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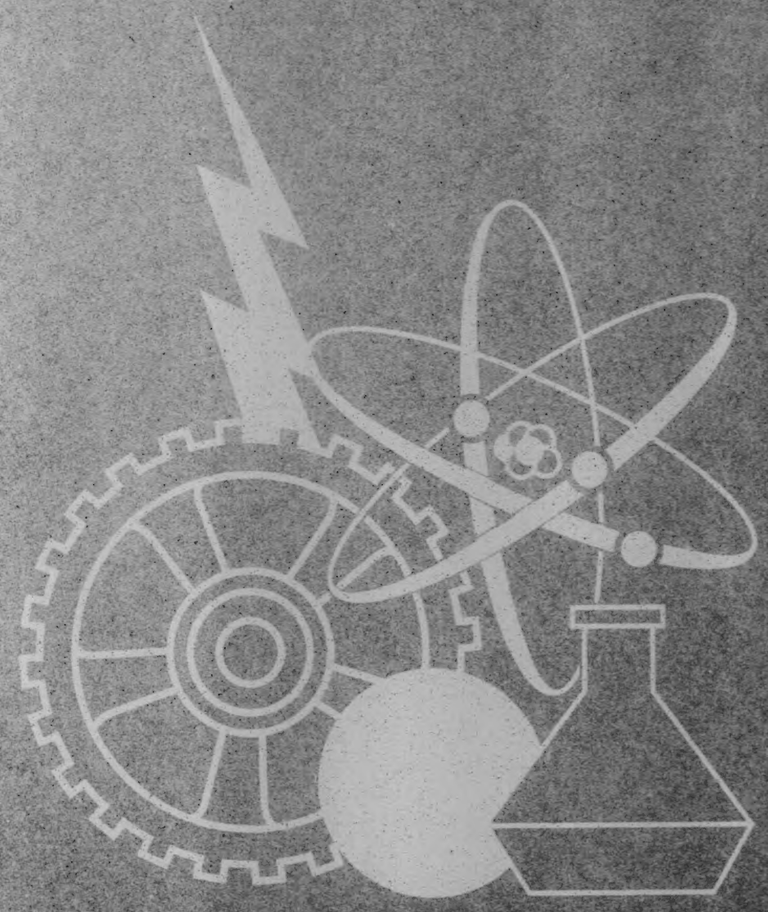
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

January 16, 1996



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
January 16, 1996 Volume 1182 Number 3

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General and Mechanical (5,483,697)			1509
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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1181 O.G. 50, on December 19, 1995.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective June 20, 1995, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1181 O.G. 49, on December 19, 1995.

International fees were changed, effective on January 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1181 O.G. 49, on December 19, 1995.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1995, and were announced in the *Official Gazette* at 1177 O.G. 171, on August 29, 1995.

The schedule of PCT fees (in U.S. dollars), effective January 1, 1996, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	220.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	660.00
—Corresponding prior U.S. national application filed	430.00
—Supplemental search fee, per additional invention (payable only upon invitation)	190.00
European Patent Office as ISA	1700.00
International fees	
Basic fee	677.00
Basic Supplemental fee (for each page over 30)	13.00
Designation fee per country or region	
—For the first 11 national or regional offices designated	164.00
—For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee	164.00
—Confirmation fee	82.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	207.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	470.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	710.00
—Additional examination fee, per additional invention (payable only upon invitation)	250.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4)	47.00	94.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	340.00	680.00
USPTO was ISA but not IPEA	375.00	750.00
USPTO was neither ISA nor IPEA		
—Search report has not been prepared by the European Patent Office or the Japanese Patent Office	505.00	1010.00
—Search report has been prepared by the European Patent Office or the Japanese Patent Office	440.00	880.00
Other National fees		
—For each independent claim in excess of 3	39.00	78.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	125.00	250.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Nov. 27, 1995

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on January 12, 1993 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,177,810 through 5,179,734
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 10, 1989 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,796,302 through 4,797,951
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 8, 1985 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,491,985 through 4,493,114
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $495.00
By other than a small entity $990.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $995.00
By other than a small entity $1,990.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,495.00
By other than a small entity $2,990.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $660.00
(2) unintentional $1,550.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED November 8, 1995
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 31,908	06/579,441	06/04/85
(4,414,463)	(06/303,004)	(11/08/83)
Re. 32,285	06/619,973	11/11/86
(4,414,594)	(06/352,943)	(11/08/83)
Re. 32,344	06/656,142	02/03/87
(4,413,737)	(06/295,524)	(11/08/83)
Re. 33,210	07/131,730	05/08/90
(4,704,225)	(06/858,389)	(11/03/87)
Re. 33,740	07/447,327	11/12/91
(4,704,501)	(06/813,446)	(11/03/87)
4,413,359	06/352,528	11/08/83
4,413,366	06/266,717	11/08/83
4,413,372	06/320,721	11/08/83
4,413,373	06/278,463	11/08/83
4,413,379	06/323,314	11/08/83
4,413,384	06/247,541	11/08/83
4,413,392	06/292,618	11/08/83
4,413,395	06/230,531	11/08/83
4,413,406	06/245,402	11/08/83
4,413,407	06/319,568	11/08/83
4,413,413	06/366,354	11/08/83
4,413,415	06/342,796	11/08/83
4,413,416	06/238,638	11/08/83
4,413,420	06/337,218	11/08/83
4,413,422	06/318,364	11/08/83
4,413,423	06/294,493	11/08/83
4,413,438	06/260,323	11/08/83
4,413,440	06/259,060	11/08/83
4,413,449	06/342,246	11/08/83
4,413,458	06/260,342	11/08/83
4,413,479	06/368,591	11/08/83
4,413,480	06/365,792	11/08/83
4,413,490	06/353,591	11/08/83
4,413,496	06/239,677	11/08/83
4,413,507	06/291,093	11/08/83
4,413,517	06/218,601	11/08/83
4,413,518	06/284,761	11/08/83
4,413,521	06/370,780	11/08/83
4,413,530	06/237,164	11/08/83
4,413,533	06/316,294	11/08/83
4,413,538	06/244,670	11/08/83
4,413,540	06/332,284	11/08/83
4,413,541	06/379,484	11/08/83
4,413,545	06/287,560	11/08/83
4,413,546	06/217,236	11/08/83
4,413,548	06/357,877	11/08/83
4,413,550	06/263,066	11/08/83
4,413,556	06/262,612	11/08/83
4,413,558	06/309,134	11/08/83
4,413,559	06/403,856	11/08/83
4,413,575	06/218,911	11/08/83
4,413,576	06/250,080	11/08/83

Patent Number	Serial Number	Issue Date
4,413,591	06/352,705	11/08/83
4,413,594	06/340,276	11/08/83
4,413,595	06/378,527	11/08/83
4,413,604	06/307,151	11/08/83
4,413,605	06/295,973	11/08/83
4,413,606	06/316,532	11/08/83
4,413,608	06/325,317	11/08/83
4,413,615	06/267,193	11/08/83
4,413,620	06/304,519	11/08/83
4,413,625	06/342,888	11/08/83
4,413,636	06/361,802	11/08/83
4,413,637	06/319,009	11/08/83
4,413,641	06/285,842	11/08/83
4,413,643	06/261,227	11/08/83
4,413,645	06/219,917	11/08/83
4,413,650	06/257,148	11/08/83
4,413,652	06/248,143	11/08/83
4,413,653	06/309,621	11/08/83
4,413,654	06/341,907	11/08/83
4,413,670	06/268,970	11/08/83
4,413,673	06/434,727	11/08/83
4,413,674	06/472,327	11/08/83
4,413,676	06/299,408	11/08/83
4,413,677	06/372,138	11/08/83
4,413,689	06/383,976	11/08/83
4,413,691	06/314,361	11/08/83
4,413,692	06/310,798	11/08/83
4,413,700	06/303,074	11/08/83
4,413,707	06/267,808	11/08/83
4,413,709	06/253,757	11/08/83
4,413,710	06/272,343	11/08/83
4,413,716	06/229,762	11/08/83
4,413,721	06/287,742	11/08/83
4,413,721	06/294,330	11/08/83
4,413,730	06/368,467	11/08/83
4,413,733	06/374,573	11/08/83
4,413,746	06/347,725	11/08/83
4,413,750	06/278,521	11/08/83
4,413,757	06/242,039	11/08/83
4,413,761	06/386,601	11/08/83
4,413,767	06/261,594	11/08/83
4,413,777	06/299,953	11/08/83
4,413,779	06/259,068	11/08/83
4,413,783	06/279,771	11/08/83
4,413,790	06/307,424	11/08/83
4,413,799	06/281,645	11/08/83
4,413,811	06/389,422	11/08/83
4,413,815	06/370,652	11/08/83
4,413,818	06/295,732	11/08/83
4,413,821	06/279,320	11/08/83
4,413,822	06/288,999	11/08/83
4,413,830	06/326,812	11/08/83
4,413,835	06/233,681	11/08/83
4,413,838	06/321,115	11/08/83
4,413,841	06/277,802	11/08/83
4,413,849	06/215,567	11/08/83
4,413,856	06/290,827	11/08/83
4,413,859	06/289,783	11/08/83
4,413,861	06/379,730	11/08/83
4,413,868	06/225,431	11/08/83
4,413,869	06/247,782	11/08/83
4,413,872	06/262,011	11/08/83
4,413,889	06/283,198	11/08/83
4,413,895	06/379,372	11/08/83
4,413,898	06/379,380	11/08/83
4,413,899	06/229,730	11/08/83
4,413,902	06/342,243	11/08/83
4,443,909	06/268,855	11/08/83
4,413,911	06/257,063	11/08/83
4,413,912	06/373,587	11/08/83
4,413,913	06/361,397	11/08/83
4,413,914	06/426,149	11/08/83
4,413,934	06/285,003	11/08/83
4,413,939	06/287,557	11/08/83
4,413,941	06/248,478	11/08/83
4,413,944	06/240,058	11/08/83
4,413,946	06/294,592	11/08/83
4,413,955	06/359,951	11/08/83
4,413,961	06/281,417	11/08/83
4,413,966	06/277,673	11/08/83
4,413,975	06/366,957	11/08/83
4,413,983	06/311,353	11/08/83
4,414,001	06/341,492	11/08/83
4,414,002	06/272,369	11/08/83
4,414,009	06/387,340	11/08/83
4,414,011	06/381,802	11/08/83
4,414,015	06/275,048	11/08/83
4,414,024	06/411,802	11/08/83
4,414,025	06/400,183	11/08/83
4,414,026	06/403,049	11/08/83
4,414,027	06/257,859	11/08/83
4,414,034	06/399,758	11/08/83
4,414,048	06/261,303	11/08/83
4,414,049	06/305,753	11/08/83
4,414,053	06/447,230	11/08/83
4,414,056	06/314,335	11/08/83
4,414,060	06/337,808	11/08/83
4,414,065	06/407,945	11/08/83
4,414,067	06/489,490	11/08/83
4,414,068	06/357,025	11/08/83
4,414,070	06/348,170	11/08/83
4,414,072	06/332,317	11/08/83
4,414,075	06/333,692	11/08/83
4,414,081	06/318,940	11/08/83
4,414,083	06/343,047	11/08/83
4,414,088	06/304,108	11/08/83
4,414,091	06/366,444	11/08/83
4,414,094	06/474,926	11/08/83
4,414,100	06/335,458	11/08/83
4,414,105	06/298,431	11/08/83
4,414,107	06/393,239	11/08/83
4,414,109	06/355,118	11/08/83
4,414,117	06/416,729	11/08/83
4,414,118	06/316,692	11/08/83
4,414,120	06/274,914	11/08/83
4,414,121	06/330,415	11/08/83
4,414,122	06/301,751	11/08/83
4,414,127	06/280,035	11/08/83
4,414,129	06/384,951	11/08/83
4,444,133	06/342,238	11/08/83
4,414,136	06/364,957	11/08/83
4,414,142	06/323,560	11/08/83
4,414,143	06/260,608	11/08/83
4,414,144	06/335,990	11/08/83
4,414,146	06/374,974	11/08/83
4,414,148	06/368,434	11/08/83
4,414,163	06/378,584	11/08/83
4,414,171	06/343,536	11/08/83
4,414,172	06/380,565	11/08/83
4,414,185	06/406,420	11/08/83
4,414,189	06/382,829	11/08/83
4,414,190	06/358,433	11/08/83
4,414,193	06/418,732	11/08/83
4,414,201	06/384,324	11/08/83
4,414,202	06/301,472	11/08/83
4,414,207	06/350,677	11/08/83
4,414,208	06/337,076	11/08/83
4,414,213	06/360,758	11/08/83
4,414,218	06/354,481	11/08/83
4,414,235	06/253,839	11/08/83
4,414,237	06/419,878	11/08/83
4,414,238	06/334,278	11/08/83
4,414,241	06/343,863	11/08/83
4,414,246	06/373,875	11/08/83
4,414,247	06/363,297	11/08/83
4,414,248	06/386,003	11/08/83
4,414,269	06/274,162	11/08/83
4,414,278	06/370,992	11/08/83
4,414,280	06/327,062	11/08/83
4,414,284	06/351,570	11/08/83
4,414,286	06/267,144	11/08/83
4,414,287	06/393,498	11/08/83
4,414,289	06/359,413	11/08/83
4,414,290	06/358,062	11/08/83
4,414,292	06/343,904	11/08/83
4,414,301	06/329,375	11/08/83

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4,414,302	06/315,625	11/08/83
4,414,307	06/351,846	11/08/83
4,414,311	06/359,458	11/08/83
4,414,314	06/352,929	11/08/83
4,414,315	06/274,342	11/08/83
4,414,320	06/462,281	11/08/83
4,414,322	06/341,820	11/08/83
4,414,324	06/252,427	11/08/83
4,414,329	06/316,164	11/08/83
4,414,334	06/291,146	11/08/83
4,414,336	06/306,647	11/08/83
4,414,347	06/418,496	11/08/83
4,414,350	06/295,582	11/08/83
4,414,354	06/364,703	11/08/83
4,414,355	06/283,292	11/08/83
4,414,360	06/319,634	11/08/83
4,414,362	06/354,838	11/08/83
4,414,363	06/388,973	11/08/83
4,414,364	06/218,501	11/08/83
4,414,371	06/347,826	11/08/83
4,414,376	06/246,104	11/08/83
4,414,380	06/437,585	11/08/83
4,414,381	06/328,395	11/08/83
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5,062,325	07/302,062	11/05/91
5,062,327	07/635,740	11/05/91
5,062,338	07/492,834	11/05/91
5,062,339	07/636,187	11/05/91
5,062,344	07/507,952	11/05/91
5,062,345	07/623,768	11/05/91
5,062,349	07/495,490	11/05/91
5,062,352	07/552,630	11/05/91
5,062,355	07/510,527	11/05/91
5,062,356	07/610,161	11/05/91
5,062,358	07/606,907	11/05/91
5,062,361	07/557,406	11/05/91
5,062,364	07/554,089	11/05/91
5,062,365	07/591,406	11/05/91
5,062,370	07/547,803	11/05/91
5,062,374	07/572,051	11/05/91
5,062,376	07/631,149	11/05/91
5,062,377	07/623,518	11/05/91
5,062,379	07/550,481	11/05/91
5,062,380	07/571,979	11/05/91
5,062,415	07/583,670	11/05/91
5,062,416	07/278,489	11/05/91
5,062,419	07/637,907	11/05/91
5,062,424	07/645,218	11/05/91
5,062,425	07/582,663	11/05/91
5,062,426	07/618,228	11/05/91
5,062,437	07/502,800	11/05/91
5,062,441	07/541,529	11/05/91

Patent Number	Serial Number	Issue Date
5,062,448	07/537,584	11/05/91
5,062,451	07/588,341	11/05/91
5,062,458	07/501,156	11/05/91
5,062,459	07/529,921	11/05/91
5,062,460	07/663,681	11/05/91
5,062,466	07/698,560	11/05/91
5,062,467	07/698,140	11/05/91
5,062,470	07/501,528	11/05/91
5,062,471	07/630,201	11/05/91
5,062,473	07/539,398	11/05/91
5,062,481	07/592,450	11/05/91
5,062,484	07/572,925	11/05/91
5,062,495	07/539,550	11/05/91
5,062,499	07/596,706	11/05/91
5,062,504	07/651,057	11/05/91
5,062,505	07/511,338	11/05/91
5,062,507	07/396,186	11/05/91
5,062,517	07/594,901	11/05/91
5,062,518	07/420,188	11/05/91
5,062,520	07/550,926	11/05/91
5,062,521	07/473,216	11/05/91
5,062,524	07/558,079	11/05/91
5,062,528	07/612,546	11/05/91
5,062,529	07/271,330	11/05/91
5,062,540	07/693,157	11/05/91
5,062,542	07/678,859	11/05/91
5,062,543	07/508,720	11/05/91
5,062,544	07/401,124	11/05/91
5,062,545	07/598,790	11/05/91
5,062,548	07/649,112	11/05/91
5,062,550	07/527,847	11/05/91
5,062,552	07/463,509	11/05/91
5,062,562	07/379,819	11/05/91
5,062,573	07/496,317	11/05/91
5,062,576	07/537,050	11/05/91
5,062,581	07/585,017	11/05/91
5,062,591	07/478,919	11/05/91
5,062,596	07/564,069	11/05/91
5,062,604	07/537,334	11/05/91
5,062,608	07/509,954	11/05/91
5,062,609	07/591,460	11/05/91
5,062,613	07/620,708	11/05/91
5,062,615	07/584,365	11/05/91
5,062,616	07/516,627	11/05/91
5,062,618	07/365,459	11/05/91
5,062,621	07/279,695	11/05/91
5,062,624	06/922,942	11/05/91
5,062,630	07/488,563	11/05/91
5,062,633	07/575,968	11/05/91
5,062,635	07/384,793	11/05/91
5,062,640	07/636,448	11/05/91
5,062,641	07/413,789	11/05/91
5,062,642	07/581,037	11/05/91
5,062,645	07/608,818	11/05/91
5,062,647	07/460,766	11/05/91
5,062,651	07/565,664	11/05/91
5,062,652	07/320,055	11/05/91
5,062,653	07/436,327	11/05/91
5,062,655	07/509,635	11/05/91
5,062,662	07/524,161	11/05/91
5,062,667	07/467,600	11/05/91
5,062,669	07/554,941	11/05/91
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5,062,676	07/609,463	11/05/91
5,062,686	07/259,120	11/05/91
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5,062,705	07/580,752	11/05/91
5,062,711	07/434,731	11/05/91
5,062,716	07/490,014	11/05/91
5,062,718	07/345,706	11/05/91
5,062,728	07/563,307	11/05/91
5,062,731	07/476,741	11/05/91
5,062,735	07/445,766	11/05/91
5,062,737	07/341,373	11/05/91
5,062,738	07/510,008	11/05/91
5,062,743	07/550,731	11/05/91
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5,062,750	07/530,359	11/05/91
5,062,765	07/542,578	11/05/91
5,062,767	07/516,493	11/05/91
5,062,773	07/601,732	11/05/91
5,062,777	07/424,203	11/05/91
5,062,789	07/574,500	11/05/91
5,062,793	07/404,954	11/05/91
5,062,797	07/578,651	11/05/91
5,062,799	07/420,943	11/05/91
5,062,805	07/618,413	11/05/91
5,062,806	07/628,335	11/05/91
5,062,810	07/573,901	11/05/91
5,062,813	07/574,090	11/05/91
5,062,814	07/379,578	11/05/91
5,062,816	07/546,914	11/05/91
5,062,818	07/640,157	11/05/91
5,062,819	07/646,818	11/05/91
5,062,820	07/566,386	11/05/91
5,062,821	07/367,712	11/05/91
5,062,837	07/528,082	11/05/91
5,062,839	07/497,129	11/05/91
5,062,848	07/680,107	11/05/91
5,062,858	07/530,312	11/05/91
5,062,871	07/435,089	11/05/91
5,062,879	07/520,810	11/05/91
5,062,882	07/324,440	11/05/91
5,062,883	07/518,640	11/05/91
5,062,888	07/489,699	11/05/91
5,062,911	07/454,524	11/05/91
5,062,912	07/597,892	11/05/91
5,062,915	07/406,898	11/05/91
5,062,920	07/526,368	11/05/91
5,062,928	07/510,175	11/05/91
5,062,929	07/393,966	11/05/91
5,062,931	07/547,370	11/05/91
5,062,933	07/430,279	11/05/91
5,062,943	07/592,440	11/05/91
5,062,944	07/431,952	11/05/91
5,062,950	07/519,399	11/05/91
5,062,955	07/530,877	11/05/91
5,062,960	07/551,409	11/05/91
5,062,963	07/478,146	11/05/91
5,062,968	07/280,673	11/05/91
5,062,969	07/355,597	11/05/91
5,062,974	07/370,456	11/05/91
5,062,976	07/545,003	11/05/91
5,062,977	07/523,063	11/05/91
5,062,982	07/505,073	11/05/91
5,062,983	07/516,593	11/05/91
5,062,996	07/533,786	11/05/91
5,062,997	06/941,590	11/05/91
5,062,998	07/513,133	11/05/91
5,063,000	07/346,983	11/05/91
5,063,003	07/436,890	11/05/91
5,063,007	07/555,101	11/05/91
5,063,014	07/520,306	11/05/91
5,063,024	07/377,538	11/05/91
5,063,027	07/373,015	11/05/91
5,063,030	07/490,376	11/05/91
5,063,033	07/013,009	11/05/91
5,063,038	07/091,612	11/05/91
5,063,049	07/535,512	11/05/91
5,063,052	07/412,788	11/05/91
5,063,056	07/526,354	11/05/91
5,063,070	07/373,822	11/05/91
5,063,085	07/560,994	11/05/91
5,063,090	07/548,233	11/05/91
5,063,091	07/418,293	11/05/91
5,063,093	07/402,352	11/05/91
5,063,099	07/496,116	11/05/91
5,063,100	07/481,442	11/05/91
5,063,107	07/418,262	11/05/91

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5,063,122	07/513,926	11/05/91
5,063,149	07/389,596	11/05/91
5,063,157	07/295,813	11/05/91
5,063,160	07/324,062	11/05/91
5,063,166	07/506,051	11/05/91
5,063,189	07/500,604	11/05/91
5,063,190	07/541,104	11/05/91
5,063,191	07/583,405	11/05/91
5,063,193	07/534,584	11/05/91
5,063,197	07/576,969	11/05/91
5,063,202	07/517,523	11/05/91
5,063,203	07/520,760	11/05/91
5,063,207	07/384,236	11/05/91
5,063,208	07/544,072	11/05/91
5,063,219	07/594,887	11/05/91
5,063,226	07/503,065	11/05/91
5,063,239	07/520,419	11/05/91
5,063,240	07/521,157	11/05/91
5,063,245	07/500,478	11/05/91
5,063,246	07/569,780	11/05/91
5,063,252	07/433,315	11/05/91
5,063,262	07/588,938	11/05/91
5,063,271	07/532,308	11/05/91
5,063,273	07/472,322	11/05/91
5,063,274	07/590,711	11/05/91
5,063,283	07/490,353	11/05/91
5,063,285	07/420,049	11/05/91
5,063,286	07/628,005	11/05/91
5,063,299	07/553,515	11/05/91
5,063,301	07/454,367	11/05/91
5,063,316	07/542,663	11/05/91
5,063,321	07/573,199	11/05/91
5,063,341	07/598,133	11/05/91
5,063,349	07/533,233	11/05/91
5,063,352	07/473,949	11/05/91
5,063,353	07/480,782	11/05/91
5,063,358	07/608,069	11/05/91
5,063,359	07/614,325	11/05/91
5,063,365	07/236,657	11/05/91
5,063,369	07/563,302	11/05/91
5,063,372	07/542,270	11/05/91
5,063,376	07/348,062	11/05/91
5,063,379	07/347,776	11/05/91
5,063,382	07/574,708	11/05/91
5,063,395	07/487,447	11/05/91
5,063,405	07/588,583	11/05/91
5,063,406	07/122,900	11/05/91
5,063,463	07/325,584	11/05/91
5,063,472	07/502,730	11/05/91
5,063,474	07/360,632	11/05/91
5,063,483	07/603,389	11/05/91
5,063,484	07/684,617	11/05/91
5,063,489	07/505,391	11/05/91
5,063,491	07/459,812	11/05/91
5,063,493	07/353,930	11/05/91
5,063,505	07/368,046	11/05/91
5,063,509	07/470,478	11/05/91
5,063,517	07/397,453	11/05/91
5,063,522	07/551,764	11/05/91
5,063,536	07/167,311	11/05/91
5,063,539	07/593,528	11/05/91
5,063,548	07/346,776	11/05/91
5,063,565	07/688,718	11/05/91
5,063,574	07/490,769	11/05/91
5,063,601	07/240,746	11/05/91
5,063,602	07/679,161	11/05/91
5,063,609	07/419,865	11/05/91

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,441,146, Re. S.N. 08/538,351, Oct. 3, 1995, Cl. 363/20, OPTIMAL RESETTING OF THE TRANSPORMER'S CORE IN SINGLE ENDED FORWARD CONVERTERS, Patrizio Vinciarelli, Owner of Record: *VLT Corporation, San Antonio, Tex.*, Attorney or Agent: David L. Feigenbaum, Ex. Gp.: 2111

5,070,346, Re. S.N. 08/543,256, Oct. 18, 1995, Cl. 347/7, INK NEAR-END DETECTING DEVICE, Seiji Mochizuki, et. al., Owner of Record: *Seiko Epson Corporation, Tokyo, Japan*, Attorney or Agent: Alan J. Kasper, Ex. Gp.: 2108

5,176,721, Re. S.N. 08/368,822, Jan. 5, 1995, Cl. 55/25, ADSORBER AND PROCESS FOR THE SEPARATION BY ADSORPTION, Leon Hay, et. al., Owner of Record: *L'Air Liquide, Societe Anonyme Pour L'Etude ET L'Exploitation Procedes Georges Claude, Paris, France*, Attorney or Agent: Robert J. Patch, Ex. Gp.: 1305

5,258,935, Re. S.N. 08/548,306, Nov. 1, 1995, Cl. 364/705.02, SELF-INPUTTING CHECKBOOK ACCOUNTING DEVICE, Michael S. Ure, Owner of Record: *Inventor*, Attorney or Agent: None, Ex. Gp.: 2306

5,259,083, Re. S.N. 08/552,113, Nov. 2, 1995, Cl. 15/22.1, MECHANICAL TOOTHBRUSH, Benjamin H. Stansbury, Jr., Owner of Record: *Pulse Innovations Inc., King City, Canada*, Attorney or Agent: Dennis P. O'Reilley, Ex. Gp.: 3405

5,418,220, Re. S.N. 08/594,192, Oct. 27, 1995, Cl. 514/63, METHOD FOR TREATING CONSTIPATION USING DIMETHICONE, Alfred Schmidt, et. al., Owner of Record: *Inventors*, Attorney or Agent: Matthew Jacob, Ex. Gp.: 1205

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,486,450, Reexam. No. 90/004,043, Dec. 11, 1995, Cl. 514/627, METHOD OF TREATING PSORIATIC SKIN AND COMPOSITION, Joel E. Bernstein, Owner of Record: *Inventor*, Attorney or Agent: Finnegan Henderson Farabow Garrett & Dunner, Washington, D.C., Ex. Gp.: 1205, Requester: Owner

4,547,328, Reexam. No. 90/004,047, Dec. 14, 1995, Cl. 264/045.9, METHOD FOR PRODUCING FOAMED PLASTIC INSULATOR, Masao Yuto, et. al., Owner of Record: *Sumitomo Electric Industries, Ltd., Osaka, Japan*, Attorney or Agent: Shugrue Mion Zinn Mac Peak & Seas, Washington, D.C., Ex. Gp.: 1306, Requester: Owner

4,625,557, Reexam. No. 90/004,046, Nov. 30, 1995, Cl. 073/635, ACOUSTICAL IMAGING SYSTEM, Jerry Rutherford, Owner of Record: *Lora B. Rutherford, Lake Barrington, Ill.*, Attorney or Agent: Poms Smith Lande & Rose, Los Angeles, Calif., Ex. Gp.: 2212, Requester: Sierra Matrix Inc. c/o Allston L. Jones, Phillips Moore Limpio & Finley, Palo Alto, Calif.

5,082,813, Reexam. No. 90/004,051, Nov. 17, 1995, Cl. 502/060, ALUMINOCILICATES WITH MODIFIED CATION AFFINITY, Peter Taborsky, Owner of Record: *Inventor*, Attorney or Agent: Charles A. Mc Clure, Tampa, Fla., Ex. Gp.: 1103, Requester: Owner

5,124,349, Reexam. No. 90/004,050, Dec. 8, 1995, Cl. 514/453, STORAGE STABLE AZADIOACHTIN FORMULATION, Charles G. Carter, et. al., Owner of Record: *W. R. Grace & Co.-Conn., New York, N.Y.*, Attorney or Agent: Jill Krafte, c/o W. R. Grace & Co.-Conn., Columbia, Md., Ex. Gp.: 1205, Requester: Foundation on Economic Trends c/o Jeremy Rifkin, Washington, D.C.

5,229,812, Reexam. No. 90/004,049, Dec. 7, 1995, Cl. 355/060, FINISHER WITH A STAPLER, Osamu Toyama, et. al., Owner of Record: *Minolta Co., Ltd., Osaka, Japan*, Attorney or Agent: Gerald H. Glanzman, Willian Brinks Hofer Gilson & Lione, Indianapolis, Ind., Ex. Gp.: 2105, Requester: Owner

5,297,611, Reexam. No. 90/004,048, Dec. 15, 1995, Cl. 164/353, CASTING OF METAL OBJECTS, Rodney A. Leggae, et. al., Owner of Record: *Comalco Aluminum Limited, Melbourne, Australia*, Attorney or Agent: Nikaido Marmelstein Murray & Oram, Washington, D.C., Ex. Gp.: 3205, Requester: Owner

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED OCTOBER 16, 1995
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
43,988	70/043,988	01/10/1905
101,735	71/081,190	01/12/1915
101,752	71/079,123	01/12/1915
101,782	71/081,786	01/12/1915
101,845	71/075,990	01/12/1915
101,852	71/080,644	01/12/1915
101,882	71/079,648	01/12/1915
101,890	71/080,551	01/12/1915
317,074	71/347,710	09/11/1934
320,752	71/356,137	01/08/1935
320,766	71/326,977	01/08/1935
320,772	71/343,632	01/08/1935
320,807	71/356,193	01/08/1935
320,810	71/356,234	01/08/1935
320,814	71/356,303	01/08/1935
320,815	71/356,321	01/08/1935
320,843	71/355,087	01/08/1935
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600,588	71/667,391	01/11/1955
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600,593	71/649,384	01/11/1955
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600,641	71/656,484	01/11/1955
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600,667	71/660,684	01/11/1955
600,679	71/663,759	01/11/1955
600,680	71/663,959	01/11/1955
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1,000,863	73/002,887	01/07/1975
1,000,864	73/003,499	01/07/1975
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1,000,874	73/015,344	01/07/1975
1,000,879	73/016,643	01/07/1975
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1,000,883	73/017,043	01/07/1975
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1,000,887	73/017,054	01/07/1975
1,000,888	73/017,061	01/07/1975
1,000,889	73/017,278	01/07/1975
1,000,890	73/017,338	01/07/1975
1,000,891	73/018,208	01/07/1975
1,000,895	73/023,326	01/07/1975
1,000,901	73/011,339	01/07/1975
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1,000,916	73/009,936	01/07/1975
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1,000,939	73/014,137	01/07/1975
1,000,941	73/016,298	01/07/1975
1,000,942	73/017,303	01/07/1975
1,000,946	73/000,964	01/07/1975
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1,000,954	73/011,756	01/07/1975
1,000,962	73/014,710	01/07/1975
1,000,968	73/003,251	01/07/1975
1,000,977	73/004,518	01/07/1975
1,000,978	73/004,864	01/07/1975
1,000,984	73/006,669	01/07/1975
1,000,985	73/006,686	01/07/1975
1,000,987	73/006,936	01/07/1975
1,000,992	73/008,071	01/07/1975
1,000,994	73/008,724	01/07/1975
1,000,995	73/008,848	01/07/1975

Reg. Number	Serial Number	Reg. Date
1,000,996	73/008,918	01/07/1975
1,000,998	73/010,948	01/07/1975
1,000,999	73/011,957	01/07/1975
1,001,001	73/008,842	01/07/1975
1,001,006	73/008,736	01/07/1975
1,001,012	73/014,711	01/07/1975
1,001,020	73/020,544	01/07/1975
1,001,022	73/001,447	01/07/1975
1,001,025	73/006,580	01/07/1975
1,001,026	73/009,002	01/07/1975
1,001,027	73/009,463	01/07/1975
1,001,028	73/009,644	01/07/1975
1,001,030	73/010,702	01/07/1975
1,001,037	73/003,791	01/07/1975
1,001,041	73/008,182	01/07/1975
1,001,042	73/010,009	01/07/1975
1,001,043	73/010,745	01/07/1975
1,001,045	73/012,754	01/07/1975
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1,001,370	72/458,792	01/07/1975
1,001,371	72/421,269	01/07/1975
1,001,372	72/442,651	01/07/1975

Certificate of Correction
For Week of January 16, 1996

P. 09,161	5,304,907	5,396,097	5,424,293
Re. 34,971	5,307,183	5,396,499	5,424,650
D. 358,898	5,313,406	5,396,896	5,425,823
D. 361,778	5,315,336	5,397,560	5,426,257
4,849,287	5,319,234	5,401,429	5,426,682
4,953,862	5,333,556	5,404,750	5,427,022
4,991,565	5,341,987	5,405,311	5,427,109
5,006,961	5,356,625	5,406,545	5,427,576
5,043,291	5,356,742	5,407,325	5,427,780
5,045,303	5,359,413	5,408,761	5,428,061
5,076,983	5,362,069	5,409,193	5,428,675
5,084,271	5,363,785	5,409,591	5,430,165
5,103,067	5,364,885	5,412,620	5,430,196
5,113,223	5,367,669	5,412,636	5,430,499
5,135,074	5,368,464	5,413,657	5,430,765
5,139,667	5,368,633	5,414,007	5,430,769
5,164,410	5,369,450	5,414,713	5,432,079
5,194,749	5,374,328	5,415,464	5,432,346
5,248,552	5,376,303	5,416,492	5,432,351
5,268,685	5,376,570	5,417,800	5,432,522
5,269,037	5,379,368	5,417,873	5,432,743
5,270,421	5,379,402	5,418,888	5,432,886
5,271,522	5,385,764	5,419,623	5,433,098
5,276,316	5,386,720	5,419,674	5,433,502
5,287,988	5,388,323	5,420,350	5,433,632
5,298,622	5,389,377	5,420,671	5,434,499
5,302,242	5,389,625	5,421,866	5,434,785
5,303,524	5,395,735	5,422,942	5,436,180

5,436,824	5,439,616	5,443,932	5,447,095	5,451,004	5,453,564	5,455,845	5,461,637
5,436,855	5,439,797	5,443,933	5,447,117	5,451,094	5,453,699	5,456,209	5,462,033
5,436,865	5,439,861	5,444,267	5,447,851	5,451,141	5,453,850	5,456,711	5,462,070
5,436,899	5,439,881	5,444,413	5,448,132	5,451,207	5,454,030	5,457,103	5,462,219
5,437,272	5,440,031	5,444,550	5,448,334	5,451,343	5,454,434	5,457,177	5,462,419
5,437,657	5,440,298	5,444,688	5,448,448	5,451,643	5,454,597	5,457,417	5,462,679
5,437,690	5,440,332	5,444,711	5,448,556	5,451,671	5,454,784	5,457,941	5,462,720
5,437,971	5,440,357	5,444,811	5,449,200	5,451,828	5,454,951	5,458,757	5,462,937
5,438,010	5,440,846	5,446,329	5,449,450	5,452,378	5,455,097	5,458,766	5,465,637
5,438,025	5,442,087	5,446,358	5,449,525	5,452,531	5,455,143	5,458,767	5,463,692
5,438,144	5,442,107	5,446,481	5,450,840	5,452,907	5,455,181	5,458,941	5,464,033
5,438,300	5,442,246	5,446,695	5,450,934	5,453,107	5,455,214	5,458,958	5,464,680
5,438,419	5,442,514	5,446,818	5,450,959	5,453,238	5,455,441	5,459,778	5,465,299
5,439,614	5,443,773	5,446,887	5,450,961	5,453,422	5,455,757	5,460,884	

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

October 9-13, 1995

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
10-11	EX	74/284,204	Int'l. Business Machines Corp.	2(d)	Refusal Affirmed		"POWERSTATION" [computer systems comprising servers and workstations; graphic display monitors; workstations comprising central processing units, monitors, keyboards and data storage devices; disk controllers; input and output devices; networking and communications equipment, namely, modems, data communications terminals and line adapters; computer program manuals for multiuser commercial applications]	"POWERSTATION" (and design) [computer utility programs and instruction manuals sold therewith]	No
10-11	EX	74/125,303	Annell Williams	whether applicant's Rule 2.88 statement of use may be accepted (and, in particular, whether the statement was signed by one with color of authority to sign on behalf of applicant)	Refusal Affirmed		design of a bird in flight [coffee]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
10-11	OPP	88,807	American Legion v. Richard G. Matthew	2(d)	Opposition Dismissed	"LEGIONNAIRE" et. al. [clothing, including caps; jewelry, memorabilia; sponsorship of various educational programs]	"LEGIONNAIRE" [clothing, namely, a kepi with a round flat top, bill, and flap on the back to protect the neck and ears from the sun]		No
10-13	EX	74/294,371	Helen Lovely	2(e)(1) [genericness]; 2(f) [whether mark has become distinctive through use in commerce]	Refusal Affirmed		"NCLEX REVIEW" [conducting classes and seminars in the fields of health and continuing education]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

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Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL-85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box M Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filings of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOU's), and extension requests.
Box TTAB FEE	Oppositions, Cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections, and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

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Washington, D.C. 20231

Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation*; papers relating to pending litigation shall be mailed only to the Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box OED	Mail for the Office of Enrollment and Discipline.

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All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

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	Birmingham Public Library	(205) 226-3620
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Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4488
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
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	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
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Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
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	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-1450
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	St. Louis Public Library	(314) 241-2288 Ext. 390
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	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	Not Yet Operational
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	Not Yet Operational
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy
J.O. THOMAS, JR., Deputy Assistant Commissioner for Patent Process Services

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	06/16/94
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	06/28/94
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—BARRY S. RICHMAN, Director	308-0651	08/26/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	09/15/94
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	03/22/94
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	01/17/94
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	05/31/94
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	06/23/93
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	03/30/94
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	05/24/94
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	04/19/94
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	05/30/94
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	05/12/94
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	07/12/94
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	09/26/94
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/25/94
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	06/20/94

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of October 1, 1995

Law Office	Oldest Date: New*	Oldest Date: Amendment Filed
Law Office 101—Ron Sussman, Acting Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/23/95	05/25/95
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/23/95	07/03/95
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/26/95	08/21/95
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/06/95	08/14/95
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/23/95	05/01/95
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/14/95	07/03/95
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/02/95	07/24/95
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions– Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/15/95	06/17/95
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/30/95	05/30/95
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—John Walker, Director, (703) 308-9100		
Trademark Assistance Center—(703) 308-9000		
Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188		
Intent-To-Use—(ITU)—(703) 308-9500		
Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	02/14/95	—0—
Renewals (All Classes)	07/25/95	—0—
Section 12(c) Publications (All Classes)	04/11/95	—0—

1. ** Assigned to all Law Office

2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 305–8747 through (703) 305-9752 from 6:30 a.m. to Midnight EST, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

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REEXAMINATIONS

JANUARY 16, 1996

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B2 Re. 33,209 (2773th)

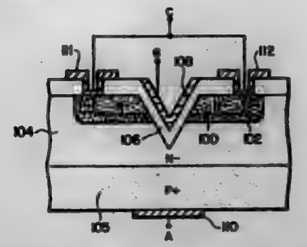
MONOLITHIC SEMICONDUCTOR SWITCHING DEVICE

James D. Plummer, Mt. View, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Reexamination Request No. 90/003,934, Sep. 15, 1995.
Reexamination Certificate for Reissue Patent Re. 33,209, issued [008d], Ser. No. 943,200, Sep. 18, 1978.
Reissued No. 3,320, dated May 1, 1990, Ser. No. 539,111, Dec. 5, 1983.

Int. Cl.[6] H01L *29/78*

U.S. Cl. 257—124



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1**, **3**, **10**, **12** and **14–25** is confirmed.

Claims **2**, **4–9**, **11** and **13** were previously cancelled.

1. A monolithic semiconductor SCR device having a bipolar mode of operation, comprising:

a semiconductor substrate of one conductivity type and an epitaxial layer of opposite conductivity type, said epitaxial layer having at least one major surface, and

first and second spaced regions of said one conductivity type formed in said epitaxial layer and abutting said major surface, third and fourth regions of said opposite conductivity type formed in said first and second regions respectively, abutting said major surface and defining first and second channel regions in said first and second regions, respectively,

a layer of insulation of said major surface,

a gate electrode formed on said layer of insulation and above said first and second channel regions, an ohmic contact to said first and third regions, and an ohmic contact to said second and fourth regions,

means for electrically connecting said ohmic contact to said first and third regions to said ohmic contact to said second and fourth regions,

said first and second regions, said epitaxial layer, and said substrate defining a first bipolar transistor whose conduction is controlled by current supplied through said first and second channel regions under control of the voltage applied to said gate electrode, said first, second, third, and fourth regions and said epitaxial layer defining a second bipolar transistor whose conduction is controlled by current supplied by the conduction of said first bipolar transistor, and

an ohmic contact to said semiconductor substrate,

first means for applying a first voltage to said gate electrode with respect to said ohmic contacts to said first, second, third, and fourth regions,

second means for applying a second voltage to said ohmic contact to said semiconductor substrate with respect to said ohmic contacts to said first, second, third, and fourth regions,

said first and second voltages being such as to cause said first bipolar transistor to conduct without resulting in the turn-on of said second bipolar transistor, such that said SCR is operated as an MOS controlled bipolar transistor.

B1 5,051,114 (2774th)

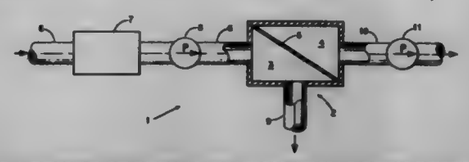
PERFLUORODIOXOLE MEMBRANES

Stuart M. Nemser, and Ian C. Roman, both of Wilmington, Del., assignors to Du Pont Canada Inc., Mississauga, Canada, and E. I. Du Pont de Nemours and Company, Wilmington, Del.

Reexamination Request No. 90/002,953, Feb. 4, 1993.
Reexamination Certificate for Patent 5,051,114, issued Sep. 24, 1991, Ser. No. 538,066, Jun. 13, 1990.
Continuation-in-part of Ser. No. 366,400, Jun. 15, 1989, abandoned.

Int. Cl.[6] B01D *53/22;71/32*

U.S. Cl. 95—47



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **12**, **27** and **30–41** are cancelled.

Claims **1** and **15** are determined to be patentable as amended.

Claims **2–11**, **13**, **14**, **16–26**, **28** and **29**, dependent on an amended claim, are determined to be patentable.

1. A method for the enrichment of the amount of a gaseous organic compound in a gaseous admixture of said organic compound and at least one of oxygen and nitrogen, said method comprising:

(a) providing in a membrane separation cell a selectively permeable member having a feed side and a permeate side, said membrane *separation cell* being virtually defect-free with an oxygen/nitrogen selectively of at least 1.4 *and having a permeability to oxygen of at least 100 Barrers* and formed from an amorphous polymer of perfluoro-2,2-dimethyl-1,3-dioxole, and feeding said admixture to the feed side of said membrane, said membrane being at a temperature of less than the glass transition temperature of the polymer; and

(b) removing from the feed side of the membrane, a gaseous admixture of said organic compound that is enriched in the amount of organic compound.

B1 5,182,743 (2775th)

RECORDING AND/OR REPRODUCING APPARATUS WITH A DISC CARTRIDGE TEMPERATURE SENSOR

Kiyoshi Ohmori, Kanagawa; Shoji Iwaasa, Tokyo, and Goro Fujita, Kanagawa, all of, Japan, assignors to Sony Corporation, Tokyo, Japan

Reexamination Request No. 90/003,681, Jan. 3, 1995.
Reexamination Certificate for Patent 5,182,743, issued Jan. 26, 1993, Ser. No. 726,779, Jul. 8, 1991.
Claims priority, application Japan, Jul. 10, 1990, 2-180611

Int. Cl.[6] G11B *33/02;7/00;33/14*

U.S. Cl. 369—116

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **9–15** is confirmed.

Claims **3** and **8** are cancelled.

Claims **1–2** and **4** are determined to be patentable as amended.

Claims **5–7** dependent on an amended claim, are determined to be patentable.

1. A recording and/or reproducing apparatus for recording and/or reproducing information signals on or from a disc rotatably mounted within a disc cartridge, the disc cartridge having a recording layer, the apparatus including means for rotating the disc

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,146

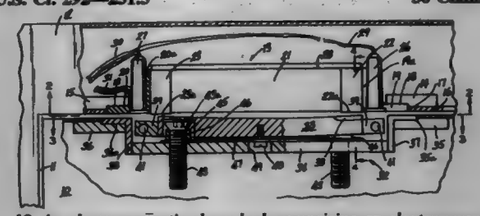
ELECTROMAGNETIC SHEAR LOCK

George Frolov, Farmington, Conn., assignor to Harrow Products, Inc., Grand Rapids, Mich.

Original No. 5,016,929, dated May 21, 1991, Ser. No. 366,864, Jun. 13, 1989. Application for reissue Apr. 16, 1993, Ser. No. 49,001

Int. Cl.[6] E05C 17/56

U.S. Cl. 292—251.5 30 Claims



19. An electromagnetic shear lock comprising an electromagnet assembly adapted to be mounted to one of a doorway or a door and an armature adapted to be mounted to the other of the doorway or the door in a position to be attracted to the electromagnet assembly,

said electromagnet assembly comprising an elongated core and an energizing coil, said core defining a first attracting surface,

said electromagnet assembly comprising longitudinally spaced end portions, said core and coil being disposed between said end portions, each said end portion comprising a raised portion at intermediate transverse positions thereof;

said armature comprising a second surface adapted to engage said first attracting surface, said armature having at opposite longitudinally spaced positions transversely spaced edge portions extending from said second surface to receive said raised portions when said first and second surfaces engage to thereby maintain an engaged relationship between said electromagnet assembly and said armature.

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PLANT PATENTS

GRANTED JANUARY 16, 1996

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,427
KALANCHOË PLANT NAMED 'ISABELLA'
Knud Jepsen, Hinnerup, Denmark, assignor to Knud Jepsen A/S, Hinnerup, Denmark
Filed Jan. 23, 1995, Ser. No. 376,388
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.15 1 Claim
1. A new and distinct Kalanchoë plant named Isabella, as described and illustrated.

9,428
KALANCHOË PLANT NAMED 'DEBBIE'
Knud Jepsen, Hinnerup, Denmark, assignor to Knud Jepsen A/S, Hinnerup, Denmark
Filed Jan. 23, 1995, Ser. No. 376,389
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.15 1 Claim
1. A new and distinct Kalanchoë plant named 'Debbie' as described and illustrated.

9,429
KALANCHOË PLANT NAMED 'FAME'
Knud Jepsen, Hinnerup, Denmark, assignor to Knud Jepsen A/S, Hinnerup, Denmark
Filed Jan. 23, 1995, Ser. No. 376,390
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.15 1 Claim
1. A new and distinct Kalanchoë plant named Fame, as described and illustrated.

9,430
ELATIOR BEGONIA PLANT NAMED 'SANNE'
Jens N. Poulsen, Gartneriet J.N.P., Larsmindevej 1, Lisbjerg, DK-8200 Aarhus N., Denmark
Filed Feb. 9, 1995, Ser. No. 385,871
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.18 1 Claim
1. A new and distinct Elatior Begonia plant named Sanne, as illustrated and described.

9,431
ELATIOR BEGONIA PLANT NAMED 'BLENDA'
Jens Nørgaard Poulsen, Larsmindevej 1, Lisbjerg, DK-8200 Aarhus N., Denmark
Filed Feb. 9, 1995, Ser. No. 385,872
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.18 1 Claim
1. A new and distinct Elatior Begonia plant named Blenda, as illustrated and described.

9,432
ELATIOR BEGONIA PLANT NAMED 'BRITTA'
Jens N. Poulsen, Gartneriet J.N.P. Larsmindevej 1, Lisbjerg, DK-8200 Aarhus N., Denmark
Filed Feb. 9, 1995, Ser. No. 385,873
Claims priority, application Japan, Jan. 5, 1993, 6259
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.18 1 Claim
1. A new and distinct Elatior Begonia plant named Britta, as illustrated and described.

9,433
ELATIOR BEGONIA PLANT NAMED 'DAISY'
Jen N. Poulsen, Gartneriet J.N.P., Larsmindevej 1, Lisbjerg, DK-8200 Aarhus N., Denmark
Filed Feb. 9, 1995, Ser. No. 386,319
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.18 1 Claim
1. A new and distinct Elatior Begonia plant named Daisy, as illustrated and described.

9,434
DIEFFENBACHIA PLANT NAMED TROPIC DAWN
Edwin J. Frazer, Kenmore, Australia, assignor to Twyford International Inc., Sebring, Fla.
Filed Jan. 19, 1995, Ser. No. 374,860
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.2 1 Claim
1. A new and distinct cultivar of Dieffenbachia plant named Tropic Dawn, as illustrated and described.

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PATENTS

GRANTED JAN. 16, 1996

ERRATA

For CLASS	See PATENT NO.
108–051	5,483,875
600–104	5,483,951
600–131	5,483,952
144–287	5,484,003
188–024	5,484,032
192–058	5,484,045
206–722	5,484,063
273–164	5,484,155
273–194	5,484,156
273–260	5,484,157
273–276	5,484,158
273–424	5,484,159
414–412	5,484,238
417–477	5,484,239
607–108	5,484,448
540–452	5,484,685
521–056	5,484,815
424–449	5,484,833
526–062	5,484,855
526–062	5,484,856
525–329	5,484,865
546–171	5,484,944
329–306	5,484,987
356–005	5,485,009
250–288	5,485,016
395–156	5,485,175
348–411	5,485,279
327–056	5,485,292

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ERRATA–Continued

For CLASS	See PATENT NO.
364–557	5,485,347
395–186	5,485,409
395–182	5,485,465
364–560	5,485,468
364–431	5,485,596
361–680	5,485,614

PATENTS

GRANTED JANUARY 16, 1996

GENERAL AND MECHANICAL

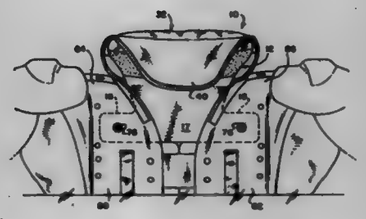
5,483,697
MULTILAYER PROTECTIVE COVERINGS WITH A SEALING SOLUTION
Ingbert E. Fuchs, Desoto, Tex., assignor to Board of Regents The University of Texas, Austin, Tex.
PCT No. PCT/US91/08961, § 371 Date Oct. 1, 1993, § 102(e) Date Oct. 1, 1993
Continuation-in-part of Ser. No. 678,838, Apr. 1, 1991, which is a continuation-in-part of Ser. No. 422,913, Oct. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 359,474, May 22, 1989, abandoned. This PCT application Nov. 27, 1991, Ser. No. 129,110
Int. Cl.[6] A41D *13/10*; A61F *6/04*
U.S. Cl. 2—161.7 **85 Claims**



1. A glove comprising:
an inner layer;
an outer layer;
an impermeable seal between the inner and outer layers; and
a middle layer comprising a sealing solution disposed between the inner and outer layers operable to seal holes in the inner or outer layers.

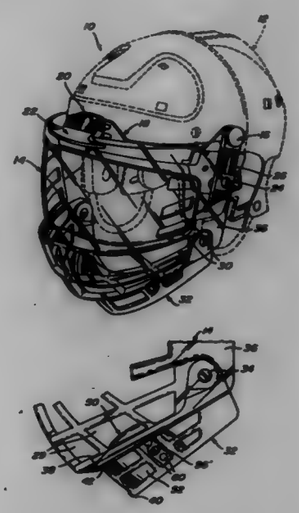
5,483,698
HELMET SUPPORT AND MOVEMENT RESTRICTOR
Rogers W. Douglas, Jr., Houston, Tex., assignor to Douglas Protective Equipment, Inc., Houston, Tex.
Filed Sep. 27, 1994, Ser. No. 312,872
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—2 **14 Claims**





1. A helmet support and movement restrictor for use in conjunction with a shoulder pad assembly for restricting rearward movement of a helmet while permitting side-to-side movement of said helmet, said shoulder pad assembly having means forming opposed body arches with opposed back plate portions, said movement restrictor comprising:
a support plate including opposed wing portions joined by a connecting web disposed between said wing portions, said wing portions including means for connecting said wing portions to respective ones of said back plate portions of said shoulder pad assembly; and,
an upwardly projecting cantilever portion of said support plate joined to said web and being operable in response to forces imposed thereon by a helmet engaging said cantilever portion to deflect above said web and to transfer forces through said web and said wing portions to said opposed back plate portions.

5,483,699
FACE SHIELD WITH CHIN CONTACTING ELEMENT
Martin P. Pernicka, St. François; Paul Isabelle, and Hubert Gagnon, both of St.-Augustin de Desmaures, Canada, assignors to Lemieux Industries, Inc., Beauceville, Canada
Filed Apr. 25, 1994, Ser. No. 231,815
Int. Cl.[6] A41D *13/00*; A42B *3/20*
U.S. Cl. 2—9 **8 Claims**



1. A face guard for a sports headgear comprising:
a face shield defining an arc-shaped body having a front viewing section and opposite side sections, said side sections being adapted for mounting to a helmet forming part of the sports headgear, said face shield body having a lower part defining a lower peripheral edge;
a chin device defining an arc-shaped rigid frame hingedly mounted at a lower part of and within said arc-shaped body of said face shield; said frame defining a central region and opposite side regions, said side regions being pivotally connected to said side sections of said face shield; said frame of said chin device defining an upper peripheral edge;
a chin contacting element mounted to said central region of said frame; and
means limiting downward pivotal movement of said frame;

said limiting means consisting of said upper peripheral edge and of said lower peripheral edge when contacting one another on downward movement thereof.

5,483,700

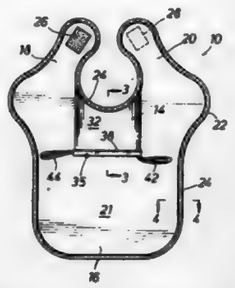
Patent Not Issued For This Number

5,483,701

COMBINED BIB AND STORAGE POUCH

Enrique Ferreyros, 913 Wildwood, Bellaire, Tex. 77401

Filed Jan. 31, 1994, Ser. No. 189,320
Int. Cl.[6] A41B *13/10*
U.S. Cl. 2—49.2 2 Claims



1. A bib for fitting about the neck and over the chest of a child and arranged to be easily compressed and stored for transport; said bib comprising

a body having a central body portion and a pair of neck portions extending from said central body portion, said body having an outer periphery and a marginal edge portion extending about said outer periphery; said central body portion having an inwardly facing rear surface for fitting against the chest of the child and an opposed outwardly facing front surface;

securing means for said neck portions-for securing said neck portions about the neck of the child to secure the bib thereon;

a pouch having a closed end and an open end and positioned adjacent said rear surface of said central body portion, said pouch secured at its closed end to said marginal edge portion at a position on said central body portion between said neck portions, said pouch extending in a free unsecured relation downwardly from said closed end on said marginal portion to said open end along said rear surface of the body portion;

said pouch being turned inside out and outside in when the bib is placed about the neck of a child with said pouch extending downwardly from said closed end secured to said marginal edge portion between said neck portions, said bib being stored in a compressed relation within said pouch via said closed end of said pouch while turning the outside of the pouch out about the compressed bib;

and a separate edge strip extends along said marginal edge portion on said outer periphery of said bib, said edge strip and said closed end of said pouch being secured together to said rear surface of said body portion between said neck portions.

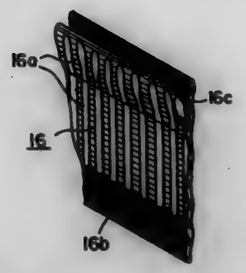
5,483,702

GARMENT WAISTBAND CONSTRUCTION

Anthony D'Ambrosio, 6405 N. Broad St., Philadelphia, Pa. 19126

Filed Nov. 22, 1994, Ser. No. 343,344
Int. Cl.[6] A41D *1/06*
U.S. Cl. 2—237 14 Claims

1. In a waistband assembly for a garment, the improvement comprising an elastic strip of one piece construction having a middle portion which is longitudinally elastic including means substantially preventing transverse bending of said middle portion thereby to exhibit no-roll characteristics, said elastic strip having a lower portion offering a lower resistance to elongation than the middle portion of said elastic strip, and said middle portion having an integral lip extending from a location below the edge of said middle portion to a location above the edge of said middle portion to form a bifurcated edge on said elastic strip, said integral lip offering a lower resistance to elongation than the middle portion of said elastic strip.



5,483,703

WATERPROOF, BREATHABLE ARTICLES OF APPAREL FOR A WEARER'S EXTREMITIES

Cole Williams, 2408 Allanjay Pl., Glendale, Calif. 91208

Filed Oct. 9, 1992, Ser. No. 959,115
Int. Cl.[6] A41B *11/00*
U.S. Cl. 2—239 42 Claims



1. A method of making a waterproof footwear article constructed of an inner fabric sock, an outer fabric sock and an intermediate pliant, waterproof, breathable bladder having a continuous extremity receiving portion in the general shape of the wearer's foot and having a continuous inner and outer surface, said method comprising the steps of:

(a) applying a thin layer of heat activated adhesive over the outer surface of the inner fabric sock to form a coated inner sock;

(b) placing the bladder over the coated inner sock to form a subassembly;

(c) applying a thin layer of adhesive over the inner surface of the outer fabric sock to form a coated outer sock;

(d) placing said coated outer sock over said subassembly so that said layer of adhesive is proximate said bladder to form a precursor article; and

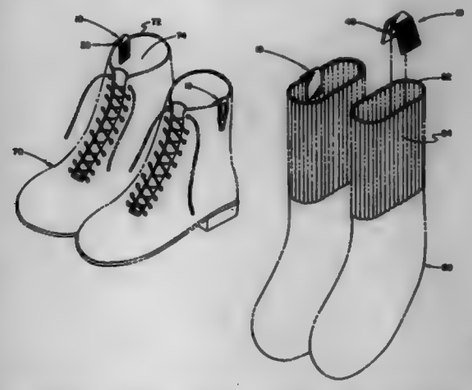
(e) heating said precursor article to a temperature sufficient to activate said heat adhesive whereby said inner and outer socks will be adhesively bonded to the continuous inner and outer surfaces of the bladder.

5,483,704

CLIP-ON GARTER

Edmund C. Filipiak, 143 County Rd. 135, Barnum, Minn. 55707

Filed Apr. 25, 1994, Ser. No. 231,835
Int. Cl.[6] A41F *1/00*
U.S. Cl. 2—336 4 Claims



1. A clip-on garter for retaining a sock fully upright while being worn within a boot whereby preventing sliding of the sock into the boot cavity caused by movement of a user's foot relative the boot, the clip-on garter comprising:

a boot clip member clampedly attachable to the boot at the top edge of the leg opening thereof, the boot clip member being formed of an elongated strip of resilient material folded back against itself intermediate a pair of arm ends thereof to form an inverted U-shaped structure having generally parallel inside and outside tension arms thereon, the pair of arm ends forming a first arm end and a second arm end, the outside arm being further formed such that the second arm end thereof lies in generally parallel touching relationship with the first arm end of the inside arm, the two arm ends defining a clamping zone therebetween wherebetween the edge of the boot opening may be retained such that the inside arm extends into the boot opening in touching facing relationship with the user's sock, the boot clip member additionally having a strip of pile fabric material disposed on the surface thereof; and

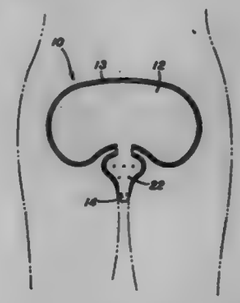
a sock clip member snapidly attachable to the sock at the top edge of the leg opening thereof, the sock clip member being formed of an elongated strip of flexible material having an integrally formed two-part snap fastener thereon, the snap fastener comprising a male member projecting from a side of the flexible strip proximal a first end thereof and a female socket extending into the side of the flexible strip proximal a second end thereof, the flexible strip being foldable laterally intermediate the first and second end thereof over the edge of the sock leg opening such that a portion of the flexible strip having the male member lies inside the sock leg opening and a portion of the flexible strip having the female socket lies outside the sock, the male member being snapidly engageable with the female socket while simultaneously trapping a portion of sock fabric therebetween to secure the sock clip to the sock, the reverse side of the socket portion lying adjacent the inside of the boot opening in touching facing relationship with the strip of pile material of the boot clip member, the sock clip member additionally having a strip of pile fabric engageable hook material disposed on the boot-adjacent surface thereof, the hook material being engageable with the pile material of the boot clip member such that the top edge of the sock is retained adjacent the top edge of the boot leg opening whereby preventing the sock from sliding down into the boot cavity.

5,483,705

FEMALE ATHLETIC PROTECTIVE SYSTEM

Frank J. DiMatteo, 501 Sunnyfield Dr., Monroeville, Pa. 15146

Filed Nov. 4, 1994, Ser. No. 334,533
Int. Cl.[6] A41B *9/00;9/04*
U.S. Cl. 2—406 19 Claims



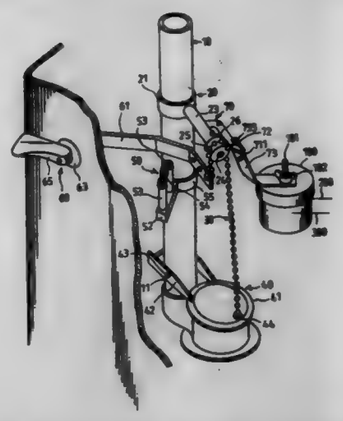
1. A protective device for protecting a female genital region, particularly during athletic competition, comprising: a generally rigid body having a slightly spooned, generally oval-shaped shield portion adapted to fit against a wearer's bowel area sufficient to overlay and shield the ovaries; and an elongated, banana-shaped cup portion with a convex outer side and a concave inner side, extending from said shield portion and adapted to extend between such wearer's thighs; said banana-shaped cup portion having an elongated cavity on said concave inner side defined by a peripheral edge to said cavity, and having sufficient volume to bridge over the wearer's vagina and perineum without contacting the vagina or the perineum, and adapted to extend rearwardly between the wearer's upper thighs with said peripheral edge proximate to the superior ramii, the inferior ramii, and/or the ischial ramii of the pelvis, with minimal contact with the upper thighs; and a resilient padding mounted onto said peripheral edge of said cavity adapted to absorb at least a major portion of any impact experienced by said cup.

5,483,706

FLUSH DEVICE FOR TOILET

Pang-Yen Tsai, and Chien-Liang Hsiao, both of Suite 1, 11F, 95-8, Chang Ping Road, Sec. 1, Taichung, Taiwan, Prov. of China

Filed Jan. 3, 1995, Ser. No. 367,729
Int. Cl.[6] E03D *1/14*
U.S. Cl. 4—325 12 Claims



1. A flush device for a toilet, comprising a support element, a restricting member and an outlet valve adapted to be attached in series to an overflow tube of a flush tank, and an actuating

assembly connected to said outlet valve via said support element by a flexible connector;

said support element comprising a laterally extending body having one end adapted to be connected to the overflow tube a pulley and a catch member attached to the other end, and a check member connected to a periphery of said extending body;

said check member comprising an L-shape suspender having a free end, a catch pin at an upper periphery in the proximity of said free end, a lever having a roughly Z-shape flat body pivotally connected at a medial bore to said free end of said suspender, said lever having a check point at one end and an aperture at the other end thereof, and a float ball having a rod adjustably secured to said aperture of said lever;

said restricting member comprising an elongate laterally extending body having a retaining ring connected to one end for attachment to the overflow tube, a pair of rods spacedly projecting upwardly from an upper surface of said elongate body, and a spring connected between said rods;

said outlet valve comprising a body having a hollow interior, a flange formed on upper portion thereof, a clevis attached at one end to said valve body with another end of said clevis adapted to be pivotally attached to said overflow tube, and means for connection to said flexible connector;

said actuating assembly comprising an actuator arm and handle adapted to be pivotally fastened to said flush tank, said flexible connector having one end attached to said actuator arm and another end attached to said connection means with said connector passing over said pulley between said pulley and catch member;

whereby actuation of said handle in one direction will open said outlet valve for a full flush and actuation of said handle in an opposite direction will cause said actuator arm to engage said spring means for opening said outlet valve for a partial flush.

5,483,707

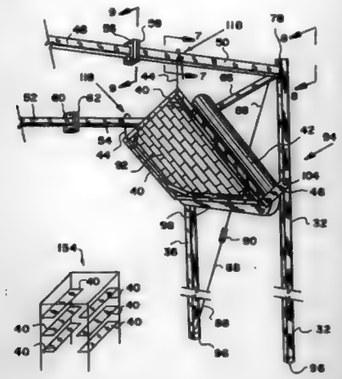
SELF STANDING SUPPORT STRUCTURE AND METHOD

Douglas S. Meyer; Fred M. Meyer, and Michelle D. Meyer, all of 4016 Highway 34, Wheatland, Wyo. 82201

Filed Mar. 1, 1993, Ser. No. 24,322

Int. Cl.[6] A47C *19/00;19/20;17/84*

U.S. Cl. 5—9.1 **21 Claims**



1. A self-standing supporting structure for use in providing sleeping and/or resting accommodations in a limited and/or unlimited space area without permanently attaching supporting structural devices to the walls, to the ceiling or to the floor of the space area, the supporting structure standing on the floor of the space area and being easily moveable as desired to different locations, comprising:

(a) a free-standing frame support structure, spanning at least a portion of the space area and having a generally horizontal support means, and at least three downwardly extending legs formed on the frame support structure, with the legs resting on the floor of the space area, said support structure not being permanently attached to any walls, the floor or the ceiling of the space area

(b) at least one generally rectangular accommodation device, adapted to be capable of supporting an occupant in a generally lying down position, comprising a generally rectangular frame, with two of its adjacent corner areas pivotally mounted by pivot means on two of the downwardly positioned legs so that the accommodation device may be positioned in a generally horizontal "use" position and may also be pivoted to a "non-use" position when desired; and

(c) at least one retaining means, comprising two chain-like means connected to the two adjacent corner areas of the generally rectangular frame that are not pivotally mounted to the legs, and means adapted to releasably and adjustably connect the chain-like means to the generally horizontal support means to thereby permit the retaining means to retain the accomodation device in a generally horizontal use position, or a pivot non-use position.

5,483,708

SOFA BED WITH VARIABLE-POSITION BACK

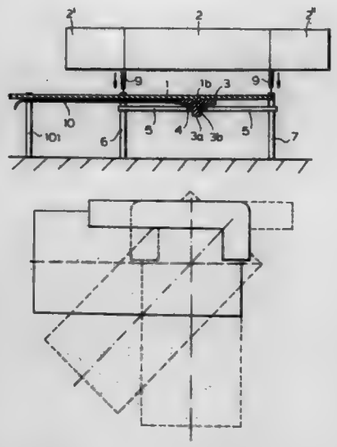
Francesco Binfare', Monza, Italy, assignor to Edra S.P.A., Perignano, Italy

Filed Jan. 19, 1994, Ser. No. 184,504

Claims priority, application Italy, Jan. 19, 1993, PT93A0002

Int. Cl.[6] A47C *17/04*

U.S. Cl. 5—12.1 **5 Claims**



1. An article of furniture comprising:

an elongated seat member formed at one end with support legs;

a radial structure rotatable on an underside of said seat member and spaced from said one end, said radial structure comprising a plate having a downwardly extending pin, a bush receiving said pin, a plurality of angularly spaced radial arms extending away from an axis of said pin and said bush, and respective legs on said arms extending downwardly therefrom, at least two of said arms having ends projecting beyond an outline of said seat member;

a back member mounted on said ends of said arms whereby, upon relative rotation of said seat member and said radial structure, said seat and back members can assume a wide variety of positions; and

restraining means on said seat member engage able with said radial structure for stabilizing said seat and back members in a selected one of said positions.

5,483,709

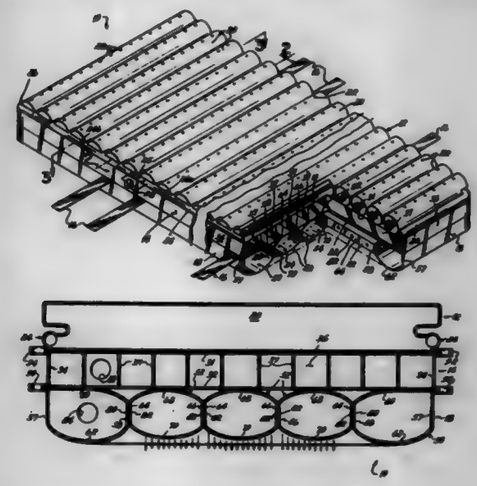
LOW AIR LOSS MATTRESS WITH RIGID INTERNAL BLADDER AND LOWER AIR PALLET

L. Dale Foster, and Ryan A. Reeder, both of Brookville, Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.

Filed Apr. 1, 1994, Ser. No. 221,633

Int. Cl.[6] A61G *7/10;* **A47C** *27/10;* **B65G** *7/06*

U.S. Cl. 5—81.1 **18 Claims**



1. A mattress for supporting a patient comprising:

an upper patient supporting low air loss bladder for ventilating and preventing skin degeneration of a patient supported thereby;

an intermediate rigidly inflatable static bladder including means on lateral edges thereof for connection to a patient weigh scale, said intermediate bladder becoming relatively rigid upon inflation thereof and being stiff enough to prevent hammocking upon being suspended by said connection means from a patient weigh scale when supporting a patient; and

a lower high air loss bladder for reducing the friction force between said mattress and a supporting surface to facilitate surface-to-surface transferring of a patient supported on said mattress by a care provider.

5. An air pallet for supporting a load and for reducing the friction forces between said pallet and facilitating surface-to-surface transfers of the load comprising:

a peripheral tube; and

a plurality of longitudinal air sacks interior of the periphery of said peripheral tube and having a plurality of bleed holes along lower surfaces thereof;

the lower surfaces of said longitudinal air sacks being disposed above the lower surface of said peripheral tube,

whereby said peripheral tube creates a skirt effect by sealing against the supporting surface trapping air which escapes from said longitudinal air sacks therein to provide a more efficient lift effect.

5,483,710

JOINT FOR THE TOP RAILS OF A FOLDABLE BABY CRIB

Te-Erh Chan, 9th Fl., 49, Chung Ching S. Rd., Sec. 1, Taipei, 100, Taiwan, Prov. of China

Filed Jan. 11, 1994, Ser. No. 179,870

Int. Cl.[6] A47D *13/06*

U.S. Cl. 5—99.1 **1 Claim**

1. A foldable baby crib including a joint for top rails, said foldable baby crib having a frame consisting of four vertical corner posts, a lower end of each vertical corner post is fixedly received within a first connecting member and an upper end of each vertical corner post is fixedly received within a second connecting member, four horizontal top rails, two ends of each horizontal top rail are pivotably received within the second connecting member, four horizontal arms each pivotably coupled at an inner end thereof to a central hub member and pivotably coupled at an outer end thereof to one of the first connecting members at the lower end of the vertical corner posts; said horizontal top rails each consisting of two round tubes which pivotally connect at an inner end thereof to two outer ends of said joint, and at their outer ends, which are also said two ends of said horizontal top rail, to said second connecting members; said joint each comprising a cover, a fixed member, and movable member;

said cover having a first face and a second face which together give said cover a substantially n-shaped cross section, and pivotably receiving within two lateral ends thereof said inner ends of said two round tubes and fixedly receiving said fixed member inside said cover by means of pins; two horizontally extended long holes being laterally symmetrically formed on each face of said cover at predetermined positions and each having a slightly downward extended outer end which forms a recess;

said fixed member having two downward extended spring wings at two lateral sides thereof, each of said spring wings being provided on an outer surface thereof ears with each ear having an elongated through hole, at a height corresponding to said long holes of said cover, and a lower end which is an inward and downward inclined plane said fixed member being centrally and fixedly positioned between said first and said second faces of said cover by means of pins; two of said pins passing through said long holes of said cover and said through holes of said ears of said fixed member, such that when said spring wings are subjected to force and shift inward toward each other, said two pins passing through the ears are allowed to translate within said long holes of said cover;

said movable member having a box-like lower portion inside which two lateral ribs each having an inward and downward inclined top surface being formed, and an upper portion which includes two vertically extended loops with central elongated holes therein so that said movable member is attached to said fixed member by hanging said loops on a central fixed shaft of said fixed member

said round tubes each having an insert fixed in said inner end thereof such that a predetermined length of said insert projects out of said inner end of said round tube; said projected length of said insert having an upper rounded corner;

said pins which pass through said long holes of said cover and said through holes of said fixed member extending into a space just below said projected length of said inserts and locating in said recesses of said long holes of said cover when said two round tubes are fully extended to a straight line and said inclined ribs of said movable member, at the time said movable member is pushed upward, being brought to contact said two inward and downward inclined lower ends of said spring wings of said fixed member, forcing said spring wings to shift inward toward each other and thereby bringing said two pins passing through said ears of said spring wings to move out of said recesses and to translate toward an inner end

of said long holes and finally separate from said projected length of said inserts, permitting said top rail to be folded at said joint.

5,483,711

SUDDEN INFANT DEATH SYNDROME PREVENTION APPARATUS AND METHOD

Thomas S. Hargest, 14 Lockwood Blvd. Apt. 10J, Charleston, S.C. 29401, and William M. Hargest, 8470 Doar Rd., Awendaw, S.C. 29429

Continuation of Ser. No. 899,462, Jun. 16, 1992, Pat. No. 5,317,767. This application May 3, 1994, Ser. No. 237,146

Int. Cl.[6] A47C *21/04;* A47D *7/00*

U.S. Cl. 5—469 53 Claims



1. A method of preventing infant asphyxiation during periods of infant bed rest, such as in a crib, said method comprising:

providing a support pad having an upper support surface and comprised of predetermined innately air permeable material therebeneath, which is air permeable in both vertical and horizontal directions, so that a predetermined breathing space is created at least in an area in and around the nose and mouth of an infant received on said upper support surface; and

forcibly circulating oxygenated air in both vertical and horizontal directions throughout and relative to said breathing space at a predetermined limited air flow rate matched with said predetermined space, for removing from said breathing space carbon dioxide exhaled by an infant received on said upper support surface, said predetermined limited air flow rate being selected so as to prevent asphyxiation of the infant due to carbon dioxide poisoning without causing a cooling effect on such infant;

wherein said circulating step includes embedding air tubing in a predetermined location inside said support pad, operatively interconnecting said air tubing with an air pump, and operating such air pump for continuously forcing oxygenated air through said air tubing; and further wherein said predetermined air flow rate is generally less than about one cubic foot per minute.

5,483,712

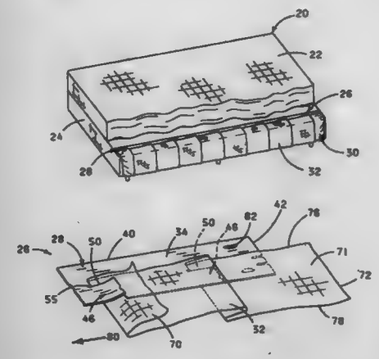
DEVICE FOR FORMING A SKIRT AND METHOD

E. Chris Greenwood, Richardson, Tex., assignor to United Interests, Inc., Oklahoma City, Okla.

Filed Feb. 18, 1994, Ser. No. 198,978

Int. Cl.[6] A47C *21/00*

U.S. Cl. 5—493 25 Claims



25. A device for receiving a portion of a strip of material so as to form a skirt about a bed comprising a mattress and a box springs having an upper surface, the skirt extending downwardly a distance from an upper surface of the box springs, the device comprising:

at least one body member positionable between the mattress and box springs so as to be disposed about at least a portion of the perimeter of the box springs, the body member having a first edge, a first slit intersecting the first edge and having an inwardly disposed end, and a second slit intersecting the inwardly disposed end of the first slit; and

a plurality of retaining flaps integrally formed in the body member along the first edge of the body member for securing the strip of material to the body member such that when the strip of material is connected to the body member via the retaining flaps a portion of the strip of material extends a distance from the body member and downwardly from the upper surface of the box springs thereby forming the skirt about at least a portion of the box springs, the retaining flaps being defined by a portion of the first edge of the body member, the first slit and the second slit of the body member.

5,483,713

METHOD OF FABRIC-TO-FABRIC BONDING AND SEAMLESS QUILT FORMED THEREBY

Hiromichi Kikuchi; Yoshinori Hideshima, both of Yokohama, and Keisuke Tanji, Fukushima, all of, Japan, assignors to ASAMI Corporation, Yokohama, Japan

Division of Ser. No. 143,845, Oct. 28, 1993. This application Mar. 7, 1995, Ser. No. 399,827

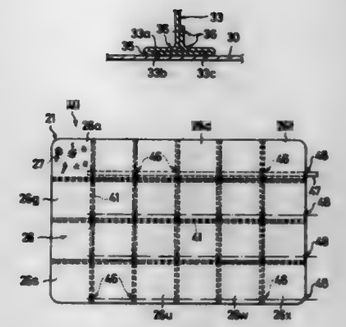
Int. Cl.[6] A47G *9/00;* B32B *7/08*

U.S. Cl. 5—502 2 Claims

2. A seamless quilt comprising:

(a) a quilt body of a hollow, generally rectangular configuration including a top sheet and a bottom sheet held in bonded relation to each other along their peripheral edges;

(b) a plurality of arrays of partition walls of a fabric material and a predetermined dimension being oriented in a lattice posture such that said partition walls extend throughout the entire length and width of the quilt body to thereby dispose a multiplicity of compartments in the quilt body, each of said partition walls being made up of two separate, upper and lower, segments provided respectively with opposite binding ends and adjacent free ends, each of said binding ends being formed in such a manner that each of said segments is folded at one end back thereon and interconnected together at three different locations by a stitching line, thereby providing two



double-layered arms and one double-layered leg located centrally upwardly therebetween, said double-layered arms being sewn respectively contiguous to said double-layered leg and having been treated on their respective one sides with an adhesive coating, one of said upper binding ends on said upper segment being attached on the coated side onto an inner surface of the top sheet and the other on said lower segment onto an inner surface of the bottom sheet and thereafter subjected to press finishing with heat, said two segments of said partition wall being subsequently sewn together at the free ends; and

(c) a mass of padding loaded in each of said compartments.

5,483,714

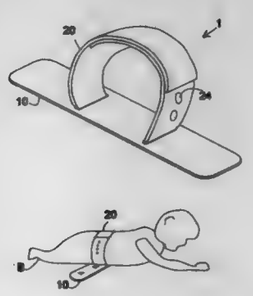
INFANT POST-FEEDING DEVICE

Thomas B. Casassa, 1321 Clearview Dr., Mount Juliet, Tenn. 37122

Filed May 16, 1994, Ser. No. 243,678

Int. Cl.[6] A47D *13/06;15/00*

U.S. Cl. 5—655 13 Claims



1. An infant post-feeding device comprising: an elongated flexible base member positionable beneath an infant's abdomen during use and having two spaced apart slots extending perpendicular to a longitudinal axis of the base member; a belt extending through the two slots and around the infant's waist during use, wherein the belt has two free end portions having means for releasably connecting the two free end portions to fit the belt closely around the infant's waist; wherein the flexible base member is sufficiently flexible to permit limited rolling while preventing rolling over.

5,483,715

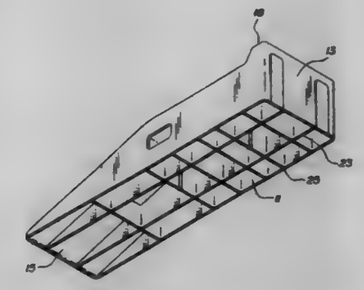
VEHICLE SERVICE RAMP

William W. Fogarty, 2408 Bradley Dr., Harrisburg, Pa. 17110, and Phillip M. Friday, 1923 Walnut St., Camp Hill, Pa. 17011

Filed Apr. 8, 1994, Ser. No. 224,759

Int. Cl.[6] E01D *1/00*

U.S. Cl. 14—69.5 5 Claims



1. A vehicle service ramp, comprising:

a unitary ramp having an external structure including a rear wall, a pair of side walls and a front, said front including a surface sloping upward to a top surface; said ramp having an internal structure forming a honeycomb pattern of supporting walls extending between said rear wall, side walls and front; said ramp being formed from a foamed polymer having tensile strength and a compression strength sufficient to support its rated load bearing capacity.

5,483,716

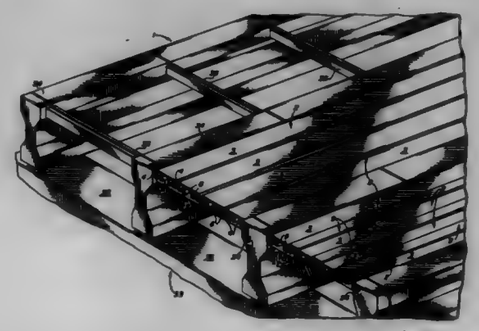
FORM DECKING APPARATUS FOR BRIDGES

Earl W. Burnaman, Rte. 1, Box 508, Deville, La. 71328

Filed Mar. 28, 1994, Ser. No. 219,310

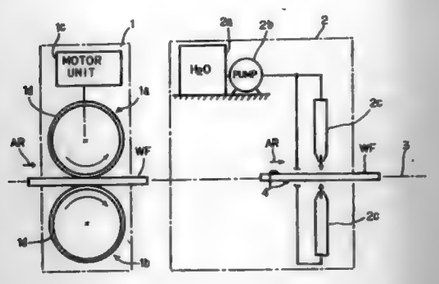
Int. Cl.[6] E04G *9/06*

U.S. Cl. 14—73 16 Claims



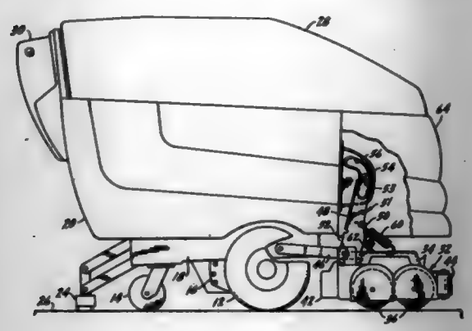
1. A form decking apparatus for mounting on bridge structures and supporting concrete poured on the bridge structures, said form decking apparatus comprising a plurality of form channels positioned on the bridge structures; a plurality of T-plates positioned longitudinally between said form channels and lapping at Least a longitudinal portion of adjacent ones of said form channels, for receiving and supporting the concrete on the bridge structures; and release means provided on said form channels for removing said form channels and said T-plates from the bridge structures when the concrete poured on said form channels and said T-plates has cured.

5,483,717
CLEANING SYSTEM USING ACRYLIC EMULSION FOR SEMICONDUCTOR WAFERS
Shinichi Chikaki, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Oct. 3, 1994, Ser. No. 317,196
Claims priority, application Japan, Jan. 5, 1993, 5-273121
Int. Cl.[6] B08B *1/02;3/02;7/04*
U.S. Cl. 15—3 **8 Claims**



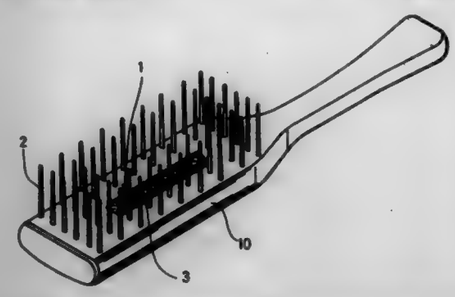
1. A cleaning apparatus comprising:
a) an absorbent unit having an adhesive layer of acrylic emulsion, said layer being adapted to be brought into contact with a surface of a semiconductor wafer for eliminating contaminants from the surface of said semiconductor wafer;
b) a washing unit operatively connected to said absorbent unit so as to wash away residue of said acrylic emulsion left on the surface of said semiconductor wafer after the elimination of said contaminants; and
c) a conveying unit for transferring said semiconductor wafer through said absorbent unit and said washing unit.

5,483,718
FLOOR SCRUBBING MACHINE HAVING IMPACT ENERGY ABSORPTION
Michael L. Biehert, Crystal; Robert A. Geyer, Champlin, and Michael S. Wilmo, Crystal, all of Minn., assignors to Tennant Company, Minneapolis, Minn.
Filed Oct. 3, 1994, Ser. No. 317,175
Int. Cl.[6] A47L *11/282;11/29*
U.S. Cl. 15—50.3 **17 Claims**



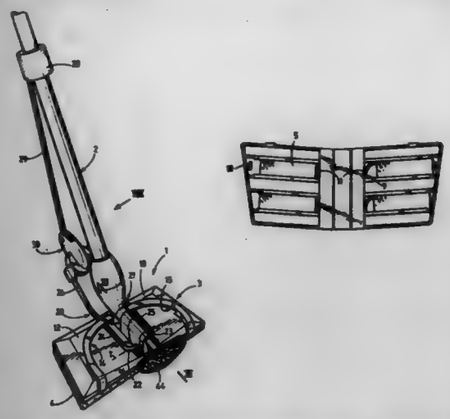
1. In a floor scrubbing machine having a chassis equipped with front and rear wheels, and having a scrub head located in front of the chassis and connected to it by an articulated linkage system, a geometric arrangement of the linkage system such that if while the machine is in motion the scrub head collides with a solid object, the front wheels of the still moving chassis will be lifted off the floor.

5,483,719
HAIR BRUSH WITH POROUS POLYTETRAFLUOROETHYLENE BODY
Chikahide Ikemoto, Higashi-Osaka, and Yoshiyuki Ishibashi, Osaka, both of, Japan, assignors to Ikemoto Brush Industries Co., Ltd., Osaka, Japan
Continuation-in-part of Ser. No. 148,501, Nov. 8, 1993, abandoned. This application Jun. 8, 1994, Ser. No. 257,435
Claims priority, application Japan, Apr. 23, 1991, 3-58966
Int. Cl.[6] A45D *44/18;24/16;* **B08B** *1/00*
U.S. Cl. 15—104.94 **18 Claims**



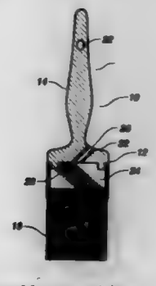
1. A hair brush comprising a brush main body, bristles vertically extending from an upper surface of said brush main body and an impregnation member provided on said upper surface of said brush main body, said impregnation member being impregnated with a liquid substance to be coated to hair; wherein said impregnation member is a porous body made of polytetrafluoroethylene.

5,483,720
SPONGE MOP
Carl Decoopman, Ingelmunster, Belgium, and Bryan Johnson, Beauvais, France, assignors to Financiere Elysees Balzac, Paris, France, and P.D.C. Brush N.V., Izegem, Belgium
Filed Jun. 29, 1994, Ser. No. 267,979
Claims priority, application France, Jun. 29, 1993, 93 07890
Int. Cl.[6] A47L *13/146*
U.S. Cl. 15—119.2 **27 Claims**



1. A sponge mop comprising a mount connected to an upwardly and rearwardly sloping handle, said mount including at least one support element adapted to receive a spongy layer fixed thereto by releasable fixing means,
said releasable fixing means comprising at least two fixing slides secured to said at least one support element, each fixing slide having a bottom face provided with gripping lugs, said releasable fixing means further comprising at least one hooking slab secured to a top face of the spongy layer and facing said at least two fixing slides, said gripping lugs being suitable for hooking to said at least one hooking slab in releasable manner; and
each fixing slide is slidably mounted in slideway-forming means provided on a bottom face of said at least one support element and extending lengthwise relative to said at least one support element in such a manner that said at least two fixing slides are suitable for moving towards each other to accompany shrinking of the spongy layer and for moving away from each other to accompany expansion of said spongy layer.

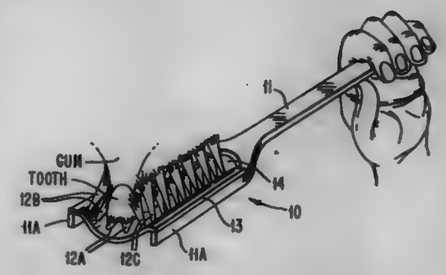
5,483,721
SELF-CLEANING PAINT BRUSH
Donald L. Caldwell, 3425 Mission Mesa Way, San Diego, Calif. 92120
Continuation-in-part of Ser. No. 116,679, Sep. 7, 1993, abandoned. This application Dec. 26, 1994, Ser. No. 364,801
Int. Cl.[6] A46B *11/00;17/06*
U.S. Cl. 15—160 **17 Claims**



1. A paint brush assembly comprising:
a body;
a handle connected to and extending outwardly from said body;
a plurality of bristles arranged in a plurality of rows, said bristles extending outwardly from said body in parallel alignment with a longitudinal axis of said handle;
a liquid inlet channel formed so as to extend through said body toward said plurality of bristles, said liquid inlet channel formed solely within said body, said liquid inlet channel extending at an acute angle relative to a longitudinal axis of said handle, said liquid inlet channel being uncovered and having an unrestricted flow passageway along an entire length of said liquid inlet channel, said liquid inlet channel having one en opening along an exterior surface of said body;
a plenum area formed in said body and in communication with said liquid inlet channel, said plenum area extending substantially across a width of said body, said plenum area having a plurality of outlet orifices formed therein adjacent an end of said plurality of bristles, said outlet orifices arranged adjacent said plurality of bristles, said liquid inlet channel having another end opening to said plenum area; and
an adapter member slidably and detachably received within said liquid inlet channel, said adapter member having a connector for selective attachment to an external source of liquid.

5,483,722
TOOTHBRUSH WITH RESILIENT FLEXIBLE BRISTLE SUPPORT
Paul A. Scheier, and Louise E. Scheier, both of 220 Central Park South, New York, N.Y. 10019
Continuation of Ser. No. 989,163, Dec. 11, 1992, Pat. No. 5,355,546. This application Jul. 19, 1994, Ser. No. 277,532
The portion of the term of this patent subsequent to Oct. 18, 2011, has been disclaimed.
Int. Cl.[6] A46B *9/04*
U.S. Cl. 15—167.2 **11 Claims**

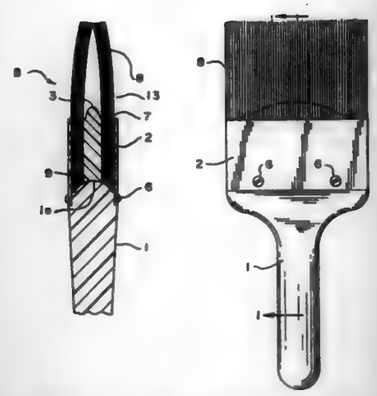
1. A toothbrush comprising:



a resilient member formed for resilient flexure between a first shape and a second shape, said resilient member having a front end, a back end, and first and second sides;
means for supporting said resilient member at the first and second sides thereof such that said resilient member is free to flex between said first and second sides when stressed;
an array of first bristle tufts positioned centrally relative to the first and second sides of said resilient member, each of said first bristle tufts having a free end and a fixed end that is affixed to said resilient member;
a first array of second bristle tufts aligned in parallel relation to said first bristle tufts and positioned between said array of first bristle tufts and the first side of said resilient member, each of said second bristle tufts in said first array having a free end and a fixed end that is affixed to said resilient member, said second bristle tufts in said first array being longer than said first bristle tufts and being unconstrained from inclining relative to said array of first bristle tufts; and
a second array of second bristle tufts aligned in parallel relation to said first bristle tufts and positioned between said array of first bristle tufts and the second side of said resilient member, each of said second bristle tufts in said second array having a free end and a fixed end that is affixed to said resilient member, said second bristle tufts in said second array being longer than said first bristle tufts and being unconstrained from inclining relative to said array of first bristle tufts;
wherein said first and second arrays of second bristle tufts are dimensioned and positioned relative to said array of first bristle tufts such that when the free ends of said first bristle tufts are pressed against the biting surface of a tooth, said resilient member is caused to stretch so as to change its size and shape whereby said first and second arrays of second bristle tufts are caused to incline toward the array of first bristle tufts such that, simultaneously with the first bristle tufts engaging the biting surface of the tooth, the free ends of said first array of second bristle tufts contact the inner side of the tooth and adjacent gums and the free ends of said second array of second bristle tufts contact the outer side of the tooth and adjacent gums.

5,483,723
PAINT BRUSH WITH MODIFIED DOME SHAPED MEMBER
Kenneth C. Wenzer, 11538 February Cir. Apt. 402, Silver Spring, Md. 20904
Filed Jul. 29, 1994, Ser. No. 282,656
Int. Cl.[6] A46B *3/02*
U.S. Cl. 15—193 **6 Claims**

1. A paint brush which is configured so as to facilitate cleaning thereof, said brush comprising a handle having a first wide end portion and a second narrow portion medial of said first wide end portion and descending downwardly therefrom; said first wide end portion having a top surface; an annular metal ferrule secured to said first wide end portion of said handle; said annular ferrule having an inner surface, a top edge and extending completely around the periphery of the first wide end portion of said brush; a dome shaped hard plastic member that includes an upper surface, a lower surface and a base at said lower surface both of which are



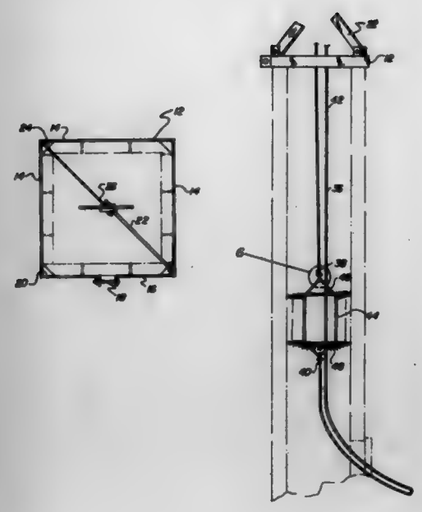
integral with said upper surface; said base abutting said top surface of said first wide end portion of said handle and which is adhesively bonded thereto and extending to the inner surface of the ferrule; said plastic dome being positioned in a center of said brush within a space defined by said ferrule; a continuous channel between said inner surface of said ferrule and said dome; a plurality of bristles having lower ends that extend to said base and around said upper surface and said lower surface integral with said dome; said lower ends of said bristles being adhesively bonded within said channel to said base and said lower dome surface; said lower surface extending from the base to said top edge of said ferrule; said adhesive being added to said top edge; said dome including said upper surface extending and devolving to an apex above the top edge of said ferrule and then tapering towards said inner surface of said ferrule; said dome forming a convex barrier between said bristles in said channel and adjacent said dome, whereby a substantial portion of paint collected during painting settles on said dome shaped member, thereby facilitating its removal.

5,483,724

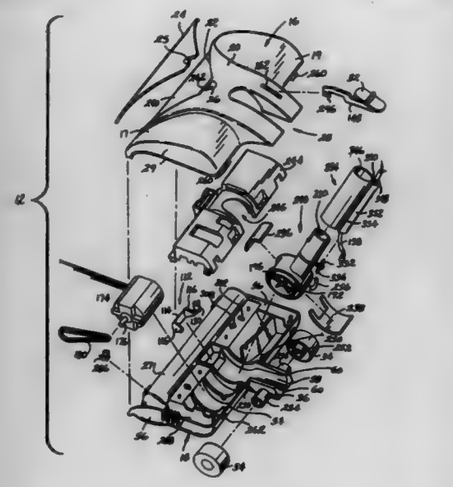
Patent Not Issued For This Number

5,483,725
SELF-SUPPORTED CHIMNEY SWEEPING DEVICE
James O. Lehman, P.O. Box 114, Spruce Head, Me. 04859
Filed Nov. 10, 1994, Ser. No. 336,915
Int. Cl.[6] F23J *3/00*
U.S. Cl. 15—249.1 **5 Claims**

5. A chimney sweep comprising:
a square support bracket, a fastening means securely fastens the square support bracket to a top of a chimney, four gussets, each of which welded to an angle of the square support bracket, the four gussets adapted to engage a top surface of the chimney, the four gussets serving to prevent the square support bracket from sliding down the chimney;
two diagonal elongated supports, each diagonal support having a first end and a second end, each first end pivotally secured to an opposite corner of the square support bracket, each second end pivotally secured above the center of the square support bracket via an upper pivotal element;
a pulley system securely coupled with the upper pivotal element, said pulley system including a cable having a first end and a second end;
a hollow brush attachment having an upper support and a lower support, the upper support secured to the first end of the cable of the pulley system, the lower support secured to the second end of the cable of the pulley system, the square brush attachment having a series of rigid bristles thereattached.



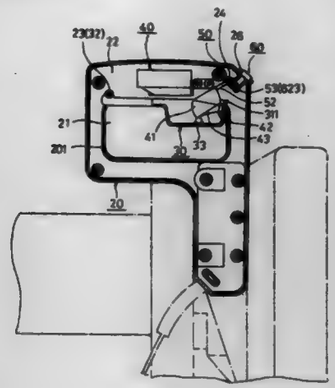
5,483,726
COMBINATION VACUUM CLEANER AND WATER EXTRACTOR POWER FOOT
Michael Blase; Luke E. Kelly; Steven K. Meek; Brenda K. Langeland, all of Grand Rapids, and Richard L. Norwood, Rockford, all of Mich., assignors to Bissell Inc., Grand Rapids, Mich.
Continuation-in-part of Ser. No. 273, Jan. 4, 1993, Pat. No. 5,398,373. This application Jan. 14, 1994, Ser. No. 181,701
Int. Cl.[6] A47L *9/04*
U.S. Cl. 15—321 **12 Claims**



1. A combination vacuum cleaner and liquid extractor foot for cleaning a surface comprising:
a housing having a front edge, a rear edge opposite the front edge, and a bottom surface extending between the front and rear edges;
at least one suction opening formed in the housing bottom surface;
a vacuum source;
an outlet suction conduit connected to the housing and connected to the vacuum source, the outlet suction conduit comprising:
a tubular body rotatably mounted in the housing;

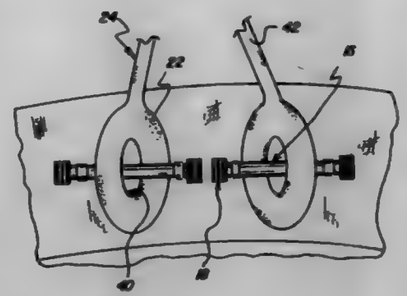
an inlet opening formed in the tubular body;
an outlet opening formed in the tubular body; and
a wand mounting member extending outwardly from the outlet opening, the wand mounting member having a first fluid conduit connected to the vacuum source and a second fluid conduit connected to a source of cleaning solution;
a connecting conduit mounted in the housing and fluidly interconnecting the at least one suction opening and the inlet opening of the outlet suction conduit;
wherein dirt and dust entrapped in a vacuum flow created by the vacuum source is conveyed from the connecting conduit, through the inlet opening into the tubular body of the outlet suction conduit, through the outlet opening of the tubular body and through the first fluid conduit of the wand mounting member to the vacuum source.

5,483,727
OPERATING HANDLE FOR A CUTTING DEVICE
Chiu-Tsun Chang, Taichung, Taiwan, Prov. of China, assignor to P&F Brother Industrial Corporation, Taichung, Taiwan, Prov. of China
Filed Mar. 2, 1995, Ser. No. 397,363
Int. Cl.[6] A47B *95/02*
U.S. Cl. 16—110 R **3 Claims**



1. An operating handle for a cutting device, said device including a base, a saw carrier mounted swingably on the base, a cutting saw carried on the carrier, and a motor driving the saw, said operating handle comprising:
a handle body adapted to be mounted securely on the carrier;
a switch installed on said handle body and adapted to be activated to drive the motor;
a trigger member mounted swingably on said handle body;
a switch driving piece mounted swingably on said handle body and biased to locate at a predetermined position adjacent to said trigger member, said trigger member being capable of being rotated in a first direction so as to rotate said switch driving piece in a second direction opposite to said first direction, thereby activating sad switch to drive the motor; and
a lock unit releasably locking said switch driving piece on said handle body so as to prevent said switch driving piece from rotation in said second direction.

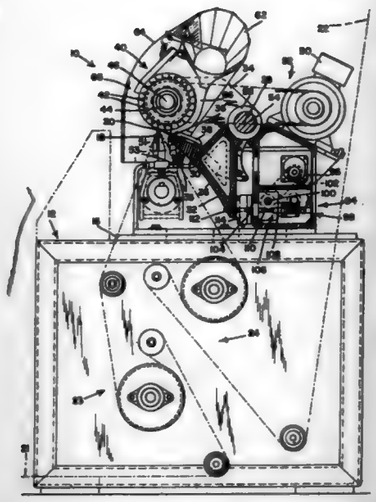
5,483,728
REMOVABLE SUSPENDERS HOLDER
Joseph Dingle, Sr., 623 Todd Cir., Warner Robins, Ga. 31088
Filed Apr. 5, 1994, Ser. No. 223,013
Int. Cl.[6] A44B *9/00*
U.S. Cl. 24—707.6 **6 Claims**

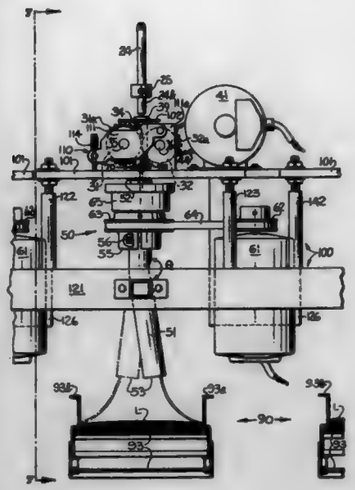


1. A suspenders holder comprising:
an article of clothing having a waistband;
a suspender attachment ear having a button hole formed therein, the suspender attachment ear being positioned against an interior surface of the waistband of the article of clothing;
a pin member having a first knobbed end portion, an elongated central portion, and a second substantially pointed end portion, the pin member projecting through a portion of the waistband proximal to a first lateral portion of the suspender attachment ear and projecting through the button hole of the first suspender attachment ear, the pin member projecting through a portion of the waistband proximal to a second lateral portion of the suspender attachment ear;
and,
a cap member removably coupled to the pin member and covering the second substantially pointed end portion thereof.

5,483,729
SHEARING MACHINE HAVING MULTIPLE CLOSE ADJUSTMENT DEVICES
Vincent Fayard, Lyons, France, assignor to GHM Industries, Inc., Worcester, Mass.
Filed May 18, 1994, Ser. No. 245,748
Int. Cl.[6] D06C *13/00*
U.S. Cl. 26—15 R **14 Claims**

1. A shearing machine for cutting fibers at the surface of a textile fabric, said machine comprising:
(a) a fixed frame, having a first side structure at one end of eh machine and a second side structure at an opposite end of the machine;
(b) a horizontal cloth support fixed to said fixed frame, said horizontal cloth support having a horizontal top edge surface for supporting the fabric;
(c) a stationary blade holder which extends from said first side structure to said second side structure, said stationary blade holder being pivotally mounted to said frame for pivoting about a first horizontal axis, said stationary blade holder having a forward end located at one side of said axis and a rearward end located at an opposite side of said axis from said one side, said stationary blade holder being rearward of said horizontal cloth support;
(d) a rotary blade holder pivotally mounted to said frame for pivoting about said first horizontal axis relative to said stationary blade holder and operatively connected to said stationary blade holder for pivoting with said stationary blade holder around said first horizontal axis;
(e) a stationary cutting blade which is fixed to the forward end of said stationary blade holder, said stationary cutting blade having a horizontal free cutting edge which is located adjacent said horizontal top edge for shearing upwardly extending





fibers of a fabric which is passed between said horizontal top edge and said horizontal free cutting edge;

(f) a rotary cutting assembly which is located above said stationary cutting blade and mounted on said rotary blade holder for rotation about a second horizontal axis, said rotary cutting assembly having a plurality of outward extending projecting cutting blades having cutting edges which travel in a circular path and which intersect the free cutting edge of the fixed blade as said rotary cutting assembly is rotated about said second horizontal axis, the cutting edge of each of said projecting cutting blades forming a scissors-like relationship with said horizontal free cutting edge for cutting fibers which extend upwardly from the upper surface of said textile fabric; and

(g) adjusting means which is operatively connected to the rearward end of said stationary blade holder for selectively and adjustably pivoting said stationary and rotary blade holders about said first horizontal axis to selectively move the free cutting edge of said stationary blade and the circular path of the cutting edges of said upwardly extending projecting cutting blades toward and away from the horizontal top edge surface of said cloth support for selectively varying the length of fiber which is to be cut from the textile fabric.

5,483,730

APPARATUS AND METHOD FOR FORMING COILS OF YARN AND FOR HEAT SETTING THE SAME

Donald L. Hoover, Cramerton, N.C., assignor to American Linc Corporation, Gastonia, N.C.

Filed Aug. 12, 1994, Ser. No. 289,937
Int. Cl.[6] D02G *1/00*
U.S. Cl. 28—289 **51 Claims**

1. An apparatus for forming coils of yarn and for heat setting the same, the apparatus comprising:

a coiler positioned to receive yarn from a yarn source and to form the yarn into a plurality of loops of a desired size, said coiler comprising a supporting frame, a pair of feed rolls mounted on said supporting frame for feeding yarn from a yarn source, a rotatable coiler tube positioned downstream from and cooperating with said feed rolls, said coiler tube being vertically positioned for facilitating the travel of yarn from said feed rolls to and through said coiler tube, a first variable speed drive connected to said pair of feed rolls for rotating said pair of feed rolls at a predetermined speed, and a second variable speed drive connected to said coiler tube for rotating said coiler tube at a speed so as to form loops of yarn of a desired size;

a conveyor positioned below said rotatable coiler tube for receiving loops of yarn thereon, said conveyor extending a predetermined distance from said coiler tube whereby rotatingly driving said rotatable coiler tube at a relatively slow speed responsive to said second variable speed drive connected thereto and driving said pair of feed rolls at a relatively fast speed responsive to said first variable speed drive connected thereto forms a clustered mass of relatively small loops of yarn on said conveyor by depositing loops of yarn onto said conveyor at successively closely spaced areas and whereby rotatingly driving said rotatable coiler tube at a relatively fast speed responsive to said second variable speed drive connected thereto forms relatively large loops of yarn on said conveyer with substantially no undulations therein by depositing loops of yarn onto said conveyor at successively closely spaced areas; and

enclosed heating means positioned downstream from said coiler and receiving portions of said conveyor therein for heating the loops of yarn carried thereon so as to effect heat setting of the yarn.

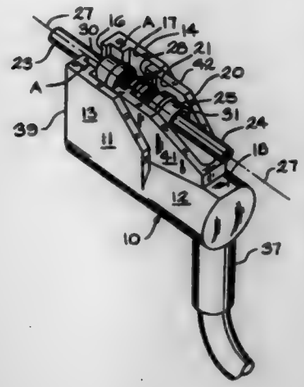
5,483,731

UNIVERSAL HYDRAULIC TOOL

Troy A. Prendel, Jackson, and Timothy D. Mulligan, Blissfield, both of Mich., assignors to Aeroquip Corporation, Maumee, Ohio

Filed Jan. 26, 1994, Ser. No. 187,109
Int. Cl.[6] B23P *19/04*
U.S. Cl. 29—237 **2 Claims**

1. A universal hydraulic tool comprising a base member and a slide member mounted for relative movement on said base member, said base member including piston means operatively connected to said slide member, said base member and said sliding member defining aligned first and second reception chambers for receiving tube portions and a connector fitting, said connector fitting having an end, said aligned reception chambers defining a longitudinal centerline, said base member defining a first jaw set, said sliding member defining a second jaw set, said jaw sets being in opposed relationship to one another and positioned perpendicular to said centerline, said jaw sets having predetermined thickness dimensions along said centerline substantially equal to one another, said first and second reception chambers having a width adjacent said jaw sets slightly larger than the width of said connector fitting end, said base member having a generally planar front surface adjacent said first jaw set and perpendicular to said centerline.



rality of rod slots to receive said clamping rods, said clamping rods being secured in said rod slots by tightening a wing nut on each said threaded inner end of said clamping rods, and wherein

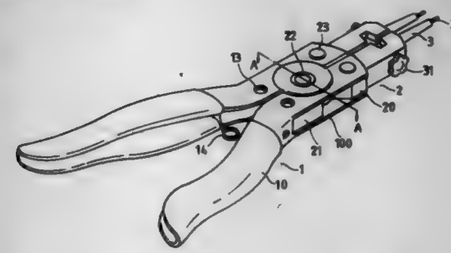
said clamping rods may be moved to other rod slots by loosening said wing nuts, thereby releasing said clamping rods from their fixed position, placing the clamping rods in a desired rod slot, and again tightening said wing nuts, said rod slots being oriented so that an angle between said handles and said clamping rods is changed by placing said clamping rods in the different rod slots.

5,483,732

VARIABLE C-SHAPED RETAINING RING PLIERS

Tian S. Wang, No. 232, Doou Tarn Rd., Shalnh Town, Taichung Shiann, Taiwan, Prov. of China

Filed Oct. 4, 1994, Ser. No. 318,026
Int. Cl.[6] B25B *7/12*
U.S. Cl. 29—229 **2 Claims**



1. A pliers for retaining rings and snap-rings comprising

a main body, a pliers head, and two clamping rods; wherein

said main body comprises two handles, each handle including at a front end thereof a clamping plate with a center hole and two locating holes, said locating holes being situated on opposing sides of said center hole, said main body including an elastic element between said two handles, said elastic element urging said handles away from each other;

said pliers head comprising a first clamping member and a second clamping member each provided with a pivoting portion, said first clamping member including a projection located in said pivoting portion of said first clamping member, and said second clamping member including a through hole in said pivoting portion of said second clamping member, said projection of said first clamping member being received in said through hole of said second clamping member,

said projection including an axial hole corresponding in location to said center hole of said main body, said axial hole and said center hole receiving a pivoting shaft on which said two handles of said main body are pivoted,

said first clamping member and said second clamping member further including two locating holes corresponding in location to said two locating holes of said main body, a locating pin passing through each said locating hole to affix said clamping member to said handles; and wherein

said clamping members include at an outer end thereof an L-shaped clamping rod with a threaded inner end and with a clamping tip thereon adapted to be inserted into retaining rings and snap-rings,

each said clamping member further including at an outer end thereof multiple detentes corresponding to matching detentes on the other clamping member, said detentes forming a plu-

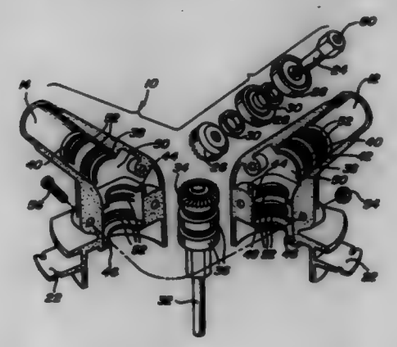
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5,483,733

METHOD OF MAKING AN ANGLE GEAR DRIVE

Ronald J. Hoffman, Phoenix, Ariz., assignor to Ryobi Outdoor Products Inc., Chandler, Ariz.

Division of Ser. No. 21,857, Feb. 23, 1993, Pat. No. 5,363,723.
This application Sep. 14, 1994, Ser. No. 306,087
Int. Cl.[6] B21D *39/00*; F16H *1/12*
U.S. Cl. 29—463 **5 Claims**



1. A method of making an angle gear drive for a portable lawn implement comprising the steps of:

casting a pair of housing portions;

assembling an input gear shaft including a first gear and a first sealed bearing into one of said housing portions;

assembling an output gear shaft including a second gear and a second sealed bearing into one of said housing portions;

assembling together the pair of housing portions having the input and output gear shafts attached thereto to form an angle gear drive housing having a seam formed between the assembled pair of housing portions; and

sealing the angle gear drive housing at the seam between said housing portions to form a sealed gear cavity within the angle gear drive

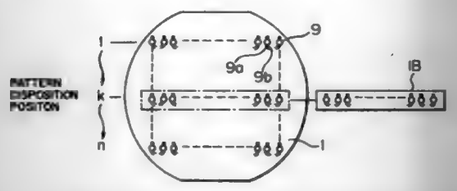
wherein said casting step comprises casting one of said housing portions with a first set of semi-annular ribs which axially restrain said input gear shaft and said output gear shaft and casting said other housing portion with a second set of semi-annular ribs which axially restrain said input gear shaft and said output gear shaft, said second set of semi-annular ribs including at least two ribs which correspond to the semi-annular ribs of said first set of said semi-annular ribs.

5,483,734

METHOD FOR PRODUCING THIN FILM MAGNETIC HEAD

Yukihiro Isono; Makoto Saito, both of Odawara; Kazuyoshi Adachi, Kanagawa; Masato Yumoto, and Akio Takakura, both of Hiratsuka, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 8, 1993, Ser. No. 118,489
Claims priority, application Japan, Sep. 11, 1992, 4-243408
Int. Cl.[6] G11B *5/42*
U.S. Cl. 29—603 6 Claims



1. A method of producing thin film magnetic heads comprising the steps of:

forming a plurality of magnetic conversion devices in respective lot units of one-block units by laminating a lower magnetic film, a magnetic gap layer, a conductor coil, an insulating layer for electrically insulating said conductor coil, an upper magnetic film and a protective film on a substrate;

collecting a plurality of data regarding formations of said magnetic conversion devices in said respective lot units and inputting said data into a memory device;

calculating each optimum value of a magnetic gap depth of said magnetic gap layer defining a distance between a position determining contact and separation of said gap layer with and from said upper magnetic layer and a surface of said thin film magnetic head opposing a magnetic recording medium, on a basis of said data in each of said respective lot units; and

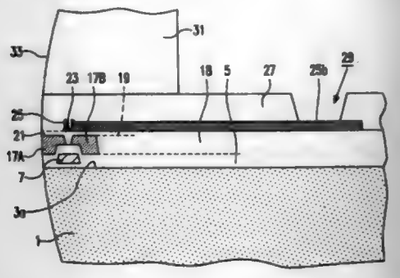
machining said magnetic gap depth of said magnetic gap layer to embody said optimum value on a basis of said optimum value and producing said thin film magnetic heads.

5,483,735

METHOD OF MANUFACTURING A THIN-FILM MAGNETIC HEAD

Lambertus Postma; Jan Haisma; Jacobus J. M. Ruigrok, and Gerardus H. J. Somers, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 22, 1994, Ser. No. 216,573
Claims priority, application Belgium, Mar. 22, 1993, 09300274; European Pat. Off., Apr. 6, 1993, 93200993
Int. Cl.[6] G11B *5/127*
U.S. Cl. 29—603 24 Claims



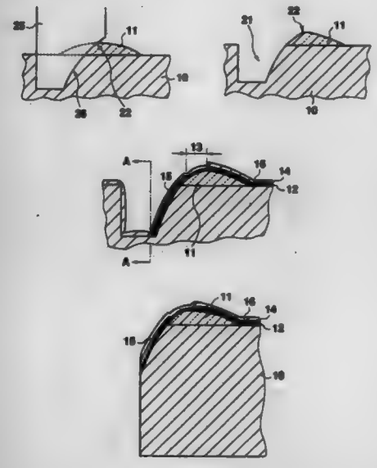
1. A method of manufacturing a thin-film magnetic head comprising a magnetoresistive element and at least one flux-guiding element on a support, the method characterized by forming a first insulation layer of a non-magnetic material on a face of the support, depositing a soft-magnetic material to form a soft-magnetic layer on the first insulating layer, the soft magnetic layer having an upper face remote from the first insulation layer, thereafter removing a portion of the soft magnetic layer to form the at least one flux-guiding element and to expose a portion of the first insulating layer, and depositing non-magnetic material on the remaining portion of the soft-magnetic layer and on the exposed portion of the first insulation layer for forming a second insulation layer having an upper face remote from the soft-magnetic layer, said second insulation layer having a thickness, viewed in a direction transverse to the support face, such that the smallest distance between the support face and the upper face of the second insulation layer is larger than the largest distance between the support face and the upper face of the soft-magnetic layer, thereafter mechanochemically polishing the upper face of the second insulation layer to form a main surface, and providing a layer of a magnetoresistive material on the main surface to form the magnetoresistive element.

5,483,736

METHOD OF MANUFACTURING A CORNER HEAD TYPE THERMAL HEAD

Kiroaki Ohnishi, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jun. 3, 1994, Ser. No. 255,312
Claims priority, application Japan, Jun. 8, 1993, 5-137955; Jun. 22, 1993, 5-149937
Int. Cl.[6] H05B *3/00*; B26D *3/06*
U.S. Cl. 29—611 2 Claims



1. A method of manufacturing a corner head type thermal head, comprising the steps of:

forming a glaze layer on a substrate;

preparing a cutting blade having a slant part with at least a neighborhood of a nose formed as a concavely curved surface;

half cutting said glaze layer and said substrate with said cutting blade downward from a predetermined position on a top surface of said glaze layer for forming a groove one side of which forms a slope being constituted of said glaze layer and said substrate, said slope being formed as a convexly curved surface in at least a vicinity of a bottom of said groove;

heat-treating said substrate and said glaze layer;

forming a resistance film layer, a common electrode, a discrete electrode, and a protective film on said glaze layer and on said slope; and

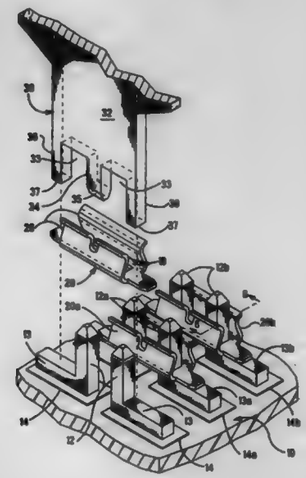
cutting said substrate on both sides of said groove.

5,483,737

ELECTRICAL SHUNT AND TOOL FOR INSTALLING SAME

Mai-Loan Tran, Harrisburg; Edward J. Bright, Middletown, and Attalee S. Taylor, Palmyra, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 9, 1994, Ser. No. 257,595
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—747 12 Claims



1. A tool for installing an electrical shunt on terminal posts each having a width, the shunt having a base which is apertured to freely receive the posts therethrough, and arms extending upwardly from opposite sides of the base and converging to a constriction between free ends thereof, a dimension of the constriction being less than the width of the posts wherein the posts may be captured between the free ends, the tool comprising:

a body;

a separator extending from the body, the separator having a width which is greater than the constriction dimension but less than the width of the posts, the separator being insertable in the constriction to resiliently deflect the arms and thereby become engaged between the free ends to frictionally retain the shunt to the tool; and,

an inserter extending from the body substantially parallel to the separator and arranged such that, when the separator is engaged between the free ends, a leading end of the inserter is engageable against the base without the inserter being engaged between the free ends;

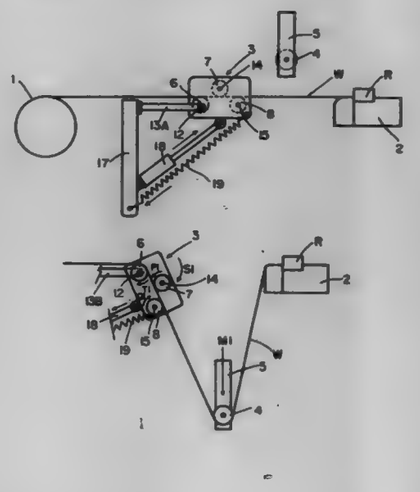
wherein the posts may be received through the apertured base and the shunt may be urged downwardly by the leading end of the inserter to cause entry and capture of the posts between the free ends, thereby releasing the separator from engagement between the free ends and permitting withdrawal of the tool.

5,483,738

APPARATUS FOR MAKING ELECTRICAL HARNESS HAVING WIRE MEASURING APPARATUS EQUIPPED WITH ANTI-CURLING MEANS

Souichi Watanabe, Yokohama; Sadao Takahashi, Machida, and Kazuaki Kamei, Yamato, all of, Japan, assignors to Molex Incorporated, Lisle, Ill.

Filed Mar. 15, 1994, Ser. No. 213,656
Claims priority, application Japan, Apr. 12, 1993, 5-024157 U
Int. Cl.[6] H01R *43/28*
U.S. Cl. 29—748 9 Claims



1. In an apparatus for making an electrical harness having a plurality of wires and at least one electrical connector at a first end of said plurality of wires, said apparatus comprising:

an apparatus for supplying a plurality of wires along a first path;

means for supporting an electrical connector;

means for guiding said wires between said wire supplying apparatus and said electrical connector;

looper means movable along a second path at an angle to said first path and including a wire engaging surface adjacent a bottom portion of said looper means to engage said wires in order to move a portion of said wires generally along said second path;

said guiding means including a wire anti-curling section immediately adjacent said looper means, said wire anti-curling means having a first curved surface against which said wires are pulled upon moving said looper means along said second path;

said wire anti-curling section also includes second and third curved surfaces against which said wires engage upon moving said looper means along said second path, said first and second curved surfaces being located on opposite sides of said wires, said first and third curved surfaces being located on the same side of said wires and said first, second and third curved surfaces being located upstream of said looper means and being located at a transition region between said first and second paths, said wires engaging both said first and second curved surfaces about an arcuate length of said first and second curved surfaces; and

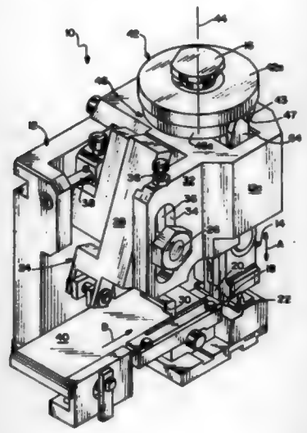
said second and third curved surfaces are mounted to a frame and said frame is rotatably mounted about an axis generally located at the center of curvature of said first curved surface.

5,483,739

ELECTRICAL TERMINAL APPLICATOR WITH IMPROVED CRIMP HEIGHT ADJUSTMENT PLATE MEANS

Vernon A. Smith, Naperville; Robert A. Suthard, Woodridge; Kevin J. Urness, St. Charles, and Russell E. Wende, Oak Lawn, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Feb. 14, 1994, Ser. No. 195,616
Int. Cl.[6] H01R *43/04*
U.S. Cl. 29—753 17 Claims



1. In an electrical terminal applicator which includes an applicator ram drivable by a press ram through a working stroke towards, and a return stroke away from, a crimping anvil,

a first crimping die on the applicator ram for cooperation with the anvil to crimp a first portion of an electrical terminal onto the insulation of an insulated electrical wire during each working stroke of the applicator ram;

a second crimping die on the applicator ram for cooperation with the anvil to crimp a second portion of the terminal onto a conductive core of the electrical wire during each working stroke of the applicator ram;

a first adjusting plate means mounted for rotation about an axis on and extending in the direction of movement of the applicator ram and including a concentric ramped striking surface for engaging a first striker member operatively associated with the first crimping die, to adjust the shut height of the first die in response to rotating the first adjusting plate means;

the first striker member has a generally convex upper surface and a center line generally parallel to said axis, and said first striker member being adapted to contact said striking surface of said first adjusting plate means only along a very small area adjacent said center line of said first striker member to minimize any rotational forces being transferred from the striking surface to the first striker member;

a second adjusting plate means mounted for rotation about said axis and including a concentric ramped striking surface for engaging a second striker member operatively associated with the second crimping die, to adjust the shut height of the second die independently of adjusting the shut height of the first die in response to independently rotating the second adjusting plate means; and

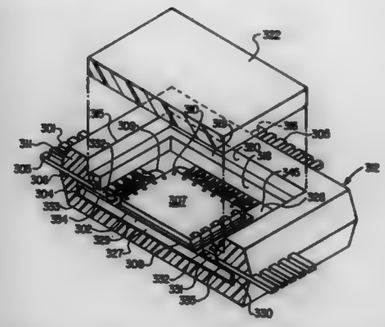
the second striker member has a generally convex upper surface add a center line generally parallel to said axis, and said second striker member being adapted to contact said striking surface of said second adjusting plate means only along a very small area adjacent said center line of said second striker member to minimize any rotational forces being transferred from the striking surface to the second striker member.

5,483,740

METHOD OF MAKING HOMOGENEOUS THERMOPLASTIC SEMI-CONDUCTOR CHIP CARRIER PACKAGE

William H. Maslakow, Lewisville, Tex., assignor to AK Technology, Inc., Carrollton, Tex.

Division of Ser. No. 250,153, May 26, 1994. This application Nov. 28, 1994, Ser. No. 345,573
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—827 6 Claims



1. A method of manufacturing a thermoplastic chip carrier cavity package, said method comprising the steps of:

laminating a circuit substrate with a suitable thermoplastic in order to form a base, said base providing integral reinforcement of said circuit substrate;

etching a defined circuit pattern on said laminated circuit substrate;

attaching a lead frame to said defined circuit pattern;

forming a casing, which is comprised of said suitable thermoplastic, to cover said laminated circuit substrate and said lead frame so that a cavity is formed, said casing being chemically bonded to a portion of said base of said laminated circuit substrate; and

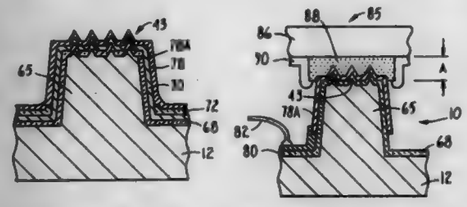
bonding a lid chemically to said casing to cover to said formed cavity.

5,483,741

METHOD FOR FABRICATING A SELF LIMITING SILICON BASED INTERCONNECT FOR TESTING BARE SEMICONDUCTOR DICE

Salman Akram, Boise; Warren M. Farnworth, Nampa, and Alan G. Wood, Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 206,747, Mar. 4, 1994, which is a division of Ser. No. 716,394, Sep. 3, 1993, Pat. No. 5,326,428. This application Nov. 7, 1994, Ser. No. 335,267
Int. Cl.[6] H05K *3/02*
U.S. Cl. 29—846 29 Claims



1. A method for fabricating an interconnect for testing a semiconductor integrated circuit die comprising:

forming an array of raised contact members on a substrate said contact members sized and spaced to engage electrically conductive contact locations on the die;

forming a first layer of material and a second layer of material on the contact members;

reacting a portion of the first layer of material with a portion of the second layer of material to form a conductive layer on the contact members;

removing an unreacted portion of the first and second layers while leaving the conductive layer; and

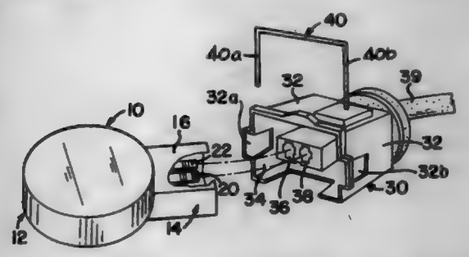
forming conductive traces on the substrate in contact with the conductive layer.

5,483,742

TOOL FOR INSTALLING A U-SHAPED RETAINER CLIP ON A CONNECTOR AND A METHOD THEREOF

Andrew J. Dunyak, Jr., 2512 Forest Haven Blvd., Edison, N.J. 08817

Filed Dec. 30, 1994, Ser. No. 366,969
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—881 5 Claims



1. A tool for installing a U-shaped retainer clip on a connector for a fuel injector or a sensor, said connector having electrical sockets for connection to an electrical wire, and having inner sidewalls and outer sidewalls, and openings formed in said inner and outer sidewalls, and said U-shaped retainer clip having two side legs, said tool comprising:

a) a handle;

b) a rectangular-shaped hollow tool section having outer sidewalls connected to said handle and a rear wall formed of plastic connected to said handle;

c) at least one pair of spaced-apart metal prongs mounted on the rear wall of said hollow tool section; and

d) the outer sidewalls of said hollow tool section are adapted to be inserted within the connector so that said outer sidewalls of said hollow tool section engage the inner sidewalls of the connector and said metal prongs are adapted to enter the electrical sockets of said connector, so that said openings in said inner sidewalls of the connector are blocked off so as to prevent said two side legs of said U-shaped retainer clip from entering said openings, so that said U-shaped retainer clip is fully seated on the outer sidewalls of said connector and so that the side legs of said U-shaped retainer clip are engaged with the outer sidewalls of the connector.

5,483,743

METHOD OF HERMETICALLY SEALING A PLASTIC CONNECTOR

Lloyd Armogan, Coon Rapids; Christina M. Schober, Saint Anthony, and Steven P. Valley, Shoreview, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

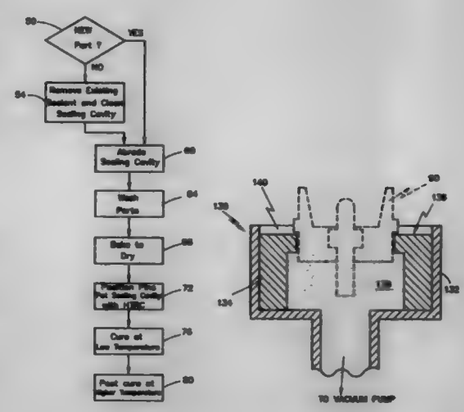
Filed Sep. 24, 1993, Ser. No. 126,955
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—883 22 Claims

1. A method of sealing an electrical connector having a connector housing made of a plastic, comprising the steps of:

abrading the connector so a sealing cavity of the connector has an abraded surface;

cleaning the sealing cavity so as to remove any abrading residue;

positioning a connector pin within the sealing cavity such that the connector pin extends through a lower surface of the sealing cavity;



potting the sealing cavity and connector pin with a sealant; and

curing the sealant at a predefined temperature for a predetermined period of time.

16. A method of sealing an electrical connector having a molded plastic connector housing and a molded-in connector pin, the method comprising the steps of:

abrading a sealing cavity with an abrasive material, the sealing cavity being a cavity within the connector housing which supports the connector pin;

cleaning the sealing cavity so as to remove any abrading residue;

creating a vacuum on a bottom side of the connector housing while exposing the sealing cavity to a second predefined pressure;

flooding the sealing cavity with a low viscosity sealant material;

removing the vacuum; and

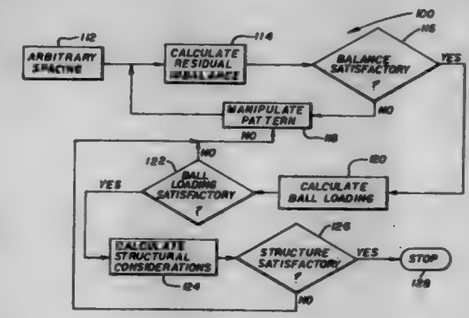
curing the sealant material for a first predetermined time at a first temperature.

5,483,744

METHOD FOR FABRICATING A BEARING WITH SEMI-RHYTHMIC BALL SPACING

John L. Roberts, Tucson, Ariz., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 344,937, Apr. 28, 1989, abandoned. This application Aug. 16, 1990, Ser. No. 567,993
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—898.07 5 Claims



1. A method for designing a bearing having a plurality of balls or rollers adapted for rolling engagement with a track in the bearing, said method including the steps of:

a) choosing an initial pattern for the position of the balls with an arbitrary irregular spacing therebetween;

b) determining the degree to which the bearing is suitable for a given application with the chosen spacing between the balls;

c) moving the position of the balls in the pattern thereby changing the spacing therebetween and

d) repeating steps b) and c) until the bearing design is suitable for a given application.

5,483,745

ELECTRIC SHAVER

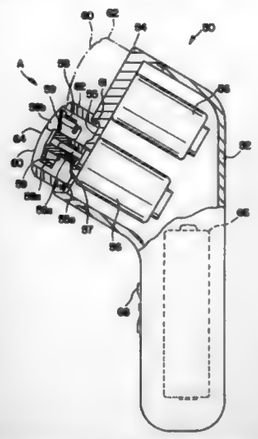
Shunji Izumi, Matsumoto, Japan, assignor to Izumi Products Company, Nagano, Japan

Filed Feb. 15, 1995, Ser. No. 389,019

Claims priority, application Japan, Aug. 19, 1994, 6-195206

Int. Cl.[6] B26R *19/28*

U.S. Cl. 30—43.6 **6 Claims**



1. An electric shaver including a plurality of shearing units each comprising an outer cutter provided with hair entry openings and an inner cutter rotatable on an under surface of said outer cutter to shear the hair, wherein a plurality of motors are further provided in a housing of said shaver and an output shaft of each of said motors is connected to each one of inner cutters so as to independently rotate said inner cutter.

5,483,746

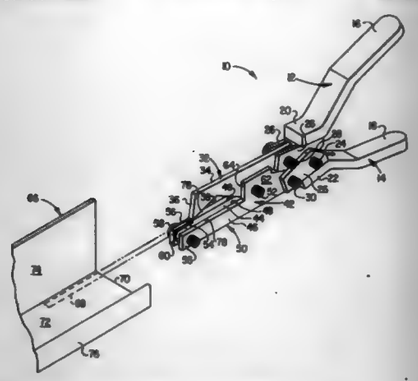
HAND OPERATED CHANNEL NOTCHING TOOL AND METHOD OF NOTCHING

Gerald W. Beyers, 2865 Lilac La., Fargo, N. Dak. 58102

Filed Nov. 19, 1992, Ser. No. 979,004

Int. Cl.[6] B26B *13/00*

U.S. Cl. 30—229 **13 Claims**



1. A hand operated notching tool, comprising

opposed handles having a movable free end manually graspable for squeezing the free ends closer together, said handles having an end opposite the free end, pivoted together at a common handle pivot, each handle having an extension beyond said pivot which move further apart as said handles move closer together;

a biasing member connected to the handles tending to spread the free ends apart;

a dual element anvil blade extending forwardly from the handles, having one end pivotally connected to one of said handle extensions, having elongated cutting edges spaced apart a distance equal to the width of a cutting blade;

an elongated cutting blade having dual cutting edges, extending forwardly from the handles, having one end pivotally connected to the other of said handle extensions, mounted centrally for movement to a cutting position with the cutting edges positioned between the cutting edge portions of the dual element anvil blade; wherein the cutting edges of the cutting blade are shaped to simultaneously cut from the front and rear of the cutout section and towards the middle in order to produce a slot having clean, sheared edges along the cutout section of stock that is cut:

the cutting blade and dual element anvil blade extending forwardly of a common pivot connecting them which is positions forwardly of the pivotal connections with the handle extensions, to provide a mechanical advantage shearing force to their cutting edges in response to force produced by squeezing the handles; and

a portion of the cutting blade extending forwardly of the common pivot comprises an elongated cutting area defined by said dual cutting edges being movable in a cutting plane in shearing contact with the cutting edges of said dual element anvil blade in order to cut out a defined cutout section from stock material which is inserted between the blades.

5,483,747

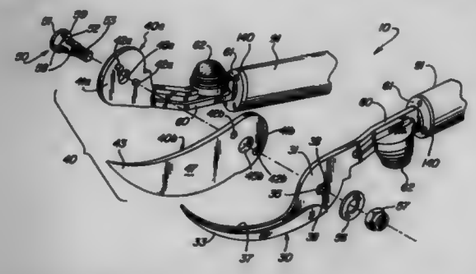
HAND-HELD TOOL WITH HOLLOW HANDLE

Alex Thompson, Manhattan Beach, and William E. Gagner, Corona, both of Calif., assignors to Harrow Products, Inc., Grand Rapids, Mich.

Division of Ser. No. 179,310, Jan. 10, 1994. This application Nov. 7, 1994, Ser. No. 335,129

Int. Cl.[6] B26B *13/28*

U.S. Cl. 30—254 **14 Claims**



1. A hand-held pruning tool comprising:

a first rotatable cutting member having a first central portion, a first planar cutting surface, and a round aperture having a spherically concave counterbore extending perpendicularly through the first central portion;

a second rotatable cutting member having a second central portion which rotatably mates with the first central portion, a second planar cutting surface which slidably mates with the first planar cutting surface, and a nonround aperture extending perpendicularly through the second central portion; and

a pivot bolt including a nonround shank passing perpendicularly through the round and nonround apertures and dimensioned to rotate freely within the first rotatable cutting member's round aperture and to lockably engage the second rotatable cutting

member's nonround aperture, and a head with a spherically concave underside that rotatably engages the first rotatable cutting member's spherically concave counterbore, the first rotatable cutting member rotating in a self-aligning fashion between the spherically convex head of the pivot bolt and the second planar cutting surface of the second rotatable cutting member, and not on the shank of the pivot bolt, thereby maintaining planar contact between the first and second planar cutting surfaces throughout rotation.

5,483,748

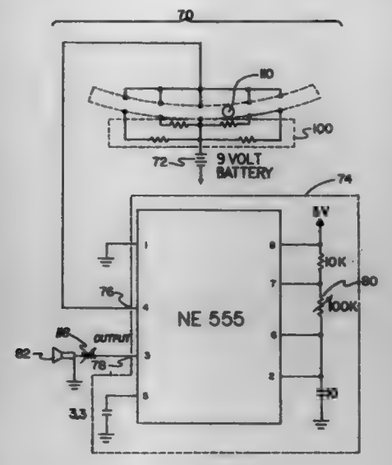
SOUND INDICATIVE LEVELING APPARATUS

Lyle W. Groves; Martha R. Groves, both of 15607 Mottley Dr., La Mirada, Calif. 90638, and John D. Hamtil, 10222 Jenrich Ave., Garden Grove, Calif. 92643

Filed Aug. 3, 1994, Ser. No. 285,215

Int. Cl.[6] G01C *9/06*

U.S. Cl. 33—366 **2 Claims**



2. A sound indicative leveling apparatus comprising:

an arcuate leveling tube having free and sealed ends extended upwards;

an adjustable clamp coupled to the tube and removably coupleable to an object for leveling;

leveling circuitry further comprising:

a replaceable battery for supplying electrical energy;

oscillation circuitry coupled to the battery and adapted to be keyed by an oscillation activation signal for generating speaker activation signals at given frequencies;

a speaker coupled to the oscillation circuitry for generating audible tones upon receipt of the speaker activation signals to thereby audibly indicate a degree of levelness attained for the object;

volume control circuitry associated with the speaker for allowing control of audible tone volume generated therefrom;

switch means including a plurality of spaced and electrically conductive terminals disposed along the leveling tube and extended therein and further coupled to the oscillator circuitry for permitting different frequencies to pass through said speaker based on the orientation of said leveling tube;b 54837602.001 and

said switch means further including liquid conductive material disposed within the leveling tube of an amount to electrically engage one of the terminals based upon leveling tube orientation and thereby generate an oscillator activation signal; and

power switch means coupled to the leveling circuitry for activating the leveling circuitry in one orientation and deactivating the leveling circuitry in another orientation.

5,483,749

MEASURING AND CUTTING APPARATUS

Paul S. Hepworth, Guildford, England, assignor to Plasplugs Limited, England

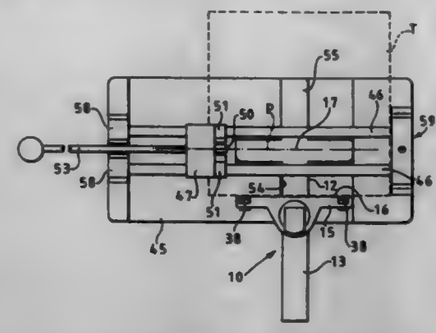
PCT No. PCT/GB91/00626, § 371 Date Mar. 5, 1993, § 102(e) Date Mar. 5, 1993, PCT Pub. No. WO91/16184, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 22, 1991, Ser. No. 937,824

Claims priority, application United Kingdom, Apr. 20, 1990, 9008858

Int. Cl.[6] G01B *5/14*; B28D *1/32*

U.S. Cl. 33—527 **6 Claims**



1. An apparatus for cutting tiles or similar items to size., comprising:

a measuring device having first and second measuring members which are movable towards and away from each other to set a required size to which a tile is to be cut, wherein the measuring members are mounted for both rectilinear and angular movement relative to one another, said measuring device including first locking means operable to lock said first and second measuring members against relative movement, said first locking means including a manually operable locking member which is moveable between a lock position and a release position, and

second locking means operable to lock said measuring members against relative angular movement and including a manually operable second locking member moveable between a lock position and a release position,

said first locking member when in its lock position preventing movement of said second locking member between said lock and release positions, and

a cutting device comprising a base, a cutter, guide means for guiding movement of said cutter along a defined path across said base, and a formation on said base to receive said first measuring member of said measuring device and to position the same in alignment with said defined path,

whereby a tile placed in edge contact with said second measuring member of said measuring device is automatically positioned for cutting substantially to the required size by said cutter.

5,483,750

SPRINGBACK ANGLE MEASURING INSTRUMENT FOR V-BENDING

Toshiyuki Ooesuki, and Toshiro Otani, both of Osaka, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

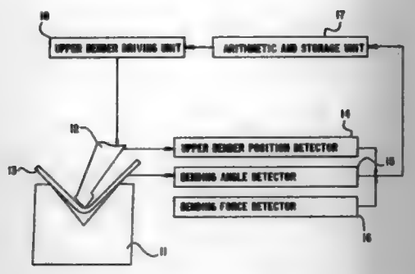
Filed Oct. 31, 1994, Ser. No. 325,401

Claims priority, application Japan, Jun. 16, 1993, 5-145059; Dec. 22, 1993, 5-323849

Int. Cl.[6] B21D *5/00*

U.S. Cl. 33—534 **11 Claims**

1. A springback angle measuring instrument for V-bending in which the springback angle of a workpiece, which is held between upper and lower benders to be bent into a V-shape by pressing with



these benders, is measured as the amount of elastic recovery of the workpiece, the measuring instrument comprising:

(a) bender position detecting means for detecting the position of either the upper bender or lower bender being lifted or lowered during bending of the workpiece;

(b) bending angle detecting means for detecting the bending angle of the workpiece during bending of the workpiece;

(c) pressure detecting means for detecting a pressure imposed on the workpiece during bending of the workpiece; and

(d) arithmetic and storage means for (i) storing a first bending angle of the workpiece, said first bending angle being detected by the bending angle detecting means when said bender is at an arbitrary position, (ii) obtaining the increment of the imposed pressure per unit lifting/lowering distance of said bender, based on the position of said bender and the value of the imposed pressure detected by the bender position detecting means and the pressure detecting means, respectively, while said bender is being lifted or lowered to reduce the pressure imposed on the workpiece within such a range that the pressure does not become zero, (iii) calculating the position of said bender at which the imposed pressure is zero from a linear approximate expression of at least two bending angles and two pressure values detected by the bending angle detecting means and the pressure detecting means, respectively, at two bender positions where said increment is kept to be a certain value, (iv) estimating a second bending angle of the workpiece for the bender position where the imposed pressure is zero, and (v) subtracting the first bending angle from the second bending angle to obtain the springback angle of the workpiece.

5,483,751

CALIPER GAUGE

Toru Kodato, Utsunomiya, Japan, assignor to Mitutoyo Corporation, Tokyo, Japan

Filed Aug. 31, 1993, Ser. No. 114,696

Claims priority, application Japan, Aug. 31, 1992, 4-231235; Aug. 31, 1992, 4-231236

Int. Cl.[6] G01B *5/14*

U.S. Cl. 33—811 **11 Claims**

1. A caliper gauge comprising:

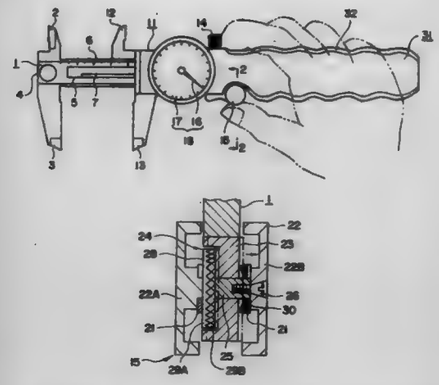
a main scale having at least a first jaw;

a slider including first support means for slidingly supporting said main scale for movement relative to said slider and having thereon at least a second jaw corresponding to said first jaw provided on said main scale, a set defined by said first and second jaws being adapted to operatively contact a portion of an object to be measured;

an outer roller rotatably mounted on said slider;

an inner roller and second support means for rotatably supporting said inner roller and for operative contact with said main scale; and

yieldable torque transmitting means interconnecting said outer roller to said inner roller and for regulating a maximum level of torque transmission from said outer roller to said inner roller, so that upon a manual driving of said outer roller for rotation, said inner roller will be driven for rotation through



said yieldable torque transmission means, said inner roller, caused by said contact with said main scale, thereby effecting a relative movement between said slider and said main scale until an engagement of the set of jaws with the object to thereby cause a halting of said relative movement, a continued manual driving of said outer roller in a direction to tighten the engagement of the set of jaws with the object being ineffectual to cause rotation of said inner roller and relative movement between said slider and main scale because of a yielding of said yieldable torque transmitting means to thereby mean that said outer roller runs idle in relation to said inner roller.

5,483,752

DEVICE FOR HEATING OR COOLING BULK MATERIALS, PARTICULARLY FOR LIGNITE PREHEATING

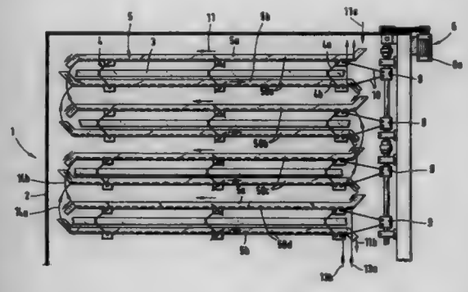
Manfred Kreft, Wetter, and Hans-Joachim Klutz, Erftstadt, both of, Germany, assignors to Jöst GmbH & Co., KG, Dülmen, and Rheinbraun AG, Cologne, both of, Germany

Filed Apr. 8, 1994, Ser. No. 225,214

Claims priority, application Germany, Apr. 10, 1993, 43 11 889.5

Int. Cl.[6] F26B *9/00*

U.S. Cl. 34—164 **8 Claims**



1. A device for one of heating and cooling bulk material, comprising:

a plurality of bulk material conveying vibrating chutes having each an equal dead load, arranged one above another and inclined alternatively in opposite directions, the plurality of vibrating chute comprising at least two pairs of vibrating chutes, each pair being formed of adjacent oppositely inclined chutes;

a vibrator associated with each pair of vibrating chutes for vibrating same, the vibrators of the two pairs of vibrating chutes being movable in a same direction with a 180° phase shift;

a plurality of pairs of articulated bars for connecting chutes of each pair together, with articulated bars of each pair being inclined in opposite directions; and

a plurality of flow ducts associated with the vibrating chutes;

wherein flow ducts of each separate vibrating chute have a unidirectional flow of fluid medium therethrough, and

wherein flow ducts of vibrating chutes having same inclination are so connected with each other that the fluid medium flows through oppositely inclined vibrating chutes of each pair in a same direction, whereby a fluid medium flow direction through the flow ducts of one of the vibrating chutes of a pair of vibrating chutes coincides with a flow direction of the bulk material through the one of the vibrating chutes, and a fluid medium flow direction through the flow ducts of another of the vibrating chutes of the pair of vibrating chutes is opposite to a flow direction of the bulk material through the another of the vibrating chutes.

5,483,753

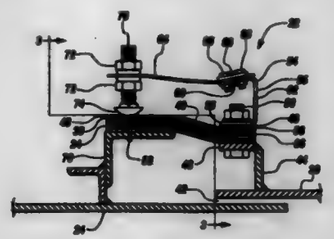
RESILIENT ROTARY DRYER SEAL

Robert M. Boivin; Ravindran Nadarajah, both of Vancouver, Wash.; John E. Rude, Lake Oswego, and Kenneth J. Zimmerman, Milwaukie, both of Oreg., assignors to Beloit Technologies, Inc., Wilmington, Del.

Filed Feb. 6, 1995, Ser. No. 383,623

Int. Cl.[6] F26B *25/00*

U.S. Cl. 34—242 **12 Claims**



1. In a rotary drum dryer having a dryer drum mounted for rotation to a base and having a circumferential sealing ring connected to the drum, and a duct mounted to the base and spaced from the drum and supplying heating gas to the drum, wherein the improvement comprises a gas seal extending between the drum and the duct comprising:

a clamp mounted to, the duct;

a blanket having a plurality of layers, wherein an edge of the blanket is clamped to the duct by the clamp, and wherein portions of the blanket overlie the sealing ring on the rotating drum; and

at least one spring engaged with the blanket to bias the blanket against the sealing ring.

5,483,754

METHOD AND APPARATUS FOR THE HEAT TREATMENT OF A CONTINUOUSLY MOVING LENGTH OF TEXTILE MATERIAL

Harry Gresens, Benningen/Neckar, Germany, assignor to Bruckner Trockentechnik GmbH & Co., Munich, Germany

Filed Dec. 11, 1987, Ser. No. 132,507

Claims priority, application Germany, Dec. 23, 1986, 36 44 323.9

The portion of the term of this patent subsequent to Sep. 13, 2006, has been disclaimed.

Int. Cl.[6] F26B *19/00*

U.S. Cl. 34—478 **6 Claims**

1. A method for drying and fixing a continuously moving length of textile material in a treatment apparatus wherein the length of textile material is serially passed through a drying zone along a path from a front end of the drying zone to a rear end of the drying zone, and then through a fixing zone along a path from a front end of the fixing zone to a rear end of the fixing zone comprising the steps of:

(a) heating a single stream of gas to a first temperature, introducing the stream of gas into the drying zone and therein contacting the length of textile material with the stream of gas;

(b) withdrawing the single stream of gas from the rear end of the drying zone and then heating the stream of gas to a second temperature higher than the first temperature;

(c) introducing the single stream of gas heated to the second temperature into the fixing zone and therein contacting the length of textile material with the stream of gas;

(d) withdrawing the single stream of gas from the rear end of the fixing zone, heating the stream of gas to a third temperature higher than the second temperature, and then contacting the stream of gas with a flame to burn harmful substances contained within the stream of gas and to produce an atmospheric exhaust stream; and

(e) discharging the atmospheric exhaust stream to the atmosphere;

wherein the single stream of gas is heated in steps (a), (b), and (d) by indirect contact with a portion of the atmospheric exhaust stream.

5,483,755

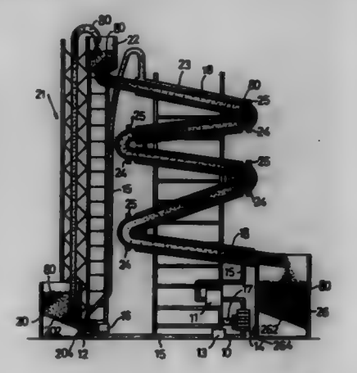
METHOD AND APPARATUS FOR DRYING GRAIN MATERIAL

Peng-Ta Yang, No. 33, Lane 66, Taillen N. St., Taichung City, Taiwan, Prov. of China

Filed May 13, 1994, Ser. No. 242,624

Int. Cl.[6] F26B *3/16;3/06;17/16*

U.S. Cl. 34—514 **7 Claims**



1. A method for drying material having a plurality of grains (80) comprising the steps of:

providing a plurality of grains (80) in a first container (20);

inputting heat into said first container (20) so as to dry said grains (80) therein;
delivering said grains (80) from said first container (20) into a second container (22) at a higher position above said first container (20) through a lifting device (21);
delivering said grains (80) from said second container (22) through a heating conduit means (23) for drying said grains (80) and into a third container (26); and
conveying air having a temperature lower than that of said third container (26) into said third container (26) so as to refrigerate said grains (80) and remove the moisture therefrom.

3. An apparatus for drying material having a plurality of grains (80) comprising:
a circuit means through which freon (10) circulates comprising an evaporator chamber (14) for evaporating said freon (10), a compressor (11) for pressurizing said freon (10), a condenser (12) for condensing said freon (10), and an expansion valve (13) for depressurizing said freon (10);
a first container (20) in which said grains (80) are provided;
a first fan means (16) for transferring heat released by said freon (10) in said condenser (12) into said first container (20) so as to dry said grains (80) therein;
a lifting device (21) for delivering said grains (80) from said first container (20) into a second container (22) at a higher position above said first container (20);
a heating conduit means (23) for delivering said grains (80) from said second container (22) into a third container (26);
an outer passage means (18) enclosing a peripheral portion of said heating conduit means (23) and connecting between said compressor (11) and said condenser (12) such that heated freon (10) passes through said outer passage means (18) so as to dry said grains (80) through said heating conduit means (23); and
a second fan means (17) for conveying air having a temperature lower than that of said third container (26) from heat exchange relationship with said evaporator chamber (14) into said third container (26) so as to refrigerate said grains (80) therein and remove the moisture from said grains (80).

5,483,756

CLOTHES DRYER WITH HORIZONTALLY ROTATABLY SUPPORTED DRUM

Reinhard Heyder, Berlin, Germany, assignor to Bosch-Siemens Hausegraete GmbH, Munich, Germany

Filed Jun. 6, 1994, Ser. No. 254,127
Claims priority, application Germany, Jun. 7, 1993, 43 18 897.4
Int. Cl.[6] F26B *11/00*
U.S. Cl. 34—601 **10 Claims**

1. A clothes dryer, comprising:
a housing;
a back wall joined to said housing;
an at least approximately horizontally rotatably supported laundry drum having at least one bottom defining a plane;
a bearing journal supporting said at least one bottom on said back wall;
said bearing journal having a spherical bearing-relevant surface stationarily secured to said back wall; and
said drum bottom having at least one bearing shell tightly embracing said spherical surface;
wherein said bearing shell and said bearing journal are approximately located in the plane of said bottom.

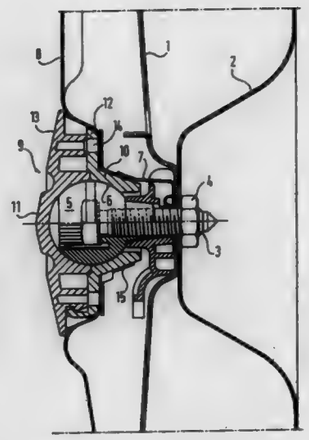
5,483,757

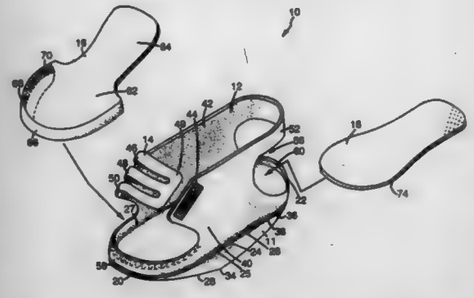
HEALING SANDAL

Robert G. Frykberg, 1895 Centre St., Boston, Mass. 02132

Filed Feb. 3, 1994, Ser. No. 191,420
Int. Cl.[6] A43B *3/24;* **A61F** *5/14*
U.S. Cl. 36—101 **6 Claims**

1. A healing sandal comprising:





a sole having a forward toe portion, a rearward heel portion, an upper surface, and a bottom surface for contacting the ground, wherein the bottom surface includes a forward convexly curved surface and a rearward convexly curved surface which meet at an apex, the apex extending from one side of the sole to another side of the sole such that the sole pivots about the apex during walking;
an upper attached to the sole, the upper having two side panels permanently interconnected by a material strip at a rearward portion of the upper and including an opening below the strip and above the heel portion of the sole, and wherein the side panels also are adjustably attached to one another at a forward portion of the upper;
an insole insert removably inserted within the sandal through the opening onto the upper surface of the sole; and
forward and rearward lips extending upwardly from the sole to retain the insole insert in place;
the opening extending from one side of the sandal to the other side so as to receive the insole insert therethrough.

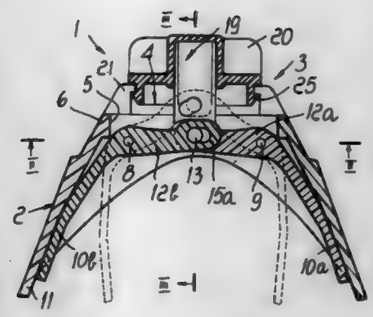
5,483,758

SECURING DEVICE FOR SPORTS SHOES

Roberto Gorza, Feltre; Giorgio Baggio, San Martino di Lupari, and Mirco Battistella, Spresiano, all of, Italy, assignors to Nordica S.p.A., Trevignano, Italy

Filed Jul. 26, 1993, Ser. No. 96,289
Claims priority, application Italy, Jul. 31, 1992, TV92A0090
Int. Cl.[6] A43B *5/04*
U.S. Cl. 36—119 **9 Claims**

1. In combination, a sports shoe having a shoe member constituted by a shell or a quarter having an internal lateral surface, and a foot securing device removably coupled to said shoe member for securing a wearer's foot within said sports shoe, said securing device comprising;



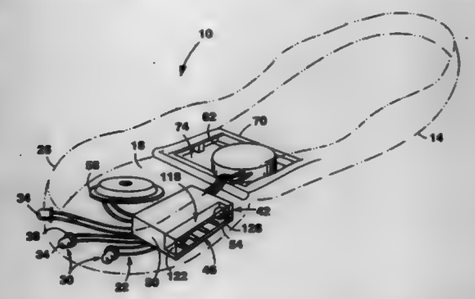
a support removably coupled to said shoe member;
two shoulders defined by said support, said shoulders having terminal shoulder ends and protruding toward an inside of said shoe member;
at least one pair of essentially L-shaped jaws for embracing a wearer's foot in a vise-like manner;
two wings defined by each of said jaws, said two wings including a larger wing and a shorter wing having a terminal end, said larger wing shaped approximately complementarily to the internal lateral surface of said shoe member and arrangeable adjacent thereto, said shorter wing being arranged substantially along a plane when said larger wings are located adjacent to said internal lateral surface;
first and second pins interposed between the terminal ends of said shoulders, each of said jaws being pivotally connected to one of said first and second pins substantially at a juncture of said larger wing and said shorter wing;
slots formed in said terminal end of said shorter wing of each of said jaws;
a third pin passing through said slots for mutually articulating said terminal ends of said shorter wings;
a knob which can be accessed by a user for rotating said jaws.

5,483,759

FOOTWEAR OR OTHER PRODUCTS

Jeffrey N. Silverman, Brentwood, Tenn., assignor to Genesco Inc., Nashville, Tenn.

Filed Feb. 1, 1994, Ser. No. 189,874
Int. Cl.[6] A43B *23/00;* **F21L** *15/08*
U.S. Cl. 36—137 **5 Claims**



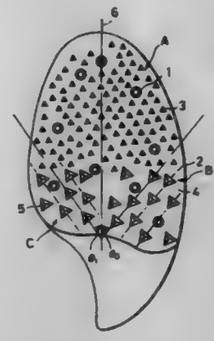
1. Footwear, comprising a body having an outer surface, such outer surface having an aperture therein, and an electric circuit at least partially positioned in said aperture, said electric circuit comprising: a switching assembly including a pair of electrical contacts visible through said aperture in said outer surface of said footwear, each of said pair of electrical contacts for switching between an open position and a closed position to open and close said electrical circuit, and a common actuator, comprising a ball, visible through said aperture in said outer surface of said footwear for switching each of said pair of electrical contacts between open position and closed position in response to movement of said footwear and wherein a first one of said pair of electrical contacts further comprises a resilient, electrically-conductive member for moving from said open position toward said closed position when depressed by said ball.

5,483,760

HARD PLATE FOR SPIKED TRACK SHOES

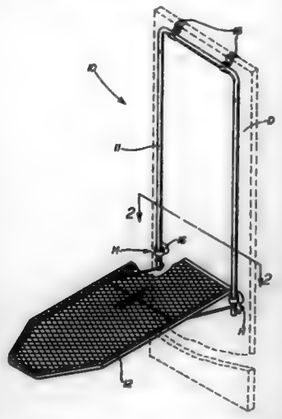
Akira Katsoka, Kobe; Masanobu Inohara, Akashi; Ryuichi Tsukita; Toshio Suma, both of Kobe, and Kiyohiro Saito, Akashi, all of, Japan, assignors to ASICS Corporation, Japan

Continuation of Ser. No. 68,128, May 27, 1993, abandoned.
This application Dec. 22, 1994, Ser. No. 361,477
Claims priority, application Japan, May 13, 1992, 4-146297; Apr. 23, 1993, 5-097704; May 13, 1993, 5-111927
Int. Cl.[6] A43B *5/00;* **A43C** *15/00*
U.S. Cl. 36—134 **10 Claims**



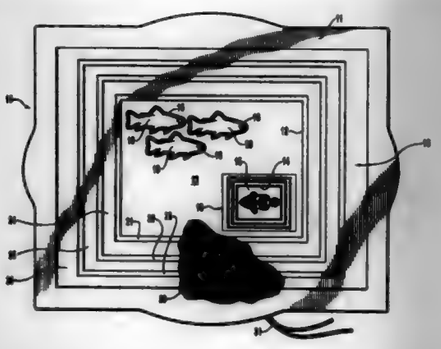
1. A hard plate for a spiked track shoe comprising:
a propulsion region for gripping ground surface and suppressing rearward slippage of the track shoe relative to the ground surface, said propulsion region being provided with a plurality of small projections on a substantially overall anterior forefoot portion in at least about half the forefoot portion;
a braking region for buffering landing impact on the ground surface and for rapidly gripping the ground surface upon landing, said braking region being provided with a plurality of first large projections on an outer posterior forefoot portion, each of said first large projections being greater than said small projections of said propulsion region; wherein
said first large projections are aligned outwardly from a center line of said shoe in a first inclined direction and at a first predetermined angle such that a base of one side face of each of said first large projections is orthogonal with said first inclined direction, and such that said one side face of each of said first large projections is oriented substantially forward in said first inclined direction; and
a balance and acceleration region for maintaining right and left balances on contact with the ground surface and for providing a propulsion force at a start dash moment, said balance and acceleration region being provided with a plurality of second large projections on an inner posterior forefoot portion, each of said second large projections being greater than said small projections of said propulsion region, wherein
said second large projections are aligned inwardly from said center line of said shoe in a second inclined direction at a second predetermined angle such that a base of one side face of each of said second large projections is orthogonal with said second inclined direction, and such that said one side face of each of said second large projections is oriented substantially rearward in said second inclined direction.

5,483,761
DOOR MOUNTED IRONING BOARD ASSEMBLY WITH RETRACTABLE HOLDERS
Danny Simpson, Seymour, Ind., assignor to Seymour Housewares Corporation, Seymour, Ind.
Filed May 10, 1994, Ser. No. 240,310
Int. Cl.[6] D06F *81/06*; A47B *5/00*
U.S. Cl. 38—137 **11 Claims**



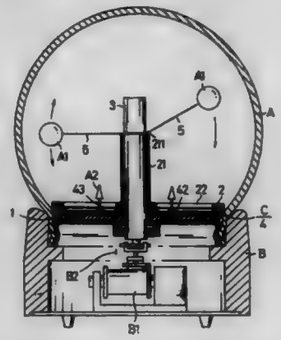
1. An ironing board assembly for mounting to a substantially vertical structure comprising:
a mounting frame having a top and bottom sides defining a lateral profile;
an ironing board pivotally mounted on the frame for lowering to an operative position and for retracting to a storage position;
bracket means adjacent the top of the frame for engaging a top edge of the substantially vertical structure;
holding means on said ironing board assembly having sufficient holding properties to hold to the face of said substantially vertical structure to resist lateral shifting during ironing, but easily releasable for portability of said ironing board assembly; and
means for retracting said holding means to a position substantially within the lateral profile of said frame,
whereby said holding means is protected during handling, but readily positionable for use.

5,483,762
ART FRAMING MAT
Sherman D. Hogan, P.O. Box 57638, Salt Lake City, Utah 84157
Filed Dec. 2, 1993, Ser. No. 160,221
Int. Cl.[6] B44C *5/02*
U.S. Cl. 40—158.1 **3 Claims**



1. An art frame mat comprising
a single sheet of embossable material having at least one defined interior space including a front and positioned within a border, said border including a plurality of spaced apart strips surrounding said interior space and a plurality of interspersed strips surrounding said interior space adjacent to said spaced apart strips, at least one of said spaced apart strips being embossed to stand away from the front of said interior space, and wherein said sheet of embossable material is impregnated with a temperature sensitive color change material.

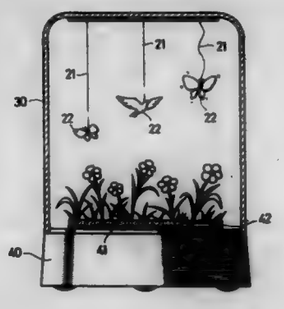
5,483,763
WATER FILLED CRYSTAL BALL WITH UNDULATING PIVOT ARMS
Jian H. Liu, No. 3, Alley 202, Kao Fen Road, Hsin-Chu City, Taiwan, Prov. of China
Filed Apr. 29, 1994, Ser. No. 235,674
Int. Cl.[6] G09F *19/08*
U.S. Cl. 40—414 **8 Claims**



1. A crystal ball having a rotating shaft and comprising
a fixed, bushing mounted concentric to the shaft, said bushing including a top surface with a high and low contour camming surface; and
a plurality of pivot arms, each pivot arm having a fixed end that is pivotally connected at the circumference of said rotating shaft proximate to and engaging the top camming surface as a cam follower which causes the other end of the pivot arm to undulate in an up and down motion.

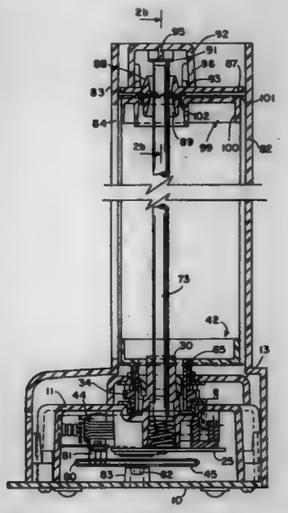
5,483,764
STRUCTURE OF BOTTLE FOR DECORATION AND VIEWING
Jen-Chao Lin, No. 170 Hai Kou Li, Chunan, Miao Li Hsien, Taiwan, Prov. of China
Filed May 12, 1994, Ser. No. 241,921
Int. Cl.[6] G09F *19/00*
U.S. Cl. 40—426 **2 Claims**

1. A decoration and viewing bottle structure comprising:



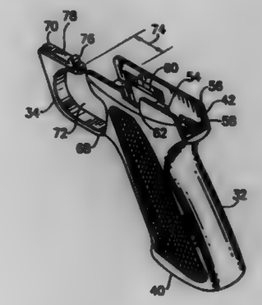
a clear hood, and
a music box seat with a turntable affixed to a top side thereof; wherein said hood includes a plurality of thin lines affixed to an inner side of a top surface of said hood, each of said lines supports a figurine so that said figurines are suspended above said turntable, and
said turntable includes an eccentrically mounted magnetic element; and wherein
said figurines include a magnetic element, a polarity of said magnetic element of said figurines being the same as that of said magnetic element of said turntable, and
said hood is mounted on said music box seat such that when said turntable turns, said magnetic element in said turntable rotates about an interior of said hood, and
said figurines are mounted such that their magnetic fields interact with that of said magnetic element of said turntable as it rotates under each figurine in turn, thereby causing said figurines to move such that said figurines appear to fly and dance.

5,483,765
DEVICE FOR DISPLAYING PICTURES IN SEQUENCE
Robert A. Karsten, Fox Point, and Jon P. Strawbridge, Glendale, both of Wis., assignors to Everbrite, Inc., Greenfield, Wis.
Filed Apr. 18, 1994, Ser. No. 228,726
Int. Cl.[6] G09F *11/02*
U.S. Cl. 40—505 **9 Claims**



1. Apparatus for displaying pictures in succession having a row of adjacent display units and means for driving the display units rotationally about parallel axes, the display units including transparency panels in a triangular formation, comprising:
a base and a housing on the base, the housing is configured to define a chamber with the base and has a housing top wall,
A row of equally spaced apart post members formed unitarily with said housing top wall, said post members each having a portion projecting upwardly from the top wall, and a portion projecting downwardly from the top wall,
a gear element comprising a spur gear having teeth on its periphery, a first hub portion extending axially upwardly from an upper side of the gear element and second hub portion extending axially downwardly from a lower side of the gear element, the gear element and hub portions having an axial bore through which the post member extends for the gear element to be rotatable concentrically to said first hub portion of said post member,
said housing top wall has an annular recess surrounding said downwardly extending second hub portion of the gear element and a bushing is installed in the recess, the bushing has a cylindrical opening in which said second hub portion of the gear element is journaled for rotation and said second hub portion has an annular shoulder bearing on said bushing for the bushing to prohibit axially downward shifting of the gear element,
a gear cover disposed on said top wall of the housing, and having a top wall spaced from the top wall to define a gear chamber, the top wall of the gear cover having a row of holes coaxial with said post members and a bushing disposed in the holes, respectively, said upwardly extending first hub portion being journaled for rotation in said bushing and said first hub portion having an annular shoulder bearing on the bushing for the bushing to prohibit axially upward movement of the gear element,
a lower end cap having a bottom wall in which there is an opening and side walls in triangular formation on which one end of a triangularly formed transparency panels fits,
means for attaching the lower end cap to said first upwardly extending hub portion of the gear element,
an upper end cap having a top wall in which there is an opening and side walls in triangular formation on which an opposite end of the triangularly formed transparency panel fits,
a guide plate having a plurality of equally spaced apart openings and the upper end caps are journaled for rotation coaxially of the openings,
said portion of said post members, respectively, projecting downwardly from said top wall providing a lamp socket for accommodating an end portion of a tubular lamp that extends through said upper and lower end caps and the openings in the guide plate.

5,483,766
COMBINED HANDGRIP AND TRIGGER GUARD FOR A FIREARM
Paul M. Hochstrate, Plantsville, and Michael E. Gamache, Tolland, both of Conn., assignors to Colt's Manufacturing Company Inc., West Hartford, Conn.
Filed Nov. 2, 1994, Ser. No. 333,284
Int. Cl.[6] F41A *11/00*
U.S. Cl. 42—75.03 **22 Claims**



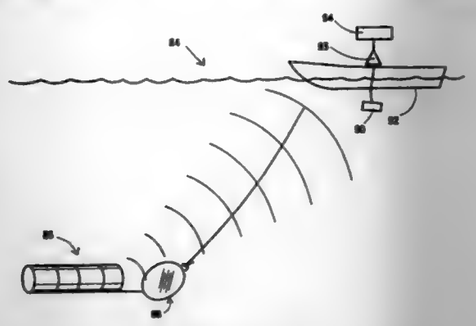
1. A firearm combined handgrip and trigger guard comprising:
a handgrip section; and
a trigger guard section extending from the handgrip section as a single cantilevered bean, a free end of the cantilever trigger guard section being adapted to be connected to a bottom of a frame of a firearm with the cantilever trigger guard section being deflected and spring loaded between the handgrip section and the frame of the firearm.

5,483,767

METHOD AND APPARATUS FOR LOCATING FISH

Alexander G. Langer, 94 St. Rose St., Jamaica Plain, Mass. 02130

Filed Jul. 13, 1993, Ser. No. 90,813
Int. Cl.[6] A01K *85/00*
U.S. Cl. 43—4 9 Claims



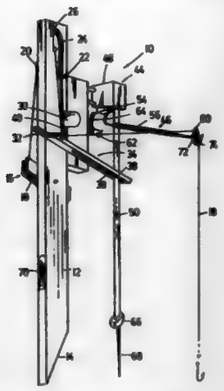
1. A fish detector assembly comprising:
a detector assembly body;
at least one sensor, disposed on said detector assembly body, for receiving underwater sensory information;
a power source, coupled to said sensor;
a position beacon assembly, coupled to said detector body, for emitting a beacon signal to identify the location of the fish detector assembly; and
an amplifier, coupled to said at least one sensor and said power source for amplifying signals provided thereto from said at least one sensor.

5,483,768

FISHHOOK SETTING DEVICE

Yvan Tessier, 913 St. Pierre, Drummondville, Quebec, Canada

Filed Sep. 27, 1994, Ser. No. 312,796
Int. Cl.[6] A01K *97/01;97/12*
U.S. Cl. 43—16 11 Claims



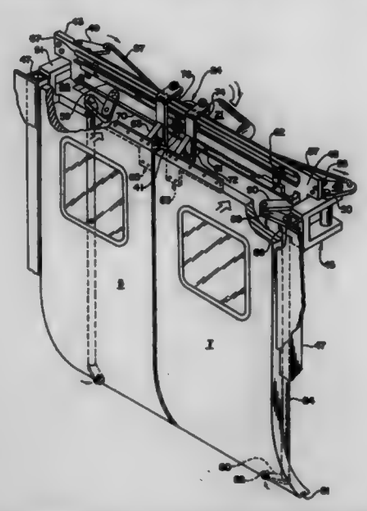
1. A fishhook setting device comprising:
elongated pole means;
means for securing said pole means in ice or snow or to other solid structure;
fishing line retaining means mounted to said pole means;
first rod means spring-mounted to said pole means at a distal end thereof;
first fishing line guide means at a free end of said first rod means;
lever means pivotally mounted to said pole means intermediate the ends thereof and including adjacent one end thereof latch means cooperable with said first guide means for latching said first rod means to said lever means in a set position of said first rod means;
adjustable recoil means mounted to said pole means between said lever means and said first rod means, said recoil means including extension means extendable from said recoil means against the bias of a recoil spring and having actuating means at the free end thereof, which actuating means is cooperable with said lever means at the other end thereof to move the lever means and release said first rod means from its set position;
second rod means spring-mounted to a locking member of said recoil means and having second fishing line guide means at the free end thereof, said second rod means serving to release said locking member and hence said extension means upon a fish accepting bait on a hook at the free end of the fishing line, said extension means then recoiling so as to actuate said lever means and release said first rod means, thereby rapidly jerking the line and hook to set the hook in a fish's mouth.

5,483,769

DOOR DRIVE EQUIPMENT FOR MASS TRANSIT VEHICLE

Marc Zwelil, Roxboro, Canada, assignor to Mark IV Transportation Products Corporation, Niles, Ill.

Filed Dec. 7, 1993, Ser. No. 164,120
Int. Cl.[6] E05C *7/06*
U.S. Cl. 49—118 9 Claims



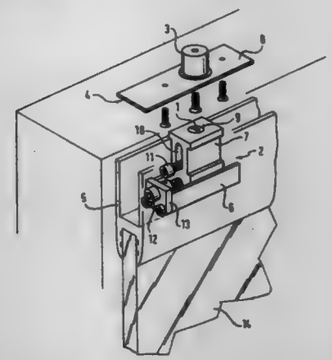
1. In an overhead power door operator driving externally sliding door panels to open, close, and plugged positions in an opening in a vehicle side wall, the improvement comprising:
a side wall;
car structural members in said side wall, said members defining an opening having vertical edges;
a pair of door panels;
a base plate having opposite ends, and upper and lower edges for mounting a power operator;
means mounting said base plate in said opening and overhead said panels, said base plate ends adjacent said vertical edges;
a drive motor in said operator having a housing and a rotating output shaft, said shaft journaled in a drive motor housing, for delivering output shaft torque of a first magnitude, said housing providing an equal and opposing torque;
means mounting said drive motor housing on said base plate;
drive means on said base plate coupled to said output shaft, said drive means supporting and moving said panels for reciprocal panel movement away from a position closing said opening to a position away from said opening outside of and along said side wall, and from said outside-side wall position to a position closing said opening on application of said drive motor output shaft torque of said first magnitude, said reciprocal panel movement defining door open and door closed positions, respectively;
means in said drive motor housing mounting means intermediate said motor housing and base plate for releasably coupling said housing and base plate, said coupling providing limited lost motion between said housing and base plate when said drive motor output shaft torque reaches a second magnitude for a door closed position;
means shifting said base plate, said shifting means providing base plate motion perpendicular to said car side wall, for a door closed position, said shifting means moving closed door panels into and out of said opening, thereby establishing plugged and unplugged door positions, respectively;
means intermediate said drive motor housing and shifting means, for transmitting said motor housing lost motion to said base plate, thereby plugging or unplugging said opening;
means selectively energizing and directing said drive motor, providing said drive motor output shaft torque of said first magnitude for moving doors from said door open to door closed and unplugged position and said drive motor output shaft torque of said second magnitude for shifting said doors from closed to plugged position, and from plugged to open positions.

5,483,770

DOOR OR WINDOW MOUNTINGS

Mario Marinoni, Magenta, Italy, assignor to Societa Italiana Progetti S.r.l., Magenta, Italy

Filed Nov. 28, 1994, Ser. No. 345,487
Claims priority, application Germany, Nov. 29, 1993, 9318246 U
Int. Cl.[6] E05D *7/08*
U.S. Cl. 49—388 4 Claims



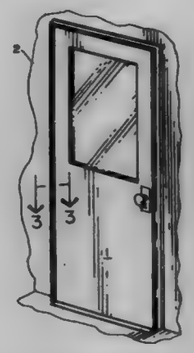
1. A door or window mounting comprising a first mounting member (2) having a pivot pin (1), said first mounting member being formed as an insert member fixable within a U-shaped rail (5) or recess, a second mounting member (4) formed as a bearing bushing (3) with a fixing panel (8) on the side pointing in the direction of and accommodating the pivot pin (1), the pivot pin (1) being slidable in its axial direction within a receiving bore (9) in the insert member, the insert member including a side member (7) provided with a lateral elongated hole (10) along the pivot pin (1), a fixing screw (11) extending through said elongated hole (10) and screwed into the pivot pin (1) which is fixable with respect to the insert member by means of said fixing screw, the insert member including a slideway (6) fixable with respect to the U-shaped rail (5), the slide member (7) accommodating the pivot pin (1) and guided in a manner such that it is adjustable by means of a regulating screw (12), the side member (7) including a crossing bore (15) aligned with one end of the elongated hole (10) and disposed opposite the pivot pin (1), the crossing bore (15) extending perpendicular to the longitudinal axis of the pivot pin (1) and receiving the free end of the fixing screw (11).

5,483,771

DOOR HINGE AND MOUNT

Walter Herbst, 86 Salem La., Evanston, Ill. 60203

Filed Sep. 27, 1994, Ser. No. 313,002
Int. Cl.[6] E06B *1/04*
U.S. Cl. 49—504 6 Claims



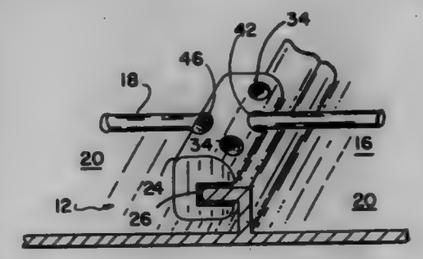
4. A door hinge mount for use with an elongate endless hinge to secure the hinge to a door and to a door frame comprising, in combination,
a body portion having a flat elongate face portion proportioned for engagement by the elongate hinge,
a depending face portion on the mount for engagement with the frame,
a bridge-like member portion of the mount extending toward the frame from the face portion of the mount terminating in a foot portion having a plurality of fastening members to secure the same to a door frame,
and a curvilinear cover stop as an extension outwardly from the flat mounting portion and curving in a direction to terminate approximately in shadowing relationship to the elongate endless hinge.

5,483,772

MOUNTING DEVICE FOR BUILDING SURFACES

Robert M. M. Haddock, 8655 Table Butte Rd., Colorado Springs, Colo. 80908

Continuation-in-part of Ser. No. 912,845, Jul. 13, 1992, Pat. No. 5,228,248. This application Jul. 13, 1993, Ser. No. 91,176
Int. Cl.[6] E04D *13/10*
U.S. Cl. 52—25 18 Claims



1. A mounting device attachable to a raised portion on a building surface, said mounting device comprising:

a unitary mounting body comprising first and second generally longitudinally extending and laterally displaced side surfaces, generally longitudinally extending and vertically displaced upper and lower surfaces, and longitudinally displaced first and second ends;

a slot integrally formed in said mounting body and defining a portion of said lower surface, said slot defining a portion of each of said first and second ends and extending between said first and second ends, said slot comprising first and second sidewalls and being adapted for receiving at least an upper part of said raised portion;

first and second mounting cavities in said mounting body, said first mounting cavity being on said upper surface for providing attachment capabilities to said mounting body when said mounting device is in a first orientation on said raised portion, said first orientation being utilized when said upper part of said raised portion on said building surface protrudes primarily away from said building surface whereby when said mounting device interfaces with said raised portion said slot projects primarily toward said building surface and encases said upper part of said raised portion and at least a portion of said upper surface having said first mounting cavity being oriented to project primarily away from said building surface, said second mounting cavity being on said first side surface for providing attachment capabilities to said mounting body when said mounting device is in a second orientation on said raised portion, said second orientation being utilized when said upper part of said raised portion on said building surface protrudes primarily laterally in relation to said building surface whereby when said mounting device interfaces with said raised portion said slot projects primarily laterally in relation to said building surface and encases said upper part of said raised portion and at least a portion of said first side surface having said second mounting cavity being oriented to project primarily away from said building surface; and

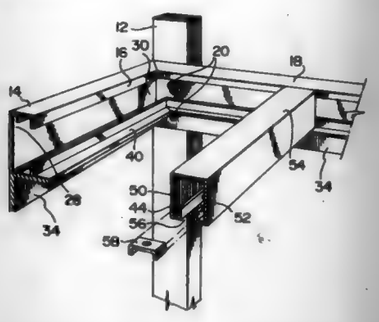
a securing assembly comprising a first hole extending from one of said side surfaces through said mounting body to interface with said slot and a first member positionable within said first hole and being extendable within said slot to secure at least said upper part of said raised portion within said slot by engaging said upper part of said raised portion within said slot with said first member.

5,483,773

PREFABRICATED BALCONY

Harvey E. Parisien, Kingston, Canada, assignor to Alcuf Inc., Kingston, Canada

Filed May 17, 1994, Ser. No. 243,692
Claims priority, application Canada, May 28, 1993, 2097213
Int. Cl.[6] E04B *1/00*
U.S. Cl. 52—73 **5 Claims**



4. In a metal structure including a frame secured to a wall and tubular support posts, and frame members and cross members on the frame for supporting floorings, each frame member of said frame comprising:

a top wall, a bottom wall, an interconnecting wall and a partial front wall defining a substantially C shaped cross section;

a downwardly directed rib on an inner face of said top wall and an upwardly directed rib on said bottom wall to define a keyway, and

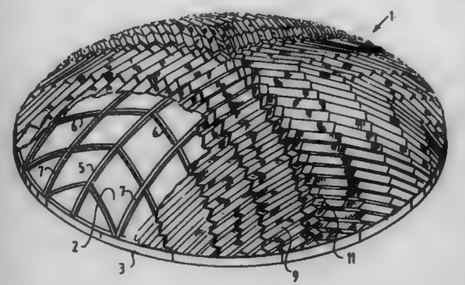
a horizontal flange extending from said bottom wall whereby corner keys received in said keyways join the adjacent-ends of said frame members disposed at right angles thereby forming said frame, the cross members are supported by said horizontal flanges for supporting the flooring and whereby the frame members are secured to said wall and to said tubular posts.

5,483,774

CONSTRUCTION ACCORDING TO A DOUBLE-CURVED SURFACE

Bernadinus F. A. Siemerink, Buitenvest 2,, NL-4931 CH Geertruidenberg, and Wilhelmus J. J. Huisman, Stationsweg 1, NL-5674 TS Nuenen, both of, Netherlands

PCT No. PCT/NL92/00135, § 371 Date Mar. 30, 1994, § 102(e) Date Mar. 30, 1994, PCT Pub. No. WO93/03233, PCT Pub. Date Feb. 18, 1993
PCT Filed Jul. 24, 1992, Ser. No. 190,055
Claims priority, application Netherlands, Jul. 30, 1991, 9101309
Int. Cl.[6] E04B *1/32*
U.S. Cl. 52—81.2 **14 Claims**



1. A construction formed in accordance with a double curved substantially spherical skin-shaped surface having a center and a peripheral edge, the construction comprising:

a number of regularly distributed primary main elements extending radially along the construction from the center to the edge;

a number of secondary main elements corresponding with the number of primary main elements and extending radially intermediate the primary main elements;

a plurality of primary sub-elements, each said primary sub-element extending parallel to a closest of one of said primary main elements from the secondary main elements towards the edge, said primary main elements and said primary sub-elements each being spaced apart a distance such that the distances between the primary main elements and adjacent primary sub-elements and the distance between each pair of adjacent primary sub-elements are substantially equal;

characterized by:

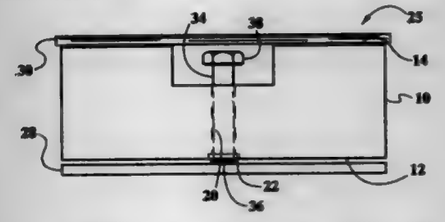
strips of substantially flat, slightly flexible material extending to the edge from each secondary main element between each pair of adjacent primary sub-elements and between each primary main element and the adjacent primary sub-elements, the strips being supported by the primary sub-elements and the primary main elements, and each strip having a width at least as large as the distances between adjacent primary sub-elements.

5,483,775

ADJUSTABLE SETTING BLOCK ASSEMBLY

Ronald E. Redman, Lawrenceville, Ga., assignor to Kawneer Company, Inc., Norcross, Ga.

Filed Feb. 9, 1994, Ser. No. 193,932
Int. Cl.[6] E06B *1/04*
U.S. Cl. 52—204.62 **20 Claims**



1. An adjustable setting block assembly for supporting and leveling window panes and the like, comprising:

a block having an upper surface and a lower surface, said block having a recess formed in said upper surface, and said block defining a threaded bore between said lower surface and said recess;

a thrust plate positioned adjacent said lower surface of said block; and

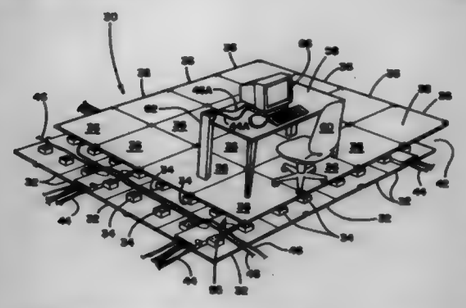
a bolt threadingly engaged with said threaded bore of said block, said bolt having a tip which bears against said thrust plate as said bolt is advanced within said threaded bore such that a load exerted on said upper surface of said block is supported by said tip of said bolt bearing against said thrust plate, and said bolt comprising a means at its upper end which can be engaged by a tool to turn said bolt.

5,483,776

UTILITY FLOOR CONSTRUCTION

Robert P. Poppe, Grand Rapids, Mich., assignor to Steelcase, Inc., Grand Rapids, Mich.

Filed May 18, 1993, Ser. No. 63,580
Int. Cl.[6] E04B *5/48*; H02G *3/26*
U.S. Cl. 52—220.3 **39 Claims**



1. A utility floor construction, comprising:

a plurality of base tiles shaped to be abuttingly supported on a floor surface in a side-by-side configuration, and having pedestals upstanding therefrom at a preselected height;

a plurality of rigid floor tiles supported on said pedestals in a side-by-side configuration, and defining a generally closed cavity between said base tiles and said floor tiles to route multiple utilities therethrough;

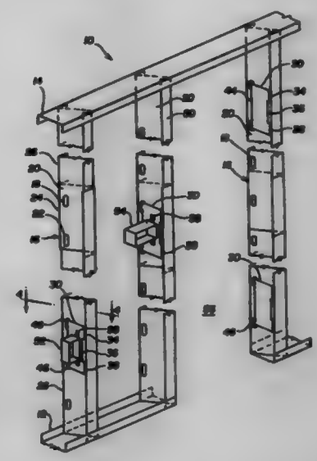
a plurality of separator channels, each having an inverted generally U-shaped closed configuration with open ends, opposing vertical flanges shaped to be received between adjacent pedestals, and a horizontal web positioned at a height substantially less than the height of said pedestals; said separator channels being positioned end-to-end on said base tiles between said pedestals to form a continuous enclosed raceway channel that divides said cavity into first and second raceways which are physically isolated from one another, whereby a first utility is laid onto said base tiles and routed between a first series of said pedestals to define said first raceway, a second utility is laid onto said base tiles and routed between a second series of said pedestals to define said second raceway, and said separator channels are positioned end-to-end over one of said first and second utilities to physically separate said first and second utilities from one another.

5,483,777

UTILITY BOX MOUNTING PLATE AND Z-STUD

Robert J. Meschetti, Buffalo, and Matthew J. Kessler, Depew, both of N.Y., assignors to National Gypsum Company, Charlotte, N.C.

Filed Jan. 31, 1994, Ser. No. 189,852
Int. Cl.[6] E04B *2/60*
U.S. Cl. 52—481.1 **18 Claims**



7. In combination, a Z-stud and an attachment plate, said Z-stud having two parallel flanges and an angled web connecting the flanges, said attachment plate comprising a generally flat, rectangular metal plate, said plate having opposed first and second side edges, said first side edge having a plurality of narrow, elongate tongues, each extending along a portion of said first side edge, said tongues being in different planes and forming, from an end view of said attachment plate, a V-groove, at least one of said flanges having an inwardly directed lip on an edge thereof and said V-groove being operable to receive said lip, and said second side edge having means for attaching said second side edge to said web adjacent the other of the flanges with said plate extending substantially perpendicular to said flanges, said Z-stud further having said angled web and said parallel flanges extending in opposite directions from edges of said angled web, each of said flanges having said inwardly directed lip on the edge thereof, said inwardly directed lip on said one flange extending into said V-groove on said first side edge of said attachment plate, said second side edge of said attachment plate being affixed to said angled web closely adjacent the other of said flanges.

5,483,778

MODULAR PANEL SYSTEM HAVING A RELEASABLE TONGUE MEMBER

Paul Scrivener, Lot 48, Coulson Road, Moubulk, Victoria, 3973, Australia

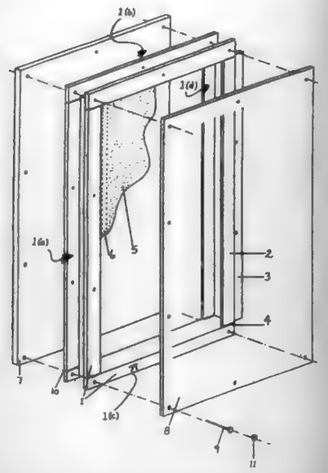
PCT No. PCT/AU92/00145, § 371 Date Oct. 29, 1993, § 102(e) Date Oct. 29, 1993, PCT Pub. No. WO92/17662, PCT Pub. Date Oct. 15, 1992

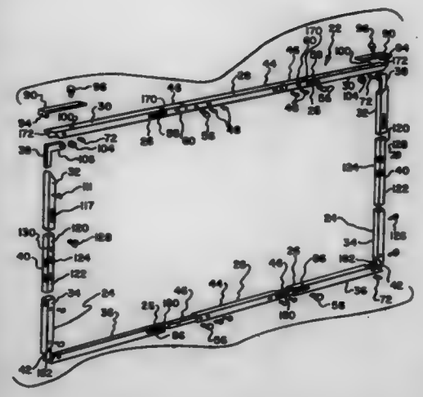
PCT Filed Apr. 3, 1992, Ser. No. 122,414

Claims priority, application Australia, Apr. 3, 1991, PK5371/91

Int. Cl.[6] E04B *2/18*

U.S. Cl. 52—579 **22 Claims**





1. A modular construction panel system comprising:

a plurality of panels each formed by a rectangular frame, said frame including a rectangular border defined by four channel elements, said channel elements having substantially similar U-shaped cross-sections, a first pair of said channel elements forming left and right vertical panel edges and a second pair of said channel elements forming horizontal top and bottom panel edges, one of said first pair of channel elements oriented with a hollow portion facing outward, while a second of said first pair of channel elements oriented with a hollow portion facing inward so that a planar face of said second channel element defines said border along one vertical panel edge;

bracing in the form of skin or cladding attached to at least two of said channel elements, said bracing defining sides of a panel parallel to a plane defined by said rectangular frame; and

a tongue element having a flat face and being demountably attachable to said panel in either of two configurations, said tongue element forming an edge joiner when said flat face attaches to the planar face of said second channel element, and said tongue forming a corner joiner when said flat face attaches to the bracing adjacent said border, said edge joiner and said corner joiner for connecting adjacent edges of two panels disposed in a single plane and in two perpendicular planes, respectively.

5,483,779

HEADER FRAME FOR A DISPLAY SYSTEM

John Crawford, Valrico, Fla., and Edward Boer, Flesherton, Canada, assignors to Exposystems, Inc., Tampa, Fla.

Filed Jul. 8, 1993, Ser. No. 88,885

Int. Cl.[6] E04C *2/40*

U.S. Cl. 52—645 **17 Claims**

1. A header frame for a display system comprising a pair of frame portion assemblies, means for detachably joining said frame portion assemblies so that the header frame has a rectangular shape for set-up an take-down of the header, each of said frame portion assemblies including a plurality of frame members and hinge means for folding said frame members relative to each other so that said frame portion assemblies are foldable to a compact shape, and means for mounting the header frame in a display system, wherein said joining means comprises a pair of elongate members and means for attaching each of said elongate members to respective end portions of said frame portion assemblies.

5,483,780

PLANAR OR THREE-DIMENSIONAL CEILING LATTICEWORK CONSISTING OF BARS AND JOINT-FITTINGS, IN PARTICULAR A WALK-ON CEILING LATTICE

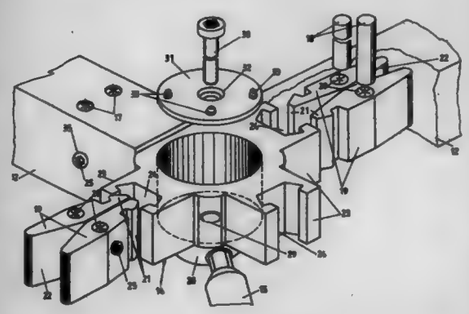
Walter Stumpf, Höchberg, Germany, assignor to MERO-Raumstruktur GmbH & Co. Wurzburg, Wurzburg, Germany

Filed Mar. 18, 1994, Ser. No. 210,501

Claims priority, application Germany, Mar. 19, 1993, 43 08 745.0

Int. Cl.[6] E04H *12/10*

U.S. Cl. 52—650.3 **16 Claims**



1. A ceiling latticework consisting of chord bars and joint-fittings and pillars for supporting said ceiling lattice, characterized in that the pillars (**11**) and joint-fittings (**14**) evince identical right-cylindrical cross-sectional contours and longitudinal flutings and wherein, in connection zones where the pillars meet the chord bars, the pillars (**11**) replace the joint-fittings (**14**) each of said chord bars (**12, 38,**) comprising hollow rectangular sections of the ceiling lattice (**10, 110, 210, 310**) connected to the joint-fittings (**14**) and the pillars (**11**) by means of clamping locks (**18–22**) affixable in flutings (**24**) of said pillars and said joint fittings.

5,483,781

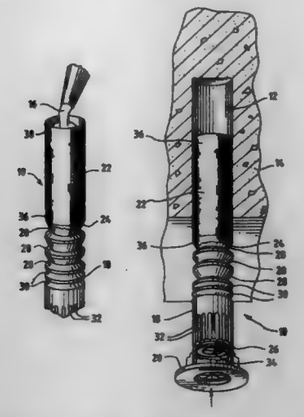
CONSTRUCTION FASTENER ASSEMBLY

Richard J. Ernst, Palatine, and Mark S. Timmerman, Elgin, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Jun. 13, 1994, Ser. No. 258,841

Int. Cl.[6] E21D *20/02*

U.S. Cl. 52—698 **15 Claims**



1. A construction fastener assembly to be secured with an adhesive within a bore of a structure such as masonry, concrete, metal, or the like, comprising:

an elongate fastener member having a shank portion, a first end for insertion within bore of structure, and a second opposite end which is accessible from a position exterior of said bore when said fastener member is inserted within said bore of said structure; and

a collapsible adhesive retaining means having one end thereof secured to said first end of said fastener member and a second opposite open end accepting an adhesive therein, for flexibly collapsing upon continued insertion of said adhesive retaining means and said fastener member within said bore of said structure such that said adhesive retaining means is confined between said first end of said fastener member and the interior end of said bore when said adhesive retaining means is collapsed upon full insertion of said adhesive retaining means and said fastener member within said bore of said structure, and for ejecting said adhesive out from said second open end of said adhesive retaining means and into said bore of said structure so as to annularly surround said shank portion of said fastener member and thereby secure said fastener member within said bore of said structure when said adhesive retaining means is collapsed upon full insertion of said adhesive retaining means and said fastener member within said bore of said structure.

5,483,782

LOAD BEARING BEAM HAVING CORROSION RESISTANT CLADDING

Donald M. Hall, P.O. Box 1247, Progress St., Kingston, N.Y. 12401

Filed Jan. 3, 1994, Ser. No. 176,986

Int. Cl.[6] E04C *3/30*

U.S. Cl. 52—730.1 **20 Claims**

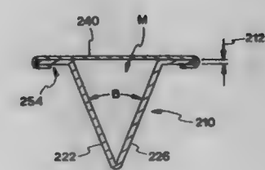
1. A beam comprising:

a) a substantially V-shaped main load-bearing member;

b) said substantially V-shaped main load-bearing member including a left and a right leg;

c) a left flange disposed on said left leg and extending outwardly therefrom;

d) a right flange disposed on said right leg and extending outwardly therefrom;



e) an apex defined by said V-shaped main load-bearing member;

f) said apex joining said left and said right;

g) a mouth defined by said V-shaped load-bearing member, said mouth being spaced opposed from said apex; and

h) a cladding member disposed on said V-shaped main load-bearing member, defining a support surface, and substantially covering said mouth.

5,483,783

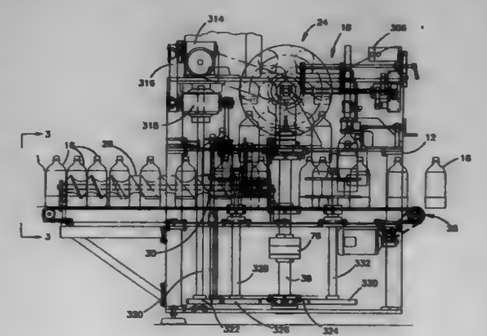
HIGH SPEED SLEEVER

Hershey Lerner, Aurora, and Dana J. Liebhart, Cuyahoga Falls, both of Ohio, assignors to Automated Label Systems Company, Twinsburg, Ohio

Filed Nov. 7, 1991, Ser. No. 789,257

Int. Cl.[6] B65B *53/00; 11/06; 7/28*

U.S. Cl. 53—399 **66 Claims**



1. A method of placing an inherently resilient film sleeve on an object comprising:

disposing the film sleeve around a set of circularly arranged pins which are arranged about a center axis and are movable toward and away from the axis;

stretching the film sleeve by moving the pins away from the axis;

relatively moving the object and the sleeve to position the sleeve around the object while simultaneously introducing air between the sleeve and the object to develop a fluid film therebetween and stretch the sleeve;

thereafter stopping the air flow to shrink the sleeve due to its inherent resiliency onto the object and dispel air from between the sleeve and object; and,

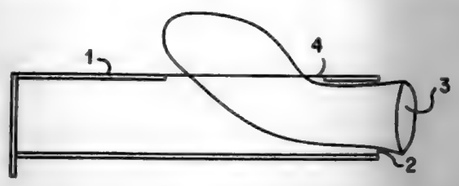
separating the object and sleeve from the pins after the air flow substantially stops.

5,483,784

METHOD AND APPARATUS FOR LOADING BAGS

Joseph E. Owensby, Spartanburg; Howard D. Conner, Mauldin, and Frederick A. Dobbins, Lyman, all of S.C., assignors to W. R. Grace & Co.-Conn., Duncan, S.C.

Filed Aug. 31, 1993, Ser. No. 114,791
Int. Cl.[6] B65B *43/26;1/04;5/00;43/42*
U.S. Cl. 53—459 19 Claims



1. A method of loading a product, including the steps of:

a) loading a bag, having a closed end and an open end, into a horn having a closed end, an open end, and an opening in the side of said horn, such that the bag is loaded into the opening in the side of the horn and the open end of the bag protrudes out of the open end of the horn;

b) pulling the open end of the bag over the open end of the horn, thereby starting to invert the bag over the outside of the horn;

c) continuing to invert the bag over the outside of the horn until the whole bag is inverted and the closed end of the bag covers the open end of the horn;

d) introducing the open end of a product loading chute, containing a product to be loaded into the bag which has been inverted over the horn, a short distance into the open end of the horn, thereby starting to force the bag back into the inside of the horn;

e) introducing the product into the bag using a product discharge means and forcing substantially all of the bag back into the interior of the horn, leaving an amount of the bag adjacent to the bag opening sufficient to allow heat sealing, inverted over the outside of the horn; and

f) discharging the now product loaded bag from the opening in the side of said horn;

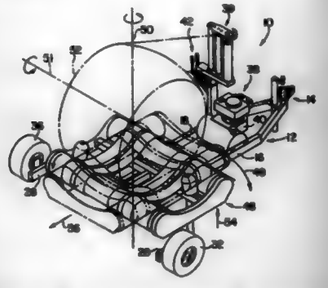
thereby producing a product loaded bag having a contamination free area of the bag adjacent to the bag opening sufficient for forming a heat seal by a heat sealing means.

5,483,785

APPARATUS FOR WRAPPING BALES OF SILAGE

Joseph A. DiCarlo, Prospect, Conn., assignor to DiCarlo Machine Corporation, Prospect, Conn.

Filed Jun. 17, 1994, Ser. No. 261,399
Int. Cl.[6] B65B *53/00;11/56*
U.S. Cl. 53—556 10 Claims



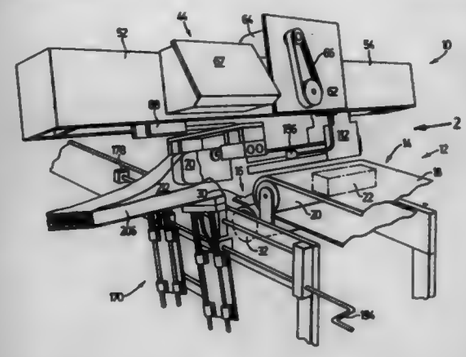
1. In a silage bale wrapping apparatus for attachment to a of a propelling vehicle and having a generally rectangular bale table, a chassis, table supporting means for mounting the bale table on the chassis to rotate about a vertical axis and tilt about a horizontal axis relative to the chassis, first and second bale rollers supported by the bale table for rotation about parallel horizontally disposed axes, at least two endless belts carried by the bale rollers for supporting a bale of silage on the bale table, and dispensing means for delivering stretchable plastic film to the bale table to wrap a bale supported on the table, the improvement wherein said table has a frame including longitudinally extending first and second roller support side frame members each of said side frame members having opposite first and second free ends, transverse support members connected to and extending between said first and second side frame members inboard of said free ends and maintaining said first and second side frame members in parallel transversely spaced apart relation to each other, said table supporting means being connected to said traverse support members of said frame and providing the sole support for said bale table, said first and second free ends extending outwardly in opposite directions and in cantilever positions beyond said transverse support members, said first and second bale rollers being solely supported on said frame by said free ends, at least one of said belts being supported on said bale rollers between said table supporting means and one of said side frame members, said one of said belts being freely removable from said frame and in the direction of said one of said side members without disassembly of said bale table.

5,483,786

APPARATUS FOR PACKAGING ARTICLES

Ken Giesbrecht, Jordan Station, and Stefan Gudmundsson, Georgetown, both of, Canada, assignors to Technopac, Inc., Canada

Continuation-in-part of Ser. No. 69,732, Jun. 1, 1993. This application Sep. 29, 1993, Ser. No. 128,297
Int. Cl.[6] B65B *43/34*
U.S. Cl. 53—570 29 Claims



1. An apparatus for packaging articles comprising:

an article holding unit to receive and hold an article to be packaged;

a bag transfer unit to carry a bag in which said article is to be placed; and

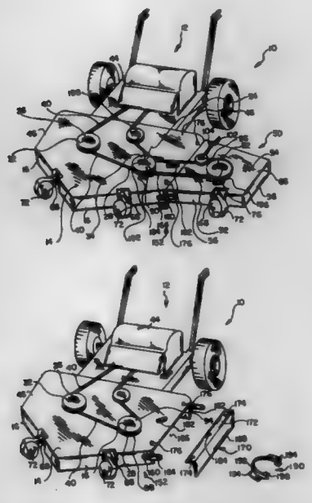
a drive acting on said article holding unit and said bag transfer unit, said drive reciprocating said article holding unit between an article holding position and a retracted position to one side apparatus and reciprocating said bag transfer unit between a bag collecting position adjacent an opposite side of said apparatus and an article packaging position wherein a bag carried by said bag transfer unit surrounds an article held by said article holding unit in said article holding position.

5,483,787

PIVOTING AUXILIARY BLADE APPARATUS FOR LAWN MOWER

Joseph E. Berrios, 975 NW. 114th Ave., Coral Springs, Fla. 33071

Continuation-in-part of Ser. No. 109,327, Aug. 19, 1993. This application Aug. 17, 1994, Ser. No. 291,686
Int. Cl.[6] A01D *35/00*
U.S. Cl. 56—10.1 9 Claims



1. In combination, an auxiliary blade apparatus and a walk behind lawn mower comprising an engine, a mower blade, a mower deck over said mower blade having side edges, a mower drive shaft extending from said mower blade to mower blade drive means drivably connected to said engine, said combination, comprising:

an auxiliary deck pivotally connected to said lawn mower, to pivot upward to permit said mower to pass through a narrow gate in a yard fence, and downward to extend the width of the cutting area of said mower to widen the path said mower can cut,

an auxiliary blade fastened to an auxiliary drive shaft extending through said auxiliary deck and fastened to auxiliary drive means connected to said mower blade drive means,

wherein said auxiliary deck is pivotally joined to said one of said mower deck edges with a hinge assembly comprising:

a connecting member having a first end and a second end extending between said mower deck and said auxiliary deck, said connecting member first end being attached to said mower deck with a first hinge means and said connecting member second end being attached to said auxiliary deck with a second hinge means, such that said first and second ends of said connecting member pivot during mower use to permit said auxiliary deck to move relative to said mower deck.

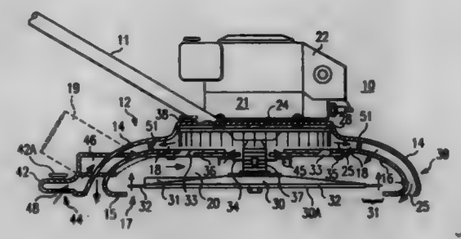
5,483,788

CUTTING APPARATUS MULCH RECYCLE SYSTEM

Arthur L. Fassauer, 420 Foster La., Canyon, Tex. 79015

Continuation of Ser. No. 86,347, Jun. 29, 1993, which is a continuation-in-part of Ser. No. 857,766, Mar. 26, 1992, Pat. No. 5,205,113, which is a continuation-in-part of Ser. No. 528,718, May 24, 1990, Pat. No. 5,101,615. This application Feb. 28, 1995, Ser. No. 396,276
Int. Cl.[6] A01D *53/00*
U.S. Cl. 56—12.1 20 Claims

1. A mulching apparatus, comprising:



a housing substantially endless having an open bottom, having an air moving means located in said housing, said housing having an outer shroud, said housing defining a substantial enclosed cutting chamber, the outer shroud overlaying a predetermined portion of an inner shroud chamber;

a drive motor including rotatable shaft supporting impeller means and cutting means;

mulching means having energy forces and associated with said impeller means for projecting forces of pressure and vacuum that simultaneously promotes energy forces to achieve mulching as well as flotation of said housing above a support surface and in combination with a wheel support whereby air moving means are defined as to pressure and vacuum, whereby said impelling means may be supported in either said inner or outer shroud to function as vacuum means for creating a vacuum within said housing or pressure means for creating a pressure within said housing, and further comprising the air intake as said vacuum means communicating with said impeller means to provide a maximum vacuum force having multiple functions as to provide an aft vacuum module supported along the aft portion of said outer shroud, said module having a vacuum slot, said aft vacuum module being coupled to said vacuum means, for vacuuming/suction of cut grass clippings on surface area of mowed grass and said cut clippings conveyed through a vacuum shroud/chamber in and through said impeller means to the pressure side of said impelling means for recycling and recutting and pressurizing to soil level; and

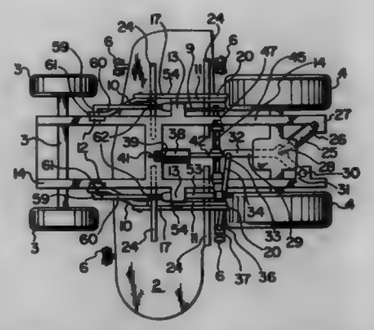
a molded disk module having support means and multiple swivel cutting tensile steel extensions.

5,483,789

LATERALLY MOVABLE GRASS CUTTING MOWER ATTACHMENT

Elwyn W. Gummerson, R.R. #2, Tavistock, Ontario, Canada

Filed Apr. 22, 1994, Ser. No. 231,132
Int. Cl.[6] A01D *34/64*
U.S. Cl. 56—15.5 8 Claims



1. In combination, a motor driven vehicle having front wheels and rear wheels and a longitudinally-extending frame bed therebetween, and a transversely-mounted powered grass cutting mower, having a housing and powered grass cutting blades, mounted to the

frame bed by means of a suspending mounting system, said suspended mounting system comprising:

(i) transversely-mounted track means which are pivotally-secured by a parallelogram linkage to said longitudinally-extending frame bed of said motor driven vehicle, said track means including first powered operating means for moving said transversely-mounted track means and thus for moving said mower housing through an infinite number of vertical locations between an upper limit and a lower limit; and

(ii) roller means rollingly operatively associated with said transversely-mounted track means, said track means being mounted on said mower housing and a second powered operating means, for moving said mower housing through linkage means connected to said mower housing through an infinite number of lateral locations between a left lateral limit and a right lateral limit.

5,483,790

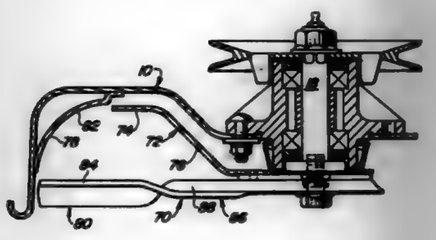
ROTATING MOWER BAFFLE MACHANISM

John B. Kuhn, Rubicon; Daniel J. Kettler, Horicon, and David K. Stricker, Columbus, all of Wis., assignors to Deere & Company, Moline, Ill.

Continuation-in-part of Ser. No. 121,817, Sep. 15, 1993, abandoned. This application Mar. 11, 1994, Ser. No. 212,071

Int. Cl.[6] A01D *34/00*

U.S. Cl. 56—17.5 **9 Claims**



1. A mower mechanism comprising:

a rotatively driven spindle,

a blade having a radially inner portion coupled for rotation with the spindle and a radially outer portion for cutting vegetation, said outer portion having an upturned portion for directing air and clippings upwardly,

a housing within which the blade rotates,

a stationary baffle positioned generally above the outer portion of the blade, said stationary baffle extending obliquely with respect to the blade such that the air and clippings directed upwardly from the outer portion of the blade strike the stationary baffle and are directed radially inwardly,

a disc operatively carried within the housing for rotation with the blade and having a radially outer portion spaced above the blade, said disc including an inner portion extending radially inwardly from the outer portion of the disc, said inner portion extending obliquely with respect to the blade such that the air and clippings directed inwardly from the stationary baffle can strike the inner portion of the disc and be directed downwardly toward the blade.

5,483,791

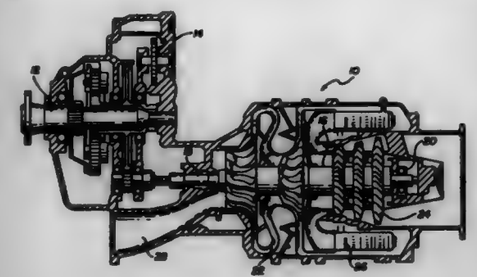
TURBOPROP WITH IMPELLER INLET STRAKE

Rangnath A. Kotwal; Jacob S. Obayomi, both of Phoenix; Henry J. Ruzicka, Mesa, and William F. Waterman, Scottsdale, all of Ariz., assignors to AlliedSignal Inc., Morris Township, N.J.

Filed Jun. 14, 1994, Ser. No. 259,595

Int. Cl.[6] F02C *7/04*

U.S. Cl. 60—39.31 **4 Claims**



1. I a gas turbine engine having in flow series arrangement a compressor, a combustor and a turbine, said engine comprising:

a crescent shape air inlet;

an annular plenum defined by an outer annular wall circumscribing and radially spaced from an inner annular wall and disposed between said inlet and said compressor;

a support member extending between said inner and outer annular walls and disposed in said plenum; and

a strake member extending from said support member towards said compressor and angled from said support member in a direction opposite the direction of rotation of said compressor.

5,483,792

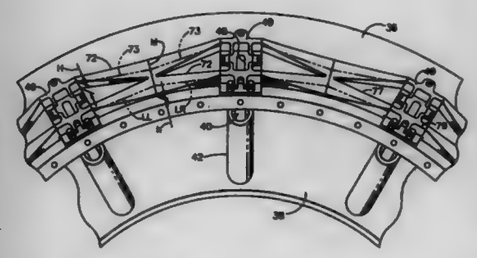
TURBINE FRAME STIFFENING RAILS

Robert P. Czachor, Cincinnati, and Michael L. Barron, Loveland, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 58,613, May 5, 1993, abandoned. This application Aug. 2, 1994, Ser. No. 284,702

Int. Cl.[6] F02C *7/20*

U.S. Cl. 60—39.31 **24 Claims**



1. A gas turbine engine frame comprising:

an outer structural ring disposed coaxially about an axial centerline axis;

an inner structural ring disposed coaxially with said outer structural ring and spaced radially inward therefrom;

a plurality of circumferentially spaced apart struts fixedly joined to and radially extending between said outer and inner structural rings;

at least one circumferentially extending stiffening rail, said rail being disposed around said outer structural ring and having a plurality of first sections between adjacent ones of said struts;

each of said first sections having a substantially constant radial cross-sectional area and a substantially linear distribution of cross-sectional centroids such that said centroids lie along at least one substantially straight line in a first plane which is parallel to and spaced apart from a second plane; and

said second plane is substantially tangential to said outer structural ring mid-way between said adjacent struts.

5,483,793

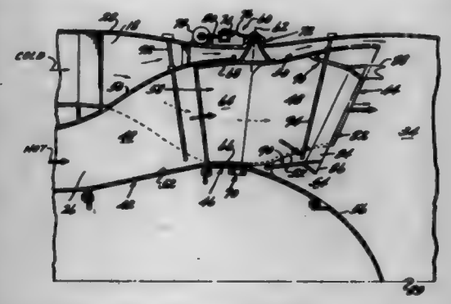
INFRARED RADIATION SUPPRESSION DEVICE

Barry Weinstein; John M. Koshoffer, and Roy E. Moyer, all of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Sep. 2, 1970, Ser. No. 78,334

Int. Cl.[6] F02K *3/10;3/06*

U.S. Cl. 60—261 **8 Claims**



1. A gas turbine engine including, in combination,

a core engine including a compressor, a combustor and a first turbine arranged in serial flow relationship for generating a hot gas stream,

a second turbine downstream of said first turbine,

a duct,

a fan upstream of said compressor and operatively connected to said second turbine for pressurizing a stream of air in said duct,

means for mixing at least a portion of said fan stream and said hot gas stream,

nozzle means downstream of said mixing means for discharging said mixed streams to provide propulsive thrust for said engine,

said mixing means including upstream and downstream portions axially spaced apart and defining an annular array of alternating first and second chutes, said upstream first and second chutes adapted to receive, respectively, said hot gas stream and said fan stream, and means for selectively communicating said downstream first and second chutes with alternate ones of said upstream first and second chutes disposed between said mixer portions and comprising means to divert the stream efflux from each upstream chute to selective ones of the downstream chutes, whereby the temperature of the downstream mixer portion and, hence, emitted infrared radiation therefrom may be selectively reduced.

5,483,794

MULTI-HOLE FILM COOLED AFTERBURNER COMBUSTOR LINER

Robert A. Nicoll, Beverly, and John W. Vdoviak, Marblehead, both of Mass., assignors to General Electric Company, Cincinnati, Ohio

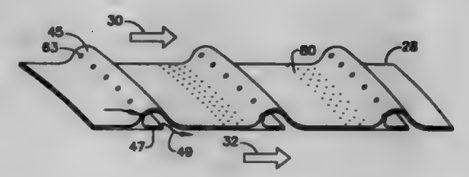
Division of Ser. No. 66,609, May 21, 1993, which is a continuation of Ser. No. 667,165, Mar. 11, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 473,802

Int. Cl.[6] F02K *3/10*

U.S. Cl. 60—261 **2 Claims**

1. A gas turbine engine afterburner comprising:

an outer annular casing;



an afterburner liner spaced radially inward from said outer casing;

a cooling flowpath between said casing and said liner operable to conduct a cooling flow wherein said flowpath converges in the direction of the cooling flow;

said afterburner liner having a cold surface facing said cooling flowpath and a hot surface on the other side of said afterburner liner and a film cooling means disposed through said afterburner liner, said film cooling means comprising a plurality of small, closely spaced film cooling hole patterns angled sharply in the downstream direction; and

a plurality of cooling nuggets wherein each of said nuggets is disposed upstream of and apart from a respective one of said cooling hole patterns.

5,483,795

EXHAUST PURIFICATION DEVICE OF INTERNAL COMBUSTION ENGINE

Kenji Katoh, Shizuoka; Takuta Inoue; Hidetaka Nohira, both of Mishima; Kiyoshi Nakanishi, Susono; Satoshi Iguchi, Mishima; Tetsuro Kihara, Susono; Manato Gotoh, Toyota; Takanitsu Asanuma, Susono; Hiroshi Okano; Jun Harada, both of Toyota; Shinichi Takeshima, Susono; Masahiko Sugiyama, Mishima; Shigenori Sakurai, Toyota; Kenji Ohkubo, Toyota, and Mikio Murachi, Toyota, all of, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

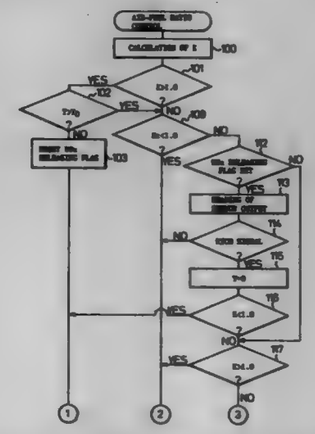
PCT No. PCT/JP94/00850, § 371 Date Sep. 15, 1994, § 102(e) Date Sep. 15, 1994, PCT Pub. No. WO94/17291, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 14, 1994, Ser. No. 295,917

Claims priority, application Japan, Jan. 19, 1993, 5-006746; May 10, 1993, 5-108333

Int. Cl.[6] F01N *3/20*

U.S. Cl. 60—276 **18 Claims**



1. An exhaust purification device of an internal combustion engine in which an NO_x absorber which absorbs NO_x when the air-fuel ratio of an inflowing exhaust gas is lean and releases the absorbed NO_x when the air-fuel ratio of the inflowing exhaust gas is the stoichiometric air-fuel ratio or rich is arranged in an engine exhaust passage, an air-fuel ratio sensor is arranged in the engine

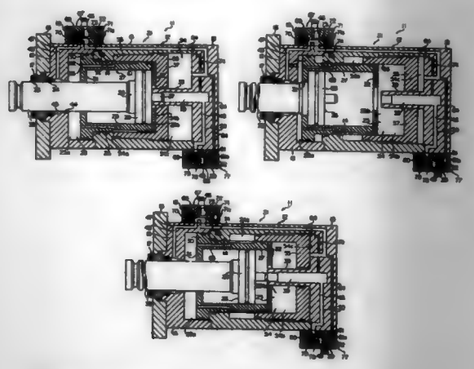
exhaust passage downstream of said NO_x absorber, and NO_x releasing completion decision means is provided for deciding that the releasing action of NO_x from the NO_x absorber is completed when the air-fuel ratio detected by the air-fuel ratio sensor is switched from lean to the stoichiometric air-fuel ratio or rich after the air-fuel ratio of the exhaust gas flowing into the NO_x absorber is switched from lean to the stoichiometric air-fuel ratio or rich and the releasing action of NO_x from the NO_x absorber is started.

5,483,796

FLUID CYLINDER

Etuo Ando, Tokyo, Japan, assignor to Ando Seisakujo Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1995, Ser. No. 420,556
Claims priority, application Japan, Feb. 3, 1995, 7-039363
Int. Cl.[6] F15B *7/00*
U.S. Cl. 60—560 **4 Claims**



1. A fluid cylinder comprising:

a cylinder casing having its interior formed with a main cylinder chamber and a pressure intensifying cylinder chamber;

a main piston, slidably housed in said main cylinder chamber and provided with a piston rod linked to a load on its front edge side, for sectioning said main cylinder chamber into a front main cylinder subchamber positioned on the front side and a rear main cylinder subchamber positioned on the rear side;

a front supply/discharge path, formed within said cylinder casing, for supplying a fluid to said front main cylinder subchamber;

a rear supply/discharge path, formed within said cylinder casing, for supplying the fluid to said rear main cylinder subchamber; and

a pressure intensifying piston, slidably housed in said pressure intensifying cylinder chamber, for sectioning said pressure intensifying cylinder chamber into first and second pressure intensifying cylinder subchambers positioned on one side but shut off from each other in terms of a fluidity and an other-side pressure intensifying cylinder subchamber positioned on the other side,

wherein said first pressure intensifying cylinder subchamber is connected to said front main cylinder subchamber,

said second pressure intensifying cylinder subchamber is connected to said rear supply/discharge path,

said other-side pressure intensifying cylinder subchamber is connected to said front supply/discharge path,

a large fluid force acting backward is imparted to said main piston by guiding a high pressure generated in said first pressure intensifying cylinder subchamber to said front main cylinder subchamber with a movement of said pressure intensifying piston toward one side when the fluid is supplied from said front supply/discharge path to said other-side pressure intensifying cylinder subchamber, and

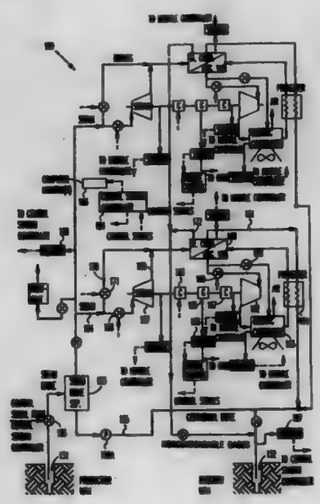
said pressure intensifying piston is, on the other hand, moved up to an other-side limit in advance of said main piston when the fluid is supplied from said rear supply/discharge path to said rear main cylinder subchamber and said second pressure intensifying cylinder subchamber.

5,483,797

METHOD OF AND APPARATUS FOR CONTROLLING THE OPERATION OF A VALVE THAT REGULATES THE FLOW OF GEOTHERMAL FLUID

Meir Rigal, Doar Na Avtah; Amir Karas, Yavne; Aba Nathan, Kiriat Ono; Yechiel Rifner, Holon; Naday Amir, Rehovit; Lucien Y. Bronicki, Yavne, and Moshe Grassianni, Herzeiya, all of, Israel, assignors to Ormat Industries Ltd., Yavne, Israel

Continuation-in-part of Ser. No. 989,918, Dec. 11, 1992, abandoned, which is a continuation of Ser. No. 730,526, Jul. 15, 1991, abandoned, which is a continuation of Ser. No. 444,565, Dec. 1, 1989, abandoned. This application Jun. 24, 1993, Ser. No. 80,816
Claims priority, application Israel, Dec. 2, 1988, 088571
Int. Cl.[6] F03G *7/00*
U.S. Cl. 60—641.2 **11 Claims**



1. A method for controlling the operation of a valve regulating the flow of geothermal fluid comprising geothermal brine and steam through the valve, said valve supplying the fluid to a geothermal plant, said method comprising the steps of:

(a) determining the maximum permitted value of at least one quantity effecting the operation of the geothermal plant;

(b) setting a preset value for said at least one quantity less than the maximum value of the quantity; and

(c) reducing the flow of fluid through the valve when the value of said at least one quantity reaches its preset value for maintaining the operation of the geothermal plant; and

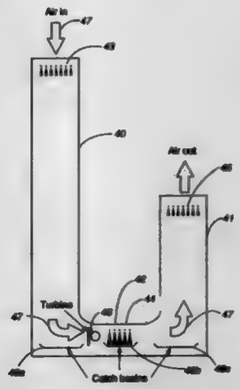
(d) wherein said valve is a pressure control valve positioned at the head of a production well for controlling the flow of geothermal fluid from the well to the geothermal plant.

5,483,798

CONVECTION TOWERS

Melvin L. Prueitt, Los Alamos, N.M., assignor to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 139,232, Oct. 19, 1993, Pat. No. 5,395,598, and a continuation-in-part of Ser. No. 942,490, Sep. 9, 1992, Pat. No. 5,284,628. This application Nov. 4, 1994, Ser. No. 334,713
Int. Cl.[6] F01R *7/00*
U.S. Cl. 60—675 **5 Claims**



1. Apparatus for cleaning pollution from air, generating electrical power and providing fresh water comprising:

a structure defining a first tower and a second tower connected by a conduit, said first tower being taller than said second tower, and said second tower having a bottom and a top;

one or more first water sprayer means located in said first tower for providing a fine mist of water droplets for evaporative cooling of said air in said tower section of said structure to create a flow of said air through said structure and for removing pollution from said air;

turbine generator means disposed in said conduit for generating electrical power once said flow of said air through said structure is established;

second water sprayer means disposed in said conduit for removing any remaining pollutants and said fine mist water droplets from said flow of air through said stucture;

third water sprayer means disposed in said second tower for providing fresh water drops to collect mist particles that have condensed from said flow of said air through said structure; and

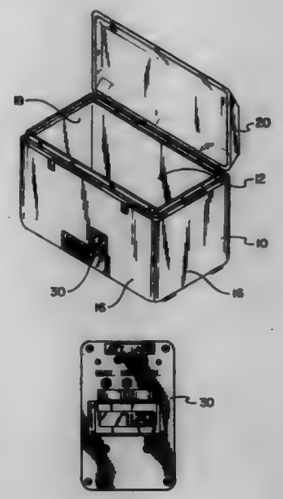
fresh water collection means located at said bottom of said second tower for collecting fresh water from said second tower.

5,483,799

TEMPERATURE REGULATED SPECIMEN TRANSPORTER

Michael Dalto, 1494 Sweetman Ave., Elmont, N.Y. 11003

Filed Apr. 29, 1994, Ser. No. 235,472
Int. Cl.[6] F25B *21/02*
U.S. Cl. 62—3.7 **1 Claim**



1. A temperature regulated specimen transporter for controlling the temperature and environment of a clinical specimen during transportation thereof comprising, in combination:

an essentially rectangular rigid impact-resistant storage compartment having an insulated bottom wall, insulated side walls extending upwardly therefrom to define a hollow interior and an opening for allowing access to the interior, and an insulated top wall hingeably coupled to a side wall adjacent to the opening and positionable over the opening for precluding access to the interior and with the walls each having thermally conductive portions formed therein;

a heat sink coupled to the thermally conductive portions of the walls for heating and cooling the storage compartment;

fan means coupled to the heat sink for drawing heat to and from the storage compartment and thereby increasing its heating and cooling efficiency;

temperature control means coupled to the storage compartment for manually setting and displaying desired minimum, maximum and operational temperature set points for the interior of the storage compartment, recording actual minimum and maximum temperatures within the interior of the storage compartment, displaying operational status exterior to the storage compartment, and outputting status signals exterior to the storage compartment based on the operational temperature set points;

a thermocouple coupled to the heat sink, the thermocouple having a first operational state for allowing the heat sink to heat the interior of the storage compartment and a second operational state for allowing the heat sink to cool the interior of the storage compartment;

a temperature control circuit coupled between the temperature control means and the thermocouple and operable in one mode for placing the thermocouple in the first operational state and another mode for placing the thermocouple in the second operational state based on the temperature set points, each mode being activated based on status signals received from the temperature control means to allow the storage compartment to be alternately heated and cooled to maintain a temperature within the interior of the storage compartment that varies no more than plus or minus 5 degrees Celsius from each of the operational set points, the temperature control circuit including relay means formed of a double pole double throw relay that is switchable through a pair of relay contacts for controlling the operational state of the thermocouple, and relay switching means formed of a transistor for controlling the relay means;

power source means for providing electrical power for energizing and de-energizing the heat sink, fan means, temperature control means, thermocouple, and temperature control circuit;

power protection means for preventing overloaded power from damaging the specimen transporter formed of a current-controlled first diode coupled between the relay means and the power source, a second diode coupled between the relay switching means and the relay means, a first capacitor coupled to the power source means for smoothing pulsating electrical power transmitted therefrom, and overvoltage protection means coupled between the first capacitor and the relay means and the relay switching means for regulating power applied to the relay means and the relay switching means;

a third diode coupled between the fan means and the thermocouple and the relay means and with the third diode allowing the fan means to operate while the thermocouple is cooling;

a second capacitor coupled to the relay switching means and a third capacitor coupled to the thermocouple and with the second and third capacitors smoothing electrical spikes generated by switching the relay switching means; and

a pair of light-emitting diodes interconnected to the thermocouple and relay means for indicating the operational state of the thermocouple.

5,483,800

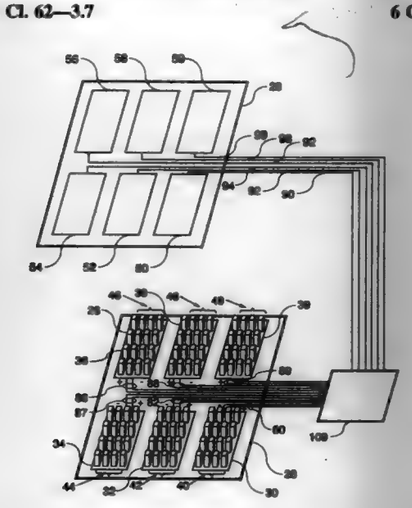
AUGMENTED THERMAL BUS

Dean S. Schrage, Strongsville, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 81,891, Jun. 25, 1993, Pat. No. 5,349,821. This application Aug. 31, 1994, Ser. No. 298,682

Int. Cl.[6] F25B *21/00*

U.S. Cl. 62—3.7 **6 Claims**



1. A method of maintaining isothermal temperature in a source using a baseplate having a plurality of quadrants therein functioning as a heat source, a coldplate including a fluid loop therein functioning as a heat sink, a plurality of radiator panels connected to said fluid loop for dissipating heat, a plurality of TEHP units each located within one of said plurality of quadrants in said baseplate thereby coupling each of said quadrants in said baseplate to said coldplate, and a model based controller individually connected to each of said TEHP units for adjusting the heat pumping capacity thereof, said method including the steps of:

generating waste heat in said baseplate by operating the electronics,

transferring heat across an adverse temperature gradient from the baseplate to the coldplate thereby upgrading waste heat,

channeling fluid through said fluid loop thereby transferring said heat from said coldplate to the radiator panels,

sensing a variation in temperature in one of said quadrants in said plurality of quadrants in said coldplate, and

compensating for said variation in temperature in said one of said quadrants by adjusting heat pumping capacity of said TEHP units connected to said model base controller.

5,483,801

PROCESS FOR EXTRACTING VAPOR FROM A GAS STREAM

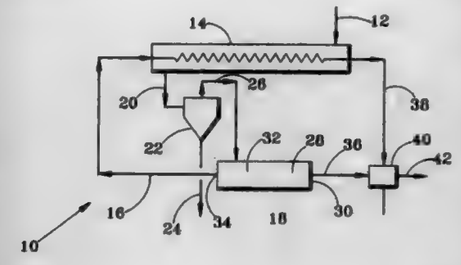
David J. Craze, Yokohama, Japan, assignor to Ezarc Pty., Ltd., Nedlands, Australia

Filed Nov. 21, 1994, Ser. No. 302,678

Claims priority, application Australia, Feb. 17, 1992, PL 0905

Int. Cl.[6] F25B *9/02*

U.S. Cl. 62—5 **30 Claims**



1. A process for extracting vapor from a gas stream, comprising the steps of:

partially condensing a raw high pressure gas stream rich in condensable vapor by an exchange of heat with a cooling medium comprising a cold exhaust stream from a vortex tube;

separating condensate from the raw gas stream to produce a raw lean gas stream;

expanding the raw lean gas stream in the vortex tube to produce the cold exhaust stream and a hot exhaust stream; and

ejecting the cold exhaust stream with the hot exhaust stream in an ejector to give a mixed vortex tube exhaust stream and increase the pressure differential through the vortex tube.

5,483,802

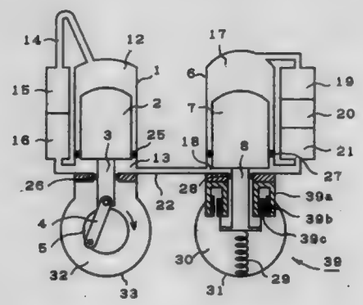
VUILLEUMIER HEAT PUMP

Kazuhiko Kawajiri, Hyogo; Takuya Suganami, Gifu; Tetsuya Honda, Hyogo; Teruo Sugimoto, Hyogo, and Michio Fujiwara, Hyogo, all of, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 73,318, Jun. 8, 1993, abandoned. This application May 6, 1994, Ser. No. 238,783

Int. Cl.[6] F25B *9/00*

U.S. Cl. 62—6 **4 Claims**



1. Vuilleumier heat pump including a hot cylinder, a hot displacer, a cold cylinder, a cold displacer, a heat exchanger and a regenerator, a working gas being sealed in a hot space and a hot/moderate temperature space which are provided in said hot cylinder, a cold space and a cold/moderate temperature space which are provided in said cold cylinder, and a working space which is defined by said heat exchanger and said regenerator, and

said hot displacer and said cold displacer reciprocating with a phase difference of about 90 degrees, said Vuilleumier heat pump comprising:

a hot buffer chamber provided adjacent to said hot/moderate temperature space, in which gas having a pressure substantially equal to an intermediate pressure of said working gas is sealed;

a cold buffer chamber provided adjacent to said cold/moderate temperature space, in which gas having a pressure substantially equal to said intermediate pressure of stid working gas is sealed;

a first one of said hot and cold displacer rods coupled with a first of said hot and cold displacers being coupled with a crank through a displacer connecting rod in a first of said hot and cold buffer chambers; and

a second of said hot and cold displacer rods coupled with a second of said hot said cold displacers being coupled with a wall of a second of said hot and cold buffer chambers through a spring in said second of said hot and cold buffer chambers,

wherein said first displacer reciprocates according to rotation of said crank so as to cause a pressure fluctuation of said working gas, a vibration system of said second displacer being provided by force generated at said second displacer rod due to a difference between said pressure of said working gas and a gas pressure in said second buffer chamber and by said spring, and said first and second displacer reciprocating with a phase difference of about 90 degrees.

5,483,803

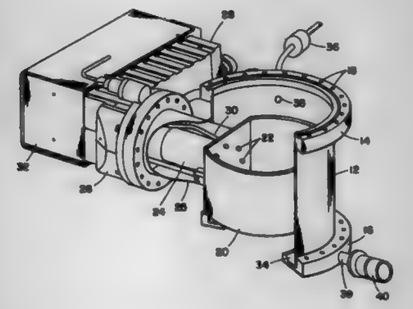
HIGH CONDUCTANCE WATER PUMP

Stephen R. Matté, Norfolk; Alan L. Weeks, South Easton, and Philip A. Lessard, Boxborough, all of Mass., assignors to Helix Technology Corporation, Mansfield, Mass.

Continuation-in-part of Ser. No. 78,990, Jun. 16, 1993, abandoned. This application Oct. 28, 1994, Ser. No. 331,170

Int. Cl.[6] B01D *8/00*

U.S. Cl. 62—55.5 **40 Claims**



1. A cold trap to be positioned in-line with a vacuum pump comprising:

a fluid conduit for coupling into a fluid flow path to the vacuum pump; and

a cryogenically cooled cryopumping array spaced within the fluid conduit, the array having a length to hydraulic diameter ratio of about 1 or less and being optically open.

5,483,804

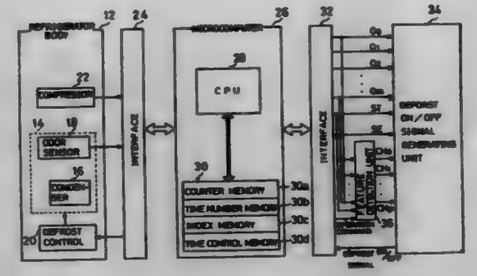
DEFROST CONTROL APPARATUS FOR REFRIGERATOR

Atsushi Ogawa, Kyoto; Yoshio Ozawa, Hirakata; Toshimichi Hirata, Gunma; Tsuyoshi Kawai, Uji; Kiyoshi Fukushima, Kobe, and Masashi Toyoshima, Gunma, all of, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Mar. 28, 1994, Ser. No. 218,598

Int. Cl.[6] F25D *21/06*

U.S. Cl. 62—153 **18 Claims**



1. A control apparatus for controlling a defrost operation of a refrigerator having a defrost device, comprising:

counting means for counting a number of opening/closing times of a door for each of a plurality of time zones of one day;

time number memory means for storing the number of opening/closing times of the respective time zones, said time number memory means including a storage area for storing the number of opening/closing times of the respective time zones of one day;

index setting means for setting indexes of the respective time zones in accordance with the number of opening/closing times of the respective time zones, said index setting means setting said indexes in accordance with the number of opening/closing times of one day;

defrost signal generating means for generating a defrost on/off signal for controlling said defrost device on the basis of said indexes; and

first determining means for determining whether or not a sudden phenomenon occurs on the basis of the number of opening/closing times and the indexes of the respective time zones;

wherein said index setting means includes renewing means for renewing the indexes only when it is determined that no sudden phenomenon occurs by said first determining means.

5,483,805

CONTROL APPARATUS FOR AN AIR CONDITIONING SYSTEM FOR AN ELECTRIC VEHICLE

Kazuo Fujii; Isao Takahashi, both of Konan; Junichiro Hara, Yokohama, and Takayoshi Matsuoka, Tokyo, all of, Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, and Zexel Corporation, Tokyo, both of, Japan

Filed Dec. 13, 1994, Ser. No. 357,194

Claims priority, application Japan, Dec. 16, 1993, 5-343671

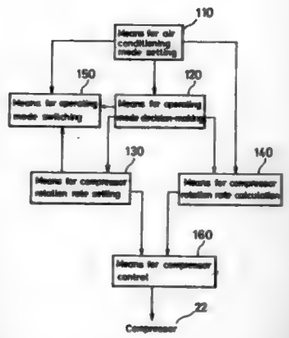
Int. Cl.[6] G05D *23/32*; F25D *29/00*

U.S. Cl. 62—158 **15 Claims**

1. A control apparatus for an air conditioning system for an electric vehicle which is provided with a heat exchanger inside an air conditioning duct, wherein;

a cooling cycle and a heating cycle are constituted by switching coolant passages, which include, at least, said heat exchanger, a compressor, a heat exchanger for outdoor use and an expansion valve, and

a means for air conditioning mode setting which sets operating modes including, at least, a heating mode, a ventilation mode and a cooling mode and sets an air conditioning level in said operating modes,



a means for operating mode decision making which decides whether or not an operating mode set with said means for air conditioning mode setting has been maintained for a specific length of time,

a means for compressor rotation rate setting which, if it is decided by means for operating mode decision making that said operating mode set by said means for air conditioning mode setting has not been maintained for said specific length of time, sets the rotation rate of said compressor at a specific rate,

a means for compressor rotation rate calculation which, if it is decided by said means for operating mode decision making that the operating mode set by said means for air conditioning mode setting has not been maintained for a specific length of time, calculates a compressor rotation rate based upon said air conditioning level set by said means for air conditioning mode setting,

a means for operating mode switching which, if it is decided by said means for operating mode decision making that said operating mode set by said means for air conditioning mode setting has been maintained for said specific length of time, and if, at the same time, said compressor rotation rate has been set at said specific rotation rate by said means for compressor rotation rate setting, switches to the operating mode that has been set by said means for air conditioning mode setting, and

a means for compressor control, which controls said compressor at either the rotation rate set by said means for compressor rotation rate setting or the rotation rate calculated by said means for compressor rotation rate calculation.

5,483,806

REFRIGERATION SYSTEM

Jeremy P. Miller, Copse View, Summerlug, Mortimer, Nr. Reading, Berkshire RG7 2JS; Colin D. Smith, 13 Highbury Crescent, Camberley, Surrey; Rodney J. Allam, "Westacre", Guildown Road, St Catherines, Guildford, Surrey, and Anthony K. J. Topham, 30 Mayo Road, Walton-on-Thames, Surry KT12 2QA, all of, Great Britain

Filed May 12, 1995, Ser. No. 439,802

Claims priority, application United Kingdom, May 16, 1994, 94 09754

Int. Cl.[6] F25D *9/00*

U.S. Cl. 62—402 **21 Claims**

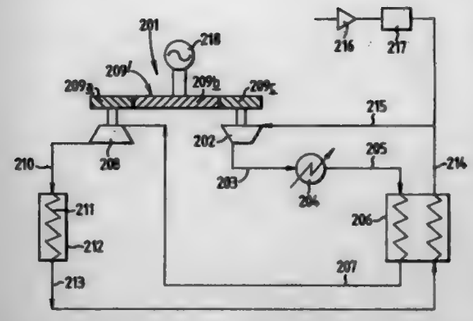
1. A refrigeration system comprising:

(i) a compressor for compressing air, nitrogen or nitrogen enriched air to a pressure of from 20 bar g to 140 bar g;

(ii) a heat exchanger for cooling said compressed air, nitrogen or nitrogen enriched air;

(iii) an expander for expanding said cooled compressed air, nitrogen or nitrogen enriched air to a pressure in the range of from 15 bar g to 110 bar g;

(iv) a cooling device for receiving cold expanded air, nitrogen or nitrogen enriched air; and



(v) means for conveying air, nitrogen or nitrogen enriched air from said cooling device at a temperature of from −20° C. to −120° C. to said heat exchanger for cooling said air, nitrogen or nitrogen enriched air.

5,483,807

DEVICE FOR AIR-CONDITIONING THE PASSENGER COMPARTMENT AND FOR COOLING THE DRIVE SYSTEM OF ELECTRIC VEHICLES

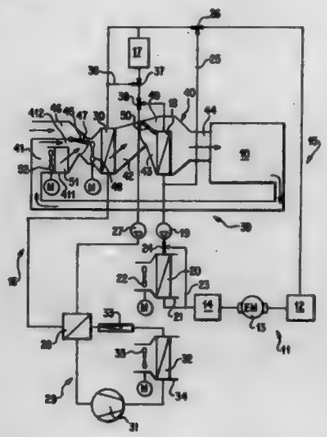
Guenter Abersfelder; Helmut Grantz, and Wolfgang Odebrecht, all of Sindelfingen, Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Aug. 19, 1994, Ser. No. 292,825

Claims priority, application Germany, Aug. 19, 1993, 43 27 866.3

Int. Cl.[6] B60H *1/32*

U.S. Cl. 62—435 **19 Claims**



1. Device for air-conditioning a passenger compartment and for cooling a drive system of an electric vehicle, comprising:

an air-guide duct which is connected on inlet and outlet sides to the passenger compartment and which exhibits a controllable fresh-air opening and contains at least one fan for the generation of an air current in the air-guide duct;

two heat exchangers disposed one behind the other in the air-flow direction in the air-guide duct;

a circuit of a cold-transporting medium incorporating one of said two heat exchangers together with a circulating pump and a cold store, said circuit being run via an evaporator of a refrigeration unit;

a circuit of a heat-transporting-medium incorporating the other of said two heat exchangers together with a circulating pump and a heat store, said circuit being run via the drive system of the electric vehicle for vehicle-cooling purposes;

at least one switchover valve, wherein said cold and heat stores are formed of a single energy store which, via said at least one switchover valve, can be switched alternately into the cold-transporting-medium or heat-transporting-medium circuits; and

wherein said cold- and heat-transporting mediums use the same liquid transmission medium.

5,483,808

ANNULAR STRUCTURE MEANT FOR PIECES OF REAL JEWELRY AND CHEAP JEWELRY, PARTICULARLY FOR RINGS

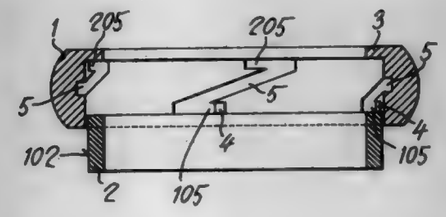
Piero Barbazza, Via Vincenzo Bellini, 6, I-15048 Valenza, Province of Alessandria, Italy

Filed Sep. 12, 1994, Ser. No. 304,774

Claims priority, application Italy, Sep. 14, 1993, AT93U0007

Int. Cl.[6] A44C *9/00*

U.S. Cl. 63—15.5 **6 Claims**



1. An annular structure for pieces of jewelry comprising an external annular element having a fore end edge, a rear end edge and an inner skirt surface and an internal annular element having an outer skirt surface, said external annular element and said internal annular element being coaxially mounted one inside the other with the diameters thereof being reduced gradually with respect to each other, said external element being provided on its inner skirt surface with at least two axial guide slots angularly arranged in an equispaced relation, a radial tooth slidably engageable in each of said slots and extending from the outer skirt surface of the internal annular element, said axial guide slots being closed at their ends lying near the end edges of said external element, and being provided at one or both ends with end sections lying near the fore end edge and the rear end edge of said external annular element, said end sections of said axial guide slots being oriented transversely and with respect to said guide slots and extending in a same direction or in mutually opposite directions.

5,483,809

PROCESS FOR BENDING A METAL TUBE TO A SMALL RADIUS OF CURVATURE AND A BENT METAL TUBE

Katsuhiko Nishile, Fuji, and Akira Kubono, Mishima, both of, Japan, assignors to Usui Kokusai Sangyo Kaisha Ltd., Japan

Filed Feb. 15, 1994, Ser. No. 196,399

Claims priority, application Japan, Feb. 15, 1993, 5-048549

Int. Cl.[6] B21D *9/05;9/01*

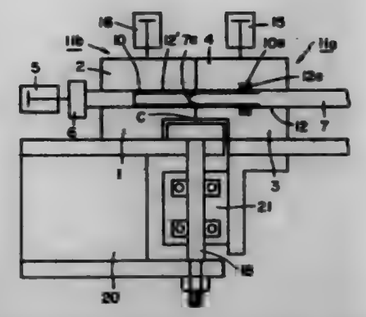
U.S. Cl. 72—150 **11 Claims**

1. A process for placing a small radius bend in a metal tube, said tube having opposed first and second ends and a selected bend location intermediate said ends, said process comprising:

securing said tube in a stationary clamp at a location substantially adjacent said selected bend location and between said selected bend location and said first end of said tube;

holding said tube in a movable clamp at a location substantially adjacent said selected bend location and between said selected bend location and said second end of said tube;

providing an elongate core dimensioned to fit within said tube and having an end defining a guide surface substantially conforming to a desired bent shape for said tube;



inserting said core into said tube such that said guide surface is substantially at said selected bend location; and

rotating said movable clamp a selected amount around a selected center of rotation and relative to said stationary clamp, while simultaneously exerting axial pressure on said second end of said tube for urging said second end of said tube toward said selected bend location.

5,483,810

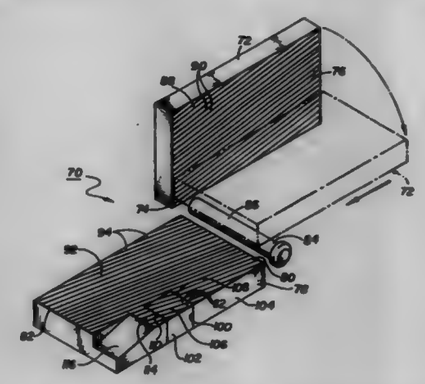
DIE SET FOR FORMING A FASTENER WITH THREAD LOCK

Edgar L. Stencel, Alta Loma, Calif., assignor to Monogram Aerospace Fasteners, Los Angeles, Calif.

Division of Ser. No. 990,040, Dec. 14, 1992, Pat. No. 5,340,253. This application Jul. 14, 1994, Ser. No. 274,774

Int. Cl.[6] B21H *3/06*

U.S. Cl. 72—88 **9 Claims**



1. A die for forming a self-locking thread on an unthreaded pin, comprising:

a block having an entry end, an exit end, and an outside edge disposed between the entry end and the exit end, the pin rolling from the entry end to the exit end during the rolling process, said outside edge defining a rectangular notch in the block, the notch having an entry side parallel to the entry end of the block and an exit side parallel to the exit end of the block, the exit side of the notch being closer to the exit end of the block than the entry side of the notch;

a roll surface on said block bounded by the entry end, the exit end and the outside edge of the block, the roll surface of the block having a set of grooves aligned at a predetermined angle to form a helical thread on the unthreaded pin; and

an insert having a roll surface disposed in said notch, the roll surface of the insert having a means for shifting a portion of the helical thread and for forming a plurality of buttress ends on the shifted portion of thread, the means including a set of grooves that is misaligned with the grooves on the block at

the entry side of the notch and aligned with the grooves on the block at the exit side of the notch;

wherein the distance between the entry end of the block and the entry side of the notch is sufficient to form a fully formed thread on the unthreaded pin; and

wherein the set of grooves of the insert have a sufficient depth such that the shifted portion of thread on the pin, including the buttress ends, are fully formed from crest to root.

5,483,811

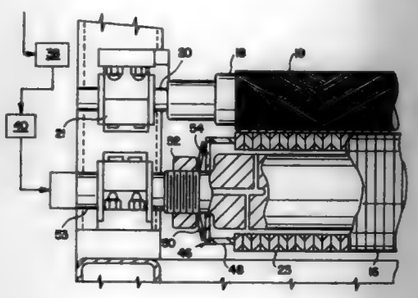
SEGMENTED ANVIL ROLLER FOR REFINING THE DOMAIN STRUCTURE OF ELECTRICAL STEELS

Robert F. Miller, Evans City, Pa., assignor to Allegheny Ludlum Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 977,359, Nov. 17, 1992, abandoned. This application Jan. 25, 1995, Ser. No. 378,893

Int. Cl.[6] B21B *27/02*

U.S. Cl. 72—197 **8 Claims**



1. An apparatus for refining the magnetic domain wall spacing of grain-oriented silicon steel strip, said apparatus comprising:

scribing roll means having scribing surfaces for imparting mechanical scribing to one surface of the strip during rolling contact therewith,

a segmented anvil roller means for supporting said strip during scribing by said scribing roller means, said segmented anvil roller further including anvil roller segments and means resiliently supporting the segments thereof for uniform support of the strip transversely of the width thereof while engaged by said scribing roll means;

means for arranging said anvil segments side-by-side under a clamping force sufficient to present anvil surfaces across the width of the strip and to permit relative positioning of the segments to accommodate crowning of the scribing roll means; and

means for controlling the position of said segmented anvil roller means relative to said scribing roll means at opposite sides of said strip to establish a rolling pressure contact area wherein said strip is scribed.

5,483,812

ROLL APPARATUS FOR REDUCING WORK

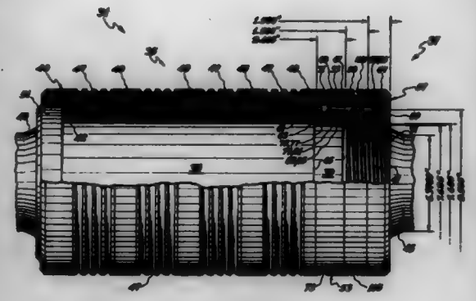
Martin J. Dempsey, Bethel Park, Pa., assignor to Asko, Inc., Homestead, Pa.

Filed Feb. 8, 1994, Ser. No. 193,455

Int. Cl.[6] B21B *27/02*

U.S. Cl. 72—252.5 **13 Claims**

1. Roll apparatus for reducing work including an arbor having an axis, roll means mounted on said arbor for rotation therewith, means, mounted on said arbor adjacent said roll means, forming with said arbor a sealed chamber, means connecting said chamber to said arbor, means, connected to said chamber for impressing pressure on said chamber to expand said chamber, said pressure being of such magnitude as to elongate said arbor through the connection between said chamber and said arbor by a predetermined magnitude, and continuously adjustable spacer means, connected to said arbor near one end, and adapted to be adjusted while so connected, after said arbor has been elongated to be connected to said forming means thereby locking the elongated arbor against reduction of the elongation on the removal of said impressed pressure, whereby on the removal of said impressed pressure, said arbor exerts axial pressure on said roll means to suppress rotation of said roll means relative to said arbor.



5,483,813

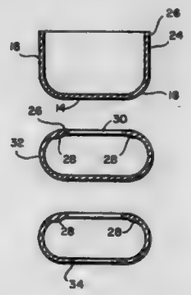
PROCESS TO MAKE A TOROID OUTER SHELL FROM SHEET STOCK

Randall J. Clark, Pleasant View; George C. Marjanski, Riverdale, both of Utah, and Leland B. Kort, Lakewood, Colo., assignors to Morton International, Inc., Chicago, Ill.

Filed Feb. 14, 1994, Ser. No. 195,403

Int. Cl.[6] B21D *51/24;53/88*

U.S. Cl. 72—334 **6 Claims**



1. A process for producing a seamless toroid outer shell for an air bag inflation system from flat sheet stock material, which comprises:

cutting flat sheet material to a suitable length and width,

placing the cut flat sheet material in a progressive die,

drawing the sheet material in the progressive die into a cup shaped blank having a shape corresponding to the bottom half of the toroid at the bottom of the cup shaped blank and an upstanding sidewall extending from said bottom half to the open end of the cup shaped blank,

trimming excess material from around the perimeter of the open end of the cup shaped blank at the top of the sidewall,

pressing the top of the sidewall adjacent to the perimeter by means which thicken the portion of said sidewall adjacent to said perimeter while it is being pressed to form the top half of the toroid, and then forming a hole in the bottom of the blank thereby forming the toroid outer shell.

5,483,814

APPARATUS FOR WORKING METAL WORKPIECES

Cornelis H. Liet, Denekamperdijk 38, 7581 PJ Lonner, Netherlands

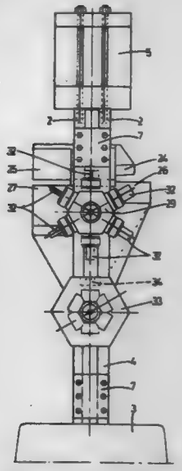
PCT No. PCT/NL92/00207, § 371 Date Apr. 19, 1994, § 102(e) Date Apr. 19, 1994, PCT Pub. No. WO93/09891, PCT Pub. Date May 27, 1993

PCT Filed Nov. 18, 1992, Ser. No. 211,815

Claims priority, application Netherlands, Nov. 19, 1991, 9101929; Sep. 22, 1992, 9201637

Int. Cl.[6] B21D *37/04*

U.S. Cl. 72—442 **16 Claims**



1. An apparatus for working metal workpieces, comprising a frame, a die tool turret joined to the frame on only one end thereof for rotation about a fixed die tool turret axis, wherein the die tool turret carries die tools which can be moved into a corresponding working position by rotation of said die tool turret about the die tool turret axis, a punch tool turret joined to the frame on only one end thereof for movement toward and away from the die tool turret and rotation about a horizontal axis, the punch tool turret carrying a plurality of punch tools associated with said die tools which can be moved into a working position by rotation of the punch tool turret about the horizontal axis, wherein the die tool turret is coupled to the punch tool turret such that rotation of one tool turret rotates the other tool turret to align corresponding punch and die tools in the working positions.

5,483,815

PNEUMATIC HOG RING GUN

Robert J. West, 752 Hallowell Rd., Pownal, Me. 04069

Filed Feb. 14, 1995, Ser. No. 388,396

Int. Cl.[6] B21J *9/18;* **B21D** *7/06;* **B21F** *45/16*

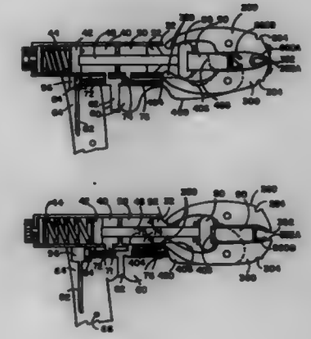
U.S. Cl. 72—452 **6 Claims**

1. A pneumatic hog ring gun operating on compressed air from a compressed air source having a main air line having a second end, said hog ring gun having a front end and a rear end, said hog ring gun for the individual application of a plurality of hog rings, comprising:

a cylinder having a front, a rear, and an opening defined in the front of said cylinder;

a power piston positioned in said rear of said cylinder, said power piston having a main piston chamber defined therein having a front and a rear, said main piston chamber having a first end at said rear of said chamber, a second end at said front of said chamber and a first air inlet aperture defined therein toward said second end;

means to urge said power piston toward said second end of said piston chamber;



means to direct said compressed air from said second end of said main air line through said first air inlet aperture into said main piston chamber, said main piston, thereby being forced rearwards towards said first end;

a shaft having a first end, a second end and a longitudinal axis, said first end attached to said second end of said main piston so that said shaft moves, respectively, backward or forward with said backward or forward movement of said main piston, said second end of said shaft extending out of said second end of said main piston chamber and out said front portion of said power piston;

a power wedge having a height, a front end, a rear end, a top surface, and a bottom surface, said rear end of said power wedge attached to said second end of said shaft so that said power wedge moves, respectively, backwards or forwards with backward and forward movement of said shaft;

a frame attached to said front portion of said power piston, said frame having a front face and a back face, and having an upper and lower pivot members defined thereon;

an upper jaw having a front, a rear and a center, a first end disposed at said rear of said upper jaw, a second end disposed at said front of said upper jaw, said upper jaw having a pivot member attachment defined therein near said center of said upper jaw, said upper jaw having an inwardly curved surface running from said first end to near said upper jaw bolt hole, said curved surface facing downward, said upper jaw having a clinching surface at said second end, said clinching surface facing downward;

a lower jaw having a front, a rear, and a center, a first end disposed at said rear of said lower jaw, a second end disposed at said front of said lower jaw, said lower jaw having a pivot member attachment defined therein near said center of said lower jaw, said lower jaw having an inwardly curved surface running from said first end to near said lower jaw bolt hole, said curved surface facing upward corresponding to said curved surface on said upper jaw, said curved surfaces of said upper and lower jaws being spaced apart at their second ends a distance greater than the height of said power wedge and spaced apart at their first ends a distance less than the height of said power wedge, said lower jaw having a clinching surface at said second end, said clinching surface facing upward corresponding to said clinching surface on said upper jaw;

said upper and lower jaws disposed in line with said longitudinal axis of said shaft, said upper and lower jaw curved surfaces disposed, respectively, above and below said power wedge with the distance between said first ends of said upper and lower jaws being less than the height of said power wedge whereby as said power wedge moves backward, said top and bottom surfaces of said power wedge contact said corresponding curved surfaces of said upper and lower jaws, spreading said curved surfaces apart and pivoting said jaws about their respective jaw bolt holes, thereby forcing said clinching surfaces of said second ends together to clinch a hog ring contained therebetween;

a lock piston chamber defined within said front of said cylinder between said main piston chamber and said cylinder front opening, said lock piston chamber communicating with said cylinder front opening;

a lock piston having a center, said lock piston contained within said lock piston chamber, said lock piston having an aperture defined in its center, said shaft passing through said lock piston chamber and through said aperture in said lock piston, said lock piston when in a full forward position extending out of said front opening of said cylinder and contacting said first ends of said upper and lower jaws and wedging said first ends apart, causing said upper and lower jaws to pivot about said pivot members and bring said clinching surfaces toward one another, said clinching surfaces thereby holding a hog ring securely therebetween, whereby said securely held hog ring may be used to pull workpieces together before actually being clinched; and

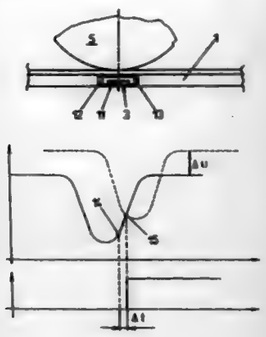
means to selectively move said lock piston to said full forward position.

5,483,816

PROCEDURE FOR ESTABLISHING THE SCANNING RANGE OF VEHICLE-ACTIVATED MEASURING EQUIPMENT, AS WELL AS EQUIPMENT FOR THE ADJUSTMENT AND TUNING OF MEASURING EQUIPMENT ON TRACKS RELATIVE TO SENSORS

Wolfgang Nayer, Zeltweg, Austria, and Josef Frauscher, Rumstorf, Germany, assignors to VAE Aktiengesellschaft, Vienna, Austria

Filed Dec. 9, 1994, Ser. No. 352,582
Claims priority, application Austria, Dec. 10, 1993, 2499/93
Int. Cl.[6] G01N *27/82*
U.S. Cl. 73—1 R **4 Claims**



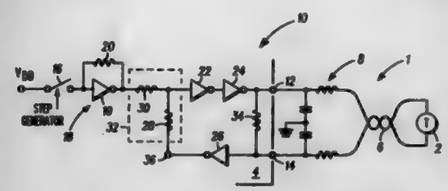
1. A method for adjusting the scanning range of vehicle-actuated measuring equipment of the type wherein receiver coils are positioned on opposite sides of a transmitter for inducing voltages in the receiver coils and a comparison circuit is employed for comparing outputs from the receiver coils, said method including the step of altering at least one of said receiver coil outputs by a constant voltage of adjustable level.

5,483,817

SHORT CIRCUIT DETECTOR FOR SENSORS

Pascal Renard, Annemasse, France, and Michel Burri, Gd-Saconnex, Switzerland, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 8, 1994, Ser. No. 257,263
Claims priority, application United Kingdom, Jul. 2, 1993, 93137313
Int. Cl.[6] G01C *17/38;25/00*
U.S. Cl. 73—2 **9 Claims**



1. A short circuit detector circuit for detecting when a sensor is operating normally and when the sensor is short circuited, comprising:

a reference signal input for receiving a reference signal;

closed loop means having a predetermined loop gain, the closed loop means having a first input coupled to the reference signal input, a first output coupled to drive the sensor with a signal dependent on the input signal and the predetermined loop gain, a second input for receiving a feed back signal from the sensor, and a second output coupled to the first input for providing an output response signal dependent on the operation of the sensor, where the value of the predetermined loop gain is selected so that the output response signal is an undamped oscillation for normal sensor operation; and

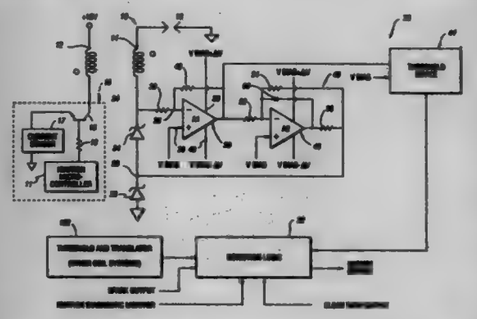
means for analysing the output response signal and for detecting normal sensor operation when the output response signal and for detecting normal sensor operation when the output response signal is an undamped oscillation and for detecting short circuit sensor operation when the output response signal is a damped oscillation.

5,483,818

METHOD AND APPARATUS FOR DETECTING IONIC CURRENT IN THE IGNITION SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Arnold W. Brandt, Livonia; Thomas E. Jones, III, Rochester Hills, and Robert B. Bucciarelli, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 43,121, Apr. 5, 1993, Pat. No. 5,321,978. This application Oct. 11, 1994, Ser. No. 320,344
Int. Cl.[6] G01L *23/22*; G01N *25/20*
U.S. Cl. 73—35.01 **15 Claims**



2. Apparatus for sensing low level ionic current in an ignition system having a spark plug and a leaky component connected between a first node and a second node, the apparatus comprising:

first means for applying a first voltage signal at the first node a bias the spark plug, the first means also adapted to convert the ionic current to a second voltage representative of the sensed ionic current; and

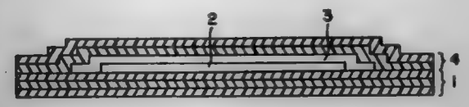
second means for converting the second voltage into a third voltage, the third voltage tracking the value of the first voltage and being applied to the second node to eliminate any influence of the leaky components.

5,483,819

METHOD OF DETECTING THE PERMEABILITY OF AN OBJECT TO OXYGEN

Charles R. Barmore, Moore, S.C., and Christopher Bull, Bethesda, Md., assignors to W.R. Grace & Co.-Conn., New York, N.Y.

Filed May 27, 1994, Ser. No. 250,085
Int. Cl.[6] G01N *21/78;15/08*
U.S. Cl. 73—38 **15 Claims**



1. In a method for detecting the permeability of an object to a gas, the improvement comprising vacuum packaging an indicator and a test object in a device comprising

a. a support having an effective barrier to the gas, and

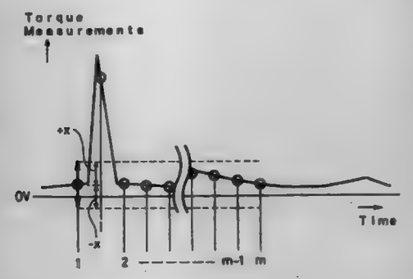
b. a multilayer film having a gas barrier portion that is peelable from a permeable portion, the permeable portion being sealed to the support.

5,483,820

METHOD FOR ZERO CORRECTION IN TORQUE SENSOR

Akira Nakamoto, Osaka; Shiro Takada, Itami, and Takuji Mori, Sakai, all of, Japan, assignors to Kubota Corporation, Japan

Filed Apr. 1, 1994, Ser. No. 222,652
Claims priority, application Japan, Apr. 6, 1993, 5-078413; Apr. 6, 1993, 5-078414; May 7, 1993, 5-106313; May 7, 1993, 5-106314; May 7, 1993, 5-106315; Jan. 25, 1993, 5-265311
Int. Cl.[6] G06F *15/20*
U.S. Cl. 73—1 C **24 Claims**



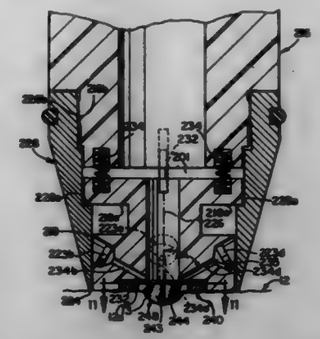
1. A method for zero correction in a torque sensor, comprising sample-measuring torque signals in predetermined time intervals (t), recognizing torques being applied when the difference between a pair of adjacent measured values is greater in absolute value than a predetermined value (±x), and using one of the pair of measured values which is closer to real zero as a reference point in setting a subsequent zero point.

5,483,821

BRINELL HARDNESS-MEASURING PROBE WITH CENTERING DEVICE

Giancarlo Mazzoleni, Horsham, and Gordon M. Baker, Doylestown, both of Pa., assignors to Newage Industries, Willow Grove, Pa.

Continuation-in-part of Ser. No. 657,596, Feb. 19, 1991, Pat. No. 5,150,608. This application Aug. 13, 1993, Ser. No. 106,028
The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.
Int. Cl.[6] G01N *3/48*
U.S. Cl. 73—82 **21 Claims**



1. In an electro-optical apparatus for determining hardness of a specimen by diametric measurement of an indentation in a surface of the specimen, the apparatus including a probe and an electronic processor coupled with the probe, the probe including an opening at one end thereof, the probe further including an artificial illumination source located to illuminate a specimen surface through the opening and optics within the probe located to view the specimen surface exposed through the opening as illuminated by the illumination source, an improvement comprising a separate centering device having an alignment guide projecting outwardly from the probe through the opening, the alignment guide entering an indentation when the indentation is at least generally aligned with the opening.

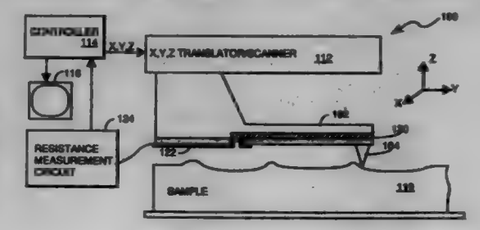
5,483,822

CANTILEVER AND METHOD OF USING SAME TO DETECT FEATURES ON A SURFACE

Thomas Albrecht, San Jose; Marco Tortonese, Stanford, and Robert Barrett, Mountain View, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Continuation of Ser. No. 954,695, Sep. 30, 1992, Pat. No. 5,345,815, which is a continuation of Ser. No. 638,163, Jan. 4, 1991, abandoned. This application May 5, 1994, Ser. No. 238,546
The portion of the term of this patent subsequent to Sep. 13, 2011, has been disclaimed.
Int. Cl.[6] G01B *7/34*
U.S. Cl. 73—105 **7 Claims**

1. A cantilever structure for use in an atomic force microscope,



the cantilever structure comprising:

a cantilever arm having a fixed end and a free end and a piezoresistive element included within the cantilever arm, deflection of the free end of the cantilever arm changing the resistance of the piezoresistive element;

a tip projecting from the cantilever arm near the free end thereof;

the cantilever arm having a mechanical resonant frequency greater than 10 KHz.

5,483,823

METHOD AND APPARATUS FOR INSPECTING VARIOUS RUNNING CONTROL FUNCTIONS OF A MOTORCAR

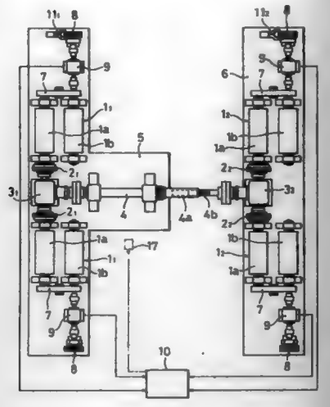
Takao Shibayama; Keiichiro Maekawa; Kimitake Uzuyama; Masaru Maruo; Akihito Fukutome; Yoshiharu Nakazono, and Yoshimichi Matsumoto, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 1,291, Jan. 6, 1993, Pat. No. 5,402,676. This application Dec. 15, 1994, Ser. No. 356,916

Claims priority, application Japan, Feb. 28, 1992, 4-043996; Feb. 29, 1992, 4-44163; Jan. 26, 1992, 4-287932

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—118.1 **3 Claims**



1. A method of inspecting a steering-interrelated control function of a motorcar which operates to control a rotation of at least one wheel in response to a steering operation of the motorcar, said method comprising the steps of:

providing an inspecting apparatus having rolls for mounting thereon wheels of the motor cars;

running the motorcar in a condition in which each of the rolls provided in the inspecting apparatus has one of the wheels mounted thereon;

simulating steering wheel operating conditions during the preceding step of running;

detecting a change in rotational speed of a first of said rolls having mounted thereon a controlled wheel which is subject to the control of said steering-interrelated control function and a change in rotational speed of a second of said rolls having mounted thereon another wheel which is counterpart and which is not subject to the control of said steering-interrelated function; and

judging whether the steering-interrelated control function is acceptable or not based on a correlation of said changes in rotational speed of said first and second rolls.

5,483,824

VEHICLE PERFORMANCE INSPECTION APPARATUS AND VEHICLE PERFORMANCE INSPECTION METHOD

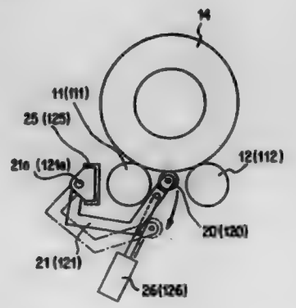
Yutaka Fukuda, Saitama, and Kouji Minagawa, Chiba, both of, Japan, assignors to Anzen Motor Co., Ltd., Tokyo, Japan

Division of Ser. No. 991,294, Dec. 16, 1992, Pat. No. 5,392,640. This application Mar. 11, 1994, Ser. No. 208,829

Claims priority, application Japan, May 1, 1992, 4-139764

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—125 **1 Claim**



1. A vehicle performance inspection method for evaluating a vehicle ABS control system operational state, said method comprising the steps of:

receiving and supporting wheels of a vehicle equipped with an ABS control system on pairs of parallel receptive support rollers;

bringing rotation detecting rollers into forcible contact with the received and supported vehicle wheels;

establishing a vehicle ABS control system test condition and rotating the received and supported vehicle wheels; and

evaluating the operational state of the vehicle ABS control system,

wherein inertia rotating means are subordinately rotated by the rotation detecting rollers, wherein said received and supported vehicle wheels are rotated by rotatably driving at least one of the respective support rollers of each pair, wherein the vehicle control system test condition is established by rotating the vehicle wheels at a steady state rotational speed and applying a braking action while continuing to rotate the inertia rotating means, and wherein the operational state of the ABS control system is evaluated based on changes in driving torques produced between the rotation detecting rollers and the inertia rotating means and on changes in rotational frequencies of the rotating wheels caused correspondingly to the state of the braking action.

5,483,825

ACCELERATOR PEDAL SYSTEM PERFORMANCE MEASUREMENT APPARATUS

Joseph J. Greenbaum, Bloomfield Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 3, 1994, Ser. No. 316,757

Int. Cl.[6] G01N *19/00*

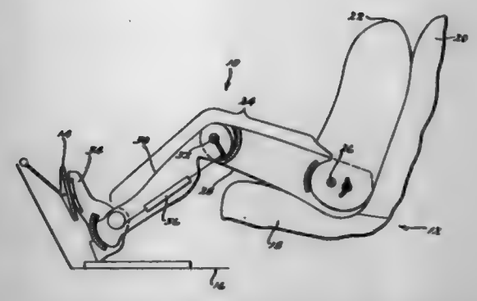
U.S. Cl. 73—132 **19 Claims**

1. An apparatus for measuring the performance of an accelerator pedal of an automotive vehicle having a floor and seat, the seat including a seat back and seat base, the apparatus comprising:

a torso member positioned against the seat back;

an elongated femur member having a first end and a second end, said femur member having at least a portion thereof positioned against said seat base;

a first pivotal joint connecting said first end of said femur member to said torso member, said joint pivoting about an axis positioned laterally to said torso member and said femur member so that the second end of said femur member pivots



around said axis, said first pivotal joint forming a reference point having fixed location with respect to said seat base and said seat back despite movement of said femur member;

an elongated calf member having a first end and a second end;

a second pivotal joint pivotally coupling said first end of said calf member to said second end of said femur member;

a foot member;

a connection means for operatively coupling said foot member and said calf member, said connection means having a portion having a fixed position relative to the floor;

a linear actuator coupled between said calf member and said connection means for moving said connection means with respect to said calf member; and

said foot member fixedly coupled to said connection means having a bearing surface for contacting the accelerator pedals.

5,483,826

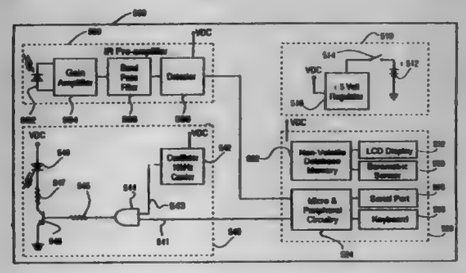
REMOTELY ACTUATED PRESSURE SENSOR RESPONSIVE TO AN ACTUATING SIGNAL

Thomas J. Schultz, Neenah, and Alan J. Campbell, New Berlin, both of Wis., assignors to TJS Development Corporation, Inc., Neenah, Wis.

Division of Ser. No. 792,134, Nov. 13, 1991, Pat. No. 5,301,553, which is a continuation-in-part of Ser. No. 453,785, Dec. 20, 1989, Pat. No. 5,083,457. This application Apr. 11, 1994, Ser. No. 226,664

Int. Cl.[6] B60C *23/02*

U.S. Cl. 73—146.5 **20 Claims**



1. A sensor for transmitting a signal indicative of a characteristic of an apparatus in response to a remote activation signal from a remote external source, the external source transmitting the remote actuation signal across a wireless medium, the sensor comprising:

battery means for providing power to the sensor;

sensing means for determining the characteristics associated with the equipment and generating a sensing signal indicative thereof;

means for receiving the remote activation signal from the external source and providing a sensor activation signal;

processing means for receiving the sensing signal and generating a digital processor signal indicative of the sensing signal; and

transmitting means for receiving the digital processor signal and generating a transmission signal indicative of the processor signal for reception by the external source, the transmission signal being indicative of the characteristic associated with the equipment; and

activation means for providing the power from the battery means to the processing means and the transmitting means in response to the sensor activation signal, wherein the processing means generates the digital processor signal in response to the power from the battery means, whereby the power consumed by the sensor is reduced by powering the processing means and the transmitting means through the activation means.

5,483,827

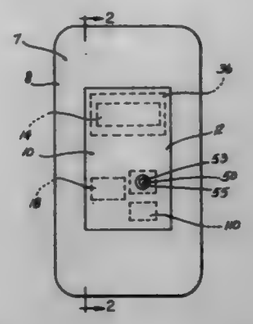
ACTIVE INTEGRATED CIRCUIT TRANSPONDER AND SENSOR APPARATUS FOR SENSING AND TRANSMITTING VEHICLE TIRE PARAMETER DATA

Harvey J. Kulka, Britton, and John H. Schramm, Ann Arbor, both of Mich., assignors to Computer Methods Corporation, Livonia, Mich.

Filed Jun. 3, 1994, Ser. No. 254,026

Int. Cl.[6] B60C *23/00*

U.S. Cl. 73—146.5 **62 Claims**



1. A transponder for sensing, storing and transmitting vehicle tire condition parameter data comprising:

a substrate adapted to be fixedly mountable on an inner surface of a vehicle tire;

a processor means, a memory, a receiver means connected to the processor means for receiving an interrogation signal from a source from the tire in which the substrate is mounted, and a transmitter means connected to the processor means for transmitting a signal containing data repreaentative of sensed tire condition parameter data to a remote source, all mounted on the substrate;

sensor means, mounted on the substrate, for sensing a tire parameter and for generating an output signal to the processor means representative of the sensed tire parameter;

power supply means, mounted on the substrate, for supplying electrical power to the processor means, the memory, the receiver means, the transmitter means and the sensor means; and

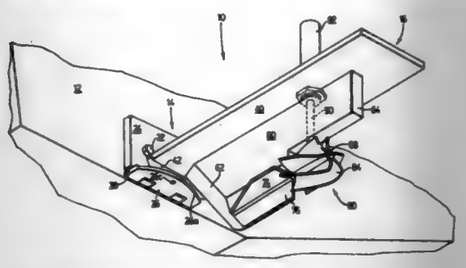
antenna means, mounted on the substrate and connected to the receiver means and the transmitter means, for communicating an interrogation signal from the remote source to the receiver means and for communicating a signal from the transmitter means to the remote source

the processor means executing a control program stored in the memory and, in response to an interrogation signal received by the receiver means and the output signal from the sensor means, generating and supplying a signal representative of the sensor output signal to the transmitter means for transmission to a remote source.

5,483,828
SPEED INDICATOR FOR MARINE VEHICLES

Brian Callihoo, 9507-113 Street, Grand Prarie, Alberta, Canada

Filed Mar. 15, 1994, Ser. No. 213,091
Int. Cl.[6] G01C *21/00*
U.S. Cl. 73—187 21 Claims

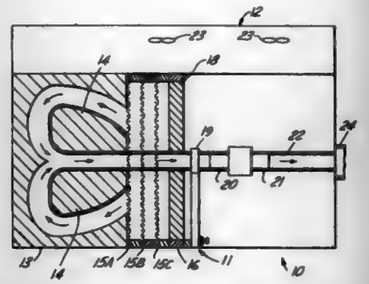


1. A speed indicator for a marine vehicle comprising:
mounting means to secure said indicator to said marine vehicle;
an impeller including vanes of magnetically conducting material and being rotatably mounted on said indicator, said impeller rotating at an angular velocity dependent on the speed of said marine vehicle;
magnetic sensing means to sense rotation of said impeller and provide an output representative of the speed of said marine vehicle; and
a support on which said impeller and magnetics sensing means are mounted, said support being pivotal relative to said mounting means about an axis generally normal to the axis of said impeller.

5,483,829
ENVIRONMENTAL FLOW STAND INLET FLOW CONDITIONER

Richard W. Caron, Canton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 20, 1994, Ser. No. 262,283
Int. Cl.[6] G01F *15/00;25/00*
U.S. Cl. 73—198 4 Claims

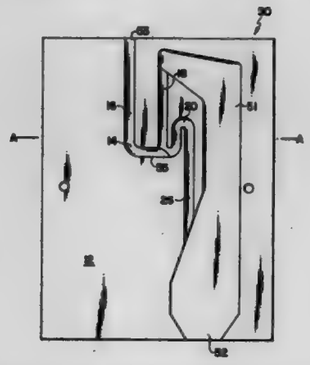


1. An air flow conditioner for regulating air flow into a mass air flow meter including:
a screen means for passing air and for straightening air flow; and
an air guide for changing the direction of air flow, said air guide being positioned downstream of said screen means and upstream of the mass air flow meter wherein said screen means includes;
a honeycomb means having a plurality of openings extruding axially in the direction of air flow straightening air flow and
a generally planar sheet having a plurality of openings for passing air flow and for straightening air flow, wherein said generally planar sheet includes a plurality of layers, with the layers having generally smaller openings in the downstream direction of air flow.

5,483,830
METHOD AND APPARATUS FOR MEASURING A LIQUID FLOW USING A SIPHON UNIT AND AN AERATING DUCT

Xaver Dietz, Vohburg, and Georg Kothmeier, Ingolstadt, both of, Germany, assignors to Durango holding GmbH, Ingolstadt, Germany

PCT No. PCT/EP92/00499, § 371 Date Dec. 8, 1993, § 102(e) Date Dec. 8, 1993, PCT Pub. No. WO92/15249, PCT Pub. Date Sep. 17, 1992
PCT Filed Feb. 5, 1992, Ser. No. 108,608
Claims priority, application Germany, Mar. 5, 1991, 41 06 995.1
Int. Cl.[6] G01F *3/38*
U.S. Cl. 73—226 18 Claims



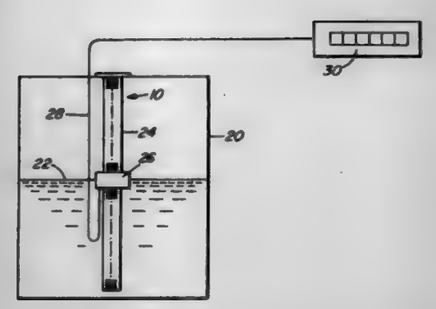
4. An apparatus for measuring a volume of a liquid flow comprising:
a siphon unit provided with a siphon subdividing the liquid flow into individual measuring volumes;
a filling duct, an outflow duct and an aerating duct for the liquid flow;
digital detector means for detecting each individual measuring volume during an emptying cycle initiated by the siphon unit; and
an evaluating device for evaluating a volume of the liquid flow from the number of emptying cycles and the individual measuring volumes;
said siphon unit including an approximately horizontal chamber provided, in flow direction, close to the siphon and communicating with the siphon so that each of the individual volumes is temporarily stored in the approximately horizontal chamber and the siphon;
wherein said filling duct and said aerating duct communicate with said approximately horizontal chamber;
said approximately horizontal chamber extends into an inlet portion of said siphon;
said approximately horizontal chamber and said siphon having approximately the same internal diameter; and said aerating duct feeding air in said volume of liquid flow internally back to said approximately horizant chamber.

5,483,831
DIRECT LIQUID LEVEL READING DEVICE

George A. Steiner, 4425 Harvard Ave., Montreal, Quebec, Canada

Filed Nov. 9, 1993, Ser. No. 149,599
Int. Cl.[6] G01F *23/60;* G06K *7/10*
U.S. Cl. 73—313 8 Claims

1. A liquid level measuring device comprising:
a vertical guide having a fixed vertical scale for a vessel or a body of liquid mounted on the vertical guide, the fixed scale having a vertical series of horizontal binary coded bits representative of binary coded numbers indicating linear divisions;

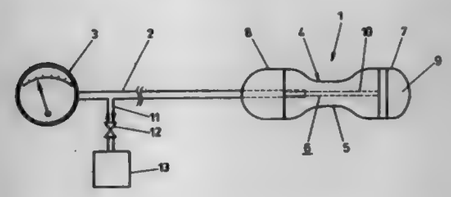


float means to raise and lower with liquid level, said float means having means for cooperating with portions of said vertical guide for keeping the float means movable in a substantially vertical path adjacent the fixed vertical scale while maintaining a controlled distance from the fixed scale;
reading head on the float means to read each of the horizontal binary coded bits individually on the fixed scale representing liquid level, and
connection means for providing a level signal from the reading head to a means for displaying an indication of liquid level.

5,483,832
DEVICE FOR MONITORING THE CONTRACTABILITY OF THE PELVIC FLOOR MUSCLES

Alexander Pauser, Czartoryskigasse 163, Vienna, Austria, and Ilse Michl, Dustmannweg 9, Vienna, Austria

PCT No. PCT/AT93/00041, § 371 Date Nov. 9, 1993, § 102(e) Date Nov. 9, 1993, PCT Pub. No. WO93/17619, PCT Pub. Date Nov. 9, 1993
PCT Filed Mar. 8, 1993, Ser. No. 146,095
Claims priority, application Austria, Mar. 9, 1992, 454/92
Int. Cl.[6] A61B *5/00;* G01L *19/00*
U.S. Cl. 73—379.08 17 Claims

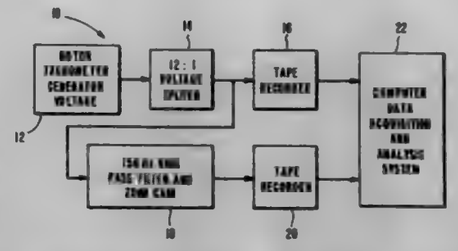


1. A device for monitoring the contractibility of the pelvic floor muscles comprising
a probe having a first end and a second end, a plurality of chambers, each defined by an elastically deformable membrane, at least one of the plurality of chambers being fluid filled; at least one of the plurality of chambers being positioned intermediate the first and second ends and having a constricted region;
at least one fluid filled conduit having two ends, one of the ends being connected to the at least one fluid filled chamber by way of fluid communication with the fluid filled chamber; and
a display device, connected to and in communication with, the other end of the fluid filled conduit.

5,483,833
METHOD AND APPARATUS FOR MONITORING AIRCRAFT COMPONENTS

Larry M. Dickens, Oak Ridge; Howard D. Haynes, Knoxville, and Curtis W. Ayers, Clinton, all of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Mar. 22, 1994, Ser. No. 216,227
Int. Cl.[6] G01H *1/00*
U.S. Cl. 73—583 28 Claims

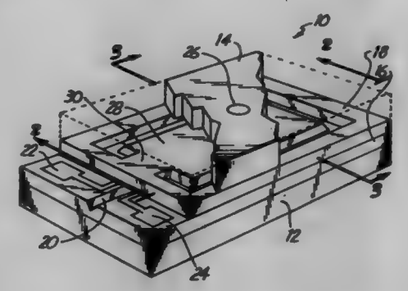


1. An apparatus for monitoring an aircraft having a mechanical system and an electrical system, comprising:
means for obtaining an electrical signal from a component of the electrical system, the electrical signal varying in accordance with movement of at least one component of the mechanical system; and
means for correlating changes in the electrical signal to changes in condition of the at least one component,
wherein the electrical signal is a voltage signal, and wherein the means for producing the voltage signal comprises at least one of a gas producer turbine tachometer generator, a power turbine tachometer generator, a rotor tachometer generator, and an aircraft systems power producing starter/generator.

5,483,834
SUSPENDED DIAPHRAGM PRESSURE SENSOR

Roger L. Frick, Hackensack, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Sep. 20, 1993, Ser. No. 123,729
Int. Cl.[6] G01L *9/12*
U.S. Cl. 73—724 26 Claims

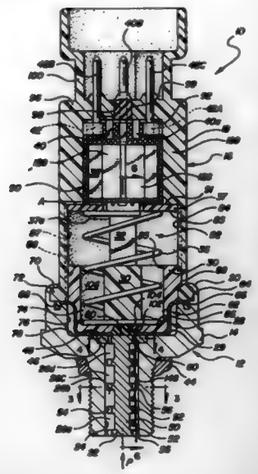


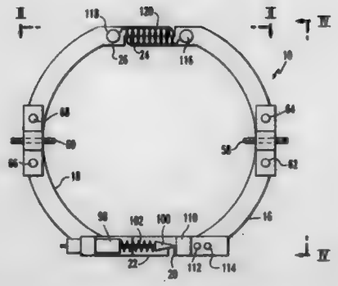
18. An apparatus for measuring pressure of a process fluid, comprising:
a sensor body formed of a brittle, corrosion-resistant material, the sensor body responsive to the pressure of the process fluid;
a support;
a sensing element carried by the sensor body responsive to deformation of the sensor body; and
an elongated stress isolator extending between the support and the sensor body and formed of the same material as the sensor body, the isolator including a conduit for carrying an electrical conductor coupled to the sensing element.

5,483,835
OIL PRESSURE SENDER UNIT WITH REINFORCED DIAPHRAGM

Henry Ciolli, Clinton Township, Mich., assignor to Saturn Electronics & Engineering, Inc., Rochester Hills, Mich.

Filed Oct. 13, 1993, Ser. No. 136,443
Int. Cl.[6] G01L 9/02
U.S. Cl. 73—726 20 Claims





1. An oil pressure sender unit for use in an automotive vehicle, the sender unit comprising:

a base structure including a generally cylindrical base having an open end and a closed end and a cylindrical interior chamber between the two ends, and an oil inlet chamber extending from the open end to the interior chamber;

a damper plug positioned within said oil inlet chamber for smoothing inlet oil pulsations;

a rolling diaphragm centrally positioned within the interior chamber of said base structure;

a piston having a wiper structure secured to said piston, said piston being positioned on said base;

a spring positioned within said interior chamber for biasing said piston;

a body structure including a generally cylindrical body having a first end connected to said base and a second end opposite said first end, a center section located between said ends, and an interior chamber between the first end and the center section;

a spring retainer located adjacent said body structure; and

a circuit card structure including a variable resistor circuit and a control switch circuit.

5,483,836
DEVICE FOR MEASURING LATERAL DEFORMATIONS IN MATERIAL TEST SPECIMENS

Stephen Kinnebrew, Vicksburg, Miss., assignor to U.S. Army Corps of Engineers as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 21, 1994, Ser. No. 215,745
Int. Cl.[6] G01N 3/00
U.S. Cl. 73—795 12 Claims

1. A device for measuring lateral deformation in an material specimen having a longitudinal axis comprising:

(a) a generally ring shaped frame member displaced generally perpendicularly to the object being measured and itself comprising a first and a second generally arc shaped element each of said arc shaped elements having first and second terminal ends and being positioned so that the first terminal end of the first arc shaped member adjoins the first terminal end of the second arc shaped member and the second terminal end of the first arc shaped member adjoins the second terminal end of the second arc shaped member and the second terminal end of the first arc shaped member adjoins the second terminal end of the second arc shaped member and there being a spring mounting means on the first arc shaped element adjacent its first terminal end and a spring receiving means on the second arc shaped element adjacent its first terminal end; and wherein the spring mounting is a projection extending longitudinally from the first arc shaped element and the spring receiving means is a projection extending longitudinally from the second arc shaped element in the same direction as the spring mounting means such that the spring arm member extend in spaced parallel relation to the frame member and bears against the spring receiving means to flex the spring arm member in response to movement of the spring retaining means relative to the spring receiving means;

(b) a spring arm member having a fixed end and a movable end and being retained at its fixed end on the spring mounting means extending therefrom to abut the spring receiving means adjacent its movable end;

(c) at least one strain measuring means fixed to the spring arm member to detect changes in the flexture of the spring arm member between the spring mounting means and the spring receiving means, and wherein the spring arm member flexes in response to the lateral deformation of the object being measured; and

(d) wherein the first arc shaped element is pivotally attached to the second arc shaped element at the first terminal ends of said first and second arc shaped elements so that the first arc shaped element is pivotable in a longitudinal arc relative to the second arc shaped elements.

5,483,837
BALE TIE FORMED WITH MARCELLED PORTION, PACKAGE COMPRISING COMPRESSED BALE AND SUCH TIE, AND RELATED FORMING APPARATUS

George M. Velan, Mount Prospect; Gale W. Huson, Glenview, and John R. Beach, Elmhurst, all of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Division of Ser. No. 18,378, Feb. 16, 1993, abandoned. This application Jul. 12, 1994, Ser. No. 273,679
Int. Cl.[6] G01N 3/08
U.S. Cl. 73—805 12 Claims

1. A method of determining an unknown tensile load previously imparted to an element having a marcelled portion, which is characterized by a series of sinusoidal undulations, comprising the steps of:

imparting a first unknown tensile load to said element, having an original length and said marcelled portion incorporated therein, so that said marcelled portions tends to yield by substantially straightening whereby said element has a first tensile load length;

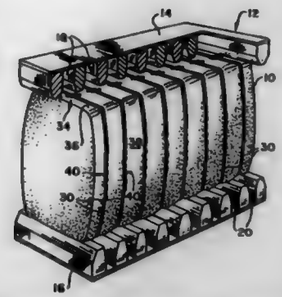
releasing said element from said first unknown tensile load so as to permit said element to tend to partially contract from said substantially straightened, first tensile load length toward said original length and thereby achieve a second length which has a value between said original length and said first tensile load length;

imparting a second tensile load to said partially contracted, partially straightened element having said second length, wherein said second tensile load is known to exceed said first tensile load as a result of said element attaining a third tensile load length which is greater than said first tensile load length;

measuring elongation of said element throughout the reloading of said element with said second tensile load;

plotting elongation measurements of said element, throughout said reloading of said element with said second tensile load, as a function of said imparted load; and

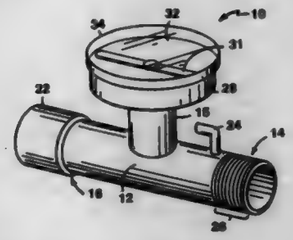
determining different slope characteristics of said plotted measurements, the intersection of said different sloped portions of said plotted measurements indicating said first unknown tensile load.



5,483,838
FLUID FLOW CONNECTOR AND GAUGE ASSEMBLY

Edward S. Holden, 16 Lowell St., Cambridge, Mass. 02138

Continuation-in-part of Ser. No. 175,973, Dec. 29, 1993, abandoned. This application Jan. 6, 1995, Ser. No. 369,372
Int. Cl.[6] G01F 1/00
U.S. Cl. 73—861.61 5 Claims



1. A gauge and connector assembly for measuring liquid pressure and flow rate, comprising:

an axially elongated, integral tubular body having an externally threaded male end portion and an opposite female end portion, said integral tubular body defining an axial main conduit, and a test conduit generally transverse to said main conduit;

an internally threaded sleeve rotatably mounted upon said integral tubular body at said female end portion and adapted for connection of said main conduit to a source of liquid under pressure;

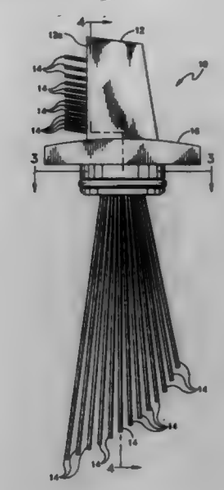
a closure element associated with said integral body for resisting flow of liquid through said main conduit; and

a gauge of pressure and flow rate mounted upon said integral tubular body and in communication with said test conduit, said gauge comprising a pointer, a first display surface for indication of liquid pressure, and a second display surface for indication of liquid flow rate, said first display surface and said second surface display being mutually adjustable.

5,483,839
MULTI-PITOT TUBE ASSEMBLY

Robert Meunier, Portsmouth, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 8, 1994, Ser. No. 353,642
Int. Cl.[6] G01F 1/46
U.S. Cl. 73—861.66 17 Claims



1. A multi-pitot tube assembly for obtaining flow measurements in a medium adjacent to a structure comprising:

an open, generally cylindrical base sealingly inset into a corresponding structure aperture in said structure;

a holding member formed of a moldable material, said moldable material filling a first portion of said base closest to said medium to fixedly attach a first end of said holding member to said base, said holding member having a second end extending into said medium, said second end of said holding member having a forward edge; and

a plurality of pitot tubes passing within said holding member, said holding member maintaining said plurality of pitot tubes in fixed positions, said plurality of pitot tubes having a first end extending through said forward edge into said medium, said plurality of pitot tubes having a second end extending through said base, through said structure aperture and into said structure, said moldable material further filling the interstices between said plurality of pitot tubes, said moldable material sealing said pitot tubes within said holding member and further sealing said pitot tubes within said base.

5,483,840
SYSTEM FOR MEASURING FLOW

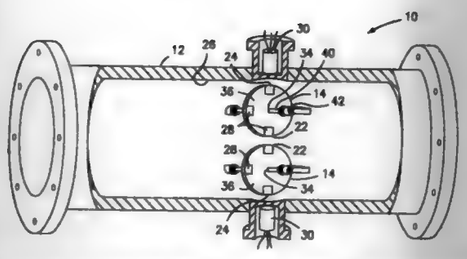
Victor Chang, San Antonio; Oscar Chang, and Mauricio Campo, both of Caracas, all of, Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed Nov. 17, 1994, Ser. No. 341,007
Int. Cl.[6] G01L 1/00
U.S. Cl. 73—861.71 22 Claims

1. A system for measuring a flow parameter of a fluid, comprising:

a conduit defining a flow passage for said fluid, said flow passage having a central axis;

means located in said flow passage for sensing a differential between a first resultant drag force exerted by said fluid at a first distance from said central axis and a second resultant drag force exerted by said fluid at a second distance from said central axis different from said first distance; and



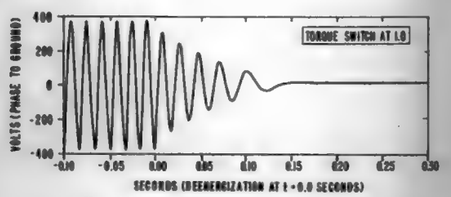
means for determining said flow parameter from said sensed differential, whereby said flow parameter is accurately measured regardless of viscosity changes in said fluid.

5,483,841

METHOD AND APPARATUS FOR MONITORING MOTOR OPERATED VALVE MOTOR OUTPUT TORQUE AND POWER AT VALVE SEATING

Donald A. Casada, Oak Ridge, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Jul. 18, 1994, Ser. No. 274,738
Int. Cl.[6] G01M *19/00*; G01P *13/00*
U.S. Cl. 73—862.193 **7 Claims**



1. An apparatus for monitoring an electric motor coupled to a power supply line and having a deenergizing switch disposed in the power supply line, comprising:

means, coupled to a load side of the deenergizing switch, for sensing at least one electrical parameter associated with and generated by the motor; and

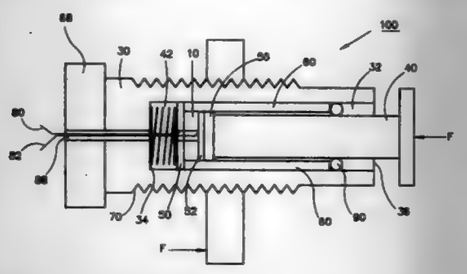
means for correlating the at least one electrical parameter to at least one operating parameter of the motor.

5,483,842

FORCE SENSOR USING A PIEZOCERAMIC DEVICE

Donald S. Foreman, Fridley, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 30, 1994, Ser. No. 347,009
Int. Cl.[5] G01L *1/00*
U.S. Cl. 73—862.392 **10 Claims**



1. A force sensor, comprising:

a first member having a first cavity formed therein, said first cavity having an opening at one end of said first cavity and a wall at another end of said first cavity;

a second member disposed within said first cavity of said first member, said second member being made of an electrically conductive material;

a piezoelectric component disposed within said first cavity;

a resilient force transfer device disposed within said first cavity between said wall and said piezoelectric component;

means for measuring a voltage potential between a first portion of said piezoelectric component and a second portion of said piezoelectric component; and

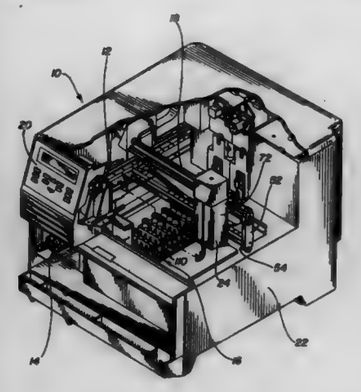
means for insulating said second member from said piezoelectric component.

5,483,843

TRANSPORT APPARATUS

Leslie A. Miller, San Jose; Thomas J. McCall, Jr., Fremont; Samuel A. Marquiss, Santa Clara; Douglas H. Smith, Los Altos, and Richard F. Johnson, San Jose, all of Calif., assignors to Thermo Separation Products Inc., Fremont, Calif.

Filed Jun. 1, 1992, Ser. No. 891,869
Int. Cl.[6] G01N *35/00*
U.S. Cl. 73—864.23 **27 Claims**



1. A vial transport apparatus comprising:

means for engaging a vial, said engaging means comprising means for supporting said vial from beneath said vial and means for at least partially surrounding said vial to entrap said vial during transport thereof; and

drive means for moving said engaging means in at least the X and Z directions.

5,483,844

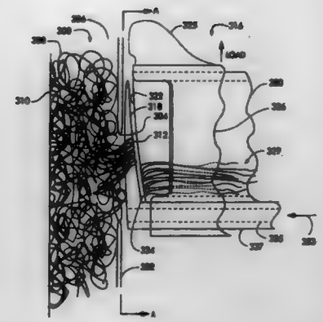
NEEDLE-BASED APPARATUS FOR INDIVIDUALIZING SINGLE FIBERS AND OTHER TEXTILE ENTITIES FOR TESTING PURPOSES

Frederick M. Shofner; Mark G. Townes, both of Knoxville, and Gordon F. Williams, Norris, all of Tenn., assignors to Zellweger Uster, Inc., Knoxville, Tenn.

Continuation of Ser. No. 999,305, Dec. 31, 1992, Pat. No. 5,367,747. This application Sep. 29, 1994, Ser. No. 314,803
Int. Cl.[6] G01N *1/04*
U.S. Cl. 73—864.42 **11 Claims**

10. A single-needle sampler assembly comprising:

a needle arranged for generally parallel movement relative to a sample holder plate having perforations through which portions of a loose mass of fibrous material project so as to load fibers and other entities from the projecting portions onto said needle;



a fiber plate movable relative to said needle between a clamping position and a sampling position, said fiber plate having a leading edge configured for engagement with said needle so as to clamp fibers between said needle and said fiber plate leading edge in the fiber plate clamping position, and said leading edge being spaced from said needle in the fiber plate sampling position to permit the loading of fibers onto said needle; and

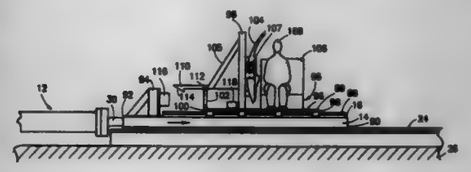
a retractable fiber plate housing movable between a retracted position which exposes a working portion of said fiber plate and a sampling position which substantially exposes said fiber plate with the exception of a projecting portion immediately adjacent said leading edge, said fiber plate housing in its sampling position defining an airflow passage on either side of said fiber plate such that the ends of fibers loaded onto said needle are drawn into said airflow passages generally alongside said fiber plate with an intermediate portion of each fiber engaging said fiber plate leading edge.

5,483,845

APPARATUS AND METHOD FOR SIDE IMPACT TESTING

Douglas J. Stein, Oxford; Frederick M. Peters, Northville; James R. Kelly, Richmond, and Chad J. Ivan, Fenton, all of Mich., assignors to Morton International, Inc., Chicago, Ill.

Filed Sep. 12, 1994, Ser. No. 304,386
Int. Cl.[6] G01M *7/08;19/00;17/00*; G01N *3/30*
U.S. Cl. 73—865.3 **15 Claims**



1. Apparatus for dynamic testing by rapidly accelerating a specimen, comprising in combination:

a pressure differential firing means terminating in a thrust surface;

a sled carriage slidably mounted on first track means attached to a fixed foundation for free longitudinal movement of said sled carriage along the track means, said sled carriage having a horizontal top surface terminating in a leading edge at one end and a trailing edge at an opposite end of the sled carriage, the trailing edge positioned for being accelerated by the thrust surface upon actuation of the firing means;

second track means fixedly mounted on the top horizontal surface of the sled carriage longitudinally between the leading edge and the trailing edge of said sled carriage;

ram means located on said horizontal surface of the sled carriage adjacent the trailing edge;

a test dolly assembly slidably mounted on said second track means for free longitudinal movement along the second track means; said test dolly assembly comprising a frame structure member having:

a leading face and a trailing face,

an impact block facing toward the trailing face of said frame structure and being strikable by said ram means for imparting longitudinal movement to said test dolly assembly along the second track means,

a crash test member facing toward the leading face of the frame structure, and

adjacent the crash test member on a side thereof opposite the impact block, a seating means for seating an anthropomorphic test specimen;

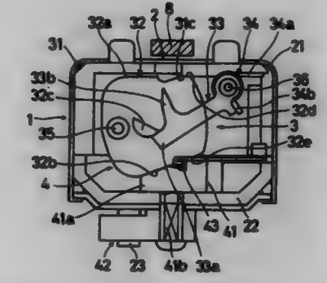
said test dolly assembly being essentially stationary on the second track means of the sled carriage due to inertia thereof until the ram means on the sled carriage moving longitudinally on the first track means strikes the impact block of the test dolly assembly.

5,483,846

IMPACT SENSING APPARATUS

Kazunori Sakamoto; Taieki Kawamura, and Yutaka Kondoh, all of Aichi, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 1, 1993, Ser. No. 143,882
Int. Cl.[6] B60R *21/32*; F42C *15/24*
U.S. Cl. 74—2 **8 Claims**



1. An impact sensing apparatus comprising:

a container;

a weight swingably supported in the container to swing in a first direction about a pivotal axis n response to an impact exceeding a predetermined value;

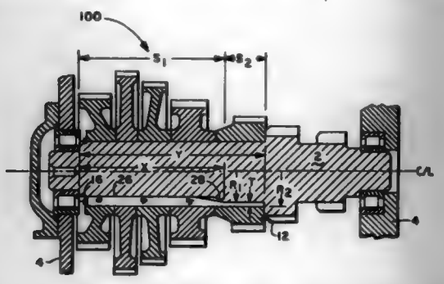
an output member rotatably supported in the container in engagement with the weight, the output member disengaging the weight upon the swinging of the weight a predetermined distance about said pivotal axis in said first direction;

the weight having a perimetrical edge that includes a stopper portion in contact with a surface of an interior section of the container to hold the weight at an initial position;

a spring member disposed between the container and the output member biasing the output member in a direction to disengage the weight upon the swinging of the weight said predetermined distance in the first direction, the spring member biasing the weight in a second direction via the output member urging the stopper portion of the weight against the surface of the interior section of the container to hold the weight in said initial position, the spring member and the pivotal axis and the stopper portion and the interior section being spaced from one another and oriented relative to one another to cause the spring member to press the stopper portion against the surface of the interior section of the container in a direction substantially perpendicular to the surface of the interior section of the container when the weight is held in said initial position lock lever rotatably disposed exteriorly of the container, and a lock cam rotatably supported in the container, the lock cam being connected to

and rotatable with the lock lever to selectively engage and disengage the weight in response to rotation of the lock lever, the weight remaining fixed in the initial position upon disengagement of the lock cam from the weight.

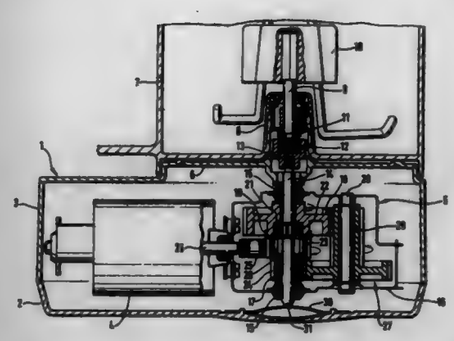
5,483,847
TRANSMISSION COUNTERSHAFT ASSEMBLY
Joseph D. Reynolds, Climax, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed May 5, 1993, Ser. No. 57,023
Int. Cl.[6] F16H *3/08*
U.S. Cl. 74—331 **3 Claims**



1. A vehicular transmission having an improved rotary countershaft assembly, said counter shaft assembly of the type having adjacent axially extending first and second sections, said second section having a diameter that is not less than the diameter of the first section, said first section having at least one countershaft gear that is rotatably disposed about the countershaft, a first groove extending axially along the first section and radially outwardly therefrom into a groove in the inner periphery of an opening through said first section gear through which the countershaft is received, said second section having at least one countershaft gear that is rotatably disposed about the countershaft, a second groove extending axially along the second section and radially outwardly therefrom into a groove in the inner periphery of an opening through the second section gear through which the countershaft is received, wherein the improvement is characterized by said assembly including a singular key extending axially along the first and second sections, said singular key removably disposed in the first groove for rotating the first section gear and having radial thickness along the second section defined between an inner radius measured from the centerline of the countershaft that is less by a predetermined amount than the sum of one-half the diameter of the countershaft second section and an outer radius measured from the centerline of the countershaft that is larger by a predetermined amount than the sum of one-half the diameter of the countershaft second section and the depth of the groove in the inner periphery of the second section gear surrounding the opening therethrough through which the countershaft is received and operative to rotate the second section gear.

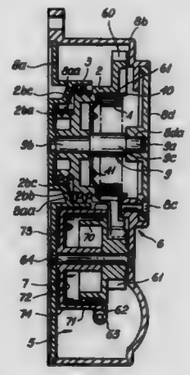
5,483,848
DRIVE MECHANISM FOR A KITCHEN APPLIANCE
Antonio Rebordosa, Oberursel, and Jürgen Golob, Friedrichsdorf, both of, Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Germany
Filed Mar. 17, 1994, Ser. No. 216,604
Claims priority, application Germany, Apr. 2, 1993, 43 10 847.4
Int. Cl.[6] F16H *3/08*
U.S. Cl. 74—371 **16 Claims**

1. A drive mechanism for a kitchen appliance comprising a drive motor and a transmission means with a tool output for the coupling of tools adapted to be driven by the tool output at two different speeds of rotation at a given motor speed, said transmission means



being a variable-speed transmission (5) having a sole axially displaceable output shaft (14) providing the tool output, said output shaft (14) being movable by axial displacement from a first position in which it is coupled to a first gear wheel (18), into a second position in which it is disengaged from said first gear wheel (18), being instead coupled to a second gear wheel (17) or to the motor shaft.

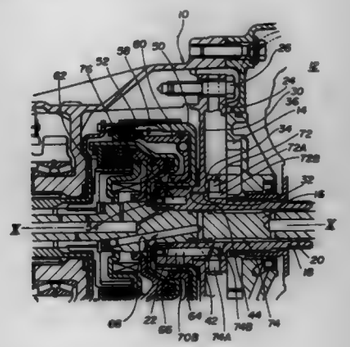
5,483,849
GOVERNOR WITH PULLEY
Makoto Orii, and Teruaki Imai, both of Nagano, Japan, assignors to Sankyo Seiki Mfg. Co., Ltd., Nagano, Japan
Filed Feb. 22, 1993, Ser. No. 20,648
Claims priority, application Japan, Feb. 24, 1992, 4-007962 U
Int. Cl.[6] G05G *1/08*; B60T *8/72*
U.S. Cl. 74—506 **7 Claims**



1. A governor provided with a pulley comprising:
a casing;
a pulley rotatably supported by said casing;
a long member wound up around said pulley, said pulley being rotated when said long member is pulled;
a spring member for urging said pulley in the direction in which said long member is wound up;
braking means for braking said pulley when said long member is pulled; and
a long member winding up portion formed in said pulley so that winding up diameters thereof change as said long member is being pulled out which, in turn, changes the operation of said braking means,
wherein said long member winding up portion is a spiral groove describing a virtual spiral and wherein the spiral groove is composed of a small diameter portion of a long member winding up start position, a large diameter portion of a long

member winding up end portion, and a conical portion connecting both the small and large diameter portions.

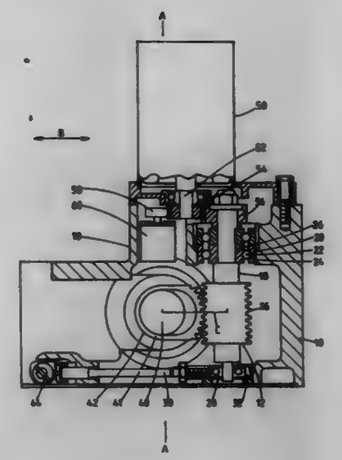
5,483,850
TRANSMISSION
Yasuhiro Yamauchi, Fuji, Japan, assignor to Jatco Corporation, Fuji, Japan
Filed Feb. 18, 1994, Ser. No. 198,358
Claims priority, application Japan, Mar. 5, 1993, 5-044926
Int. Cl.[6] F16H *57/02*
U.S. Cl. 74—606 R **4 Claims**



1. In a transmission:
a stationary sleeve having an axis;
a radially extending member formed with a bore receiving said stationary sleeve and extending radially outward with respect to said axis, said radially extending member including wall means defining said bore;
said radially extending member including an annular flange formed integrally therewith and coupled with said stationary sleeve, said annular flange being axially disposed adjacent said bore to hold said radially extending member in juxtaposed position with respect to said axis of said stationary sleeve;
said stationary sleeve having a reduced diameter section defining a shoulder which engages said annular flange of said radially extending member; and
wherein said radially extending member is formed with a first fluid passage communicating with said bore and said stationary sleeve is formed with a second fluid passage having an end opening within an outer circumferential surface of said stationary sleeve, and said first and second fluid passages can be fluidly communicated with each other upon engagement of said annular flange with said shoulder.

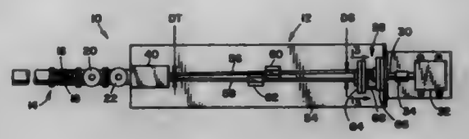
5,483,851
GEARBOX
Steven J. Willacy, Ilkley, and David S. Mitchell, Bingley, both of, United Kingdom, assignors to Lucas Industries public limited company, Solihull, England
Filed Dec. 2, 1993, Ser. No. 160,920
Claims priority, application United Kingdom, Dec. 11, 1992, 9225877
Int. Cl.[6] F16H *35/06;57/02*
U.S. Cl. 74—606 R **7 Claims**

1. A gearbox, comprising a housing having a first part, a first gear, a first axle, first and second axle supports, a second gear, a second axle and a compensation member, said first axle and said compensation member each having first and second portions, and said compensation member and at least one of said first and second gears having a coefficient of thermal expansion different from that of said housing, the material of said housing having a coefficient of



thermal expansion greater than those of the materials of said at least one gear and said compensation member in which: said first gear is mounted on said first axle; said second gear is mounted on said second axle and said second axle is supported by said housing; said compensation member is attached at said first portion thereof to said housing; said first axle is supported at said first portion thereof by said first axle support so as to be substantially fixed with respect to said first part of said housing and is supported at said second portion thereof by said second axle support; and said second axle support is arranged to cooperate with said second portion of said compensation member such that said second axle support is urged to move by said compensation member in response to a change in temperature to maintain said first and second gears in substantially temperature invariant engagement.

5,483,852
TWIN SCREW EXTRUDER AND TORQUE SPLITTING TRANSMISSION
Robert M. Stuemky, Franktown, Colo., assignor to The Gates Rubber Company, Denver, Colo.
Filed Dec. 17, 1993, Ser. No. 169,450
Int. Cl.[6] F16H *37/06*
U.S. Cl. 74—665 GA **16 Claims**



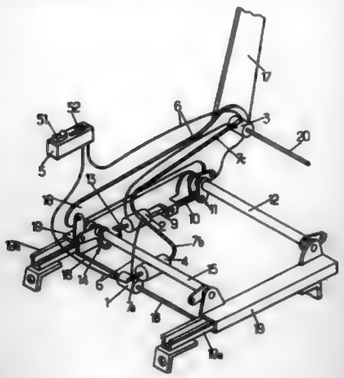
1. An extruder with twin screws having axes spaced a distance apart and driven by torque splitting gearing that includes at least one final drive pinion driving at least one of the screws and wherein the improvement comprises:
at least one flexible elongate shaft intermediate between and interconnecting the drive pinion and screw, the shaft sufficiently bent along its length to provide space for the drive pinion gear which has a diameter that is greater than the distance between the axes of the screws.

5,483,853

SYSTEMS FOR ADJUSTING VEHICLE SEATS

Pierre G. R. Moradell, Saint Gregoire Du Vievre, and Paul J. G. Jaudouin, Saint Georges Des Groseillers, both of, France, assignors to Bertrand Faure France, Boulogne, France

Filed Oct. 12, 1994, Ser. No. 321,680
Claims priority, application France, Jan. 14, 1993, 93 12231
Int. Cl.[6] B60N *2/12;2/18;2/20;* **F16C** *1/02*
U.S. Cl. 74—665 GD **13 Claims**



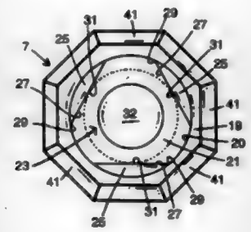
1. A system for adjusting a vehicle seat, the system comprising a plurality of adjustment mechanisms that are selectively driven by a common adjustment electric motor via gear units that are distributed about the seat each respectively in the vicinity of a corresponding one of the adjustment mechanisms, the gear mechanisms being connectable to the adjustment motor via at least one transmission member rotating at the same speed as said adjustment motor, the system further including clutches and clutch control means, wherein each gear unit is permanently coupled to the adjustment motor by one of the transmission members, each gear unit being coupled to an adjustment mechanism via a corresponding one of the clutches which is installed between said gear unit and said adjustment mechanism.

5,483,854

APPARATUS FOR REMOVING CORK AND STOPPERING STRUCTURE FROM PRESSURIZED BOTTLE

Timothy P. King, Stanfordville, and Stacy Walsh, New York, both of N.Y., assignors to K2 Development Corporation, Pine Plains, N.Y.

Filed Mar. 6, 1995, Ser. No. 398,714
Int. Cl.[6] B67B *7/44*
U.S. Cl. 81—3.4 **25 Claims**



1. An apparatus for removing a stoppering structure from a bottle wherein the stoppering structure has a portion extending longitudinally outwardly from the bottle, said apparatus comprising:

a support structure adapted to be held in the hand of an operator; and

at least three metallic blades supported on the support structure, said blades defining therebetween a stoppering structure receiving space,

each blade having an edge portion disposed toward said receiving space,

each blade having a lower end portion and being supported so that the lower end portions of said blades are positioned to lie on a circle which is large enough to permit passage of the stoppering structure portion into said receiving space;

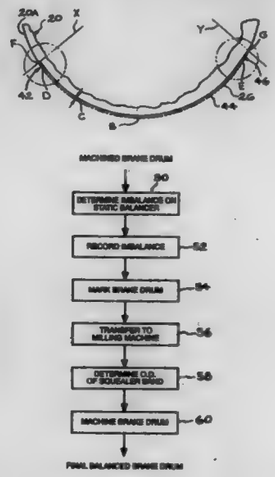
each of said blades extending at an angle of approximately 30 degrees to approximately 60 degrees obliquely relative to the plane of said circle radially inwardly of the circle from the end portion thereof at a relative distance from the other blades so that the blades cut into said stoppering structure portion and cammingly draw said stoppering structure portion into said receiving space when said apparatus is applied over said stoppering structure and rotated.

5,483,855

METHOD FOR FINAL BALANCING A BRAKE DRUM

Jay K. Julow, Louisville, Ky.; Robert A. DeRegnaucourt, Centerville, and John C. Hall, Kettering, both of Ohio, assignors to Dayton Walther Corporation, Dayton, Ohio

Filed Jun. 14, 1993, Ser. No. 76,986
Int. Cl.[6] B23C *3/34;3/04;* **B23B** *5/00*
U.S. Cl. 82—1.11 **20 Claims**



1. A method for producing a final balanced brake drum comprising the steps of:

(a) providing a brake drum including a generally cylindrical body provided with an integral raised squealer band, the squealer band having an outwardly facing surface initially machined to a predetermined diameter around its entire circumference, the brake drum having the initially machined squealer band incorporating an unacceptable imbalance;

(b) determining balancing specifications consisting of the location, length, and depth of a circumferentially extending substantially constant depth cut which extends along a predetermined length of the squealer band and which is necessary to correct the imbalance:

(c) positioning the brake drum on a cutting machine;

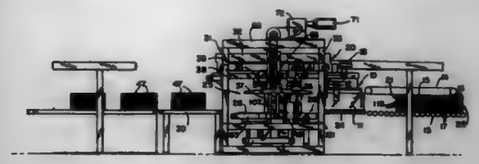
(d) operating the cutting machine to make the constant depth cut along the squealer band in accordance with the balancing specifications determined in step (b) to thereby produce a final balanced brake drum.

5,483,856

APPARATUS AND METHOD FOR SLITTING CORRUGATED PAPERBOARD BOXES

Dean W. Saultterberg, Prentice; William R. Nachtrab, Jr., Phillips; David G. Kadlecek, Park Falls, and Bruce H. Beutler, Phillips, all of Wis., assignors to Marquip, Inc., Phillips, Wis.

Continuation-in-part of Ser. No. 65,935, May 24, 1993, Pat. No. 5,375,492, which is a continuation-in-part of Ser. No. 878,681, May 5, 1992, abandoned. This application Nov. 18, 1994, Ser. No. 341,752
Int. Cl.[6] B26D *1/46;* **B31B** *1/14*
U.S. Cl. 83—23 **15 Claims**



1. A method for slitting a stack of corrugated paperboard sheets having a pair of opposite parallel cut edges, said method comprising the steps of:

(1) moving the stack of sheets in a direction normal to the cut edges onto a stack supporting table in a slitting station;

(2) positioning a downstream squaring device in the path of movement in the slitting station to engage a stack face defined by the downstream cut edges of the stacked sheets;

(3) positioning an upstream squaring device in the path of stack movement adjacent the stack face defined by the upstream cut edges of a stacked sheets;

(4) mounting a slitting blade below the stack supporting table in the slitting station, said blade having a horizontally disposed slitting edge moveable transversely with respect to the path of sheet movement, said blade edge disposed upwardly and positioned in a vertical cutting plane parallel to the cut edges of the stacked sheets in the slitting station;

(5) moving said downstream and upstream squaring devices toward one another to engage the respective stack faces and center the stack in the cutting plane; and,

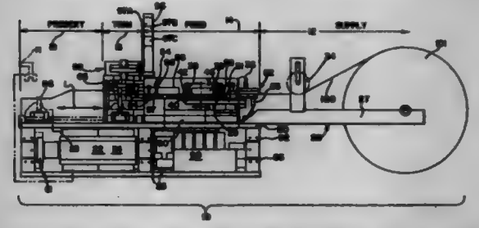
(6) moving the stack supporting table and the stack of sheets vertically downward through the slitting edge of the blade to slit the stack in the cutting plane and form two stacks of smaller sheets.

5,483,857

WORKPIECE FINISHING AND PRESENTATION MACHINE

Frank Ziberna, Elmhurst, Ill., assignor to Bi-Link Metal Specialties, Elmhurst, Ill.

Filed Sep. 20, 1993, Ser. No. 123,718
Int. Cl.[6] B21D *28/02;* **B26D** *7/18*
U.S. Cl. 83—104 **22 Claims**



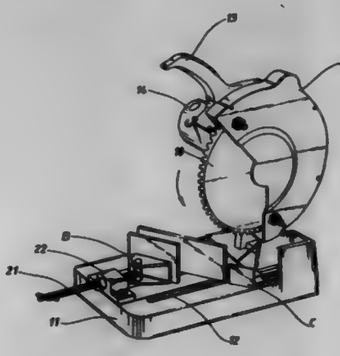
13. A machine for trimming a single part from a supply of individual parts and presenting the single part to an automated loading means at a predetermined location and elevation, the machine being adapted to engage a supply of parts in the form of a continuous supply belt of parts in which individual parts are disposed side-by-side in a predetermined spacing with adjacent parts being interconnected together by integral web portions at opposing ends of said parts, the web portions being disposed generally flat in a common plane, said machine comprising: means defining a feedpath of said machine extending along an axis of said machine, the feedpath having a part-receiving channel and supply belt supporting surfaces, means for cutting a single part from said supply belt of parts, means for advancing said supply of parts along said feedpath by engaging only said web portions of said supply belt so as to incrementally advance successive interconnected parts in the plane of said web portions into a ready position within said cutting means and means for receiving said single part cut from said supply belt and presenting it to a predetermined location and elevation distant from said cutting means.

5,483,858

SAWING MACHINE HAVING ANGLE-ADJUSTABLE CLAMPING MECHANISM AND SAFETY ALIGNMENT MECHANISM

Tony Chen, Taipei, Taiwan, Prov. of China, assignor to Ko Shin Electric and Machinery Co., Ltd., Taipei, Taiwan, Prov. of China

Filed Jun. 9, 1994, Ser. No. 257,122
Int. Cl.[6] B26D *7/02*
U.S. Cl. 83—464 **3 Claims**



1. A sawing machine comprising:

a) a base including a top surface;

b) a power-controlled sawing device, a clamping and angle-adjusting mechanism, and a safety alignment mechanism supported on the base;

c) the clamping and angle-adjusting mechanism including a first clamping plate, a second clamping plate, a bottom plate on the top surface of the base, a rotatable threaded rod mounted on the bottom plate, the first clamping plate being pivotally connected to the threaded rod for forward and backward movement during rotation of the threaded rod, the second clamping plate including a first sleeve integrally formed thereon, a seat mounted on the bottom plate, the second clamping plate being secured to the seat through the first sleeve, an angle-adjusting mechanism carried by the first sleeve and including a locating pin, a spring and a knob secured to the locating pin for permitting the second clamping plate to be selectively fixed in one of plural angular positions relative to the seat in correspondence to a sawing direction defined by the sawing machine; and

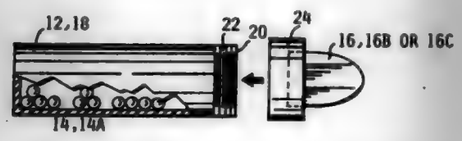
d) the safety alignment mechanism including a stop plate, a second sleeve integrally formed on the stop plate, a sliding plate movably mounted on the base, a shaft fixed to the sliding plate, the second sleeve being rotatably supported on the shaft, and a fastening means for securing the sliding plate in a desired position on the base and permitting the stop pate to be rotated to a desired angle of alignment with the second clamping plate.

5,483,859

COMBINATION STRUMMING PICK AND PERCUSSION DEVICE

Vanessa L. Singer, 7210 Jordan Ave., No. B83, Canoga Park, Calif. 91304

Filed Dec. 13, 1994, Ser. No. 355,046
Int. Cl.[6] G10D *3/16;13/08;* **A63H** *5/00*
U.S. Cl. 84—322 **21 Claims**



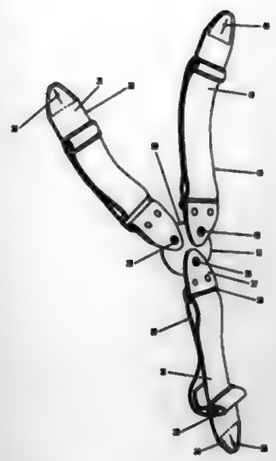
1. A combination strumming pick and percussion device comprising:
a) a hollow enclosed container,
b) a multiplicity of particles located within said container, and
c) a pick having an upper section and a lower section, where the lower section is attached by an attachment means to said container, where when said container is oscillated to cause the upper section of said pick to strum strings of a stringed musical instrument, a rhythmic musical sound is emitted that includes the sound produced by the strummed musical instrument and a complimentary percussion sound produced by said particles impinging on the container.

5,483,860

HARNESS FOR GUITAR OR LIKE INSTRUMENT

Cliff Adams, 6885 Shepard Mesa Rd., Carpinteria, Calif. 93013

Continuation of Ser. No. 65,651, Jul. 9, 1993, Pat. No. 5,291,816. This application Mar. 3, 1994, Ser. No. 206,129
The portion of the term of this patent subsequent to Mar. 8, 2011, has been disclaimed.
Int. Cl.[6] G10D *3/00;* **A45F** *3/14;5/00*
U.S. Cl. 84—327 **4 Claims**



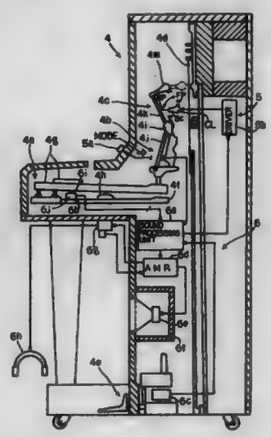
1. A harness for positioning and stabilizing a musical stringed instrument, comprising:
(a) a backpiece;
(b) a first segment having a first and second end; a first attachment means for attaching said first end of said first segment to said backpiece; a first anchoring means for anchoring said second end of said first segment to said instrument;
(c) a second segment having a first and second end; a first attachment means for attaching said first end of said second segment to said backpiece; a second anchoring means for anchoring said second end of said second segment to said instrument;
(d) a third segment having a first and second end; a third attachment means for attaching said first end of said third segment to said backpiece; a third anchoring means for anchoring said second end of said third segment to said instrument; wherein each of said first, second and third segments is independent from any other of said segments.

5,483,861

KEYBOARD INSTRUMENT EQUIPPED WITH DURABLE HAMMER STOPPER FOR SELECTIVELY PRODUCING ACOUSTIC SOUNDS AND SYNTHESIZED SOUNDS

Kiyoshi Kawamura, and Kondo Motoya, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Jun. 20, 1994, Ser. No. 262,230
Int. Cl.[6] G10C *3/12;5/00;* **G10D** *15/00;* **G10H** *1/34*
U.S. Cl. 84—719 **9 Claims**



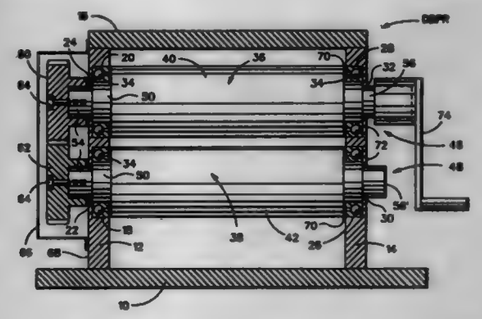
1. A keyboard instrument selectively entering into an acoustic sound mode for producing acoustic sounds and a silent mode for producing synthesized sounds, comprising:
a) an acoustic piano having
a-1) a keyboard having a plurality of swingable keys selectively depressed by a player in both acoustic sound and silent modes,
a-2) a plurality of key action mechanisms respectively linked with said plurality of swingable keys, and actuated by the depressed keys in both acoustic sound and silent modes,
a-3) a plurality of hammer assemblies having respective contact portions, and selectively driven by the key action mechanisms linked with said depressed keys for rotations in both acoustic sound and silent modes, and
a-4) a plurality sets of strings respectively associated with said plurality of hammer assemblies, and selectively struck by the hammer assemblies associated with said key action mechanisms linked with said depressed keys in said acoustic sound mode for producing said acoustic sounds;
b) a controlling system having a stopper, and responsive to an instruction of said player for changing said stopper between a free position in said acoustic sound mode and a blocking position in said silent mode, said hammer assemblies rebounding on the associated sets of strings when said stopper is in said free position, said hammer assemblies rebounding on said stopper before the impacts of said hammer assemblies on said associated sets of strings when said stopper is changed to said blocking position, said stopper having a plurality of recesses for receiving the contact portions of said hammer assemblies, an inner surface of each of said recesses being substantially conformal to a part of the outer surface of said contact portion of the associated hammer assembly; and
c) an electronic sound generating system enabled in said silent mode, and producing the synthesized sounds with notes assigned to said depressed keys.

5,483,862

APPARATUS AND METHOD FOR HOMOGENIZING PLASTIC EXPLOSIVES

Darryl F. Hale, Vicksburg, Miss., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 22, 1994, Ser. No. 345,722
Int. Cl.[6] F42D *1/08;* **C06B** *21/00*
U.S. Cl. 86—21 **3 Claims**



1. An apparatus for homogenizing plastic explosives, comprising:
a) a frame comprising a base and spaced first and second parallel supports extending perpendicularly therefrom;
b) first and second spaced parallel generally cylindrical rolls, each roll journaled at opposite end portions thereof to said supports and each roll having an uninterrupted peripheral surface portion for engagement with plastic explosive material;
c) means operably associated with one of said rolls at a first end thereof for rotating said one roll; and
d) means operably interconnecting said rolls at a second end thereof so that rotation of said one roll causes associated rotation of the other roll and plastic explosives thereby caused to be drawn between said rolls so as to be homogenized;
e) said peripheral surface of a core each roll has a non-stick surface of PTFE; and
f) said core of each roll is formed from a material consisting essentially of tempered brass and beryllium copper.

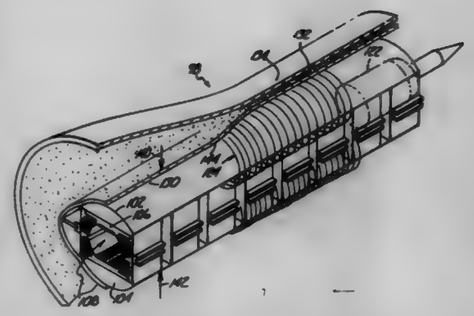
5,483,863

ELECTROMAGNETIC LAUNCHER WITH ADVANCED RAIL AND BARREL DESIGN

Yuri A. Dreizin, Minneapolis, Minn., assignor to Dyuar Incorporated, Minneapolis, Minn.

Continuation-in-part of Ser. No. 874,781, Apr. 27, 1992, Pat. No. 5,297,468. This application Sep. 13, 1993, Ser. No. 108,710
Int. Cl.[6] F41B *6/00*
U.S. Cl. 89— **17 Claims**

1. An electromagnetic railgun comprising:
a plurality of elongated bus-bars having a bore therebetween, wherein the bore has a breech end and a muzzle end;
means connected to the elongated bus-bars, for generating a magnetic flux that passes around at least one of the bus-bars and through the bore for propelling a launch package through the bore from the breech end toward the muzzle end; and
means, positioned outside of and extending along the bore, for compressing the magnetic flux and generating a traveling crow bar effect outside the bore to displace the magnetic flux along the bore toward the muzzle end, without substantial deformation of the bore.

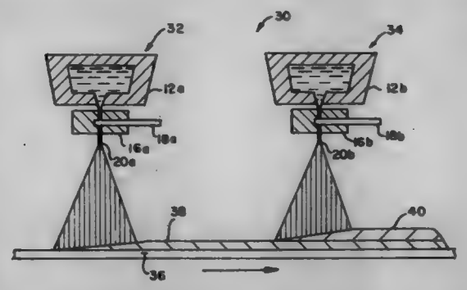


5,483,864

BALLISTIC ARMOR AND METHOD OF PRODUCING SAME

Virginia C. Vanark, Hazelwood; Thomas M. Ford, and Carlo B. Sonnino, both of St. Louis, all of Mo., assignors to Electronics & Space Corp., St. Louis, Mo.

Continuation of Ser. No. 681,784, Apr. 8, 1991, Pat. No. 5,235,895. This application Jan. 19, 1993, Ser. No. 5,290
Int. Cl.[6] F41N *5/04*
U.S. Cl. 89—36.02 **3 Claims**



1. A method of producing a dual hardness ballistic armor for use in military applications comprising the steps of:
liquefying a first ballistic metal alloy;
supplying a controlled stream of said liquefied first ballistic metal alloy to a gas atomizer having a pressurized inert gas feed;
impacting said stream with a high velocity jet of inert gas to produce a stream of first ballistic metal alloy particles;
spraying said stream of first ballistic metal alloy particles onto a collector to form a first layer of said first ballistic metal alloy thereon;
liquefying a second ballistic metal alloy having differing ballistic characteristics from said first ballistic metal alloy;
supplying a controlled stream of said second liquefied ballistic metal alloy to a second gas atomizer having a pressurized inert gas feed;
impacting said stream of said second liquefied ballistic metal alloy by a second high velocity jet of inert gas to produce a stream of second ballistic metal alloy particles;
spraying said second ballistic metal alloy particles over said layer of said first ballistic metal alloy particles such that said second ballistic metal alloy particles form a second layer of said second ballistic metal alloy to be substantially carried by said first layer of said first ballistic metal alloy;
cooling said first and second ballistic metal alloys to solidify them to form a homogenous armor preform comprising said

collector, said first layer, and said second layer, and said cooling of said first and second ballistic metal alloys including controlling the cooling of said first and second ballistic metal alloys at a rate of approximately $10^{5°}$ C./second to $10^{3°}$ C./second during the respective spraying steps of said alloys; and,

mechanically working said preform to finish it into a desired ballistic armor shape having a dual hardness ballistic armor.

5,483,865

AIRCRAFT SIGHTING SYSTEM

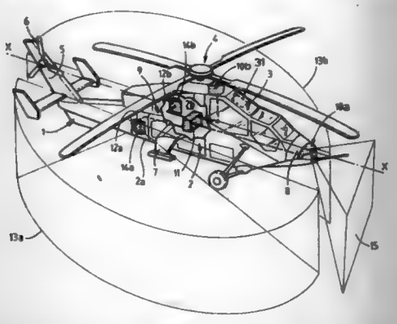
Jacques Brunand, La Fare Les Oliviers, France, assignor to Eurocopter France, Marignane, France

Filed May 2, 1994, Ser. No. 236,442

Claims priority, application France, Jun. 9, 1993, 93 06919

Int. Cl.[6] F41G *5/18*

U.S. Cl. 89—41.21 **28 Claims**



1. A sighting system for an aircraft, comprising in combination:

an onboard computer;

observation means, integrated in the sides of the aircraft, for automatically detecting air and ground targets and for observing a field telescopically with determined magnification to recognize targets and to confirm detection thereof; and

sighting means, integrated at the front of the aircraft, for acquiring a target, said observation means and said sighting means being connected to said onboard computer of the aircraft, said sighting means comprising:

means for generating a large field image that is not steerable, that lies on an axis of the aircraft, and that serves to acquire targets directly or by designation from said observation means; and

means for generating a small field image that is steerable and that is overlaid within said large field image to identify and engage a target at long range.

5,483,866

PNEUMATIC BOOSTER WITH SOLENOID AUXILIARY CONTROL, PARTICULARLY FOR MOTOR VEHICLE BRAKE SYSTEMS

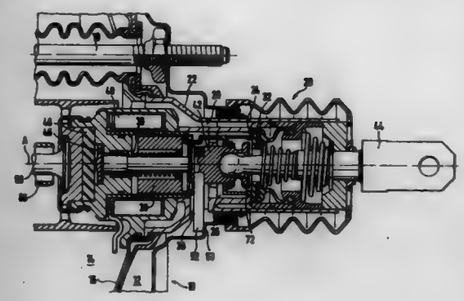
Peter Schlüter, Kammerforst, Germany, assignor to Lucas Industries Public Limited Company, Solihull, United Kingdom

Filed Feb. 3, 1995, Ser. No. 383,202

Claims priority, application Germany, Feb. 17, 1994, 44 05 076.3

Int. Cl.[6] F15B *13/16*

U.S. Cl. 91—367 **3 Claims**



1. A pneumatic booster with solenoid auxiliary control, particularly for motor vehicle brake systems, having

a booster housing (**10**) in which

at least a first chamber (**12**) and a second chamber (**14**) are contained and

are separated from each other by a movable wall (**16**),

a valve body (**22**) which

is connected to said movable wall (**16**) for common axial relative movement with reference to said booster housing (**10**) and having

a first valve seat (**24**),

a sealing element (**60**)

arranged axially movable in said valve body (**22**) and

pretensioned in the direction of said first valve seat (**24**),

a piston (**42**) which

is movable by means of an actuator element (**44**) axially away from said sealing element (**60**),

a valve barrel (**30**) having

a second valve seat (**32**) assigned to said sealing element (**60**),

pretensioned in the direction of said sealing element (**60**),

couplingly connected to said piston (**42**) for movement in the direction away from said sealing element (**60**) and

also movable in the direction away from sealing element (**6**) by means of a solenoid (**40**) independently of said piston (**42**),

a seal (**56**) between said valve barrel (**30**) and said piston (**42**),

a stopper element (**52**) defining a common rest position of said piston (**42**) and said valve barrel (**30**) in which said first chamber (**12**) is sealed off from the inflow of air and is connected to said second chamber (**14**), and

a passage (**26**) through which air flows into said first chamber (**12**) when said valve barrel (**30**) leaves its rest position, said sealing element (**60**) being in contact with said first valve seat (**24**) and discontinuing the connection between said two chambers (**12, 14**), characterized in that on said piston (**42**) a third valve seat (**72**) is formed which

is spaced away from said sealing element (**60**) when said valve barrel (**30**) and said piston (**42**) are in rest position, but which

are in contact with said sealing element (**60**) to thus prevent the inflow of air in said first chamber (**12**) when said actuator element (**44**) is released, whilst said valve barrel (**30**) is maintained by said solenoid (**40**) in a position distant from said sealing element (**60**).

5,483,867

SWASH PLATE COMPRESSOR WITH SUFFICIENTLY LUBRICATED SHOES

Hayato Ikeda; Tatsuya Nakai; Naoya Yokomachi, and Masanobu Yokoi, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Sep. 27, 1994, Ser. No. 313,357

Claims priority, application Japan, Jan. 1, 1993, 5-246712

Int. Cl.[6] F01B *3/00*

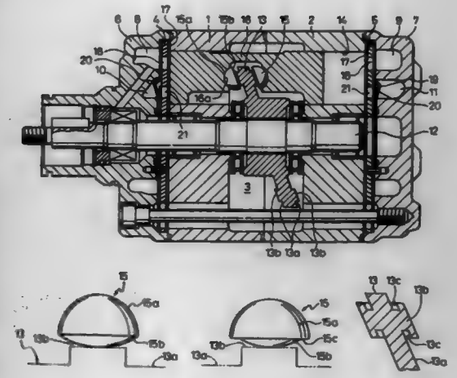
U.S. Cl. 92—71 **6 Claims**

1. A swash plate type refrigerant compressor comprising:

a cylinder block assembly having therein a plurality of axial cylinder bores;

a plurality of double-headed pistons fitted in said cylinder bores, respectively;

a swash plate having opposite faces and secured to a drive shaft supported in said cylinder block assembly so as to be rotated about an axis of rotation; and



a rotation-to-reciprocation conversion means including a plurality of shoes arranged between said swash plate and respective ones of said double-headed pistons, each of said shoes being provided with a semispherical surface portion slidably engaged with a spherically recessed socket formed in cooperating one of said double-headed pistons, and an opposite sliding-contact surface portion being in sliding-contact with a cooperating flat face portion formed in a generally marginal portion of said swash plate, said sliding contact surface portion of each of said shoes being formed as a round surface bulging outward from a flat base and having a predetermined radius of curvature "R" of 800 through 1600 millimeters.

5,483,868

DRAKING APPARATUS FOR A RODLESS PISTON ACTUATED RECIPROCATING CARRIAGE

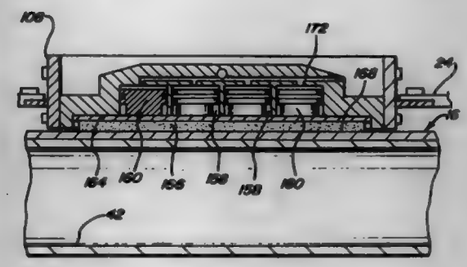
Joseph H. Green, Tampa, Fla., assignor to Greenco Mfg. Corporation, Tampa, Fla.

Continuation-in-part of Ser. No. 22,984, Feb. 26, 1993, Pat. No. 5,168,792. This application Apr. 19, 1994, Ser. No. 229,645

The portion of the term of this patent subsequent to Apr. 14, 2011, has been disclaimed.

Int. Cl.[6] F01B *29/00*

U.S. Cl. 92—88 **3 Claims**



1. A rodless piston and cylinder assembly reciprocating a carriage with braking apparatus for said carriage comprising:

an elongated cylinder;

a piston mounted for reciprocation in said cylinder;

a longitudinally extending carriage;

a support structure for guiding and supporting said carriage;

a band connected to said piston and passing through opposite ends of said cylinder and attached to said carriage for reciprocation of said carriage on said support structure; and

a plurality of longitudinally spaced braking pistons in said carriage positioned to act against a longitudinally extending planar brake surface on said support structure.

5,483,869

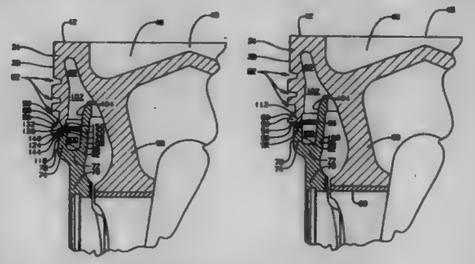
SEALED ARTICULATED PISTON

Allyn P. Bock, Lafayette, Ind.; Stephen V. Kelly, Peoria, Ill.; Samuel L. McLaughlin, and Brian R. Weller, both of Lafayette, Ind., assignors to Caterpillar Inc., Peoria, Ill.

Filed May 26, 1995, Ser. No. 451,245

Int. Cl.[6] F01B *31/10*

U.S. Cl. 92—159 **16 Claims**



1. An articulated piston, comprising:

a head portion including a combustion bowl area therein and having a lower outer portion defining a plurality of ring grooves, the head portion having an annular cavity between the combustion bowl area and the plurality of ring grooves;

an independent skirt portion having an upper outer portion adjacent the lower outer portion of the head portion defining an open space therebetween, the skirt portion having an annular trough therein in fluid communication with the annular cavity to form a cooling gallery;

sealing means disposed between the skirt portion and the head portion for closing the open space, the sealing means extending from the upper outer portion and terminating in contacting relationship with the lower outer portion of the head portion.

5,483,870

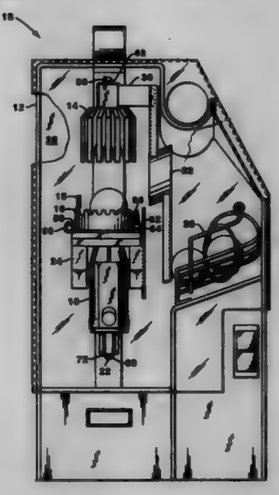
COUNTERTOP CITRUS JUICER

David N. Anderson, 2129 Kirkland Lake Dr., Auburndale, Fla. 33823, and Wayne C. Sherman, 4702 Joyce Ave., Lakeland, Fla. 33805

Filed May 12, 1995, Ser. No. 440,178

Int. Cl.[6] A23N *1/02*; B30B *9/02*

U.S. Cl. 99—510 **19 Claims**



1. A single head juice extractor having a housing defining an orifice robe drive arm slot and further comprising a lower cup and an interdigitating upper cup mounted on an upper cup drive arm,

an orifice robe mounted through an aperture defining orifice tube drive arm, said orifice tube carried inside a strainer tube for reciprocal movement therein, the improvement comprising:

means for mounting said upper cup to said upper cup drive arm by means of an upper cup spring clip biased to contact said upper cup for holding said upper cup to said upper cup drive arm;

means for mounting said orifice tube through said aperture of said orifice drive arm by means of an orifice tube restraining means for holding said orifice tube to said orifice robe drive arm.

5,483,871

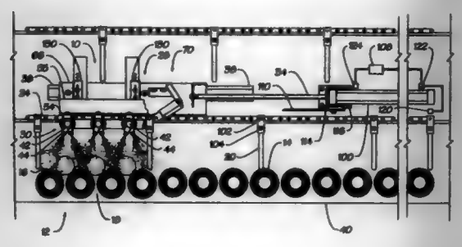
APPARATUS FOR SPRAY WASHING FRUIT IN A BRUSH BED

William Kirk, Alta Loma; Henry A. Affeldt, Victorville; Keith Gilbert, Devore, and David Lerew, Riverside, all of Calif., assignors to Sunkist Growers, Inc., Ontario, Calif.

Filed Feb. 24, 1994, Ser. No. 201,431

Int. Cl.[6] A23B *7/00;7/16*

U.S. Cl. 99—516 **23 Claims**



1. An apparatus for fluid spraying of objects advanced through a bed, said bed having a plane defined therein, comprising:

a plurality of spraying elements for collectively providing a spray pattern over said bed as said objects are advanced through said bed; and

motion causing means to selectively cause movement of at least one of said spraying elements relative to said bed and thereby to cause at least a portion of said spray pattern to be selectively moveable in respect to said bed, wherein said motion causing means reciprocally translates said one spraying element in parallel with said plane.

5,483,872

METHOD AND APPARATUS FOR WEIGHTING AND BREAKING EGGS

James M. Nield, Northville, Mich., assignor to Diamond Automations, Inc., Farmington Hills, Mich.

Filed Jan. 13, 1995, Ser. No. 372,427

Int. Cl.[6] A23N *5/00;* A47J *17/00*

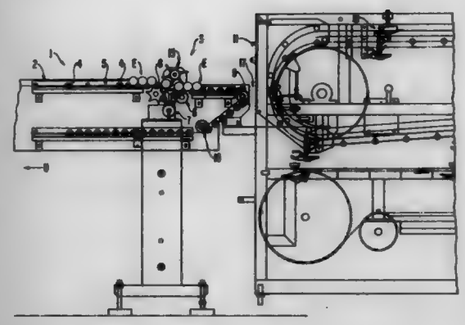
U.S. Cl. 99—568 **20 Claims**

1. An apparatus for weighing and breaking eggs comprising:

a conveyor for conveying eggs individually in at least one row;

a weighing station for weighing eggs conveyed by said conveyor, said weighing station comprising at least one scale for individually weighing eggs in said at least one row; and

an apparatus for breaking eggs, said eggs being conveyed from said weighing station to said apparatus for breaking eggs.



5,483,873

METHOD IN CALENDERING OF A PAPER WEB AND A CALENDAR THAT MAKES USE OF THE METHOD

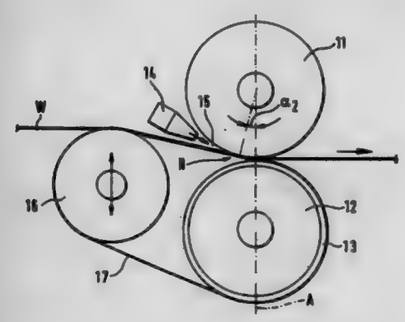
Pekka Koivukunnas; Harri Kuosa; Jussi Tuomela, all of Järvenpää; Markku Ellilä, and Mikko Tani, both of Helsinki, all of, Finland, assignors to Valmet Paper Machinery Inc., Helsinki, Finland

Filed Mar. 2, 1994, Ser. No. 205,958

Claims priority, application Finland, Mar. 8, 1993, 931021

Int. Cl.[6] D21G *1/02*

U.S. Cl. 100—38 **16 Claims**



1. A method of calendering a paper web, comprising:

providing apparatus that comprises a first roll and a second roll in nip forming relationship, a paper alignment roll spaced from the first and second rolls, and an endless band trained around the second roll and the paper alignment roll and extending through the nip formed by the first and second rolls, wherein the first roll is a hard roll and the endless band presents a soft face to the first roll,

rotating the first and second rolls in first and second opposite senses and rotating the paper alignment roll in the second sense, whereby the endless band is fed around the second roll and the paper alignment roll and passes through the nip, the first and second senses being such that the endless band passes from the paper alignment roll to the nip,

positioning the paper alignment roll such that the endless band wraps partially around the first roll upstream of the nip,

passing the web around the paper alignment roll and between the first roll and the endless band, whereby the web passes along the endless band into the nip with a first surface layer of the web toward the first roll and contacts the first roll before entering the nip,

heating the first roll to an extent such that the first surface layer of the paper web is plasticized, and

feeding steam or water onto the first surface layer of the paper web upstream of contact with the first roll.

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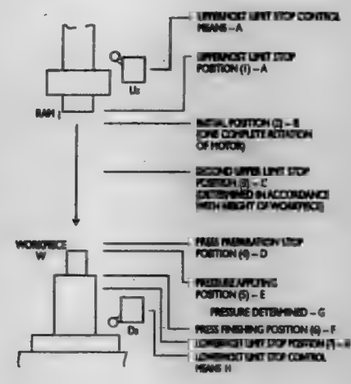
ELECTROPRESSING APPARATUS WITH COMPUTER PROGRAMMABLE CONTROL

Masato Shimizu; Fumiaki Kobayashi; Yoshio Akahori, and Shinichi Fukada, all of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1994, Ser. No. 210,399

Int. Cl.[6] B30B *15/14*

U.S. Cl. 100—50 **2 Claims**



1. An electropressing apparatus for pressing a workpiece, comprising:

(a) an electric motor;

(b) motor driver means including a motor driving circuit for driving the electric motor;

(c) pressing means including a pressing ram and a rotational mechanism operatively connected to the pressing ram and electric motor for rotation by the motor to move the pressing ram in a vertical direction relative to the workpiece;

(d) first detecting means for detecting an initial position of the pressing ram, and first control means, communicating with the first detecting means for setting and memorizing the initial position of the pressing ram as detected by the first detecting means;

(e) second detecting means for detecting an upper limit stop position of the pressing ram relative to the workpiece, and second control means, communicating with said second detecting means, for setting, memorizing and changing said upper limit stop position;

(f) third detecting means for detecting a lower limit stop position of the pressing ram immediately above said workpiece, and third control means communicating with said third detecting means for setting, memorizing and changing said lower limit stop position;

(g) fourth detecting means for detecting application of pressure by the pressing ram against the workpiece, and fourth control means communicating with said fourth detecting means for setting, memorizing and changing a position at which the pressing ram starts to apply pressure to the workpiece; and

(h) fifth detecting means for detecting a terminal position at which the pressing ram stops and begins to apply increasing pressure against the workpiece, and fifth control means communicating with said fifth detecting means for setting, memorizing and changing said terminal position.

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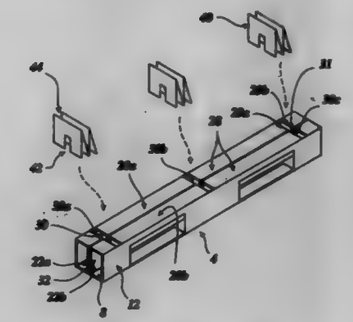
PAPERBOARD RUNNERS AND PAPERBOARD PALLETS

John Turecek, Brampton, and Richard Chupak, Etobicoke, both of, Canada, assignors to Coleman Containers Limited, Mississauga, Canada

Filed Jan. 31, 1994, Ser. No. 188,847

Int. Cl.[6] B65D *19/00*

U.S. Cl. 108—51.3 **18 Claims**



8. A runner for a pallet comprising a folded sheet of paperboard and a brace:

(a) said sheet comprising:

(i) a first pair of spaced parallel fold lines for defining a bottom wall;

(ii) a second pair of parallel fold lines spaced from and parallel to said first pair of parallel fold lines for defining a pair of side walls between said first fold lines and said second fold lines;

(iii) a third pair of parallel fold lines parallel to, and bracketing said second pair of parallel fold lines for defining top wall portions between said second pair of fold lines and said third pair of fold lines;

(iv) a pair of longitudinal edges parallel to and bracketing said third pair of fold lines to define central wall portions therebetween;

(v) at least one pair of longitudinally aligned cut-outs, each pair of longitudinally aligned cut-outs extending from one of said second fold lines across said top wall portion, across said third fold line and across a portion of said central wall portion to define a top wall slot portion in said top wall and a central wall rebate in said central web portion;

(vi) said sheet foldable along said first, second and third fold lines to a folded position;

(vii) said central wall portions depending from said top wall portions to said bottom wall in said folded portion;

(viii) each pair of aligned top wall slot portions co-operating to define a top wall slot in said folded position;

(b) said brace comprised of paperboard having a plurality of folds to present a slotted block for insertion through said top wall slot to seat in said rebate.

5,483,876

WORKPART TRANSFER MECHANISM FOR STAMPING PRESS

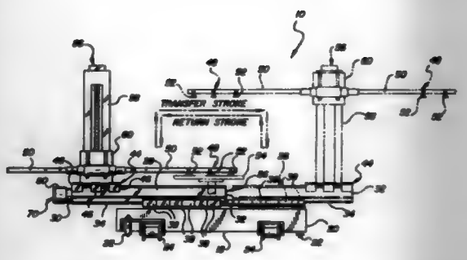
Guy M. Davis, Elmira; Jack F. Herklotz, and Kevin J. Livesby, both of Traverse City, all of Mich., assignors to Trantek, Incorporated, Traverse City, Mich.

Filed Dec. 21, 1993, Ser. No. 170,695

Int. Cl.[6] B30B *15/30*

U.S. Cl. 100—207 **26 Claims**

1. A workpart transfer assembly (**10**) for shuttling unfinished workpart stampings from a forming die (**14**, **16**) of one stamping press (**12**) to a remotely spaced successive forming die (**14**, **16**) in another stamping press (**12**) while the two stamping presses (**12**) cycle in unison, said assembly (**10**) comprising: a stationary base (**18**) for disposition in a clearance space between the two stamping



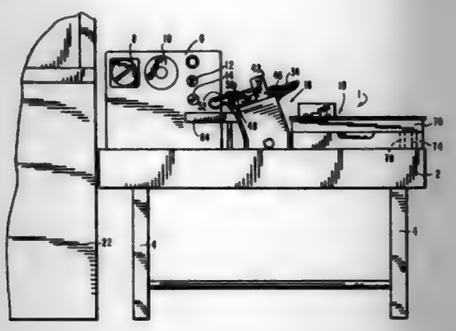
presses (12); an intermediate transfer shuttle (26) longitudinally slidably carried on said stationary base (18) for reciprocating linear movement in the clearance space between the two stamping presses (12) between extreme longitudinally displaced positions and having a pair of opposing ends (30,32) alternately cantilevered from said base (18) as said transfer shuttle (26) moves from one extreme longitudinally displaced position to another; a carriage (44) longitudinally slidably carried on said transfer shuttle (26) for reciprocating linear movement therealong; gripping means (48) supported on said carriage (44) for alternately gripping and releasing workparts; and longitudinal drive means (70) for simultaneously driving said carriage (44) along said transfer shuttle (26) while driving said transfer shuttle (26) in the same direction along said stationary base (18) such that said carriage (44) is displaced along said transfer shuttle (26) a distance less than the relative displacement between said carriage (44) and said base (18).

5,483,877

CASSETTE STACKER/STAMPER

Luciano Perego, Milan, Italy, assignor to Tapematic U.S.A., Inc., Orlando, Fla.

Filed Oct. 2, 1992, Ser. No. 956,654
Int. Cl.[6] B41F *17/00*
U.S. Cl. 101—44 **11 Claims**



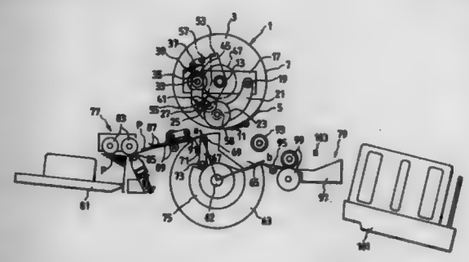
1. An apparatus for stacking and stamping cassettes comprising:
infeed means for feeding cassettes received from an external source;
stamper means adjacent said infeed means for stamping a code on said received cassettes;
pusher means for removing cassettes from said infeed means to a first collection means for accumulating cassettes in a row; and
transfer means for transferring cassettes from said first collection means to a second collection means, wherein said second collection means is capable of holding a plurality of rows of cassettes.

5,483,878

MIMEOGRAPHIC PRINTING MACHINE

Hiroshi Hanzawa, Tokyo, Japan, assignor to Riso Kogaku Corporation, Tokyo, Japan

Filed Nov. 10, 1994, Ser. No. 339,180
Claims priority, application Japan, Nov. 11, 1993, 5-282707
Int. Cl.[6] B41F *15/22*
U.S. Cl. 101—118 **7 Claims**



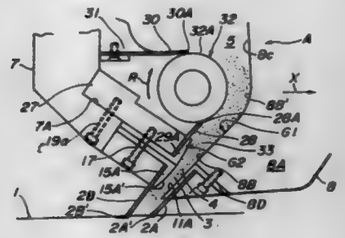
6. A mimeographic printing machine including:
a flexible rotary cylindrical printing drum including a flexible tubular wall enabling to pass an ink, on an outer surface of which a stencil paper is wound;
a lower pusher roller in parallel with said flexible rotary cylindrical printing drum with a predetermined space between said lower pusher roller and said flexible rotary cylindrical printing drum;
an inside pusher roller provided inside said flexible rotary cylindrical printing drum in such a manner that said inside pusher roller is extended in parallel with a generating line of said flexible rotary cylindrical printing drum, said inside pusher roller being movable between a deformation position to push said flexible tubular wall radially outwardly thereby to deform said flexible tubular wall towards said lower pusher roller, and a steady position to release said flexible tubular wall from the deformation;
a sheet supply section for supplying a printing sheet; and
a sheet discharge section, in which, with said inside pusher roller at said deformation position, the printing sheet is supplied from said sheet supplying section to the space between said flexible rotary cylindrical printing drum and said lower pusher roller to perform a pressure type mimeographic printing operation, and said printing sheet, after printed, is discharged to said sheet discharging section,
wherein the improvement comprises:
inside pusher roller controlling means for selectively positioning said inside pusher roller at said steady position in association with a sheet supplying operation of said sheet supplying section; and
printing sheet conveying means which, under the condition that said inside pusher roller is held at said steady position by the operation of said inside pusher roller controlling means, causes said printing sheet from said sheet supplying section to pass through the space between said flexible rotary cylindrical printing drum and said lower pusher roller, in such a manner that said printing sheet is not brought into contact with said flexible rotary cylindrical printing drum, so that said printing sheet is discharged into said sheet discharging section without being printed, said conveying means including said pusher roller.

5,483,879

PRINTER SYSTEM FOR PRINTING CIRCUIT PATTERNS OR LIKE ON BASE BOARD

Okie Tani, Tokyo, and Takashi Nanzai, Fujisawa, both of, Japan, assignors to Tani Electronic Industry Co., Ltd., Tokyo, Japan

Filed May 3, 1994, Ser. No. 237,364
Claims priority, application Japan, May 12, 1993, 5-145326
Int. Cl.[6] B41L *13/18*
U.S. Cl. 101—123 **18 Claims**



1. A printer system for printing a given pattern on a base board, comprising:
a screen plate to be positioned above a base board, said screen plate having a perforated print pattern defined thereby;
a printer proper including, housing, an ink container chamber, and an ink squeegeeing device, said ink squeegeeing device running on said screen plate pressing the same against base board while squeegeeing a given amount of viscous ink onto an upper surface of said screen plate, said ink squeegeeing device including first and second inclined blades that define an ink outlet opening of said ink container chamber, said first and second inclined blades having respective tips which are pressed against the upper surface of said screen plate when said ink squeegeeing device runs for effecting a printing, and a shutter mechanism for selectively opening and closing said ink outlet opening, said shutter mechanism including
a fixed wall of said housing of said printer proper, said fixed wall having said second inclined blade connected thereto;
a pivotal wall of said housing, said pivotal wall being pivotal relative to said fixed wall and having said first inclined blade connected thereto; and
drive means for pivoting said pivotal wall;
a cleaning device for cleaning residual ink left on a lower surface of said screen plate; and
an ink supplier for feeding said ink container chamber of said printer proper with a fresh viscous ink when needed.

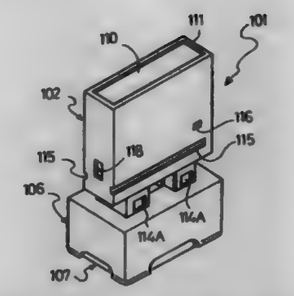
5,483,880

STAMP UNIT WHOSE PRINT FACE PORTION IS FORMED OF A HEAT SENSITIVE STENCIL PAPER

Keiji Seo, Nagoya, and Takashi Miki, Toyoake, both of, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 7, 1994, Ser. No. 337,214
Claims priority, application Japan, Nov. 30, 1993, 5-329656; May 24, 1994, 6-135108
Int. Cl.[6] B41K *1/32*
U.S. Cl. 101—125 **15 Claims**

1. A stamp unit comprising:
a grip portion having first guide holes extending in a substantially horizontal direction;
a stamp portion engageable with the grip portion, said stamp portion comprising:
a base member,
an ink member fixed to a lower surface of said base member, and
a heat sensitive stencil paper covering at least a lower surface of said ink member and comprising a print face portion;
a skirt member surrounding an outer peripheral side of said stamp portion, said skirt member having second guide holes, said skirt member being supported by at least one of said grip portion and said stamp portion so as to be movable relative to said ink member in a substantially vertical direction between a first position at which a lower end portion of said skirt member protects beyond said print face portion of said stamp portion, a second position at which said lower end portion of said skirt member does not protect beyond said print face portion, and a third position in which said first guide holes are maintained in alignment with said second guide holes such that an alignment device is receivable therethrough; and
an elastic member that elastically urges said skirt member toward said first position relative to said grip portion.

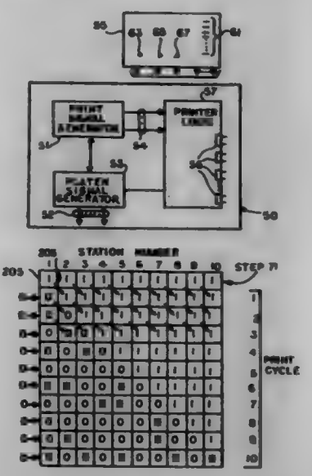


5,483,881

METHOD AND APPARATUS FOR CONTROLLING MULTI-STATION SCREEN PRINTERS

Alex Erman, Chicago, Ill., assignor to American Screen Printing Equipment Co., Chicago, Ill.

Filed Oct. 31, 1990, Ser. No. 607,429
Int. Cl.[6] B41F *15/18*
U.S. Cl. 101—126 **13 Claims**



1. A screen printing apparatus for printing multiple impressions on each of a plurality of work objects in a predetermined sequence comprising:
a plurality of platens for conveying said work objects;
an input station at which work objects are places on said platens;
a plurality of print stations, each for printing an impression on each work object presented thereto;
means for moving said platens from said input station to said print stations in said predetermined sequence;

means for identifying at least one of said platens as a non-print platen; and

control means responsive to said non-print platen identification for inhibiting printing on said at least one non-print platen by each of said print stations, wherein said control means comprises:

means for storing a non-print representation corresponding to each of said identified non-print platens;

means responsive to the movement of said platens for associating each of said non-print representations with successive ones of said print stations in said predetermined sequence; and

means responsive to said non-print platen representations for inhibiting printing at the print station associated therewith.

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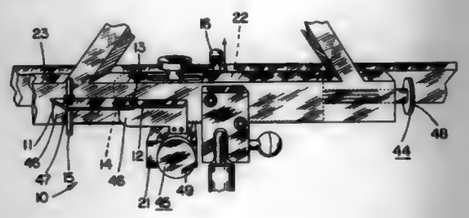
SCREEN ADJUSTMENT AND RESET DEVICE FOR PRINTING APPARATUS AND THE LIKE

David Jaffa, Franklin Lakes, N.J., assignor to Precision Screen Machines, Inc., Glen Ellyn, Ill.

Filed Nov. 23, 1993, Ser. No. 156,422

Int. Cl.[6] B41F *15/34*

U.S. Cl. 101—128 **3 Claims**



1. A method for locating a printing screen at a selected starting position for printing operations and for resetting the screen to the starting position for adjustment relative to an article to be printed upon, which comprises the steps of:

(a) providing a first and a second centering plate disposed in overlapping relationship with one another;

(b) providing a pin;

(c) providing a screen centering member;

(d) providing an adjustable arm having an aperture;

(e) positioning the screen at a selected position relative to the article, the screen having at least one receptacle for receiving the screen centering member;

(f) aligning the receptacle with the aperture in the adjustable arm;

(g) engaging the screen centering member with the receptacle and aperture;

(h) perforating each of the first and second centering plates disposed in overlapping relationship with one another;

(i) passing the pin through the perforations so as to define the selected starting position;

(j) removing the pin from the perforations;

(k) performing at least one printing operation;

(l) positioning a second article relative to the screen;

(m) adjusting the centering plates so as to place the corresponding perforations in alignment with one another;

(n) passing a pin through the perforations so as to define the selected starting position; and

(o) performing at least one printing operation.

5,483,883

METHOD FOR IMAGING A STENCIL USING A LOW ENERGY LASER AND LIGHT ABSORBING INK

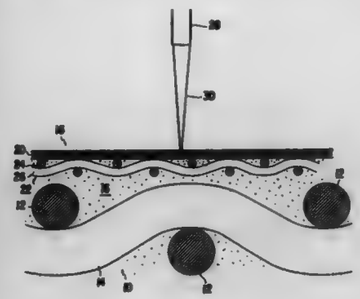
Noboru Hayama, Minato, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Filed Sep. 30, 1993, Ser. No. 128,728

Claims priority, application Japan, Jan. 16, 1992, 4-304725

Int. Cl.[6] B41F *15/08*; B41N *1/24*

U.S. Cl. 101—128.4 **4 Claims**



1. A method for perforating a thermal stencil sheet by a laser beam, comprising the steps of providing a source of a laser beam, positioning a thermal stencil sheet so that a heat-sensitive plastic film thereof faces said source of a laser beam with a first surface thereof, supplying a layer of ink including a light absorbing heat generating substance to a second surface of the heat-sensitive plastic film opposite to said first surface, irradiating the laser beam from said source to the heat-sensitive plastic film from the side of said first surface, and melting and perforating the heat-sensitive plastic film starting from said second surface by heat generated in the light absorbing heat generating substance of the ink layer by the laser beam passing through the heat-sensitive plastic film and being absorbed by the light absorbing heat generating substance.

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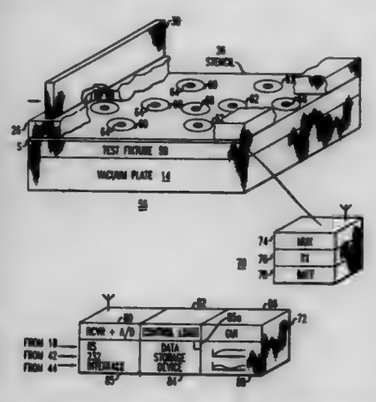
METHOD AND APPARATUS FOR SETTING UP A STENCIL PRINTER

Mahesh K. Vellanki, Princeton, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Oct. 31, 1994, Ser. No. 331,462

Int. Cl.[6] B41F *15/26*; *15/44*

U.S. Cl. 101—129 **7 Claims**



1. A method for setting up a stencil printer that prints solder paste or the like on a substrate by displacing a blade in a first direction across a stencil in registration with the substrate, comprising the steps of:

providing a test fixture having at least two spaced-apart rows of individual force sensors, each row of force sensors being parallel to the blade and perpendicular to the first direction, and at least one row of spaced-apart proximity sensors parallel to the first direction for measuring the proximity of the stencil to the test fixture;

placing the stencil in registration with the test fixture;

displacing the blade across the stencil to simulate a stencil printing operation so that the blade exerts a force on the stencil;

measuring the force exerted on the stencil by the force sensors of the test fixture;

measuring the proximity measured by each proximity sensor:

processing the forces measured by the force sensors and the proximity measured by each proximity sensor to determine what if any adjustments are necessary to the stencil printer.

5,483,885

HOLDER FOR A DOCTOR ROD

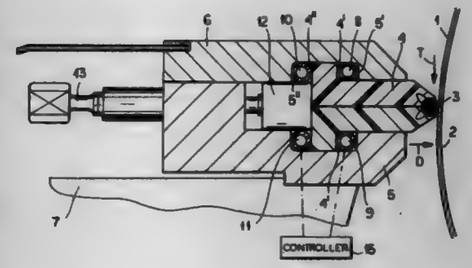
Heinz Leineweber, San Fernando de Maspalomas, Spain, assignor to Jagenberg Papiertechnik GmbH, Neuss, Germany

Filed Oct. 11, 1994, Ser. No. 321,429

Claims priority, application Germany, Jan. 11, 1993, 43 34 555.7

Int. Cl.[6] B41F *9/10*

U.S. Cl. 101—169 **4 Claims**



1. In an applicator where a thick coating of a liquid is applied to a flexible web that is then moved through a doctor assembly where excess liquid is scraped from the web, the doctor assembly comprising:

a generally stationary support at the station;

a holder beam extending longitudinally substantially parallel to the web and transverse to a web travel direction, the beam being movable on the support transversely of itself and of the travel direction forward toward and backward away from the web and formed relative to the direction with a pair of laterally directed feet each forming a respective front holder face directed toward the web and a respective oppositely directed back holder face turned away from the web, the support having respective front and back support faces generally parallel to and confronting the respective back and front holder faces;

a doctor rod held in the holder beam and juxtaposable thereby with the web to scrape the excess liquid from the web;

respective front inflatable hoses each engaged between a respective one of the front holder faces and the respective back support face;

respective back inflatable hoses each engaged between a respective one of the back holder faces and the respective front support face; and

means for selectively inflating and deflating the hoses, whereby when the front hoses are inflated at greater pressure than the back hoses the holder beam moves backward in the support and when the back hoses are inflated at greater pressure than the front hoses the holder beam moves forward in the support.

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PAPER GUIDE FOR WEB-FED PRESS

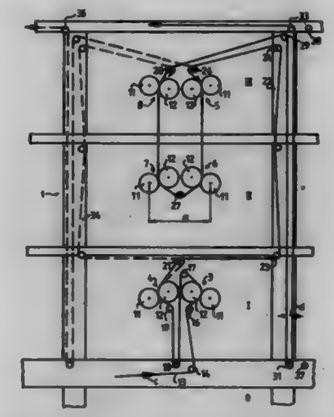
Horst-Walter Hauer, Würzburg, Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany

Continuation of Ser. No. 113,095, Aug. 30, 1993, abandoned. This application Feb. 27, 1995, Ser. No. 395,152

Claims priority, application Germany, Aug. 28, 1992, 42 28 611.5

Int. Cl.[6] B41F *5/18*

U.S. Cl. 101—181 **4 Claims**



1. A paper guide assembly for a web-fed rotary printing press, said paper guide assembly comprising:

a plurality of colored ink printing groups arranged in pairs of printing groups in each of multiple levels of a printing machine, each of said colored ink printing groups having a plate cylinder and a corresponding counter pressure cylinder, said plate cylinders in each of said pairs of colored ink printing groups in each of said levels being spaced a distance "a" from each other, said plurality of colored ink printing groups having a total of "n" colors of water-based ink;

means for passing a selectably coated or uncoated web to be printed in said "n" colors on a first side through said pairs of colored ink printing groups to print said first side of said web in said "n" colors; and

a printed paper web side air-drying path between a last one of said colored ink printing groups and a first paper reversing device contacting said printed first side of said selectably coated or uncoated web, said printed web side air-drying path receiving said printed web printed in said "n" colors from said last one of said colored ink printing groups and having an air-drying path length of at least (n+1) times said distance "a" to thereby permit complete air-drying of said selectably coated or uncoated printed web.

5,483,887

PAPER GUIDE FOR WEB-FED PRESS

Heinrich K. Grosshauser, Würzburg, Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany

Continuation of Ser. No. 112,467, Aug. 27, 1993, abandoned. This application Feb. 27, 1995, Ser. No. 395,154

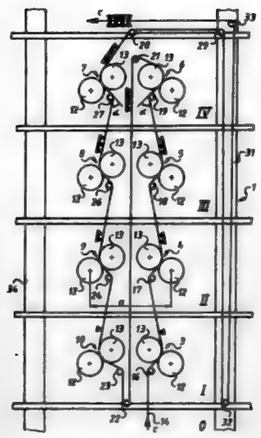
Claims priority, application Germany, Aug. 28, 1992, 42 28 610.7

Int. Cl.[6] B41F *5/18*

U.S. Cl. 101—181 **6 Claims**

1. A paper guide assembly for a web-fed printing press, said paper guide assembly comprising:

a plurality of printing groups positioned in pairs of printing groups in each of multiple levels of a printing machine, each of said printing groups having a plate cylinder and a cooperating counterpressure cylinder, said plate cylinders in each of said pairs of printing groups in each of said multiple levels



being spaced a distance "a" from each other, said plurality of printing groups being arranged into first web side printing groups and second web side printing groups;

means for passing a selectably coated or uncoated web to be printed on a first side through said first web side printing groups to print said first side of said web in "n" colors using water-based inks;

a first printed web side air-drying path intermediate said first web side printing groups and said second web side printing groups, said first web side air-drying path receiving said web printed on said first web side from a last one of said first web side printing groups, said first printed web side air-drying path having a first length of at least (n+1) times said distance "a" to thereby permit complete air drying of said first side of said selectably coated or uncoated web;

means for passing said web to be printed through said second web side printing groups, subsequent to passage of said web through said first printed web side air-drying path, to print a second side of said web in "m" colors using water based inks; and

a second printed web side air-drying path subsequent to said second side printing groups, said second web side air-drying path receiving said web printed on said second web side from a last one of said second web side printing groups, said second printed web side air-drying path having a second length of at least (m+2) times said distance "a" to thereby permit complete air-drying of said second side of said selectably coated or uncoated web.

5,483,888

DEVICE FOR ACTUATING LATERAL SHEET GUIDES IN ROTARY PRINTING PRESSES

Martin Greive, Heidelberg, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

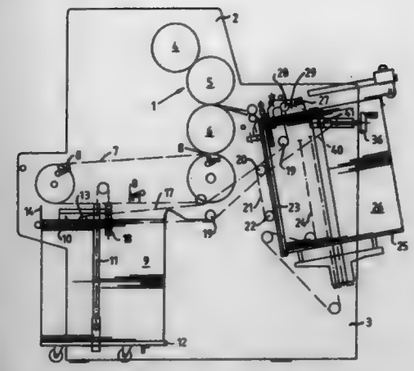
Filed Aug. 12, 1994, Ser. No. 289,693

Claims priority, application Germany, Aug. 12, 1993, 43 27 012.3

Int. Cl.[6] B41F *13/24*

U.S. Cl. 101—232 **5 Claims**

1. In a rotary printing press having a printing unit, a feed region and a delivery region, lateral sheet guides with sheet stops disposed in the printing unit defining sheet format width to be processed, and an operating side at which the printing unit is accessible to a press operator, a device for actuating the lateral sheet guides in accordance with respective sheet format widths to be processed, the device comprising an actuator disposed on the operating side of the press for displacing a side stop transversely to the longitudinal direction of the sheet, said actuator being disposed so as to be visible and freely accessible on an operating side of a



sheet pile, adjustable lateral sheet guides disposed in the feed region and the delivery region of the printing press, mutually cooperating tensioning means form-lockingly connected to said actuator and to said lateral sheet guides and being simultaneously adjustable by said actuator in the feed region and in the delivery region for moving said lateral sheet guide symmetrically to a center of the printing unit.

5,483,889

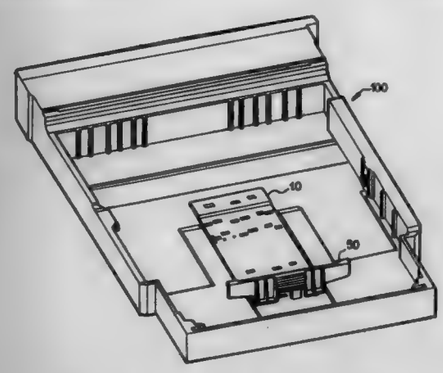
AUTOMATIC MEDIA SIZE DETECTOR

Tim M. Hoberock, Boise, and John W. Huffman, Meridian, both of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 19, 1995, Ser. No. 444,599

Int. Cl.[6] B41F *13/24*

U.S. Cl. 101—232 **9 Claims**



1. An apparatus for holding media and conveying said media's size to a printing system, said apparatus comprising:

a tray having a top and a plurality of receiving positions, said media sets in said tray, said tray attaches to said printing system;

a plurality of conductive strips attached to said top of said tray, said plurality of conductive strips arranged to be in contact with said printing system when said tray is attached to said printing system;

an insulating label placed over said plurality of conductive strips, said insulating label having a unique pattern of holes over said plurality of conductive strips for each one of said plurality of receiving positions in said tray; and

a back-stop attached to said tray in one of said plurality of receiving positions, said back-stop attaches over said insulating label, said back-stop having a plurality of connections arranged to make electrical contact with said plurality of conductive strips through said unique pattern of holes, said back-stop rests against an edge of said media.

5,483,890

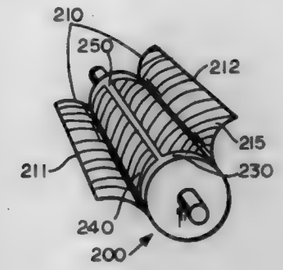
DIRECT APPLIED EMBOSSING CASTING METHODS

Joseph S. Kildune, Salem, N.H., assignor to GenCorp Inc., Fairlawn, Ohio

Filed Mar. 15, 1995, Ser. No. 404,220

Int. Cl.[6] B41F *1/28*; B29C *33/40*

U.S. Cl. 101—401.1 **15 Claims**



1. A method of creating a seamless printing master for use with an embossing roll (100), said method comprising the steps of:

a. applying a first amount of hardenable material (120) to the textured surface (115) of a first positive printing master section (110),

b. applying said first positive printing master section (110) to the outer surface (130) of said embossing roll (100) such that said first amount of hardenable material (120) is compressed between said textured surface (115) of said first positive printing master section (110) and said outer surface (130) of said embossing roll (100);

c. hardening said first amount of hardenable material (120);

d. peeling off said first positive printing master section (110) from the hardened material on said outer surface (130) of said embossing roll (100) whereby exposing a first negative printing master region (140) having been imprinted in said hardened material on said outer surface (130) of said embossing roll (100);

e. applying a second amount of hardenable material (150) to the textured surface (165) of a second positive printing master section (160);

f. applying said second positive printing master section (160) to said outer surface (130) of said embossing roll (100) such that said second amount of hardenable material (150) is compressed between said textured surface (165) of said second positive master section (160) and said outer surface (130) of said embossing roll (100), said second positive printing master section (160) overlapping at least one previously formed negative printing master region on said outer surface (130) of said embossing roll (100);

g. hardening said second amount of hardenable material (150);

h. peeling off said second positive master section (160) from the hardened material on said outer surface (130) of said embossing roll (100) whereby exposing a second negative printing master region (170) having been imprinted in said hardened material on said outer surface (130) of said embossing roll (100); and

i. repeating previous steps e)–h) in sequence until the entirety of said outer surface (130) of said embossing roll (100) is completely covered with the overlapping negative printing master regions, whereby forming a seamless negative printing master imprinted in said hardened material on said outer surface (130) of said embossing roll (100).

5,483,891

ARRANGEMENT FOR FASTENING A FLEXIBLE PRINTING PLATE

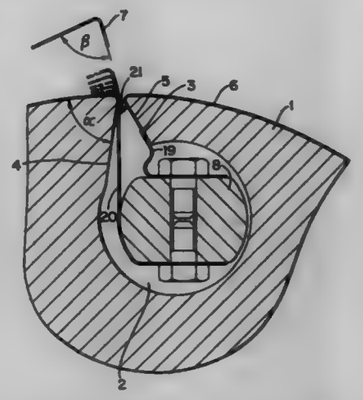
Klaus T. Reichel, Augsburg, Germany, assignor to MAN Roland Druckmaschinen AG, Offenbach Am Main, Germany

Filed Oct. 4, 1994, Ser. No. 317,335

Claims priority, application Germany, Jan. 15, 1993, 43 35 140.5

Int. Cl.[6] B41F *1/28*

U.S. Cl. 101—415.1 **8 Claims**



1. An arrangement for fastening a flexible printing plate on a form cylinder of a printing press, comprising: a form cylinder having at least one axially directed cavity with a first wall that terminates at an acute angle with an outer surface of the cylinder so as to form an edge on which a leading leg of the printing plate is supportable, and a second wall on which a trailing leg of the printing plate is contactable; a spindle mounted in the cylinder cavity so as to be swivelable about a longitudinal axis; and a plurality of separate first and second plate-like springs distributed along and fastened to the spindle so that the first springs press the leading plate leg against the first wall of the cavity and the second springs press the trailing plate leg against the second wall of the cavity, whereby swiveling of the spindle disengages the springs from the plate legs and the second springs being arranged and adapted to be pullable into the cylinder cavity by swiveling of the spindle.

5,483,892

DEVICE FOR SUPPLYING PRINTING PLATES TO A PLATE CYLINDER AND FOR CARRYING THE SAME AWAY FROM THE PLATE CYLINDER

Jürgen A. Stiel, Ostheim, Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany

Filed Mar. 16, 1995, Ser. No. 397,870

Claims priority, application Germany, Sep. 18, 1992, 42 31 901.3

Int. Cl.[6] B41F *27/06*

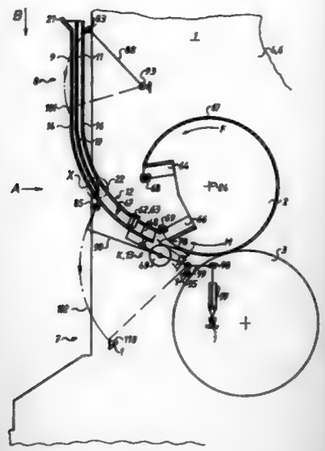
U.S. Cl. 101—477 **8 Claims**

1. A device for supplying and removing printing plates in a rotary printing press with a plate cylinder comprising:

a printing plate storage container positioned adjacent said plate cylinder and having an upper portion and a lower portion;

a longitudinally extending intermediate wall dividing said upper portion of said storage container into a plate supply compartment and a plate removal compartment, said intermediate wall having an upper end and a lower end;

an undivided plate guide compartment in said lower portion of said storage container and below said intermediate wall, said plate guide compartment having a lower end terminating adjacent said plate cylinder; and



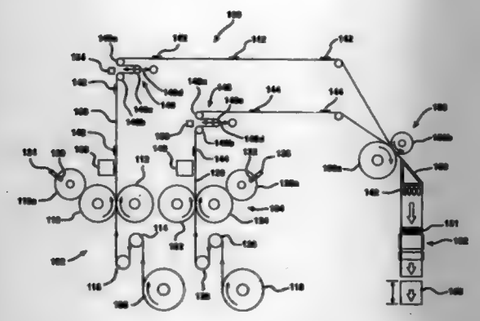
a plurality of guide elements in said storage container and including removal compartment guide elements which act in a blocking manner in a printing plate .supply direction, and supply compartment guide elements which act in a blocking manner in a printing plate removal direction.

5,483,893

CONTROL SYSTEM AND METHOD FOR AUTOMATICALLY IDENTIFYING WEBS IN A PRINTING PRESS

Ragy Isaac, 895 Brompton Cir., Bolingbrook, Ill. 60440; Richard Fedrigon, 935 Ontario St., Oak Park, Ill. 60302, and Edward Hudyma, 631 Derbyshire Ln., Bolingbrook, Ill. 60440

Filed Mar. 31, 1995, Ser. No. 414,079
Int. Cl.[6] B41F *13/12*
U.S. Cl. 101—485 **16 Claims**



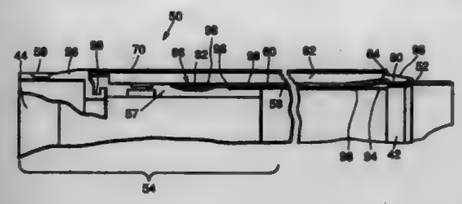
1. A control system for a printing press which prints an image on a web and includes a compensator for regulating the length of the web, the control system comprising:
- a marking device for applying detectable reference marks on the web to uniquely identify the web;
- a mark sensor located at the compensator for detecting reference marks on the web running through the compensator; and
- a computer circuit responsive to the mark sensor for uniquely identifying the web running through the compensator based on the detected reference marks and for controlling printing press operation based on the identification of the web.

5,483,894

INTEGRAL MISSILE ANTENNA-FUSELAGE ASSEMBLY

Andrew B. Facciano, Tucson; Ronald N. Hopkins, Superior Township; Rodney H. Krebs, Tucson; James L. Neumann, Tucson, and Oscar K. Ohanian, Tucson, all of Ariz., assignors to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Dec. 27, 1994, Ser. No. 364,905
Int. Cl.[6] F42B *15/36*
U.S. Cl. 102—293 **19 Claims**



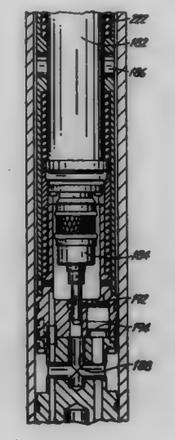
1. An assembly for use in an armament missile constructed from a plurality of joined-together sections, said assembly comprising:
- a missile fuselage tube constructed of a composite material having reinforcing fibers impregnated with resin;
- a fastener ring having an outer rim portion with a radially inward extending circumferential recess formed therein for receiving at least ends of the fibers;
- circumferential means surrounding the ends of the fibers to secure the ends of the fibers within said rim portion recess; and
- said resin further impregnating the ends of the fibers and the circumferential means to bond the tube to the ring.

5,483,895

DETONATION SYSTEM FOR DETONATING EXPLOSIVE CHARGES IN WELL

Martin L. Tomek, Houston, and Gregory N. Gilbert, Missouri City, both of Tex., assignors to Halliburton Company, Dallas, Tex.

Filed Apr. 3, 1995, Ser. No. 415,538
Int. Cl.[6] F42R *3/00*; F42C *15/34*;*9/06*
U.S. Cl. 102—312 **15 Claims**



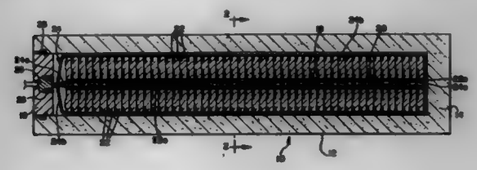
1. An explosive charge assembly for use in an earth borehole to detonate an explosive charge therein, comprising:
- a housing assembly adapted for movement within said borehole;
- an explosive charge assembly including an impact responsive detonation charge retained at least partially within said housing assembly;
- a firing pin assembly movably secured within said housing and adapted to be moveable from a first, unactuated, position to a second, actuated, position, at which a firing pin of said firing pin assembly will impact said detonation charge;
- a first arming assembly responsive to fluid pressure, said first arming assembly adapted to move from a first position to a second position, said second condition being a condition precedent to actuation of said firing pin assembly;
- a second arming assembly, said second arming assembly cooperatively coupled to said first arming assembly, said second arming assembly being moveable from a first condition to a second condition, said second condition being a condition precedent to actuation of said firing pin assembly, and wherein movement of said second arming assembly to said second condition is dependent upon said first arming assembly having moved from said first condition to said second condition.

5,483,896

PYROTECHNIC INFLATOR FOR AN AIR BAG

Christopher Hock, Uintah; Linda M. Rink, Liberty, and Wesley L. Hatt, Centerville, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Jul. 12, 1994, Ser. No. 273,650
Int. Cl.[6] C06D *5/00*
U.S. Cl. 102—530 **18 Claims**



1. A pyrotechnic inflator for an airbag, comprising:
- housing means for containing gas generator means for inflating an airbag, and having an elongated, hollow, tubular side wall of substantial thickness and strength including an integral end wall, said tubular side wall and said end wall being formed in one piece and said walls formed of rigid porous material for filtering and cooling gas from said gas generator passing through said walls to inflate said airbag;
- gas generator means sealed inside said housing means for activation to rapidly generate gas to pass outwardly through said walls into said airbag;
- said gas generator means including a core of ignitable material centrally positioned inside a packet of gas generating pyrotechnic material, said pyrotechnic material contained in a hermetically sealed jacket, which Jacket is contained in said housing means.

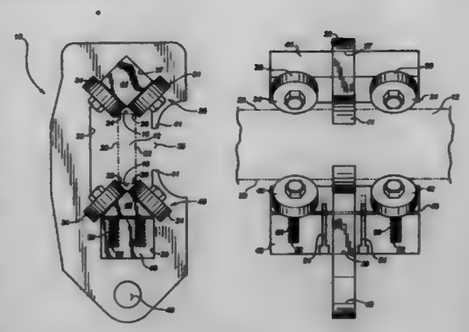
5,483,897

TRACK AND RAIL-FORM SLIDER COMBINATIONS

Darrell Doherty, Edmonton, Canada, assignor to Golden Rod Welding Ltd., Edmonton, Canada

Filed Feb. 3, 1995, Ser. No. 382,974
Claims priority, application Canada, Apr. 19, 1994, 2121651
Int. Cl.[6] A63G *21/00*
U.S. Cl. 104—135 **10 Claims**

1. A track and rail-form slider combination, comprising:
- a. a rail-form slider having a top surface, a bottom surface, sides extending between the top surface and the bottom surface and four corners formed where the top surface meets the sides and the bottom surface meets the sides; and
- b. a track, including:
  - i. a plurality of roller supports;
  - ii. at least four rollers secured to each roller support, each roller engaging the rail-form slider solely at one of the corners.

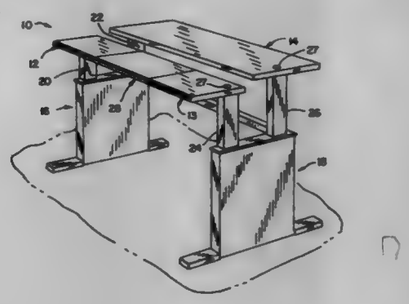


5,483,898

TILTING AND SLIDING SURFACE ASSEMBLY FOR A TABLE

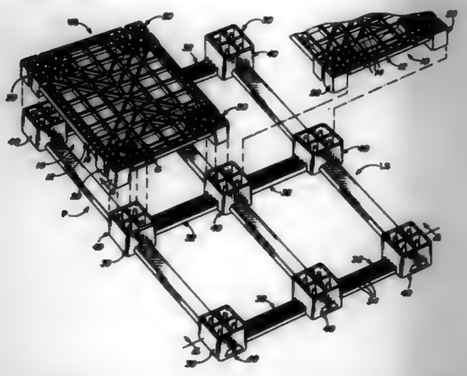
Lon D. Seidl, Green Bay, Wis., assignor to Krueger International, Green Bay, Wis.

Filed Feb. 24, 1994, Ser. No. 201,236
Int. Cl.[6] A47F *5/12*
U.S. Cl. 108—3 **17 Claims**



1. A table comprising:
- a first surface having a space therein;
- table legs;
- a cross-member extending below the first surface; a movable surface;
- a bracket assembly engageable with the cross-member and secured to the movable surface;
- a manually operable pivot mechanism interposed between the bracket assembly and the movable surface for selectively providing pivoting movement of the movable surface about a substantially horizontal pivot axis relative to the first surface; and
- a manually operable slide mechanism interposed between the bracket assembly and the movable surface for selectively providing sliding inward-outward movement of the movable surface relative to the first surface;
- wherein the movable surface is coplanar with the first surface when the movable surface is within the space in the first surface and the movable surface is in one of various positions.

5,483,899
MODULAR PALLET ARRANGEMENT
Eugene P. Christie, 555 Edgemount La., Park Ridge, Ill. 60068
Filed Jul. 5, 1994, Ser. No. 270,579
Int. Cl.[6] B65D *19/00*
U.S. Cl. 108—56.3 **20 Claims**



1. A modular pallet arrangement formed of a plurality of molded plastic units adapted to be interconnected in interlocking relation to form one complete pallet that, when heavily loaded and stacked with similar pallets, is capable of being supported only by laterally spaced warehouse rack rails, comprising:

(a) an upper section including a plurality of generally similar upper units, each comprising a rectangular, grid-like, base member having, at each corner thereof, four separate, integral, downwardly extending, upper connector elements;

(b) a lower section including a plurality of elongated lower units each comprising a flat, rectangular, grid-like base member having, at each end thereof and intermediate the ends thereof, quadruple compartmented, integral, upwardly extending, end and center connector elements, respectively;

(c) certain compartments of certain of said lower unit connector elements being arranged and disposed for telescoping relation with corresponding upper connector elements of at least two adjacent, but separate, upper units to connect said adjacent upper units to each other, whereby said upper pallet section is supported on and by said lower pallet section;

(d) said lower section including elongated, rigid, reinforcing members extending laterally between corresponding connector elements of lower units to prevent said pallet from sagging in the center.

5,483,900
TABLE MADE WITH INTERCONNECTED PARTS
Manfred Elzenbeck, Steinheim/Murr, Germany, assignor to Frocher Aspect GmbH & Co. KG, Steinheim/Murr, Germany
PCT No. PCT/EP90/01494, § 371 Date Mar. 13, 1992, § 102(e) Date Mar. 13, 1992, PCT Pub. No. WO91/03966, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 6, 1990, Ser. No. 838,276
Claims priority, application Germany, Sep. 16, 1989, 89 11 083.8 U
Int. Cl.[6] A47B *57/00*
U.S. Cl. 108—64 **17 Claims**

1. A table, comprising:

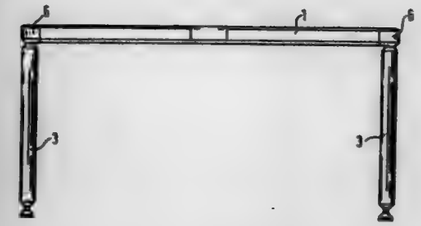
a frame including a plurality of rails and a plurality of corner pieces joined to the plurality of rails;

a leg removably associated with each corner piece; and

a table top having a top surface and a recess engaging portion, wherein:

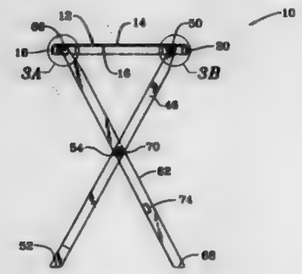
each rail consists of a pipe-shaped hollow profile; and

each rail and corner piece defines a top surface and each corner piece and at at least two facing rails are formed with



a step-like recess of equal height, such that when the rails and corner pieces are assembled as a frame, at least two parallel, continuous step-like recesses are formed which receive the corresponding recess engaging portions of the table top so that the top surface of the table top is flush with at least a portion of the top surface of the assembled rails and corner pieces.

5,483,901
FOLDABLE TRAY TABLE
Thomas A. Tisbo, Barrington Hills, and Stephen P. Whitehead, Elgin, both of Ill., assignors to Suncast Corporation, Batavia, Ill.
Filed Aug. 16, 1994, Ser. No. 291,413
Int. Cl.[6] A47B *3/02*
U.S. Cl. 108—119 **9 Claims**



1. A modular foldable tray table comprising:

a tray having a top surface, an underside, a first edge, a second edge opposite to said first edge and two side edges, said tray having two pair of spaced journal mounting brackets and at least one clip mounting bracket formed on said underside, said two pair of journal mounting brackets being located one on either side of said tray adjacent to said first edge, said clip mounting bracket being located adjacent said second edge, each of said brackets being an integral part of said tray with an upper pivot hole formed in each of said journal mounting brackets and a snap-on hole formed in said clip mounting bracket;

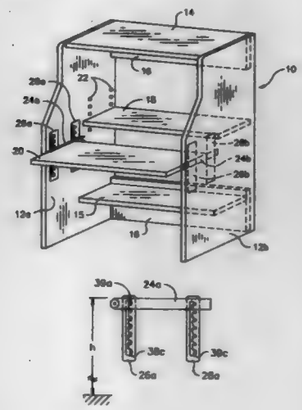
a pair of first legs, each first leg having an upper end and a lower end, the upper end of each of said first legs having a journal pin operatively adapted for being disposed between and snap-fit in said upper pivot holes of one of said pair of journal mounting brackets, when so disposed, each said first leg being pivotal about its respective journal;

a pair of second legs, each second leg having an upper end and a lower end, said second legs being joined together by a locking bar at their upper ends, a pivot plug being formed intermediate the ends of and extending from one of each said first legs and each said second legs for interconnecting with an intermediate pivot hole formed intermediate the ends of and in the other of each said first legs and each said second legs, each said pivot plug being operatively adapted for being snap-fit in one of said intermediate pivot holes such that each

first leg and second leg so connected are pivotal relative to one another thereby; and

at least one clip operatively adapted for being snap-fit in said snap-on hole and thereby held to said clip mounting bracket, said locking bar and said clip being operatively adapted for said locking bar being releasably retained by said clip.

5,483,902
ADJUSTABLE WORK SURFACE FOR COMPUTER STATIONS
Peter T. Grosch, 1456 Rockwell Rd., Abington, Pa. 19001
Filed Sep. 14, 1993, Ser. No. 121,204
Int. Cl.[6] A47B *11/00*
U.S. Cl. 108—143 **17 Claims**



1. A workstation comprising:

means providing a supporting surface having opposite edges, each having track-engaging slide means;

means providing a pair of tracks located alongside said opposite edges of the supporting surface and slidably receiving said track-engaging slide means to permit sliding of said supporting surface in a path defined by said tracks, each of said tracks having supporting slot-engaging means comprising a front projection and a rear projection;

first and second plate means, the first plate means being located alongside one of said opposite edges of the supporting surface and the second plate means being located alongside the other of said opposite edges of the supporting surface; and

means supporting each of said first and second plate means at a predetermined height;

the first plate means having a front supporting slot receiving the front projection of one of said tracks and a rear supporting slot receiving the rear projection of said one of said tracks;

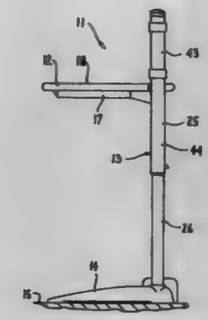
the second plate means having a front supporting slot receiving the front projection of a second of said pair of tracks and a rear supporting slot receiving the rear projection of said second track;

one of the slots in each plate means comprising a vertically elongated section having a plurality of straight notches extending obliquely downwardly therefrom, at vertically spaced locations, in a direction transverse to the direction of elongation of the vertically elongated section of the slot, for receiving one of said projections; and

the other of the slots in each plate means comprising a vertically elongated section having a plurality of curved notches extending therefrom, at vertically spaced locations, each of the curved notches extending transverse to the direction of elongation of the vertically elongated section of said other of the slots and having a downwardly extending pocket formed therein and spaced from the vertically elongated section, for receiving another one of said projections;

whereby, for vertical adjustment of the position of the supporting surface, the track-providing means must be moved upward, and then horizontally, to position said projections in the vertically elongated sections of the slots.

5,483,903
TABLE
Paul M. Pierce, Grand Haven, and Randall W. Bergman, Holland, both of Mich., assignors to Haworth, Inc., Holland, Mich.
Filed Jun. 10, 1994, Ser. No. 258,101
Int. Cl.[6] A47B *9/00*
U.S. Cl. 108—147 **6 Claims**



1. A table comprising:

a horizontally enlarged platelike worksurface defining thereon an upwardly facing top surface, said worksurface including front and rear edges;

a pair of generally parallel height-adjusting upright legs, said legs being disposed adjacent opposite sides of said worksurface;

a supporting structure fixed to said legs and positioned directly under said worksurface in supporting engagement therewith, said supporting structure including a cross bar which is fixed to and extends between said legs;

each said upright leg including vertically elongate upper and lower tubular leg parts disposed in coaxial and telescopic relation, said upper leg part being fixed to said supporting structure at a location intermediate the ends thereof so that said upper leg part includes upper and lower elongate portions which respectively project upwardly and downwardly from said supporting structure, said elongate upper portion projecting vertically upwardly above the top surface of said worksurface;

a floor-engaging support foot fixedly mounted to a lower end of each said lower leg part;

said lower leg part projecting coaxially upwardly into the interior of said upper leg part with said lower leg part terminating in an upper free end, said lower leg part projecting coaxially upwardly a sufficient vertical extent so that the upper free end thereof is disposed at an elevation above the top surface when the worksurface is in a lowermost position;

an elongate drive mechanism extending coaxially of each said leg for effecting raising and lowering of the upper leg part to adjust the vertical height position of the worksurface between said lowermost position and an uppermost position;

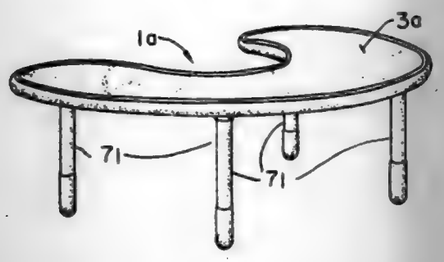
said drive device including an elongate rotatable drive screw which projects coaxially of one of the upper and lower leg parts and is axially anchored adjacent one end thereof to the respective leg part, said drive screw adjacent the other end thereof being engaged with a nut member which is coupled to one end of an elongate support tube which projects coaxially of the other leg part, said support tube adjacent the other end thereof being nonrotatably and axially anchored relative to said other leg part.

5,483,904

LIGHT WEIGHT TABLE STRUCTURES

Ray G. Kelly; Sharon A. Turnbough, both of St Louis, Mo.; Diane Taraskavage, San Diego, Calif., and Douglas L. Blocker, Jefferson, Mo., assignors to Angeles Group, Inc., Pacific, Mo.

Filed May 16, 1994, Ser. No. 243,310
Int. Cl.[6] A47B *3/06*
U.S. Cl. 108—156 **16 Claims**



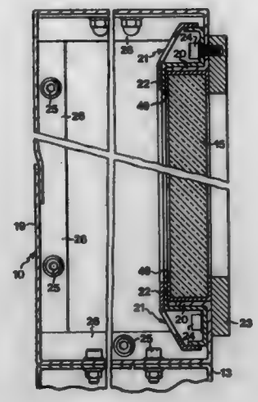
1. A table including:
a table top including a core having upper and lower surfaces, said upper and lower surfaces being covered with a liner, said liner extending beyond edges of said core to define a channel;
said core comprises one of corrugated paperboard, honeycombed paperboard, expanded foam, or expanded resin;
a finishing piece received in said channel, said finishing piece having a cushioned external surface, said finishing piece includes an elongate member having a foot section having legs received in said edge channel and a head section extending outwardly from said channel, said head section forming a
a finishing piece received in said channel, said finishing piece having a cushioned external surface.
a groove formed in said table top lower surface;
reinforcing members received in said table lower disposed groove, said members defining corners;
a boss secured to said reinforcing members at each of said corners, said bosses having connecting surfaces;
legs, said legs having an externally threaded upper portion which is connected to said bosses, said legs comprise generally hollow tubes, a foot piece is received in each of said legs at a bottom thereof, said foot piece having a rounded ground engaging portion and an annular lip which is received within said leg, and a leg covering, said leg covering enclosing said leg foot piece and at least a lower portion of said leg.

5,483,905

SECURITY CABINET WITH DISPLAY WINDOW

Jerzy K. Johansson, Hässleholm, Sweden, assignor to Visual Security Visec Aktiebolag, Hassleholm, Sweden

Filed Oct. 5, 1993, Ser. No. 131,888
Claims priority, application Sweden, Jan. 7, 1993, 9300023
Int. Cl.[6] A47F *3/12*
U.S. Cl. 109—79 **10 Claims**



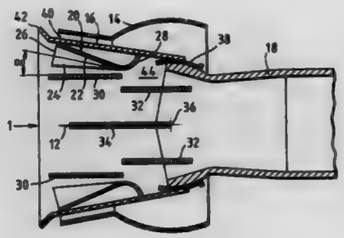
1. A security cabinet comprising:
a body (**19**) of a high-strength material;
a main element (**10**) having two opposite major sides;
a display window (**15**) in at least one of said major sides, said display window comprising a shock-proof, burglary resistant glass panel;
mounting means for mounting said glass panel in said main element, said mounting means comprising:
a circumferential, torsionally rigid frame section (**21**) attached to the inside of the body, said frame section being essentially trapezoidal in cross-section, and having at its inner edge an inwardly directed clamping flange (**22**) which is adapted to form part of a mounting groove for said glass panel (**15**), and
a circumferential frame (**23**) of a high-strength material, engaging the outside of the body and adapted to clamp said glass panel between the frame section and the frame;
at least one end element (**11**, **12**) attached to one end of said main element (**10**); and
at least one burglary resistant, lockable door (**16**) attached to said end element.

5,483,906

RELATING TO SOLID FUEL BURNERS

Peter F. Hufton, Derby, Great Britain, assignor to Rolls-Royce Power Engineering plc, Newcastle upon Tyne, England

Filed Oct. 21, 1994, Ser. No. 326,834
Claims priority, application United Kingdom, Jan. 26, 1993, 9322016
Int. Cl.[6] F23D *1/02*
U.S. Cl. 110—260 **6 Claims**



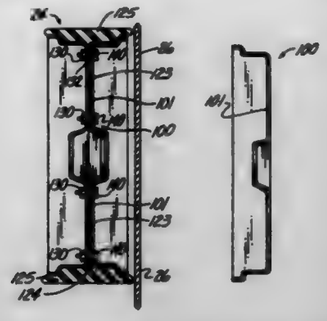
1. A solid fuel burner comprising a hollow structure having an inlet connectable to particulate solid fuel and air delivery means and including a passage the inner wall of which diverges from said inlet to an outlet thereof, tapered fluted means being provided on the inner wall of the passage, the fluted means having troughs which are deepest at the outlet end of the passage, a splitter plate adjacent the troughs spans the interior of the hollow structure to define divergent passage portions which in operation cause a reduction in velocity of a particulate solid fuel/airflow therethrough to ensure flame retention on the planer downstream ends of the flutes and non breakaway of the particulate solid fuel/airflow from the surfaces of the troughs thereof, so as to avoid ash recirculation.

5,483,907

LOW FRICTION GAUGE WHEEL RIM LINER

Mark K. Gaalswyk, R.R. #1 Box 85, Welcome, Minn. 56181

Filed Dec. 6, 1993, Ser. No. 161,526
Int. Cl.[6] A01C *5/06*
U.S. Cl. 111—167 **11 Claims**



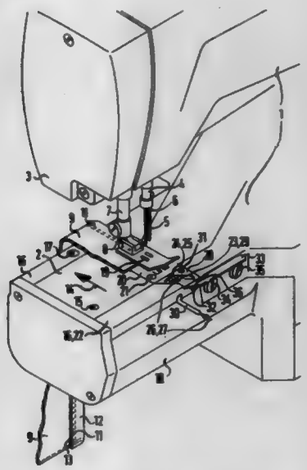
1. In a soil working implement including a frame, a soil opening disk attached to the frame, and a depth gauge wheel operably attached to the frame and disposed adjacent the disk to selectively control the depth the disk penetrates the soil, the gauge wheel including a wheel rim having opposed faces including a first face disposed adjacent the disk, the improvement comprising:
a liner member attached to and disposed to cover only the first face of the wheel rim, the liner member having an exterior surface closely conforming to said first face and formed of a material having high lubricity, whereby the buildup of soil on the exterior surface of the liner member adjacent the disk is minimized.

5,483,908

BLOWING DEVICE ON A SEWING MACHINE FOR UNCURLING THE EDGE OF SEWING MATERIAL

Wolfgang Nolle, Albstadt, Germany, assignor to Union Special GmbH, Hemmingen, Germany

Filed Feb. 1, 1994, Ser. No. 189,692
Claims priority, application Germany, Feb. 10, 1993, 93 01 861.4
Int. Cl.[6] D05B *35/02;35/10;81/00*
U.S. Cl. 112—150 **8 Claims**



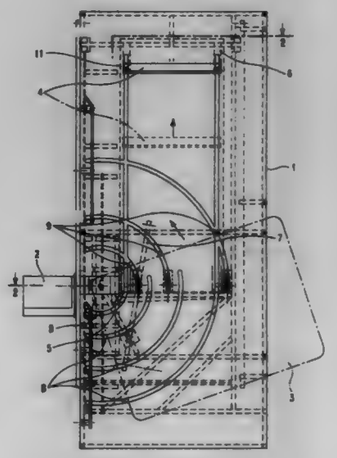
1. A sewing machine having a needle plate with a point of stitch formation and a carrier for the needle plate, a blowing device for uncurling an edge of a workpiece by means of a gas stream, wherein a step including a wall is formed, as part of said carrier, upstream of the point of stitch formation and across a path extending along a feed direction of the workpiece, and an opening, out of which the gas stream may be blown towards the curled edge of the workpiece, opens into said wall of the step.

5,483,909

METHOD AND APPARATUS FOR SEWING THE PERIMETER SEAM OF AN UPHOLSTERED OR TRIMMED ARTICLE

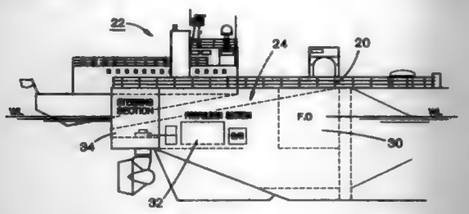
Jose L. A. Nogueras, Madrid, Spain, assignor to Fabricas Lucia Antonio Betere, S.A. (Flabesa), Madrid, Spain

Filed Oct. 28, 1994, Ser. No. 331,220
Claims priority, application Spain, Jan. 29, 1993, 9302271
Int. Cl.[6] D05B *11/00*
U.S. Cl. 112—475.04 **9 Claims**



1. A method for sewing the perimeter seam of an upholstered article comprising the steps of:
(a) extending a plurality of linear pusher elements through longitudinal grooves of a planar, sliding surface of a table;
(b) positioning said planar surface of said table at an incline from 0 to 90 degrees from horizontal;
(c) moving said linear pusher elements in a rectilinear direction from an initial position until said linear pusher elements contact an upholstered article positioned upon said planar surface of said table;
(d) moving said linear pusher elements along a length of said grooves in a rectilinear direction such that said upholstered article is moved in a rectilinear direction;
(e) sewing a seam in said upholstered article with said sewing machine as said upholstered article is being moved by said linear pusher elements;
(f) stopping said movement of said linear pusher elements when a corner of said upholstered article reaches said sewing machine;
(g) moving said linear pusher elements to its said initial position;
(h) moving a plurality of arcuate pusher elements and a plurality of arcuate retainer elements, which protrude from arcuate grooves in said table, in an arcuate path while said arcuate pusher elements and said arcuate retainer elements contact said upholstered article such that said upholstered article is turned in an arcuate path away from said sewing machine and towards said table in a counter-clockwise direction; and
(i) sewing a corner seam in said upholstered article while said article is being turned by said arcuate pusher elements and arcuate retainer elements.

5,483,910
SELF-LAUNCHING SUPERSTRUUCTURE FOR VESSELS
Ole Skaarub, Greenwich, and James H. Hara, Ridgefield, both of Conn., assignors to Skarhar, Inc., Greenwich, Conn.
Filed Jul. 14, 1992, Ser. No. 913,247
Int. Cl.[6] B63B *29/02*
U.S. Cl. 114—71 9 Claims



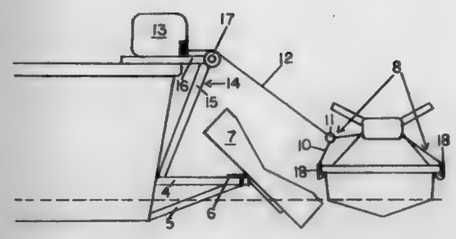
1. A vessel with a self-launching superstructure, comprising:
(a) a vessel hull having therein a main power plant and a steering section for propulsion and steering of said vessel;
(b) said self-launching superstructure being disposed upon said hull and having therein a wheel house for said vessel and controls for said steering section and said main power plant; and
(c) said self-launching superstructure being launchable from said vessel by sliding down a sloped floor on said vessel into water in which said vessel is floating.

5,483,911
ELASTIC ANCHOR ROPE
Ronald N. Kubli, 135 Fern Valley Rd. #69, Medford, Oreg. 97501
Filed Feb. 18, 1994, Ser. No. 198,561
Int. Cl.[6] B63B *21/00*
U.S. Cl. 114—230 5 Claims



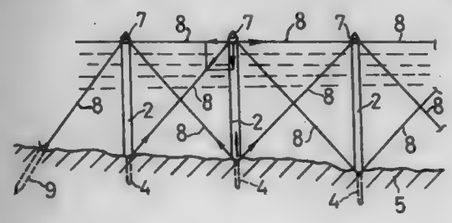
1. An elastic anchor rope for watercraft and comprising,
a hollow braid rope of open center construction,
attachment means on said rope offset from the rope ends with a major segment of the rope defined by said attachment means,
a hook at one end of said rope for attachment to an anchor,
an elongate elastic member lengthwise disposed in and attached to said rope and at all times whether relaxed or tensioned extending said major portion of the length of said rope and having end segments offset inwardly from the ends of said rope, said major portion of said rope collapsed by and along said elastic member when said elastic member is in a relaxed untensioned state,
said attachment means attaching each of said end segments of the elastic member to the rope, and
said elastic member serving to collapse said major portion of the rope extending intermediate said attachment means to permit anchoring of a watercraft in a yieldable manner to allow the discharge of boat occupants ashore with the anchor rope returning the boat to an offshore anchoring site.

5,483,912
SMALL CRAFT CARRIER
Wayne Thomas, 6 White Dr., Neptune, N.J. 07753
Filed Jun. 6, 1994, Ser. No. 254,705
Int. Cl.[6] B63B *23/06*
U.S. Cl. 114—259 12 Claims



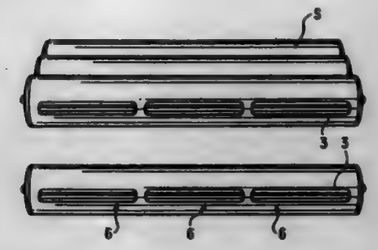
1. A small craft carrying device for securing to a platform attached to the stern and above the water line of a mother boat for raising, lowering, and storing a small craft onto the mother boat comprising a cradle means attached to the end of the platform in pivotal relationship so that the cradle means can tilt towards and away from the mother boat for transverse mounting of the small craft thereon, sling means comprised of a plurality of straps where one end of the straps are attached to gunnel mount brackets for attaching to the gunnel of the small craft and the other end of the straps are attached to a grommet at a central location above the brackets in adjustable relationship, and power means for attaching to the sling means for pulling the small craft transversely onto the cradle means and securing the small craft to the mother boat.

5,483,913
FLOATING STRUCTURES AND LOCKING DEVICE THEREOF
Hiroshi Ohkawa, 3-13-8, Minamigaoka, Nishin-cho, Aichi-gun, Aichi-ken, and Takao Nonoyama, 15, Hirashiba-cho 7-chome, Toyota-shi, Aichi-ken, both of, Japan
PCT No. PCT/JP93/01891, § 371 Date Jun. 8, 1994, § 102(e) Date Jun. 8, 1994, PCT Pub. No. WO94/19231, PCT Pub. Date Jan. 9, 1994
PCT Filed Dec. 24, 1993, Ser. No. 244,374
Claims priority, application Japan, Feb. 26, 1993, 5-063348
Int. Cl.[6] B63B *27/00*
U.S. Cl. 114—264 2 Claims



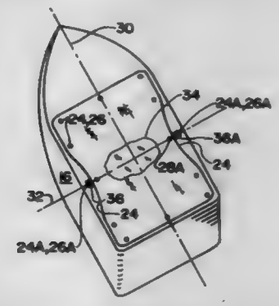
1. A looking device of a floating structure comprising:
a plurality of independent columns which are positioned a predetermined distance from each other, the columns having a bottom portion fixed to a bottom of the body of water wherein a top portion of the columns is projected to a position near the surface of the water;
a cable body which is disposed between two neighboring columns and integrally connecting the bottom of one column and the top of the neighboring column; and
wherein said floating structure is installed between said neighboring columns and floats on the surface of the water.

5,483,914
LONGITUDINALLY EXTENDED FLOATS
Justine Wonka; Franziska Pfeiffer, and Nicole Pfeiffer, all of Amalieweg 16, D-85551 Kirchheim, Germany
Filed Aug. 15, 1994, Ser. No. 290,107
Claims priority, application Germany, Aug. 17, 1993, 9312294 U
Int. Cl.[6] B63B *7/00*
U.S. Cl. 114—345 13 Claims



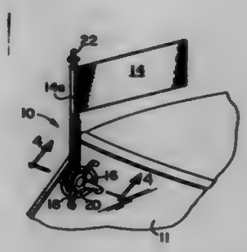
1. A longitudinally extended float, comprising joining means on a first float for detachable longitudinal-side attachment to a substantially identical second float, said joining means being connected to respective opposite first and second longitudinal sides of said first float, said joining means comprising elongated profiles extending substantially parallel to said respective opposite first and second sides, each of the profiles having a generally U-shaped cross-section with leg portions of unequal length, the unequal leg portions comprising a long leg and a short leg, the long leg comprising a back piece which is attached to a respective longitudinal side of said first float, said long leg being connected to said short leg by a bottom portion of said U-shaped profile, said U-shaped profile having an open end opposite the bottom portion, said joining means further comprising a fin member adjacent the open end of said U-shaped profile and substantially parallel to said bottom portion, said fin member being connected to said back piece, and said fin member shielding the open end of the U-shaped profile.

5,483,915
SNAP EXTENDER FOR A BOAT CANVAS
Ron Clark, 150 St. Marks Pl., Massapequa, N.Y. 11758
Filed Mar. 24, 1995, Ser. No. 409,529
Int. Cl.[6] B63B *17/00*
U.S. Cl. 114—361 1 Claim



1. A method of positioning in a longitudinally centered operative position in covering relation over a boat opening a canvas which has shrunk out of fit in relation to said boat opening and is of a type having spaced-apart plural female snaps in a peripheral edge of said canvas adapted to interconnect with cooperating spaced-apart plural male snaps in a peripheral edge bounding said boat opening, said canvas-positioning method comprising the steps of fabricating plural lengths of strips of rectangular shape each having a male snap and a female snap at opposite strip ends in directionally opposite facing relation to each other, interconnecting transversely aligned sets of canvas female snaps on canvas areas which have not shrunk out of fit to boat male snaps and in any canvas area which has shrunk out of fit interconnecting at each opposite edge location thereof one said strip male snap to a canvas female snap so as to have oppositely extending therefrom two canvas-attached strips in aligned relation to each other, and interconnecting said female snaps of said aligning two canvas-connected strips to two cooperating male snaps on said boat, whereby the lengths of said strips are effective in increasing the span of said shrunk canvas area to complete the interconnection of said cooperating snaps and in positioning the shrunk canvas area therebetween in a longitudinally centered orientation in its covering relation over said boat opening.

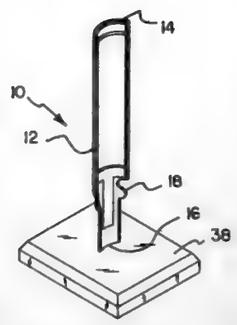
5,483,916
FLAG DISPLAY DEVICE
Albert Kolvites, Mountaintop; Robert J. Cohn, Dallas, and Paul J. Angeloni, Jessup, all of Pa., assignors to A. Rifkin Co., Wilkes-Barre, Pa.
Filed Apr. 26, 1994, Ser. No. 233,587
Int. Cl.[6] G09F *17/00;7/00;* F16M *13/00*
U.S. Cl. 116—173 11 Claims



1. A flag display device for mounting a flag on a surface comprising:
a flag staff having a first end and a second end, the flag being affixed adjacent to the flag staff first end;
a base member comprising an annular ring having a plurality of generally flexible legs radially extending therefrom and a downwardly extending rib, the legs of the annular ring having feet at their distal ends, the feet extending substantially perpendicularly from the legs of the annular ring, towards the surface;
a suction cup depending from the base member for gripping the surface such that when the suction cup is gripping the surface the feet engage the surface at individual, separate and distinctly spaced contact points adjacent an outer perimeter of the suction cup and the base member downwardly extending rib engages an upper surface of the suction cup to provide the base member with rigidity; and
an adjustment mechanism comprising a mounting member securing the flag staff second end to the base member, the adjustment mechanism for adjusting a position of the flag staff relative to the base member, whereby a force applied to the flag staff is transferred to the surface through the individual contact points and the suction cup.

5,483,917
LIGHT REFLECTING TRAFFIC DIRECTION WAND
Dale L. Walker, P.O. Box 445, McCamey, Tex. 79752
Filed Sep. 29, 1994, Ser. No. 315,227
Int. Cl.[6] E01F *9/00;* G09F *15/00*
U.S. Cl. 116—63 P 4 Claims

2. A light reflecting traffic direction wand comprising:



a wand, the wand being positionable in a vertical orientation with an upper extent of an enlarged size and a lower extent of a reduced size as compared to the upper extent, the upper extent and lower extent being formed in a curved configuration about a common vertical center of rotation, the upper extent being axially longer than the lower extent, the upper extent having a lateral extent and the lower extent having a lateral extent, wherein the lateral extent of the upper extent is larger than the lateral extent of the lower extent; and

a plurality of strips of reflective material secured to an interior surface of the upper and lower extent, such plurality of strips including an upper strip located adjacent to an upper edge of the upper extent, an enlarged intermediate strip secured to the majority of the interior surface of the upper extent and a T-shaped strip having an upper horizontal extent in a lower region of the upper extent and having a vertical extent downwardly from the upper extent to a lower portion of the lower extent.

5,483,918

METHOD FOR PRODUCING SINGLE-CRYSTAL SILICON BY CHEMICAL VAPOR DEPOSITION AND METHOD FOR FRACTIONAL DETERMINATION OF ULTRATRACE ELEMENTS PRESENT IN CHLOROSILANES AS STARTING MATERIALS AND SINGLE-CRYSTAL SILICON PRODUCED

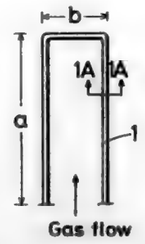
Yoji Kobayashi; Yasuhide Nishina, and Shuichi Miyao, all of Niigata, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 834,647, Feb. 12, 1992, abandoned. This application Apr. 11, 1994, Ser. No. 225,907

Claims priority, application Japan, Feb. 14, 1991, 3-020652

Int. Cl.[6] C30B *25/02*

U.S. Cl. 117—84 **2 Claims**



1. A method for fractional determination of ultratrace elements present in a silicon single crystal comprising the steps of irradiating a silicon single crystal produced according to chemical vapor deposition with laser rays so that the energy of the laser rays on the irradiated surface of the crystal ranges from 3100 to 3358 mW/cm^2 and then optoelectrically determining spectra emitted by the crystal to thus quantify the ultratrace elements present in the silicon single crystal.

5,483,919

ATOMIC LAYER EPITAXY METHOD AND APPARATUS

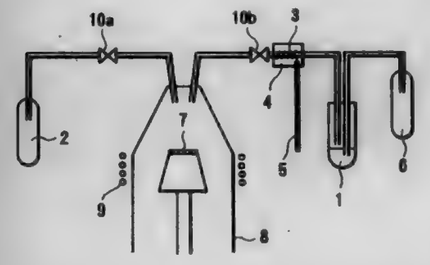
Haruki Yokoyama, and Masanori Shinohara, both of Kanagawa, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Continuation of Ser. No. 748,684, Aug. 22, 1991, abandoned. This application Aug. 17, 1994, Ser. No. 291,334

Claims priority, application Japan, Aug. 31, 1990, 2-231413; May 10, 1991, 3-135670

Int. Cl.[6] C30B *25/19*

U.S. Cl. 117—89 **7 Claims**



1. An atomic layer epitaxy method for obtaining a high-purity atomic layer comprising the steps of:

energizing at a first energization region an organometal consisting of a metal and an alkyl group and having a self-limiting mechanism;

flowing said energized organometal in a pipe provided at said first region so that unbound metal, detached from the organometal in which all bonds between the metal and alkyl group are cut, is removed by deposition to an inner wall of said pipe thereby preventing the unbound metal from reducing the effect of the self-limiting mechanism, at least one bond between the metal and the alkyl group of the organometal is dissociated and only an energized source having at least one bond is remaining; and

flowing said energized source to a second region in which a substrate is set, so that said energized source and a hydride or organometal molecules consisting of a different metal are alternatively supplied on a substrate thereby growing the high-purity atomic layer on said substrate.

5,483,920

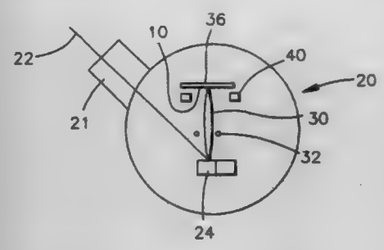
METHOD OF FORMING CUBIC BORON NITRIDE FILMS

Roger W. Pryor, Bloomfield Township, Mich., assignor to Board of Governors of Wayne State University, Detroit, Mich.

Filed Aug. 5, 1993, Ser. No. 102,605

Int. Cl.[6] C30B *23/08*

U.S. Cl. 117—106 **20 Claims**



1. A method of forming large area single crystal boron nitride films on silicon substrates comprising the steps of:

providing a single crystal silicon substrate having a top surface;

treating said top surface of the silicon substrate with plasma excited atomic hydrogen; and

depositing a large area single crystal cubic boron nitride layer on said treated top surface in a reactive gas environment.

5,483,921

METHOD OF AND SYSTEM FOR MILKING MANY ANIMALS

Bert J. Waybright, 1865 Mason Dixon Rd., Gettysburg, Pa. 17325

Filed Feb. 24, 1994, Ser. No. 201,512

Int. Cl.[6] A01J *5/00*; B60P *3/04*

U.S. Cl. 119—14.02 **37 Claims**



1. A method of milking at least several domestic animals on a large scale basis comprising loading at least several of the animals on a car while the car is at an animal loading station, moving the car with the animals thereon to a milking station, milking the animals while the car is at the milking station, the time required for the car to traverse the distance from the loading station to the milking station exceeding the time while the car is at the milking station, moving the car with the animals thereon from the milking station to an animal discharging station, and discharging the animals from the car while the car is at the discharging station.

5,483,922

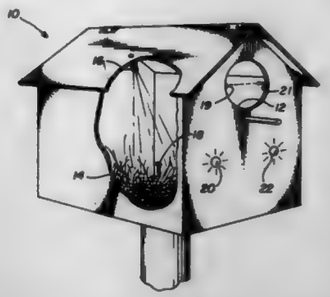
APPARATUS FOR DETECTING WHEN BIRDS ARE IN A BIRDHOUSE

Lance S. Hall, 840 Newport #200, Newport Beach, Calif. 92660

Filed Mar. 29, 1995, Ser. No. 412,638

Int. Cl.[6] A01K *31/14*

U.S. Cl. 119—23 **5 Claims**



1. Apparatus for detecting when birds are in a birdhouse comprising:

a birdhouse;

a first heat sensor and a second heat sensor positioned in said birdhouse;

a differential amplifier connected to said first and second heat sensors to produce an output signal only when a bird is in said birdhouse; and

a lamp mounted external to said birdhouse and coupled to said differential amplifier output to emit a light when said differential amplifier output is received to indicate that a bird is in said birdhouse.

5,483,923

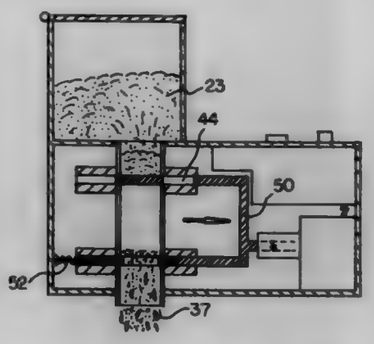
TIMER CONTROLLED PET FEEDER

Samir M. Sabbara, 3348 Deerwood Dr., Anaheim, Calif. 92804

Filed Jun. 30, 1994, Ser. No. 270,984

Int. Cl.[6] A01K *5/02*

U.S. Cl. 119—51.11 **3 Claims**



2. A timer controlled pet feeder for automatically dispensing a predetermined amount of pet food at a given time comprising:

a container having an openable main reservoir formed therein and adapted for holding several meals of pet food connected to a feeding reservoir formed therebelow and adapted for holding a meal of food with the feeding reservoir having an upwardly extended entrance for communicating with the main reservoir and a downwardly extended exit for providing communication therefrom;

dispensing means comprising an upper and lower platform integrally coupled by a rigid rail having a retracted orientation for simultaneously closing the exit of the feeding reservoir and opening the entrance of the feeding reservoir and an extended orientation for simultaneously opening the exit of the feeding reservoir and closing the entrance of the feeding reservoir;

actuator means for placing the dispensing means in the extended orientation when activated and the retracted orientation when de-activated;

timer circuitry disposed within the base compartment of the container, the timer circuitry further comprising:

a timer for maintaining a current time and a plurality of triggerable time settings keyed to the current time;

a timer switch having one orientation for energizing the actuator when a time setting is triggered and another orientation for de-energizing the actuator when a time setting is not triggered;

timer adjustment means coupled to the timer and extended through the container for allowing a user to adjust the time and time settings; and

a display extended through the container for displaying the current time and time settings.

5,483,924

DEVICE FOR TRAINING A BIRD IN A CAGE

Russell C. Whitaker, 6305 N. O'Connor Blvd., Suite 119, LB11, Irving, Tex. 75039

Filed Sep. 23, 1994, Ser. No. 311,495

Int. Cl.[6] A01K *15/02*; *45/00*

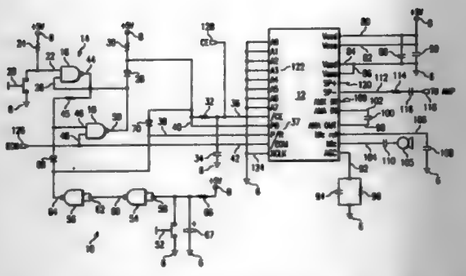
U.S. Cl. 119—713 **16 Claims**

1. A device for training birds in a cage to talk, comprising:

(a) a container;

(b) attachment means, affixed to the container, for holding the container against the cage;

(c) solid state analog storage device, resident in the container, for storing a signal up to a predetermined length, wherein the analog storage device is powered down when not playing back the stored signal; and



(d) a variable timer, operatively connected to the solid state analog storage device, for playing back the stored signal at specified controllable intervals.

5,483,925

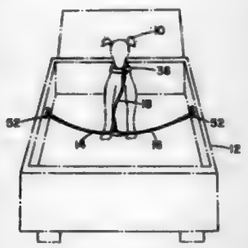
ANIMAL TETHER

Jack E. Childress, 28701 Deer Creek Trail, Pine Valley, Calif. 91962

Filed May 23, 1994, Ser. No. 247,280

Int. Cl.[6] A01K *27/00*

U.S. Cl. 119—795 **8 Claims**



1. An animal tether for restraining an animal within an area having a width, comprising:

first, second and third cable portions, each having a connected end and a free end, said connected end of said cable portions joined together, said cable portions formed of a flexible, stiff material, said first and second cable portions being halves of a continuous length of cable and having equal lengths, said third cable portion having a length no greater than the length of said first and second cable portions;

a first connector for forming a first loop at a center of said continuous length of cable to define said first and second cable portions; and

three latches, each attached to said free end of one of said cable portions, said three latches comprising a first latch disposed at said free end of said first cable portion for attaching to a first side of said area, a second latch disposed at said free end of said second cable portion for attaching to a second side of said area opposite said first side so that said first cable portion and said second cable portion span the width of said area, and a third latch disposed at a free end of said third cable portion for attaching to said animal.

5,483,926

BRAKE MECHANISM FOR RETRACTABLE ANIMAL LEASH ASSEMBLY

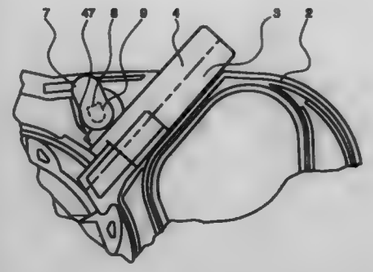
Manfred Bogdahn, Hamburg, Germany, assignor to Bogdahn-Technik GmbH, Germany

Filed Mar. 23, 1994, Ser. No. 216,312

Claims priority, application Germany, Mar. 24, 1993, 9304693 U

Int. Cl.[6] A01K *27/00*

U.S. Cl. 119—796 **17 Claims**



1. A retractable animal leash assembly, comprising a housing which is carried in a hand and a leash arranged in said housing and having a free end portion which extends out of said housing, said leash assembly further comprising

brake means including brake activation means, said brake means being operable by said carrying hand into an activated position to hold said portion of said leash located outside said housing at a desired length, and

a brake lock mechanism for providing a sustained brake function, said brake lock mechanism being associated with said assembly in a region of said brake means to lock the leash in the position momentarily determined by said brake means, said brake lock mechanism comprising means for operating said brake lock mechanism separated from said brake activation means,

wherein said means for operating said brake lock mechanism comprise at least two operating means each arranged in different positions on said housing which can be reached by said carrying hand, such that a desired brake lock function is achievable by selectively activating one of said two operating means.

5,483,927

METHOD FOR ENGINE CONTROL

Dennis M. Letang, Canton; Douglas J. Babcock, South Lyon, and S. Miller Weisman, II, Farmington Hills, all of Mich., assignors to Detroit Diesel Corporation, Detroit, Mich.

Division of Ser. No. 113,424, Aug. 27, 1993, Pat. No. 5,445,128. This application Mar. 17, 1995, Ser. No. 406,114

Int. Cl.[6] F01P *7/12*; F02D *13/04*; B60K *31/02*

U.S. Cl. 123—41.12 **9 Claims**

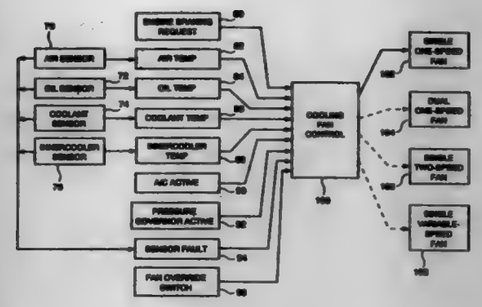
1. A method of controlling road speed of a vehicle including a multi-cylinder internal combustion engine having at least one cooling fan and an electronic control unit with memory for controlling the engine, the method comprising:

determining a desired vehicle road speed to obtain a desired road speed signal;

sensing at least one vehicle operating parameter to obtain an actual road speed signal;

comparing the desired road speed signal with the actual road speed signal; and

controlling the at least one cooling fan based on the comparison.



5,483,928

LIQUID COOLED INTERNAL COMBUSTION ENGINE

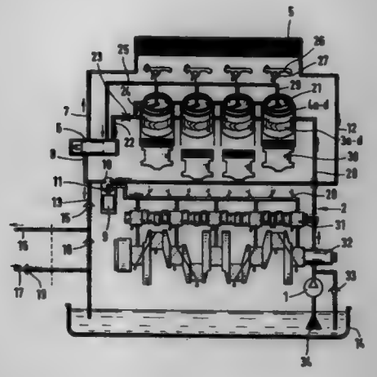
Hans-Peter Mahlberg, Rosrath; Heinz W. Fuchs, Remscheid; Reinhard Rechberg, St. Augustin; Lothar Bauer, Cologne; Werner Lemme, Rostrath; Wolfgang Strusch, Cologne; Tai Tedsen, Orfoan Hahn; Herbert Schleiermacher, Bruhl, and Jürgen Wahnschaffe, Bergisch Gladbach, all of, Germany, assignors to Klockner-Humboldt-Duetz AG, Koln-Porz, Germany

Filed Jul. 11, 1994, Ser. No. 273,475

Claims priority, application Germany, Jul. 27, 1993, 43 25 141.2

Int. Cl.[6] F07P *3/00*

U.S. Cl. 123—41.42 **12 Claims**



1. In an internal combustion engine having a crankcase, with a of cylinders in in-line relationship with one another, a crankshaft supported in a said crankcase, a cylinder head for each cylinder, a piston in each cylinder, connecting rods interconnecting said pistons with said crankshaft and an engine lubrication system, the combination comprising:

a cylinder cooling space in each cylinder,

a head cooling space in each cylinder head,

means connecting said cylinder cooling spaces in series fluid communication,

means connecting said head cooling spaces in series fluid communication,

a source of lubricating oil,

an oil pump connected in oil receiving relation to said source of lubricating oil,

an inlet line interconnecting said pump and said cylinder cooling space of one end cylinder,

a drain line (22) connected to said cylinder cooling space of the opposite end cylinder,

a throttle (23) in said the drain line (22),

a supply line (24) connecting said head cooling space of said opposite end cylinder to said drain line (22) at point upstream of said throttle (23) thereby placing said head cooling spaces in series fluid communication with said cylinder cooling spaces and

a return flow line (25) connecting said head cooling space of said opposite end cylinder to said drain line (22) at a point downstream from said throttle (23).

5,483,929

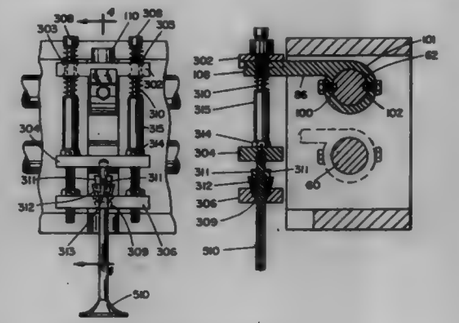
RECIPROCATING VALVE ACTUATOR DEVICE

Damon Kuhn, Frisco, and J. M. Johnson, Lewisville, both of Tex., assignors to Kuhn-Johnson Design Group, Inc., Lewisville, Tex.

Filed Jul. 22, 1994, Ser. No. 279,465

Int. Cl.[6] F01L *1/00*; F16K *31/44*

U.S. Cl. 123—90.1 **19 Claims**



1. A valve moving system comprising:

a frame adjacent a valve;

at least one reciprocating rod, having an axis and a stepped cam slot, slidably supported by the frame;

at least one reversing screw, having an axis of rotation parallel to the axis of the reciprocating rod, operatively attached to the reciprocating rod so that the rod is reciprocated when the reversing screw is rotated; and,

at least one actuator, operatively connected to the stepped cam slot and to the valve, so that the actuator moves the valve when the rod is reciprocated.

5,483,930

VALVE TIMING CONTROL DEVICE

Yoshihito Moriya, Nagoya; Akihiko Takenaka, Anjo, and Michio Adachi, Obu, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Continuation of Ser. No. 245,555, May 18, 1994, abandoned. This application Feb. 8, 1995, Ser. No. 386,908

Claims priority, application Japan, May 19, 1993, 5-116990

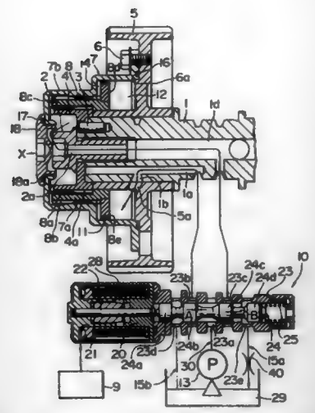
Int. Cl.[6] F01L *1/34*

U.S. Cl. 123—90.17 **8 Claims**

1. A valve timing control device comprising:

a cylindrical gear having splines formed on the inner and outer peripheries thereof, said splines formed on at least one of inner and outer peripheries thereof being helical, said gear being engaged between a crankshaft-side member and a camshaft-side member so as to transmit rotation of the crankshaft-side member to the camshaft-side member;

gear driving means for moving said gear in the axial direction by a hydraulic pressure, said driving means including an advancing-side hydraulic chamber for rotating said camshaft-side member relative to said crankshaft-side member to an advancing side, and a delaying-side hydraulic chamber for rotating said camshaft-side member relative to said crankshaft-side member to a delaying side; and



fluid rate control means for supplying fluid to said advancing-side hydraulic chamber and discharging fluid from said delaying-side hydraulic chamber when said camshaft-side member is rotated relative to said crankshaft-side member to the advancing side, for supplying fluid to said delaying-side hydraulic chamber and discharging fluid from said advancing-side hydraulic chamber when said camshaft-side member is rotated relative to said crankshaft-side member to the delaying side, and for supplying fluid to fill both said hydraulic chambers when said camshaft-side member is retained at a desired position relative to said crankshaft-side member, said fluid rate control means serving to supply fluid of a predetermined rate to said advancing-side hydraulic chamber and substantially stop discharging fluid from said delaying-side hydraulic chamber when said camshaft-side member is retained at the desired position relative to said crankshaft-side member.

5,483,931

DRIVE DEVICE ESPECIALLY FOR A TRIMMER

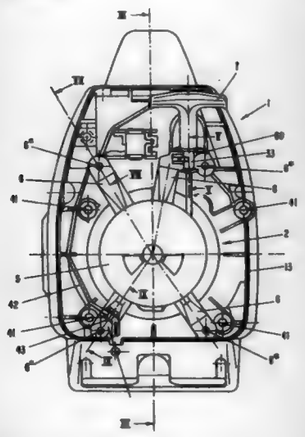
Gerhard Stoll, Winnenden, and Helmut Schlessmann, Waiblingen, both of, Germany, assignors to Andreas Stihl, Waiblingen, Germany

Filed Jun. 30, 1994, Ser. No. 268,855

Claims priority, application Germany, Jul. 1, 1993, 43 21 862.8

Int. Cl.[6] F02N *3/02*

U.S. Cl. 123—185.3 **17 Claims**



1. A drive device comprising:
a housing;
an internal combustion engine positioned in said housing, said engine comprising a crankshaft;
a cable starter comprising a cable and a cable reel for receiving said cable, said cable having at a free end thereof a handle;
a cable guide sleeve through which said cable is guided;
said crankshaft extending through said cable starter;
a clutch with a clutch casing;
a support for said cable starter, said support arranged between said housing and said clutch casing;
said support having radially extending arms, with one of said arms having a securing device for said cable guide sleeve; and
said securing device having a securing connection in the form of a snap connection.

5,483,932

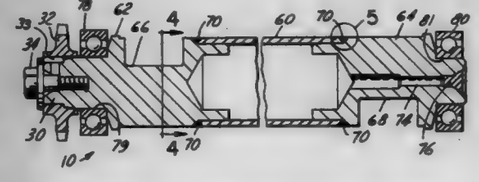
HOLLOW BALANCE SHAFT

Ronald S. Friedman, Commerce Township, and William C. Sisco, Homer, both of Mich., assignors to Simpson Industries, Inc., Bingham Farms, Mich.

Filed Apr. 21, 1994, Ser. No. 230,642

Int. Cl.[6] F02B *75/06*

U.S. Cl. 123—192.2 **43 Claims**



1. A balance shaft for an automobile engine comprising:
a hollow tubular member having two ends;
a first plug member secured by welding to one end of said tubular member; and
a second plug member secured by welding to the other end of said tubular member;
said first plug member having an air vent therein.

5,483,933

COMBUSTION CHAMBER STRUCTURE FOR DIESEL ENGINES

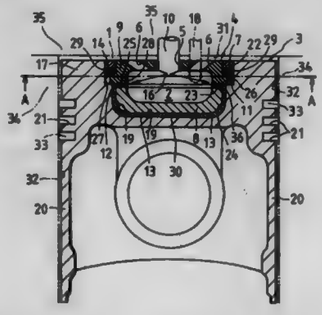
Hideo Kawamura, Samukawa, Japan, assignor to Isuzu Ceramics Research Institute Co., Ltd., Kanagawa, Japan

Filed Mar. 27, 1995, Ser. No. 410,740

Claims priority, application Japan, Mar. 28, 1994, 6-079311

Int. Cl.[6] F02F *3/26*

U.S. Cl. 123—254 **10 Claims**



1. A combustion chamber structure for diesel engines, comprising,
a cylinder block forming cylinders therein,
a cylinder head fixed on said cylinder block,

pistons reciprocatingly moving in said cylinders and provided with cavities in the substantially central portions thereof,
primary chambers formed in said cylinders,
fuel injection nozzles provided in said cylinder head so as to project from the lower surface thereof, precombustion chamber bodies provided in said cavities, forming precombustion chambers in the substantially central portions of said cylinders, and formed by upper chambers, lower chambers opposed to said upper chambers, and heat resisting gaskets interposed between said upper chambers and said lower chambers,
gaskets of a low heat conductivity provided between said cavities and said precombustion chamber bodies, and air layers formed between wall surfaces of said cavities and outer surfaces of said precombustion chamber bodies, and
central insert bores, through which said fuel injection nozzles can be thrusted into said precombustion chambers in positions in the vicinity of upper dead centers of said pistons, and communication ports provided so as to be spaced from each other in the circumferential direction of said central insert bores, allowing said precombustion chambers and said primary chambers to communicate with each other and opened so as to extend radially toward the circumferences of the cylinders, which insert bores and communication ports are formed in upper wall portions of said pistons.

5,483,934

METHOD FOR OPERATING A FOUR-STROKE INTERNAL COMBUSTION ENGINE WITH EXTERNALLY SUPPLIED IGNITION AND DIRECT INJECTION, AND APPARATUS FOR PERFORMING THE METHOD

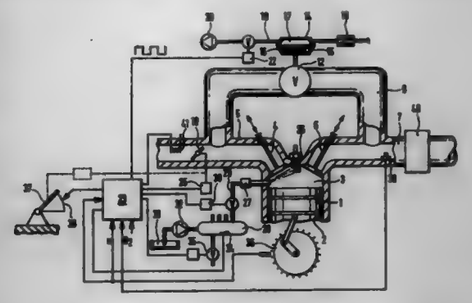
Heinz Stutzenberger, Valhingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 19, 1994, Ser. No. 293,271

Claims priority, application Germany, Sep. 22, 1993, 43 32 171.2

Int. Cl.[6] F02B *5/00*

U.S. Cl. 123—305 **20 Claims**



1. A method of operating a four-stroke internal combustion engine with externally supplied ignition and direct fuel injection into respective combustion chambers of said engine, which comprises:
causing an injection onset during a full-load operation during an intake stroke within a range of operation of a piston between top dead center (TDC) and bottom dead center (BDC) of an applicable cylinder of said engine and with an unthrottled delivery of air into a respective one of said combustion chambers;
causing an injection onset during a low load range of operation just prior to TDC and an ignition, within a predetermined operating range of an engine performance graph between said full-load operation and said low-load range of operation;
controlling an opening of the air intake cross section of said engine via an intake throttle device, said device being positioned as a function of a torque-demand input provided by a gas pedal position; and
establishing a substantially constant position of said intake throttle device in other operating ranges for each of respective said other operating ranges;
controlling fuel injection quantities in accordance with said gas pedal position over an entire engine performance graph range; and
controlling a recirculated exhaust gas quantity (EGR) within a specific operating range within a range internal to said entire engine performance graph range, said specific operating range adjoining said predetermined operating range in which said opening of an air intake cross section is controlled.

5,483,935

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

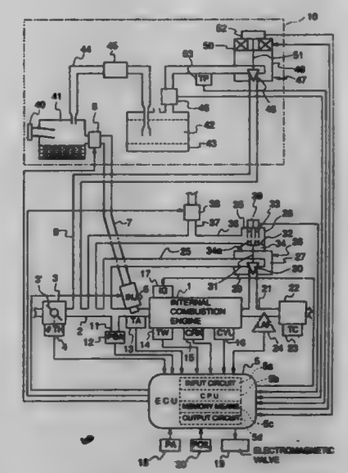
Ken Ogawa; Yoshikazu Oshima; Yasunori Ehara; Kei Machida, and Atsushi Kato, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 122,190, Sep. 17, 1993, Pat. No. 5,426,938. This application Feb. 15, 1995, Ser. No. 388,836

Claims priority, application Japan, Sep. 18, 1992, 4-275401; Sep. 18, 1992, 4-275402; Sep. 18, 1992, 4-275403; Sep. 18, 1992, 4-275404

Int. Cl.[6] F02D *43/04*

U.S. Cl. 123—421 **7 Claims**



1. A control system for an internal combustion engine having an intake passage having an inner wall surface, a fuel tank, at least one fuel injection valve, at least one combustion chamber, and an evaporative emission control system, said evaporative emission control system including a canister for adsorbing evaporative fuel generated from said fuel tank, a purging passage connecting between said intake passage and said canister, and a purge control valve for controlling a flow rate of a gas containing said evaporative fuel and purged through said purging passage into said intake passage, wherein said gas containing said evaporative fuel purged from said canister is supplied to said combustion chamber for combustion together with fuel injected by said fuel injection valve, the control system comprising:
air-fuel ratio-detecting means for detecting an actual air-fuel ratio of an air-fuel mixture supplied to said engine;
operating condition-detecting means for detecting operating conditions of said engine including at least the rotational speed of said engine and load on said engine;
desired air-fuel ratio-calculating means for calculating a desired air-fuel ratio of said air-fuel mixture to be supplied

to said engine based on results of detection by said operating condition-detecting means;

correction coefficient-calculating means for calculating an air-fuel ratio correction coefficient for correcting said actual air-fuel ratio toward said desired air-fuel ratio in a feedback manner in response to said actual air-fuel ratio detected by said air-fuel ratio-detecting means;

desired fuel supply amount-calculating means for calculating a desired amount of fuel to be supplied to said combustion chamber based on results of detection by said operating condition-detecting means; and

actual fuel ratio-calculating means for calculating a ratio of an actual amount of fuel supplied to said combustion chamber to said desired amount of fuel to be supplied to said combustion chamber, by taking into account at least an amount of said evaporative fuel supplied to said combustion chamber;

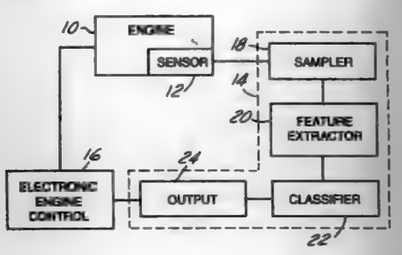
said correction coefficient-calculating means including change rate-setting means for setting a rate of change of said air-fuel ratio correction coefficient based on results of calculation of said actual fuel ratio-calculating means.

5,483,936

SPARK KNOCK DETECTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Scott M. Kerstein, 16557 Lexington, Redford, Mich. 48240; Stephen C. Simmons, 12449 W. Dunbar, Dundee, Mich. 48131; Brett A. Dunn, 384 S. Harris, Saline, Mich. 48176, and Duane M. Grider, 21672 Sheffield, Farmington Hills, Mich. 48335

Filed Jul. 5, 1994, Ser. No. 270,982
Int. Cl.[6] F02P *5/152;* **G01L** *23/22*
U.S. Cl. 123—425 **20 Claims**



1. A system for detecting spark knock in an internal combustion engine comprising:

vibration detection means connected in proximity to the engine for 'converting a vibration into an electrical output signal representative of said vibration;

sampling means connected to said vibration detection means for sampling said electrical output signal and converting said electrical output signal into a digital data pattern corresponding to said electrical output signal;

feature extraction means connected to said sampling means for converting said digital data pattern into frequency domain signal values forming a frequency domain pattern, each value having a magnitude;

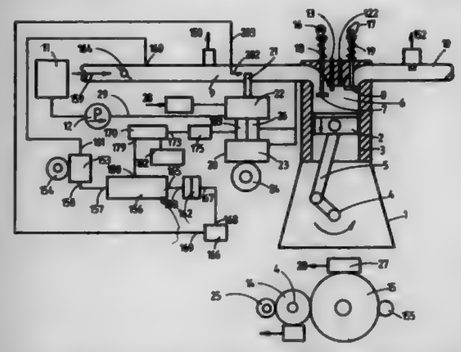
trained classification means connected to said feature extraction means for receiving said frequency domain pattern and having predetermined coefficients determined during training for classifying said frequency domain pattern to indicate the presence of spark knock.

5,483,937

ACTUATOR FOR ENGINE FUEL INJECTOR SYSTEM

Joseph C. Firey, P.O. Box 15514, Seattle, Wash. 98115-0514

Filed Nov. 14, 1994, Ser. No. 339,067
Int. Cl.[6] F02D *41/14;* **F02M** *45/00*
U.S. Cl. 123—435 **7 Claims**



1. In a four stroke cycle internal combustion engine mechanism comprising: at least one piston, operative within a cylinder, and connected to a crankshaft via a connecting rod; each said piston and cylinder comprising: a variable volume chamber, between the crown of said piston and the head of said cylinder, whose volume varies when said piston is moved by said connecting rod within said cylinder by rotation of said crankshaft; an air intake valve and an exhaust valve gas flow connecting into said variable volume chamber and opened and closed by a camshaft and valve drive means from said crankshaft; said camshaft and valve drive means being timed relative to said piston so that a four stroke cycle is carried out with each two revolutions of said crankshaft; said four stroke cycle comprising in time order, an air intake stroke whenever said piston is moving to increase the volume of said variable volume chamber and said intake valve is opened and said exhaust valve is closed by said valve drive means, a compression stroke whenever said piston is moving to decrease the volume of said variable volume chamber and said intake and exhaust valves are closed by said valve drive means, an expansion stroke whenever said piston is moving to increase the volume of said variable volume chamber and said intake valve and said exhaust valve are closed by said valve drive means, a combustion process occurring during the ending of said compression stroke and the starting of said expansion stroke when fuel is supplied to said internal combustion engine mechanism, an exhaust stroke whenever said piston is moving to decrease the volume of said variable volume chamber and said exhaust valve is opened and said intake valve is closed by said valve drive means, and said four stroke cycle is repeated; an air supply intake manifold connection to said air intake valve; an exhaust gas manifold connection to said exhaust valve; a source of supply of engine liquid fuel at a pressure in excess of atmospheric; an ignition means for igniting compressed fuel air mixtures within said variable volume chamber so that a combustion process occurs during said compression and expansion strokes; an engine intake air density adjustment means for adjusting the density of the air in said air intake manifold; said four stroke cycle internal combustion engine further comprising a number of engine fuel injection systems wherein each engine cylinder is served by one such engine fuel injection system, each said engine fuel injection system comprising:

a gas pressure cycling means for cycling the pressure of a gas quantity so that during each cycle said gas pressure rises from a starting pressure to a peak pressure and said pressure rise is followed by a pressure decrease from said peak pressure to essentially said starting pressure; said gas pressure cycling means comprising, a variable volume chamber, containing said gas quantity, enclosed between a fixed container and a moveable element operating sealably within said fixed container, pressure cycler means for driving said moveable element so that said variable volume is decreased to increase the pressure of said gas quantity and is subsequently increased to decrease the pressure of said gas quantity and to thusly cycle the pressure of said gas quantity, first means for connecting said variable volume chamber to said engine air supply intake manifold only during the ending of said pressure decrease and the start of the next said pressure increase so that said starting pressure essentially equals the pressure in said engine air supply intake manifold;

fuel injector means for injecting liquid fuel into said engine air supply intake manifold during each said air intake stroke and comprising: a fuel injector nozzle, a liquid fuel chamber containing liquid fuel, a nozzle valve means for connecting and disconnecting said fuel injector nozzle to said liquid fuel chamber and comprising drive means for opening and closing said nozzle. valve means, a fuel supply valve means for connecting and disconnecting said liquid fuel chamber to said engine fuel supply source and comprising drive means for opening and closing said fuel supply valve means, a liquid fuel pressurizer means for applying pressure to said liquid fuel in said liquid fuel chamber;

said fuel injector nozzle of said fuel injector means connecting into said engine air supply intake manifold;

pressure transmitter means for transmitting pressure from said variable volume chamber of said gas pressure cycling means to said liquid fuel pressurizer means of said fuel injector means so that pressure increase in said variable volume chamber of said gas pressure cycling means is transmitted as pressure increase on said liquid fuel in said liquid fuel chamber, and so that pressure decrease in said variable volume chamber is transmitted as pressure decrease on said liquid fuel, and so that gas does not enter said liquid fuel chamber and so that liquid fuel does not enter said variable volume chamber of said gas pressure cycling means, said pressure transmitter means comprising: means for connecting and disconnecting said pressure transmitter to said variable volume chamber of said gas pressure cycling means so that pressure increase and decrease in said variable volume chamber act upon said pressure transmitter only during and throughout each said air intake stroke; and so that the pressure acting upon said liquid fuel in said liquid fuel chamber via said pressure transmitter is less than said liquid fuel supply pressure during and throughout each said compression stroke, expansion stroke and exhaust stroke;

inter drive means for driving said moveable element of said gas pressure cycling means from said crankshaft of said internal combustion engine mechanism so that, a pressure cycle takes place during each said air intake stroke, and so that the duration of said pressure cycle is essentially equal to the duration of said intake stroke;

intake stroke sensor means for sensing the start of said air intake stroke and the end of said air intake stroke of said internal combustion engine mechanism;

fuel valve control means for controlling the connecting and disconnecting of said fuel injector nozzle to said liquid fuel chamber and for controlling the connecting and disconnecting of said liquid fuel chamber to said engine fuel supply source, and responsive to said intake stroke sensor means, and operative upon said nozzle valve means drive means and said fuel supply valve drive means, so that said nozzle valve means connects said fuel injector nozzle to said liquid fuel chamber only from the start to the end of each said air intake stroke, and so that said fuel supply valve means connects said liquid fuel chamber to said engine fuel supply source only when said nozzle valve means has disconnected said fuel injector nozzle from said liquid fuel chamber;

fuel flow control means for controlling the fuel quantity delivered into each said engine intake manifold, and thence into each connected engine cylinder, per engine intake stroke by adjustment of the integrated product of fuel flow area of said fuel injector nozzle multiplied by the square root of the pressure difference between said liquid fuel chamber and said engine intake manifold, said product integrated over the time duration of one engine intake stroke;

wherein the improvement comprises adding an engine fuel injector system actuator to each said fuel injector system, said actuator comprising:

a source of gas to be compressed;

a positive and fixed displacement gas compressor means for compressing gases and comprising a gas inlet and a compressed gas outlet;

a drive means for driving said gas compressor means so that the rotational speed of said gas compressor is a fixed multiple of the rotational speed of said engine crankshaft;

a compressed gas reservoir comprising a reservoir inlet and at least two reservoir outlets;

a compressed gas spill orifice comprising an orifice inlet and an orifice outlet;

a collector for spilled gases comprising a collector inlet and a collector outlet;

said gas inlet of said gas compressor means being connected to said source of gas to be compressed;

said compressed gas outlet of said gas compressor means being connected to said reservoir inlet of said compressed gas reservoir;

said compressed gas spill orifice inlet being connected to one of said reservoir outlets of said compressed gas reservoir;

said compressed gas spill orifice outlet being connected to said collector inlet of said collector for spilled gases;

said collector outlet of said collector for spilled gases being connected to the engine intake manifold;

wherein said source of gas to be compressed is the engine intake manifold downstream in the intake air flow direction of said means for adjusting intake manifold air density;

at least one source of gas at a first reference pressure, said first reference pressure being less than the pressure in said compressed gas reservoir and greater than the pressure in said engine intake manifold downstream of said means for adjusting intake manifold air density;

a fuel flow control actuator means for controlling the fuel flow per engine intake stroke delivered to each engine cylinder by said engine fuel injection system of said internal combustion engine, said fuel flow control actuator means comprising: a piston sealably operative within a fixed actuator cylinder and connected to a fuel flow control drive bar, said drive bar comprising a drive end opposite the piston end thereof; a compression spring within said cylinder acting upon one side of said piston; both ends of said cylinder having pressure connections, a spring side pressure connection to that cylinder end containing the spring, an anti spring side pressure connection to that other cylinder end, both cylinder ends being otherwise gas sealed;

said anti spring side pressure connection of said fuel flow control actuator means being connected to one other of said reservoir outlets of said compressed gas reservoir;

said spring side pressure connection of said fuel flow control actuator means being connected to said source of gas at a first reference pressure;

said fuel flow control actuator means further comprising interconnector means for connecting said fuel flow control drive bar drive end to said fuel flow control means for controlling the fuel quantity delivered to each engine cylinder per engine intake stroke of each said engine fuel injection system, so that the fuel quantity delivered to each engine cylinder per engine intake stroke increases as the air quantity delivered to each engine cylinder per engine intake stroke increases, and decreases as said air quantity decreases.

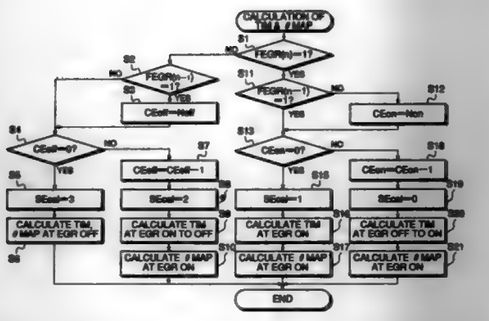
5,483,938

AIR-FUEL RATION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Yoshikazu Oshima, and Ken Ogawa, both of Wako, Japan, assignors to Honda Giken Kogyo K.K., Tokyo, Japan

Filed Sep. 27, 1994, Ser. No. 313,376
Claims priority, application Japan, Sep. 29, 1993, 5-265802
Int. Cl.[6] F02M *51/00*
U.S. Cl. 123—478 **19 Claims**

1. An improvement for air-fuel ratio control system for an internal combustion engine having an intake passage, an exhaust



passage, and exhaust gas recirculation means including an exhaust gas recirculation passage connecting between said exhaust passage and said intake passage, and a recirculation control valve arranged in said exhaust gas recirculation passage for controlling recirculation of exhaust gases from said engine as a recirculation gas via said exhaust gas recirculation passage,

the improvement comprising:

operating condition-detecting means for detecting operating conditions of said engine including at least rotational speed of said engine and intake pressure within said intake passage;

valve opening-detecting means for detecting a valve opening of said recirculation control valve;

recirculation gas amount-determining means for determining an amount of said recirculation gas, based on said valve opening of said recirculation control valve detected by said valve opening-detecting means;

fuel supply amount-determining means for determining an amount of fuel to be supplied to said engine, based on the rotational speed of said engine and the intake pressure within said intake passage detected by said engine operating condition-detecting means; and

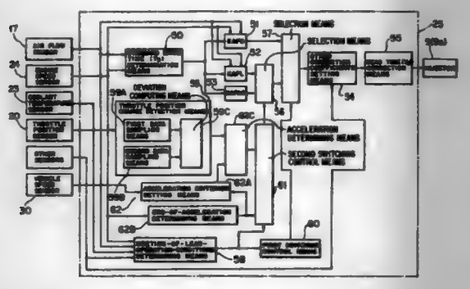
fuel supply amount-correcting means for correcting said amount of fuel to be supplied to said engine, based on said amount of said recirculation gas determined by said recirculation gas amount-determining means.

5,483,939

CONTROL SYSTEM FOR LEAN-BURN INTERNAL COMBUSTION ENGINE

Hitoshi Kamura, Kyoto, and Yasuki Tamura, Nisshin, both of, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1994, Ser. No. 321,026
Claims priority, application Japan, Jan. 12, 1993, 5-254585
Int. Cl.[6] F02D *41/10*; B60K *41/06*
U.S. Cl. 123—492 **10 Claims**



1. A control system for a lean-burn internal combustion engine mounted on a vehicle to perform a lean-burn operation at an air/fuel ratio leaner than a stoichiometric air/fuel ratio under predetermined operation conditions, comprising:

load change parameter detection means for detecting a parameter correlated to a change in load on said internal combustion engine;

vehicle speed state detection means for detecting the state of running speed of said vehicle;

means for setting an acceleration criterion;

acceleration determining means for comparing output information from said load change parameter detection means with said acceleration criterion set by said acceleration criterion setting means and when said output information is greater than said acceleration criterion, determining that said internal combustion engine is in an accelerated operation;

end-of-acceleration determining means for determining an end of said accelerated operation; and

air/fuel ratio control means for controlling the mixing ratio of fuel to air, which are to be fed to said internal combustion engine, to said stoichiometric air/fuel ratio or said richer air/fuel ratio when said internal combustion engine has been determined to be in said accelerated operation by said acceleration determining means in a lean-burn operation, and then controlling said air/fuel mixing ratio back to said leaner air/fuel ratio when said accelerated operation is determined to have ended by said end-of-acceleration determining means;

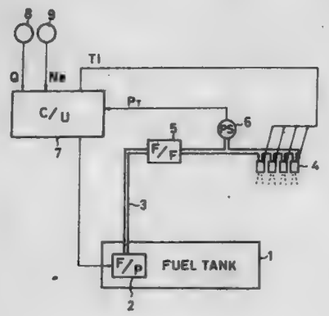
wherein when the state of running speed of vehicle detected by said vehicle speed state detection means is in a high speed range and said accelerated operation is determined to have ended by said end-ofacceleration determining means, said acceleration criterion setting means changes said acceleration criterion to a greater value.

5,483,940

APPARATUS AND A METHOD FOR CONTROLLING FUEL SUPPLY TO ENGINE

Toshio Nambe; Masanobu Osaki, and Junichi Furuya, all of Atsugi, Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan

PCT No. PCT/JP93/01627, § 371 Date Jun. 29, 1994, § 102(e) Date Jun. 29, 1994
PCT Filed Nov. 9, 1993, Ser. No. 256,084
Claims priority, application Japan, Nov. 9, 1992, 4-298796
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—497 **12 Claims**



1. An apparatus for controlling fuel supply to an engine, comprising:

a fuel injection valve for injecting fuel therethrough into an intake system of said engine;

a fuel pump for sucking thereinto fuel contained in a fuel tank and force feeding the fuel to said fuel injection valve through a fuel supply passage;

driving condition detecting means for detecting a driving condition of said engine, correlating to an amount of fuel required by said engine;

control value for steady condition setting means for setting a control value for steady condition for said fuel pump, corresponding to a steady condition, said control value for steady

condition being determined using said driving condition of said engine detected by said driving condition detecting means as a parameter;

transient condition detecting means for detecting a transient condition where said amount of fuel required by said engine varies, and for detecting a variation rate of said amount of fuel required by said engine;

transient correction value setting means for setting a transient correction value for correcting said control value for steady condition based on said variation rate of said required fuel amount detected by said transient condition detecting means; and

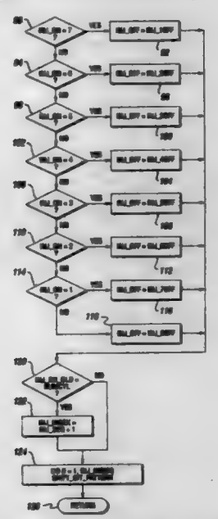
fuel pump control means for setting a final control value by correcting said control value for steady condition based on said transient correction value when the transient condition is detected by said transient condition detecting means, while setting said control value for steady condition as a final control value when a transient condition is not detected by said transient condition detecting means, and for controlling and driving said fuel pump based on a thus set final control value.

5,483,941

METHOD AND APPARATUS FOR MAINTAINING TEMPERATURES DURING ENGINE FUEL CUTOFF MODES

Michael J. Cullen; Robert M. Marzouie, both of Northville, Mich.; Joseph N. Ulrey, Hiroshima, Japan; Richard W. Sbaschnig, Dearborn, Mich.; Michael A. Weyburne, Northville, Mich., and Paul C. Mingo, Farmington Hills, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 25, 1993, Ser. No. 141,177
Int. Cl.[6] F02D *7/00*
U.S. Cl. 123—481 **8 Claims**



1. A method, for use with a vehicle powered by an internal combustion engine having multiple power cylinders with intake valves and combustion gas exhaust valves for controlling the temperature of said exhaust valves, said cylinders being fueled in successive firing cycles with predetermined firing patterns, and an electronic digital microprocessor including sets of data storage memory registers defining data bits in a pattern, including a base bit pattern, corresponding to said firing pattern, the method comprising:

storing in separate ones of said memory register sets a plurality of cylinder firing patterns;

cutting off fuel delivered in an indexed cylinder firing pattern whereby fuel is delivered to the fueled cylinders in a separate firing pattern for each successive firing cycle, the number of firing patterns being determined by the number of power cylinders, the firing pattern for each cycle being indexed successively to the next firing pattern after a calibratable time upon completion of one or more firing cycles, whereby acceptable exhaust valve temperatures are maintained;

each combination of fueled and unfueled cylinders being maintained for a predetermined period of time prior to the selection of a new combination of fueled and unfueled cylinders;

said engine having operating characteristics including the number of engine cylinders, engine coolant temperature and cylinder wall wetting, said predetermined period of time being based on at least one of said engine operating characteristics;

the number of bits in said bit pattern being based on the number of engine cylinders;

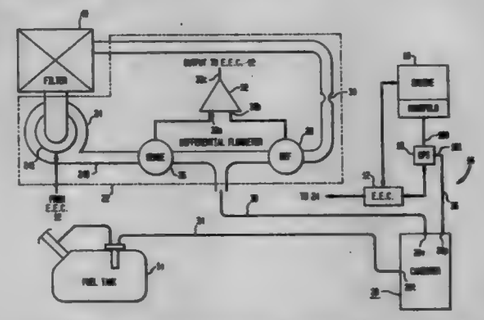
each combination of fueled and unfueled cylinders utilizing a different bit pattern to identify which cylinders receive fuel, the same bit location in each bit pattern being utilized to identify a common unfueled cylinder.

5,483,942

FUEL VAPOR LEAK DETECTION SYSTEM

Paul D. Perry, and John E. Cook, both of Chatham, Canada, assignors to Siemens Electric Limited, Chatham, Canada

Filed Feb. 24, 1995, Ser. No. 393,952
Int. Cl.[6] F02M *33/02*
U.S. Cl. 123—520 **11 Claims**



1. In an engine-powered automotive vehicle evaporative emission control system wherein a fuel tank for storing volatile fuel that is combusted in combustion chamber space of the engine is operatively associated with a fuel vapor collection canister that collects volatized fuel from the tank and a canister purge valve that is periodically operated to purge collected vapor from the canister to the engine, and leak detection system is operatively associated with the evaporative emission control system for detecting leakage from that portion of the evaporative emission control system which is upstream of an inlet of the canister purge valve relative to the engine, the improvement in said leak detection system which comprises:

pressurizing means having an inlet at which a source of gaseous medium is available to be pressurized by said pressurizing means and an outlet at which positively pressurized medium is made available for delivery to said portion of the evaporative emission control system;

a series flow path from said outlet of said pressurizing means back to said source of gaseous medium, said series flow path comprising a first flow sensor for sensing the entire flow from said outlet of said pressurizing means, a second flow sensor for sensing flow through a portion of said series flow path that is downstream of said first low sensor and a calibrated orifice means also disposed in said portion of said series flow path that is downstream of said first flow sensor;

a branch flow path that branches to said portion of said evaporative emission control system from said series flow path at a location in said series flow path that is between said first flow sensor and said second flow sensor; and means for sensing

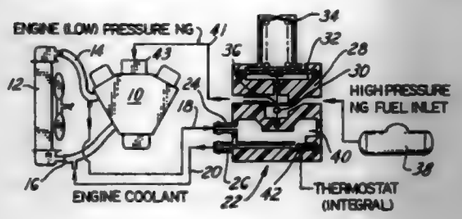
differential between flow sensed by said first flow sensor and flow sensed by said second flow sensor.

5,483,943

GASEOUS FUEL SUPPLY MODULE FOR AUTOMOTIVE INTERNAL COMBUSTION ENGINE

Edward W. Peters, Belleville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 19, 1994, Ser. No. 308,786
Int. Cl.[6] F02M *21/04;23/14*
U.S. Cl. 123—527 **8 Claims**



1. A fuel supply module for furnishing gaseous fuel to a liquid cooled automotive internal combustion engine, comprising:

a pressure regulator for reducing gas pressure from a relatively higher tank pressure to a relatively lower pressure required for induction into an engine;

a heating chamber integral with said pressure regulator and which surrounds at least part of a valve means incorporated in said pressure regulator;

means for conducting liquid engine coolant from an engine into said heating chamber and for returning said coolant to the engine such that heat will be transferred from the coolant to the gas flowing through the fuel supply module; and

temperature control means located within said heating chamber for sensing the temperature of the coolant within the chamber and for controlling the amount of coolant flowing through said heating chamber in response to said sensed temperature, so as to control the amount of heat which is transferred to the gas flowing through the fuel supply module.

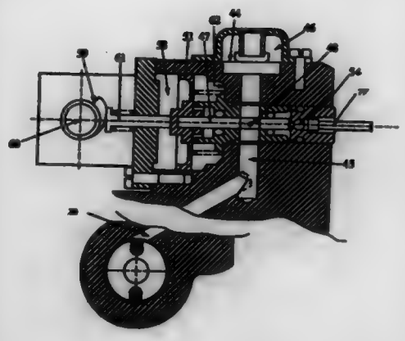
5,483,944

METHOD AND APPARATUS FOR METERING FUELS FOR DELIVERY TO AN INTERNAL COMBUSTION ENGINE

Sam R. Leighton, Nedlands, and Raymond J. Hill, Joondanna, both of, Australia, assignors to Orbital Engine Company (Australia) Pty. Limited, Balcatta, Australia

Filed Dec. 1, 1994, Ser. No. 302,773
Claims priority, application Australia, Jan. 21, 1991, PK8999
Int. Cl.[6] F02M *23/00*
U.S. Cl. 123—531 **26 Claims**

1. A method of metering fuel for delivery to an engine combustion chamber comprising during each fuel delivery cycle, delivering a predetermined quantity of fuel into a control chamber in direct communication with an injector chamber charged with a compressed gas to displace fuel therefrom into said injector chamber and to refill the control chamber, and during at least part of the engine operating load range, removing fuel from said control chamber as required to adjust the quantity of fuel displaced from the control chamber to the injector chamber in response to the filling of the control chamber in the next fuel delivery cycle in accordance with the engine fuel demand.

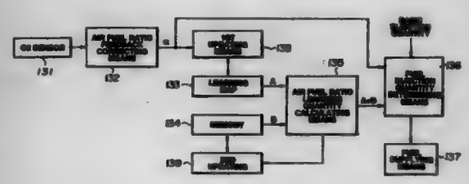


5,483,945

AIR/FUEL RATIO CONTROL SYSTEM FOR ENGINE

Masato Kobayashi, Atsugi; Osamu Matsuno, Ebina; Youichi Kishimoto, Chigasaki, and Katsuhiko Kawamura, Yokohama, all of, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 11, 1994, Ser. No. 209,048
Claims priority, application Japan, Mar. 16, 1993, 5-055959
Int. Cl.[6] F02D *41/14*
U.S. Cl. 123—674 **25 Claims**



5. An air, fuel ratio control system for an engine, said control system comprising:

an oxygen sensor for producing an oxygen sensor signal representing an air fuel ratio of exhaust gases of said engine;

a feedback correcting means for determining a feedback correction quantity in accordance with said oxygen sensor signal and performing a feedback correcting operation to maintain an air fuel ratio near a theoretical air fuel ratio;

a first memory section for storing a value of a first learning variable for each of a plurality of first learning regions which are different subregions of an engine operating region;

a second memory section for storing a value of a second learning variable for a second learning region which contains all of said first learning regions;

a fuel injection quantity determining means for determining a fuel injection quantity by modifying a basic injection quantity corresponding to an engine operating condition, in accordance with said feedback correction quantity and said first and second learning variables;

a fuel supplying means for supplying said fuel injection quantity of fuel to an intake passage of said engine;

a first updating means for updating said first learning variable stored in said first memory section at a fast learning rate in accordance with said feedback correction quantity; and

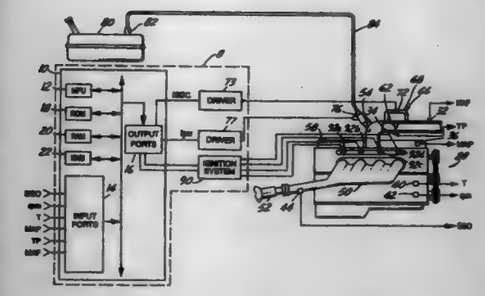
a second updating means for updating said second learning variable stored in said second memory section at a slow learning rate which is lower than said fast learning rate in accordance with at least one of said first and second learning variables.

5,483,946

ENGINE CONTROL SYSTEM WITH RAPID CATALYST WARM-UP

Douglas R. Hamburg, Bloomfield; Philip W. Husak, Southgate; Daniel L. Meyer, Dearborn, and Steven R. Whittier, Saline, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 3, 1994, Ser. No. 333,696
Int. Cl.[6] F02D *41/00*
U.S. Cl. 123—686 **21 Claims**



1. A control method for an internal combustion engine having its exhaust coupled to a catalytic converter, comprising the steps of:

retarding ignition timing from a nominal value during a period following engine start and returning said ignition timing to said nominal value by termination of said period;

offsetting a mixture of air and fuel inducted into the engine by a predetermined amount in a lean direction during said period to shift engine exhaust gas mixture towards an air/fuel ratio lean of stoichiometry by a preselected amount; and

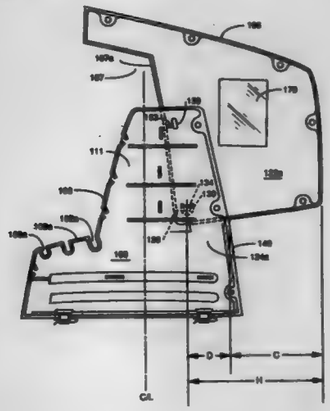
correcting said predetermined air/fuel mixture offset by a correction value so that said exhaust gas mixture is shifted more closely to said lean offset from stoichiometry.

5,483,947

GRILL HOOD

Michael Giebel, Joplin; Steven Speck; Randy A. Love, both of Neosho, all of Mo., and Rainer B. Teufel, Columbus, Ohio, assignors to Sunbeam Corporation, Fort Lauderdale, Fla.

Filed Aug. 15, 1994, Ser. No. 290,145
Int. Cl.[6] F24C *3/00*
U.S. Cl. 126—41 R **22 Claims**



1. A food cooking apparatus having a cooking region covered by a hood assembly comprising a lid and a base, said lid being pivotally mounted to said base, whereby said lid is capable of being opened with respect to said cooking region, thereby exposing said cooking region for access by a user of said food cooking apparatus, said hood assembly including a hinge assembly positioned on the sides of said hood assembly for pivotally mounting said lid to said base, wherein said lid includes a stop assembly for limiting the rearward travel of said lid with respect to said cooking region said stop assembly comprising a first flange protruding outwardly from said outside surface of said base member, and a second flange protruding inwardly from said inside surface of said lid side member, said first and second flanges contacting one another as said lid is rotated to an open position, thereby precluding further rotation of said lid with respect to said base.

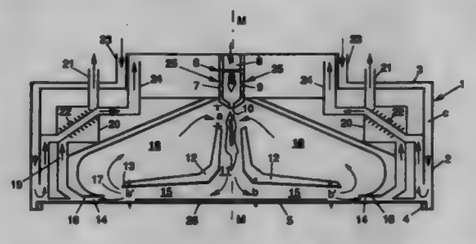
2. The food cooking apparatus of claim 1 wherein said cooking region is supported by a body, and said hood base includes a plurality of lugs which pass through complementary holes in said body.

5,483,948

COMPACT GAS-FIRED INFRARED RADIATOR OF CLOSED DESIGN

Geuko van der Veen, Deventer, Netherlands, assignor to Gastec N.V., Apeldoorn, Netherlands

Filed Sep. 12, 1994, Ser. No. 304,302
Claims priority, application Netherlands, Sep. 13, 1993, 9301581
Int. Cl.[6] F24C *3/00*
U.S. Cl. 126—91 R **13 Claims**



1. A gas-fired infrared radiator comprising a closed housing which includes a combustion chamber, with a side of the radiator that is to be directed towards an object being a radiation plate which forms a boundary of the combustion chamber, and comprising at least one burner, characterized in that said burner is a high-speed burner adapted for combustion in two combustion stages, with the second combustion stage taking place in the combustion chamber, said high-speed burner is arranged in such a manner that a flame formed by said high-speed burner is directed at the radiation plate, and gas guiding means are provided for partly recirculating flue gas which has been passed along the radiation plate, to one of said two combustion stages.

5,483,949

EXOTHERMIC COMPOSITIONS AND CONTAINER FOR HEATING FOOD

Dean B. James, 20518 Deerpark Ct., Saratoga, Calif. 95070

Filed Sep. 22, 1994, Ser. No. 311,134
Int. Cl.[6] F24J *1/00*
U.S. Cl. 126—263.05 **16 Claims**

1. A fuel for a self-heating food container which includes a compartment having two chambers separated by a water-impermeable barrier film comprising:

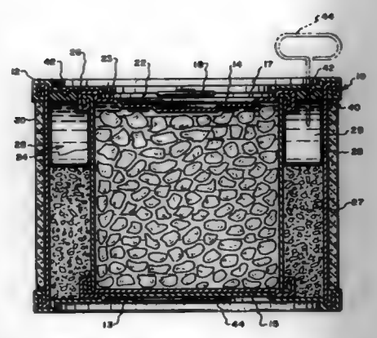
a first chamber containing water; and

a second chamber containing a hydratable exothermic fuel consisting essentially of a major amount of hard, particles of crystalline quicklime that have been calcined at a temperature above 1,400° C.

11. A self-heating, food container comprising in combination:

a first closed container for receiving the food to be heated;

a second container surrounding the first container forming an annular chamber divided by a water impermeable film into an upper compartment and a lower compartment; and



body of hydratable fuel consisting essentially of a major amount of hard particles of crystalline quicklime calcined at a temperature above 1,400° C. received in the lower compartment; and

a body of water received in the upper compartment.

5,483,950

SOLAR DEVICE WITH AN AIR RECEIVER AND AIR RETURN

Günter Keintzel, Engelskirchen; Manfred Schmitz-Goeb, Gummersbach, both of, Germany, and Hans W. Fricker, Rickenbach, Switzerland, assignors to L. & C. Steinmüller GmbH, Gummersbach, Germany

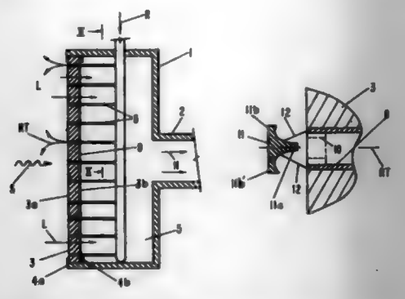
PCT No. PCT/EP93/01877, § 371 Date Feb. 7, 1994, § 102(e) Date Feb. 7, 1994, PCT Pub. No. WO94/02788, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 16, 1993, Ser. No. 196,245

Claims priority, application Germany, Jul. 18, 1992, 42 23 779

Int. Cl.[6] F24J 2/02

U.S. Cl. 126—680 **18 Claims**



1. A solar device comprising:

an air receiver comprising a housing with a first and a second end and an air-permeable absorber connected within said housing at said first end, said absorber heated by solar radiation;

said absorber having an upstream side and a downstream side, said housing having a heated air chamber downstream of said absorber, with a stream of air guided through said absorber from said upstream side to said downstream side into said heated air chamber and thereby heated to generate heated air;

said housing comprising a conduit means for removing said heated air from said heated air chamber for cooling to produce useful heat energy and cooled air;

means for returning at least a portion of said cooled air as return air in a plurality of partial streams to said absorber, said means for returning guiding said partial streams through said absorber counter to said stream of air without mixing therewith from said downstream side to said upstream side; and

means for deflecting said partial streams at said upstream side such that said partial streams are deflected toward said upstream side.

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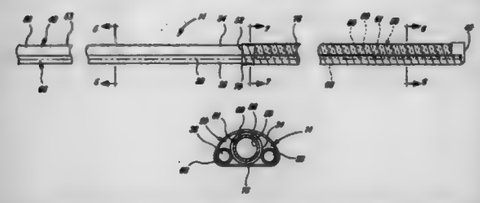
WORKING CHANNELS FOR A DISPOSABLE SHEATH FOR AN ENDOSCOPE

Jim Frassica, Chelmsford, and Robert Ailinger, Norwood, both of Mass., assignors to Vision-Sciences, Inc., Natick, Mass.

Filed Feb. 25, 1994, Ser. No. 201,571

Int. Cl.[6] A61B 1/00

U.S. Cl. 600—104 **31 Claims**



1. An endoscopic sheath assembly having axial side walls and proximal and distal ends, the sheath assembly being adapted for use with an elongated, flexible endoscope having a neutral bending plane, the assembly comprising:

a thin walled flexible endoscope tube adapted to fit over and tightly surround the endoscope to isolate at least a portion of the endoscope from an external environment, said endoscope tube having an opening at said proximal end for receiving the distal end of the endoscope and closed distal end; and

a kink-resistant biopsy channel substantially parallel to said endoscope tube and positioned radially outward from the neutral bending plane, said biopsy channel having open proximal and distal ends and being adapted to allow endoscopic accessories to pass therethrough, said biopsy channel comprising a proximal section, an axially flexible distal section, and a transition area extending between and interconnecting said proximal section and said axially flexible distal section, said axially flexible distal section comprising an axially wound wire member forming a lumen adapted to allow an endoscopic instrument to pass therethrough, and an elastomeric sleeve that fits over and tightly surrounds said wire member; said axially flexible distal section being substantially more flexible than said proximal section.

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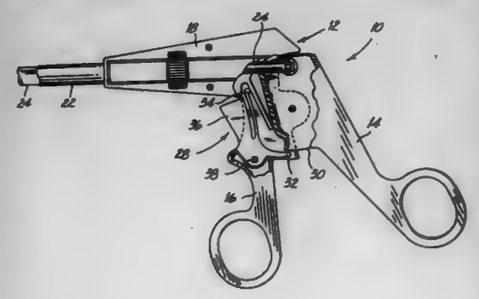
HANDLE FOR SURGICAL INSTRUMENTS

Ernie Aranyi, Easton, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 765,993, Sep. 26, 1991, abandoned. This application Feb. 15, 1994, Ser. No. 196,886

Int. Cl.[6] A61B 1/00;17/00

U.S. Cl. 600—131 **58 Claims**



1. An endoscopic or laparoscopic surgical instrument comprising:

a handle assembly including a barrel portion, a stationary handle and a pivoting handle extending from said barrel portion, said barrel portion having an interior cavity accommodating at least a portion of said pivoting handle;

a body assembly extending distally from said handle assembly and defining a longitudinal axis, said body assembly having a pair of coaxial members including an inner rod member having a proximal end connected to said pivoting handle and mounted to be longitudinally slidable with respect to an outer tube member in response to movement of said pivoting handle, said body assembly terminating at an end remote from said handle assembly in a reciprocatingly movable tool mechanism; and

a ratchet mechanism at least partially positioned within said interior cavity of said barrel portion of said handle assembly, said ratchet mechanism being operatively associated with at least one of said pair of coaxial members of said body assembly to provide incremental movement of said tool mechanism with respect to said longitudinal axis of said body assembly.

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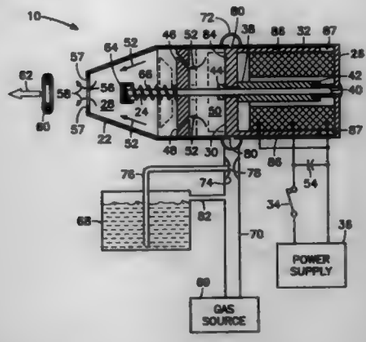
AEROSOL DISPENSING APPARATUS FOR DISPENSING A MEDICATED VAPOR INTO THE LUNGS OF A PATIENT

Guy F. Cooper, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 437,860, Apr. 8, 1995. This application Jun. 22, 1995, Ser. No. 493,519

Int. Cl.[6] A61M 11/02

U.S. Cl. 128—200.22 **11 Claims**



1. An aerosol dispensing apparatus comprising:

a reservoir for providing a medication under pressure;

a cylindrical shaped housing having a centrally located chamber and a rear wall;

a wave shaping chamber located in a front portion of said housing, said wave shaping chamber being adjacent said centrally located chamber;

a blast valve resting on a valve seat located within said housing, said blast valve being interposed between said centrally located chamber and said wave shaping chamber to seal said centrally located chamber from said wave shaping chamber;

a support rod centrally located within said housing, said support rod fixedly attached to the rear wall of said housing, said support rod extending longitudinally forward from the rear wall of said housing;

a piston having a plunger slidably mounted on said support rod and a vertical extending support member attached to the front end of said plunger, said support member forming a movable rear wall of said centrally located chamber;

an impact head attached to the front end of said piston;

a coil mounted within a rear portion of said housing;

the support member of said piston having a cylindrical shaped skirt attached thereto, said cylindrical shaped skirt extending into a recess located between the inner surface of said housing and said coil;

a power supply connected to said coil, said power supply providing a square wave signal of a predetermined frequency to alternatively energize and de-energize said coil, said coil when energized drawing said piston in a rearward direction, said piston moving in a forward when said coil is de-energized;

an input manifold positioned around an outer surface of said housing, said input manifold being coupled to said reservoir for receiving said liquid medication from said reservoir;

a plurality of inlet ports positioned around said housing between said manifold and said centrally located chamber, said medication entering said centrally located chamber as a medicated vapor through said plurality of inlet ports when said piston is drawn in said rearward direction, said inlet ports being closed by said cylindrical shaped skirt when said piston moves in said forward direction;

said impact head unseating said blast valve when said piston moves in said forwarding direction allowing said medicated vapor to enter said wave shaping chamber;

said housing having an edged shaped orifice at a front end thereof, said edged shaped orifice communicating with said wave shaping chamber allowing said medicated vapor to exit said wave shaping chamber and pass through said edged shaped orifice to form a ring vortex of medicated vapor;

said blast valve opening and closing at the predetermined frequency of said square wave signal causing said aerosol dispensing apparatus to generate a train of said ring vortices of medicated vapor; and

a mask coupled to the front end of said housing, said mask being adapted to cover a patient's mouth and nose, said mask having an elastic band for securing said mask to said patient, said mask receiving the train of ring vortices of said medicated vapor allowing said patient to inhale the train of said ring vortices of medicated vapor.

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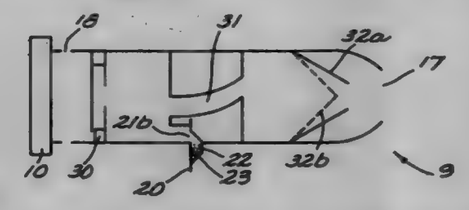
INHALER AND MEDICATED PACKAGE

Mark B. Mecikalski, 7580 N. Calle Sin Desengano, Tucson, Ariz. 85718

Filed Jun. 10, 1994, Ser. No. 258,743

Int. Cl.[6] A61M 15/00

U.S. Cl. 128—203.15 **21 Claims**



1. A combination for administration of powdered medication comprising:

a) an inhaler having an essentially cylindrical body member having,

1) a slot located in said body member,

2) a mouthpiece located at a first end of said body member,

3) an end piece located at a second end of said body member; and,

b) a medicated packet insertable into said slot in said body member and having,

1) a blister side panel having a raised envelope containing a powdered medication,

2) an essentially flat side panel sealing said raised envelope and having at least two holes therein and aligned to com-

municate with said envelope such that, in operation, patient supplied inhalation air flows through one hole into said envelope entraining said powdered medication and transporting said powdered medication out the other hole to the inhaling patient via said mouthpiece, and,

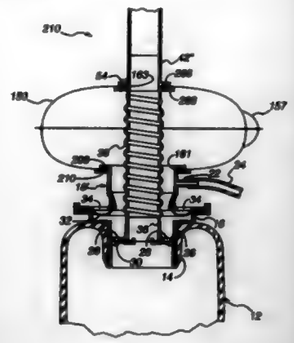
3) a removable layer affixed to said flat side panel and completely covering said holes.

5,483,955

OXYGEN RESERVOIR BAG FOR A SQUEEZE BAG RESUSCITATOR

Gregory R. Morris, North Huntingdon, Pa., assignor to Respironics, Inc., Murrysville, Pa.

Filed Sep. 27, 1994, Ser. No. 312,702
Int. Cl.[6] A02B *7/04*; B65D *81/20*
U.S. Cl. 128—205.13 **15 Claims**



1. A bag formed of pliable, non-porous material, said bag being operable to store pressurized gas and fluidly and sealingly connect first and second members, said bag comprising:

a substantially spherical body including first and second substantially hemispherical portions and an equatorial region defining an equator;

a first opening at a polar region of said first hemispherical portion for receiving said first member;

a second opening at a polar region of said second hemispherical portion for receiving said second member;

at least one radially outwardly projecting pocket forming a juncture with said equatorial region; and

vent means provided in said at least one pocket for venting excess quantities of said pressurized gas from said bag to the atmosphere,

whereby upon inflation of said bag with said pressurized gas, said at least one pocket forms at least one bulbous formation bulging radially outwardly from said equatorial region and said vent means vents said excess quantities of said pressurized gas from said bag to the atmosphere.

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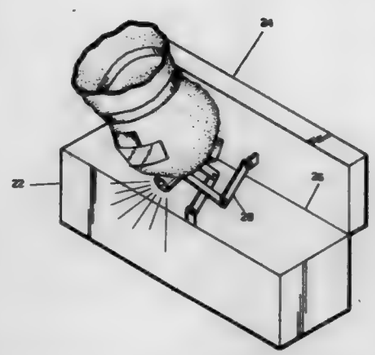
COMBINATION FIRE EMERGENCY NIGHT LIGHT AND SMOKE INHALATION PREVENTION ESCAPE MASK

Buddy R. Shapiro, 64 Bleecker St., New York, N.Y. 10012

Filed Feb. 21, 1995, Ser. No. 391,513
Int. Cl.[6] A62B *18/00*
U.S. Cl. 128—206.27 **14 Claims**

8. In combination, a fire protection head enclosure and lighted container therefore, said combination comprising:

a fire-protective enclosure capable of fitting about the head of a user, including a visibly-transparent visor through which the user can see, and an air filtration unit defining an air passage through said enclosure and capable of filtering contaminants from air passing therethrough, said enclosure releaseably attachable to an orientation assembly;



an elastically-deformable collar integral with said fire-protective enclosure capable of forming an air-tight seal about the neck and shoulders area of the user;

a light attached to an exterior surface of said fire-protective enclosure, said light including a portable rechargeable battery and electrical connectors capable of connecting said portable rechargeable battery to a permanent electricity source; and

a blanket releaseably folded and attached to said exterior surface of said fire-protective enclosure; and

a container housing and top therefor, said top movable between an open position and a closed position;

biasing means for biasing said top toward said open position;

a latch mechanism for releaseably latching said top in said closed position, said latch mechanism including an externally-mounted, illuminated release button;

rechargeable batteries attached to said illuminated release button, and electrical connectors capable of connecting said rechargeable batteries to a permanent electricity source; and

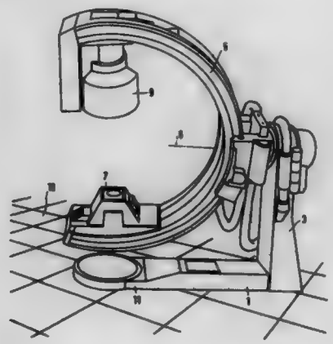
an orientation assembly located within said container housing, said orientation assembly releaseably attachable to said fire protection head enclosure.

5,483,957

MEDICAL APPARATUS WITH CABLES EXTENDING BETWEEN ROTATABLE PARTS

Jozef T. A. Janssen, and Theodorus J. M. Van Genechten, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 14, 1994, Ser. No. 338,918
Claims priority, application Belgium, Nov. 12, 1993, 09301252
Int. Cl.[6] A61B *5/00*; H05G *1/06*
U.S. Cl. 128—630 **4 Claims**



1. A medical apparatus, comprising a stand with an approximately L-shaped arm, which comprises a first portion (1) having a

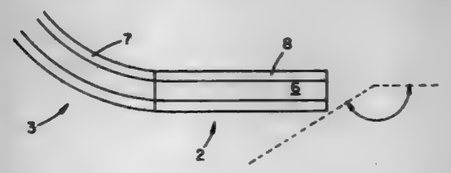
free end which is connected, via a bearing (17), to a boundary surface (13) of an examination space in such a manner that it can be rotated from a neutral position into opposite directions through an angle of α radians in a plane of rotation which is parallel to said boundary surface, and also comprises a second portion (3) which extends approximately perpendicularly to the first portion and to a free end of which there is attached at least one medical apparatus (7, 9), a bundle of cables (21) extending from a space (19) at the side of the boundary surface which is remote from the examination space to parts of the apparatus, characterized in that the bundle of cables (21) is shaped as an approximately flat ribbon having a largest thickness t equal to the thickness of the thickest cable of the bundle and a width w equal to the sum of the thicknesses of the cables, and extends to the free end of the second portion, via an opening (25) in the boundary surface (13) at the area of the bearing (17) and a cavity (29) formed in the arm (1, 3) and extending over the entire length of the arm, said cavity having an approximately rectangular cross-section of a width which at least equals w and a height which at least equals t, the width direction of the cavity in the first portion (1) of the arm extending substantially parallel to the boundary surface, the, cables of the bundle being secured in a first cable holder (23) which is situated at the side of the bearing remote from the second portion (3) of the arm and defines the positions of the cables relative to one another, and that at the area of the transition between the first and the second portion of the arm there is provided a protrusion (31) so that the height of the cavity in the second portion of the arm locally equals at least t+α·w.

5,483,958

FLUORESCENT-TIPPED DOSIMETER PROBE

Glenn N. Merberg, Gaithersburg, Md., and Lothar Lilge, Hamilton, Canada, assignors to United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Jan. 25, 1994, Ser. No. 188,325
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—634 **11 Claims**



1. In a fluorescent dosimeter having an optical fiber with a proximal end and a distal end, the improvement comprising:

a solid-state fluorescent tip attached directly to the proximal end of the optical fiber so that said solid- state fluorescent tip is in direct contact with the proximal end of the optical fiber, said solid-state fluorescent tip comprising a fluorescent material which emits fluorescence when exposed to non-ionizing radiation in the visible or near infrared range, said solid-state fluorescent tip being of a sufficient length so as to have a substantially isotropic response characteristics within a field that extends from a forward direction of said solid-state tip up to about 170° from said forward direction to the non-ionizing radiation.

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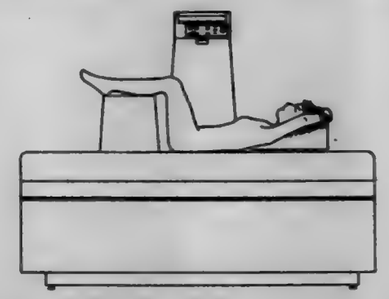
Patent Not Issued For This Number

5,483,960

MORPHOMETRIC X-RAY ABSORPTIOMETRY (MXA)

Peter Steiger, Framingham, and Howard P. Weiss, Newton, both of Mass., assignors to Hologic, Inc., Waltham, Mass.

Filed Jan. 3, 1994, Ser. No. 176,418
Int. Cl.[6] G06F *159/00*
U.S. Cl. 128—653.1 **26 Claims**



1. A method comprising the steps of:

obtaining paired AP (anterior/posterior or posterior/anterior) centerline and lateral morphometry images of a patient covering at least the T4 (thoracic 4) through L4 (lumber 4) vertebrae by using a fan beam bone densitometer to carry out an AP scan and a lateral scan without moving the patient between the scans, wherein said AP scan is carried out first to produce an AP image which is analyzed to determine the centerline of the patient's vertebral column and said centerline is used to maintain a constant distance between the centerline and an origin on the fan beam while carrying out the lateral scan;

displaying the paired AP image and the lateral image side-by-side together with a pair of spatially synchronized cursors pointing to anatomically corresponding current locations on both images to help identify vertebrae and visualize spatial relationships of anatomy and pathology between said AP and lateral images which are displayed side-by-side;

designating six points for each vertebra with said cursor;

calculating posterior, mid- and anterior vertebral heights and vertebral wedge indices with the use of points designated in the designating step; and

displaying calculated heights and indices characterizing the patient.

5,483,961

MAGNETIC FIELD DIGITIZER FOR STEREOTACTIC SURGERY

Patrick J. Kelly, 620 9th Ave., and Stephan J. Goerss, 5525 St. Mary's Dr. NW., both of Rochester, Minn. 55901

Continuation of Ser. No. 34,362, Mar. 19, 1993, abandoned. This application Aug. 29, 1994, Ser. No. 297,427
Int. Cl.[6] A61B *5/055;6/03;17/00*
U.S. Cl. 128—653.1 **5 Claims**

1. A locating device for use with sterotactic device comprising:

electromagnetic position indicating means for generating an output position signal identifying the location of a reference position with respect to a surgical field, and wherein said electromagnetic position indicating means further comprises:

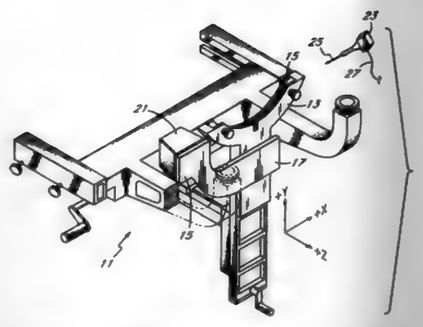
an electromagnetic transmitter having an input;

an electromagnetic receiver having an output;

a magnetic field digitizer having an input connected to said output of said electromagnetic receiver and a first output connected to said input of said electromagnetic transmitter, and a second output for outputting a position signal;

a computer having an input connected to said second output of said magnetic field digitizer, a data input, and a display output; and

a display having an input connected to said display output of said computer;



an imaging scan display system having an input connected to receive said output position signal from said electromagnetic position indicating means and adapted to display a scan image associated with the three dimensional position of said reference position in said surgical field; and

a head holder for performing cranial surgery and wherein said head holder supports said electromagnetic transmitter.

5,483,962

COMPLEX MTI FILTER

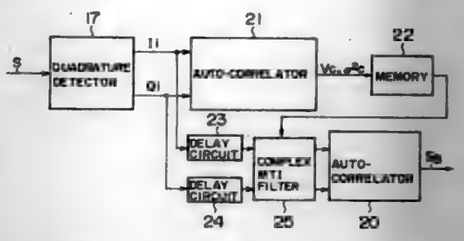
Akira Shiba, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 16, 1993, Ser. No. 121,642

Claims priority, application Japan, Mar. 8, 1993, 5-046842

Int. Cl.[6] A61B *8/06*

U.S. Cl. 128—660.05 **16 Claims**



1. An ultrasonic diagnostic system with a complex MTI filter, comprising:

probe means for detecting ultrasonic information and outputting a probe signal;

complex MTI filter means for receiving said probe signal including

first phase rotating means for receiving angle data and complex data, which are associated with each other, to rotate a phase of a complex number represented by the received complex data by an angle indicated by the associated angle data;

first and second real type MTI filters for receiving data representative of the real part and the imaginary part of the complex number, which have been subjected to the phase rotation by said first phase rotating means, to provide predetermined filtering processes for said data representative of the real part and the imaginary part of the complex number, respectively;

second phase rotating means for receiving angle data and complex data of which real part and imaginary part are given with said data subjected to the predetermined filtering processes by said first and second real type MTI filters, respectively, which angle data and complex data are associated with each other, to rotate a phase of a complex number represented by the received complex data by an angle which is the same as the angle indicated by the associated angle data in the absolute value but is of inverse sign, so that an output complex data is generated; and

display means for displaying information based upon the probe signal as filtered.

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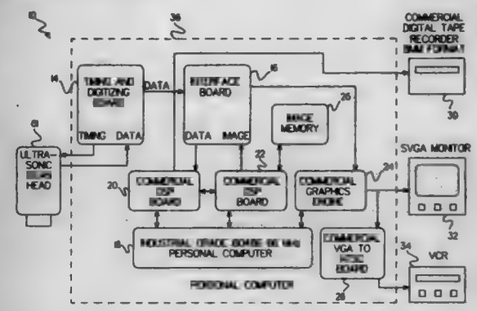
TWO DIMENSIONAL TRANSDUCER INTEGRATED CIRCUIT

Neal R. Butler, Acton, Mass., and Marvin E. Lasser, Potomac, Md., assignors to Loral Infrared & Imaging Systems, Inc., Lexington, Mass.

Filed Jul. 22, 1994, Ser. No. 278,799

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—661.01 **19 Claims**



1. A data acquisition and display apparatus for an ultrasonic camera comprising:

(a) an ultrasonic scanning head means for scanning an ultrasonic field of view in two dimensions having an ultrasonic signal output for carrying an ultrasonic signal;

(b) a timing and digitizing apparatus for digitizing the ultrasonic signal from the ultrasonic scanning head means having a digitized output, wherein the timing and digitizing apparatus is coupled to the ultrasonic signal output;

(c) an interface means for interfacing digitized data to a graphics processing system, where the interface means is coupled at an input to the digitized output, wherein the interface means comprises a data line, an image data line and a graphics data line;

(d) first digital signal processing means for processing data, the first digital signal processing means being coupled to the data line;

(e) second digital signal processing means for processing data, the second digital signal processing means being coupled to the image data line for providing image data to the interface means, the second digital signal processing means also being in communication with the first digital signal processing means and sharing an image memory data line;

(f) a graphics processing means for graphics processing image data, the graphics processing means being coupled to the graphics data line, and wherein the graphics processing means includes a graphics output;

(g) an image memory means for storing image data, the image memory means being coupled to the image memory data line; and

(h) a computer controller for controlling the graphics processing means, first digital signal processing means and second digital signal processing means, the computer controller sharing a first path with the graphics processing means, a second path with the first digital signal processing means and a second path with the second digital signal processing means.

5,483,964

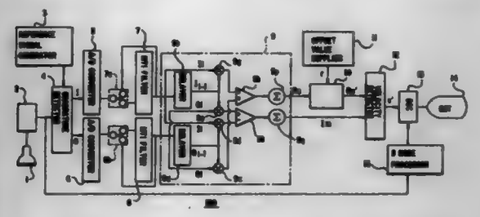
METHOD OF DETECTING MOVING VELOCITY OF TISSUE OR BLOOD AND ULTRASONIC DIAGNOSING APPARATUS

Shinichi Amemiya; Takao Jibiki, and Sumio Nishii, all of Tokyo, Japan, assignors to GE Yokogawa Medical Systems, Ltd., Tokyo, Japan

Filed May 15, 1995, Ser. No. 441,042

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—661.09 **2 Claims**



1. A method of transmitting a series of plural ultrasonic pulses to the inside of a living body from an ultrasonic probe, receiving an ultrasonic echo signal from within the living body and detecting a moving velocity of a tissue or blood from the living body, based on a real-part component and an imaginary-part component obtained by effecting auto-correlation processing on the ultrasonic echo signal, which comprises the step of:

detecting a moving velocity of the tissue or blood after an offset value has been added to the real-part component.

5,483,965

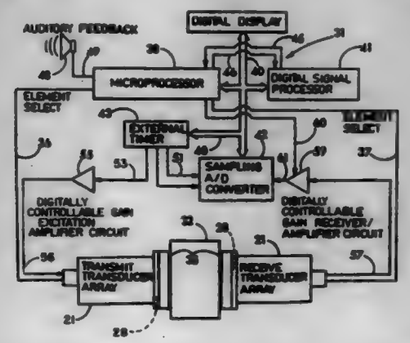
ULTRASONIC DENSITOMETER DEVICE AND METHOD

Scott A. Wiener, Mount Horeb, Wis., and Phillip J. Roesman, Rochester, Minn., assignors to Lunar Corporation, Madison, Wis.

Continuation of Ser. No. 72,799, Jun. 4, 1993, abandoned, which is a continuation of Ser. No. 895,494, Jun. 8, 1992, Pat. No. 5,343,863, which is a continuation-in-part of Ser. No. 772,982, Oct. 7, 1991, Pat. No. 5,119,820, which is a continuation-in-part of Ser. No. 343,170, Apr. 25, 1989, Pat. No. 5,054,490, which is a continuation-in-part of Ser. No. 193,295, May 11, 1988, Pat. No. 4,930,511. This application Mar. 1, 1995, Ser. No. 397,027

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—661.03 **7 Claims**



1. An apparatus for measuring the integrity of a bone within a human heel in vivo, comprising:

a receptacle sized and shaped to receive the human heel;

at least two ultrasonic transducers located in said receptacle and positioned so that when the human heel is placed in said receptacle an acoustic signal may be launched along an axis from one ultrasonic transducer and received by another ultrasonic transducer after said signal has passed through the bone;

scanning means in communication with the at least two ultrasonic transducers for moving the axis along which the acoustic signal is launched among a plurality of scanned positioned with respect to the bone;

means for measuring the received acoustic signals at the plurality of scanned positions to determine corresponding member parameters related to the propagation of the acoustic signal through the bone at each scanned position;

means for relating the member parameters at each of the scanned positions to a bone integrity of the bone; and

means for displaying a visual representation of the bone integrity value.

5,483,966

Patent Not Issued For This Number

5,483,967

BIOELECTRIC SIGNAL RECORDING DEVICE

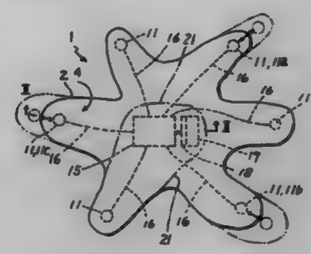
Tutomu Ohtake, 3-60-1 Yotsuya-cho, Toyokawa-shi, Aichi-ken, Japan

Filed Dec. 2, 1993, Ser. No. 160,722

Claims priority, application Japan, Feb. 23, 1993, 5-059516

Int. Cl.[6] A61B *5/04*

U.S. Cl. 128—695 R **6 Claims**



1. A bioelectrical signal recording device comprising:

(a) a flexible, waterproof, sheet-like base member adherable to a living body and capable of following the motion of said living body, said base member having an adhering face containing an electrically conductive adhesive thereon for adherence to said living body;

(b) a plurality of electrodes disposed on an interior surface of said base member for receiving electrical signals from said living body;

(c) a recording element disposed on an interior surface of said base member and having a plurality of connection lines disposed within said base member, each of said connection lines coupled to one of said plurality of electrodes for recording said electrical signals received by said electrodes; and

(d) a battery disposed within said base member and coupled to said recording element for powering said recording element;

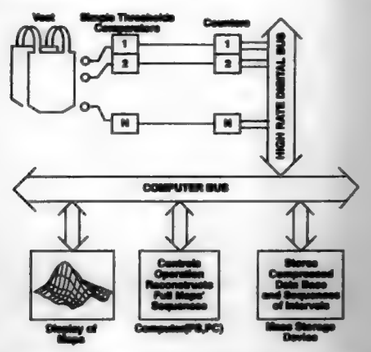
(e) said base member being of sufficient dimensions to watertightly cover said at least one electrode, said recording element and said battery.

5,483,968

METHOD AND APPARATUS FOR ANALYZING THE ELECTRICAL ACTIVITY OF THE HEART

Dan Adam; Ilia Vitsnudel, both of Haifa; Shlomo Gilat, Natania, and Samuel Sideman, Haifa, all of, Israel, assignors to Technion Research and Development Foundation Ltd., Technion City, Israel

Filed May 21, 1992, Ser. No. 886,227
Claims priority, application Israel, Jun. 25, 1991, 98613
Int. Cl.[6] A61B *5/0432*
U.S. Cl. 128—696 **17 Claims**



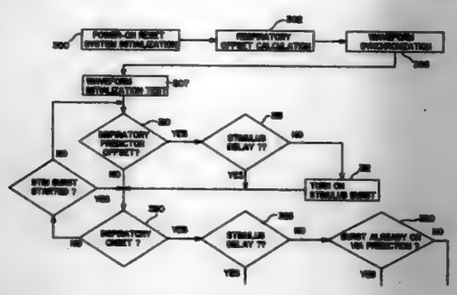
1. A method of analyzing the electrical activity of the heart by Body Surface Potential Mapping (BSMP), comprising, applying an array of electrodes over the thoracic region of a subject's body for producing measurements of the electrical signals generated in said thoracic region, and processing said measurements for indicating certain electrical events in the subject's body; characterized in utilizing said array of electrodes to measure only the times of crossing of the electrical signals over a preset threshold.

5,483,969

METHOD AND APPARATUS FOR PROVIDING A RESPIRATORY EFFORT WAVEFORM FOR THE TREATMENT OF OBSTRUCTIVE SLEEP APNEA

Roy L. Testerman, New Hope, and Donald J. Erickson, Plymouth, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 21, 1994, Ser. No. 310,363
Int. Cl.[6] A61B *5/08*
U.S. Cl. 128—716 **40 Claims**



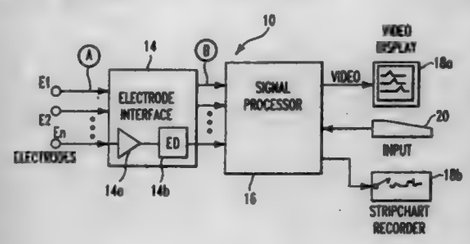
1. A method for providing a respiratory effort waveform for a patient comprising the steps of:
(a) sensing a signal having an output characteristic of respiratory effort of the patient;
(b) sampling the sensed signal at a predetermined interval to provide a digitized respiratory effort waveform;
(c) determining an average offset for the digitized waveform;
(d) adjusting the sensed signal to bring the average offset into the center of a predetermined maximum digital range;
(e) determining an average peak-to-peak amplitude for the digitized waveform; and
(f) adjusting the average peak-to-peak amplitude to bring the average peak-to-peak amplitude into the range of about 60–90% of the maximum digital range.

5,483,970

APPARATUS AND METHODS FOR THE DIAGNOSIS OF LABOR

Ethan Rosenberg, Monsey, N.Y., assignor to Hygeia Biomedical Research Inc., Monsey, N.Y.

Continuation of Ser. No. 988,433, Dec. 9, 1992, Pat. No. 5,301,680. This application Feb. 8, 1994, Ser. No. 193,284
The portion of the term of this patent subsequent to Apr. 12, 2011, has been disclaimed.
Int. Cl.[6] A61B *5/0488*
U.S. Cl. 128—733 **21 Claims**



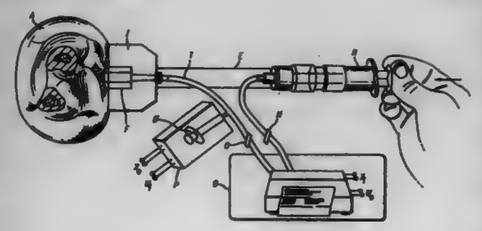
1. A monitoring system for use with a pregnant mammal, comprising:
means for obtaining electrical signals from a plurality of superficial abdominal locations of a pregnant mammal, the electrical signals resulting from muscular activity- associated with labor;
means, responsive to the electrical signals obtained from the plurality of superficial abdominal locations, for determining a uterine muscle contraction vector, the uterine muscle contraction vector having a propagation rate component and a propagation direction component with respect to at least a first superficial abdominal location, a second superficial abdominal location, and a third superficial abdominal location; and
means for providing a visual representation of the determined uterine muscle contraction vector.

5,483,971

NONINVASIVE COMPARTMENT MEASUREMENT DEVICE

Bruce Steinberg, 3211 Dogwood Clr. South Dr., Indianapolis, Ind. 46268

Division of Ser. No. 54,456, Apr. 27, 1993, which is a continuation of Ser. No. 917,797, Jul. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 489,939, Mar. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 299,233, Jan. 23, 1989, abandoned. This application Jul. 8, 1994, Ser. No. 273,014
Int. Cl.[6] A61B *5/00;5/103;5/117*
U.S. Cl. 128—748 **4 Claims**



1. A method for evaluating hardness of tissue of a limb for the purpose of diagnosing compartment syndrome, said method comprising the steps of:
applying a piston to a limb compartment with a predetermined force,
incrementally applying pressure to the tissue of the limb with a plunger within said piston in order to compress the limb,
measuring the pressure in the piston while also measuring displacement of the piston plunger, and
plotting the relationship of the incremental pressure applied to the displacement measured.

5,483,972

BIOPSY WOUND CLOSURE DEVICE

Hossein Nabai, 14555 Levan Rd., Ste. 410, Livonia, Mich. 48154, and Homayoon Rahbari, 1314 N. Macomb St., P.O. Box 360, Monroe, Mich. 48161

Division of Ser. No. 56,399, May 4, 1993, Pat. No. 5,388,588. This application Dec. 19, 1994, Ser. No. 358,820
Int. Cl.[6] A61B *10/00*
U.S. Cl. 128—749 **9 Claims**



1. A closure device for the repair of skin tissue, controlling bleeding, and reducing the likelihood of inducing excess scar tissue during a routine skin biopsy procedure, comprising: a cylindrical tube; a close fitting pre-formed cylindrical sponge in the interior of said cylindrical tube made from a foam material which swells and is absorbed in a biopsy site with little tissue reaction, said sponge being pre-formed to a diameter within a range of 2 to 6 millimeters which is approximately equal to the diameter of a circular blade of a punch used for taking a specimen of skin for a biopsy from said biopsy site; and an applicator for implanting said sterile sponge into said biopsy site after the excising of said specimen by said punch; and a fibrous cotton wad at an end of said applicator for pushing said sponge from said tube and applying pressure to said sponge for a short interval of time after said sponge has been implanted into said biopsy site.

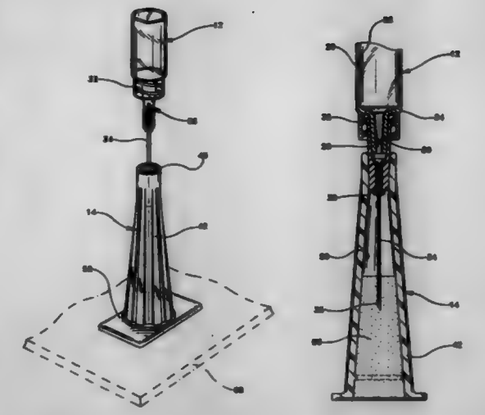
5,483,973

NEEDLE STOPPER AND NEEDLE REMOVAL DEVICE

Carl L. Benson, Wyckoff, and Anthony J. Kosinski, Murray Hill, both of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation-in-part of Ser. No. 969,496, Oct. 30, 1992, abandoned. This application Sep. 23, 1993, Ser. No. 125,575
Int. Cl.[6] A61B *5/00; B65D 81/00*
U.S. Cl. 128—760 **3 Claims**

1. A method for obtaining a blood sample from an artery using syringe having a syringe barrel with a distal end, a needle hub removably mounted to said distal end, and a needle cannula mounted to said needle hub, said method comprising the steps of:
providing a needle stopper having a shell with a bottom end, an open top end and a side wall defining a needle-receiving chamber therebetween, hub engaging means on said shell for engaging said hub when said needle cannula is inserted into said needle-receiving chamber, said side wall of said needle stopper being tapered such that said needle-receiving chamber defines larger cross-sectional areas at locations thereon closer to said bottom end than said top end, whereby said taper helps prevent engagement of said needle cannula with said side wall during insertion into said needle-receiving chamber, a penetrable sealing material disposed in said needle-receiving chamber;
supporting the bottom end of said shell on a generally horizontal surface;
drawing a sample of blood from said artery with said syringe barrel and said needle cannula;
withdrawing said needle cannula from said artery;
applying pressure to said artery for achieving hemostasis; and
inserting said needle cannula of said syringe through said open top end of said shell and into said needle-receiving chamber sufficiently for said needle cannula to be occluded by said sealing material; and moving said shell relative to said syringe barrel for disengaging said needle hub from said syringe barrel.

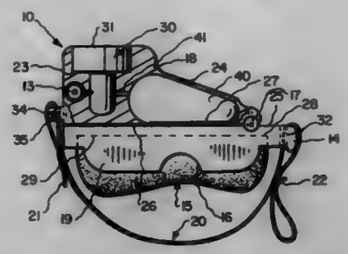


5,483,974

DEVICE TO APPLY, HOLD, AND MEASURE CRICOID PRESSURE DURING ENDOTRACHEAL INTUBATION OR CRICOTHYROIDOTOMIES, OR OTHER MEDICAL AIRWAY PROCEDURES

Richard Crangle, 204 Sports Mall Plaza 1, 5505 S. 900 East, Salt Lake City, Utah 84117

Filed May 20, 1993, Ser. No. 63,737
Int. Cl.[6] A61B *5/103*
U.S. Cl. 128—774 **12 Claims**



1. A device to apply, hold, and measure cricoid pressure during endotracheal intubation, cricothyroidotomies, or other medical airway procedures comprising:
a means for applying a force to the cricoid cartilage of a patient,
a pressure sensitive gauge attached to said means for applying pressure, said pressure sensitive gauge capable of measuring said force applied to said cricoid cartilage, and,

a means for selectively maintaining a predetermined Force to the cricoid cartilage,

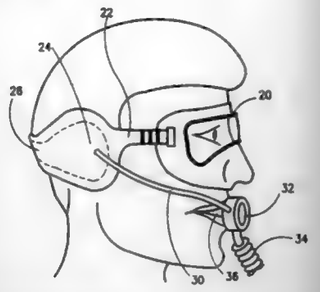
whereby said force is applied to the cricoid cartilage by said means for applying said force until said predetermined force is reached wherein said means for selectively maintaining said force at said predetermined increment is employed during the medical airway management procedure.

5,483,975

DEVICE FOR EQUALIZING PRESSURE ACROSS THE EARDRUM OF DIVERS

Aviv Hirschenbain, 8 Emanuel Haromi, 62645 Tel Aviv, Israel

Filed Mar. 10, 1995, Ser. No. 402,226
Int. Cl.[6] A61F *11/00*
U.S. Cl. 128—864 **12 Claims**



1. A device for facilitating the equalization of pressure across the eardrum of a user, comprising:

(b) a strap, at least a portion of said strap, when said strap is secured to the head of the user, defining a single air space, said air space including ear portions overlying the user's ears and a connecting portion overlying the sides and back of the user's head and connecting said ear portions; and

(c) a tube for supplying air to said air space, a first end of said tube being connected to said air space and a second end of said tube being connected to a source of pressurized air.

5,483,976

MECHANICALLY ACTUATED URETHRAL PLUG ASSEMBLY AND METHOD FOR CONTROLLING URINARY INCONTINENCE

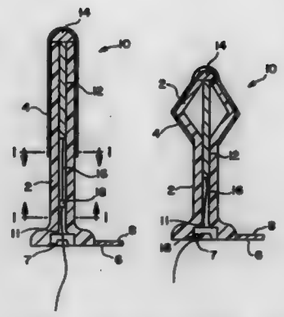
Paul D. McLaughlin, Scituate; Sharad Joshi, Watertown; Azhar Syad, and John Simon, both of Boston, all of Mass., assignors to UroMed Corporation, Watertown, Mass.

Continuation-in-part of Ser. No. 811,571, Dec. 20, 1991, which is a continuation-in-part of Ser. No. 746,364, Aug. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 636,285, Dec. 31, 1990, Pat. No. 5,090,424. This application May 17, 1993, Ser. No. 62,592
Int. Cl.[6] A61F *5/48;2/00*
U.S. Cl. 128—885 **37 Claims**

1. A remove-to-void plug assembly for use in the urethra to control urinary incontinence, comprising:

a housing adapted to be inserted into the natural urethral opening of a wearer,

a solid element coupled with said housing, which solid element directly impacts on said housing so as to mechanically change the shape of said housing causing at least a portion of said housing to expand outwardly to contact the walls of the urethra, bladder neck or bladder, wherein the mechanical change in shape is effectuated by the wearer after insertion of said housing into the natural urethral opening, said at least a portion of said housing thereby forming a seal with the walls to block the flow of urine without the formation of a passageway through said housing, and



means for reversing the change in shape of said housing to return said housing to its non-expanded state, thereby enabling the wearer to remove said housing from the natural urethra opening and effect bladder evacuation.

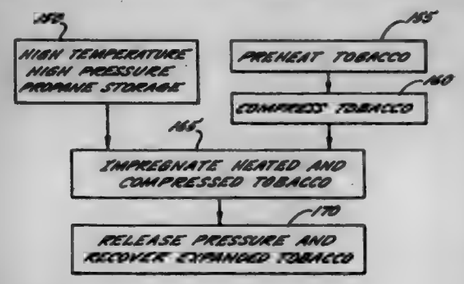
5,483,977

TOBACCO EXPANSION PROCESSES AND APPARATUS

Lucas J. Conrad, Winston-Salem, and Jackie L. White, Pfafftown, both of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Jun. 14, 1993, Ser. No. 76,535
Int. Cl.[6] A24B *3/18*
U.S. Cl. 131—291 **81 Claims**

1. The process for increasing the filling capacity of tobacco



comprising:

substantially filling the available impregnation volume of an impregnation vessel with tobacco compressed at a compression ratio of at least 1.5:1 relative to the loose fill volume of said tobacco:

impregnating said compressed tobacco in said impregnation zone with an expansion agent; and

removing impregnated compressed tobacco from said expansion zone and subjecting the impregnated compressed tobacco to conditions sufficient to expand the tobacco.

5,483,978

LIGHTER WITH GUARD

Gerald J. Doiron, Athol, Mass., assignor to Bic Corporation, Milford, Conn.

Filed Jul. 28, 1993, Ser. No. 97,685
Int. Cl.[6] F23D *11/36*
U.S. Cl. 131—329 **25 Claims**

1. A lighter comprising:

a lighter body containing a fuel reservoir with a valve for releasing fuel therefrom;

spark producing element having a surface adapted for contact by a user and rotatable by a user to produce sparks directed toward said valve, said element mounted on the body with at



least a portion of said contact surface exposed for manipulation and rotation by the user;

a valve actuator depressible to actuate said valve and release said fuel; and

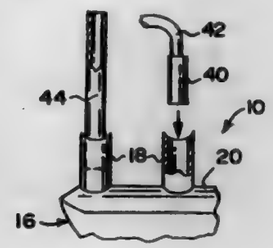
a shield member mounted on the lighter and extending around a portion of said spark producing element, wherein said shield member is disposed outward from said contact surface in a position which inhibits manipulation of the spark producing element by a user and is depressible to a position permitting manipulation of said spark producing element by contact with said contact surface thereby increasing the difficulty of producing sparks.

5,483,979

HAIR COLORING COMB

Florenza Bertieri, 211 W. 53rd St. (4F), New York, N.Y. 10019

Filed Apr. 21, 1994, Ser. No. 230,692
Int. Cl.[6] A45O *24/22*
U.S. Cl. 132—114 **7 Claims**



1. A hair coloring comb which comprises:

a) a canister for holding a quantity of hair coloring liquid therein having a plurality of pliable squeeze areas;

b) a hollow spine body having a plurality of hollow teeth extending from a first end;

c) means for attaching in a removable manner a cooperating mating end of said hollow spine body to said canister, so that when said pliable squeeze areas are depressed some of the hair coloring liquid will be forced from said canister through said hollow spine body and out of said hollow teeth whereby said coloring liquid may be applied onto the hair of a person;

d) a plurality of individual blocking pins for fitting into selected individual hollow teeth thereby completely preventing flow of liquid out of said selected individual hollow teeth while leaving other individual hollow teeth open, for use in frosting the hair; and

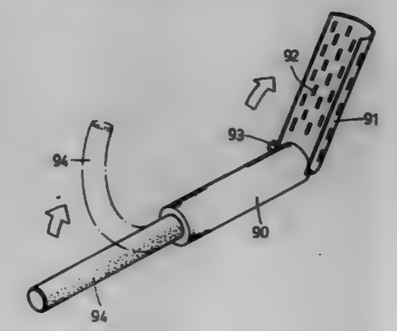
e) a hollow tooth extender sleeve fitting into one of said hollow teeth to allow the hair coloring liquid to exit therefrom, so as to be used in coloring the eyebrows.

5,483,980

HAIR ROLLER

Te S. Lin, P.O. Box 82-144, Taipei, Taiwan, Prov. of China

Filed Jan. 6, 1994, Ser. No. 177,941
Int. Cl.[6] A45D *2/12*
U.S. Cl. 132—255 **1 Claim**



1. A hair roller comprising:

a cylindrical rod made of a liquid absorbing material;

a semi-cylindrical cover pivotally connected to an end of said cylindrical rod and formed with a plurality of slots, said cover made of a liquid-absorbing material adapted to clamp hair against said cylindrical rod; and

a flexible member partially inserted into said rod and capable of being bent on said cover to keep hair in position.

5,483,981

CASING FOR COSMETIC PRODUCTS WITH REGULATED OPENING AND CORRESPONDING POWDER CASE

Michel Vandreumme, Le Plessis-Brion, and Charles Fleur, Noyon, both of, France, assignors to Yves Saint Laurent Parfums (Societe Anonyme), Neuilly Sur Seine, France

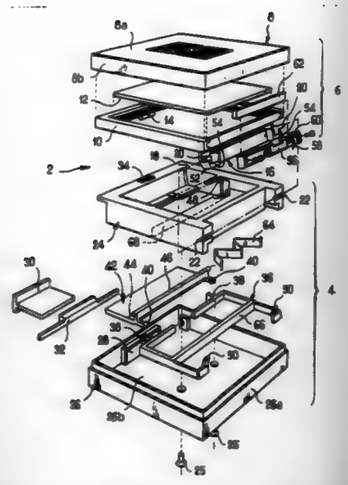
Filed Mar. 29, 1994, Ser. No. 219,354
Claims priority, application France, Apr. 6, 1993, 93 04071
Int. Cl.[6] A45D *33/00*
U.S. Cl. 132—315 **10 Claims**

1. Casing for cosmetic, make-up, care or hygiene products, comprising:

an enclosure having a cover, the enclosure being suitable for containing said product;

a hinge coupling the enclosure and the cover for articulation in rotation of the cover relative to the enclosure;

the cover having a hook and the enclosure having parts for locking/unlocking the hook for retaining the cover in the closed position;



a first spring which is compressed in the closed position of the cover and exerts tension against the cover, and of which the extension of the first spring released by the unlocking of the hook is such that it causes the abrupt opening of the cover; and

means for cushioning the opening movement of the cover in order to decelerate the abrupt opening of the cover by the first spring the cushioning means comprising at least one substantially resilient compressible element which can be compressed or extended as a function of the extension or compression of the first spring respectively.

5,483,982

DENTAL FLOSS DEVICE

Clayton Bennett; Alan Sullivan, and Paul Sullivan, all of Dublin, Ireland, assignors to Forfas, Dublin, Ireland

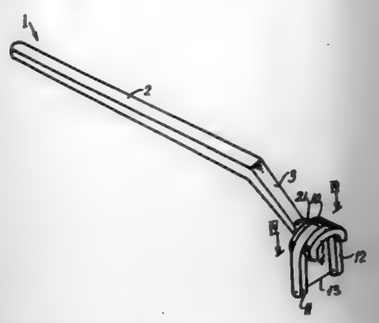
PCT No. PCT/IE92/00007, § 371 Date Mar. 11, 1994, § 102(e) Date Mar. 11, 1994, PCT Pub. No. WO93/04641, PCT Pub. Date Mar. 18, 1993

PCT Filed Sep. 11, 1992, Ser. No. 204,350

Claims priority, application Ireland, Sep. 11, 1991, 2311/91; Feb. 7, 1992, 920.410

Int. Cl.[6] A61C *15/00*

U.S. Cl. 132—323 **17 Claims**



1. A dental floss device comprising:

a handle having a head piece;

a disposable dental floss holder for interengagement with the head piece, on assembly;

the dental floss holder comprising a base portion and a pair of spaced-apart jaws extending from the base portion to accommodate a length of dental floss therebetween; and

releasable engagement means between the head piece of the handle and the dental floss holder for retaining the dental floss holder securely in position on the head piece of the handle during movement of the dental floss device, in use;

the head piece of the handle or the base portion of the dental floss holder defining a transversely extending groove, and the other of the base portion of the dental floss holder or head piece of the handle having a complementary tongue portion which engages the transversely extending groove, on assembly, the tongue portion and transversely extending groove defining part of the releasable engagement means,

the releasable engagement means also including snap-fitting means between the dental floss holder and the head piece of the handle,

the jaws of the dental floss holder or the head piece having snap-fit projections and the other of the jaws of the dental floss holder or head piece defining corresponding recesses which together with the snap-fit projections constitute said snap-fitting means, the snap-fit projections engaging with the recesses upon engagement of the tongue portion with the transversely extending groove.

5,483,983

DUAL PURPOSE CLEANING TRAY FOR LOT BOX CLEANING MACHINE

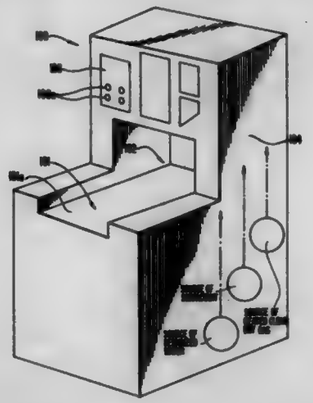
Keith O. Briggs, San Antonio; John J. Perez, Lubbock, and Gregory A. Taylor, San Antonio, all of Tex., assignors to Sony Corporation, Tokyo, Japan, and Sony Electronics Inc., Park Ridge, N.J.

Filed May 10, 1994, Ser. No. 240,527

Int. Cl.[6] B08B *13/00*

U.S. Cl. 134—58 R **3 Claims**

1. In a clean room environment associated with IC chip production, the combination of:



a microcomputer controlled programmable cleaning machine for clean room equipment, said cleaning machine including:

a source of deionized water,

a source of surfactant, and

a source of heated clean dry gas,

said cleaning machine being adapted to decontaminate articles which are placed therein by selectively using deionized water from said source of deionized water, surfactant from said source of surfactant, and heated clean dry gas from said source of heated clean dry gas; and

a skeletal wire tray-like basket for supporting the articles to be decontaminated, said basket having a wire frame including:

a plurality of cross-beams,

support means for specifically supporting first boxes which are adapted to receive IC chips and second different sized boxes which are adapted to receive reticles which are used for the production of the IC chips, said support means including a plurality of loop-shaped support members for supporting said first boxes and a plurality of bridge-shaped support members for supporting said second box means, said plurality of bridge-shaped support members being formed on said plurality of cross-beams, and

a pivotal lid for retaining the first and second boxes in position in said basket during washing, decontamination and drying operations.

5,483,984

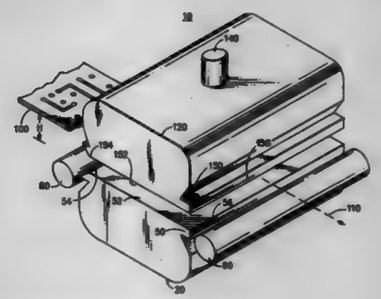
FLUID TREATMENT APPARATUS AND METHOD

Fraser P. Donlan, Jr., 1900 Monroe St., Endicott, N.Y. 13760; David D. Hare, 13 Beech Rd., Apalachin, N.Y. 13732; Jeffrey D. Jones, R.R. 3, Box 137, Newark Valley, N.Y. 13811; Thomas L. Miller, 1317 Glenwood Rd., Vestal, N.Y. 13850; Ronald J. Moore, 35 Beethoven St., Binghamton, N.Y. 13905, and Richard F. Nelson, 21 Hillside Dr., Apalachin, N.Y. 13732

Continuation-in-part of Ser. No. 911,610, Jul. 10, 1992, Pat. No. 5,289,639. This application Aug. 11, 1992, Ser. No. 928,609

Int. Cl.[6] F26B *7/00*; B08B *3/02*

U.S. Cl. 134—122 R **11 Claims**



1. A fluid treatment system, comprising:

at least a first fluid treatment compartment including a first channel through which a substrate is to be moved and first means for treating said substrate with a first fluid, and for producing a fluid bearing action on said substrate, during at least a portion of the time said substrate is in said first channel;

at least a second fluid treatment compartment, positioned immediately adjacent said first fluid treatment compartment, said second fluid treatment compartment including a second channel, aligned with said first channel, through which said substrate is to be moved and second means for treating said substrate with a second fluid during at least a portion of the time said substrate is in said second channel; and

intermingling-prevention means for preventing intermingling of said first and second fluids, wherein said substrate is a chip carrier substrate and each of said first and second fluids is chosen from the group consisting of water, air, liquid chemical etchant and liquid electrolyte.

5,483,985

FULLY AUTOMATIC AND SIMPLIFIED CONTROL STRUCTURE

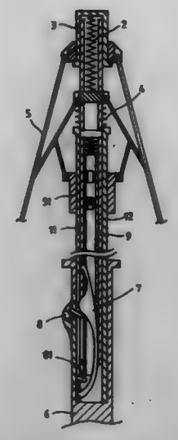
Shu-Chun Yu, 425, Chung Shin Road, Pin Chang City, Thoyuan Shien, Taiwan, Prov. of China

Filed Nov. 15, 1994, Ser. No. 340,908

Int. Cl.[6] A45B *25/14*

U.S. Cl. 135—22 **1 Claim**

1. An umbrella control structure for automatically opening and closing an umbrella framework, comprising:



a longitudinally extended outer tube having opposing first and second ends, said outer tube having a first longitudinally directed slotted opening formed therethrough adjacent said first end and a second longitudinally directed slotted opening formed therethrough adjacent said second end thereof;

a handle coupled to said first end of said outer tube, said handle having a third longitudinally directed slotted opening formed therethrough and disposed in aligned relationship with said first slotted opening;

a longitudinally extended inner tube having a first end slidably disposed within said outer tube and a positioner hole disposed adjacent thereto, said inner tube having a pair of longitudinally spaced apertures disposed intermediate said first end thereof and a second end of said inner tube, said pair of apertures being in aligned relation ship with said second slotted opening;

a closing coil spring positioned concentrically on said inner tube and having one end disposed adjacent said second end of said outer tube and an opposing end disposed adjacent a lower surface of a sliding guide of the umbrella framework;

a tubular cap slidably coupled to said second end of said inner tube and having a closed upper end;

an opening coil spring positioned within said second end of said inner tube and having one end disposed adjacent said closed upper end of said tubular cap and an opposing end disposed adjacent an upper surface of the sliding guide of the umbrella framework;

means for interlocking an active strut guide of said umbrella framework slidably disposed on said outer tube to either of two positions on said outer tube, said interlock means including means for engaging either of said pair of apertures of said inner tube through said second slotted opening of said outer tube;

a longitudinally extended control tube slidably disposed within said inner tube, said control tube having an upper end adapted to displace said engaging means to permit displacement of the active strut guide;

a leaf spring disposed within said first end of said outer tube and having a first end coupled thereto, said leaf spring having a longitudinally displaced hook-shape second end to engagement with said poisitioner hole of said inner tube, said leaf spring having a camming surface disposed intermediate said first and second end thereof; and,

a control tab disposed within said first and third slotted openings for slidable coupling to said outer tube and said handle, said control tab having a knock pin extending therefrom for contacting and upwardly displacing said control tube responsive to an upward displacement of said control tab to displace said engaging means and open the umbrella framework by a force from said opening coil spring, said control tab having a spring biased movable tab extending therefrom in sliding contact with said camming surface of said leaf spring, said movable tab being displaced by said camming surface responsive to

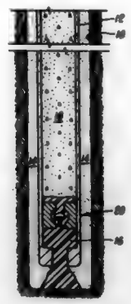
said upward displacement of said control tab and displacing said camming surface responsive to a subsequent downward displacement of said control tab, said leaf spring second end being disengaged from said positioner hole responsive to displacement of said camming surface of said leaf spring to close the umbrella framework by a force from said closing coil spring.

5,483,986

METHOD OF DISPLACING LIQUIDS THROUGH PIPES

David D. Onan, Lawton; Vincent J. Bila, Duncan; James L. Haney, Duncan; Gary E. Folmnsbee, Duncan; Rodney R. Koch, Duncan, all of Okla.; Randall D. Stilley, London, United Kingdom, and Larry T. Watters, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 41,083, Apr. 1, 1993, Pat. No. 5,346,011.
This application Jun. 9, 1994, Ser. No. 255,633
Int. Cl.[6] F16K *13/10*; E21B *33/16*
U.S. Cl. 137—1 **13 Claims**



1. In a method of displacing a first liquid through a pipe with a second liquid while preventing the first and second liquids from mixing wherein a solid plug for separating the first and second liquids is placed in the pipe and then the plug and the first liquid are displaced through the pipe with the second liquid, the improvement which comprises forming said plug in-situ in said pipe between said first and second liquids by injecting a self-thickening liquid therein and permitting said liquid to thicken into a liquid-separating plug prior to displacing said plug and said first liquid with said second liquid, wherein said self-thickening liquid is comprised of a suspension of a natural or synthetic rubber and a vulcanizing agent therefor which thickens after being injected into said pipe as a result of said rubber being vulcanized by said vulcanizing agent.

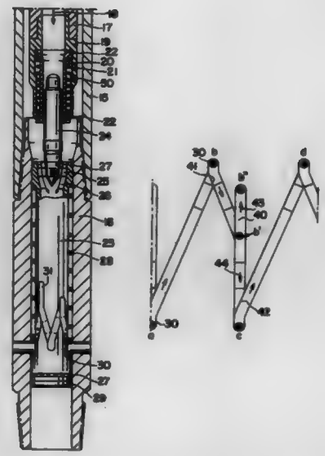
5,483,987

REMOTE CONTROL METHOD AND DEVICE FOR ACTUATING AN EQUIPMENT-APPLICATION TO A DRILL STRING

Benoit Arnaudric du Chaffaut, Voisins Le Bretonneux, and Jean Boulet, Paris, both of, France, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France

Filed Dec. 23, 1994, Ser. No. 362,952
Claims priority, application France, Dec. 24, 1993, 93 15720
Int. Cl.[6] E21B *34/10*
U.S. Cl. 137—2 **12 Claims**

1. A method for actuating an equipment from a distance, said actuation being performed through a variation of the conditions of flow of a fluid in a pipe, said equipment including means of coupling with an actuating device comprising adjusting means suited for varying the geometric characteristics of the passageway of said fluid through the hydrodynamic action of the flow of said fluid in said pipe, comprising the following stages:



varying the circulation rate at least between a value Qmini and a value Qf, Qmini being less than Qf,

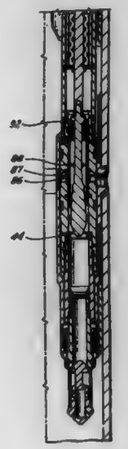
performing a first variation of the circulation rate from one or the other of said values Qf or Qmini so as to reach a value Qr, Qr being an immediate flow rate value between Qmini and Qf, then performing, from Qr, a second variation in the opposite direction with respect to said first variation.

5,483,988

SPOOLABLE COILED TUBING MANDREL AND GAS LIFT VALVES

Ronald E. Pringle, Houston, Tex., assignor to Camco International Inc., Houston, Tex.

Filed May 11, 1994, Ser. No. 241,256
Int. Cl.[6] F04F *1/20*
U.S. Cl. 137—155 **20 Claims**



1. A spoolable flexible sidepocket mandrel positioned in a coiled tubing comprising,

a flexible spoolable circular housing having the same size and shape as the coiled tubing and forming a portion of the coiled tubing, said housing including an open bore communicating with the coiled tubing,

an orienting sleeve secured to the inside of the housing for aligning a flow control device in the housing,

a sidepocket offset from the open bore for receiving a flow control device, said pocket including a plurality of separate pocket parts each of which is secured to the inside of the housing, and

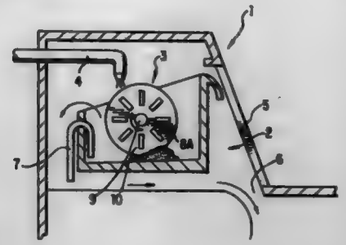
a deflector guide aligned with the sidepocket, said guide including a plurality of separate guide parts each of which is secured to the inside of the housing.

5,483,989

APPARATUS FOR DISSOLVING DETERGENT

Heetae Lim, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 29, 1994, Ser. No. 366,118
Claims priority, application Rep. of Korea, Mar. 30, 1994, 94-6539
Int. Cl.[6] B01F *3/12*
U.S. Cl. 137—268 **8 Claims**



1. An apparatus for dissolving a detergent, said apparatus comprising:

a detergent dissolving container having a first sidewall and a second sidewall facing the first sidewall, the first sidewall being higher than the second sidewall, and having a tube disposed on the first sidewall for draining a remaining dissolved detergent;

a detergent introducing container having a receiving opening formed at a sidewall thereof for drawing the detergent dissolving container into and out of said detergent introducing container, an outlet formed at a lower edge of a side thereof for draining a dissolved detergent, and a water pipe protrudingly formed on one side of said detergent introducing container, for supplying water through an outlet of said water pipe to dissolve the detergent; and

a rotation means rotatably hinged on a third sidewall and a fourth sidewall, the fourth sidewall facing the third sidewall, for promoting dissolving of the detergent, said rotation means being located in said detergent dissolving container and under the outlet of said water pipe so that the water exited from said outlet of said water pipe rotates said rotation means and the rotation of said rotation means may cause the water from said outlet of said water pipe to mix with the detergent.

5,483,990

IN-LINE VALVE FOR INSERTION IN A PRESSURIZED FLUID FLOW LINE

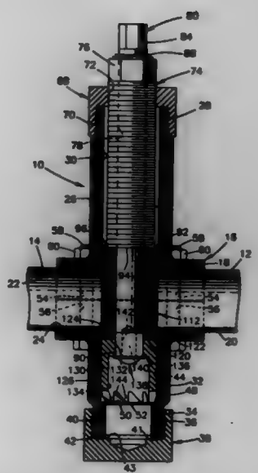
Joseph R. Martin, Newport, Ky., assignor to Jomar International, Ltd., Madison Heights, Mich.

Filed Apr. 27, 1995, Ser. No. 429,865
Int. Cl.[6] F16K *43/00*; F16L *55/128*
U.S. Cl. 137—318 **5 Claims**

1. A valve (10) for insertion in a fluid flow line (12) comprising:

(a) a valve body (16) including an upper body portion (18) and a lower body portion (20);

(b) said upper body portion (18) having a longitudinal semicircular bore (22) on the lower side thereof, and said lower body portion (20) having a longitudinal semicircular bore (24) on the upper side thereof which is complementary with the



longitudinal semicircular bore (22) on the upper body portion (18) to form a cylindrical line opening for the reception of a cylindrical fluid flow line (12);

(c) means (58,60) for releasably and sealingly clamping the upper (18) and lower (20) body portions over a fluid flow line (12) mounted in said cylindrical line opening;

(d) said upper body portion (18) being provided with an integral cylindrical extension (26) which extends upwardly from the top of the upper body portion (18), and which has an upper end with external threads (28) formed around the outer periphery thereof, and an axial cylindrical bore (30) that extends therethrough and communicates at the lower end thereof with the semicircular bore (22) in the upper body portion (18) and is perpendicular to said cylindrical line opening;

(e) said lower body portion (20) being provided with an integral cylindrical extension (32) which extends downwardly from the bottom of the lower body portion (20), and which has a lower reduced diameter end (34) with external threads (36) formed around the outer periphery thereof, and a lower end transverse face (41), and an axial stepped diameter bore (44,46) with a cylindrical wall that extends therethrough and communicates at the upper end thereof with the semicircular bore (24) in the lower body portion (20) and is perpendicular to said cylindrical line opening and in axial alignment with the cylindrical bore (30) in said upper body portion (18);

(f) said axial stepped bore (44,46) in the lower body integral cylindrical extension (32) including an upper portion (44) having a first diameter equal to the diameter of the axial cylindrical bore (30) in the upper integral cylindrical extension (26), and a lower portion (46) having a second diameter of a size smaller than said first diameter so as to form an annular, radially inward extended shoulder (48) at a junction point between said bore upper portion (44) and said bore lower portion (46);

(g) said lower body integral cylindrical extension (32) being provided with an annular groove (50) formed in the wall of the stepped diameter bore upper portion (44) at said junction point, and with the lower side of the annular groove (50) being coplanar with the annular surface of the annular shoulder (48), and having a snap ring stop retainer (52) mounted in said annular groove (50);

(h) said lower body portion lower reduced diameter end (34) being provided with a bottom cap (38) which is threadably mounted on the lower end threaded periphery (36) of the lower body portion cylindrical extension lower reduced diameter end (34) and having a transverse seat (43) on the inner side of which is mounted a sealing washer ring (42) that sealingly seats against the lower body portion cylindrical extension lower reduced diameter end transverse face (41);

(i) said upper body portion (18) being provided with an upper cap (68) threadably mounted on the upper end threaded periphery (28) of the upper body portion integral cylindrical extension (26) and having an axial threaded bore (72) formed therethrough;

(j) an elongated tubular outer shaft (74) having an axial bore (78) formed therethrough from an upper end to a lower end, and having an outer threaded periphery, and a hexagonal shaped head, and being is threadably mounted through the axial threaded bore (72) in the upper body cap 68;

(k) an elongated inner shaft (80) having a smooth surface cylindrical shape, with an upper hexagonal shaped driver head (84) on the upper end thereof, and a lower end (90) which is hexagonal shaped in cross section and which has a threaded axial blind bore (142) extended upwardly therein from the lower end thereof;

(l) said elongated inner shaft (80) being mounted through the axial bore (78) in said elongated tubular outer shaft (74) and being freely rotatable therein, and having the lower portion thereof extended below the lower end of the elongated tubular outer shaft (74), and retainer means (88) mounted on the upper end of the elongated inner shaft (80) and engaging the upper end of the elongated outer shaft (74) to limit the inward movement of the elongated inner shaft (80) relative to the elongated tubular outer shaft (74);

(m) a steel washer (92) mounted around the elongated inner shaft (80) lower portion with an upper side thereof seated against the lower end of the elongated tubular outer shaft (74);

(n) an O-ring seal carrier member (96) mounted around the elongated inner shaft (80) lower portion below the steel washer (92), with an upper side thereof seated against the steel washer (92) and having outer O-ring seal means (102) slidably and sealingly engaging the axial cylindrical bore (30) in the upper body cylindrical extension (26), and having an internal O-ring seal means (106) sealingly engaging the periphery of the smooth surface cylindrical shape of the elongated inner shaft (80);

(o) a tubular elastomeric fluid flow line seal (112) is slidably mounted on the elongated inner shaft (80) with an upper end thereof (118) seated against the O-ring seal carrier member (96) and which has a cylindrical outer surface that makes a slip fit within the axial cylindrical bore (30) in the upper body cylindrical extension (26);

(p) a steel washer (122) is mounted around the elongated inner shaft (80) in a position against a lower end (120) of the tubular line seal (112);

(q) an annular hole cutter (126), having a cylindrical head (128) and an integral tubular cylindrical wall (130) extending downwardly from said head (128), is slidably mounted in the axial cylindrical bore (30) in the upper body portion cylindrical extension (26) and provided with an axially disposed hole (132) formed through said cylindrical head (128) which is hexagonal shaped in cross section and in which is received the hexagonal shaped driving end (90) of the elongated inner shaft (80) and said annular hole cutter (126) is retained on said hexagonal shaped driving shaft end (90) in seating engagement against a steel washer (122) that seats on the lower end (120) of the fluid flow line seal (112) by a self-locking screw (138) operatively mounted in the threaded blind bore (142) in the elongated inner shaft driving end (90);

(r) said annular hole cutter (126) is provided on the lower end of the tubular cylinder wall (136) with a plurality of downwardly extended cutting teeth (144) to provide the cutter (126) with a lower open end and an internal holding chamber (134) for holding a slug cut from the upper wall of a fluid flow line (12) on which the valve (10) is operatively mounted; and,

(s) whereby when the elongated tubular outer shaft (74) is rotated in one direction to retract the cutter (126) and the tubular seal (112) upwardly into the cylindrical bore (30) in the upper body extension (26) the upper and lower body portions (18, 20) may be clamped onto a fluid flow line (12), and when the elongated outer shaft (74) is selectively rotated in the opposite advancing direction and the elongated inner shaft (80) is rotated progressively ahead of the outer shaft (74); in said opposite direction independently of the elongated outer shaft (74), the annular hole cutter (126) and the tubular seal (112) will move downwardly sequentially, and the cutter (126) will cut a hole through the upper wall of the fluid flow line (12) and remove a slug which will pass upwardly into the holding chamber (134) in the cutter (126), and continued selective advancing rotation of the outer tubular shaft (74) and the progressive independent rotation of the cutter (126) will move the cutter (126) into a cutting engagement with the lower wall of the fluid flow line (12) and cut a hole ther

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5,483,991

VALVE WITH SELF-CENTERING SEAT

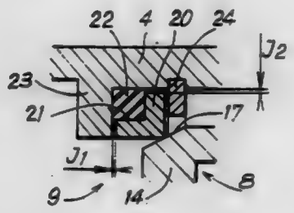
Guy D'Agostino, Vitry Sur Seine, and Rachid Belhamici, Massy, both of, France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.", Paris, France

Filed May 5, 1994, Ser. No. 238,531

Claims priority, application France, May 12, 1993, 93 05693

Int. Cl.[6] F16K *15/02;25/00*

U.S. Cl. 137—514 **6 Claims**



1. A valve comprising:

a) a generally cylindrical casing having a longitudinal axis and defining an inner chamber;

b) a generally annular shoulder extending into the inner chamber from the generally cylindrical casing;

c) a valve piston movably located in the inner chamber so as to be movable in a direction parallel to the longitudinal axis, the valve piston defining a sealing surface extending obliquely to the longitudinal axis;

d) a valve seat member defining a valve seat located in the inner chamber;

e) at least one generally annular elastic element connected to the valve seat member, the generally cylindrical casing and the generally annular shoulder such that an axial clearance is maintained under all operating conditions between the valve seat member and the generally annular shoulder and a radial clearance is maintained between the valve seat member and the generally cylindrical casing whereby the valve member may move axially and radially relative to the valve piston due to contact between the oblique sealing surface of the valve piston and the valve seat to ensure sealing of the valve seat against the oblique sealing surface; and,

f) biasing means acting on the valve piston so as to bias the valve piston towards the valve seat member.

5,483,992

ANNULAR VALVE FOR A PISTON COMPRESSOR

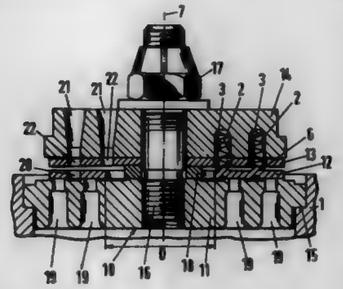
Markus Lehmann, Oberstammheim, Switzerland, assignor to Maschinenfabrik Sulzer-Burckhardt AG, Basel, Switzerland

Division of Ser. No. 237,943, May 2, 1994, abandoned, which is a continuation of Ser. No. 41,084, Apr. 1, 1993, abandoned. This application Jan. 25, 1995, Ser. No. 378,307

Claims priority, application European Pat. Off., Jun. 2, 1992, 92810421

Int. Cl.[6] F16K *15/12*

U.S. Cl. 137—516.21 **2 Claims**



1. A valve for a piston compressor comprising a valve seat for attachment to a housing of the compressor; an absorber secured to the valve seat and spaced therefrom; an annular sealing component disposed in a space between opposing surfaces of the valve seat and the absorber and being axially movable between the opposing surfaces, the sealing component comprising a plate constructed of a plastic material; at least three helical springs disposed between the absorber and the sealing component, distributed about the sealing component and biasing the sealing component into a closed position against the surface of the valve seat; the plate including a projection for each helical spring which is of unitary construction with the plate and extends into an interior of the spring at a first end thereof; the absorber including a blind bore for each spring, an end of the bore having a diameter selected to engage and secure a second end of the helical spring to the absorber, a remainder of the bore having a diameter larger than an outer diameter of the helical spring; and means for guiding axial movements of the sealing component in the space between the valve seat and the absorber, said guiding means being solely defined by the helical springs and their engagement of the sealing component.

5,483,993

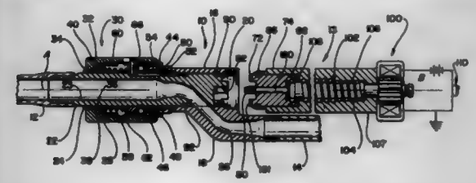
MAINTAINABLE IN-LINE FLUID CONNECTOR

George J. Roebelen, Jr., Suffield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 3, 1994, Ser. No. 316,971

Int. Cl.[6] F16L *29/00*

U.S. Cl. 137—614 **10 Claims**



1. A maintainable in-line fluid connector for a flexible or semi-flexible conduit having an upstream portion and downstream portion comprising a female housing having a central open ended bore and a branch portion, a downstream portion of said conduit connected to said branch portion, a detachable mating male portion comprising a cylindrical valve member and a sleeve surrounding a portion of said valve member disposed in sliding relationship with said sleeve and said male portion attached to said female housing, said upstream portion of said conduit connected to said valve portion, fluid conducting passageway in said valve member and additional fluid conducting passageway disposed in said branch portion angularly disposed relative to said fluid conducting passageway fluidly connecting said upstream portion and downstream portion of said conduit, in combination with an installation tool having a pushout rod having an outer diameter complementing the diameter of said bore for pushing said valve member axially, and seal means on said valve portion and on said pushout rod for straddling the ends of a passageway formed in said valve portion and said additional fluid conducting passageway formed in said branch portion whereby said female portion and said male portion can be separated and fluid in said upstream portion and downstream portion of said conduit is prevented from leaking through said in-line fluid connector.

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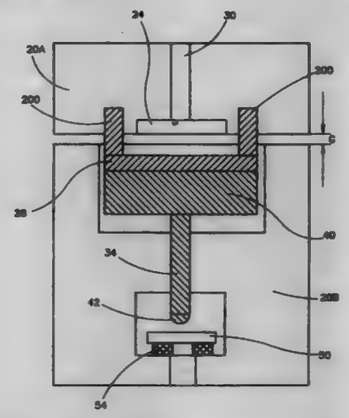
PRESSURE TRANSDUCER WITH MEDIA ISOLATION AND NEGATIVE PRESSURE MEASURING CAPABILITY

D. Joseph Maurer, Pearl City, Ill., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Feb. 1, 1995, Ser. No. 382,273

Int. Cl.[6] F16L *55/04;* **G01L** *9/06*

U.S. Cl. 138—31 **20 Claims**



1. A pressure sensor, comprising:

a housing member having a first chamber and a second chamber, said housing member having a first portion and a second portion;

a flexible membrane disposed between said first and second chambers;

a first conduit extending through said housing member, said first conduit being connected in fluid communication with said first chamber;

a plunger slideably disposed within said housing member, said plunger having a first end and a second end, said first end of said plunger being disposed within said second chamber and being attached to said flexible membrane, said plunger being movable within said housing member in response to movement of said flexible membrane;

a pressure sensor die disposed within said housing member proximate said second end of said plunger, said pressure sensor die having a deformable portion which is deformable in response to movement of said plunger; and

a resilient member disposed within said housing, said resilient member being deformable in response to movement of said plunger relative to said first portion of said housing member, said resilient member exerting a force on said plunger toward said pressure sensor die in response to a force on said second portion of said housing member toward said first portion of said housing member.

5,483,995

DEVICE FOR COUPLING AND UNCOUPLING LOOM HEALD SHAFTS

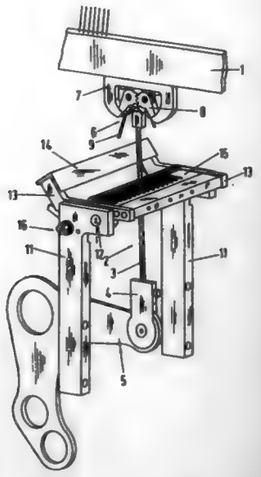
Gustav Oertli, Brütten, Switzerland, assignor to Sulzer Ruti AG, Winterthur, Switzerland

Filed Oct. 14, 1994, Ser. No. 324,051

Claims priority, application European Pat. Off., Nov. 24, 1993, 93810816

Int. Cl.[6] D03C *9/00*

U.S. Cl. 139—57 **7 Claims**



1. A device for coupling and uncoupling a plurality of heald shafts to a plurality of shaft rods in a shaft drive comprising:

a first coupling element attached to each shaft;

a second coupling element attached to each shaft rod;

a latching member for latching each of the first coupling elements to respective second coupling elements;

an actuating member coupled to the shaft drive for moving the shaft rods between a working position, where the shaft rods are coupled to the shafts, and a rest position, where the shaft rods are uncoupled from the shafts; and

a support member coupled to the actuating member, the support member having guide elements for receiving and guiding the shaft rods during operation of the shaft drive and holding elements for securing the shaft rods in a stable position when the shaft rods are in the rest position uncoupled from the shafts.

5,483,996

HEDDLE FRAME CORNER JOINT

Franz Mettler, Wollerau, Switzerland, assignor to Grob & Co. Akt, Horgen, Switzerland

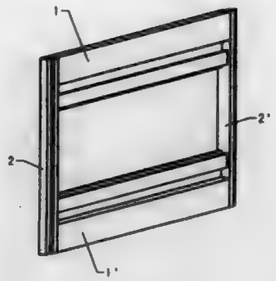
Filed Jan. 25, 1995, Ser. No. 378,368

Claims priority, application Germany, Feb. 8, 1994, 44 03 923.9

Int. Cl.[6] D03C *9/06*

U.S. Cl. 139—91 **6 Claims**

1. A heddle frame comprising a pair of spaced, horizontal hollow shafts and a pair of spaced hollow side supports, an angled joint element connecting each opposing end of each of said supports to said shafts, an inner face of each said side support having open longitudinal slots at said opposing ends, each said joint element having an elongated leg extending into each said hollow side support from said opposing ends thereof and beyond an inner edge of each said slot for strengthening said side supports, and each said joint element having a protrusion extending through each said slot and into opposing ends of said horizontal shafts, and means for securely connecting said legs of said joint elements to said side supports along the length of said legs.



5,483,997

BLADE TYPE WEFT BRAKE FOR A SHUTTLELESS LOOM

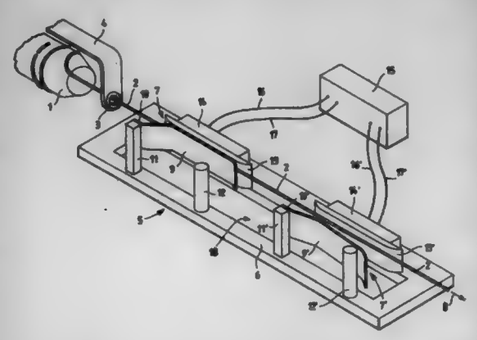
Luciano Corain, Vicenza; Marco Novella, Valdagno, and Giulio Bortoli, Schio, all of, Italy, assignors to Nuovopignone - Industrie Meccaniche e Fonderia S.p.A., Florence, Italy

Filed Sep. 21, 1994, Ser. No. 309,453

Claims priority, application Italy, Sep. 29, 1993, MI93A2067

Int. Cl.[6] B65H *59/22*; D03D *47/34*

U.S. Cl. 139—194 **5 Claims**



1. A shuttleless loom weft brake, which comprises:

a plurality of braking units positioned on a frame of the weft brake in a weft yarn travel direction and including an elastic blade made at least partly of a ferromagnetic material, and a flat support plate of a non-magnetic material, between which said weft yarn originating from a feed bobbin travels wherein said blade is pressed against the plate by at least one electromagnet of adjustable excitation and wherein a stop pin is fixed to the frame for the weft brake of each braking unit;

said plurality of braking units comprises at least two braking units arranged in series on said weft brake frame in said weft yarn travel direction, the blades and support plates of said braking units being arranged in a vertical position, said blades being rigidly fixed to said frame of the weft brake at an end thereof which is closer to said feed bobbin and a column loaded on said frame, said column preloading each of the blades in a direction urging said blades away from the respective support plate thereof and against the respective stop pin thereof located on said frame.

5,483,998

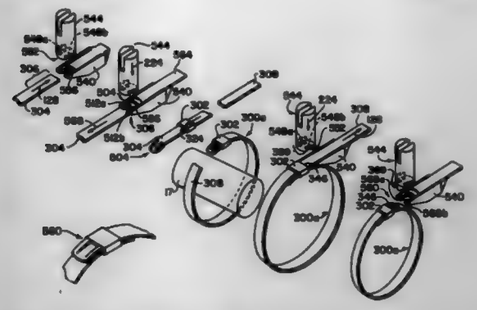
ANCHORING OF A BAND BUCKLE IN A BAND CLAMP

Miklos Marelin, Aurora; George Jansen, Denver, and Hans R. Hinnen, WheatRidge, all of Colo., assignors to Band-It-Idex, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 594,377, Oct. 5, 1990, Pat. No. 5,127,446. This application Dec. 6, 1993, Ser. No. 163,815

Int. Cl.[6] B21F *09/02*

U.S. Cl. 140—93.4 **19 Claims**



1. A method for clamping an object comprising:

providing a set of one or more tools, each tool of said set for producing both a retaining member and a lock for clamping a banding material about an object to form a band

wherein, in using one or more tools of said set to provide a band clamp, the following steps (A1) through (A5) are performed:

(A1) providing a first banding amount of the banding material having a longitudinal axis extending from a first end to a second end, said first banding amount also having a first lateral edge and a second lateral edge both extending between said first end and said second end;

(A2) forming a retaining member on said first end using a tool of said set, wherein a cross-section of said retaining member, between a first point on said first lateral edge and a second point on said second lateral edge substantially opposite to said first point relative to said longitudinal axis, includes two points such that a line of points between said two points has a third point outside said cross-section;

(A3) positioning a buckle adjacent to said retaining member;

(A4) disposing said first banding amount with said buckle about an object; and

(A5) creating a lock, with said first banding amount, using a tool of said set, said step of creating said lock being conducted subsequent to said step of forming said retaining member.

5,483,999

WASTE COLLECTION SYSTEM FOR CONTAINMENT AND DISPOSAL OF CONTAMINATED FLUIDS

Fred P. Lampropoulos, Salt Lake City; Richard L. Young, Alpine; Cidny A. Bushman, Midvale, and Bryan R. Lampropoulos, Salt Lake City, all of Utah, assignors to Merit Medical Systems, Inc., Salt Lake City, Utah

Filed Mar. 15, 1993, Ser. No. 33,303

Int. Cl.[6] F23G *5/12*

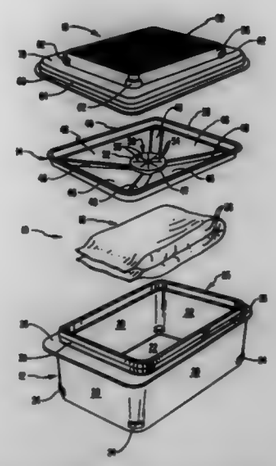
U.S. Cl. 141—86 **113 Claims**

1. A waste collection system for receiving and containing contaminated fluids, comprising:

receptacle means for holding contaminated fluids introduced into the receptacle means;

containment means, joined to the receptacle means in an essentially fluid tight manner, for providing containment of the contaminated fluids within the receptacle means; and

valve means formed of foam material, disposed on one of said receptacle means and said containment means, for permitting passage of contaminated fluids into the receptacle means without permitting the contaminated fluid to splash outside of the containment means and receptacle means as the contaminated fluid is introduced into the receptacle means.



5,484,000

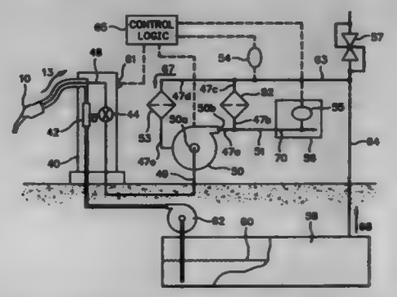
VAPOR RECOVERY AND PROCESSING SYSTEM AND METHOD

Detley E. M. Hasselmann, 519 S. Nardo, Solana Beach, Calif. 92075

Filed Apr. 1, 1994, Ser. No. 222,549

Int. Cl.[6] B67D *5/378*

U.S. Cl. 141—7 **19 Claims**



1. A vapor recovery method for collecting vapors emitted during vehicle refueling and for processing excess vapors form a dispensing system in order to prevent increased pressurization of a storage tank of combustible liquid, the storage tank being maintained at or below atmospheric pressure, the storage tank also being in selective fluid communication with a nozzle in the dispensing system for dispensing the combustible liquid into the vehicle fuel tank, the nozzle having means for capturing the vapors forced from the vehicle tank, said method comprising the steps of:

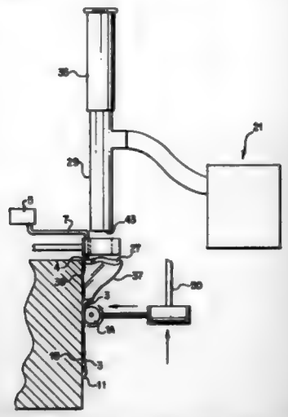
collecting the combustible vapors at the nozzle by a collection means connected thereto, the volume of vapors thus collected being those vapors forced from the vehicle tank by the entering liquid and any air drawn in at the nozzle;

discharging a portion of the collected vapors from the collection means to a processing means, the volume of that portion of the collected vapors being directly determined by the vapor pressure in the storage tank;

processing the portion of the collected vapors discharged to the processing means to an environmentally safe form by the processing means; and

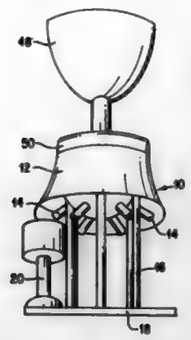
discharging the remainder of the collected vapors from the collection means to the storage tank in sufficient volume to maintain a predetermined vapor pressure in the storage tank.

5,484,001
METHOD FOR APPLICATION OF SMOKE COLOR TO INSIDE OF BAG AND APPARATUS THEREFOR
Stephen L. Gray, Moore, S.C., assignor to W. R. Grace & Co.-Conn, Duncan, S.C.
Filed Jun. 15, 1993, Ser. No. 77,467
Int. Cl.[6] A22C *11/02*
U.S. Cl. 141—114 2 Claims



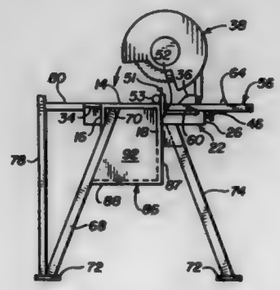
1. An apparatus, in a stuffing machine, for providing liquid additives to a flexible, thermoplastic container during stuffing of said container with comminuted meat, said apparatus comprising:
(a) a squeeze roller and a backing plate disposed with respect to said stuffing machine such that the squeeze roller may be brought together with the backing plate at a thermoplastic container bottom, and moved upwardly along the container outside, and then brought apart from said backing plate;
(b) a liquid delivery means attached to said stuffing machine for delivering liquid additive to said container inside;
whereby after said liquid additive is delivered inside said container, said squeeze roller and said backing plate are brought together at said container bottom, said squeeze roller is moved upwardly along said container outside, and then brought apart from said backing plate, thereby dispersing said liquid additive along the inside of the container to a desired level.

5,484,002
DISTRIBUTOR FOR ALCOHOLIC BEVERAGES
Michael Kupietzky, 14 Jabotinsky Street, Jerusalem, Israel
Filed Nov. 22, 1994, Ser. No. 346,190
Claims priority, application Israel, Jan. 31, 1994, 108494
Int. Cl.[6] B65B *3/06*
U.S. Cl. 141—237 9 Claims



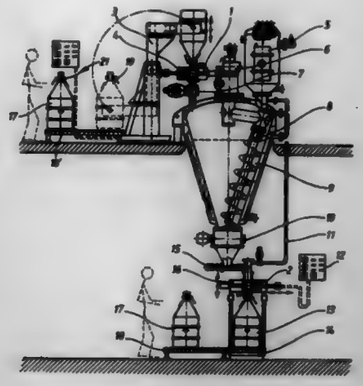
1. A distributor system for wine and other alcoholic beverages, comprising in combination:
an elevated distributor bowl for receiving a beverage poured therein, and provided with multiple outlet ports for discharge of said beverage;
a plurality of small drinking cups removably positioned beneath said distributor bowl, to respectively receive a beverage flowing out of said respective outlet ports; and
a goblet of a capacity of at least twice that of each of said small drinking cups for holding and pouring the beverage into said distributor bowl, said goblet being configured to stand centrally on said distributor bowl when not in use, and being provided with a base configured to act as a dust cover for said distributor bowl when said goblet is placed centrally thereon.

5,484,003
CHOP SAW TABLE
Neal O. Bisel, Rte. 1, Box 123, Okeene, Okla. 73763
Filed Jan. 27, 1995, Ser. No. 379,806
Int. Cl.[6] B25H *1/02*; B27C *9/00*
U.S. Cl. 144—287 9 Claims



1. A workpiece support table for a chop saw having a base having parallel side edges and having a horizontal workpiece support surface underlying a rotary saw blade vertically movable toward and away from the workpiece support surface, comprising:
an elongated inverted U-shaped member having depending parallel channel legs respectively forming a table front side and a table rearward side, said member having a planar bight portion forming a horizontal workpiece supporting surface,
said bight portion having a transverse recess, intermediate its ends, open at each end through the respective channel leg for closely nesting respective side edges of the chop saw base and disposing the plane of the chop saw rotary blade normal to the longitudinal axis of the U-shaped member and disposing the chop saw base workpiece surface in the plane of the bight portion workpiece supporting surface;
a pair of table front legs respectively secured to respective end portions of said U-shaped member and projecting laterally downward and outwardly in parallel relation with respect to the vertical plane of the forward channel leg of said U-shaped member; and,
a table rearward leg secured to the medial portion of said U-shaped member and projecting laterally downward and outwardly with respect to the vertical plane of the rearward channel leg.

5,484,004
TRANSFER CLOSURE VALVE FOR FILLING AND EMPTYING CONTAINERS
Alfred Bolz, Wangen im Allgäu, Germany, assignor to Alfred Bolz GmbH & Co. KG, Wangen, Germany
Filed Aug. 30, 1993, Ser. No. 112,941
Claims priority, application Germany, Sep. 18, 1992, 9212623 U
Int. Cl.[6] B65B *1/04*
U.S. Cl. 141—346 8 Claims

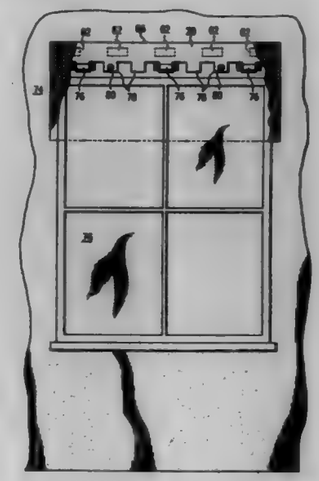


1. A transfer closure valve for filling and emptying containers, the closure valve comprising:
a first housing having a first, container connecting piece for docking with a container, a second, container connecting piece coaxial with, and opposite to, the first connecting piece; and
a movable member inside the first housing movable between a closed position in which there is no connection between the first and second container connecting piece and an open position to produce a flow connection between the first and second connecting piece;
said movable member comprising second housing which is movable in the first housing, a lifting device and a lifting cap mounted in said second housing, said lifting cap comprising means for engagement with a lid of a docked container and said lifting device comprising means for moving said lifting cap onto a said container lid; and
a filler pipe being connected to the second housing and being displaceable therewith to produce said flow connection between the first connecting piece and the second connecting piece of the housing, in the open position of the second housing.

5,484,005
PNEUMATIC TIRE WITH AIR RETENTION CARCASS
Christine L. Morehart, North Canton, and Frederick J. Ravagnani, Uniontown, both of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan
Continuation of Ser. No. 998,359, Dec. 30, 1992, abandoned.
This application Nov. 3, 1994, Ser. No. 333,938
Int. Cl.[6] B60C *1/00;5/12;9/02;9/04*
U.S. Cl. 152—564 9 Claims

1. A tubeless pneumatic tire having no separate innerliner ply and having acceptable resistance to air permeability in the absence of an innerliner comprises a tread, one or more reinforcing belts, sidewalls, one or more body plies and beads; wherein the rubber skim of the innermost body ply is formed from a rubber composition comprising:
(a) from about 10 to about 60 parts by weight of natural rubber;
(b) from about 20 to about 30 parts by weight of halogenated butyl rubber;
(c) from about 20 to about 30 parts by weight of epichlorohydrin rubber; and
(d) from about 5 to about 50 parts by weight of a metal salt-containing material selected from the group consisting of a metal salt of an unsaturated carboxylic acid and a graft copolymer comprising a diene polymer or copolymer backbone having pendently grafted thereto a polymerized metal salt of an unsaturated carboxylic acid.

5,484,006
CORNICE BOX
Whitney A. Walker, 3001 Maple St., No. 702, Dallas, Tex. 75219
Filed Aug. 1, 1994, Ser. No. 283,991
Int. Cl.[6] E04F *10/00*
U.S. Cl. 160—38 11 Claims



1. A method for forming a cornice box of a desired shape that hangs on a wall over a window from a cornice box assembly including a face member of a lightweight rigid material having first and second side edges and top and bottom edges; first and second side members of the lightweight rigid material each having inside and outside surfaces and inside, outside, top, and bottom edges; a top member of the lightweight rigid material having top and bottom edges; a back member of the lightweight rigid material having a first side tab member at a first end and a second side tab member at a second end, the back member, first tab member, and second tab member having top and bottom edges and inside and outside surfaces, each tab member may be placed in a position generally perpendicular to the back member at an interface between each tab member and the back member, the method comprising the steps of
joining with an adhesive the face member's first side edge with the first side member's inside edge, the face member's second side edge with the second side member's inside edge, the face member's top edge with the top member's bottom edge, and the top member's top edge with the back member's bottom edge, such that a hingeable joint is formed between any two adhesive joined members;
positioning each of the side members at a perpendicular position with respect to the face member by folding each side member up with respect to the face member at the hingeable joint between each side member and the face member;
positioning the top member at a perpendicular position with respect to the face member by folding the top member up with respect to the face member at the hingeable joint between the top member and the face member;
positioning the back member in a plane parallel to the plane of the face member by folding the back member down with

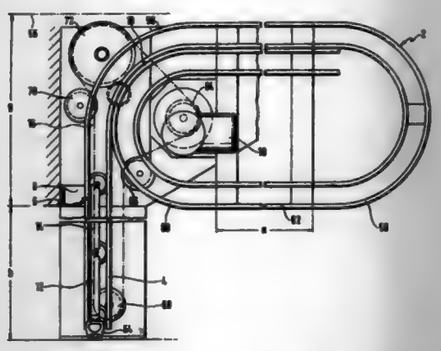
respect to the top member at the hingeable joint between the back member and the ton member;
securing each side member to an associated back tab member with a fastening medium attached to each side member's inside surface near each side member's top edge and a connection medium attached to each back tab's outside surface so as to hold the cornice box in the desired shape;
covering the formed cornice box with a backing once the box is in the desired shape; and
covering the backing with a decorative material and securing the decorative material to the cornice box.

5,484,007

VERTICAL LIFT GATE WITH STRIP CLADDING IN GUIDEWAYS

Gabrijel Rejc, Falkenstr. 46, Landshut, Germany

Filed Nov. 10, 1992, Ser. No. 259,050
Claims priority, application Germany, May 11, 1990, 40 15 215.4; WIPO, May 13, 1991, PCT/EP91/00685
Int. Cl.[6] E06B *9/08*
U.S. Cl. 160—133 **9 Claims**



1. A lifting door for a door aperture comprising:
a door body for opening and closing the door aperture and including a plurality of substantially rigid slats pivotally coupled to one another and carrying guides at opposite sides thereof;
guide tracks extending substantially vertically along opposite sides of the door aperture for substantially the full height of the door aperture and curved above the door aperture into an inwardly directed, generally spiral configuration, said guides lying in engagement with said guide tracks such that, when the door body is moved to an open position, the guides follow the curvature of said guide tracks to locate the slats between the spirally configured guide tracks and without contact with one another;
each said guide track comprising a pair of guide bars and said guides comprising rollers engaging said bars.

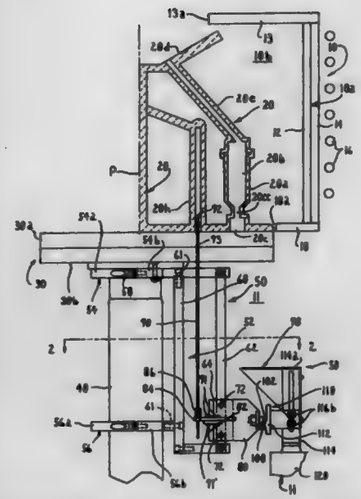
5,484,008

THERMOCOUPLE POSITIONER FOR DIRECTIONAL SOLIDIFICATION APPARATUS/PROCESS

Dennis J. Thompson, Holton, Mich., assignor to Howmet Corporation, Greenwich, Conn.

Filed Aug. 26, 1994, Ser. No. 296,963
Int. Cl.[6] B22D *2/00;27/04*
U.S. Cl. 164—338.1 **10 Claims**

1. A casting apparatus comprising a mold and chill plate, said apparatus further comprising a furnace for receiving the mold disposed on the chill plate that is carried on a movable ram such that after being filled with melt, the mold can be withdrawn from the furnace to effect directional solidification of said melt, and having a thermocouple positioning device comprising:
a support bracket disposed on the ram for movement therewith, said bracket having an upstanding slide member and a slideway member disposed on said slide member for relative movement therebetween, said slideway member having a thermocouple holder thereon,
a stop member disposed in fixed position below the furnace,
said slideway member having a stop engaging member for engaging said stop member as the ram is raised to position the mold in the furnace, and
a thermocouple disposed on said slideway member for positioning in a temperature sensing position relative to said mold in said furnace by engagement between said stop member and said stop engaging member, said thermocouple remaining at said temperature sensing position by virtue of movement of said slide member relative to said slideway member as the mold is withdrawn from the furnace to effect directional solidification of said melt in said mold.



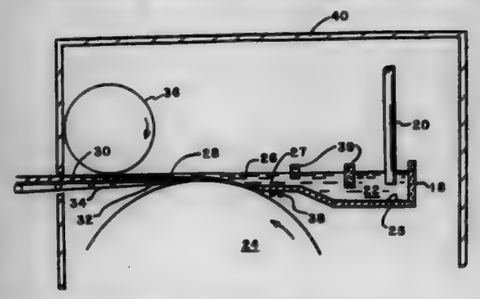
5,484,009

METHOD AND APPARATUS FOR DIRECT CASTING OF CONTINUOUS METAL STRIP

David B. Love, Natrona Heights; John D. Nauman, Pittsburgh, both of Pa., and Karl Schwaha, Linz, Austria, assignors to Allegheny Ludlum Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 147,497, Nov. 4, 1993, abandoned, which is a division of Ser. No. 876,885, Apr. 30, 1992, Pat. No. 5,293,926. This application Jun. 9, 1994, Ser. No. 257,497
Int. Cl.[6] B22D *11/06;11/124*
U.S. Cl. 164—429 **13 Claims**

1. An apparatus for directly casting molten metal to continuous strip of crystalline metal comprising:



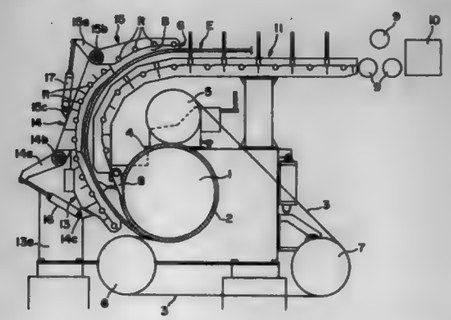
movable casting surface including a single surface of a cylindrical roll rotatable about its longitudinal axis aligned substantially horizontally to effect primary solidification cooling of the molten metal, the casting roll having a diameter of less than 24 inches;
casting vessel having a generally U-shaped exit end about as wide as the strip to be cast, the exit end being substantially horizontal in close proximity to the casting roll surface;
means for controlling the supply of molten metal to the casting vessel;
means for maintaining substantially uniform flow and temperature and free upper surface of molten metal at the exit end and for maintaining molten metal level near the crest of the casting roll;
means located near the crest of the casting roll for separating a semi-solid cast strip having a non-solid upper surface from near the crest of the casting roll surface substantially horizontally as the casting surface moves generally upwardly past the exit end of the casting vessel;
means for providing secondary cooling of removed semisolid cast strip to complete solidification, the means including a rotating wheel after the separating means for contacting the upper surface of the separated strip; and
means after the separator means for transporting the removed semi-solid strip from the separator means with substantially no net forces on the strip during completion of strip solidification.

5,484,010

DEVICE FOR GUIDING A CAST BAR FROM THE OUTPUT OF A CASTING WHEEL TO THE INPUT OF A ROLLING MILL

AndréRouzeval, Conflans-Ste-Honorine, and Christian Viel, Houilles, both of, France, assignors to Clecim, Cergy Pontoise, France

Filed Oct. 18, 1993, Ser. No. 137,421
Claims priority, application France, Jan. 26, 1992, 92 12755
Int. Cl.[6] B22D *11/06;11/128*
U.S. Cl. 164—433 **6 Claims**



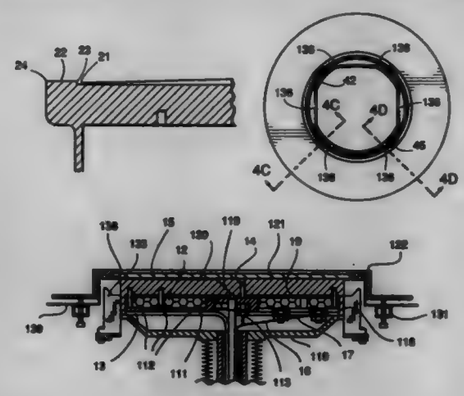
1. In a casting installation including a casting wheel (1) driven in rotation and comprising a peripheral groove (2) associated with a strip (3) covering a part of said periphery of said casting wheel between means (4) for pouring a molten metal forming a cast strand in said groove (2) and means (8) for extracting said cast strand (E), and a support table (11) for supporting said strand (E) up to a processing installation (12), said support table comprising a first portion (11*a*) partially surrounding said casting wheel (1) from said extraction means (8) and connecting tangentially to a second portion (11*b*) of said support table extending toward said processing installation (12) in a substantially straight direction,
the improvement comprising:
a guiding device for guiding a cast bar or strand continuously produced in said casting installation between said casting wheel and a strand processing installation, said guiding device comprising outer guiding means (13, 14, 15) with said first portion (11*a*) of said support table (11) associated for guiding and progressively bending said strand (E) as it advances, said outer guiding means comprising at least two successive guide tables, namely, a first table (13) fixed substantially parallel to a path taken by said strand (E) immediately after it has been extracted from said casting wheel (1), and at least one movable table (14) placed in a prolongation of said fixed table (13) and having an upstream end and a downstream end, said at least one movable table (14) being associated with means for adjusting its angular position between at least two positions in relation to said fixed table (13), namely, an open position in which said downstream end of said at least one movable table (14) is located substantially on the path taken by an upstream section of said strand (E) after it leaves said fixed table (13), and a closed position in which said upstream end of said at least one movable table (14) connects tangentially to a downstream end of said fixed table to jointly form together a curved outer guide surface connecting tangentially to the direction of said second portion (11*b*) of said support table (11), said at least two guide tables (13, 14, 15) defining, in their closed position and with said first portion (11*a*) of said support table (11), respectively, an outer face and an inner face of a closed channel (G) for guiding said strand (E) toward said second portion (11*b*) of said support table (11).

5,484,011

METHOD OF HEATING AND COOLING A WAFER DURING SEMICONDUCTOR PROCESSING

Avi Tepman, Cupertino; Howard Grunes, Santa Cruz, and Dana Andrews, Mountain View, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

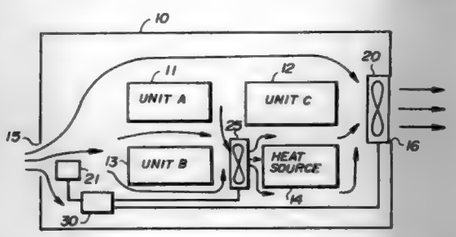
Continuation of Ser. No. 109,207, Aug. 19, 1993, abandoned, which is a continuation of Ser. No. 1,994, Jan. 8, 1993, abandoned, which is a division of Ser. No. 939,542, Sep. 2, 1992, Pat. No. 5,228,501, which is a continuation of Ser. No. 513,318, Apr. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 760,848, Sep. 17, 1991, Pat. No. 5,215,619, which is a continuation of Ser. No. 595,793, Oct. 9, 1990, abandoned, which is a continuation of Ser. No. 411,189, Sep. 20, 1989, abandoned, which is a continuation of Ser. No. 343,035, Apr. 25, 1989, abandoned, which is a continuation of Ser. No. 185,215, Apr. 25, 1988, Pat. No. 4,842,683, which is a continuation of Ser. No. 147,594, Jan. 22, 1988, abandoned, which is a continuation of Ser. No. 944,843, Dec. 19, 1986, abandoned. This application Aug. 12, 1994, Ser. No. 289,989
Int. Cl.[6] H01L *21/02*
U.S. Cl. 165—1 **8 Claims**



1. A method of transferring heat to or from a wafer during processing in a vacuum chamber, said method comprising the steps of:

a) clamping the wafer to a platen having a domed surface that is encircled by an annular lip that is recessed relative to an inner portion of the domed surface and protrudes relative to an outer portion of the domed surface such that said wafer when not clamped against said annular lip can be supported on the domed surface without making contact with the annular lip;
b) producing in a volume between the wafer and the domed surface of the platen a gas poressure high enough to bow the wafer such that a substantially constant gap is produced between the wafer and the platen, whereby a gas flow path is produced having a reduced resistance to gas flow, thereby enabling cooling or heating of the wafer by convection.

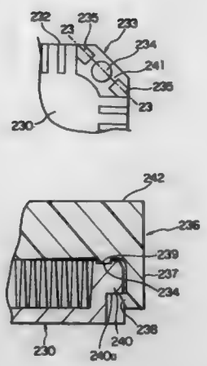
5,484,012
ELECTRONIC APPARATUS HAVING COOLING SYSTEM
Yoshiaki Hiratsuka, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Dec. 15, 1994, Ser. No. 356,580
Claims priority, application Japan, Mar. 15, 1994, 6-043580
Int. Cl.[6] B60H *1/00*; H05K *7/20*
U.S. Cl. 165—40 **13 Claims**



1. An electronic apparatus having a housing in which at least a heat source is housed, said housing being provided with an intake port and an exhaust port, the electronic apparatus comprising:
a first cooling fan mounted in the exhaust port;
a second cooling fan placed near said heat source;
a first control means for controlling a revolving speed of said first cooling fan; and
a second control means for controlling a revolving speed of said second cooling fan in a first mode when the revolving speed of said first cooling fan is less than a reference speed and in a second mode when the revolving speed of said first cooling fan is greater than the reference speed, the revolving speed of said second cooling fan controlled in the first mode being greater than the revolving speed of said second cooling fan controlled in the second mode.

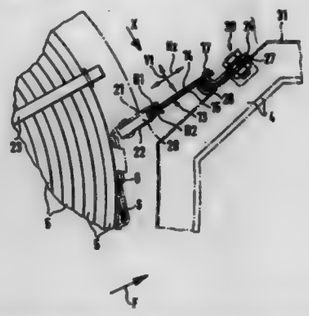
5,484,013
HEAT SINK FAN
Fumihiro Morikawa, Yonago, and Hiroaki Saeki, Sakaiminato, both of, Japan, assignors to Nippon Densan Corporation, Kyoto, Japan
Filed May 20, 1994, Ser. No. 246,796
Claims priority, application Japan, May 27, 1993, 5-151458; Jun. 24, 1993, 5-180658; Jul. 30, 1993, 5-045959; Nov. 24, 1993, 5-067643
Int. Cl.[6] F28F *7/00;13/12*
U.S. Cl. 165—80.3 **7 Claims**

1. A heat sink fan comprising:
a fan motor having blades;
a first casing having a plurality of corners and one surface and holding said fan motor at said one surface;
a second casing including a flat bottom portion having side edges, heat dissipating fins extending perpendicularly from said side edges, and corners defined between adjacent heat dissipating fins facing said one surface of said first casing; and



mechanically interlocking means for mechanically locking together said first and second casing; wherein
said first and second casings have centers; and
said mechanically interlocking means comprises extending portions at said corners of said first casing each having a pawl, and a projection formed thereon, and facing said corners of said second casing, stepped portions formed on said corners of said second casing for interengagement with said pawls on relative rotation of said casings, and depressions formed in said corners of said second casing for receiving said projections and for securing the casings against relative rotation and pawl-step disengagement.

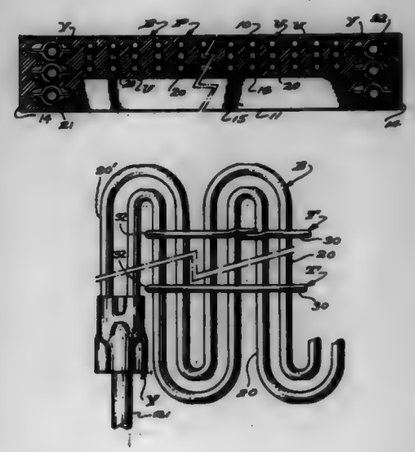
5,484,014
DEVICE FOR SEALING A GAP BETWEEN COMPONENTS OF GROUPS OF COMPONENTS
Karl Maier, Karlsfeld, Germany, assignor to MTU Motoren - Und Turbinen-Union Muenchen GmbH, Munich, Germany
PCT No. PCT/EP91/01725, § 371 Date May 11, 1993, § 102(e) Date May 11, 1993, PCT Pub. No. WO92/05377, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 11, 1991, Ser. No. 989,017
Claims priority, application Germany, Sep. 13, 1990, 40 29 010.7
Int. Cl.[6] F28F *9/22*; F28D *7/06*
U.S. Cl. 165—159 **14 Claims**



1. A device for sealing a gap between at least two components being subjected to mutual spatial movements, comprising:
a lamellar sealing member pivotally joined in a longitudinal direction of said gap to one of the at least two components, said lamellar sealing member being guided movably and sealingly in a groove of a clamping device extending in the longitudinal direction of said gap on the other component;
wherein said lamellar sealing member is formed of plate-like elements, said plate-like elements are arranged movably and fluid-tight in the longitudinal direction of said gap and are freely expandable;

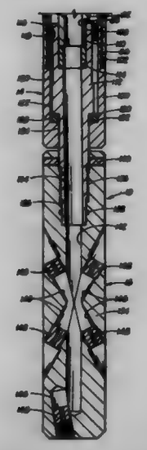
wherein said sealing member is urged against an elastically deformable seal being fixedly connected to the one component in the longitudinal direction of said gap;
wherein the groove of said clamping device includes opposingly facing curved jaws for movably and sealingly holding said sealing member with the plate-like elements therebetween on the other component; and
wherein at least a part of said clamping device with one of said curved jaws at the groove forms a spring-like wall member acting resiliently on said sealing member and allowing the sealing member to pivot.

5,484,015
COLD PLATE AND METHOD OF MAKING SAME
Melvin Kyees, 16732 Intrepid La., Huntington Beach, Calif. 92649
Filed Dec. 3, 1993, Ser. No. 160,815
Int. Cl.[6] F28F *3/12*; F25D *3/02*
U.S. Cl. 165—168 **13 Claims**



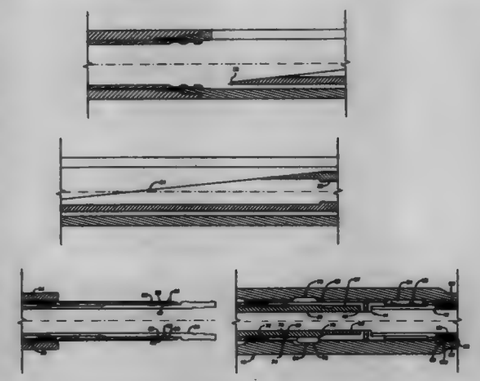
1. A cold plate including a cast aluminum body having vertically spaced horizontal top and lower surfaces and vertical outside surfaces about and between the perimeters of the top and lower surfaces; a plurality of like vertically stacked tubing units each including elongate inlet and outlet tubes with inner and outer end portions, an elongate horizontal sinuously formed heat transfer tube with inlet and outlet ends; couplings connecting the inlet and outlet ends of the heat transfer tube with the inner end portions of the inlet and outlet tubes; a plurality of spaced tie bars engaged with the stacked heat transfer tubes and having elongate upper and lower spacer portions extending transversely across and in vertical pressure engagement with the upper-most and lower-most heat transfer tubes and holding those tubes in substantial uniform pressure bearing and heat transfer engagement with each other; said plurality of like vertically stacked tubing units are positioned within the aluminum body with the outer end portions of the inlet and outlet tubes projecting freely outwardly therefrom and with the top and lower surfaces of the body on planes that are coincidental with the planes on which the upper and lower edges of the upper and lower spacer portions of the tie bars occur.

5,484,016
SLOW ROTATING MOLE APPARATUS
Jim B. Surjaatmadja, and Timothy W. Helton, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed May 27, 1994, Ser. No. 250,406
Int. Cl.[6] E21B *43/00*
U.S. Cl. 166—104 **20 Claims**



1. A jetting apparatus for use in removing material buildup from an inner surface, comprising:
a motor section adapted for providing rotation in response to a flow of fluid therethrough;
a speed reducer section defining a flow passage therethrough and connected to said motor section such that an output speed of said speed reducer section is less than an output speed of said motor; and
a jetting section attached to said speed reducer section and rotated thereby within said inner surface at said output speed of said speed reducer section, said jetting section defining a jetting port in communication with said flow passage through which said fluid is jetted.

5,484,017
WHIPSTOCK ASSEMBLY FOR A SLEEVED CASING
Robert J. Coon, Houston, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.
Filed Jan. 12, 1995, Ser. No. 371,868
Int. Cl.[6] E21B *7/08;23/00;34/14*
U.S. Cl. 166—117.5 **26 Claims**



1. An apparatus for creating sidetrack in a wellbore extending from a surface location, comprising:

a tubular housing insertable in the wellbore extending adjacent a point where the sidetrack is to commence, said housing further comprising:

a cover selectively movable over an opening formed in said tubular housing between a first position where said opening is covered and a second position where said opening is exposed;

a whipstock supported by said housing, said whipstock having a tapered guiding surface in alignment with said opening whereupon when said cover is selectively placed in said second position, a sidetrack can be drilled through said opening.

16. A whipstock mountable in a housing, comprising:

a housing comprising a shoulder;

said whipstock comprises at least one collet movable past said shoulder in a first direction but engaging said shoulder in a reversed second direction;

said collet is connected to a sleeve;

said whipstock further comprises at least one engagement dog retained against radially outward movement by said sleeve until said collet moves said sleeve to release said dog radially for engagement with said housing.

5,484,018

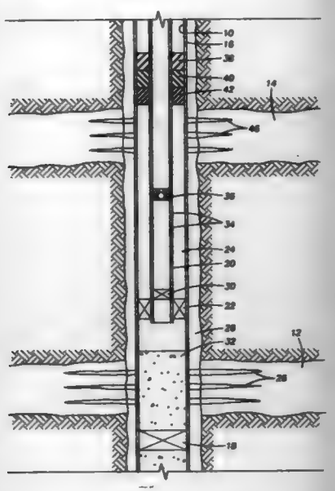
METHOD FOR ACCESSING BYPASSED PRODUCTION ZONES

Travis W. Cavender, Angleton, Tex., and Joseph R. Murphey, Duncan, Okla., assignors to Halliburton Company, Houston, Tex.

Filed Aug. 16, 1994, Ser. No. 291,302

Int. Cl.[6] E21B *43/14;33/16*

U.S. Cl. 166—291 **4 Claims**



4. A method for establishing production of oil or gas from a secondary production zone which is above a primary production zone in a well having a casing and a concentric production tubing with an annular space between the casing and the tubing, comprising

forming perforations in the tubing at a level below the secondary zone,

pumping a settable material downwardly through the tubing and through said perforations to the annular space above the secondary production zone,

allowing the settable material to set up, and

perforating the secondary zone with a through-tubing perforating gun prior to placing the settable material, and the settable material is pumped through the perforations to its position in the annular space.

5,484,019

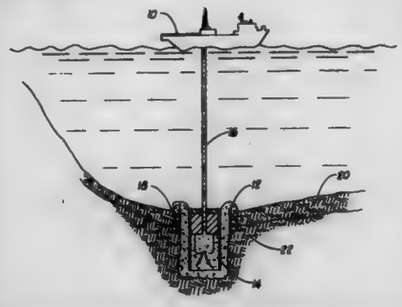
METHOD FOR CEMENTING IN A FORMATION SUBJECT TO WATER INFLUX

James E. Griffith, Loco, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Nov. 21, 1994, Ser. No. 343,058

Int. Cl.[6] E21B *33/14*

U.S. Cl. 166—293 **18 Claims**



1. A method for cementing a conductor pipe in a well bore in a seafloor in a water depth over 1000 feet comprising:

preparing a cementing slurry comprising a Portland cement having a Blaine Fineness less than about 3900 cm^2/gm, from about 1 to about 30 percent by weight of said Portland cement of a fine particle size cementitious material having a Blaine Fineness of no less than about 6000 cm^2/gm and a particle size no greater than about 30 microns, from about 0.4 to about 0.85 pounds of aqueous fluid per pound of said Portland cement, from about 1 to about 10 percent by volume of aqueous fluid of a foaming surfactant and sufficient nitrogen gas to foam said slurry;

introducing said slurry into said conductor pipe whereby it is caused to flow through said pipe and return from the lower end thereof through an annulus present between said pipe and said well bore to the surface of said seafloor; and

maintaining said slurry in said annulus for a sufficient time to enable said slurry to form a rigid cement sheath whereby influx of fluids into said well bore is prevented.

5,484,020

REMEDIAL WELLBORE SEALING WITH UNSATURATED MONOMER SYSTEM

Kenneth M. Cowan, Sugar Land, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 25, 1994, Ser. No. 233,150

Int. Cl.[6] E21B *33/13*

U.S. Cl. 166—295 **17 Claims**

1. A method for remedial cementing comprising:

injecting a water-soluble composition comprising a monomeric component having polymerizable unsaturated groups into a cemented annulus between a pipe and a wellbore.

5,484,021

METHOD AND APPARATUS FOR FORMING A WINDOW IN A SUBSURFACE WELL CONDUIT

Charles D. Hailey, 11628 Burning Oaks, Oklahoma City, Okla. 73150

Filed Nov. 8, 1994, Ser. No. 335,585

Int. Cl.[6] E21B *7/08;29/06;17/05*

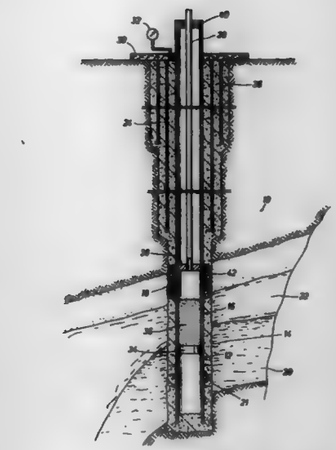
U.S. Cl. 166—297 **11 Claims**

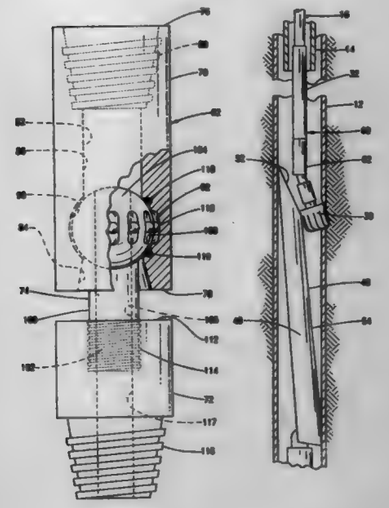
1. A milling assembly for forming a window in a subsurface well conduit, comprising:

a mill;

a motor; and

a joint comprising:





a first end member having a first end adapted for connection to the motor and a second end;

a second end member having a first end adapted for connection to the mill and a second end;

a joint assembly for connecting the second ends of the first and second end members, the joint assembly characterized as permitting angular movement relative to the longitudinal axis of the joint but preventing rotational movement of the mill relative to the motor;

wherein the first end member, the connecting member, the second end member and the joint assembly define a continuous longitudinal passage for fluid flow therethrough between the mill and the motor.

2. A method for forming a window in a subsurface well conduit, comprising the steps of:

setting a whipstock inside the conduit at a selected location, the whipstock characterized by a two stage guide surface;

lowering a jointed milling assembly into the conduit above the whipstock using coiled tubing;

further advancing the jointed milling assembly until the mill impinges on the first stage of the whipstock's guide surface bending the joint of the jointed milling assembly and directing the mill at the conduit;

continuing to advance the jointed milling assembly along the guide surface of the whipstock until the mill reaches the second stage of the guide surface and the joint straightens; and

continuing to advance a milling assembly until the formation of the window is completed.

5,484,022

TUBING TEST VALVE

Graeme F. Coutts, and Jeffrey C. Edwards, both of Scotland, United Kingdom, assignors to Exploration & Production Services (North Sea) Ltd., United Kingdom

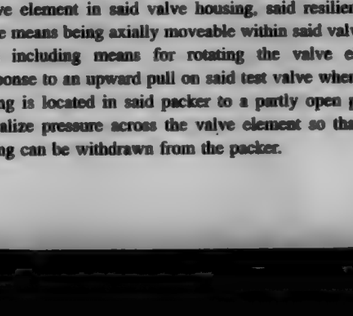
PCT No. PCT/GB92/01351, § 371 Date Mar. 25, 1994, § 102(e) Date Mar. 25, 1994, PCT Pub. No. WO/9303255, PCT Pub. Date Feb. 18, 1993

PCT Filed Jul. 23, 1992, Ser. No. 190,854

Claims priority, application United Kingdom, Aug. 8, 1991, 9117119

Int. Cl.[6] E21B *34/10*

U.S. Cl. 166—336 **26 Claims**



1. A tubing nest valve for use in a drill string insertable into a permanent packer of a well during well running-in operations, said tubing test valve comprising:

a valve housing;

a rotatable valve element disclosed in the valve housing, said rotatable valve element being rotatable and axially movable along the longitudinal axis of the valve housing;

a valve seat disposed in the valve housing for engagement with the valve element;

valve element positioning means for positioning the valve element axially above the valve seat during running-in a well, and for positioning the valve element to engage the valve seat when the tubing test valve is stationary in the well to allow pressure testing of components above the valve element, and

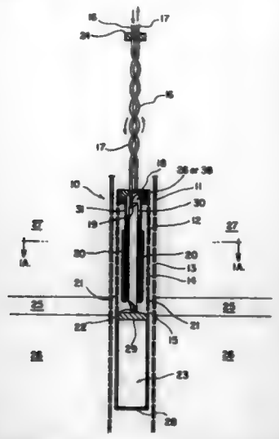
resiliently-biased valve cage means for supporting said rotatable valve element in said valve housing, said resiliently-biased cage means being axially moveable within said valve housing and including means for rotating the valve element in response to an upward pull on said test valve when said drill string is located in said packer to a partly open position to equalize pressure across the valve element so that the drill string can be withdrawn from the packer.

5,484,023

FLOATING LAYER RECOVERY APPARATUS

James H. Shippee, P.O. Box 47, Vernon, Vt. 05354-0047

Filed Oct. 18, 1994, Ser. No. 324,966
Int. Cl.[6] E21B *43/00*
U.S. Cl. 166—369 12 Claims



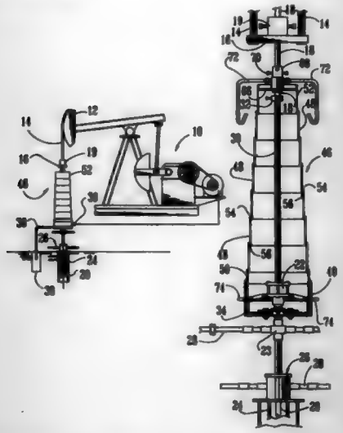
1. A floating liquid layer detection and recovery system comprising a floating assembly adapted to float in a well adjacent an upper surface of groundwater having a floating liquid layer thereon; a first tank adapted to be disposed in the well above said floating assembly and first syphon means interconnecting said floating assembly and said first tank to raise the floating liquid from the layer on the groundwater to said first tank.

5,484,024

OILWELL SPILL CONTAINMENT

Douglas Ladd, 2536 Mary Ellen St, Pampa, Tex. 79065-3807, and John K. Quirk, P.O. Box 1277, Fritch, Tex. 79036

Filed Jan. 3, 1995, Ser. No. 368,035
Int. Cl.[6] E21B *33/08*
U.S. Cl. 166—369 16 Claims



1. The method of protecting an area surrounding a wellhead from environmental damage resulting from liquid discharge from an oil well comprising:

a) attaching a top end of an expandable covering to a polish rod above the polish rod liner clamp;

b) attaching a bottom end of the expandable covering to a containment basin, said basin surrounding a stuffing box; and

c) expanding and contracting the expandable covering as the polish rod is reciprocated, and

d) servicing the stuffing box by

e) detaching the bottom end of the expandable cover from the basin, and

f) moving the bottom end of the expandable covering while the top end is still attached to a polish rod.

4. A leak container for an oil well using a polished rod liner connected by a polished rod liner clamp to a polished rod which passes through a stuffing box comprising:

a) a basin connected to the oil well around the stuffing box on a wellhead;

b) an expandable covering having a bottom end and a top end,

c) said bottom end of the expandable covering connected to the basin;

d) a cover top supporting the top end of the expandable covering,

e) a cover clamp supporting the cover top, said cover clamp attached to the polished rod above the polished rod liner clamp,

f) the expandable covering connects to the basin by means for easy removal of the expandable covering from the basin, and

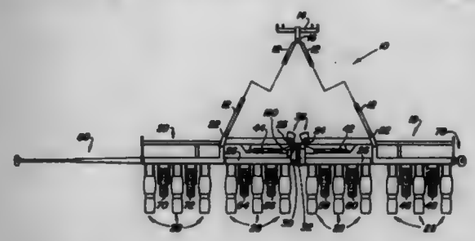
g) means for moving the expandable covering to provide access to the stuffing box.

5,484,025

LOCKING ROW MARKER HYDRAULIC CYLINDERS IN RETRACTED TRANSPORT CONDITION

Donald K. Landphair, Bettendorf, Iowa, and Gary D. Luxon, Moline, Ill., assignors to Deere & Company, Moline, Ill.

Filed Jun. 23, 1994, Ser. No. 264,410
Int. Cl.[6] A01B *73/02*
U.S. Cl. 172—311 7 Claims



1. A foldable agricultural implement frame having an extending working configuration and a folded transport configuration, the implement frame comprising:

a wing section;

a center section pivotally coupled to the wing section by a fold pivot;

a row marker mounted to the wing section, the row marker having an extended marking position and a retracted transport position;

a row marker hydraulic cylinder which is hydraulically coupled to a row marker hydraulic circuit for extending and retracting the row marker, the row marker hydraulic circuit is provided with first and second supply/return lines with the first supply/return line being provided with a first latching valve and the second supply/return line being provided with a second latching valve,

the first latching valve for controlling the flow of hydraulic fluid to the row marker hydraulic circuit, the first latching valve having a flow position and a checked position, the first and second latching valves are mounted to the center section and is provided with a control lever arm;

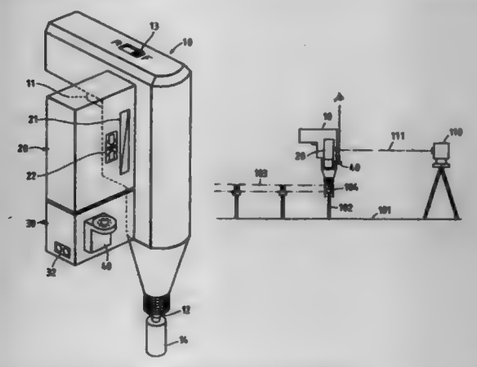
a mechanical linkage extending between the center section and the wing section and being coupled to the control lever arm, the mechanical linkage comprises a rod that is coupled to the first and second latching valves and the wing section, the first and second latching valves are shifted by the mechanical linkage, the mechanical linkage shifts the first latching valve from the flow position to the checked position as the implement frame is folded from its working configuration to its transport configuration and shifts the first latching valve from its checked position to its flow position as the implement frame is unfolded from its transport configuration to its working configuration.

5,484,026

HANDHELD ELECTROMOTIVE TOOL WITH SENSOR

Toshikazu Susaki, Kawasaki, and Kyoji Nakamura, Yokosuka, both of, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Sep. 3, 1993, Ser. No. 115,569
Int. Cl.[6] B25B *21/00*; G01C *5/00;9/00*
U.S. Cl. 173—4 7 Claims



1. A handheld electromotive tool, comprising:

a rotation shaft;

an electric motor to drive said rotation shaft;

a work member provided around said rotation shaft to work an object;

a housing supporting said work member and holdable by an operator;

a position transducer means including a photo detector stationary with respect to said housing, which receives a radiation beam projected in a reference plane and generates output signals indicating positional deviation of said photo detector from said reference plane; and

control means for controlling the rotation speed of said motor according to said position transducer means,

wherein said control means controls the motor to stop rotation of the motor when the radiation beam is received at a reference position of the photo detector, to rotate the motor at high speed until the radiation beam is received in the vicinity of said reference position, and to rotate the motor at low speed from the time the radiation beam is received in the vicinity of the reference position to the time the radiation beam is received at the reference position.

5,484,027

ICE PENETRATING HOT POINT

Robert T. Greenlaw, Westerly, R.I., and Jeffrey S. Kornblith, Mystic, Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 1, 1987, Ser. No. 75,692
Int. Cl.[6] F25C *5/04*
U.S. Cl. 175—18 5 Claims

1. An ice penetrating device comprising:

a cone having spiral grooves on its outer surface;

a pair of terminal leads adjusted to receive a voltage;

an electrical wire having a substantial resistance spirally wrapped around said cone with said wire inserted in said spiral grooves of said cone, said wire being connected across said pair of terminal leads and said wire adapted to receive a voltage across it for dissipating heat;

a conical shroud placed over said cone; and

a high thermal conductivity dielectric located between said cone and said conical shroud.



5,484,028

METHOD OF DRILLING WITH FLUID INCLUDING NUT CORK AND DRILLING FLUID ADDITIVE

Ron A. Rose, Lufkin, Tex., assignor to Grinding & Sizing Co., Inc., Houston, Tex.

Filed Aug. 18, 1994, Ser. No. 292,258
Int. Cl.[6] E21B *7/00*; C09K *7/06*
U.S. Cl. 175—72 20 Claims

1. A method of carrying out drilling operations wherein a drilling fluid is circulated in a well being drilled in the ground comprising the steps of:

obtaining and grinding nut cork to a powder form,

adding said ground nut cork to a drilling fluid, and

circulating said drilling fluid, with said ground nut cork added thereto, in said well while drilling operations are being carried out.

5,484,029

STEERABLE DRILLING TOOL AND SYSTEM

Alan M. Eddison, Drumlithie, United Kingdom, assignor to Schlumberger Technology Corporation, Sugar Land, Tex.

Filed Aug. 5, 1994, Ser. No. 286,291
Int. Cl.[6] E21B *7/00*
U.S. Cl. 175—73 20 Claims

1. A rotary directional drilling tool apparatus, comprising: a drive shaft having a drill bit on one end thereof, said shaft and bit having a first axis of rotation; a tubular housing having a second axis of rotation and adapted to be rotated by a drill string; universal joint means for mounting said drive shaft on said housing and transmitting torque from said housing to said drive shaft and bit; and gravity responsive means for holding said first axis so thnt said bit faces in one direction in space during rotation of said housing about said second axis.

5,484,030

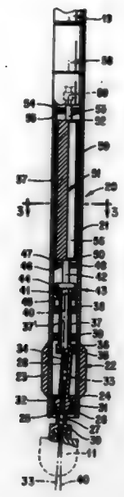
INDEPENDENTLY-POWDERED BUMPER CART

John V. Glenn, 401 W. Main St., Heber Springs, Ark. 72543

Filed Aug. 5, 1994, Ser. No. 286,632
Int. Cl.[6] B62D *1/02*; B60K *17/30*
U.S. Cl. 180—6.2 7 Claims

1. A bumper cart, comprising:

a chassis comprising a top and a bottom, a right side, a left side, a front and a back, a centrally-located first hole through the top and the bottom and a second hole through the top and the bottom;



holes in the two prongs of the drive wheel fork and rotatable in a plane between the opposing prongs of the drive wheel fork;

a transmission element with a first shaft extending up through the hollow shaft of the drive wheel fork, a bearing affixed in the center of the top of the hollow shaft of the drive wheel fork and a rigidly attached second pulley and with a second shaft extending through a rigidly attached upper drive chain sprocket;

a drive belt surrounding the first pulley and the second pulley;

a steering wheel attached at the center to a steering shaft extending perpendicularly from the rotational plane of the steering wheel and with the steering shaft extending through a steering wheel shaft channel extending through the second hole of the chassis and rigidly attached inside the second hole of the platform, and through an attached steering wheel sprocket;

a steering chain engaging the steering wheel sprocket and the drive wheel steering sprocket attached to the hollow shaft of the drive wheel fork;

a safety restraint; and

a plurality of supports.

5,484,031

LEG STRUCTURE FOR WALKING ROBOT

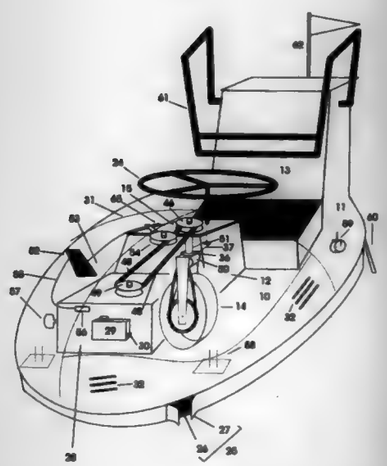
Noriho Koyachi, Tsukuba; Hironori Adachi, Tsuchiura, and Tatsuo Arai, Tsukuba, all of, Japan, assignors to Agency of Industrial Science and Technology, and Ministry of International Trade and Industry, both of Tokyo, Japan

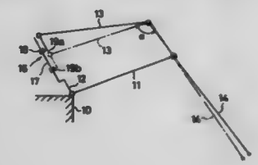
Filed Sep. 30, 1994, Ser. No. 314,284

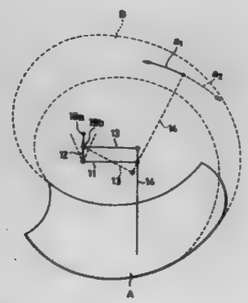
Claims priority, application Japan, Sep. 30, 1993, 5-268176

Int. Cl.[6] B62D *57/02*

U.S. Cl. 180—8.1 **2 Claims**







a platform attached to the chassis with a first hole aligned with the first hole of the chassis and a second hole aligned with the second hole in the chassis;

a bumper element surrounding the front, the back, the right side and the left side of the chassis;

a seat on the top of the chassis at the back;

a motor having a rotating shaft and a throttle with said motor affixed to the top of the chassis, a first pulley affixed to the rotating shaft and the throttle connected to a control device;

a drive wheel fork having a shoulder plate with a hole and two opposing prongs on one end and a hollow shaft aligned with the hole on an opposing end, with each prong having an axle hole near the end of the prong so that the axle holes are aligned equidistant from the ends of the prongs;

the hollow shaft of the drive wheel fork having a top at the opposing end of the drive wheel fork from the prongs, and extending through a center of a rigidly attached drive wheel steering sprocket rigidly attached to the shoulder plate up through a drive wheel shaft channel positioned in the first hole in the chassis and through the first hole of the platform and affixed to said platform, and further extending through a plurality of bushings to keep said hollow shaft centered in said drive wheel shaft channel;

a traction wheel and a concentrically-mounted lower drive chain sprocket rigidly attached to an axle extending through the axle

1. A leg structure for a walking robot having a robot body, the leg structure comprising:

a first input link having a distal end and rotatably attached to the robot body;

a second input link having two ends and rotatably attached to the robot body at the same location as the first input link to form a preacribed angle relative to the first input link;

a connecting link having two ends and connected at one of the two ends with the second input link;

an output link having two ends, the output link being connected at one of the two ends with the other of the two ends of the connecting link and connected at an intermediate point thereof with the distal end of the first input link, the first input link, the second input link, the connecting link and the output link

forming a parallelogrammatic shape with an angle of not more than 180° at the connection between the connecting link and the output link when serving as legs of the robot and, when the first input link, the second input link, the connecting link and the output link serve as arms of the robot, the connecting link and the output link form an angle of not less than 180° at the connection therebetween, with the connection between the connecting link and the output link being located below the first input link; and

adjusting means for adjusting the distance between the robot body and a point of connection between the second input link and the connecting link.

5,484,032

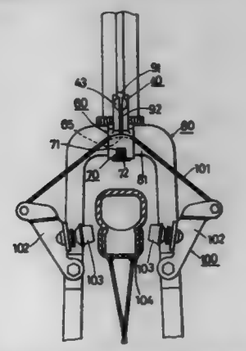
HANGER DEVICE TO BE USED IN A BICYCLE BRAKE ASSEMBLY

Jung-Hua Li, Chang-Hua, Taiwan, Prov. of China, assignor to Ah-Pin Lin, Chang-Hua, Taiwan, Prov. of China

Filed May 16, 1995, Ser. No. 441,798

Int. Cl.[6] B62L *1/00;1/12*

U.S. Cl. 188—24.21 **7 Claims**



1. A hanger device for interconnecting a pull cable and a yoke cable in a bicycle brake assembly, said hanger device comprising:

a vertical guide rod adapted to be mounted to a fork portion of a bicycle frame; and

a slidable member mounted slidably on said guide rod and adapted to be connected to the pull cable, said slidable member being formed with a transverse receiving groove that is adapted to receive an intermediate portion of the yoke cable therein.

5,484,033

DRIVE ASSEMBLY

Michael Frank, Köln; Eugen Stall, Neunkirchen-Seelscheid, and Robert Rickell, Siegburg, all of, Germany, assignors to GKN Automotive AG, Siegburg, Germany

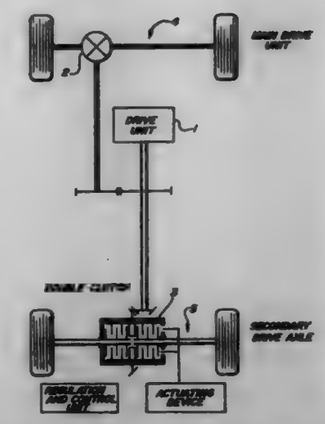
Continuation of Ser. No. 717,634, Jun. 19, 1991, abandoned. This application Dec. 2, 1993, Ser. No. 161,981

Claims priority, application Germany, Jul. 7, 1990, 40 21 747.7

Int. Cl.[6] B60K *17/35*

U.S. Cl. 180—245 **2 Claims**

1. A drive assembly for a motor vehicle, having two drivable axles, a first axle being driven permanently by a drive unit and at least a second axle being connectable via only a double friction coupling assembly so as to be externally controllable, with the double friction coupling assembly comprising a common drivable coupling carrier with outer plates and individual sets of inner plates each connected to first and second axle shafts of the second driving axle and said outer and inner plates are friction plates, such that only when said friction plates are locked together are said shafts enabled to be driven by said carrier, characterised in that the



double coupling is actuated by a common actuating device, thereby permitting both sets of friction plates of the double friction coupling to be loaded by the same amount of actuation forces with the first and second axle shafts being disengaged from said first axle and from each other when said double-coupling is in a non-actuated state; and

said actuating device for the double coupling comprising a mechanical expanding mechanism which, in turn, comprises two expanding discs which are rotatable relative to each other and which are provided with rolling members which run in rolling member guide tracks rising in opposite directions and which, upon rotation of one of the expanding discs cause an axial forward movement of the expanding disc acting on the sets of plates.

5,484,034

MOTOR VEHICLE AND PROCESS FOR PRODUCTION THEREOF

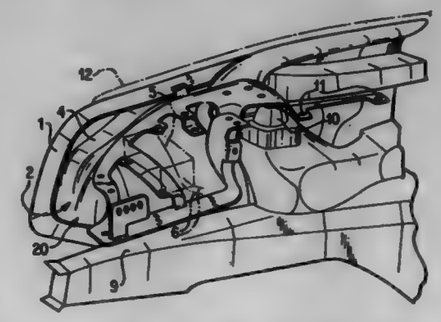
Erwin Benz, Gechingen; Gerhard Burk, Sindelfingen; Norbert Schwachow; Werner Trost, and Martin Deibler, Esslingen, all of, Germany, assignors to Mercedes-Benz AG, Germany

Filed Dec. 27, 1994, Ser. No. 364,199

Claims priority, application Germany, Dec. 24, 1993, 43 44 811.0

Int. Cl.[6] B62D *25/08;21/00*

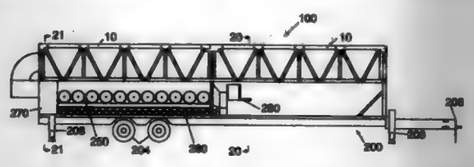
U.S. Cl. 180—312 **17 Claims**



1. A motor vehicle, comprising a bearer part arranged in an engine compartment and fastenable at least indirectly to supporting structural parts of a front part of the vehicle, and pre-assemblable additional units having connecting lines laid within the engine compartment, wherein the supporting structural parts are formed by a supporting frame having at least one perforation, such that the bearer part is fastened in a region of a vehicle wheel housing, the at least one perforation is arranged so as to be closed subsequently

after the mounting of the bearer part equipped with the additional units and the connecting lines, by way of a cover plate attachable on the outside thereof.

5,484,035
TRAILER AND ENVIRONMENTALLY SAFE WORK PLATFORM SYSTEM
Robert J. Wildner, R.D. 2, Box 347A, Johnstown, Pa. 15904
Continuation-in-part of Ser. No. 172,925, Dec. 27, 1993, Pat. No. 5,417,301. This application Nov. 14, 1994, Ser. No. 340,306
Int. Cl.[6] E04G *1/22*
U.S. Cl. 182—63 **26 Claims**



1. A trailer for use with a work platform assembly, said trailer for transporting and vertically repositioning the work platform assembly to the underside of a deck, the work platform assembly providing support for worker access to, and the treatment of, surfaces of supporting structures of the deck, the work platform assembly having an assembly frame having a forward portion and a rearward portion, a trough extending longitudinally of the work platform assembly for collecting particulate material at a bottom thereof, grating positioned atop the trough for supporting a worker thereon and allowing particulate material to pass therethrough into the trough, a conveyor for discharging the particulate material from the trough inlet means for introducing air into the work platform assembly from the outside environment and an exhaust port for applying vacuum therethrough to the work platform assembly and exhausting the air therefrom, so as to cause airborne portions of residue to be entrained in an air current extending from the inlet means to the exhaust port, and a forward and a rearward lifting interface for interfacing with and attachment to said trailer, the forward lifting interface located adjacent the forward portion of the assembly frame and the rearward lifting interface located adjacent the rearward portion of the assembly frame; said trailer comprising:

a substantially horizontal trailer bed having a forward portion and a rearward portion;

wheels for rollingly supporting the trailer bed on a supporting surface;

front and rear lifting assemblies, said front lifting assembly being fixedly attached to the forward portion of the trailer bed and said rear lifting assembly being fixedly attached to the rearward portion of the trailer bed;

each said lifting assembly including a lifting frame and at least one lifting cylinder, said lifting frame of the front lifting assembly intended for supporting the forward portion of the assembly frame of the work platform assembly, said lifting frame of the rear lifting assembly intended for supporting the rearward portion of the assembly frame of the work platform assembly;

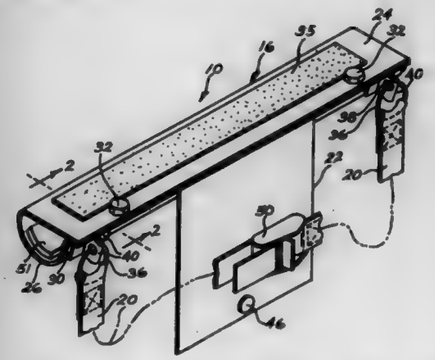
front and rear fastening means, said front fastening means intended for removably attaching the forward lifting interface of the work platform assembly to the lifting frame of the front lifting assembly, said rear fastening means intended for removably attaching the rearward lifting interface of the work platform assembly to the lifting frame of the rear lifting assembly;

each said lifting cylinder having a lower end structurally coupled to said trailer body and an upper end structurally attached to its respective lifting frame, each said lifting cylinder being substantially vertically oriented;

fluid control means operatively coupled to the lifting cylinders for controlling the flow of fluid to and from the lifting cylinders, and thereby causing the lifting cylinders to extend or retract, wherein the extension and retraction of the lifting cylinders move the lifting frames and the work platform assembly substantially vertically with respect to the trailer bed; and

a dust collection system having a vacuum fan and a conduit for connecting the exhaust port to said vacuum fan; said dust collection system being attached to said trailer bed.

5,484,036
SAFETY DEVICE FOR LADDERS
Terry D. Cothern, P.O. Box 77, Boston, Ky. 40107
Filed May 13, 1994, Ser. No. 242,350
Int. Cl.[6] E06C *1/00*
U.S. Cl. 182—107 **14 Claims**



1. A safety device for holding a ladder in a stable position relative to a structure against which said ladder is operatively placed comprising

a rigid body adapted to surround a rung of a ladder,

means for securing the legs of said ladder against a linear surface when said ladder is disposed in an operative position against said surface, said securing means comprising a pair of flexible straps attached on corresponding ends thereof to opposite end portions of said body, and

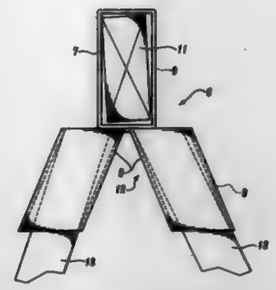
flexible sheet means attached to said body for selectively confining said straps in a stored condition against said body when said straps are not being used to connect a ladder to a structure against which said ladder is placed.

5,484,037
SAWHORSE CONNECTOR
Arthur F. Neumarkel, 706 10th St., Mukilteo, Wash. 98275
Filed May 23, 1994, Ser. No. 206,407
Int. Cl.[6] F16M *11/00*
U.S. Cl. 182—185 **4 Claims**

1. A connector for use in assembling a sawhorse having an elongated cross member and at least first and second elongate leg members, the connector comprising:

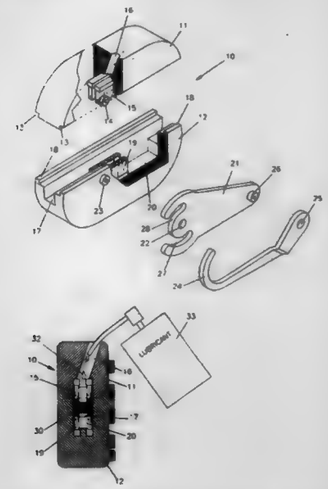
a rectangular tubular center sleeve defining a flat bottom wall and an interior passage having a longitudinal axis, the interior passage capable of receiving an end of the cross member; and

first and second rectangular tubular sockets, each socket defining an interior passage having a longitudinal axis, an oblique upper end and an oblique lower end defining an aperture, the first and second sockets secured in opposing angular disposition centrally below the center sleeve so that the longitudinal axes of the first and second sockets are disposed radially relative to the longitudinal axis of the center sleeve, with the oblique upper ends of the first and second tubular sockets abutting and being secured to the flat bottom wall of the center sleeve and extending on either side beyond the bottom



wall of the center sleeve, each of the first and second sockets capable of receiving an end of one of the first and second leg members, respectively, within the lower end apertures, so that the received ends of the first and second leg members bear against the bottom wall of the center sleeve.

5,484,038
BICYCLE CHAIN LUBRICATING DEVICE
Mark M. Rowell, 38 Alviso Ct., Pacifica, Calif. 94044
Filed Mar. 30, 1995, Ser. No. 413,801
Int. Cl.[6] B61K *3/00*
U.S. Cl. 184—15.1 **11 Claims**



8. A bicycle chain lubricating device for lubricating a bicycle chain mounted on a bicycle, comprising:

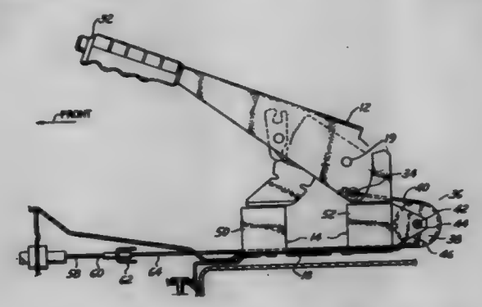
a housing having an elongated channel extending therethrough, said channel being sized to slidably receive a portion of said bicycle chain, said housing comprising separable upper and lower housings,

a porous oil-holding device mounted within said channel for contacting said chain when said chain is introduced into said channel,

anchoring means for anchoring said housing to said bicycle, and

a lubricant hole extending between an exterior surface of said housing and said channel for directing a lubricant introduced thereinto onto said porous oil-holding device, so that when said bicycle chain is slidably moved through said channel, said porous oil-holding device distributes said lubricant along said bicycle chain, and said anchoring means maintains said housing in a stationary position while said bicycle chain is moved therethrough, and locking means for locking said upper and lower housings together, said locking means comprising a pin extending from said upper housing, and a locking arm pivotally attached to said lower housing, said locking arm including an open ended curved slot, so that said locking arm is rotatable to position said curved slot around said pin.

5,484,039
FORCE REVERSING AND TRANSMITTING APPARATUS FOR A PARKING BRAKE SYSTEM
Robert W. Singleton, Geelong, Australia, and Donald R. McCann, Farmington Hills, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Sep. 12, 1994, Ser. No. 304,323
Int. Cl.[6] B60T *1/00*
U.S. Cl. 188—2 D **6 Claims**



1. A parking brake apparatus for use in a motor vehicle having a pivotable manual brake actuator for generating a rearwardly directed output force and a right rear wheel brake and a left rear wheel brake, said parking brake apparatus comprising:

an equalizer;

cable means operatively connecting said brake actuator to said wheel brakes wherein said cable means comprises:

a first cable operatively interconnecting said right rear wheel brake to said equalizer;

a second cable operatively interconnecting said left rear wheel brake to said equalizer;

a third cable interconnecting said equalizer to said brake actuator;

a first bracket portion for mounting said brake actuator a predetermined distance above a floor member;

a second bracket portion for mounting said brake actuator to said floor member a predetermined distance above said floor member and forming a rearwardly extending cantilever arm; and

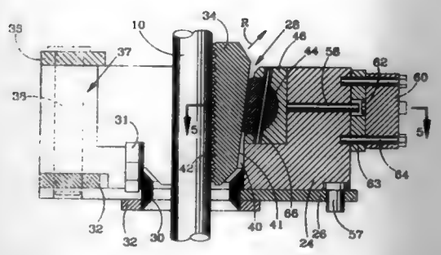
a pulley disposed on said cantilever arm, said pulley being adapted for reversing the direction of the rearwardly directed tensile force from the brake actuator and transmitting a forwardly directed tensile force to said wheel brakes.

5,484,040
SLIP-TYPE GRIPPING ASSEMBLY
Dennis J. Penisson, 319 Willow St., Raceland, La. 70394
Continuation of Ser. No. 994,640, Dec. 22, 1992, Pat. No. 5,335,756. This application Aug. 9, 1994, Ser. No. 288,082
The portion of the term of this patent subsequent to Aug. 7, 2011, has been disclaimed.
Int. Cl.[6] E21B *19/10*
U.S. Cl. 188—67 **14 Claims**

1. A slip-type gripping assembly for gripping a tubular member having a substantially vertical axis, comprising:

an outer body defining a longitudinal through opening for receiving the tubular member;

a plurality of slip bodies each generally disposed within the outer body and circumferentially spaced about the through



opening, each slip body having gripping teeth on a radially inner surface thereof for gripping engagement with the tubular member, each slip body having an upper portion, a lower portion, a left side, and a right side, each slip body further including a longitudinal inclined camming surface for radial movement of the slip body with respect to the outer body in response to longitudinal movement of the slip body with respect to the outer body for gripping engagement of the slip body with the tubular member; and

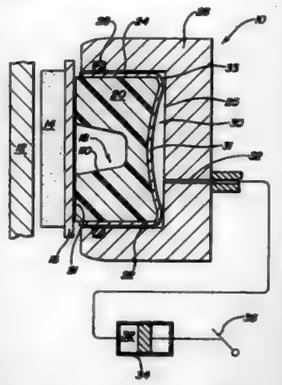
a pivot mechanism for pivoting each of a plurality of slip bodies with respect to the outer body both within a vertical plane and about a respective tangential axis for radial movement of the upper portion of the slip body with respect to the lower portion of the slip body, and simultaneously within a horizontal plane and about a respective longitudinal axis for radial movement of the left side of the slip body with respect to the right side of the slip body, such that each slip body pivots for uniform engagement of the gripping teeth with the tubular member.

5,484,041

COMPOSITE BRAKE PISTON WITH INTERNAL CUSHION AND STOP

Patrick M. Cadaret, Waterford, Mich., and Joseph F. Dernovshek, Rock Hill, S.C., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 120,100, Sep. 10, 1993, abandoned.
This application May 22, 1995, Ser. No. 447,286
Int. Cl.[6] F16D *65/38*
U.S. Cl. 188—73.37 **12 Claims**



1. A disc brake system for a vehicle, said system having a rotor, brake pad means, a caliper and a piston positioned in a bore in said caliper, said piston being hydraulically operated to press said brake pad means against said rotor, said improvement comprising:

said piston comprising a cup member having a central chamber and a cushion member, said cushion member having a lower modulus of elasticity than said cup member and being positioned in said central chamber, a portion of said cushion member protruding axially beyond said cup member for contacting said brake pad means,

wherein upon actuation of said brake system, said piston transmits a first force against said brake pad means during a first braking operation of said vehicle, and wherein said piston transmits a second force against said brake pad means during a second braking operation of said vehicle,

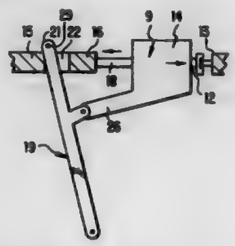
said cushion member contacting said brake pad means and thereby applying said first force to said brake pad means during said first braking operation, and said cup and said cushion member both contacting said brake pad means and thereby applying said second force to said brake pad means during said second braking operation, wherein said lower modulus of elasticity of said cushion member does not cause said cushion member to deflect sufficiently to allow said cup member to contact said brake pad means during said first braking operation, and wherein said lower modulus of elasticity of said cushion member does cause said cushion member to deflect sufficiently to allow said cup member to contact said brake pad means during said second braking operation.

5,484,042

FLUID PRESSURE AND MECHANICAL DRUM BRAKE ACTUATOR

Nui Wang, Croydon, Australia, assignor to Brake And Clutch Industries Australia Pty, Ltd., East Bentleigh, Australia

Continuation of Ser. No. 952,716, Feb. 4, 1993, abandoned.
This application Apr. 5, 1995, Ser. No. 418,121
Claims priority, application Australia, Apr. 4, 1991, PK5417
Int. Cl.[6] F16D *51/04*
U.S. Cl. 188—106 A **20 Claims**



1. A drum brake assembly, comprising:

a backing plate;

a brake shoe attached to the backing plate and having two opposed and spaced ends, a first abutment at one end of the brake shoe and a second abutment at the other end of the brake shoe;

a primary brake actuator comprising a piston-cylinder assembly that is movably supported on the two ends of the brake shoe so that the piston-cylinder assembly may move relative to said backing plate;

a secondary brake actuator comprising a member substantially fully contained in the brake assembly, said member having reaction means for coacting with said first abutment at an end portion thereof; and

means for connecting said member to said piston cylinder assembly for relative movement about a pivot axis extending substantially parallel to the rotational axis of the brake drum, said pivot axis being spaced from said reaction means in a direction transverse to said pivot axis;

wherein in a first mode of operation of said brake assembly said piston-cylinder assembly and said member cooperate to form a composite structure, said reaction means coacting with the first abutment, and said piston-cylinder assembly coacting with the second abutment so that said composite structure is operable to increase the spacing between said first and second abutments to cause radial expansion of the brake shoe when said member is moved in a first direction about said pivot axis; and

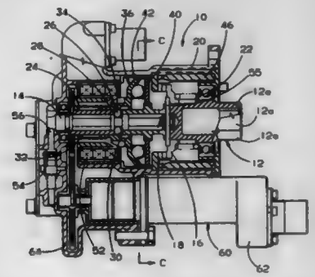
wherein in a second mode of operation said piston-cylinder assembly is operable independent of said member and coacts with said first and second abutments to increase the spacing between the first and second abutments to cause radial expansion of the brake shoe.

5,484,043

SPEED RESPONSIVE BRAKE DEVICE

David C. Quick, and David E. Russ, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Apr. 28, 1993, Ser. No. 54,682
Int. Cl.[6] F16D *15/00*
U.S. Cl. 188—187 **27 Claims**



1. A failure protection unit for a flight control system, comprising:

an input shaft connected to a shaft of said flight control system, said shaft of said flight control system normally being operably associated with a plunger having a brake hub integral therewith for rotational driven movement of said plunger and said brake hub through said input shaft, said plunger and said brake hub being moveable relative to said input shaft;

a brake reaction plate positioned within a housing in normally spaced relation to said brake hub;

spring means biasing said brake hub in a direction toward said brake reaction plate and said plunger in a direction away from said input shaft;

means normally resisting movement of said brake hub toward said brake reaction plate and movement of said plunger away from said input shaft; and

trip means for initiating engagement of said brake hub with said brake reaction plate responsive to an overspeed condition for said shaft of said flight control system by disabling said movement resisting means to thereby allow said spring biasing means to cause movement of said brake hub toward said brake reaction plate and movement of said plunger away from said input shaft.

5,484,044

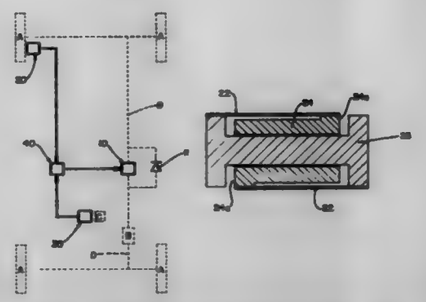
DEVICE FOR THE AUTOMATIC CONTROL OF VEHICULAR BRAKE SYSTEMS ON HILLS

Orlando Bursteinas; Substião; A. Machado, both of Santos, and Umberto J. Fontes, Rio de Janeiro, all of, Brazil, assignors to Mário Sérgio Helmeister, São Paulo, Brazil

Filed Nov. 7, 1994, Ser. No. 335,574
Int. Cl.[6] B60T *11/00*
U.S. Cl. 188—353 **26 Claims**

1. A device for the automatic control of a vehicular brake system on hills, comprising:

an electromechanical control valve, mounted to the brake system, in order to selectively allow and block the release of a braking fluid pressure applied to the wheel braking elements;



at least one load sensor operatively connected to the wheel braking elements in order to be elastically deformed in two opposite directions from a rest condition when the wheel braking elements are applying to a wheel a braking torque lower than a certain minimum value and between two opposite end deformed conditions and when the wheel braking elements are applying to said wheel a braking torque at least equal to said minimum value, said load sensor varying its electrical resistance upon said elastic deformation;

first voltage comparator means, having a first and a second inlet connected to an electrical power source of the vehicle, at least one of said inlets being connected to the electrical power source through at least one load sensor, said first voltage comparator means having all outlet delivering a predetermined output voltage when the load sensor is in the rest condition and a different output voltage when the load sensor is elastically deformed towards any of its opposite end deformed conditions;

first amplifier means connected to the outlet of the first voltage comparator means in order to amplify the output voltage therefrom;

a control unit receiving the amplified output voltage from the first amplifier means and a reference voltage from the electrical power source, said reference voltage being equal to said predetermined amplified output voltage from first amplifier means, said control unit having: second voltage comparator means provided with a first inlet, a second inlet and an outlet which call deliver an output voltage when the voltage applied in the first inlet of said second voltage comparator means is greater than the voltage applied to the second inlet of said second voltage comparator mean and first switching means (SC1) to selectively apply the output voltage from the first amplifier means to the first and second inlets of the second voltage comparator means, while applying the reference voltage to another of said first and second inlets of the second voltage comparator means;

a direction sensor assembly having switches (S1, S2, S3, S4, S5, SR) each one being associated with a respective gear shift lever position defined at least by the forward and rear gear positions and connecting the electrical power source to the first switching means (SC1) of the control unit when the respective gear is engaged, said connection of the first switching means (SC1) with the electrical power source defining the inlet of the second comparator means to which the output voltage of the first amplifier means is to be applied, in order to provide the output voltage from the second voltage comparator means when the wheel braking elements are applying said minimum braking torque to the wheel in a direction opposite to the direction of driving torque and of the gear selected by the gear shift lever;

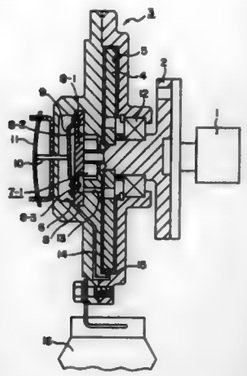
second amplifier means having an inlet connected to the outlet of the second voltage comparator means and an outlet connected to the electromechanical control valve in order to amplify the output voltage of the second voltage comparator means to a value sufficient to close said control valve.

5,484,045

FLUID CLUTCH

Yasuhei Kikuchi; Mitsuaki Hatori, and Satoshi Tsuyuki, all of Tagata, Japan, assignors to Usui Kokusai Sangyo Kaisha Ltd., Japan

Filed Mar. 21, 1994, Ser. No. 210,923
Int. Cl.[6] F16D 35/02;43/25
U.S. Cl. 192—58.4 17 Claims



1. A fluid clutch comprising a rotatably driven shaft, a closed case rotatably disposed along a portion of said shaft and enclosing an end of said shaft, a torque transfer chamber and an oil basin chamber to store oil being defined inside the case, a driving disc rigidly mounted to the end of the shaft and being rotatably disposed inside the torque transfer chamber of the case, wherein the oil is supplied from the oil basin chamber to the torque transfer chamber to transfer a driving torque from said driving disc to the closed case,

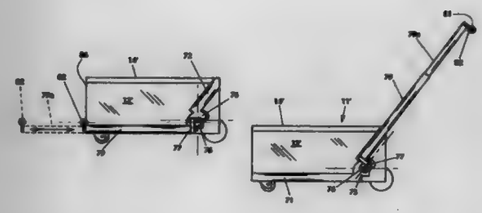
said fluid clutch being provided with an exhaust passage for delivering the oil from the torque transfer chamber to the oil basin chamber, a dam disposed on an inner face of the closed case and in proximity to the exhaust passage for urging oil from the torque transfer chamber into the exhaust passage and to the oil basin chamber, a pumping mechanism using differences in revolution between the case and the shaft being provided inside the case and between the oil basin chamber and the torque transfer chamber, an oil supplying passage extending from the oil basin chamber to an upstream side of the pumping mechanism, and a pump exhaust passage extending from a downstream side of the pumping mechanism to the torque transfer chamber to supply the oil inside the oil basin chamber to the torque transfer chamber by action of the pumping mechanism, a valve disposed in the oil basin chamber and upstream of the pumping mechanism to open or close said oil supplying passage, a valve actuator extending from said valve to a location external of said oil basin chamber, and a temperature sensor externally of said oil basin chamber and connected to said valve actuator for moving said valve in response to sensed changes of temperature and selectively opening or closing said oil supplying passage, .whereby said dam is disposed and dimensioned for rapidly circulating oil from said torque transfer chamber through said exhaust passage to said oil basin chamber, and whereby said pumping mechanism sucks oil from said oil basin chamber and urges the oil to said torque transfer chamber in accordance with differences in revolution between the case and the shaft and in accordance with the disposition of the valve relative to the oil supplying passage between the oil basin chamber and the pumping mechanism.

5,484,046

WHEELED LUGGAGE CASE

Brad Alper, 4730 Stoetz La., and Richard Trevethick, 6103 Burnside Rd., both of Sebastopol, Calif. 95472

Continuation-in-part of Ser. No. 80,982, Jun. 4, 1993, Pat. No. 5,407,039. This application Apr. 11, 1995, Ser. No. 420,292
Int. Cl.[6] A45C 5/14;13/26
U.S. Cl. 190—115 12 Claims



1. A wheeled luggage case equipped for rolling translation along a supporting surface, comprising:

a luggage receptacle shaped to define a luggage compartment and having a front end wall and a back end wall and a pair of opposed side walls joining said front and back end walls;

a lid overlying said receptacle and being hinged thereto to enable pivoting of said lid between an open and a closed position;

a plurality of wheels extendable from said receptacle to engage a supporting surface in rolling contact;

handle means for enabling pushing, pulling and steering said luggage case along a supporting surface;

said handle means including a pair of strut assemblies having like first ends joined to a handle assembly extending generally transversely between said pair of strut assemblies;

a first pair of channels formed in said opposed side walls and extending generally parallel to said lid;

a second pair of channels formed in said opposed side walls and extending obliquely upwardly with respect to said first pair of channels;

each of said first pair of channels being disposed to intersect a respective one of said second pair of channels;

said first and second pair of channels adapted to receive said pair of strut assemblies;

means for selectively moving said pair of strut assemblies from a first position in which each strut assembly is secured in one of said first channels in a retracted, storage disposition, to a second position in which each strut assembly is secured in a respective, intersecting one of said second pair of channels and maintained by said second pair of channels in an extended, operative, erected disposition to enable pushing, pulling, and steering said luggage case in rolling translation.

5,484,047

CONTAINER DECORATING SYSTEM

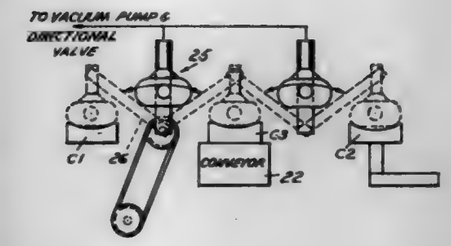
John A. Plenzler, Sylvania, Ohio, assignor to Owens-Illinois Plastic Products Inc., Toledo, Ohio

Filed May 16, 1994, Ser. No. 242,930
Int. Cl.[6] B65G 47/46
U.S. Cl. 198—370.01 8 Claims

1. In an apparatus for decorating containers wherein containers are successively moved through a plurality of successive decorating stations which includes an inlet conveyor at the first of the stations and a discharge conveyor at the last station, the method which comprises

providing at least one outlet conveyor between adjacent decorating stations, and

providing oscillating grippers capable of moving a container between stations and at least temporarily depositing a container on an outlet conveyor.

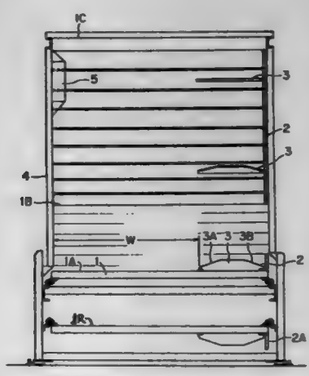


5,484,048

RUBBER TIRE INDIVIDUAL SEPARATION TRANSPORT APPARATUS

Yasuhiro Ohta, Sakurai; Masaru Umemoto, Kashiwara, and Kenryo Kashiwagi, Yao, all of, Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Continuation of Ser. No. 40,405, Mar. 31, 1993, Pat. No. 5,307,922. This application Apr. 4, 1994, Ser. No. 222,160
Claims priority, application Japan, Jan. 11, 1993, 5-17858; Jan. 11, 1993, 5-17859
Int. Cl.[6] B65G 47/24
U.S. Cl. 198—397 12 Claims



1. Apparatus for conveying and separating annular objects of different diameters including a conveyor having an inclined section, a loading section adjacent one end of said section and a discharge area adjacent the opposite end of said inclined section and a discharge area adjacent the opposite end of said inclined section, said inclined section being moveable to transport annular objects from the loading zone to the discharge zone, said conveyor having a width sufficient to support two of said annular objects in a side-by-side relationship, said conveyor section positioned such that any line traversing said conveyor section and perpendicular to the edges thereof will be generally parallel to the horizontal;

a plurality of support plates on said conveyor section each of a size to support only one annular object laid flat on said conveyor and mounted at a larger pitch in the direction of transport than the maximum diameter of rubber annular objects being conveyed;

a stationary side wall along the side edge of said inclined portion remote from said support plates for guiding others of said annular objects supported on said inclined section and not supported by one of said support plates; and

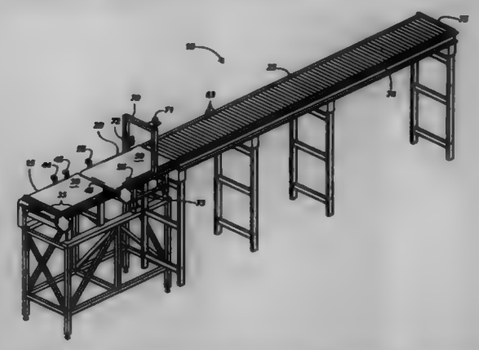
the traverse distance between the support plates and said side wall being greater than the diameter of annular objects being conveyed whereby annular objects not engaging on said support plates are returned to the loading zone.

5,484,049

PACKAGE MEASURING SYSTEM AND ACCUMULATOR

Pao-Ter Huang, Edison, N.J.; Chunsheng Cai, New Fairfield, Conn.; Jaroslav Janik; John H. Lecko, both of Southbury, Conn., and James S. Morton, Danbury, Conn., assignors to United Parcel Service of America, Inc., Atlanta, Ga.

Filed Feb. 22, 1994, Ser. No. 199,971
Int. Cl.[6] B65G 47/26
U.S. Cl. 198—460.3 10 Claims



1. A method of accumulating a plurality of packages, comprising the steps of:

a) measuring the length of a first package;

b) urging said first package onto an accumulator conveyor having a known length capable of accommodating packages, said urging being facilitated by a second conveyor upstream of said accumulator conveyor;

c) urging subsequent packages onto said accumulator conveyor until the summed length of packages on said accumulator conveyor is sufficient to prevent the complete introduction of a final package onto said accumulator conveyor;

d) urging said packages on said accumulator conveyor into line contact by use of said second conveyor which urges said final package partly onto said accumulator conveyor and into contact with the most upstream package completely on said accumulator conveyor, to cause said packages on said accumulator conveyor to be urged into line contact; and

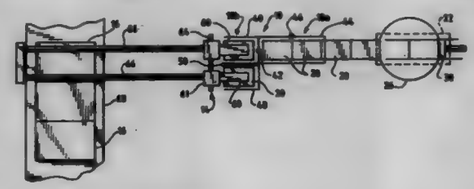
e) reversing said second conveyor to at least assist in withdrawing said final package from contact with said most upstream package completely on said accumulator.

5,484,050

CATALOG STACKER AND LOADER

James Cheatham, Spout Spring, Va., assignor to R. R. Donnelley & Sons Company, Lisle, Ill.

Filed Aug. 19, 1994, Ser. No. 293,696
Int. Cl.[6] B65G 25/04
U.S. Cl. 198—468.3 14 Claims



1. An apparatus comprising:

a conveyor;

a cage assembly associated with said conveyor, said cage assembly having a first cage and a second cage, each of said first and second cages being movable between a loading position adjacent said conveyor and an unloading position, said first cage being dimensioned to receive two stacks of articles, one of said first and second cages comprising means for holding

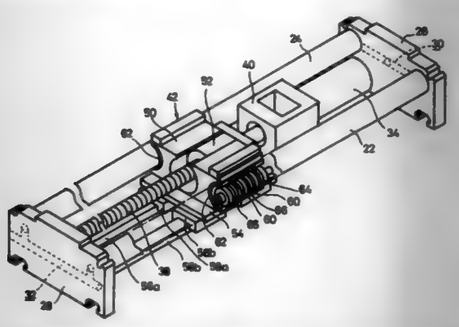
said two stacks in a first orientation when said one cage is in a first position and for holding said two stacks in a second orientation when said one cage is in a second position, one of said stacks occupying a first position relative to the other of said stacks when said stacks are in said first orientation and one of said stacks occupying a second position relative to the other of said stacks when said stacks are in said second orientation, said first relative position being different than said second relative position; and

loading means for unloading said two stacks from one of said first and second cages and loading said two stacks into a shipping container.

5,484,051
BALANCER

Shigekazu Nagai; Tadasu Kawamoto, and Teruo Inaba, all of Ibaraki, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1994, Ser. No. 314,624
Claims priority, application Japan, Jan. 12, 1993, 5-280122
Int. Cl.[6] B65G 25/00
U.S. Cl. 198—750.7 **4 Claims**



1. A balancer for pneumatically or hydraulically applying forces to reduce a burden on a power source for moving a workpiece or an apparatus, comprising:

an elongate frame;

at least one cylinder disposed in and extending longitudinally along said elongate frame, for displacing a piston longitudinally in a chamber defined in said cylinder;

a table mechanism movable longitudinally along said cylinder;

a drive source for moving said table mechanism; and

drive force transmitting means coupled to said drive source for transmitting a drive force produced by said drive source to said table mechanism;

said table mechanism having a first magnet disposed closely to an outer circumferential surface of said cylinder, said piston having a second magnet positioned for magnetic coaction with said first magnet.

5,484,052
CARRIER PUCK

James C. Pawloski, Troy; Gary S. Bliss, Beavercreek, and Ronald L. Siemon, Springfield, all of Ohio, assignors to Dowbrands L.P., Indianapolis, Ind.

Filed May 6, 1994, Ser. No. 238,778
Int. Cl.[6] B65G 37/00
U.S. Cl. 198—803.01 **11 Claims**

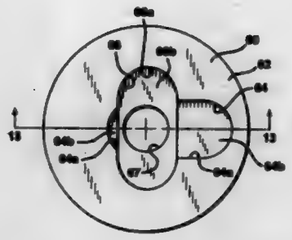
1. A carrier puck for receiving and supporting one of at least first and second articles, said first article having first dimensions and said second article having second dimensions which differ from said first dimensions, said carrier puck comprising:

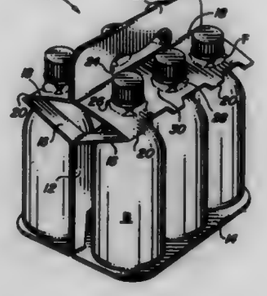
a main body having a first cavity of a first size and a second cavity of a second size which differs from said first size, said first cavity being adapted to receive and support said first article and said second cavity being adapted to receive and support said second article and wherein said first and second cavities intersect one another.

5,484,053
BASKET-STYLE CLIP CARRIER

Randall L. Harris, Powder Springs, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Jun. 22, 1994, Ser. No. 263,627
Int. Cl.[6] B65D 75/00
U.S. Cl. 206—147 **7 Claims**





1. A substantially rectangular blank for forming a carrier for necked bottles, comprising:

two handle panel sections connected to each other along a central fold line;

an upper panel section connected to each handle panel section along a fold line substantially parallel to the central fold line, each upper panel section containing openings for receiving the necks of bottles;

an intermediate panel section connected to each upper panel section along a fold line substantially parallel to the central fold line, each intermediate panel section containing openings for receiving a neck of a bottle;

a central vertical panel section connected to each intermediate panel section along a fold line substantially parallel to the central fold line; and

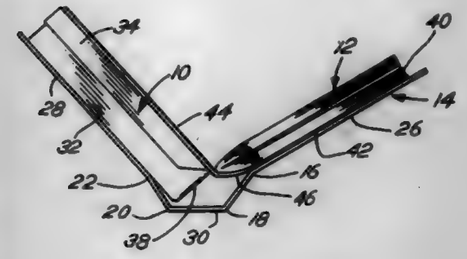
a bottom panel section connected to each central vertical panel section along a fold line substantially parallel to the central fold line;

the fold line connecting each bottom panel section to a central vertical panel section being interrupted by transversely extending slits forming glue fingers, the glue fingers associated with one of the bottom panel sections being larger than the glue fingers associated with the other bottom panel section.

5,484,054
COMBINATION BOOK CASSETTE

Randy K. Kryszewski, 103 E. St. Mary's St., Minooka, Ill. 60447

Filed Dec. 14, 1994, Ser. No. 325,875
Int. Cl.[6] B65D 85/575
U.S. Cl. 206—232 **7 Claims**



1. The combination of an audiotape cassette container secured to a miniature book

said container having a rectangular body including a bottom and side walls, and a lid hinged to said body along one side wall thereof, said one side wall and the lid portion adjacent said hinge comprising the spine of said combination,

said book having a folio and first and second end sheets, said first end sheet being adhered to said cassette lid,

a case enclosing said container and book combination comprising a front cover, a spine cover and a back cover,

said front cover being adhered to said second end sheet except for a strip adjacent said spine,

said back cover being adhered to said body bottom except for a strip adjacent said spine,

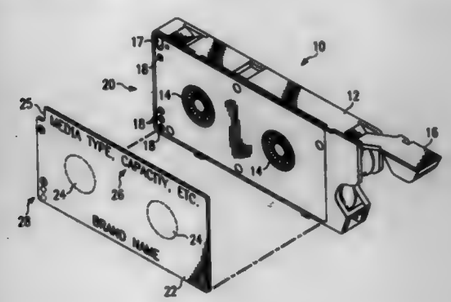
said spine cover being free of said spine,

whereby when said lid is in closed position against said body, the non-adhered, free portions of said case lie in contact with the opposed areas of said second end sheet, said spine and said container bottom, respectively, and when said lid is in open position, the free portions of said case are spaced from said opposed areas.

5,484,055
MACHINE AND HUMAN READABLE LABEL FOR DATA CARTRIDGE

Steven L. Felde, and Kenneth R. Shelley, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 15, 1994, Ser. No. 228,533
Int. Cl.[6] B65D 85/672
U.S. Cl. 206—387.1 **10 Claims**



1. A data cartridge, comprising:

a housing having an indicator area on an external surface thereof, said indicator area comprising a number Z recesses formed therein, Z being at least 1; and

a label covering at least said indicator area of said external surface, said label comprising:

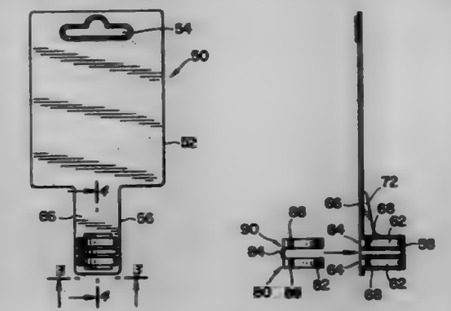
human readable information; and

Z indicator positions, each indicator position overlaying one of said recesses, said indicator positions having open and closed states, the open state of a selected indicator position indicated by a hole through said label to expose a corresponding recess.

5,484,056
DISPLAY HANGER HAVING AN ELASTOMERIC ARTICLE RETAINER

Peter C. Wood, Georgetown, S.C., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Dec. 14, 1994, Ser. No. 358,591
Int. Cl.[6] B65D 73/00; 85/20
U.S. Cl. 206—349 **11 Claims**



1. A display hanger for suspending an article, comprising:

a body having a front face, a rear face, and a suspension structure enabling the body to be suspended from a support;

pockets formed on said body below said suspension structure, each pocket projecting forwardly from said front face and defining a passage extending parallel to said front face, said passages being aligned with one another for enabling an article to extend therethrough, each pocket including an access opening through said rear face; and

a one-piece grommet formed of an elastomeric material, said grommet including:

a pair of sections each having a through-hole and configured to be mounted in a respective one of said pockets so that said through-hole is aligned with said passage thereof, and

a web integral with and interconnecting said sections to define a hinge enabling said grommet to be folded over to orient said through-holes in mutually aligned relationship and be simultaneously installable into respective pockets through said access openings, said through-holes being adapted to frictionally grip an article extending therethrough.

5,484,057
TOOL PACKAGING CONTAINER

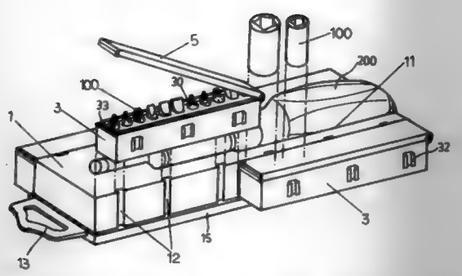
Lin Tzu-Ching, P.O. Box 82-144, Taipei, Taiwan, Prov. of China

Filed Jul. 18, 1994, Ser. No. 276,425
Int. Cl.[6] B65D 85/20; 21/024
U.S. Cl. 206—374 **1 Claim**

1. A tool packaging container comprising:

a rectangular body portion having a recess at a central portion, a flange at a bottom, and a plurality of vertical dovetail grooves at both sides; and

two rectangular extension containers connected with both sides of said rectangular body portion, each of said rectangular extension containers being one-half as long as said rectangular body portion and provided at one side with a plurality of dovetails and at another side with a plurality of dovetail



retainers, the dovetails of one of said rectangular extension containers being adapted to engage the dovetail grooves of said rectangular body portion and being adapted to engage the dovetail retainers of another one of said rectangular extension containers, each of said rectangular extension containers being formed with a raised edge at an upper portion, two lugs at one end, and a shoulder at another end;

a closable cover having a curved portion at one end adapted to engage the shoulder of said rectangular extension container and a clamping portion at another end adapted to engage the lugs of said rectangular extension containers; and

a rectangular additional container which is open at a top and at a bottom, said rectangular additional container being engaged with a neck of one of said rectangular extension containers and formed with a curved portion at a lower corner adapted to engage the shoulder of each of said rectangular extension containers, a neck at an upper portion adapted to engage a bottom of another rectangular additional container, a shoulder at an upper edge adapted to engage the curved portion of said closable cover, and a pair of lugs at another upper edge adapted to engage the clamping portion of said closable cover.

5,484,058

TAPE CASSETTE STORAGE CONTAINER WITH PRESSING PROJECTIONS

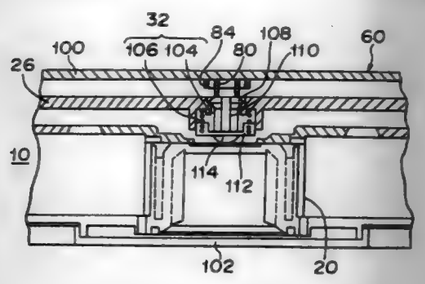
Motohiko Shima; Masatoshi Okamura, both of Saku, and Jin Kutsukake, Ueda, all of, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Aug. 30, 1994, Ser. No. 297,856

Claims priority, application Japan, Sep. 10, 1993, 5-054153 U; Jan. 21, 1993, 5-061814 U

Int. Cl.[6] B65D *85/67*

U.S. Cl. 206—387.1 **4 Claims**



1. A cassette storage container for storing a tape cassette including a casing formed of combined upper and lower halves, the casing having a window including through holes, a pair of reels with a tape wound thereon, and pressing members urging the reels, the pressing members having ends exposed to the outside via the through holes, said container comprising:

a main body;

an upper lid cooperable with said main body to close the main body; and

pressing projections mounted to an inner wall of a top plate of said upper lid at such positions that said pressing projections press on pressing members of a said cassette contained therein when said upper lid closes said main body, wherein said pressing projections each comprise a thin walled cylindrical projection; and

thick walled cylindrical projections mounted to the inner wall of said upper lid at positions sufficiently closely surrounding said pressing projections that said thick walled cylindrical projections can function as stiffeners for the pressing projections surrounded thereby, wherein said thick walled cylindrical projections each have a length shorter than that of said pressing projections and less than a spacing between said inner wall of said upper lid and a said casing window when said upper lid closes said main body with a said cassette contained therein so that said thick walled cylindrical projections do not contact a said casing window when said upper lid closes said main body with a said cassette contained therein.

5,484,059

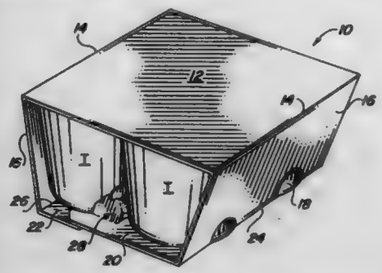
CARRIER WITH BOTTOM PANEL LOCK

Robert L. Sutherland, Kennesaw, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Aug. 18, 1994, Ser. No. 292,505

Int. Cl.[6] B65D *71/18*

U.S. Cl. 206—434 **17 Claims**



1. A wrap-around article carrier containing a plurality of adjacent rows of articles the bottom portions of which are spaced apart, comprising:

a top panel;

opposite side panels connected to the top panel;

a bottom panel comprised of a first bottom panel flap connected at a side edge thereof to one of the side panels and a second bottom panel flap connected at a side edge thereof to the other side panel, each bottom panel flap having opposite end edges;

the first bottom panel flap including an integral article retainer flap hinged thereto adjacent each end edge of the first bottom panel flap, the article retainer flaps being folded up from the first bottom panel flap into the interior of the carrier so as to engage the bottom portions of adjacent spaced articles;

the second bottom panel flap including a locking tab associated with each retainer flap, each retainer flap engaging an associated locking tab to maintain the retainer flap in folded condition;

a shoulder on each tab extending over an edge of the associated retainer flap for preventing withdrawal of the locking tabs from engagement with the retainer flaps; and

each retainer flap including side extensions connected on opposite sides thereof along fold lines, the side extensions contacting the bottom portions of adjacent spaced articles.

10. A blank for forming a wrap-around carrier for packaging a plurality of adjacent rows of articles the bottom portions of which are spaced apart, comprising:

a generally rectangular sheet having a central top panel section;

side panel sections connected to opposite sides of the top panel section by fold lines;

a first bottom panel flap connected to one of the side panel sections along a first fold line and a second bottom panel flap connected to the other side panel section along a second fold line, each bottom panel flap having opposite end edges;

the first bottom panel flap including an article retainer flap hinged thereto adjacent each end edge of the first bottom panel flap;

the second bottom panel flap including a locking tab for engaging an associated locking tab in the first bottom panel flap in a carrier formed from the blank to fold the retainer flap into the interior of the carrier and to maintain the retainer flap in folded condition;

a shoulder on each tab underlying an edge of an associated retainer flap in a carrier formed from the blank for preventing withdrawal of the locking tabs from engagement with the retainer flaps; and

each retainer flap including side extensions connected on opposite sides thereof along fold lines, the side extensions contacting the bottom portions of adjacent spaced articles in a carrier formed from the blank.

17. A wrap-around article carrier containing a plurality of adjacent rows of articles the bottom portions of which are spaced apart, comprising:

a top panel;

opposite side panels connected to the top panel;

a bottom panel comprised of a first bottom panel flap connected at a side edge thereof to one of the side panels and a second bottom panel flap connected at a side edge thereof to the other side panel, each bottom panel flap having opposite end edges;

the first bottom panel flap including an integral article retainer flap hinged thereto adjacent each end edge of the first bottom panel flap, the article retainer flaps being folded up from the first bottom panel flap into the interior of the carrier so as to engage the bottom portions of adjacent spaced articles;

the second bottom panel flap including a locking tab associated with each retainer flap, each retainer flap engaging an associated locking tab to maintain the retainer flap in folded condition;

means for preventing withdrawal of the locking tabs from engagement with the retainer flaps;

the retainer flaps being hingedly connected to the first bottom panel flap along fold lines which are substantially parallel to the end edges of the first bottom panel flap; and

each article retainer flap including a cutout forming spaced legs, the spaced legs being hingedly connected to the first bottom panel flap along said fold lines.

5,484,060

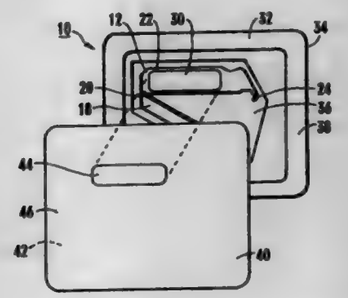
STERILE INFANT IDENTIFICATION DEVICE

George H. Middle; 1300 Clough Rd., Reno, Nev. 89509, and William D. Glennon, 14115 Mocarise Ct., Reno, Nev. 89502

Filed Feb. 9, 1995, Ser. No. 386,288

Int. Cl.[6] A61B *17/06;* **B65D** *85/00*

U.S. Cl. 206—438 **19 Claims**



9. An identification device for an infant which comprises:

means for identifying an infant;

means for receiving said identification means;

means attachable to said receiving means for holding said identification means in said receiving means to maintain said identifying means in a sterile environment; and

means for inscribing identifying information on to said identification means when said identification means is held in said receiving means by said retaining means.

5,484,061

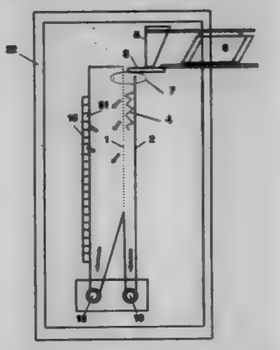
ELECTROSTATIC SIEVING APPARATUS

John P. Dunn, Penn Yan, N.Y., assignor to Advanced Electrostatic Technologies, Inc., Hammondsport, N.Y.

Continuation-in-part of Ser. No. 924,897, Aug. 4, 1992, abandoned. This application Mar. 21, 1994, Ser. No. 215,489

Int. Cl.[6] B03C *7/00*

U.S. Cl. 209—127.4 **23 Claims**



1. An apparatus for classifying particles by size comprising:

a) a source of direct potential having first and second terminals;

b) a sieve electrode connected to said first terminal;

c) a solid electrode connected to said second terminal, the solid electrode having a variable contour along its length;

d) means for feeding particles to a transfer point located between said sieve electrode and said solid electrode such that said particles disperse and oscillate between said sieve electrode and said solid electrode whereby smaller particles pass through said sieve electrode; and

e) collection means for receiving said particles passing through said sieve electrode.

5,484,062

ARTICLE STACK HANDLER/SORTER

Donald S. Rich, Long Valley, N.J., assignor to Technology Handlers, Inc., Long Valley, N.J.

Continuation of Ser. No. 8,127, Jan. 22, 1993, abandoned. This application Mar. 13, 1995, Ser. No. 402,798

Int. Cl.[6] B07C *5/00*

U.S. Cl. 209—587 **18 Claims**

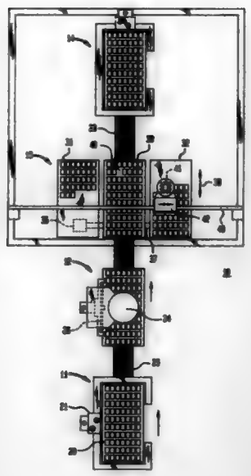
1. An apparatus for conveying articles between a plurality of stations, the apparatus comprising:

conveyor guide means for defining a conveyor path;

unstacking means arranged at an article receiving station for receiving a stacked plurality of the articles;

first shuttle means for receiving a first article from said unstacking means and transporting said first article on said conveyor guide means to an article examination station along a first portion of said conveyor path;

second shuttle means for receiving said first article at said article examination station and transporting same to an output station, said first and second shuttle means being operable independently of one another; and



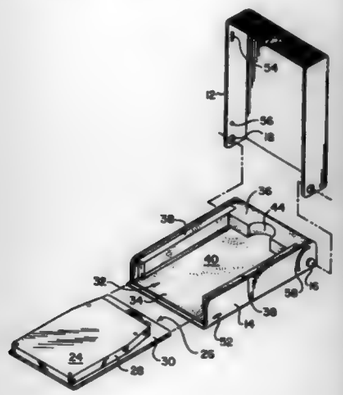
stacking means arranged at said output station for receiving said first article from said second shuttle means, said unstacking means and said stacking means being operable independently of one another.

5,484,063

HDD CARRYING CASE

Allen Cuccio, Boulder, Colo., and John Hagerman, Menlo Park, Calif., assignors to Maxtor Corporation, San Jose, Calif.

Filed Apr. 13, 1994, Ser. No. 227,272
Int. Cl.[6] B65D *73/02;85/42*
U.S. Cl. 206—722 **8 Claims**



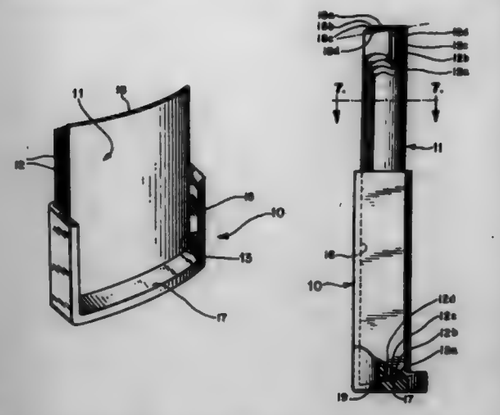
1. A carrying case for a portable hard disk drive, comprising:
a base;
a cover pivotally connected to said base such that said cover can move between an open position and a closed position; and,
an elastic insert attached to said base and having a slot which receives a hard disk drive, wherein said insert has a back wall and a pair of side walls that extend from a bottom wall, said back, said side and said bottom walls defining said slot, said back wall being separated from said bottom wall by a gap.

5,484,064

DOCUMENT HOLDER

Paul R. Melichar, 727 Longwood Dr., Lake Forest, Ill. 60045

Filed Jan. 31, 1994, Ser. No. 189,094
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—50 **10 Claims**



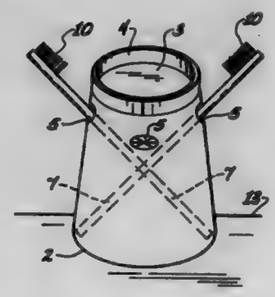
1. A document holder for dispensing one at a time a plurality of flexible paper documents of a predetermined uniform width and length, said document holder comprising:
means defining an open-topped compartment having left and right sidewalls, a backwall and a bottom for receiving a stack of the documents with the top edges thereof projecting form the compartment;
said left and right sidewall having a spacing less then the predetermined width of the flexible documents whereby said documents are bowed toward the front of said compartment when stacked therein; and
said bottom rising as it extends from said backwall towards said open end whereby the exposed top edge of the front-most one of said flexible documents stacked within said compartment is vertically seperate from the exposed top edge of the next succeeding exposed top edge of said stacked documents to facilitate the removal of said front-most documents from said stack.

5,484,065

DRINKING VESSEL-DISPOSABLE TOOTHBRUSH HOLDER

Frank Davoli, Jr., and Cherri D. Davoli, both of 17 Milton Ave., West Seneca, N.Y. 14224

Filed Jul. 11, 1994, Ser. No. 273,209
Int. Cl.[6] A47B *81/02*
U.S. Cl. 211—65 **8 Claims**



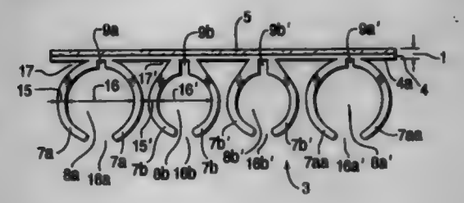
1. A sanitary, disposable drinking vessel convertible to a disposable toothbrush holder which comprises an open top section, side sections and a bottom base section to define thereby a reservoir for holding a liquid, said vessel thereby having means to hold a liquid therein in a leakproof fashion, said vessel containing at least one break-through tab in at least said bottom base section or said side sections, said break-through tabs having slits therein which can be opened by pressure exerted thereon, said tabs being of sufficient dimension to hold a handle of a toothbrush therethrough, said vessel when in an upright position being usable in its entirety as a disposable leakproof drinking vessel and said vessel when in an inverted position and when break-through tabs are opened being usable thereafter as a disposable toothbrush holder.

5,484,066

MOUNTABLE OBJECT HOLDER

Thomas J. Luisi, c/o Vacuum Supply Co., 200 E. Main St., Bound Brook, N.J. 08805

Continuation of Ser. No. 901,970, Jun. 22, 1992, abandoned. This application Mar. 9, 1993, Ser. No. 28,636
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—69.8 **6 Claims**



1. A holder comprising
a) a rigid molded polypropylene or polypropylene-ethylene copolymer plastic planar support plate having a frontside and a backside;
b) a layer of adhesive on the backside of said support plate;
c) a plurality of paired, coactively operable fingers open at one end for holding an object having a circular cross section extending outwardly from the frontside of said support plate and molded integrally therewith at junctions along said frontside of said support plate, said finger pairs defining a circular cross section therebetween of variable size; and having a slot of variable size opposite said open end and at said junction for providing flexibility and stress relief to said fingers, whereby when a pen or pencil is snapped in or out of said fingers, said slot permits said fingers to open to afford entry or exit of said pen or pencil without stressing the plastic fingers, and to close again to their original position.

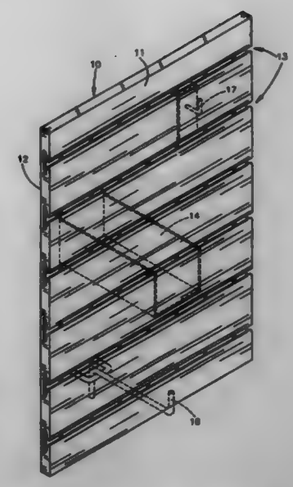
5,484,067

SLOTTED DISPLAY WALL PANEL

Donald J. Sothman, Menomonee Falls, Wis., assignor to Commercial and Architectural Products, Inc., Dover, Ohio

Continuation of Ser. No. 927,142, Aug. 7, 1992, Pat. No. 5,360,121. This application Oct. 28, 1994, Ser. No. 331,051
The portion of the term of this patent subsequent to Nov. 1, 2011, has been disclaimed.
Int. Cl.[6] A47F *5/08*
U.S. Cl. 211—87 **13 Claims**

1. A slotted display wall comprising a panel formed of material having horizontally extending vertically spaced slots constructed to allow the installation of cantilever brackets for support of articles, said panel having a predetermined thickness and parallel front and back substantially planar faces, said horizontally extending slots having a modified "T" shape open through said front face, said slots having a throat open to said front face and extending a depth toward said back face to an inner end, the inner end of said throat joining opposed walls, said opposed walls diverging from said throat in opposite directions to opposed extremities and being of increased thickness adjacent said extremities, said throat having a depth substantially less than the length of said opposed walls, a slot end wall joining said extremities of said opposed walls and extending therefrom toward said back face, said end wall joining an inner slot well spaced from and parallel to said panel back face.

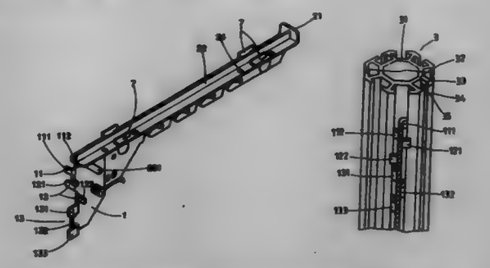


5,484,068

FRAMEWORK MOUNTING STRUCTURE

Che-Hsiung Huang, No. 106, Ta Tun Road, Taipei, Taiwan, Prov. of China

Filed Feb. 7, 1994, Ser. No. 192,748
Claims priority, application Germany, Feb. 8, 1993, 9301716.2 U
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—193 **2 Claims**



1. A framework mounting structure comprising:
a post made from an aluminum profile having at least one longitudinal groove on the outside through its length;
a connecting frame having a top end, a bottom end, an inner edge and an outer edge, and made from a thin, elongated flat plate detachably fastened to said post, said connecting frame comprising two reversed hooks vertically spaced along the inner edge at the top and respectively hooked in said longitudinal groove, three presser strips vertically spaced on along the inner edge at the bottom and alternatively projected in reversed directions and respectively stopped against the inside surface of the longitudinal groove on which said hooks hook, and two reversed stop strips vertically spaced between said reversed hooks and said presser strips and respectively stopped against said post on the outside, and an upper pin hole adjacent the outer edge of the connecting frame and lower pin hole adjacent the outer edge of the connecting frame; and
a supporting frame connected to said connecting frame, said supporting frame comprising a fender on one end distal the connecting frame at the top, a longitudinal division plate extending from said fender in the middle toward an opposite

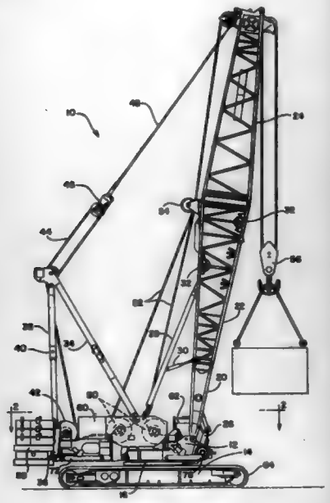
end, mounting slots and holes symmetrically disposed adjacent the one end and the opposite end at two opposite sides of the longitudinal division plate for fastening a board, a row of hooks longitudinally spaced intermediate the one end and the opposite end at the bottom of the longitudinal division plate, and a mounting plate on an opposite end at the bottom, said mounting plate comprising an elongated slot connected to said upper pin hole on said connecting frame by a first pin and a clamp, and a row of supporting frame pin holes alternatively connected to said lower pin hole on said connecting frame by a second pin.

5,484,069

PROCESS FOR SELF-DISASSEMBLING A CRAWLER CRANE

John M. Lanning, Cato, Wis., assignor to The Manitowoc Company, Inc., Manitowoc, Wis.

Continuation of Ser. No. 762,767, Sep. 20, 1991, abandoned. This application Dec. 20, 1993, Ser. No. 170,682
Int. Cl.[6] B66C *23/42;23/26;23/70*
U.S. Cl. 212—270 **15 Claims**



11. A process of disassembling a crane comprising pendants, an equalizer, boom hoist rigging, a gantry, a load hoist line, a boom, and a boom positioning means, the boom being supported by said pendants, the pendants being connected between the boom and said equalizer, the equalizer being connected to said boom hoist rigging, wherein the process comprises the steps of:

a) connecting the load hoist line to the boom and the equalizer;

b) disconnecting the equalizer from the pendants;

c) using said boom positioning means to position the boom and the load hoist line such that the equalizer is suspended by the load hoist line; and

d) using said boom hoist rigging to move the equalizer to a storage position on the gantry.

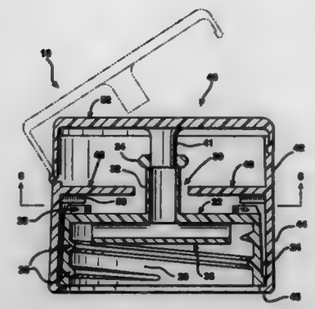
5,484,070

CHILD-PROOF CLOSURE WITH SYRINGE-TIP CONNECTOR

D. Scott Graham, 6815 Dillon Hills Dr., Nashport, Ohio 43830

Filed Mar. 14, 1994, Ser. No. 209,270
Int. Cl.[6] B65D *5/43;51/18;55/02*
U.S. Cl. 215—223 **19 Claims**

1. A container closure having a syringe tip connector comprising:



a coupling for securing said closure to an opening in a container and adapted to allow said closure to be removed from said container, said including a laterally extending top panel, and an annular skirt descending from said top panel, said annular skirt including internally extending ridges for rotatably securing said closure to said container;

a dispensing port in said closure for releasably connecting the tip of a syringe, said dispensing port including a tubular stem which protrudes from said coupling and adapted to engage said tip of said syringe and provide a liquid impermeable seal between said dispensing port and said syringe tip; and,

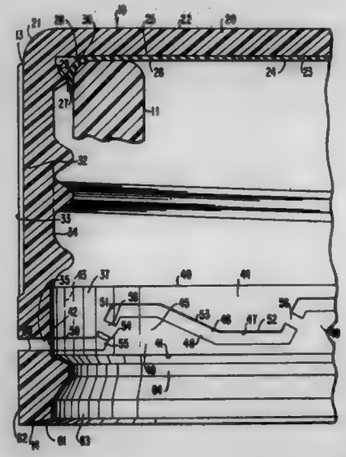
a cap encircling said coupling and adapted for movement between open and closed positions, said cap including an outer barrel member adapted to fit over said coupling with free rotation and limited axial movement, said outer barrel member and said coupling acting in conjunction with one another to form a child-proof mechanism and a plug member in said cap which sealably engages said dispensing port when said cap is in a closed position.

5,484,071

TAMPER INDICATING RING CONSTRUCTION FOR CLOSURES

Bruno Zumbuhl, 2760 Sugar Cane La., Evansville, Ind. 47715

Filed May 23, 1994, Ser. No. 247,632
Int. Cl.[6] B65D *41/34*
U.S. Cl. 215—254 **3 Claims**



1. In a threaded closure for containers having a correspondingly threaded container finish including an upper closure element and frangibly interconnected tamper indicating ring element, the improvement comprising: a bridge element of generally cylindrical configuration having an upper member integrally formed with said closure element, and a lower member integrally formed with said

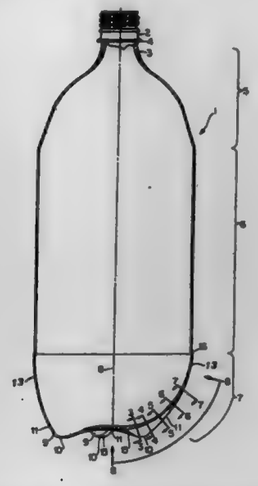
ring element; said upper member having a substantially continuous lower edge forming plural camming surfaces; said lower member having a substantially continuous upper edge forming mating camming surfaces; plural frangible links interconnecting said mating camming surfaces; said mating camming surfaces being brought into operative contact during the unthreading of said closure element from said container finish to result in imparting a shearing stress upon said frangible links and serving to sever said links as said closure element is removed.

5,484,072

SELF-STANDING POLYESTER CONTAINERS FOR CARBONATED BEVERAGES

Martin H. Beck, Merrimack; George F. Rolland, Amherst, and John H. Muszynski, Auburn, all of N.H., assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed Mar. 10, 1994, Ser. No. 209,392
Int. Cl.[6] B65D *23/00*
U.S. Cl. 215—375 **13 Claims**



1. A self standing blow molded polyester container, defining a longitudinal axis, for carbonated beverages having a neck finish integral with and terminating in a neck portion which is integral with and terminates in a side wall portion which is integral with and terminates in a closed base portion; the neck portion, side wall portion and the base portion being biaxially oriented; and the base portion being of a petaloid form defining at least three feet disposed about the longitudinal axis whereby the container is self standing, characterized in that:

circumferentially adjacent pairs of the feet define, support, and are separated by, relatively stiff valleys each extending substantially radially from a central region of the base portion, centered on the longitudinal axis, to a relatively deformable, compared to the relatively stiff valleys, open area of the base portion located radially outwardly of the feet and adjacent to a maximum diameter of said base portion;

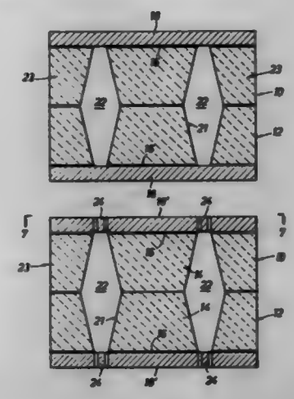
wherein the relative stiffness and deformability of the valleys and the open area are selected such that initial internal pressurization of the container will, due to the relative deformability of the open area, deform the open area radially outwardly away from the longitudinal axis, which in turn moves radially outer ends of the relatively stiff valleys radially outwardly away from the longitudinal axis, which in turn, due to the stiffness of the valleys relative to the open area, rocks the valleys about their support by the feet and moves radially inner ends of the valleys generally upwardly toward the neck finish, thereby moving the central region of the base portion along the longitudinal axis toward the neck finish.

5,484,073

METHOD FOR FABRICATING SUSPENSION MEMBERS FOR MICROMACHINED SENSORS

Raymond K. Erickson, Taylor, Tex., assignor to I/O Sensors, Inc., Austin, Tex.

Filed Mar. 28, 1994, Ser. No. 218,363
Int. Cl.[6] H01L *21/306*
U.S. Cl. 216—2 **9 Claims**



9. A method of micromachining one or more suspension members between a frame member and a suspended mass, said frame member and said suspended mass having side walls, the method comprising the steps of:

processing a silicon wafer to produce a processed wafer including a layer of bulk silicon and a layer of epitaxial grown silicon separated by an etch stop layer;

from the bulk silicon side of said processed wafer, chemically etching said layer of bulk silicon and said etch stop layer to leave a thickness of epitaxial silicon according to a pattern defining the space between said side walls of said frame member and said suspended mass; and

dry etching from said epitaxial grown silicon side of said processed wafer according to a suspension member pattern of arbitrary shape to remove epitaxial grown silicon material in said space thereby leaving one or more suspension members which suspend said mass from said frame member.

5,484,074

METHOD FOR MANUFACTURING A SHADOW MASK

Dean T. Deibler, Cortland, N.Y.; Thomas Ratz, Eschbach, Germany; Peter L. Takach, Cortland, N.Y., and Roland Thoma, Freiburg-Tiengen, Germany, assignors to BMC Industries, Inc., Minneapolis, Minn.

Filed May 3, 1994, Ser. No. 237,501
Int. Cl.[6] B44C *1/22;* C25F *3/00;* C23F *1/02;* B31D *3/00*
U.S. Cl. 216—12 **8 Claims**

1. A method for manufacturing a shadow mask for use in a cathode ray tube, the method comprising the steps of:

providing a thin metal web having a first and second major surfaces;

forming photosensitive layers on the first and second major surfaces;

exposing the first photosensitive layer to a first patterned light and the second photosensitive layer to a second patterned light;

applying a first protective film on the second photosensitive layer to prevent etching of the second surface;

etching the first surface to create a first cavity, the first cavity having a depth that is less than a distance from the first surface to the second surface;

applying a second protective film to the first surface to prevent additional etching of the first surface;

removing the first protective film;



etching the second surface to create a second cavity, the second cavity communicating with the first cavity;

removing the second protective film; and

removing the photosensitive layers.

5,484,075

METHOD OF MANUFACTURING INK JET RECORDING HEAD

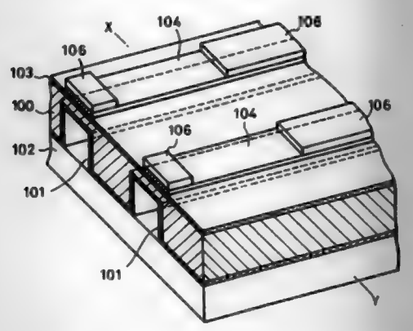
Isao Kimura, and Takashi Fujikawa, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 975,411

Claims priority, application Japan, Nov. 12, 1991, 3-295853

Int. Cl.[6] B44C *1/22*; H01L *21/306*

U.S. Cl. 216—27 **14 Claims**



1. A method of manufacturing an ink jet recording head for recording an image by discharging ink to a recording medium through an ink discharge port, said method of manufacturing an ink jet recording head comprising the steps of:

forming a groove, which forms an ink passage communicating with said ink discharge port, by etching a given side of a substrate;

completing said ink passage by joining a cover member to the given side of said substrate; and

providing an electrothermal transducer for generating thermal energy which is used for discharging the ink, at a portion corresponding to said groove, on an other side of said substrate.

5,484,076

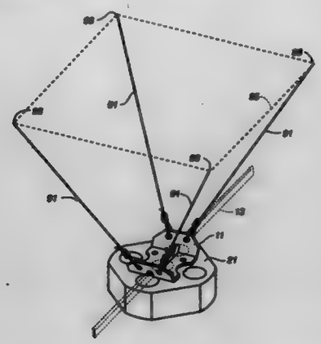
LOAD BEARING MOUNTING BRACKET FOR HANGING A LIGHT FIXTURE FROM A MOUNTING RAIL OF A GRID CEILING SYSTEM

Stephen E. Petrushka, 3366 Mount Diablo Blvd., #402, Lafayette, Calif. 94549

Filed Nov. 18, 1993, Ser. No. 154,173

Int. Cl.[6] H02G *3/08*

U.S. Cl. 220—3.9 **17 Claims**



1. A load bearing mounting bracket for hanging a lighting fixture from a mounting rail of a grid ceiling system, said mounting bracket comprising

a bottom plate portion,

opposed side plate portions extending upwardly of said bottom plate portion,

a straddle slot extending through said bottom plate portion and up into said side plate portions for receiving a mounting rail of the grid ceiling system such that the mounting rail is straddled by said mounting bracket,

load wire attachment means on each of said side plate portions for anchoring the mounting bracket to a load bearing structure, and

coupling means associated with said bottom plate portion by which the load bearing mounting bracket can support a lighting fixture to be installed on the grid ceiling system.

5,484,077

PACKAGING SYSTEM INCLUDING SMALL FRAME WITH INTEGRAL LID, BAG AND EXTERNAL CONTAINER

Mario Albanesi, and Luigi Bonifaci, both of Rome, Italy, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US92/00814, § 371 Date May 9, 1994, § 102(e) Date May 9, 1995, PCT Pub. No. WO92/16439, PCT Pub. Date Oct. 1, 1992

PCT Filed Jan. 31, 1992, Ser. No. 117,172

Claims priority, application Italy, Mar. 13, 1991, MI91A0664

Int. Cl.[6] B65D *5/68*

U.S. Cl. 220—404 **1 Claim**

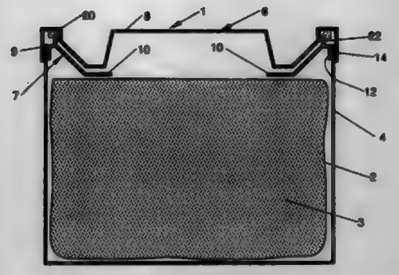
1. An improved system for sticking a frame with an integral lid to a flexible bag and to a rigid external container into which said bag is inserted, said system comprising:

a) a frame having a flange and a peripheral groove, said flange having a lower surface, said lower surface having a surface-finish which has channels formed therein to promote the distribution of an adhesive;

b) a bag having a flat upper surface;

c) an external container having an upper edge, said upper edge having a finish of reliefs and hollows; and

d) an adhesive between said upper edge of said external container and said peripheral groove in said frame and between said lower surface of said flange and said upper surface of said bag, said lower surface of said flange having an increased



surface area due to said channels in order to increase sticking action between said bag and said flange, and said reliefs and hollows of said upper edge of said external container increasing sticking action between said frame and said external container.

5,484,078

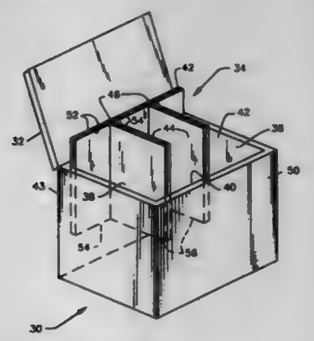
CLOTHES HAMPER WITH ROTATABLE PARTITIONS AND INSERT THEREFORE

Raymond A. Bronovicki, Piscataway, N.J., assignor to Murbac, Inc., Piscataway, N.J.

Filed May 3, 1993, Ser. No. 55,246

Int. Cl.[6] B65D *5/49*

U.S. Cl. 220—531 **6 Claims**



1. A clothes hamper comprising

a clothes storage bin having a bottom wall and a plurality of upstanding side walls defining a compartment in which to store clothing; and

settable partition means hingedly affixed in said compartment for rotatable selective placement into a variety of constant positions in said compartment, which settable partition means may divide the compartment into a plurality of subcompartments, the volumes of which may be set to different values according to the relative placement of the partition means in said compartment, said settable partition means comprising

a first wall in said compartment, said first wall having a rear surface confronting one of said upstanding side walls of said bin and a front surface facing outward into said compartment; and

at least one partition wall having a first and a second end and a first and second side, said first end being hingedly affixed to said front surface of the first wall, and said second and being freely rotatable through said compartment about said first end, said at least one partition wall being dimensioned to extend away from said front surface of said first wall sufficiently to divide said compartment into a plurality of variable subcompartments, the volume of each subcompartment being variable according to the rotated position of said second end of said partition wall relative to said first wall.

5,484,079

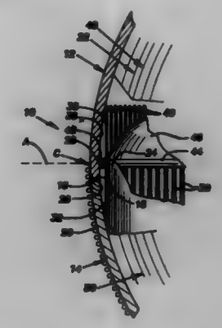
HYDROPNEUMATIC FILAMENT-WOUND PRESSURE VESSEL

Thomas G. Carter, Kent; Douglas M. Horner, Gates Mills; Robert L. Zimmerman, Cleveland; Robert J. Pristas, and James C. Murphy, both of Chardon, all of Ohio, assignors to Essef Corporation, Chardon, Ohio

Filed Mar. 13, 1995, Ser. No. 402,920

Int. Cl.[6] F16L *55/04*

U.S. Cl. 220—589 **16 Claims**



1. A filament-wound pressure vessel having a seal and diaphragm assembly comprising first and second cup-shaped plastic tank liners having circular open mouth end portions having first and second end faces, respectively, which mate in face-to-face apposition to form an outer surface, said outer surface being at least in part defined by domes, each having a curved surface of revolution generated by first and second lines of identically reversed curvature, each of said domes extending between a circumference having a diameter corresponding to a first axis of said vessel and between a second transverse polar axis of said vessel, said first and second end faces meeting to form inner and outer circular seam lines and to define an interior chamber, said second tank liner having an inner axially-extending cylindrical wall spaced radially inwardly from said inner seam line, said cylindrical wall having an annular shelf extending radially outwardly to an inner wall portion of said first tank liner, said inner wall portion of said second tank liner being cylindrical and having an annular ledge extending radially inwardly, an O-ring positioned between said shelf and said ledge and being compressed between said cylindrical wall and said inner wall portion of said second tank liner, said O-ring forming the periphery of an integral flexible diaphragm, said diaphragm extending between an end of said cylindrical wall and an edge of said ledge to separate said interior into discrete variable volume pressure chambers, and a resin-impregnated filament winding covering said outer surface in a predetermined winding pattern.

5,484,080

LIQUID CONTAINER WITHIN RETRACTABLE STRAW

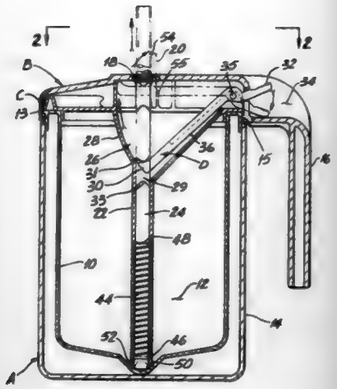
William Blasnik, 1512 Palisade Ave., Fort Lee, N.J. 07024, and Robert A. Coonradt, 8851 Vamo Rd., Sarasota, Fla. 34231

Filed May 16, 1994, Ser. No. 242,878

Int. Cl.[6] B65D *47/04*

U.S. Cl. 220—708 **20 Claims**

1. A liquid container comprising an insulated base defining a liquid reservoir having a sidewall and an axis extending in a direction substantially parallel to said sidewall with an open top defined by a rim, a unitary straw, a cover for closing said open top comprising means for sealingly engaging said rim and a straw containing compartment into which said straw is received for linear movement substantially along said axis between a retracted position wherein said straw is entirely within said base below said cover and a protruding position wherein a portion of said straw is situated above said cover, a lever pivotally mounted on said cover having a portion accessible from the exterior of said cover and a



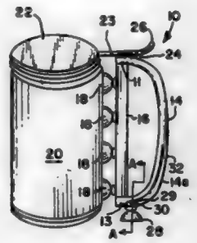
portion situated within said compartment and operably engaging said straw, said lever being pivotable to move said straw, as a unit, between said retracted and said protruding positions.

5,484,081

RELEASABLE SUCTION HANDLE FOR BEVERAGE CONTAINERS

Todd C. H. Jahn, 38 W. Hygeia Ave., Hampton, Va. 23663

Filed Aug. 11, 1994, Ser. No. 289,188
Int. Cl.[6] B65D *25/28*
U.S. Cl. 220—759 **5 Claims**



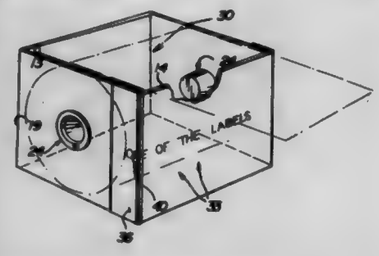
1. A portable handle for converting a beverage container into a drinking mug comprising:
an elongated support shaft having first and second end portions;
a hand graspable handle having end portions thereof integral with the respective first and second end portions, and on a first side of, said elongated support shaft;
said hand graspable handle having an intermediate portion integral with said end portion thereof and spaced from said elongated support shaft;
suction attachment means for releasably retaining a beverage can disposed on a second side of said elongated support shaft;
said suction attachment means for releasably retaining a beverage can including at least one suction cup;
said at least one suction cup having a base end secured to said second side of said elongated support shaft and having an exposed suction cup surface extending from said base end;
said hand graspable handle being provided with a suction cup support groove extending over at least a portion of the length and through at least a portion of the thickness thereof;
an additional suction cup slidably positioned on said hand graspable handle;
said additional suction cup having a threaded bolt connected thereto and extending into said suction cup support groove;
said threaded bolt and said additional suction cup being movable along said suction cup support groove from a position parallel with said elongated support shaft to a position perpendicular to said elongated support shaft; and
means for adjustably securing said additional suction cup at any point along the length of said suction cup support groove.

5,484,082

PORTABLE LINERLESS LABEL DISPENSER

Mark Casper, and Stephen Michalovic, both of Williamsville, N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Oct. 19, 1994, Ser. No. 325,529
Int. Cl.[6] A47F *1/04*
U.S. Cl. 221—305 **21 Claims**



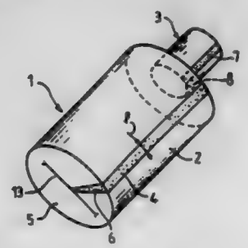
15. A label dispenser assembly comprising:
an open ended rectangular parallelepiped having first through fourth sides, and an open interior communicating said open ends thereof;
first and second shaft stubs extending into said open interior from said first and third sides of said label dispenser, and substantially concentric with each other and defining an axis of rotation; and
a roll of linerless labels mounted on said shaft stubs for rotation about said axis, so that said labels on said roll of linerless labels may be dispensed one at a time by moving said labels into contact with at least a portion of said second side to detach a label from a trailing label in said roll.

5,484,083

RECEPTACLE WITH DEFORMABLE FLEXIBLE WALL, OF THE BOTTLE, POUCH OR TUBE TYPE

Gerard Joulia, Paris, France, assignor to L'Oreal, Paris, France

Filed Jan. 18, 1995, Ser. No. 374,103
Claims priority, application France, Jan. 18, 1994, 94 00466
Int. Cl.[6] B65D *35/08*
U.S. Cl. 222—107 **8 Claims**



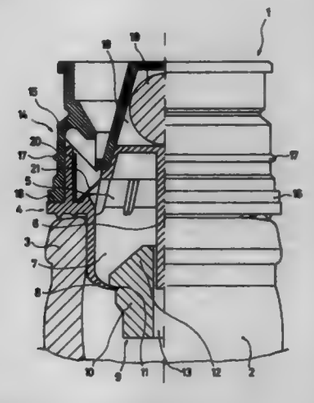
1. In an elongated receptacle (1, 101) with a deformable flexible wall (2, 102), comprising a one-way dispensing member that does not take air back in, adapted to contain a flowable product to be distributed through an outlet opening, under the influence of the one-way dispensing member, causing the collapse of the flexible wall and a decrease of internal volume of the receptacle, the wall (2, 102) of the receptacle comprising means (4, 104) to create at least one longitudinal channel (11) upon dispensing of the product, preventing a retention of the product and therefore ensuring the complete dispensing of this product, said means comprising at least one strip extending lengthwise of the receptacle and comprising an integral portion of a side wall of the receptacle; the improvement wherein said at least one strip is of a material different from and more rigid than the material of the remainder of said side wall of the receptacle.

5,484,084

NON-FILLABLE STOPPER

Joaquin Junqueras Guerre, C. Rin, 27, 08291 Ripollet, Spain

Filed May 24, 1994, Ser. No. 248,430
Claims priority, application Spain, May 31, 1993, 9301178
Int. Cl.[6] B65D *47/02*
U.S. Cl. 222—147 **6 Claims**



1. A non-fillable stopper, comprising:
a first tubular body which fits hermetically into the mouth of the neck of a container with said first body comprising a movement guide and a plurality of openings, said first tubular body forming a first chamber comprising a moveable plug element which moves along said movement guide and a seated opening for said plug element;
a second pouring body joined to the first body forming a second chamber juxtaposed to the first chamber;
a third body comprising means for fixing said third body to the neck of the container and means for joining said third body to the assembly formed by the first and second bodies;
an element formed of a material resistant to penetration by piercing objects which is arranged inside the second chamber; and wherein
said second chamber and penetration-resistant element are formed such that said penetration-resistant element is stationary and immoveable within said second chamber and such that said penetration-resistant element prevents access to the first chamber.

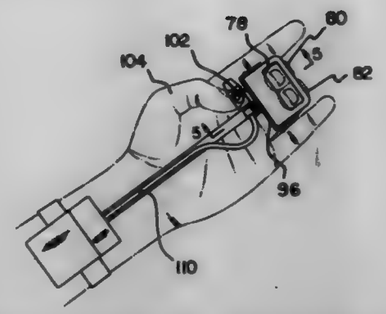
5,484,085

WRIST-CARRIABLE PROTECTIVE SPRAYER

David Bennett, Box 1481, Port Hardy, British Columbia, Canada

Filed Mar. 29, 1995, Ser. No. 412,999
Int. Cl.[6] B67D *5/64*
U.S. Cl. 222—175 **4 Claims**

1. A wrist-carriable protective sprayer for allowing protective spray to be carried in a proximal concealed location for its ready use as required comprising, in combination:
a carrying pouch having a central axis, a front wall with a pile-type fastener coupled thereto, a rear wall, and a generally U-shaped peripheral side wall interconnecting the front wall and the rear wall to define a hollow interior and a central top opening for allowing access to the interior, the pouch further having a flap with a complimentary pile-type fastener coupled thereto and with the fasteners of the front wall and the flap removably secured together for sealing the opening and thereby precluding access to the interior, the carrying pouch additionally having a first strap with an inboard end coupled to the side wall and an outboard end with a pile-type fastener coupled thereto, a second strap with an inboard end coupled to the side wall at a location opposite the first strap and an inboard end with a complimentary pile-type fastener coupled thereto and with the fasteners of the straps removably secured together in a closed loop configuration about a forearm of a user;



a canister of pressurized protective spray removably disposed within the pouch and with the canister having a valve coupled thereto for allowing the spray to be dispersed;
an elongated guide rail having an inboard end, an outboard end, and a central axis positioned in parallel relation with the central axis of the pouch at a location adjacent to the bottom wall thereof;
a guiding bracket coupled to at least one of the pouch or canister and slidably coupled to the guide rail and with the guiding bracket allowing movement of the guide rail along an axis coincident with its central axis and longitudinal movement with respect to the user's forearm;
a finger grip having a V-shaped cross-section formed of a generally rectangular long plate interconnected with a generally rectangular short plate at an apex and with the long plate having an aperture formed thereon sized for receipt of both a middle finger and a ring finger of the user;
a base bracket coupled to the outboard end of the guide rail and pivotally coupled to the apex of the finger grip;
a depressible spray nozzle coupled to the guide rail at a location proximal to the base bracket;
a section of flexible tubing coupled between the valve of the canister and the spray nozzle and with depression of the spray nozzle allowing protective spray to be expelled from the nozzle to a remote location;
whereby when the pouch is secured to the user's forearm and the spray nozzle is positioned in juxtaposition with the user's wrist to thereby define a stowed configuration, positioning of the user's fingers within the aperture of the finger grip and subsequent extension of such fingers allows the spray nozzle to be pulled to an operable position for depression by at least one of the user's thumb or finger, thereby allowing disbursement of protective spray.

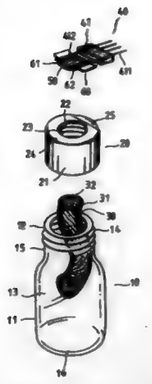
5,484,086

PERFUME GAS GENERATING DEVICE

Kuan H. Pu, No. #25 Alley 2 Lane 220 An-Ping Rd., Tainan, Taiwan, Prov. of China

Filed Apr. 1, 1994, Ser. No. 221,737
Claims priority, application China, Apr. 20, 1993, 93210429.0
Int. Cl.[6] B67D *3/00*
U.S. Cl. 222—187 **10 Claims**

1. A perfume gas generating device including:



a container for containing the perfume, said container having a main body, a neck portion formed on an upper end of said main body, and a reservoir defined by said main body;

a cap member associated with said neck portion of said container, having at least one opening;

a fiber-made wick member disposed in said reservoir of said container, said wick member serving as an upward moving path of the perfume in said reservoir and having a top end extending outside said neck portion of said container; and

a heating system including a heating mechanism disposed above said wick member, having a heat input end and a heat output end, and a heat source controlling circuit for conducting heat to said heating mechanism, whereby

said heating mechanism forms a high temperature area above said top end of said wick member and the perfume is able to move upward along said wick member into said high temperature area to be vaporized into gas which dissipates into the ambient environment, said heating mechanism including a transistor connected with said input end of said heating mechanism, a diode and a current-limiting resistor connected with said transistor, and an oscillating circuit having a variable resistor, whereby said oscillating circuit is connected with said transistor through said current-limiting resistor and diode.

5,484,088

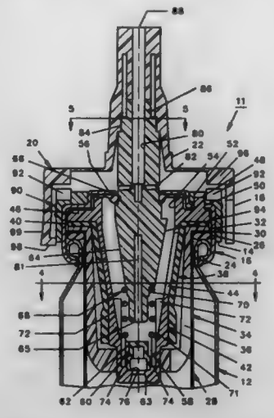
PRESETTABLE INDEXED ADJUSTABLE DOSE DISPENSER

James H. Martin, 8322 County Line Rd., Burr Ridge, Ill. 60521

Filed Apr. 29, 1994, Ser. No. 235,083

Int. Cl.[6] B65D *83/16*

U.S. Cl. 222—402.2 **10 Claims**



1. Dispensing apparatus for dispensing a predetermined quantity of a pressurized fluid, comprising in combination:

a receptacle enclosing a fluid supply chamber for containing a fluid,

a valve assembly extending into said receptacle from an end of said receptacle,

said valve assembly including

a body member, and

an elongate valve stem mounted for axial reciprocation in said body member, between a first dispensing position and a second fill position,

an axial passageway in said stem,

means responsive to the relative angular positions of said valve stem relative to said body member for adjusting the volume of a metering chamber for metering the volume of fluid dispensed,

a housing, the housing having a base, a housing top having a housing top opening, and side walls, said side walls substantially parallel to one another and defining a hollow interior space in which material to be dispensed is stored, the housing having at least one guide rail extending vertically along the side walls;

a cap, having a cap top, the cap seated on the housing top where it is rotatable, the cap having a spout cavity, and having a lower chamber, the lower chamber in fluid communication with the spout cavity and with the hollow interior space of the housing;

a threaded rod, the threaded rod extending in the hollow interior space from the cap to the base, the threaded rod mated to the cap so that the threaded rod rotates when the cap rotates, the threaded rod freely rotatable in the base;

a piston, the piston substantially flat, having an outer edge that matches the side walls, the piston substantially perpendicular to the threaded rod, the piston having at least one rail notch corresponding to the position and number of guide rails in the side walls, the piston advancing toward the cap upon rotation of the threaded rod, pushing the material in the hollow interior space toward the cap; and

a spout, the spout having a spout conduit extending therethrough, the spout located in the spout cavity where it may be pivoted to selectively bring the spout conduit into and out of fluid communication with the lower chamber.

5,484,087

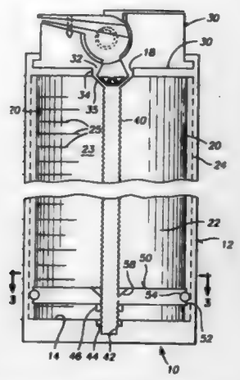
SCREWTOP CONTROLLED VISCOUS MATERIALS DISPENSER

Colin E. Negrych, 263 W. End Ave., New York, N.Y. 10023

Filed Oct. 12, 1994, Ser. No. 320,968

Int. Cl.[6] B67D *5/42*

U.S. Cl. 222—390 **15 Claims**



1. A viscous material dispenser, comprising:

means for angularly orienting said body member relative to the angular position of said valve stem,

actuator means mounted to said valve stem externally of said receptacle for axial and rotational movement therewith,

means for locking said body member to said receptacle, and

indexing means provided on said actuator means and on said receptacle for indexing the angular position of said valve stem relative to said body member and for indexing the size of said metering chamber.

5,484,089

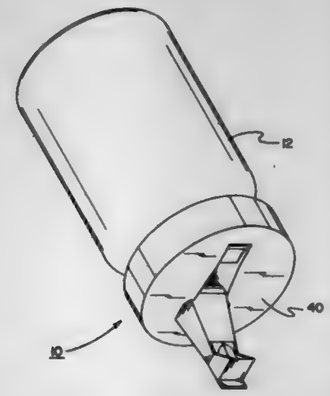
PILL BOTTLE AND DISPENSING CAP COMBINATION

Virginia L. Picerno, 1201 Grand River Dr., Sacramento, Calif. 95831

Filed Nov. 23, 1994, Ser. No. 344,025

Int. Cl.[6] B67D *3/00*

U.S. Cl. 222—534 **2 Claims**



1. A pill bottle and dispensing cap combination for allowing an individual to readily dispense pills and the like for use comprising:

a plastic pill bottle having a tubular side wall with an integral inwardly flared annular curved upper end portion and an integral inwardly flared annular curved lower end portion with a radius of curvature of the upper end portion being greater than a radius of curvature of the lower end portion, a circular planar bottom wall integral with the lower end portion and axially aligned with the side wall, and a tubular mouth with outwardly projecting threads disposed thereon having a top end and a bottom end with the bottom end integral with the upper end portion of the side wall and axially aligned with the side wall and with the mouth defining a central opening for allowing items to be disposed within the pill bottle;

a plastic dispensing cap including a cap portion and an elongated nozzle, the cap portion having a circular planar top wall with an upper surface, a lower surface, a peripheral outer edge interconnecting the upper surface with the lower surface, an annular side wall having an outer surface, an inner surface with a plurality of inwardly projecting threads disposed thereabout, a top end, and a bottom end with the top end integral and perpendicular with the outer edge of the top wall such that the side wall is axially aligned with the top wall, the top wall further including an elongated diametrically aligned channel disposed thereon with the channel defining a planar horizontal base surface, a pair of opposed and spaced upstanding inner side surfaces with the side surfaces extended between the base surface and upper surface of the top wall, an upstanding first end surface extended between the side surfaces and base surface at one end of the channel, a second end surface extended between the side surfaces and the base surface at the other end of the channel with the second end surface including an upstanding lower end surface portion and an outwardly flared upper end surface portion with the upper end surface portion and the adjacent side surfaces defining a shallow slot, and a pair of opposed seats with each seat disposed on a side surface at a location near the first end surface and with each seat including a frustral recessed portion and an vertical outwardly tapered groove having a trapezoidal cross-section extended therefrom to the upper surface of the top wall, the cap portion further including a rectangular aperture disposed on the base surface of the channel at a location between the seats, the cap portion threadedly coupled to the mouth of the pill bottle with the aperature thereof in communication with the central opening,

the nozzle having an upper wall with a planar upper surface, a lower wall, and pair of opposed spaced side walls perpendicularly interconnected therebetween, a rounded base end with a base opening disposed thereon, a sealed tip end projecting substantially orthogonally from the upper wall and terminating a first distance therefrom, an intermediate location defined between the base end and the tip end, a hollow base portion having a rectangular cross-section tapering inwards from the base end to the intermediate location such that the side walls terminate a second distance from the upper wall, with the first distance being substantially greater than the second distance, the lower wall being positioned the first distance from the upper wall proximal to the rounded base end and projecting towards the upper wall to terminate at the intermediate location positioned the second distance from the upper wall, and a hollow tip portion having a rectangular cross-section tapering outwards from the intermediate location to the tip end, a tip opening disposed on the lower surface with the tip opening formed of a generally rectangular first section located on the base portion and a generally rectangular second section located on the tip portion, a planar rectangular lip projected outwards from the tip end and aligned in parallel with the upper wall of the tip portion, and a pair of opposed axially aligned frustral plugs extended oppositely outwards from the side surfaces of the lower portion near the base end and with each plug disposed within a recessed portion of a separate seat for rotatable movement therein, the nozzle positionable in a closed orientation within the channel with its upper surface flush with the upper surface of the cap portion and with its lip is positioned in the slot of the cap portion for precluding communication between its base opening and the aperture of the cap portion and thereby preventing items disposed within the pill bottle from being dispensed through the tip opening of the nozzle, the nozzle further positionable in an open orientation with its base opening in communication with the aperture of the cap portion and the central opening of the pill bottle and thereby allowing items disposed within the pill bottle to be dispensed through the tip opening of the nozzle.

5,484,090

FRAMED PANNIER AND MOUNTING ARRANGEMENT FOR REAR CARRIER BICYCLE RACKS

Leslie Lyshkov, 608 S. Glendora Ave., Apt. #D, W. Covina, Calif. 91790

Filed Jun. 16, 1992, Ser. No. 899,640

Int. Cl.[6] B62J *9/00*

U.S. Cl. 224—40 **1 Claim**

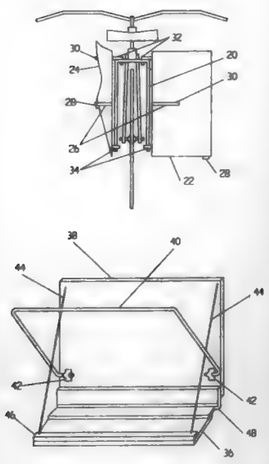
1. A device for attaching a pannier receiver to a cycle rack comprising:

a bottom panel having a top side, a bottom side, a front end, and a rear end;

a back panel having a front side, a back side, a top end, a bottom end, a first front side edge, and a second front side edge;

means for hingingly connecting the rear end of the bottom panel to the bottom end of the back panel;

a pair of flexible struts; each strut having first and second ends; the first ends of each strut being attached to an opposite corner of the back panel at the top end; the second ends of each strut being attached to an opposite corner of the bottom panel at the front end;



a U-shaped rod for engaging the pannier receiver having first and second ends; the first end of the U-shaped rod being hingingly attached to the first front side edge of the back panel and the second end of the U-shaped rod being hingingly attached to the second front side edge;

means attached to the back side of the back panel for attaching the device to the cycle rack.

5,484,091

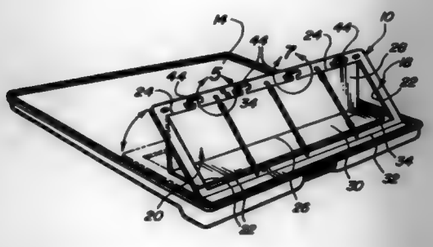
VEHICLE CARGO ORGANIZER

Leo Malinowski, Detroit, and Terrance R. Evans, Clarkston, both of Mich., assignors to MascoTech Automotive Systems Group, Inc., Auburn Hills, Mich.

Filed Jan. 12, 1994, Ser. No. 134,350

Int. Cl.[6] B60R *9/00*

U.S. Cl. 224—542 **18 Claims**



1. A cargo organizer for a rear cargo compartment of a vehicle, said cargo compartment having a load floor, said vehicle cargo organizer comprising:

a substantially planar body adapted to be hingedly mounted to the load floor of the cargo compartment, said body selectively foldable to form a compartmentalized organizer, said organizer stored substantially flush with the load floor and substantially covering the load floor within a periphery of said planar body thereby forming a flat load surface within the cargo compartment, said planar body including an upper wall and a base wall hingedly connected along a fold line, said body folding along said hinged line upon erection of said organizer such that said upper wall forms a substantially vertical support and said base wall remains flush with said load floor.

5,484,092

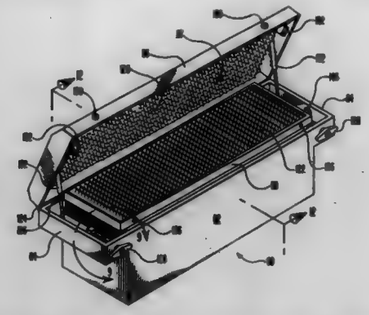
VEHICLE STORAGE BOX WITH DOUBLE SECURED COMPARTMENTS

Dale S. Cheney, 2679 W. 1700 South, Syracuse, Utah 84075

Continuation-in-part of Ser. No. 7,274, Jan. 21, 1993, Pat. No. 5,299,722. This application Apr. 4, 1994, Ser. No. 222,676

Int. Cl.[6] B60R *9/00*

U.S. Cl. 224—404 **14 Claims**



1. A vehicle storage box for securing articles in a vehicle, the storage box comprising:

first compartment means for holding articles, the first compartment means comprising an interior surface and an exterior surface, the first compartment means having a length greater than three feet and a height greater than six inches;

first locking means for locking the first compartment means such that access to the interior surface of the first compartment means from the exterior surface of the same is selectively prevented except with a proper key means for securing and unsecuring the first locking means;

second compartment means for holding articles, the second compartment means capable of securely holding at least one assembled rifle having a length of at least three feet and a height of at least six inches, the second compartment means being located within the interior of the first compartment means; and

second locking means for locking the second compartment means against one of the sides of the first compartment means such that the second compartment means is locked within the first compartment means and both the first locking means and the second locking means must be defeated to allow unauthorized access into the second compartment means.

5,484,093

MAGAZINE POUCH

Albert W. Hellweg, 84 Terrara Road, Vermont, Victoria, Australia, and Kerby C. Smith, 42827 Bean Gulch Ranch Rd., Coarsegold, Calif. 93614

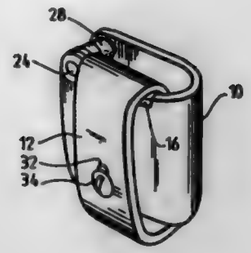
Filed Jan. 28, 1994, Ser. No. 189,907

Claims priority, application Australia, Feb. 11, 1993, PL7231

Int. Cl.[6] A45F *5/00*

U.S. Cl. 224—253 **5 Claims**

1. A variable tension magazine pouch comprising a main body portion and a belt loop portion, said main body portion and said belt loop portion being formed from a single folded piece, said main body portion having an open top for receiving a magazine therein, and a closed bottom to retain said magazine, said main body portion having two substantially parallel but spaced apart ends defining an open side therebetween, there being provided at least two fasteners passing between said ends and across said open side to maintain said ends in a spaced relationship, each of said fasteners comprising a bolt passing through one of said ends and co-operating with a captive nut on the other of said ends, said bolt being adapted to receive thereabout at least one spacer between said ends for maintaining said ends spaced apart, said belt loop portion extending downwardly from and underneath said main body portion to form said bottom.



5,484,094

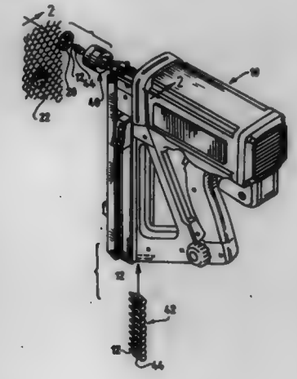
WORKPIECE-CONTACTING PROBE FOR FASTENER-DRIVING TOOL FOR FASTENING LATH TO SUBSTRATE

Harish C. Gupta, Naperville, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Jun. 16, 1994, Ser. No. 260,899

Int. Cl.[6] B25C *1/04*

U.S. Cl. 227—8 **20 Claims**



1. A fastener-driving tool, comprising:

a nosepiece;

means for driving a fastener from said nosepiece, through a workpiece, and into a substrate;

a safety actuating member movably mounted upon said tool for movement between an extended power-inhibiting position, and a retracted power-enabling position;

a workpiece-contacting probe having means disposed thereon for releasably holding a washer plate thereon; and

means mounting said workpiece-contacting probe upon said safety actuating member for properly aligning said workpiece-contacting probe, and said washer plate housed thereon, with respect to said fastener driving means such that said fastener driving means can drive said fastener through said workpiece-contacting probe, through said washer plate, through said workpiece, and into said substrate, and for moving said safety actuating member from said extended power-inhibiting position to said power-enabling position so as to enable said tool when said workpiece-contacting probe is moved against said workpiece.

5,484,095

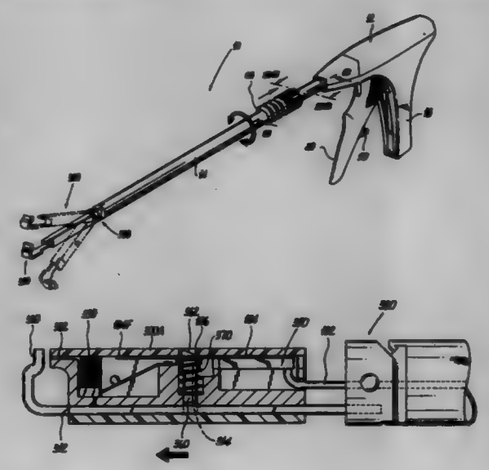
APPARATUS FOR ENDOSCOPICALLY APPLYING STAPLES INDIVIDUALLY TO BODY TISSUE

David T. Green, Westport; Henry Bolanos, East Norwalk; Lisa W. Heaton, Norwalk; Mark E. Alari, Derby, and Ghaleb A. Sater, Shelton, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 861,965, Mar. 31, 1992, Pat. No. 5,364,002. This application Oct. 27, 1993, Ser. No. 144,160

Int. Cl.[6] A61B *17/00*

U.S. Cl. 227—181.1 **35 Claims**



1. Apparatus for remote application of a surgical staple to body tissue comprising:

a frame;

one handle mounted for movement between open and closed positions and connected to said frame;

a generally elongated member connected to said frame and extending distally therefrom;

a support member positioned adjacent a distal end of said elongated member and mounted for pivotal movement with respect thereto, said support member having a cartridge coupled thereto for storing at least one surgical staple;

an anvil operatively coupled to said support member and said cartridge for forming the surgical staple;

means operatively associated with said one handle and extending through said elongated member for moving said cartridge relative to said anvil in response to movement of said one handle from said open position to an intermediate position spaced from said closed position to clamp body tissue between said cartridge and said anvil prior to forming a staple;

a staple firing mechanism operatively connected to said one handle and actuated in response to movement of said one handle from said intermediate position to said closed position and configured to individually advance a surgical staple from said cartridge into said body tissue and against said anvil to form the staple.

5,484,096

METHOD OF BONDING TWO BODIES TOGETHER BY BRAZING

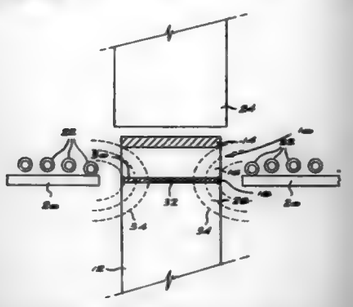
Klaus Tank, 9 Warbleton Avenue, Essexwold, Johannesburg, South Africa

Filed Jun. 24, 1994, Ser. No. 265,203

Claims priority, application South Africa, Jul. 7, 1993, 93/4877

Int. Cl.[6] B23K *31/00;13/01*

U.S. Cl. 228—121 **14 Claims**



8. A method of bonding a first body to a second body comprising the steps of:

(i) providing a brazing shim comprising at least two zones having differing melting temperatures;

(ii) placing the shim on a surface of a first body;

(iii) placing a surface of a second body, said second body made of different material than said first body, with the proviso that one of said first and said second bodies is made of cemented carbide, on the shim to form an unbonded assembly, wherein both said first and said second bodies are in direct contact with each of the at least two zones;

(iv) applying heat to the assembly to cause the shim to melt thereby bonding the assembly; and

(v) allowing the assembly to cool to a temperature at which all the zones of the shim become solid.

5,484,097

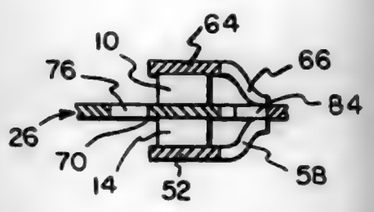
FABRICATION OF HYBRID SEMICONDUCTOR DEVICES

William V. Heuvel, Ft. Salonga, N.Y., assignor to General Instrument Corp., Hatboro, Pa.

Filed Jul. 12, 1994, Ser. No. 273,854

Int. Cl.[6] H01L *21/60*

U.S. Cl. 228—123.1 **9 Claims**



1. A method of fabricating a semiconductor device comprising mounting a first pair of semiconductor chips on respective ones of first and second integrally connected mounting pads lying in a common plane, one of said pads having a first terminal extending upwardly therefrom, mounting a second pair of semiconductor chips on respective ones of spaced apart third and fourth mounting pads, said third and fourth pads lying in a common plane and forming part of a lead frame, said lead frame including a second terminal extending towards and spaced from one of said third and fourth pads, disposing said third and fourth pads over said first pair of chips with upper surfaces of said first pair of chips contacting under surfaces of respective ones of said third and fourth pads and with a surface of said first terminal contacting a surface of said second terminal, and bonding said contacting surfaces together to form a rigid assembly.

5,484,098

SPHERICAL LNG-TANK AND A PRODUCTION METHOD FOR SUCH A TANK

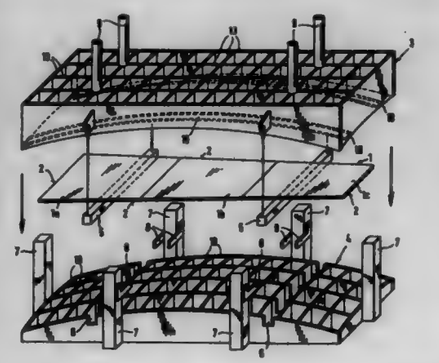
Jari Anttila, Turku; Jukka Gustafsson, Mynämäki; Matti Heinäkari, Turku; Jukka Linja, Merimasku, and Matti Vaihinen, Turku, all of, Finland, assignors to Kvaerner Masa-Yards Oy, Helsinki, Finland

Filed May 13, 1993, Ser. No. 61,193

Claims priority, application Finland, May 14, 1992, 922191

Int. Cl.[6] B23K *37/00;101/12;* **B21D** *51/08*

U.S. Cl. 228—184 **12 Claims**



1. A method for producing a plate blank for use in constructing a large vessel that is mainly spherical and has a predetermined radius of curvature, comprising:

(a) selecting a set of spherical portions of said predetermined radius of curvature, said portions being shaped so as to fit together,

(b) welding rectangular plane plates or portions of such plates together to form a composite plane plate,

(c) cutting the composite plane plate to form a composite plate blank having a peripheral shape such that on bending the composite plate blank to spherical form of said predetermined radius it conforms to the peripheral shape of one of said portions, and

(d) forming the composite plate blank to spherical form of said predetermined radius by heat forming in an oven at a temperature in the range 350°–460° C.

5,484,099

HIGH TEMPERATURE-RESISTANT, THERMALLY-PRINTABLE LABEL FOR ATTACHMENT TO HOT METAL STOCK AND METHOD THEREOF

John A. Robertson, Chillicothe, and Ken R. Vaughn, Kingston, both of Ohio, assignors to Infosight Corporation, Chillicothe, Ohio

Division of Ser. No. 123,323, Sep. 17, 1993, Pat. No. 5,422,167. This application Mar. 28, 1995, Ser. No. 412,073

Int. Cl.[6] B23K *11/10*

U.S. Cl. 228—176 **26 Claims**

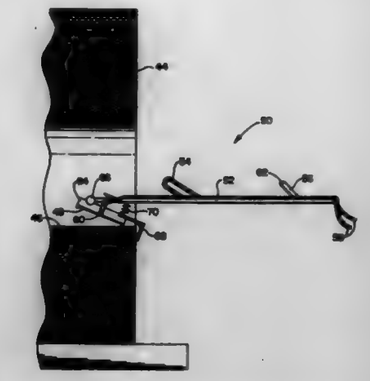
1. Method for labeling hot metal stock which has a surface and is at a temperature of up to about 1,200° F., which comprises the steps of:

(a) coating a portion of the sheet face of a metal label having a face and a back with a layer of a paint that is resistant to the temperature of the hot metal stock and receptive to being thermally transfer printed, the metal label being of a thickness so that the paint layer can be thermally transfer printed and having unpainted zones of bare metal;

(b) thermally transfer printing on said paint one or more of human or machine readable identification characters;

(c) placing the back surface of the printed label of step (b) on a surface of the hot metal stock; and

(d) welding said unpainted zones to said hot metal stock.



5,484,100

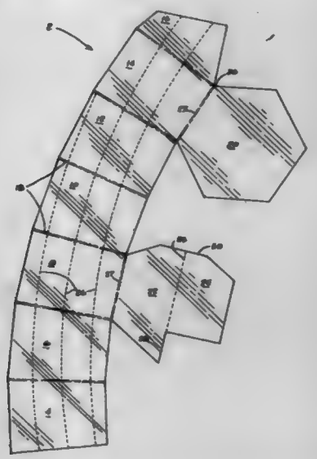
TAPERED, HEXAGONAL PAPERBOARD CARTON

William R. Rigby, Newark, Del., assignor to Westvaco Corporation, New York, N.Y.

Filed Mar. 24, 1995, Ser. No. 427,669

Int. Cl.[6] B65D *5/355*

U.S. Cl. 229—101.1 **9 Claims**



1. A tapered, hexagonal paperboard container, wherein said composite package comprised of:

at least two paperboard bottom panels;

at least six paperboard side panels hingedly connected to each other to form a tapered, hexagonal container wherein two of said side panels are hingedly connected to said at least two paperboard bottom panels; and

perforations located on said side panels wherein said perforations are formed in a spiral configuration along a first direction of said side panels.

5,484,101

OPENING ARRANGEMENT

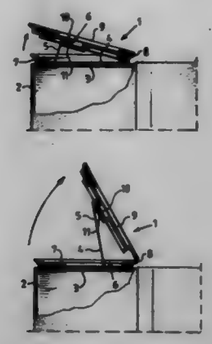
Peter Hedberg, Modena, Italy, assignor to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Filed Dec. 15, 1994, Ser. No. 357,337

Claims priority, application Sweden, Dec. 17, 1993, 9304200

Int. Cl.[6] B65Q *5/74;* **B65D** *41/62*

U.S. Cl. 229—125.04 **10 Claims**



1. An opening arrangement for a package the package being manufactured from a packaging material, the opening arrangement comprising:

a hole punched in the material;

a strip having a first portion which, prior to filling and forming of the package is sealed to the material over the hole, the strip having a second portion folded over the first portion of the strip; and

a thermoplastic structure surrounding the strip including a pouring element and a closure element, the thermoplastic structure being secured to the package,

wherein a portion of the second portion of the strip is fixedly sealed against the closure element of the thermoplastic structure.

5,484,102

FOLDING CARTON BLANK WITH FEED GATE ENGAGING NOTCH

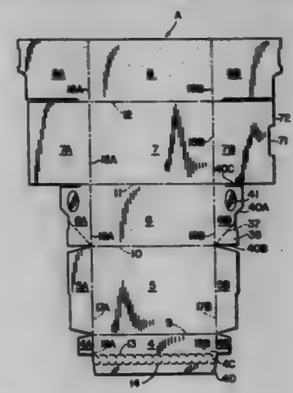
Karl F. DeMay, Newark, N.Y., assignor to Fold-Pak Corporation, Newark, N.Y.

Continuation-in-part of Ser. No. 974,975, Nov. 12, 1992, Pat. No. 5,288,012, which is a continuation-in-part of Ser. No. 796,758, Nov. 25, 1991, abandoned. This application Feb. 18, 1994, Ser. No. 198,993

Int. Cl.[6] B65D *5/10*

U.S. Cl. 229—132 **32 Claims**

1. A foldable blank for assembling a carton, said blank compris-



ing:

(a) cover, top, rear, bottom and front panels hingedly connected in the order named, said cover, top, rear, bottom and front panels each having left and right ends, and said front panel further having a first edge free of a first lip portion and said top panel being hingedly connected to said cover panel by way of a first fold line;

(b) left and right bottom panel end flaps hingedly connected to said left and right ends of said bottom panel, said left bottom panel end flap having a second edge free of a second lip portion and said right bottom panel end flap having a feed gate engaging notch and a third edge free of a third lip portion;

(c) left and right front panel end flaps hingedly connected to said left and right ends of said front panel, said left front panel end flap having a fourth edge free of a fourth lip portion and said right front panel end flap having a fifth edge free of a fifth lip portion;

(d) left and right top panel end flaps hingedly connected to said left and right ends of said top panel by way of second and third fold lines, respectively;

(e) left and right rear panel end flaps hingedly connected to said left and right ends of said rear panel;

(f) left and right cover panel end flaps hingedly connected to said left and right ends of said cover panel;

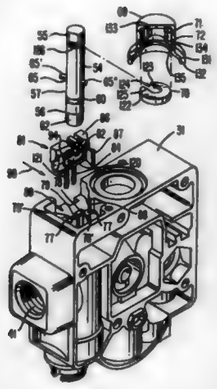
wherein said blank is designed to form a carton, said carton assembled by the left bottom panel end flap being folded first, said left front panel end flap is folded second to overlie a portion of said left bottom panel end flap, said left top panel end flap is folded third, said left rear panel end flap is folded fourth, and wherein said right bottom panel end flap is folded first, said right front panel end flap is folded second to overlie a portion of said right bottom panel end flap, said right top panel end flap is folded third, said right rear panel end flap is folded fourth, and wherein said first free edge engages said first fold line, said second and fourth free edges engage said second fold line, said third and fifth free edges engage said third fold line.

5,484,103

CONTROL DEVICE AND METHOD OF MAKING THE SAME

Gilbert Schultz, Fullerton, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 4, 1994, Ser. No. 334,559
Int. Cl.[6] C05D *15/00;* F23D *5/16*
U.S. Cl. 236—68 D **20 Claims**



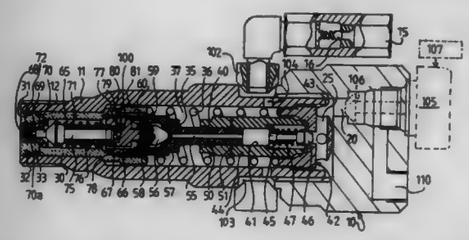
1. In a control device comprising a housing means, an electromagnetic means carried by said housing means, a movable valve means carried by said housing means and normally being disposed in a first operating position thereof and being adapted to be held in a second operating position thereof by said electromagnetic means as long as said electromagnetic means remains energized, electrical switch means carried by said housing means and being operatively interconnected to said electromagnetic means so that said electromagnetic means is adapted to be energized when said switch means is in a first operating condition thereof and is prevented from being energized when said switch means is in a second operating condition thereof, and a shaft means carried by said housing means and being adapted to be axially moved from a first axial position thereof to a second axial position thereof so as to engage said valve means and move said valve means from said first operating position thereof to said second operating position thereof, said shaft means having actuator means operatively interconnected to said switch means and being rotatably movable from a first rotatable position thereof to a second rotatable position thereof to cause said switch means to be in said first operating condition thereof, the improvement wherein said switch means comprises contact means normally disposed in the closed condition thereof which comprises said first operating condition of said switch means thereof and wherein said actuator means of said shaft means engages and holds said contact means in an open condition thereof when said shaft means is in said first rotatable position thereof whereby said open condition of said contact means comprises said second operating condition of said switch means.

5,484,104

FUEL INJECTOR PRESSURIZED BY ENGINE CYLINDER COMPRESSION

Ronald Kukler, Highton, Australia, assignor to Interlocking Buildings Pty Ltd., Victoria, Australia

PCT No. PCT/AU92/00453, § 371 Date Feb. 25, 1994, § 102(e) Date Feb. 25, 1994, PCT Pub. No. WO93/04275, PCT Pub. Date Mar. 4. 1993
PCT Filed Aug. 26, 1992, Ser. No. 199,186
Claims priority, application Australia, Aug. 26, 1991, PK7984
Int. Cl.[6] F02M *49/02;47/00*
U.S. Cl. 239—87 **14 Claims**



14. An injecting apparatus for injecting a fluid under pressure, the injecting apparatus including:

a body (**10**),

piston means (**30**, **35**) movable in the body (**10**) under the action of externally applied fluid pressure, the piston means (**30**, **35**) being operable to compress fluid to be injected in a high pressure chamber (**45**), the piston means (**30**, **35**) being selectively movable against the action of fluid pressure in a low pressure chamber (**37**), the movement of the piston means (**30**, **35**) being selectively controllable by controlling the fluid pressure in the low pressure chamber (**37**), and

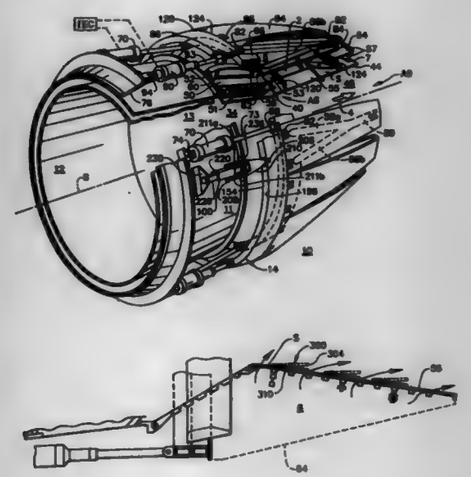
a selectively controllable injection valve (**70**) and an associated injection orifice (**68**) in fluid communication with the high pressure chamber (**45**) whereby high pressure fluid from the high pressure chamber (**45**) can be injected through the injection orifice (**68**) upon selective opening of the injection valve (**70**), the injection valve (**70**) including a valve member (**70**, **75**) movable under the action of a fluid pressure differential between fluid pressure from the high pressure chamber (**45**) and against the action of fluid pressure in a control chamber (**78**), the fluid pressure differential being selectively controllable to control operation of the injection valve (**70**).

5,484,105

COOLING SYSTEM FOR A DIVERGENT SECTION OF A NOZZLE

Robert M. Ausdenmoore, West Chester, Ohio, and Wilbert B. Freid, Bridgton, Me., assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 13, 1994, Ser. No. 274,523
Int. Cl.[6] B64D *33/04*
U.S. Cl. 239—127.3 **17 Claims**



1. A cooling system for cooling interior hot surfaces of longitudinally extending and circumferentially adjacent divergent seals and flaps bounding a hot exhaust gas flowpath in a divergent section of an aircraft gas turbine engine exhaust nozzle, said cooling system comprising:

a nozzle throat area and a nozzle exit area of the nozzle,

an area ratio control means to change a ratio of said nozzle exit area to said nozzle throat area to an overexpanded level that reduces static pressures along at least a longitudinally extending portion of said surfaces to below ambient pressure of ambient air outside the nozzle to draw said ambient air into the exhaust gas flowpath, and

a valve means to controllably flow said ambient air into the exhaust gas flowpath when said static pressures are below said ambient pressure said valve means including a valve opening means to open said valve by a radial pressure gradient across the divergent flaps and seals.

5,484,106

AUTOMATIC PRESSURIZED ADJUSTABLE SOLUTION DISPENSER

Dan G. Gilmond, 402 Stirrup Ct., Roseville, Calif. 95661

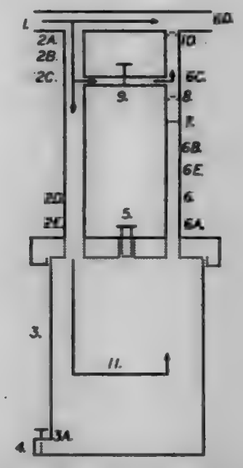
Filed Jan. 26, 1993, Ser. No. 8,776
Int. Cl.[6] B05B *7/26*
U.S. Cl. 239—317 **1 Claim**

1. A solution dispenser for dispensing a solution into a flow line, without the need for a venturi or other form of pressure manipulation in the flow line, said dispenser comprising:

a storage tank containing said solution to be dispensed, said tank having a drain and a drain valve for draining said tank, a filler opening for filling said tank, an inlet, and an outlet;

an inlet pipe extending from an upstream portion of said flow line to said tank inlet;

an outlet pipe extending from said tank outlet to a downstream portion of said flow line, said outlet pipe having a backflow preventer disposed therein to prevent backflow of said solution;



first and second nozzles disposed in said outlet pipe downstream of said backflow preventer, said first and second nozzles being spaced to define a mixing chamber therebetween; and

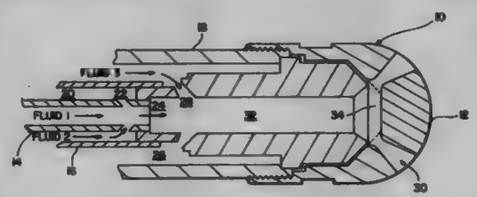
a crossover pipe extending from said inlet pipe to the mixing chamber in the outlet pipe, said crossover pipe having a control valve therein to regulate fluid flow through the crossover pipe.

5,484,107

THREE-FLUID ATOMIZER

Michael J. Holmes, Alliance, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed May 13, 1994, Ser. No. 242,227
Int. Cl.[6] B05B *7/04*
U.S. Cl. 239—427.5 **3 Claims**



1. A method for mixing a first fluid, a second fluid and a compressible third fluid in an atomizer, comprising the steps of:

supplying a first fluid, which is a member selected from the group consisting of a liquid, a gas, a slurry, and a solid-laden gas, through a first fluid supply conduit being of a constant inside diameter extending over the entire length of said conduit and said conduit being connected to a nozzle head defining a space for receiving a mixture containing the first, second and third fluids;

supplying a second fluid, which is a member selected from the group consisting of a liquid, a gas, a slurry, and a solid-laden gas, through a second fluid supply conduit connected to the nozzle head and positioned concentrically about the first fluid supply conduit to define a first annular fluid passage;

combining the first fluid and the second fluid within the first fluid supply conduit by allowing the second fluid to flow through an aperture in the wall of the first fluid supply conduit at a position near the outlet end of the first fluid supply conduit;

supplying a compressible third fluid, which is a member selected from the group consisting of a gas and a solid-laden gas, through a third fluid supply conduit connected to the nozzle head and positioned concentrically about the second fluid supply conduit to define a second annular fluid passage;

combining, in a mixing chamber, the compressible third fluid with the first fluid and the second fluid by allowing the third fluid to flow through an opening in the wall of the mixing chamber, the opening being positioned near the inlet end of the mixing chamber and extending directly between the second annular passage and the mixing chamber so that the third fluid has a straight flow path from the second annular passage to the mixing chamber;

transporting a mixture of the first fluid, the second fluid, and the third fluid through the mixing chamber and directly thereafter through the space defined by the nozzle head; and

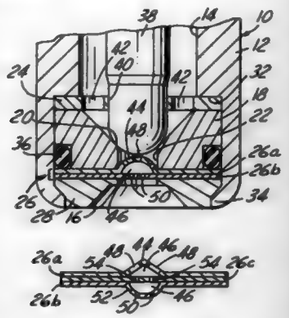
discharging from the space defined by the nozzle head a jet of the mixture of the first fluid, the second fluid and the compressible third fluid through at least one hole in the nozzle head.

5,484,108

FUEL INJECTOR HAVING NOVEL MULTIPLE ORIFICE DISK MEMBERS

Debora E. Nally, Williamsburg, Va., assignor to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Mar. 31, 1994, Ser. No. 221,193
Int. Cl.[6] F02M *51/06*
U.S. Cl. 239—553.3 **7 Claims**



1. A fuel injector for injecting fuel into an internal combustion engine comprising:

a body,

a fuel passageway through said body leading to a nozzle from which fuel is injected,

a valve seat disposed internally of said body within said passageway,

a valve element that is reciprocated relative to said valve seat to close and open said passageway to flow by seating and unseating said valve element on and from said valve seat, and

at least two thin disk orifice members disposed in said passageway between said valve seat and said nozzle, said thin disk orifice members being fabricated from a metallic material are stacked face-to-face to abut around their perimeters at least one of which is shaped in its central region to cooperatively define between themselves a walled chamber space,

one of said orifice disk members comprises a plurality of through-orifices extending into said chamber space to place said chamber space in fluid communication with said fuel passageway and the other of said orifice disk members having a plurality of through-orifices extending into said chamber space to place said chamber space in fluid communication with said nozzle, each one of said through-orifices in said one orifice disk member has a larger flow area than each one of said through-orifices in said other orifice disk member: so that fuel that has passed through said valve seat passes through said chamber space before it is ejected from said nozzle.

7. A fluid injector having an input port and an output port, a passageway from the input port to the output port, and a valve element intermediate the input port and the output port for opening and closing the passageway, the improvement comprising:

two orifice disk members fabricated from a metallic material and located between the valve element and the output port, said members stacked face-to-face to abut around their perimeters but are shaped in their central regions to cooperatively define between themselves a chamber, one of said orifice disk members comprises at least one orifice extending into said chamber for fluid communication with the passageway and the other of said orifice disk members having at least one orifice extending into said chamber for fluid communication with the output port so that fluid that has passed through the valve element passes through said chamber before it is ejected from the output port: and

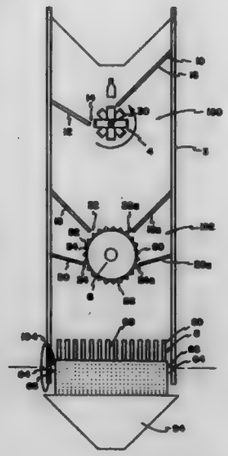
a third orifice disk member is sandwiched between said two orifice disk members to divide said chamber space into two portions and comprises its own at least one through-orifice for placing the two portions of said chamber space in fluid communication with each other.

5,484,109

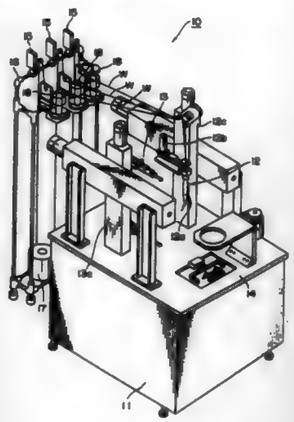
GLASS SHEARING APPARATUS

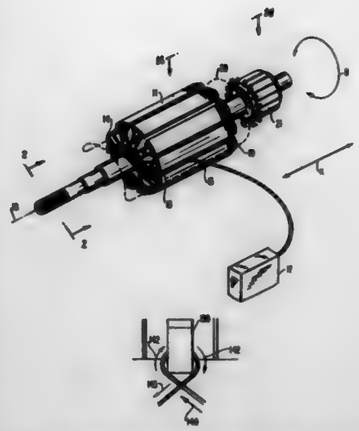
Donald E. Cook, 4335 Roberts Lake Trail, Faribault, Minn. 55021

Filed Sep. 20, 1993, Ser. No. 124,303
Int. Cl.[6] B02C *23/16;19/14;13/02*
U.S. Cl. 241—73 **5 Claims**



5,484,113
METHOD AND APPARATUS FOR WINDING WIRE AROUND A DEFLECTION YOKE
Yasuhiro Watanabe, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 25, 1993, Ser. No. 140,465
Claims priority, application Japan, Nov. 6, 1992, 4-322553
Int. Cl.[6] H01B *11/04;* H01F *7/06*
U.S. Cl. 242—7.03 6 Claims





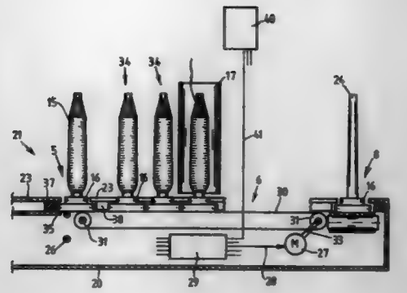
1. A winding apparatus for a deflection yoke defining an x-axis and a z-axis with the z-axis being coaxial with the deflection yoke and the x-axis being orthogonal to the z-axis comprising;
a base;
a nozzle for supplying a wire to be wound around said deflection yoke;
a tensioner for supplying said wire to said nozzle;
a holder for holding said deflection yoke; and
two guide means, each guiding said wire to a different respective vertical position on said deflection yoke.

5,484,114
PROGRAMMABLY CONTROLLED ARMATURE WINDING METHODS
Luciano Santandrea; Massimo Lombardi, and Salvatore Amato, all of Florence, Italy, assignors to Axis USA, Inc., Tampa, Fla.
Continuation of Ser. No. 139,641, Oct. 8, 1993, Pat. No. 5,413,289, which is a continuation of Ser. No. 738,199, Jul. 30, 1991, abandoned. This application May 1, 1995, Ser. No. 431,541
Int. Cl.[6] H02K *15/04*
U.S. Cl. 242—7.03 4 Claims

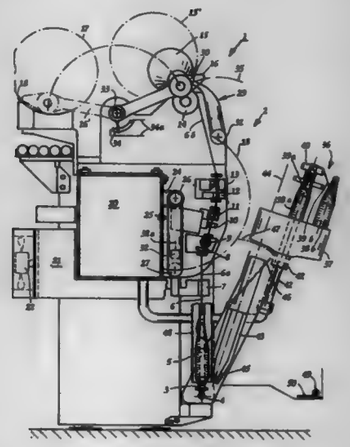
1.A method of winding a wire on an armature having an axial shaft, a core member permanently and fixedly mounted concentrically on said shaft, and a commutator permanently and fixedly mounted concentrically on said shaft at a location which is axially spaced from said core member, said core member having a plurality of circumferentially spaced, radially and axially extending slots, and said commutator having a plurality of circumferentially spaced coil lead termination structures, said wire being dispensed from a wire outlet of a wire dispensing member which is movable relative to said armature, said method comprising the steps of:
anchoring the wire extending from said wire outlet relative to said armature;
moving said wire dispensing member relative to said armature so that wire is pulled from said wire outlet during this step at least initially as a result of said anchoring step and is wound in a first coil around said core member by passing wire in a repeating succession (1) through a first slot, (2) adjacent a first axial end of said core member from said first slot to a second slot, (3) through said second slot, and (4) adjacent a second axial end of said core member from said second slot back to said first slot, the wire dispensing member following a first path of movement relative to said armature during this step such that the wire touches substantially only the wire dispensing member, the armature, and previously wound wire in travelling from said wire outlet to said first coil;
after completion of said first coil, moving said wire dispensing member relative to said armature so that wire pulled from said wire outlet during this step passes through a first of said coil lead termination structures on said commutator so that said wire is permanently retained by said first coil lead termination structure prior to performance of any claimed step following this step, the wire dispensing member following a second path of movement relative to said armature during this step such that the wire touches substantially only the wire dispensing member, the armature, and previously wound wire in travelling from said wire outlet to said first coil lead termination structure; and
after completion of the immediately preceding step, repeating the two preceding steps using the same wire dispensing member an a continuous continuation of the same wire, but using different slots of said core member as said first and second slots and using different coil lead termination structures of said commutator as said first coil lead termination structure until a desired number of coils have been wound on said core member.

5,484,115
TEXTILE MACHINE HAVING MULTIPLE WINDING STATIONS FOR PRODUCING WOUND YARN PACKAGES
Ulrich Wirtz, Mönchengladbach, Germany, assignor to W. Schlafhorst AG & Co., Monchen-Gladbach, Germany
Filed Nov. 7, 1994, Ser. No. 335,265
Claims priority, application Germany, Nov. 11, 1993, 43 38 552.4
Int. Cl.[6] B65H *54/02;69/04;* B65G *43/00*
U.S. Cl. 242—35.5 A 13 Claims

1. A textile machine for winding yarn into cheeses, having a plurality of aligned winding heads and a transport system for conveying pallets carrying yarn-wound cops and empty bobbins disposed upright thereon to and from the winding heads, the pallet transport system having at least one cop supply track, at least one empty bobbin return track and a plurality of transport tracks transversely connecting the individual winding heads with the cop supply and bobbin return tracks, each of the plurality of transverse transport tracks having at least one movable transport element extending to the cop supply track for transporting the pallets along said transverse transport track and an individual means for reversible driving of the at least one movable transport element.

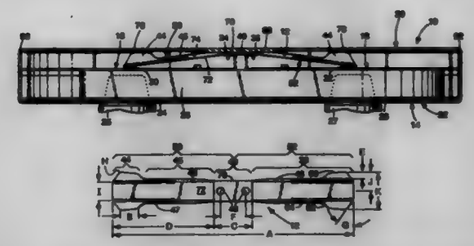


5,484,116
METHOD AND APPARATUS FOR MOVING INDIVIDUAL YARN ENDS INTO A YARN END JOINING DEVICE
Dieter Horak; Uwe Fabelje; Joachim Stiller; Dietmar Engelhardt, all of Monchen-Gladbach; Norbert Corres, Wassenberg; Petra Vautz, Monchen-Gladbach; Arnold Muck, Schwalmtal, and Ulrich Wirtz, Monchen-Gladbach, all of, Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Germany
Filed Sep. 24, 1993, Ser. No. 126,488
Claims priority, application Germany, Sep. 24, 1992, 42 31 958.7
Int. Cl.[6] B65H *54/20;54/22*
U.S. Cl. 242—35.6 R 15 Claims



1. In a winding station of a bobbin winding machine having at least one delivery bobbin having a delivery yarn end, at least one take-up bobbin having a take-up yarn end, and a yarn joining device, a method for moving the individual yarn ends into yarn receiving disposition at the yarn joining device for subsequent joining thereof, said method comprising the steps of:
providing a singular yarn manipulating device for moving both the delivery yarn end and the take-up yarn end;
moving a first one of the yarn ends into yarn receiving disposition at the yarn joining device using said yarn manipulating device; and
moving a second one of the yarn ends into yarn receiving disposition at the yarn joining device using said yarn manipulating device after said first yarn end is disposed at the yarn joining device for subsequent joining of the yarn ends.

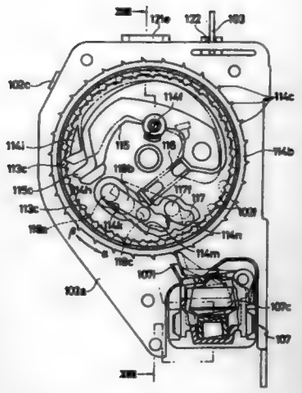
5,484,117
REEL SPRING FOR A THIN-WALLED VIDEOCASSETTE
Dale T. Tollefson, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 31, 1994, Ser. No. 221,085
Int. Cl.[6] G11B *23/087*
U.S. Cl. 242—345.2 16 Claims



1. An integral, one-piece spring of resilient sheet-like material for applying pressure between an inner surface of a cassette housing and reels rotatably mounted within the housing, wherein the spring comprises:
a central mounting portion mounted to the inner surface of the housing; and
a pair of elongated pressure portions extending from opposite sides of the mounting portion and configured to engage one of the reels, wherein each pressure portion comprises a central base having side edges, wherein the base and the central mounting portion are aligned; and at least one spring portion located along a transverse edge of the base, wherein each spring portion extends from the base at an angle with the base, wherein each spring portion has a free edge which engages the inner surface of the housing and resiliently forces the pressure portion away from the housing while urging the pressure portion into engagement with the reel, and wherein the spring provides its spring force by pressing opposed spring portions against an inner surface of the housing to divide the total spring force between at least two regions of the housing.

5,484,118
SEAT BELT RETRACTOR
Yoshiichi Fujimura, Shiga, and Shizutaka Matsuoka, Hikone, both of, Japan, assignors to Takata Corporation, Tokyo, Japan
Filed Mar. 19, 1993, Ser. No. 34,702
Claims priority, application Japan, Mar. 24, 1992, 4-066326
Int. Cl.[6] B60R *22/34;* B65H *75/48*
U.S. Cl. 272—384.2 9 Claims

1. A seat belt retractor for a vehicle including a reel shaft for winding up a webbing, a frame rotatably supporting both ends of said reel shaft, lock means disposed in between said frame and said reel shaft and arranged to allow rotation of said reel shaft under normal circumstances and to be activated, when need arises, so as to prevent rotation of said reel shaft in at least a direction in which said webbing is unwound, deceleration sensing means operating when deceleration exceeding a predetermined value acts on the vehicle, and lack activating means for activating said lack means in response to the operation of said deceleration sensing means.
said lock means including either a first engagement member or a first engagement portion, which is provided on said frame at a position which is closer to one end of said reel shaft, the other of said first engagement member and first engagement portion, which is supported on said one end of said reel shaft so as to be engageable with the first-mentioned one of said first engagement member and first engagement portion, either a second engagement member or a second engagement portion, which is provided on said frame at a position which is closer to the other end of said reel shaft, and the other of said second engagement member and second engagement portion, which



is supported on the other end of said reel shaft so as to be engageable with the first-mentioned one of said second engagement member and second engagement portion,

said lock activating means including lock control means for controlling locking such that after said first engagement member and first engagement portion have been set in a state where they are engageable with each other, said second engagement member and second engagement portion are set in a state where they are engageable with each other, and then engagement between said first engagement member and first engagement portion and engagement between said second engagement member and second engagement portion are effected,

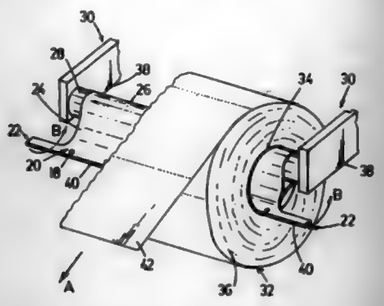
wherein said lock control means effects control such that the engagement between said first engagement member and first engagement portion and the engagement between said second engagement member and second engagement portion are completed simultaneously.

5,484,119

DEVICE FOR CONTROLLING LENGTH OF PAPER PULLED FROM A WOUND ROLL THEREOF

Raymond G. Olive, Dorchester, Canada, assignor to Discount High Limited, New Brunswick, Canada

Filed Mar. 28, 1994, Ser. No. 218,172
Int. Cl.[6] B65H *59/02*
U.S. Cl. 242—422.4 **4 Claims**



4. A device adapted for use with a spindle of a roll holder for indicating when an appropriate length of wound web material has been pulled from a roll of the web material residing in the roll holder, comprising:

a centre section of thin flexible plastics material defining an arcuate bight portion and a pair of wall portions converging from the bight portion to longitudinal end edges of the wall portions;

means securing the wall portions together along the end edges thereof; and

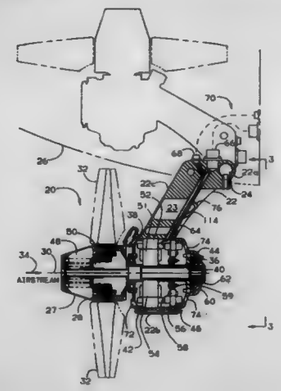
a pair of flexible overlapping arms extending laterally from said centre section at the secured end edges of said wall portions, said arms, when said spindle is received within said device and said spindle and said device are received within a core of a roll of web material mounted in the roll holder, extending beyond the ends of said roll, for engagement with adjacent edges of the roll holder during pulling action on a free end of said web material to indicate that a length of web material may be torn from the roll, said arms being sufficiently flexible to bend and pass by said roll holder edges upon further pulling of said material.

5,484,120

SUPPORT STRUT FOR RAM AIR DRIVEN TURBINE

Anthony Blakeley; Timothy S. Konicek; Gregory E. Horihan, all of Rockford, and William D. Sherman, Hampshire, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Mar. 11, 1994, Ser. No. 212,549
Int. Cl.[6] B64D *27/00;41/00;* **F02C** *7/20*
U.S. Cl. 244—54 **21 Claims**



1. An auxiliary power unit for an aircraft comprising:

a ram air driven turbine including blade means attached to a hub assembly which is rotatable about an axis of rotation; and

a strut having mounting means at one end thereof for attaching said strut to the aircraft, and a housing at the other end thereof for attaching the hub assembly of the ram air driven turbine;

said housing and mounting means of said strut being rigidly connected by a central portion of said strut extending generally radially from said axis of rotation of the ram air turbine at a fixed angle from Said axis of rotation;

said central portion of said strut including a first and a second leg member spaced with respect to one another so as to form an axially opening channel therebetween.

5,484,121

ICING DETECTOR FOR AIRCRAFT SURFACES

Jacques Padawer, 170 Villard Ave., Hastings-on-Hudson, N.Y. 10706, and Robert M. Goldberg, 120 Orleans La., Jericho, N.Y. 11753

Filed Nov. 12, 1993, Ser. No. 151,181
Int. Cl.[6] B64D *15/20*
U.S. Cl. 244—134 F **10 Claims**

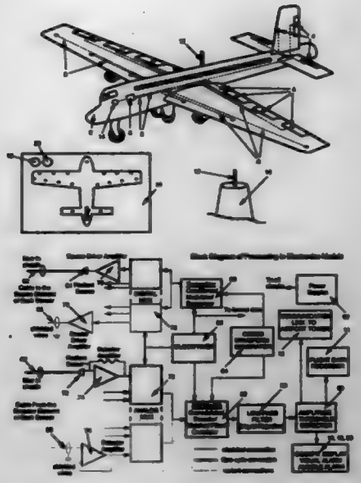
1. A system for detecting the presence of ice on the external surfaces of an aircraft, comprised of:

a) a plurality of radiant sensors that are flush-mounted at convenient places in the external surface of the aircraft, each said radiant sensor consisting of the combination of a source element that can radiate energy normal to and away from the surface of the aircraft and an adjacent detector element which is sensitive to energy normal to and incident upon the surface of the aircraft, so that said radiant sensor can generate a signal when the fields of view of said source element and said detector element are mutually covered by a reflecting material;

b) an electronics module that is connected to said source element and said detector element of each of the radiant sensors, that generates a time-coded signal to control the emission of each source element, that processes the received signal from each detector element by correlating it with said time-coded signal and that develops a logical signal to indicate the presence or absence of a reflecting material at each radiant sensor; and

c) an alarm unit located in the cockpit of the aircraft that is connected to said electronics module and that indicates the presence or absence of a reflecting material at each of the radiant sensors,

such that when ice forms on any radiant sensor, radiant energy emitted from the source element and reflected from the ice onto the adjacent detector element will generate a logical signal and the presence of ice will be indicated by the alarm unit.



i) an inner plate having heat exchange fins extending away from an outer surface of the inner plate, said heat exchange fins forming channels to direct an exhaust gas stream from the turbine engine across the outer surface of the inner plate and enable heat transfer therewith, said inner plate being formed of a material which can withstand degradation by the exhaust gas from the turbine engine;

ii) an outer plate having heat exchange fins extending away from an outer surface of the outer plate, said heat exchange fins on the outer plate forming channels to direct a cooler airflow passing through the turbine engine across the outer surface of the outer plate and enable heat exchange therewith, said inner and outer plates defining a plenum therebetween; and

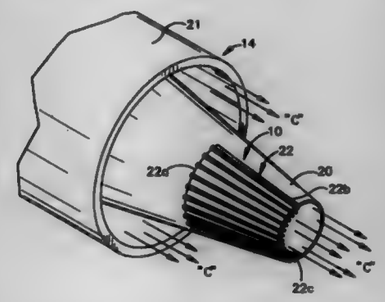
iii) heat transfer fluid disposed within the plenum formed between the inner plate and the outer plate, said heat transfer fluid being in heat exchange relationship with an inner surface of the inner plate and an inner surface of the outer plate such that heat energy can be transferred between the plates.

5,484,122

TURBINE EXHAUST GAS ANTI-ICE SYSTEM

Dennis W. DeSalve, Findlay, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Nov. 9, 1993, Ser. No. 149,588
Int. Cl.[6] B64D *15/00*
U.S. Cl. 244—134 B **24 Claims**



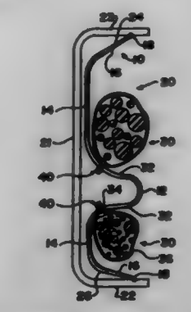
1. An exhaust gas heat exchanger for the turbine engine tailpipe of an aircraft, comprising:

5,484,123

SELF-LOCKING VEHICLE ROUTING RETAINER

Dan T. Logan, Fremont, Ind., assignor to Navistar International Transportation Corp., Chicago, Ill.

Filed Feb. 28, 1994, Ser. No. 203,091
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—68.1 **9 Claims**



1. In combination with a vehicle frame rail of channel section having spaced flanges joined by a web portion, a self-locking vehicle routing retainer for engagement within said frame rail, said retainer being adapted to have a bundle of elongated members secured thereto and comprising an integrally formed U-shaped spring steel body including:

a main body portion of a length less than the distance between said flanges of said frame rail and a width less than its beight;

upper and lower leg portions respectively disposed at an obtuse angle to said main body portion and extending therefrom to distal ends disposed a distance from said main body portion less than the length of said frame rail flanges, said retainer being retained by frictional engagement of said distal ends with said frame rail flanges within an inner periphery of said frame rail defined by said web portion and said frame rail flanges; and

cooperative means permitting the attachment of said bundle of elongated members to said main body portion.

5,484,124

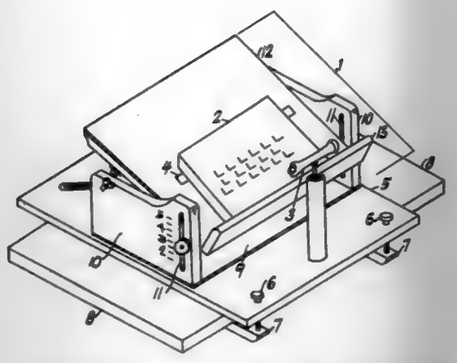
NON-TACTUAL FACILITATION SUPPORT SYSTEM

Donald Billings, 8 Sycamore Pl., East Northport, Long Island, N.Y. 11731

Filed Mar. 3, 1993, Ser. No. 25,559
Int. Cl.[6] B68G *5/00*
U.S. Cl. 248—118 **11 Claims**

1. A communication facilitation system comprising:

a. an easel for supporting a communication device;



b. a human appendage support operatively associated with the easel; and

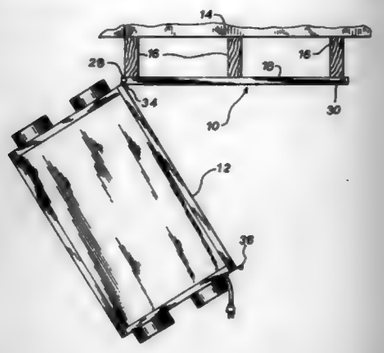
c. a base having a top side and a bottom side, wherein the easel is mounted to the top side of the base and wherein the base has two knobs with threaded studs which thread into clamp bars below the base, which hold the entire apparatus firmly to the tabletop.

5,484,125

APPLIANCE MOUNTING SYSTEM

Thomas J. Anoszko, Oregon, Wis., assignor to Research Products Corporation, Madison, Wis.

Filed Apr. 28, 1993, Ser. No. 55,229
Int. Cl.[6] A47H *1/10*
U.S. Cl. 248—201 **2 Claims**



1. A mounting system for allowing one man installation and removal of an appliance from a supporting structure, said system comprising:

an assembled appliance having a linear dimension and a manipulable weight;

an elongated, U-shaped bracket connected to said supporting structure and having legs formed of continuous walls extending away from said supporting structure, said legs defining a channel therebetween and including openings formed therein surrounded by said walls, said bracket having a pivot end and a locking end;

a mounting pin disposed at said pivot end of said bracket for exclusively suspending said assembled appliance and extending through a first set of said surrounded openings in said legs of said bracket and across said channel, said mounting pin comprising a first elongated fastener having a first, singular retaining member on one end thereof;

a mounting hook disposed towards one end of said appliance and extending outwardly from a surface of said appliance, said appliance being pivotally suspended from said mounting pin and said bracket;

a locking sleeve disposed at said locking end of said bracket for locking said assembled appliance in a raised position, said locking sleeve dimensioned to fit within said channel; and

a locking pin disposed at said locking end of said bracket for exclusively suspending said assembled appliance, said locking pin disposed within said sleeve and extending through a second set of surrounded openings formed in said legs of said bracket and extending across said channel, said locking pin comprising a second elongated fastener having a second, singular retaining member on one end thereof;

said assembled appliance being pivotally supportable about said mounting pin and lockable in said raised position by said locking pin, the weight of said assembled appliance being completely supported at both said pivot end and said locking end by said first and second elongated fasteners and said first and second singular retaining members;

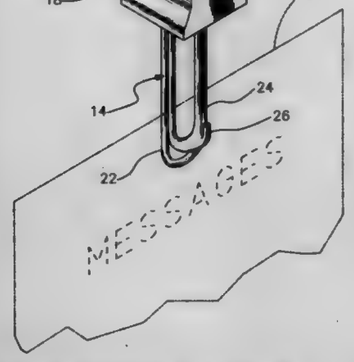
said assembled appliance being installable and removable by respective tightening and loosening of said first and second singular retaining members.

5,484,126

SURFACE PIERCING SHEET RETAINER

Irene W. Kitchin, P.O. Box 250, Jamul, Calif. 91935

Filed Jan. 26, 1995, Ser. No. 378,563
Int. Cl.[6] A47B *96/06*
U.S. Cl. 248—217.3 **11 Claims**



1. A surface piercing sheet retainer comprising:

a mounting means for piercingly engaging a support surface;

an engaging means extending from the mounting means for coupling to a planar sheet of material such that the planar sheet can be suspended relative to the support surface;

wherein the engaging means extends substantially orthogonally from a longitudinal axis directed through the mounting means;

wherein the mounting means comprises a gripping member for being grasped and manipulated by an individual; and a mounting pin projecting from the gripping member for piercing insertion into a support surface, Wherein the mounting means can be rotatably positioned relative to the support surface;

wherein the engaging means comprises a first depending loop projecting from the gripping member of the mounting means; and a second depending loop projecting from the gripping member of the mounting means and into a substantially parallel orientation relative to the first depending loop;

wherein the first depending loop is of a first longitudinal length, with the second depending loop being of a second longitudinal length, wherein the first longitudinal length is substantially greater than the second longitudinal length;

wherein the first depending loop is of a first transverse width, with the second depending loop being of a second transverse width, wherein the first transverse width is substantially greater than the second transverse width such that the second depending loop is permitted to pass through an interior of the first depending loop;

wherein the first depending loop resides within a first plane, and the second depending loop resides within a second plane oriented substantially spaced and parallel relative to the first plane;

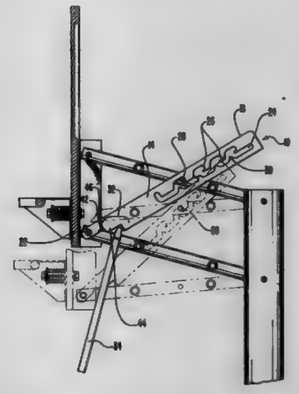
and further comprising a hook member projecting from the second depending loop.

5,484,127

ANGLED SUPPORT BRACE

Barry D. Mower, and Tony L. England, both of Layton, Utah, assignors to Lifetime Products, Inc., Clearfield, Utah

Filed Jul. 15, 1994, Ser. No. 275,587
Int. Cl.[6] A63B *63/00*
U.S. Cl. 248—284.1 **15 Claims**



1. A support brace for the adjustable support of a basketball goal system having a deformable parallelogrammatic structure capable of deformation into a plurality of configurations, said support brace being pivotally connected to the parallelogrammatic structure so that the brace can pivot in a vertical plane in response to the application and release of a force applying implement, said support brace comprising:

a trough shaped member with an elongated base and a pair of sides angularly extending from said base, each side having a connected edge and a free edge, said connected edge being connected to said base, said sides being angled with respect to each other such that the distance between the sides is greater near the free edge of each side than it is nearer the base, said trough shaped member comprises:

a locking means for securing said parallelogrammatic structure in one of a plurality of positions, said locking means having both engaged and disengaged positions; and

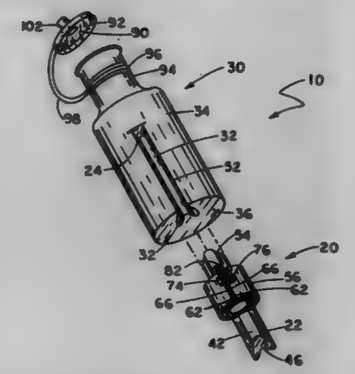
a receiving member for receiving a tip of the force-applying implement and restraining the tip from inadvertent slippage from said support brace, said receiving member being positioned such that a force may be applied to said support brace to pivot said support brace in a vertical plane between an engaged position and a disengaged position said receiving member comprising a "T"-shaped base member with an elongated stem and a pair of side ears, the stem being continuous with the elongated base of the support brace, each side having a notch capable of engaging one of the side ears of the base member.

5,484,128

BEVERAGE BOTTLE AND GOLF CART MOUNTING APPARATUS

James L. France, Sr., 8181 Boca Rio Dr., Boca Raton, Fla. 33433

Filed May 31, 1994, Ser. No. 251,614
Int. Cl.[6] F16M *13/00*; B62J *11/00*
U.S. Cl. 248—311.2 **7 Claims**



1. A beverage retaining apparatus for attachment to any one of several parts of several known structures, the given part having a part outer surface and having any of several cross-sectional shapes including circular and square, comprising:

a beverage retaining vessel having a vessel wall,

bracket means for fitting around said part, said bracket means comprising a part encompassing member having an open mode for receiving a part and a closed mode for engaging and gripping said part, wherein said engaging member in said closed mode defines a substantially fixed member cross-sectional area within said encompassing member, said member cross-sectional area having a minimum cross-sectional distance, said encompassing member having an inner member surface and sized such that said inner member surface is larger than and spaced apart from said given part outer surface, and comprising deformable gripping material extending from said inner member surface for filling the space between said inner member surface and said given part outer surface, said deformable gripping material having a cross-sectional thickness of at least 0.146 of said encompassing member minimum cross-sectional distance to circumferentially engage and circumferentially and substantially continuously abut both circular and square shaped part cross-sections,

interconnection means for connecting said vessel to said bracket means.

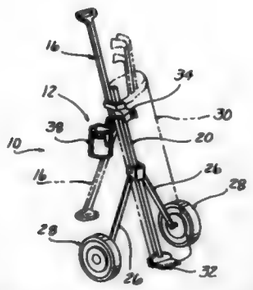
5,484,129

BEVERAGE HOLDER ARRANGEMENT FOR A GOLF CART

Michael D. Megal, 37630 Hayes, Clinton Township, Macomb County, Mich. 48038

Filed Dec. 20, 1994, Ser. No. 359,611
Int. Cl.[6] A47K *1/08*
U.S. Cl. 248—311.2 **6 Claims**

1. A beverage container holder arrangement for a wheeled golf cart having an upright stanchion member for supporting a golf bag on a bottom plate and against an upper rest, both said bottom plate and said upper rest supported by said stanchion member, and a handle member mounted to an upper end of said stanchion and extending upwardly therefrom above said upper rest, said holder arrangement including a post extending horizontally and laterally from said upper end of said stanchion member at the level of the upper part of a golf bag leaning against said upper rest, a U-shaped bail having a pair of legs joined by a connecting portion, means pivotally supporting said bail on a projecting end of said post to be



freely swingable in a fore and aft direction, and a cylindrical beverage container receptacle received between said bail legs and either side of said beverage container receptacle pivotally attached to a respective leg to be freely swingable laterally, whereby said beverage container receptacle is held laterally away from said upper end of said stanchion member by said post and is self-leveling by tilting on said post in fore and aft and lateral directions about transverse axes.

5,484,130

SUPPORT COLUMN FOR USE IN A MINE

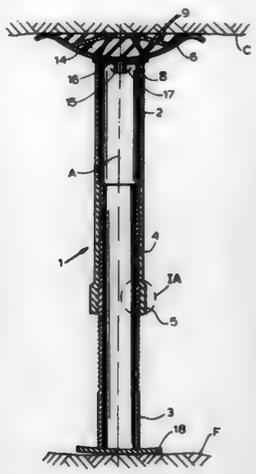
Lothar Domanski, Oberhausen, and Rudi Podjadtke, Herne, both of, Germany, assignors to Bochumer Eisenhutte Heintzmann GmbH & Co. KG, Bochum, Germany

Filed Oct. 28, 1994, Ser. No. 330,714

Claims priority, application Germany, Nov. 13, 1993, 43 38 831.0

Int. Cl.[6] A47F *5/00*

U.S. Cl. 248—354.3 **8 Claims**



1. An adjustable column for use between ceiling and floor surfaces of a mine, the column comprising:

an outer tube having an outer end and an inner end;

an inner tube having an inner end in the outer tube at the inner end thereof and an outer end, the tubes being coaxial to an upright axis;

an external screwthread on the outer-tube inner end;

an inner screwthread on the inner-tube inner end engaging the external screwthread, whereby the tubes can be screwed relative to each other to change the axial length of the column, one of the outer ends being operatively braced against one of the surfaces and the other outer end being spaced from the other of the surfaces and formed with a concave seat turned toward the other surface;

an elastically deformable plate sitting on the seat, concave away from the column, axially engaging the other surface, and braced axially between the seat of the other outer end and the other surface; and

a body of compressible material in the plate and engaging the other surface.

5,484,131

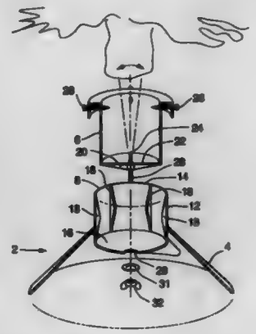
TREE LEVELLING STAND

Michael T. Aldrete, 215 Brookside Dr., San Anselmo, Calif. 94960, and Paul A. Lagomarsino, 840 Angus Ave. W., San Bruno, Calif. 94066

Filed Dec. 5, 1994, Ser. No. 350,279

Int. Cl.[6] F16M *13/00*

U.S. Cl. 248—527 **12 Claims**



1. A tree stand comprising:

a base member adapted to be supported on a floor and having an upwardly facing recess opening formed therein;

a cup member having a longitudinal axis received within the recess opening of the base member for movement to alter the angle of the longitudinal axis relative to the base member;

means to secure a tree within the cup member; and

means to selectively adjust and lock the cup member within the recess opening at different angular orientations of the longitudinal axis relative to the base member,

wherein the adjustment means comprises a fulcrum surface within the recess opening for engagement with the cup member to enable the cup member to be displaced by the fulcrum surface causing a change in the angular orientation of the cup member longitudinal axis relative to the base member.

5,484,132

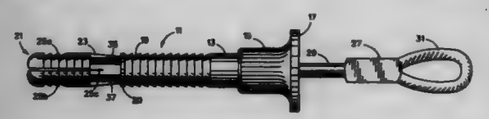
REMOVABLE PITON CLIMBING AID AND METHOD OF USING

Philip B. George, 2025 W. Broad St., and Gregory T. Horwath, 2071 Kenmore Ave., both of Bethlehem, Pa. 18018

Filed Feb. 8, 1995, Ser. No. 385,275

Int. Cl.[6] A63B *29/02*

U.S. Cl. 248—231.9 **14 Claims**



1. A climbing aid for providing a removable anchor in an orifice pre-prepared in a rock face for receipt of such climbing aid comprising:

(a) a hollow elongated body member having a substantially uniform diameter and adapted for containment within a uniformly prepared elongated opening in a rock face extending

substantially perpendicular with respect to the rock face into which the climbing aid is to be inserted,

(b) an opening extending from one end of such hollow elongated body member to the other,

(c) a wedge action-type expansible head disposed at one end of the hollow body member, said wedge action-type expandable head having an unexpanded diameter substantially equal to or less than the diameter of the hollow body member and an expanded diameter substantially greater than the diameter of the hollow body member said expansible head being comprised of at least three wedge members in which each of said wedge members has outer arcuate toothed surfaces the radius of each of which arcuate surfaces is substantially equal to the radius of the hollow body member,

(i) a principal one of said wedge members having an outer arcuate surface greater in circumference than the outer arcuate surfaces of each of two secondary wedge members, but lesser in circumference than the outer circumference of the two secondary wedge members combined,

(ii) the principal wedge member having a guiding key extending from a keyway on its inside surface and adapted to extend between the two secondary wedge members and a longitudinally smooth inside surface slanted outwardly toward the hollow body member,

(iii) the two secondary wedge members having longitudinally smooth inner surfaces slanted inwardly toward an inner end of the hollow body member, each being arranged and adapted to fit into the space on each side of the guiding key defined by the key and the inner surface of the principal wedge member,

(d) an outwardly curved portion at one end of the said hollow body member arranged and adapted for controlled grasping by the hand of a user of the climbing aid,

(e) a principal cable means extending through the opening in the hollow body member and adapted at one end for attachment to climbing safety means and secured at the opposite end to the principal wedge member,

(f) a pair of secondary cable means each attached at one end to the end of the hollow body member removed from the outwardly curved portion upon said hollow body member and at their opposite end to the secondary wedge members,

(g) said secondary wedge members being arranged and adapted to form when longitudinally oriented with said principal wedge members an outer circumference adapted to pass into the prepared opening in the rock face,

(h) the principal and secondary wedge members having inner mutually contacting angled surfaces adapted for rectilinear movement of said surfaces past each other such that relative movement of the principal wedge member along the intercontacting surfaces of the secondary wedging members causes an overall expansion of an outer cross-sectional dimension of the combined first and second wedging head means in one direction and overall contraction of said outer cross-sectional dimension in the opposite direction, and

(i) resilient means to bias the principal and secondary wedge member in relative directions to generally expand the cross-sectioned dimension of the wedge-action type expansible head.

5,484,133

MANUAL OVERRIDE SYSTEM FOR LINEAR MAGNETICALLY OPERATED VALVE

John B. Oliver, Dartmouth, Canada, assignor to Nova Scotia Research Foundation, Dartmouth, Canada

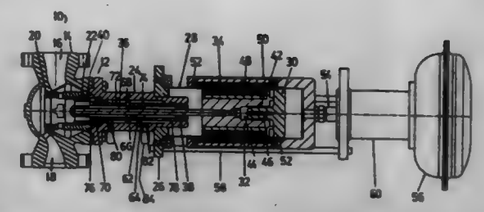
PCT No. PCT/CA92/00391, § 371 Date Apr. 19, 1994, § 102(e) Date Apr. 19, 1994, PCT Pub. No. WO94/05938, PCT Pub. Date Mar. 17, 1994

PCT Filed Oct. 9, 1992, Ser. No. 211,816

Int. Cl.[6] F16K *31/08*

U.S. Cl. 251—14 **4 Claims**

1. A manual override system for a linear magnetically operated valve assembly having a valve member reciprocally located in a



valve body, a first carrier member connected to said valve member and mounting a peripheral set of driven magnets, a barrier member surrounding said first carrier member and being hermetically sealed to said valve body, and a second carrier member surrounding said barrier member and mounting a set of drive magnets for magnetically inducing following linear movement in said first carrier member and said valve member in response to specific linear movement of said second carrier member, said manual override system comprising: a piston member reciprocally located in said valve body for linear movement between said valve body and said first carrier member, said piston member having an annular skin thereon sealingly engaging an inner bore of said valve body and defining first and second sealed chambers on respective sides thereof within the valve body; hydraulic fluid contained within each chamber; and means for further pressurizing one of the chambers while draining the other chamber to effect linear movement of the piston member into abutting engagement with said valve member or said first carrier member to move said valve member towards a closed or an open valve position respectively.

5,484,134

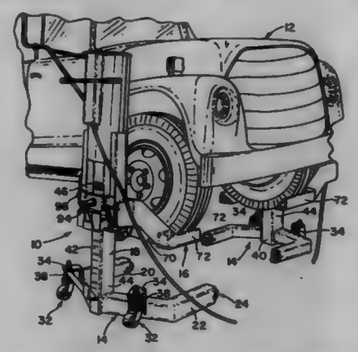
VEHICLE WHEEL LIFT AND STAND APPARATUS

Richard T. Francis, Easton, Mo., assignor to Gray Automotive Products Company, St. Joseph, Mo.

Filed Mar. 15, 1994, Ser. No. 212,953

Int. Cl.[6] B60P *1/00*

U.S. Cl. 254—2 B **14 Claims**



1. An apparatus for lifting a vehicle relative to the ground and for supporting the vehicle at a lifted position, the apparatus comprising: a base assembly including a base adapted to rest on the ground, and an upstanding

post extending generally vertically upward from the base; a cradle assembly supported on the post for up and down movement relative to the

base assembly and including a cradle adapted to engage the vehicle during

lifting and support of the vehicle;

a piston and cylinder means connected between the base assembly and the cradle assembly for moving the cradle up and down relative to the base assembly;

a pawl and ratchet means connected between the base assembly and the cradle assembly and being movable to an operative position for permitting unrestricted upward movement of the cradle assembly while preventing unrestricted downward

movement, and to an inoperative position for permitting unrestricted upward and downward movement of the cradle assembly,

the pawl and ratchet means including a movable pawl presenting an engagement surface, and a ratchet surface presenting a step against which the engagement surface of the pawl bears to prevent unrestricted downward movement of the cradle assembly in the operative position of the pawl and ratchet means,; and

a locking means for locking the cradle assembly in a raised position relative to the base assembly, the locking means including a hole in the post, a hole in the cradle assembly that is aligned with the hole in the post when the engagement surface of the pawl is engaged with the step of the ratchet surface, and a pin insertable through the hole in the cradle assembly into the hole in the post to prevent the cradle assembly from being moved either up or down relative to the base assembly.

5,484,135

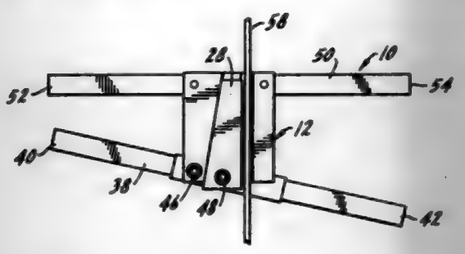
FISH TAPE PULLER

Scott Golden, DeKalb, and Bruce Mathwich, Cherry Valley, both of Ill., assignors to Ideal Industries, Inc., Sycamore, Ill.

Continuation of Ser. No. 118,182, Sep. 9, 1993, abandoned. This application Sep. 19, 1994, Ser. No. 308,400

Int. Cl.[6] E21C *29/16*

U.S. Cl. 254—134.3 FT **15 Claims**



1. A fish tape puller, comprising:

a body member having an elongated, flat first bearing surface;

a clamp block slidably attached to the body member and slidable toward and away from the first bearing surface, the clamp block including an elongated, flat second bearing surface opposite and parallel to the first bearing surface such that the first and second bearing surfaces define an elongated, straight slot between them for receiving a fish tape; and

a handle connected to the clamp block for moving the clamp block toward and away from the first bearing surface.

5,484,136

CARPET INSTALLATION TOOL

Lance L. Lopes, and Wayne M. Prouty, both of Gardnerville, Nev., assignors to Pro-Lo Pin, Inc., Minden, Nev.

Filed Jun. 29, 1994, Ser. No. 267,509

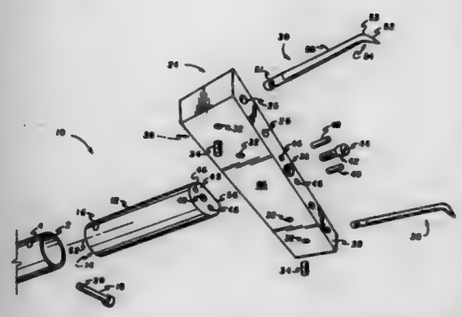
Int. Cl.[6] B25B *25/00*

U.S. Cl. 254—200 **17 Claims**

1. The combination of a tailpiece mounted on a rear shaft of a carpet stretching tool comprising:

a stem of the tailpiece having a socket at one end telescopingly interfitting the rear shaft of the carpet stretching tool, and having a first flat upper surface at an opposite end;

a pin holder connected by attachment means to said stem at said opposite end, having a second flat upper surface coplanar with said first flat upper surface of said stem to provide a knee hold oriented parallel to a floor surface, and having a plurality of holes spaced equidistantly therein for accepting pins;



a plurality of pins, each inserted in each of said plurality holes in said pin holder, each one of said pins having a straight main section, a pointed penetrating section arranged at an angle to said main section, and a rounded bent section joining said main section to said penetrating section and having a smooth lateral wall; and

means for securing each said pin within each of said pin holder holes.

5,484,137

PORTABLE LINE BARRIER

Franklin D. Smith, 1809 N. Flagler Dr. D-5, West Palm Beach, Fla. 33407

Filed May 11, 1994, Ser. No. 241,344

Int. Cl.[6] E04H *17/00;* **E01F** *9/00*

U.S. Cl. 256—50 **3 Claims**



1. A portable line barrier for preventing people from accessing a particular area comprising, in combination:

six rigid outer poles, each outer pole having a threaded upper end and a weighted lower end with each lower end adapted to rest on a generally level surface to place each outer pole in a generally upright position;

six rigid inner poles, each inner pole having an upper end and a lower end with each lower end slidably received in a separate upper end of an outer pole such that each inner pole is telescopically extendable with respect to its associated outer pole;

six rigid collars, each collar having an inner radial extent with a decreasing diameter, each collar threadably coupled about an upper end of a separate outer pole and its associated inner pole, whereby tightening a collar occurs as the diameter around the upper end decreases as the collar is coupled thereon allowing the collar to set the extension of an inner pole with respect to its outer pole and loosening a collar allows adjustment of the inner pole with respect to its associated outer pole;

a pair of line payer heads, each line payer head coupled to a separate upper end of a separate inner pole, each line payer head further comprising:

a rigid and generally cylindrical top section having a lower surface and a peripheral and outwardly tapered side wall extending upwards therefrom to define an opening;

a rigid and generally circular cover threadably coupled to the top section over the opening to define a first compartment;

a rigid and generally cylindrical bottom section having a lower surface and a peripheral side wall extended upwards therefrom and threadably coupled to the lower surface of the top section to define a second compartment;

a pivot pin centrally disposed in the second compartment having one end coupled to the lower surface of the bottom section and another end extended upwards therefrom;

a spool rotatably disposed about the pivot pin within the second compartment;

an elongated and coiled spring disposed about the pivot pin with the spring having one end coupled to the pivot pin and another end coupled to the spool with the spring adapted for urging the spool into a position such that the radial extension of the spring is minimal;

a lamp coupled to the cover with a portion thereof extended into the first compartment;

a battery disposed within the first compartment and coupled to the lamp with the battery adapted for providing energy for illuminating the lamp;

a switch coupled between the battery and the lamp and extended through the cover with the switch having one orientation for energizing the lamp and another for de-energizing the lamp; and

a flasher coupled between the switch and the battery with the flasher adapted for allowing the lamp to be strobed when energized, whereby providing an indicative warning;

four rigid loops, each loop coupled to a separate upper end of four of the inner poles not having a line payer head coupled thereto with each loop adapted for holding a cable therein;

a flexible cable having one end coupled to and wrapped around the spool of one of the line payer heads and another end extended through the line payer head, through the four loops on the inner poles, through the other line payer head, and coupled to its spool such that the inner poles, outer poles, collars, loops, and line payer heads create an extendable barrier, whereby when the cable is extended between the line payer heads and the outer poles are positioned on a generally level surface in a spaced relationship, the barrier is placed in an operable configuration; and

a rigid carrying tray having six spaced and aligned holes disposed thereon adapted to receive the lower ends of the outer poles therein to define a stowed configuration for the barrier, the carrying tray further having a pair of handles coupled thereto and extended upwards therefrom for allowing the carrying tray to be transported from one location to another.

5,484,138

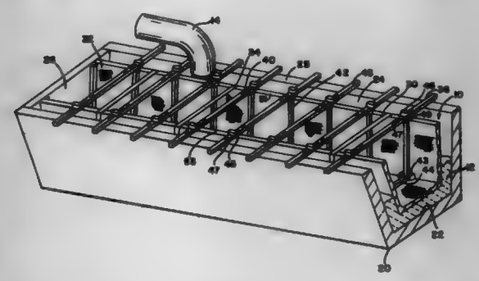
CONSUMABLE FORM WITH ADJUSTABLE WALLS

Madjid Soofi, St. Charles, Ill.; James S. Irwin, Hinckley, Ohio, and Charles W. Connors, Jr., Chicago, Ill., assignors to Magneco/Metrel, Inc., Addison, Ill.

Continuation-in-part of Ser. No. 156,563, Nov. 22, 1993. This application Sep. 19, 1994, Ser. No. 308,755

Int. Cl.[6] C21B *7/04*

U.S. Cl. 266—281 **20 Claims**



1. A mold structure for forming a refractory lining in a metal containment device, comprising:

a metal containment device including a floor and one or more walls; and

an adjustable form suspended in the metal containment device at a distance from the floor and walls;

the adjustable form and the floor and walls of the metal containment device defining a space therebetween for the pouring of a refractory material;

the adjustable form including an adjustable frame and a consumable form comprising an open-mesh screen wrapped around the adjustable frame.

5,484,139

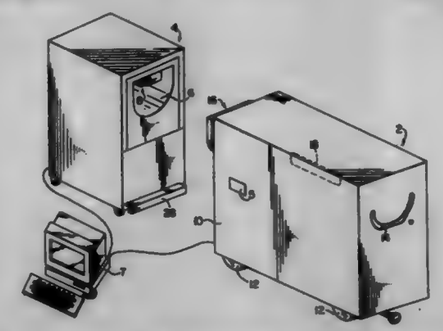
SYSTEM FOR HANDLING CURVED FORM MEDIA AND CASSETTE THEREFOR

Lawrence S. Wolfson, West Hartford, Conn.; Philip W. Cenedella, East Douglas, Mass., and Joseph Conlan, Rocky Hill, Conn., assignors to Gerber Systems Corporation, South Windsor, Conn.

Filed Jun. 1, 1993, Ser. No. 71,567

Int. Cl.[6] B65H *85/00*

U.S. Cl. 271—3 **34 Claims**



4. A media handling unit for moving media between discrete locations, said unit comprising: a frame, a supply means supported by said frame for providing a source of media conformed to a generally partially cylindric shape while being maintained in said supply means, a first positioning means located above said supply means and slidably movably mounted to said frame for movement between a first position generally above said supply means and a second position located outwardly of said frame, a second positioning means carried by said first positioning means for movement relative to both said frame and to said first positioning means, a third positioning means carried by said second positioning means and being vertically moveable relative thereto for lifting media from said supply means in a conformed partially cylindric shape and for maintaining said media in said conformed partially cylindric shape as said media is moved to discrete locations remote of said supply means under combined movements of said first and said second positioning means, and control means connected to each of said first, second and third positioning means for controlling the movements of the same to effect handling of media between said discrete locations.

5,484,140

CATCH TYPE SHEET TRAY FOR AN IMAGE FORMING APPARATUS

Hiroshi Hirose, Sagamihara; Kenji Hiratani, Atsugi, and Masashi Kimijima, Ayase, all of, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

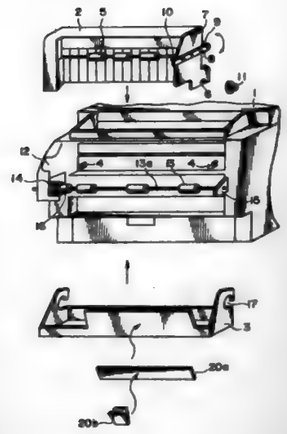
Filed Nov. 9, 1993, Ser. No. 149,560

Claims priority, application Japan, Nov. 9, 1992, 4-298276; Feb. 3, 1993, 5-016215; Mar. 2, 1993, 5-040994; Apr. 13, 1993, 5-086033

Int. Cl.[6] B65H *31/00*

U.S. Cl. 271—175 **40 Claims**

1. A catch type sheet tray for an image forming apparatus in which said apparatus includes a horizontal tray and said apparatus



records data in sheets and sequentially discharges said sheets to said horizontal tray via an outlet thereof, said catch type sheet tray comprising:

transporting means for transporting the sheet driven out through said outlet downward;

receiving means for receiving the sheet conveyed by said transporting means by catching a leading edge of said sheet and causing a trailing edge of said sheet to hang down outside of said receiving means; and

first mounting means for mounting said transporting means on a portion of said apparatus from which said horizontal tray has been removed;

said tray being mounted on said apparatus in place of said horizontal tray by said first mounting means.

5,484,141

AUTOMATIC DOCUMENT FEEDER WITH POSITION COMPENSATING DEVICE

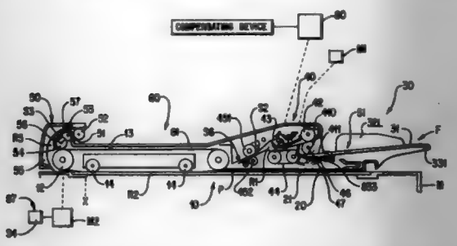
Masashi Yamashita, Kohfu; Norihiro Ohno, Yamanashi; Tetsuyuki Tohyama, Yamanashi; Eiichi Kubo, Yamanashi; Takahiko Komatsu, Kohfu, and Yoshinou Kouno, Yamanashi, all of, Japan, assignors to Nisca Corporation, Yamanashi, Japan

Filed Oct. 28, 1993, Ser. No. 141,972

Claims priority, application Japan, Jan. 29, 1992, 4-313951; Jan. 29, 1992, 4-313953; Jun. 30, 1993, 5-189050; Jun. 30, 1993, 5-189054

Int. Cl.[6] B65H *7/02*

U.S. Cl. 271—227 **24 Claims**



1. An automatic document feeder for feeding a sheet on a platen, comprising,

a transfer device having a transfer belt situated above the platen to transfer the sheet on the platen, and a belt motor for actuating the transfer belt,

a sheet detecting device situated near the transfer belt for detecting the sheet,

a feeding device located near the transfer belt at a side of the sheet detecting device, said feeding device feeding the sheet between the transfer belt and the platen,

a controlling device electrically connected to the sheet detecting device and the belt motor, said controlling device, while the belt motor for transferring the sheet on the platen is actuating, outputting a stop signal to stop the belt motor when a predetermined time has passed after the sheet detecting device detects the sheet so that the sheet is placed on a predetermined position on the platen, and

a compensating device connected to the controlling device, said compensating device assuming an amount of overrun of the belt motor from a time that the belt motor receives the stop signal to a time that the belt motor actually stops, and compensating a time that the stop signal is outputted from the controlling device based on the overrun amount so that the sheet supplied from the feeding device to the transfer device is directly stopped at the predetermined position without interruption, said compensating device calculating the amount of the overrun based on an information obtained after the sheet is started to be transferred from the feeding device and adding the calculated amount of the overrun to the controlling device before the stop signal is outputted from the control device.

5,484,142

DEVICE FOR DRIVING DOCUMENTS GUIDED BY ONE EDGE ON A REFERENCE PLANE

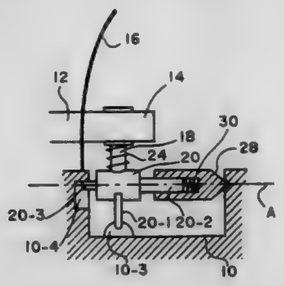
Fabien Demange, La Voulte S/Rhone, France, assignor to Montetel S.A., Granges-Les-Valence, France

Filed Nov. 9, 1994, Ser. No. 338,130

Claims priority, application France, Nov. 30, 1993, 93/14611

Int. Cl.[6] B65H *9/16*

U.S. Cl. 271—251 **4 Claims**



1. A device for driving documents having one edge in contact with a reference plane including:

a drive roller having its axis perpendicular to the reference plane;

an idle roller pressing a driven document against the drive roller;

a support for the idle roller, mounted on a frame so that an axis of the idle roller can be freely tilted in a plane parallel to the plane of the driven document, between two limit positions on either side of a position perpendicular to the reference plane;

friction means between the idle roller and its axis; and

an elastically urged piston ended by a tip penetrating in a female cone of the frame; wherein

said support includes a first extension along an axis substantially perpendicular to the axis of said drive roller, for insertion into a recess in said piston.

5,484,143

SHEET SORTING AND STORING APPARATUS

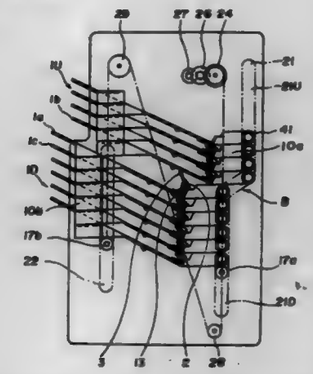
Akira Hirose, Tokyo; Takashi Fujii, Omiya; Yoshihide Sugiyama, Nagoya; Kunihiro Uotani, Nagoya, and Fumitaka Hyoudou, Nagoya, all of, Japan, assignors to Ricoh Company Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 848,181, Mar. 10, 1992, abandoned. This application Mar. 23, 1994, Ser. No. 216,403

Claims priority, application Japan, Mar. 12, 1991, 3-70428; May 1, 1991, 3-126475; Jun. 3, 1991, 3-157451; Sep. 30, 1991, 3-276417; Dec. 20, 1991, 3-354324; Mar. 30, 1993, 5-072169; Feb. 23, 1994, 6-025452

Int. Cl.[6] B65H *39/10*

U.S. Cl. 271—293 **14 Claims**



1. A sheet sorting and storing apparatus comprising:

a plurality of vertically stacked bin trays each having an introducing side positionable with respect to an external sheet feeding device, and a loading face inclined in a discharge direction of a sheet discharged out of the external device so as to receive the discharged sheet therefrom;

supporting means for supporting each of said bin trays for movement in a substantially horizontal direction;

deviating means for moving at least one of said stacked bin trays in said substantially horizontal direction such that an upper space above a desired one of said bin trays which is to receive a discharged sheet is enlarged, said upper space being defined as a distance between said loading face of said desired one of said bin trays and a bottom face of an upwardly adjacent bin tray above said desired one of said bin trays in a direction perpendicular to said inclined direction; and

sheet press means extending upwardly on said introducing side of each of said bin trays for pressing a sheet being received in said bin tray, each of said sheet press means having a tip end and comprising means such that the tip end of said sheet press means stands upright when said upper space is enlarged and engages the bottom face of said upwardly adjacent bin tray so as to lie towards said loading face when said upper space is not enlarged.

5,484,144

TRANSPORTABLE BASKETBALL NET ASSEMBLY FOR TEMPORARY USE ON A BASKETBALL RIM

Matthew R. St. Onge, 6-12 Louisburg Square, Nashua, N.H. 03060

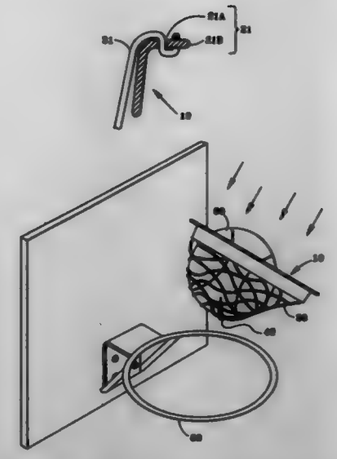
Continuation-in-part of Ser. No. 218,310, Mar. 25, 1994, Pat. No. 5,405,132. This application Aug. 11, 1994, Ser. No. 289,186

The portion of the term of this patent subsequent to Apr. 11, 2012, has been disclaimed.

Int. Cl.[6] A63B *63/08*

U.S. Cl. 273—1.5 R **20 Claims**

1. A transportable basketball net assembly for use on a basketball rim, said net assembly comprising:



a circular flanged collar having a diameter and including a plurality of net attachment means uniformly spaced around a circumference of said circular flanged collar and disposed on a flange of said flanged collar, an inner diameter of said flange transitioning via a uniform radius downward into a collar of slightly smaller diameter, said flange sized to a rest on top of said rim, said collar diameter sized to fit easily within a mouth of said rim; and

a basketball net, attach-loops of said net attached to said net attachment means of said circular flanged collar, said net disposed downward within said collar, said attach-loops of said net traversing and supported for strain relief by said uniform radius of said flanged collar, a small end of said net hanging open.

17. A method for installing a basketball net on a basketball rim, said method comprising:

attaching of attach-loops of said net to a flanged collar, a flange of said flanged collar sized to rest on top of said rim, a collar of said flanged collar sized to fit easily within a mouth of said rim;

closing temporarily of small end of said net;

inverting and disposing of said net and said flanged collar over a basketball; and

throwing of said basketball up from outside said rim so as to fall down through said rim, thereby depositing said flanged collar and said net into position on said rim.

5,484,145

PORTABLE PITCHING AID

James M. Shriver, 14550 Rosemary Dr., Fontana, Calif. 92335

Filed Sep. 1, 1994, Ser. No. 298,319

Int. Cl.[6] A63B *69/40*

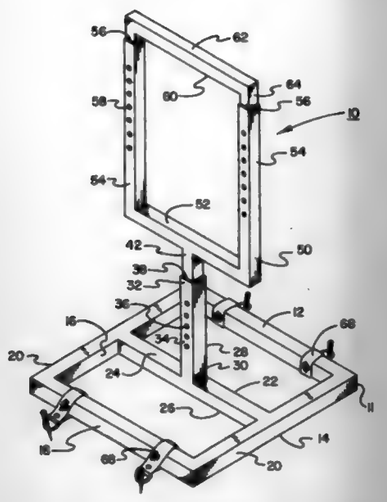
U.S. Cl. 273—26 A **7 Claims**

1. A portable pitching aid for outlining a strike zone with adjustment features to aid a pitcher in learning the art of pitching comprising, in combination:

a hollow base portion having an upper surface, a lower surface, an inner surface, and an outer surface, and four side portions, a support bar extending from the inner surface of one of the four side portions to the inner surface of an opposing side portion, the support bar having an upper surface and a lower surface;

a hollow outer vertical support bar having a first end, an open second end, and an intermediate extent therebetween, the first end being integral with a midpoint of the upper surface of the support bar of the hollow base portion, the intermediate extent having a plurality of horizontally extending vertically spaced apertures therein;

a hollow inner vertical support bar having a first end, a second end, and an intermediate extent therebetween, the intermedi-



ate extent having a plurality of horizontally extending vertically spaced apertures therein, a tension biased detent element secured within the intermediate extent, the hollow inner vertical support bar slidably received within the hollow outer vertical support bar, the plurality of apertures of the intermediate extent being aligned with the plurality of apertures in the intermediate extent of the hollow outer vertical support bar, the tension biased detent element extending into selected aligned apertures to adjustably couple the aligning apertures to adjust the height of the inner vertical support bar within the outer vertical support bar;

an outer hollow U-shaped frame having a base portion and two arm portions, the base portion integral with the first end of the hollow inner vertical support bar, the two arm portions having open end portions, the two arm portions having a plurality of horizontally extending vertically spaced apertures therein;

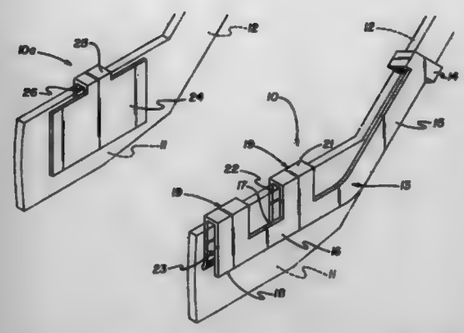
an inner hollow inverted U-shaped frame having a base portion and two arm portions, the two arm portions having a plurality of horizontally extending vertically spaced apertures therein, said inner frame having a tension biased detent element secured within each of the two arm portions, the two arm portions slidably received within the two arm portions of the outer hollow U-shaped frame, the plurality of apertures of said inner frame aligning with the plurality of apertures of the outer hollow U-shaped frame, the tension biased detent element extending into a pair of aligned apertures to adjustably couple the aligning apertures to adjust the height of the inner hollow inverted U-shaped frame within the outer hollow U-shaped frame;

a plurality of straps, each of the straps having a first end, a second end, and an intermediate extent therebetween, the second end having a metal hoop thereattached, the first end secured around one of the four side portions of the hollow base portion to the second end, each metal hoop secured to a portion of ground to hold the device in place.

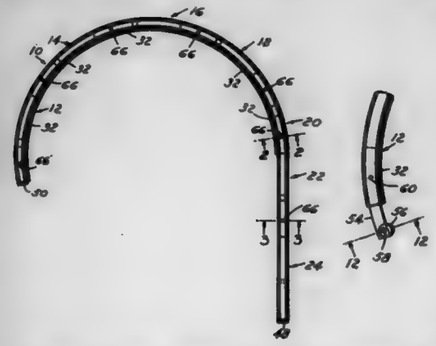
5,484,146
HOCKEY BLADE WEIGHT MEMBER
Mark A. Loschiavo, 924 Clyde La., Philadelphia, Pa. 19128
Filed Feb. 21, 1995, Ser. No. 391,362
Int. Cl.[6] A63B *59/12;21/00;69/00*
U.S. Cl. 273—67 A **4 Claims**

1. A hockey blade weight member arranged for attachment to a hockey stick, having a hockey blade and a handle extending from the hockey blade, and wherein the weight member comprises,

a flange member, the flange member having a flange front wall spaced from a flange rear wall, and the flange member having a first side spaced from a second side, with at least one U-shaped spring clamp member extending from the first side, the spring member having a gap oriented between the flange member and the flange front wall to receive the hockey blade therewithin.



5,484,147
HOCKEY PUCK CAROM WALL PRACTICE APPARATUS
Kenneth C. Fagan, 165 N. Main St., Carsonville, Mich. 48419
Filed Mar. 1, 1994, Ser. No. 203,362
Int. Cl.[6] A63B *69/00*
U.S. Cl. 273—57.2 **7 Claims**

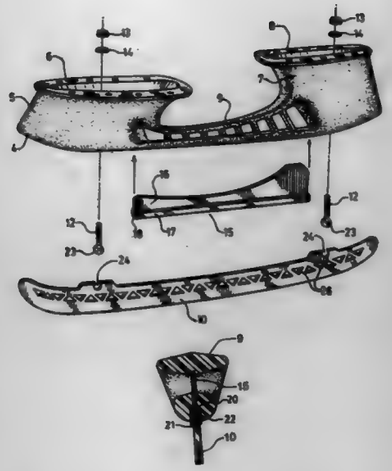


1. A hockey practice apparatus for use on a selected playing area, the apparatus comprising a substantially half circle section and a tangential section connected to one end of the half circle, each section having a vertical inner wall for directing a hockey puck projected against the tangential section on around the half circle section and back into the playing area, and at least one eccentrically mounted roller at the other end of the half circle section for directing puck in various directions at random.

5,484,148
SKATE BLADE ASSEMBLY WITH REINFORCEMENT INSERT
Icaro Olivieri, Westmount, Canada, assignor to Canstar Sports Group Inc., Ville Mont-Royal, Canada
Filed Jun. 14, 1994, Ser. No. 260,375
Int. Cl.[6] A63C *1/30*
U.S. Cl. 280—11.18 **10 Claims**

1. An ice skate blade assembly for attachment to a skate boot, said skate blade assembly comprising:

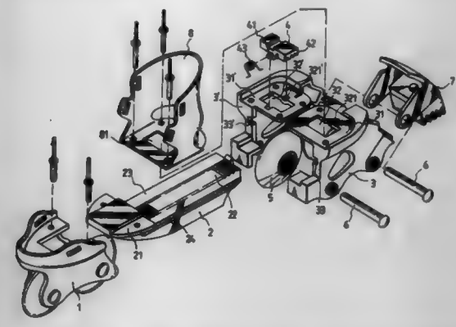
an elongated blade holder having a front portion for attachment beneath the toe area of the skate boot, a rear portion for attachment beneath the heel area of the skate boot, and an integral neck portion between said front and rear portions;



a rigid reinforcement member having an elongated inverted U-shaped portion comprising a horizontal portion having an upper surface and a lower surface and integral sidewall portions extending downwardly from said lower surface and having an integral elongated web portion extending a substantial distance upwardly from a central longitudinal axis of said horizontal portion upper surface said web portion and said U-shaped portion being snugly accommodated and secured within a longitudinal slot in said blade holder, said reinforcement member extending at least the length of said neck portion; and

a runner snugly accommodated and secured within said slot and said U-shaped portion of said reinforcement member, extending downwardly therefrom, said runner having an upper surface which is in continuous contact with said horizontal portion of said reinforcement member.

5,484,149
ADJUSTABLE ROLLER SKATE STRUCTURE
Fang-Liang Lee, Chung, Taiwan, Prov. of China, assignor to Yuh Jou Co., Ltd., Taipei, Taiwan, Prov. of China
Filed Jun. 10, 1994, Ser. No. 258,084
Int. Cl.[6] A63C *17/04*
U.S. Cl. 280—11.26 **2 Claims**



1. An adjustable roller skate structure of the type including a front body with a roller and axle assembly, a rear body with a roller and axle assembly, a shoe ridge connecting the front and rear bodies together and having a top surface and a pair of side edges, a rear casing and a brake pad mounted on the rear body, the improvement comprising:

a) the shoe ridge including a tooth track on the top surface and a guide track extending outwardly from each side edge;

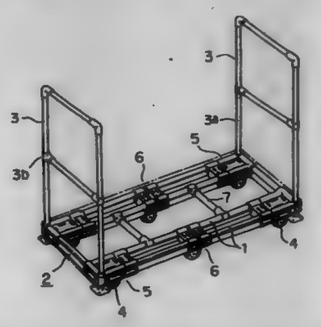
b) the rear body including a left body portion and a right body portion of corresponding configurations, each body portion including a recessed top surface having a central hole therethrough, the body portions being disposable in overlapping coincidence with each other to position the holes in alignment, and each body portion further including a slot for engagement by the guide tracks of the shoe ridge;

c) a latching block disposed within the aligned holes of the body portions and clamped therebetween for pivotal movement, the latching block including a surface defined by a plurality of teeth for engaging the tooth track of the shoe ridge, and means for biasing the teeth of the latching block into engagement with the tooth track;

d) the rear casing including a hole through a bottom surface thereof, the latching block being accessible through the hole; and

e) whereby when the latching block is pivoted against the biasing means, the teeth are disengaged from the tooth track to permit the shoe ridge to be adjusted relative to the rear body and thereafter secured in the desired position of adjustment by releasing the latching block.

5,484,150
CASTER BASE ASSEMBLY FOR LOAD CARRYING WHEELERS
Shinobu Yasutomi, Shizuoka, Japan, assignor to Yazaki Industrial Chemical Co. Ltd., Shizuoka, Japan
Filed Apr. 15, 1994, Ser. No. 228,532
Int. Cl.[6] B62B *3/02*
U.S. Cl. 280—79.3 **1 Claim**



1. A chassis of a cart having a plurality of downwardly depending casters wherein a part of the chassis may be adjusted to accomodate a variety of caster attaching means comprising:

first, second, third and fourth corner joints defining respective corners of the chassis;

each corner joint including two side-by-side first cylindrical parts, each of said parts having two insert openings that are substantially B-shaped in cross section, each of said cylindrical parts facing in an opposite horizontal direction;

each corner joint including a second cylindrical part having an insert opening that is substantially B-shaped in cross section and perpendicular to the first cylindrical parts;

first, second, third and fourth tubular frame members defining respective sides of said chassis;

said first and third tubular frame members each including four parallel tubular members fitted into respective oppositely facing cylindrical parts of two of said corner joints;

horizontal first connecting plates connecting each of said two side-by-side first cylindrical parts;

said second and fourth tubular frame members including double tubes, one below the other;

said first and third tubular frame members each having at least two adjustable horizontally slidable parts, wherein each of

said slidable parts includes two side-by-side cylindrical portions having horizontal bores carrying a portion of said first and third tubular frame members therethrough,

each of said adjustable slidable parts having a horizontal second connecting plate connecting said two side-by-side cylindrical portions;

at least four casters, each of said casters depending downwardly from a horizontal caster plate, said horizontal caster plate having a plurality of vertical bores therethrough;

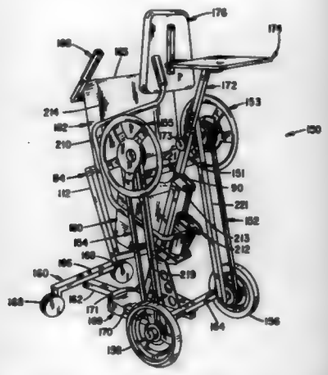
each of said casters being mounted to each of said corner joints by said respective caster plate at an underside of said horizontal first connecting plate and an underside of said horizontal second connecting plate;

said horizontal first connecting plates having a plurality of vertical slots therethrough wherein at least two of said slots are adapted and constructed to be in vertical alignment with at least two of said Vertical bores of said caster plate;

said horizontal second connecting plates having a plurality of vertical slots therethrough wherein at least two of said slots are adapted and constructed to be in vertical alignment with at least two of said vertical bores of said caster plate;

each of said corner joints and said adjustable slidable parts being positioned whereby the caster plate bridges its respective corner joint to its respective adjustable slidable part whereby appropriate bores of the caster plate are in alignment with two slots of the said first connecting plate are in alignment with two slots of said second connecting plate and bolts are affixed through said bores and slots to affix a caster to at least each corner.

5,484,151
MOBILE STANDING AID
Alan L. Tholkes, 913 S. Washington, Redwood Falls, Minn. 56283
Filed Nov. 18, 1993, Ser. No. 154,608
Int. Cl.[6] A61G *5/00*; B62M *1/14*
U.S. Cl. 280—250.1 **23 Claims**



1. Mobile support apparatus for lifting and lowering a user between seated and standing postures, comprising:

a) a framework including 1) a base, 2) a non-extensible column mounted upright to said base, and 3) first and second wheels secured to said base to rotate and move said framework;

b) a seat;

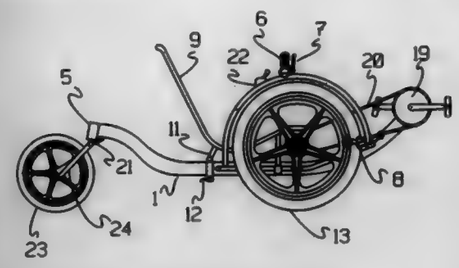
c) chest support means for supporting a user's chest in a standing posture;

c) leg restraint means for restraining the user's legs in a standing posture;

d) pump means secured to said column and including a piston and a handle for manually extending and retracting the piston in response to the user's movement of said handle; and

e) posturing means including a support arm secured at one and said seat and at an opposite end to said pump means and further secured to a pivot at said column for continuously supporting the user between a seated and a standing posture, wherein reciprocal movement of said piston rotates said seat between a transverse orientation to said column at a user seating position and a parallel, displaced orientation to said column at a user standing position, and wherein at said user standing position the seat supports the user to engage said chest support means and said leg restraint means, whereby the user is at all times supported as the seat rotates between the user seating and standing positions in response the axial movement of the piston.

5,484,152
RECUMBENT TRICYCLE APPARATUS WITH DIFFERENTIAL BRAKE STEERING
James A. Nunes, 375 Sunset, Oak View, Calif. 93022, and Michael G. Cowan, 311 N. Sprucewood Ave., Oak Park, Calif. 91301
Filed Jun. 24, 1994, Ser. No. 264,984
Int. Cl.[6] B62K *5/04*; *5/08*
U.S. Cl. 280—282 **4 Claims**



1. A recumbent tricycle apparatus comprising:

a frame;

a crank assembly mounted on said frame;

a pair of drive wheels mounted on a pair of drive axles;

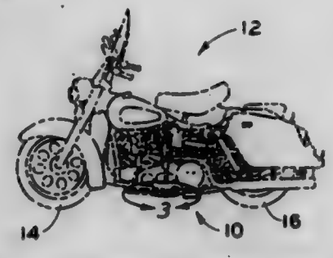
said drive axles being rotatably mounted to said frame;

a differential interconnecting said drive axles and having a free wheel sprocket;

a drive chain interconnecting said crank assembly and said free wheel sprocket; and

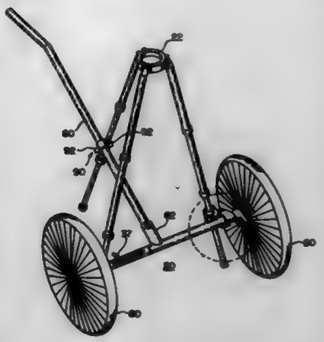
a caster wheel rotatably mounted to a rear portion of the frame.

5,484,153
MOTORCYCLE KICKSTAND ACCESSORY
Robert Ricciardi, 170 Oceanside St., Islip Terrace, N.Y. 11752
Filed Nov. 7, 1994, Ser. No. 334,573
Int. Cl.[6] B62H *1/02*
U.S. Cl. 280—293 **1 Claim**



1. For use with a motorcycle of a type having front and rear wheels and having positioned therebetween a kickstand with a downwardly pivotally traversing leg to define a tripod support provided by said front and rear wheels and said kickstand leg during non-use of said motorcycle on a support surface, an attachment to said motorcycle of a plate means having an operative position interposed between said leg and said support surface to obviate any marring of said support surface as may be due to the weight of said motorcycle transmitted by said leg, said plate means comprising a flat plate of selected metal construction material to support the weight of said motorcycle, a housing bounding a storage compartment for said plate attached to said motorcycle, a spring disposed in said housing compartment having an inner end fixed against movement and presenting an unfixed outer end, a chain connected in spanning relation between said plate and said spring outer end to permit manual removal of said plate from said housing compartment against spring urgency and the return thereof under said spring urgency, whereby in said plate operative position said weight of said motorcycle holds said plate in place and in the non-use stored condition thereof said spring urgency contributes to obviating any rattling thereof during riding use of the motorcycle.

5,484,154
WHEELED ACCESSORY FOR EQUIPMENT STANDS
Frank R. Ward, 20910 NE. 156th St., Woodinville, Wash. 98072
Filed Nov. 18, 1993, Ser. No. 154,869
Int. Cl.[6] B62B *1/12*
U.S. Cl. 280—652 **16 Claims**



1. A wheeled accessory for an equipment stand, the equipment stand having at least a first leg, a second leg and a third leg, the first and second legs defining a first plane, the wheeled accessory which comprises:

an axle, the axle having a first end, a second end and a longitudinal axis;

a first mounting interface, the first mounting interface having collar means for securing the first mounting interface to the first leg of the equipment stand, axle block means for mounting the axle to the first mounting interface for pivotal movement with respect thereto about the longitudinal axis of the axle, and means for mounting the axle block means to collar means for pivotal movement with respect thereto about an axis perpendicular to the first plane;

a second mounting interface, the second mounting interface having collar means for securing the second mounting interface to the second leg of the equipment stand, axle block means for mounting the axle to the second mounting interface for pivotal movement with respect thereto about the longitudinal axis of the axle, and means for mounting the axle block means to collar means for pivotal movement with respect thereto about an axis perpendicular to the first plane;

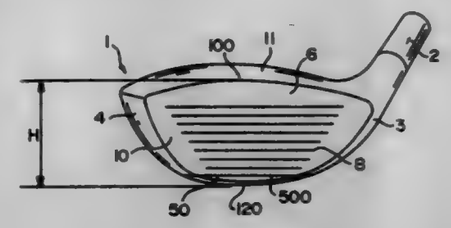
first crank member means for mounting a first wheel having an axis of rotation proximate the first end of the axle such that the axis of rotation of the first wheel is parallel to and offset from the longitudinal axis of the axle;

second crank member means for mounting a second wheel having an axis of rotation proximate the second end of the axle such that the axis of rotation of the second wheel is parallel to and offset from the longitudinal axis of the axle;

a lever having a first end and a second end; and

means for mounting the first end of the lever to the axle for pivotal movement therewith between a lever raised position where the first wheel and the second wheel are each in contact with a support surface and a lever lowered position, spaced relatively below the lever raised position, where the first leg and the second leg are each in contact with the support surface.

5,484,155
GOLF CLUB HEAD
Koichi Yamawaki, Chiba, Japan; Franck Dumontier, Vista; Mike Peters, San Diego, both of Calif., and Jean-Marc Guiboud, Annecy, France, assignors to Taylor Made Golf Company, Inc., Carlsbad, Calif.
Filed Oct. 14, 1994, Ser. No. 322,482
Claims priority, application France, Nov. 12, 1993, 93.13680; Japan, Jan. 17, 1994, 77/1994 U
Int. Cl.[6] A63B *53/04*
U.S. Cl. 273—164.1 **9 Claims**



1. A metal head for a golf club of the wood type, said head comprising:

a body and optionally a hosel, said body including a front face having a striking edge, said body further including one part that is sandblasted or covered with paint and one part that is polished, wherein the polished part corresponds at least to a surface of the body subjected principally to friction with the ground, and the sandblasted or paint-covered part corresponds at least to a surface of the body visible to the golfer when he addresses the ball, with the exception of a lower polished zone of the front face, which extends from the striking edge and which has a boundary with an upper sandblasted or paint-covered zone formed by a substantially horizontal line of demarcation extending across the front face, when the head rests on the ground when the ball is addressed.

5,484,156
GOLF CLUB PRACTICE SWING WEIGHT
Michael B. Giguere, Rte. 1 Box 153 AA, Pine City, Minn. 55063
Filed Feb. 9, 1994, Ser. No. 194,065
Int. Cl.[6] A63B *69/36*
U.S. Cl. 273—194 B **4 Claims**

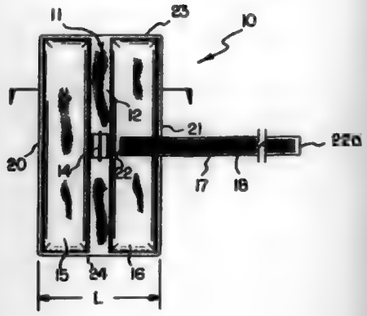
1. A golf club practice swing weight comprising:

a flexible web having a web front wall spaced from a web rear wall, a web first end spaced from a web second end, and a web first side spaced from a web second side;

a ring member fixedly mounted medially of the front wall;

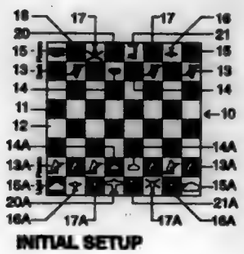
a flexible strap adapted to be looped through said ring member and having a strap first end mounted to the web adjacent the ring member, and a strap second end, with a strap hook and loop fastener surface extending between the strap first end and the strap second end so that when looped through said ring member, said strap may be fastened to itself;

at least one first pouch mounted to the front wall between the web first end and the ring member;



at least one second pouch mounted to the flexible web between the ring member and the web second end, with the first pouch and the second pouch each including a granular material contained therewithin.

5,484,157
MILITARY CHESS GAME
Michael H. King, 2016 Paradise Point, York, S.C. 29745
Filed Mar. 18, 1994, Ser. No. 214,440
Int. Cl.[6] A63F 3/02
U.S. Cl. 273—260 1 Claim

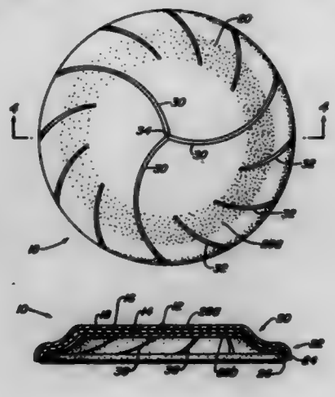


INITIAL SETUP

1. A method for two players to play a game of military chess, said method comprising the steps of:
(a) providing a chess board with sixty four alternately colored light and dark squares,
(b) providing sixteen game pieces for each player,
(i) the game pieces of one player being distinguishable from the game pieces of the other player;
(ii) the sixteen game pieces for each player comprising six pieces representing infantry forces, two pieces representing a cavalry tank brigade, two pieces representing armored tanks, two pieces representing fighter planes, two pieces representing helicopters, one piece representing a bomber and one piece representing a headquarters;
(c) providing rules governing limited movement of the military pieces, wherein:
(i) the rules for movement of some of the military pieces are the same as the chess rules for movement of some of the game pieces in the game of chess and
(ii) the rules for movement of other military pieces are different than the chess rules for movement of any of the game pieces in the game of chess;
(iii) "blitz" movements of one square may be made of any two or more pieces of infantry forces or special forces or armored tanks in a straight line of adjoining squares, whereby two or more of the game pieces may be moved in one game turn;
(d) placing the pieces of each player on the board so that the pieces for one player occupy the first two rows on one side of the board and the pieces for the other player occupy the first two rows on the opposite side of the board;
(e) the players moving in alternate turns one or more of the game pieces according to said rules governing the limited movement of the game pieces; and
(f) continuing to move the pieces in alternate turns until the headquarters of one player has been placed under radar lock and the other player declares victory or until both players declare a truce or a draw.

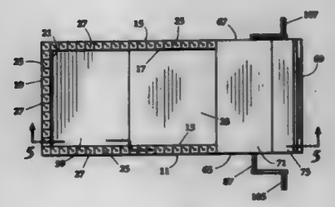
5,484,158
Patent Not Issued For This Number

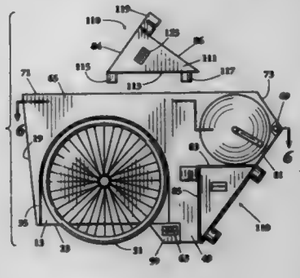
5,484,159
COVERED FLYING OBJECT
Lance L. Dean, 808 Mayfair Hill Ct., Bedford, Tex. 76021, and Gust C. Kepler, Dallas, Tex., assignors to Lance L. Dean, Bedford, Tex.
Filed Jul. 26, 1994, Ser. No. 280,375
Int. Cl.[6] A63H 33/18
U.S. Cl. 273—424 20 Claims



1. An improved flying disc adapted for throwing, the improved disc comprising:
a body;
a peripheral portion for gripping the body with a hand and launching the body through the air;
an upper surface and a lower surface aerodynamically shaped to cause the body to fly when thrown;
a rim extending around the peripheral portion;
a layer of resilient material covering the peripheral portion of at least one of said surfaces of the body, and the rim of the body; and
the resilient material having greater resiliency than the body to provide a cushioned grip which facilitates gripping.

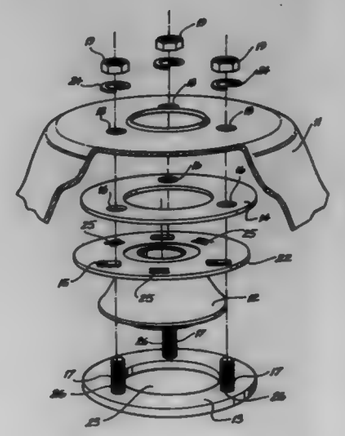
5,484,160
GARDEN CART
J. Edwin Ek, 5161 S. Marion, Tulsa, Okla. 74135
Continuation-in-part of Ser. No. 878,883, May 4, 1992, Pat. No. Des. 344,383, and a continuation-in-part of Ser. No. 4,244, Jan. 29, 1993, Pat. No. Des. 347,404. This application Feb. 14, 1994, Ser. No. 194,868
Int. Cl.[6] B62B 1/12
U.S. Cl. 280—659 18 Claims





14. A cart for storing and transporting gardening tools and materials comprising a shell having a plurality of vertically stacked compartments defined by at least one shelf therebetween and an open compartment exteading a full depth of said shell, an axle aligned with an interior edge of one of said shelves and extending through opposite sides of said shell, a pair of wheels on the ends of said axle external to said shell for transporting said shell and a steering assembly fixed to a rear portion of said shell for guiding said shell during transport, said shell having a rectangular bottom and having front and side walls formed from pairs of flat parallel panels spaced apart and connected by flat vertical dividers to define arrays of tubular pots of approximately square cross-section, each for receiving a tool through an open upper end thereof, at least one pair of said pots extending below a bottom and on opposite sides thereof as legs for, together with said wheels, supporting said shell in a substantially level condition.

5,484,161
ADJUSTABLE MOUNTING FOR SUSPENSION STRUT
Kevin J. McIntyre, 138 Oxford Street, Woollahra NSW 2025, Australia
PCT No. PCT/AU92/00303, § 371 Date Dec. 21, 1993, § 102(e) Date Dec. 21, 1993, PCT Pub. No. WO93/00244, PCT Pub. Date Jan. 7, 1993
PCT Filed Jun. 22, 1992, Ser. No. 167,940
Claims priority, application Australia, Jun. 21, 1991, PK6006
Int. Cl.[6] B62D 17/00
U.S. Cl. 280—661 7 Claims



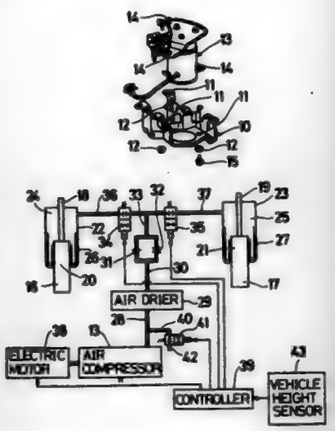
1. An adjustable mount for the upper end of a vehicle suspension strut allowing the strut to be relocated relative to a vehicle chassis member, said mount comprising a bush adapted to receive and secure the upper end of the strut, a flange extending radially outwardly from an upper part of the bush and having upper and lower faces, a clamping plate adapted to abut the lower face of the flange and having an opening therethrough larger than the perimeter of the bush such that the clamping plate can slide over the lower face of the flange over a limited area, and a plurality of studs extending upwardly from the clamping plate through apertures in the flange, each said aperture being at least twice as large as the diameter of the stud passing therethrough in directions both radial and circumferential to the axis of the strut, permitting sliding movement of the flange relative to the clamping plate.

5,484,162

VEHICLE HEIGHT CONTROL SYSTEM

Yoshiaki Kanoh, Nagoya; Yoshikazu Tachiri, Chiryu, and Kazuo Ogawa, Toyota, all of, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Feb. 1, 1994, Ser. No. 189,556
Claims priority, application Japan, Feb. 5, 1993, 5-018654
Int. Cl.[6] B60G 17/00
U.S. Cl. 280—711 6 Claims



1. A vehicle height control system comprising:
vehicle height adjusting means including an air chamber;
an air compressor connected with the vehicle height adjusting means through an air supply conduit;
an air drain conduit connected with the air supply conduit;
an air drain valve disposed in the air drain conduit, the air drain valve discharging air stored in the air chamber and the air supply conduit to the atmosphere when opened;
a cut-off valve disposed between the vehicle height adjusting means and the air compressor in the air supply conduit, the cut-off valve operating to store the air in the air chamber when closed; and
control means for controlling operation of the air compressor, the air drain valve and the cut-off valve to determine the amount of air stored in the air chamber, to maintain the air drain valve opened for a predetermined time during starting operation of the air compressor and to open the cut-off valve after operation of the air compressor is started.

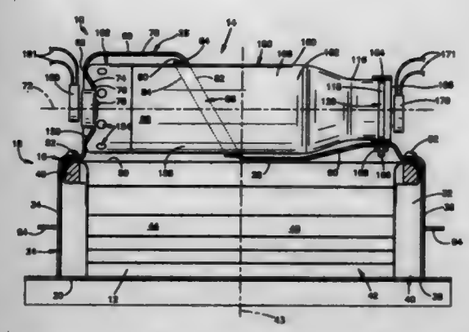
5,484,163

VEHICLE OCCUPANT RESTRAINT APPARATUS

Jeffrey A. Jenkins, Shelby Township, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Feb. 17, 1994, Ser. No. 197,734
Int. Cl.[6] B00R 21/20
U.S. Cl. 280—728.2 12 Claims

1. Apparatus for use in inflating an inflatable vehicle occupant restraint, said apparatus comprising:
inflator means for providing a pressure vessel for containing inflation fluid, said pressure vessel including an elongated container wall having first and second longitudinally opposite end portions, said inflator means further including means for defining a nozzle for directing inflation fluid from said inflator means, said nozzle being located adjacent to said first end portion of said container wall;
pressure sensing means for sensing the pressure of inflation fluid contained in said pressure vessel, said pressure sensing means comprising a pressure sensor connected to said pressure vessel adjacent to said second end portion of said container wall; and



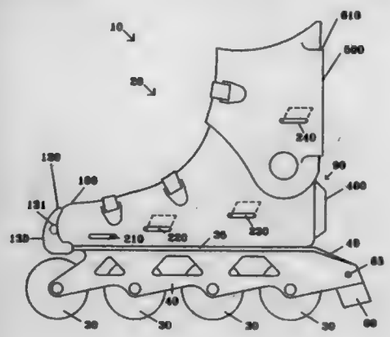
canister means for supporting the vehicle occupant restraint and said inflator means in a vehicle, said canister means having an outer portion defining an outer compartment for containing the vehicle occupant restraint, said outer portion of said canister means having first and second side walls defining respective opposite ends of said outer compartment;
said canister means further having an inner portion defining an inner compartment containing said nozzle and said first end portion of said container wall, said inner portion of said canister means having first and second side walls defining respective opposite ends of said inner compartment, said second side wall of said inner portion of said canister means having an opening extending through said second side wall;
said container wall extending longitudinally through said opening from said inner compartment to the exterior of said canister means, said second end portion of said container wall and said pressure switch being located outside of said canister means.

5,484,164

ROLLER SKATE LIGHTING SYSTEM

James M. McInerney, and Mitch E. Norman, both of P.O. Box 1131, Carnelian Bay, Calif. 96140

Filed Mar. 24, 1994, Ser. No. 217,413
Int. Cl.[6] A63C 17/26
U.S. Cl. 280—112 10 Claims



1. For use with a roller blade or the like, a lighting system comprising:
a plurality of lights extending along a boot of the roller blade with at least one of said lights being positioned at a heel of the boot;
a power source in the boot;
a first circuit associated with said power source for energizing said at least one light positioned at the heel of the boot, said first circuit including a normally open switch means for precluding a current flow from said power source to said heel light during a rolling movement of the roller blade;

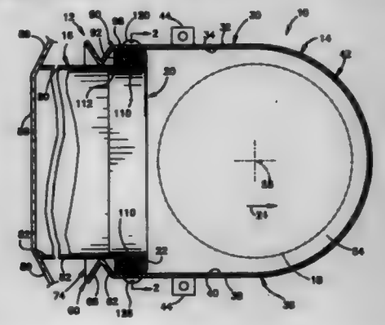
a brake pad;
means for mounting said brake pad to the roller blade boot and at a position spaced from a skating surface during rolling movement of the roller blade;
said switch means closing said first circuit only in response to said mounted brake pad contacting the skating surface whereby to provide a current flow to said heel light;
a second circuit associated with said power source for energizing said remaining plurality of lights.

5,484,165

AIR BAG MODULE

Jeffrey A. Jenkins, Shelby Township, and Scott A. Kelley, Algonac, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Aug. 12, 1994, Ser. No. 289,686
Int. Cl.[6] B60R 21/16
U.S. Cl. 280—728.2 27 Claims



23. A vehicle safety apparatus for protecting an occupant of a vehicle, comprising:
a housing including a first portion and a second portion;
an inflatable vehicle occupant restraint disposed within said housing;
an inflation fluid source connected with said housing for supplying inflation fluid to said inflatable restraint;
a retaining ring connected with said inflatable restraint for securing said inflatable restraint to said housing;
said retaining ring having a plurality of internal surfaces which define a plurality of openings in said retaining ring, each one of said internal surfaces defining a respective internal thread convolution which is disposed within said retaining ring and which forms an outer periphery of a respective opening in said retaining ring; and
a plurality of screws, each one of said screws having a threaded shank with an external thread convolution in engagement with a respective one of said internal thread convolutions on said retaining ring, said plurality of screws interconnecting said first portion of said housing and said second portion of said housing and said retaining ring.

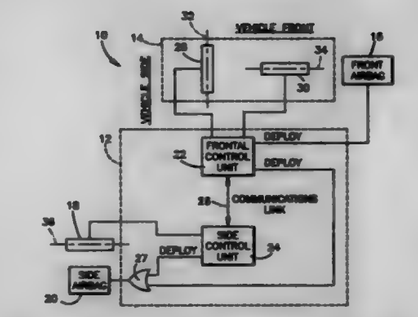
5,484,166

METHOD AND APPARATUS FOR PROVIDING A DEPLOYMENT SIGNAL FOR A VEHICLE OCCUPANT RESTRAINT DEVICE DURING A SIDE IMPACT CRASH

Joseph F. Mazur, Washington; Brian K. Blackburn, Rochester, and Scott B. Gentry, Romeo, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Jul. 22, 1994, Ser. No. 279,594
Int. Cl.[6] B60R 21/32
U.S. Cl. 280—735 16 Claims

1. A method of providing a deployment signal for deploying a vehicle occupant restraint device in response to a side impact to a vehicle, said method comprising the steps of:



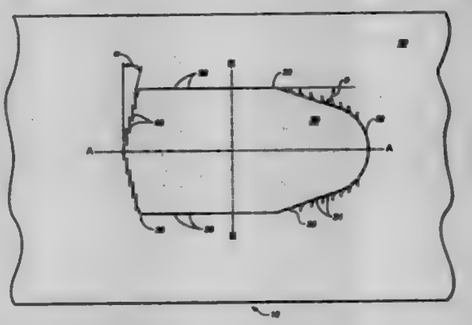
sensing a non-door side impact at a non-door location, and providing a non-door side impact signal;
sensing an on-door side impact at a vehicle door, and providing an on-door side impact signal;
evaluating said non-door side impact signal to determine if said non-door side impact signal indicates a non-door deployment crash condition;
evaluating said on-door side impact signal to determine if said on-door side impact signal indicates an on-door deployment crash condition and wherein said step of evaluating said non-door side impact signal is prevented when a value of said on-door side impact signal exceeds an on-door threshold value; and
providing a deployment signal for deploying the vehicle occupant restraint device when either of said evaluating steps determines that the respective side impact signal indicates a deployment crash condition.

5,484,167

LABEL HAVING INTEGRALLY FORMED DIFFERENTIAL RELEASE COUPON AND METHOD OF MAKING

Dean S. Donaldson, Vallejo; Darren T. Williams, Brentwood, and William W. Campbell, Benicia, all of Calif., assignors to The Clorox Company, Oakland, Calif.

Filed Sep. 13, 1993, Ser. No. 120,891
Int. Cl.[6] B42D 15/00
U.S. Cl. 283—67 13 Claims



1. A label comprising
(a) a non-releasable fixed portion for affixing to a container: and
(b) a releasable coupon portion defined by a series of perforations comprising:
(i) a first continuous cut;
(ii) a plurality of herringbone cuts adjacent to and coincident with the continuous cut, the herringbone cuts collectively defining, a first taper relative to a central tear axis, each herringbone cut including a flange portion cut into the non-releasable fixed portion, each said flange extending into the fixed portion by a length equal to about 20–50% of

a length of the herringbone cut, said flange further being angled relative to said first taper by about10–30, degrees, each flange further extending beyond a start of a succeeding herringbone cut;

(iii) a plurality of overlapping vertical hash cuts defining a second taper relative to said tear axis;

(iv) a first transition cut intermediate to and coincident with said plurality of herringbone cuts and said plurality of hash cuts; and wherein the coupon portion is separable from the fixed portion by applying a unidirectional pulling force along said tear axis.

5,484,168

SHIPPING LABEL

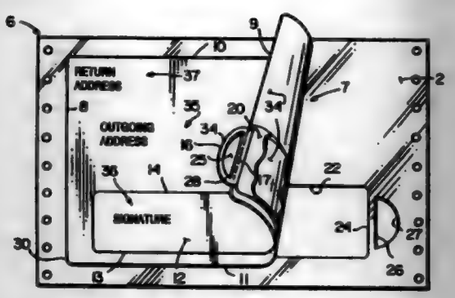
Pierre Chigot, Vailly Sur Sauldre, France, assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Oct. 5, 1993, Ser. No. 131,749

Claims priority, application France, Jan. 22, 1992, 92 12653

Int. Cl.[6] B42D *15/00*

U.S. Cl. 283—67 **26 Claims**



1. A label assembly comprising:

a backing of release material;

a main label of label stock, having a top face and a bottom face: adhesive substantially covering said bottom face;

a first die cut formed in said main label, defining a secondary label substantially within said main label; and

a second die cut formed in said backing overlapping said first die cut to define a first removable segment of said backing;

said adhesive exerting a greater force on said first removable segment than the rest of said backing, so that when said main label is removed from said backing, said first removable segment detaches from said backing and remains with said main and secondary labels.

5,484,169

HIDDEN ENTRY SYSTEM AND IMAGE-DEVELOPING DEVICE THEREFOR

John C. H. Chang, Naperville, and Donald Hoffmann, Elmhurst, both of Ill., assignors to Wallace Computer Services, Inc., Hillside, Ill.

Division of Ser. No. 110,253, Aug. 23, 1993, Pat. No. 5,431,452. This application Feb. 17, 1995, Ser. No. 390,568

Int. Cl.[6] B42D *15/00*

U.S. Cl. 283—67 **10 Claims**

1. A method for developing a hidden entry which comprises providing a hidden entry system comprising

a first substrate having a first surface bearing a localized latent image comprising an image-forming reactant, which is either a chromogen or a color developer, and an image-developing device comprising a second substrate having a first surface and a second surface,

said first surface of said second substrate bearing a chromogenic composition, said chromogenic composition comprising an image-developing co-reactant, said image-developing co-reactant being a chromogen or a color developer capable of reacting with said image-forming reactant to form a visible image,

said second surface of said second substrate bearing a pressure-sensitive adhesive,

said image-developing device being superposed with respect to said first substrate such that said pressure-sensitive adhesive is releasably attached to said first substrate and spaced apart from said localized latent image,

separating said image-developing device from said first substrate,

digitally engaging said pressure-sensitive adhesive and manually contacting said localized latent image comprising said image-forming reactant with said chromogenic composition comprising said image-developing co-reactant to convert said latent image to a visible image, said pressure-sensitive adhesive providing an anchor for said manual contacting.

5,484,170

UNITARY SHIPPING LABEL, PRODUCT INFORMATION LABEL AND PACKING SLIP

Raymond Hatfield, Jr., Waynesville, Ohio, assignor to Intermec Incorporated, Everett, Wash.

Filed Aug. 10, 1994, Ser. No. 289,954

Int. Cl.[6] B42D *15/00*

U.S. Cl. 283—79 **14 Claims**





1. A unitary shipping label, product information label, and packing slip comprising:

a) a first strip of a printable medium having a front face and a back face;

b) a second strip of a printable medium having a front face and a back face, said first strip being placed over said second strip in alignment with said back face of said first strip facing said front face of said second strip;

c) a layer of adhesive covering said back face of said first strip;

d) a layer of adhesive release material covering said front face of said second strip whereby said first strip is adheasively held to said second strip by said adhesive but said second strip can be released and removed from said adhesive at the junction of said release material with said adhesive;

e) said first strip and said second strip having transverse perforations therethrough defining first, second, third, and fourth panels; and,

f) said second strip having a pair of longitudinal perforations with corresponding slits therethrough defining top and bottom removable strips for said second, third, and fourth panels.

5,484,171

COUPLING JOINT

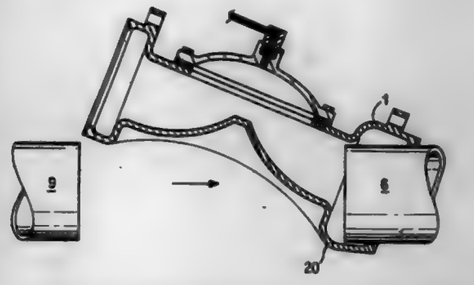
Douglas H. Emmins, Private Mail Bag 51, Mannum, South Australia, Australia

Continuation of Ser. No. 950,579, Sep. 23, 1992. This application Jun. 3, 1994, Ser. No. 248,855

Claims priority, application Australia, Sep. 24, 1991, PK8524

Int. Cl.[6] F16L *21/00*

U.S. Cl. 285—31 **9 Claims**



1. A fitting for providing sealed communication across a gap in a conduit, said gap being defined between fixed and rigid spaced-apart conduit ends, the fitting including:

a first expanded collar at a first end of the fitting for sealing connection around a first of said conduit ends,

a second end of the fitting including a second expanded collar adapted to fit around a second of said conduit ends,

the first expanded collar having an open end defined within a first internal annular face, said first internal annular face being adapted to provide a snug fit around the first conduit end,

the second expanded collar having an open end defined within a second internal annular face, said second internal annular face being adapted to provide a snug fit around the second conduit end, wherein the open ends of the first and second expanded collars lie in planes parallel to one another and perpendicular to a longitudinal axis of the fitting and

means for facilitating positioning of said fitting between the fixed and rigid spaced-apart conduit ends, said means including a bulbous portion formed within a portion of the circumference of the open end of the first expanded collar, so that the fitting can be angled axially relative to the first conduit end when the first conduit end is in the first expanded collar, and so that when so angled the second fitting end extends to one side of the second conduit end, the first expanded collar being sufficiently deep so that when the first end of the conduit is inserted within the first expanded collar, the second end of the fitting is clear of the second conduit end.

5,484,172

PIPE CONNECTION

Heinz Unewisse, Mülheim/Ruhr, and Herbert Foering, Solingen, both of, Germany, assignors to Mannesmann Aktiengesellschaft a Corp. of The Federal Republic of Germany, Dusseldorf, Germany

Filed Apr. 6, 1992, Ser. No. 864,295

Claims priority, application Germany, Apr. 4, 1991, 9104147 U

Int. Cl.[6] F16L *55/07;19/07*

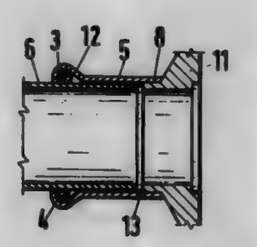
U.S. Cl. 285—175 **10 Claims**

1. A fluid connection, comprising in combination:

a valve body made of a cast material, comprising an inlet and an outlet each having an end portion, each of said end portions being formed by a deformable sheet metal press fitting comprising a substantially cylindrical portion and an annular groove; and

an annular sealing member disposed in said groove, and

said press fitting being dimensioned for receiving a substantially cylindrical conduit to be inserted therein and for non-releasably crimping said fitting around said conduit, said inlet and said outlet each including a protruding annular sleeve having an outer surface receiving said press fittings and an end surface substantially perpendicular to said outer surface forming a stop for the conduit to be inserted therein.



5,484,173

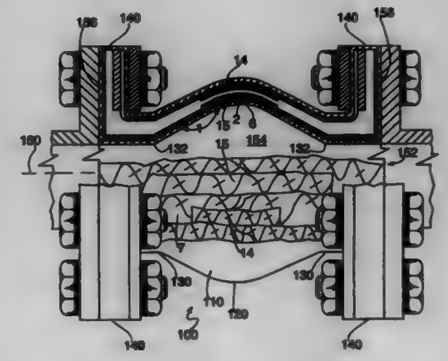
FLOWING ARCH EXPANSION JOINT USING FEP LINER BONDED TO FIBERGLASS FABRIC LAYER AND REINFORCED WITH PLURALITY OF FABRIC PLIES COVERED WITH ELASTOMERIC OUTER LAYER

Stephen F. Baker, Phelps, N.Y., assignor to Garlock Inc., New York, N.Y.

Filed Sep. 12, 1994, Ser. No. 304,852

Int. Cl.[6] F16L *21/00*

U.S. Cl. 285—229 **9 Claims**



1. A flowing arch expansion joint, comprising:

an inner liner layer of heat-flowable fluoropolymer material;

a layer of fiberglass fabric mechanically bonded to said inner liner layer by wicking penetration of said heat-flowable fluoropolymer into the structure of said fiberglass fabric as the result of heating to an elevated temperature;

said fiberglass layer and said inner liner layer being shaped into a bulged cylinder configuration having a given overall length with a maximum diameter portion intermediate the ends thereof and a minimum diameter portion proximate at least one end thereof;

said layer of fiberglass fabric having longitudinally extending overlapping edges defining a seam with said edges overlapping each other along a portion of the circumfereace of said bulged cylinder and having interposed therebetween a layer of heat flowable fluoropolymer material mechanically bonded to the fabric that forms both edges and securing said edges together against relative motion;

a surrounding layer of heat-flowable elastomeric material surrounding the outer periphery of said fiberglass layer from end to end thereof;

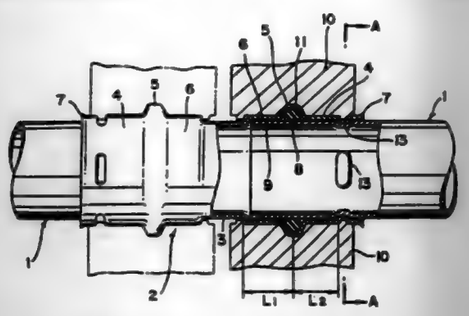
said surrounding elastomeric layer being mechanically bonded to said fiberglass fabric layer by wicking penetration of said

heat-flowable elastomeric material into the structure of said fiberglass fabric as the result of heating to an elevated temperature.

5,484,174
PIPE COUPLING AND METHOD OF JOINING MATERIALS

Taiji Gotoh; Hidetoshi Yamamoto, both of Kuwana; Kiyokazu Iwama, Mie, and Kiyoshi Yamada, Kuwana, all of, Japan, assignors to Mie Horo Co., Ltd., Mie, Japan

PCT No. PCT/JP89/00667, § 371 Date Jun. 3, 1994, § 102(e) Date Jun. 3, 1994, PCT Pub. No. WO90/00697, PCT Pub. Date Jan. 25, 1990
PCT Filed Jul. 3, 1989, Ser. No. 465,208
Claims priority, application Japan, Jul. 13, 1988, 63-174393
Int. Cl.[6] F16L *13/14*
U.S. Cl. 285—382.2 17 Claims

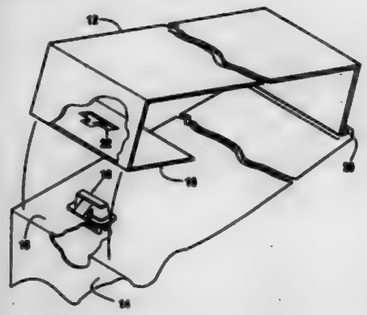


1. A pipe fitting for joining together piping material, the pipe fitting (2) comprising:
a substantially cylindrical main body portion (3) having an inner diameter which is substantially the same as an inner diameter of said piping material (1) to be joined;
first and second cylindrical portions (4, 6) extending from said main body portion (3) in a given direction, said first and second portions (4, 6) each having an inner diameter larger than that of said main body portion (3), said second portion (6) being joined to said main body portion (3) at a distal end of said second portion (6);
an outwardly extending annular portion (5) defining an annular space for receiving therein a sealing material (8), said annular portion being located between said first and second portions (4, 6) and extending outwardly relative to said first and second portions (4, 6);
said second portion (6) having a clearance (9) of not less than 100 μm between the outer surface of said piping material (1) to be joined and the inner surface of said second portion (6), to prevent crevice corrosion at said inner surface of said second portion (6) and at the outer surface of said piping material (1) to be joined;
and wherein:
said second portion (6) has a length (L1) as measured from said annular portion (5) to the distal end of said second portion (6);
said first portion (4) has a length such that a recess (13) formed therein is at a distance (L2) measured from said annular portion (5), wherein said length (L1) is substantially equal to said distance (L2);
said first portion (4) has a main substantially cylindrical portion and an outwardly tapered annular portion (7) formed at a distal end portion of said first portion (4); and
said tapered annular portion (7) has a degree of taper such that an annular entrance clearance is formed between an internal surface of the distal end of the tapered portion (7) and an external surface of the piping material (1) to be joined; and
said annular entrance clearance is substantially equal to a wall thickness of the pipe fitting.

5,484,175
CABINET LOCK AND METHOD FOR USING SAME

Daniel E. Teich, Marion, and Erick L. Sokn, Murphysboro, both of Ill., assignors to Maytag Corporation, Newton, Iowa

Filed Jan. 28, 1994, Ser. No. 187,841
Int. Cl.[6] E05C *19/06*
U.S. Cl. 292—80 10 Claims



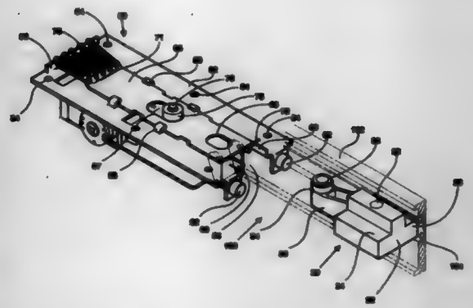
1. In an appliance cabinet assembly, the combination comprising:
a first panel member having a downwardly presented surface with a first aperture therein;
a second panel member having an upwardly presented surface with a second aperture therein;
a locking member having a base flange positioned between and preventing contact between said first and second panel members;
said base flange causing a space to be formed between said first and second panel members;
two or more spring legs extending downwardly from said base flange and protruding into said second aperture, said spring legs being biased apart from one another to retentively engage said second panel member while within said second aperture, thereby detachably securing said locking member to said second panel member;
a catch pawl connected to said base flange and protruding into said first aperture of said first panel member, said catch pawl having an upper portion retentively engaging said first panel member while in said first aperture to detachably secure said locking member to said first panel member and having a lower portion extending below said first panel member and into said space between said first and second panel members.

5,484,176
LATCH MECHANISM

Alan J. Sallwasser, Chateauy Malabry, France, assignor to Motus, Inc., Indianapolis, Ind.

Filed May 20, 1994, Ser. No. 245,602
Int. Cl.[6] E05C *1/02*
U.S. Cl. 292—137 22 Claims

1. A latch mechanism comprising:
a first latch member including a first latch element;
a second latch member comprising a leaf spring and including a second latch element, said second latch member being movable in a first direction from a latching position to an unlatching position, said second latch element cooperatively structured with said first latch element to be engageable therewith, whereby said first and second latch members are latched together when said second latch member is disposed in said latching position and said first latch element engages said second latch element;
ramp means separate from the first and second latch members for bending said leaf spring of said second latch member in a second direction relative to said first latch member when said second latch member moves in said first direction to said unlatching position while said first and second latch elements

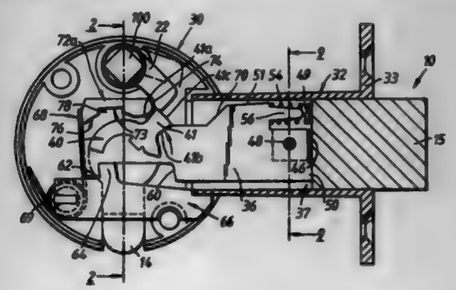


are engaged, whereby said first latch element and said second latch element disengage to unlatch the first and second latch members; and
at least one bias means returning said second latch member from said unlatching position to said latching position.

5,484,177
DUAL FUNCTION LOCK MECHANISM

Geoffrey J. Fortune, 10 Luckie Street, Nunawading, Victoria, 3132, Australia; Erwin R. O. Liebherr, deceased, late of Wonthaggi, and by Helga L. A. Liebherr, executrix, 28 Matthew Street, Wonthaggi, Victoria, 3995, Australia

Filed Oct. 8, 1993, Ser. No. 131,954
Claims priority, application Australia, Jan. 9, 1992, PL5182; Jan. 27, 1993, PL6948
Int. Cl.[6] E05C *1/06*
U.S. Cl. 292—140 17 Claims

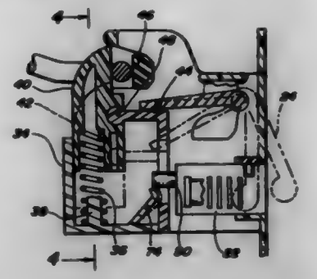


1. A dual function lock mechanism comprising:
a body;
a cam member mounted on the body for rotation about an axis;
retractor means adapted to drive a latch bolt and supported for sliding movement in opposite directions transversely with respect to said axis;
means to slide the retractor means in a first direction of said sliding movement to retract the latch bolt from a latch position to a release position;
respective cooperable mutually engageable formations on the cam member and on the retractor means whereby a predetermined first rotational movement of the cam member is effective to slide the retractor means in a second direction opposite said first direction to move the latch bolt from said latch position to an extended lock position, and a predetermined opposite rotational movement is effective to return the latch bolt from the extended lock position to the latch position; and
detent means to engage and thereby normally prevent said retractor means form moving said latch bolt between said extended lock position and said latch position;
wherein said retractor means is so supported and said formations are so cooperable that, to allow movement of said latch bolt from the extended lock position to the latch position, the retractor means is displaceable by the cam member in a direction laterally of said sliding movement whereby to disengage the retractor means from said detent means.

5,484,178
NEW SIDE PULL LATCH MECHANISM

Chain S. Sandhu, Farmington Hills, and Lev Lilov, Southfield, both of Mich., assignors to NYX, Inc., Redford, Mich.

Filed Mar. 28, 1994, Ser. No. 218,717
Int. Cl.[6] E05C *1/12*
U.S. Cl. 292—173 14 Claims



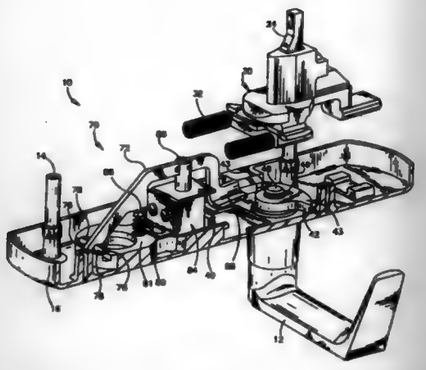
1. A latch assembly for a vehicle glove box door wherein a door is to be held in a flush position with respect to an adjoining panel surface, said latch assembly comprising,
a housing means for use in placing the latch assembly on the vehicle glove box door;
a lever means which operates as a handle and is pivotable on an axis to provide an ability to unlock the latch assembly, said lever means being spring biased to a generally flush position relative to the door and said panel surface;
an actuator means which is moveable between at least a first and second position in order to lock or unlock the said lever means, said actuator means including a spring member which biases the actuator means into a locked position, said spring member being enclosed in a circular container within said actuator means;
a locking means for locking said actuator means in one position, said locking means having a first and second position, said locking means having a lock cylinder with a V-shaped groove at a predetermined location; and
a modular means which snaps on to said housing means for use in securing said actuator means.

5,484,179
FAILSAFE ELECTRIC LOCKING LEVER TRIM

Gerald E. Mader, Indianapolis, Ind., assignor to Von Duprin, Inc., Indianapolis, Ind.

Filed Dec. 27, 1993, Ser. No. 173,283
Int. Cl.[6] E05B *3/00*
U.S. Cl. 292—336.3 12 Claims

1. An electrically lockable door lever assembly for controlling a door latch assembly, the door lever assembly comprising:
a trim housing configured to present a plate;
a lever handle rotatably connected to the trim housing;
a cam operably connected to the lever handle and positioned to rotate in response to rotation of the lever handle;
a slider movable in response to rotation of the cam, with movement of the slider controlling operation of the door latch assembly; and
a block arm assembly attached to the trim housing, the block arm assembly comprising a block arm and an attached block head, with the block head selectively positionable by rotation of the block arm in a locked position between the slider and the plate to prevent movement of the slider and its connected door latch assembly, the block head being, moved to a locked



position by electrical activation of a solenoid assembly connected between the trim housing and the block arm, and mechanically biased to return to an unlocked position by deactivation of the solenoid assembly.

5,484,180

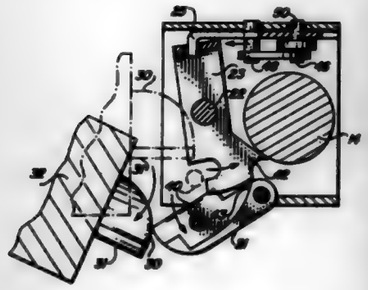
ELECTRIC STRIKE MECHANISM

Henry L. Helmar, Phoenix, Ariz., assignor to Hanchett Entry Systems, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 72,109, Jun. 7, 1993, abandoned. This application Jul. 18, 1994, Ser. No. 276,430

Int. Cl.[6] E05B *15/02*

U.S. Cl. 292—341.16 **9 Claims**



1. A door locking mechanism comprising:

a strike block adapted to receive a latch bolt,

a pivotal keeper comprising pin means for selectively opening and closing said strike block,

a first spring means acting on said keeper for biasing said keeper to a locked position,

solenoid means positioned in said block and having a plunger extending therefrom and a second spring means mounted around said plunger for biasing said plunger outwardly of said solenoid means,

pivot means mounted in said block for arcuate reciprocal movement from a first position to a second position under the action of said plunger of said solenoid means and from said second position to said first position under the action of said second spring means,

said pivot means having a slot for engagement with said pin means on said keeper when said solenoid means is deenergized,

an actuator means pivotally mounted on said block for engagement with said plunger of said solenoid means at one end thereof and with said pivot means at the other end,

said solenoid means when electrically energized rotating said actuator means to cause it to engage and arcuately move said pivot means,

said pivot means upon arcuate movement to said second position removing its slot from around said pin means to release said keeper rendering it movable by a door latch to its open position and sequentially under the action of said first spring means moving it back to its locked position.

5,484,181

GRIPPER MECHANISM

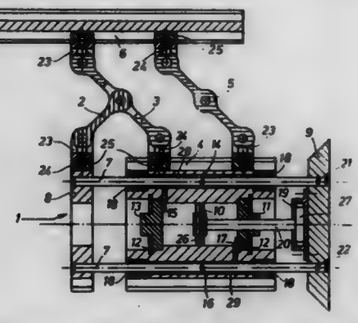
Mohsen M. Saadat, Wasserstrasse 2, 59505 Bad Sassendorf, Germany

Filed Oct. 28, 1993, Ser. No. 140,165

Claims priority, application Germany, May 15, 1991, 41 15 912.8; Mar. 4, 1992, 42 06 708.1

Int. Cl.[6] B66C *1/42*

U.S. Cl. 294—88 **14 Claims**



1. A gripper mechanism for a manipulator, having at least one movable gripper finger swingable around a slide axis, as a coupler of a kinematically multi-member positive guide mechanism, the positive guide mechanism comprising at least one slider/crank mechanism as an actuating unit which has a crank acting at one end on a first link and pivoted at the other end on a slide rod assembly, a second link spaced apart from the first link, and a slide which is guided on the slide rod assembly and abuts against the first link and the second link, both of said links of the guide mechanism acting on the gripper finger, the slide rod assembly carrying out no movement in the direction of the slide axis upon the movement of the gripper, and wherein said slide rod assembly is formed of several decentrally arranged slide rods as a cage, and said slide extends along an axis of the cage to stabilize the cage.

5,484,182

ADJUSTABLE HANDLE FOR HOLDING CONTAINERS

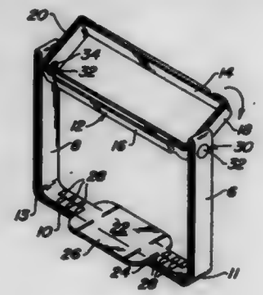
Edward H. Meixner, Short Hills, N.J., assignor to Eagle Affiliates, Inc., Harrison, N.J.

Filed Jun. 28, 1994, Ser. No. 268,006

Int. Cl.[6] A45F *5/10*; B65G *7/12*

U.S. Cl. 294—165 **18 Claims**

1. An adjustable handle for transporting and storing a single



container or a stack of plural containers, each of the containers having a top surface and a bottom surface, said handle comprising a frame, an upper portion and a means for changing the orientation of said upper portion with respect to said frame from a first orientation to a second orientation and vice versa to permit the transporting of containers of different sizes, said frame having a bottom member for supporting the bottom surface of a container thereon, said upper portion comprising a first member and a second member, said first member being disposed directly above said bottom member and separated by a first predetermined spacing when said upper portion is in said first orientation to engage the top surface of a single container on the bottom member or the top surface of a stack of containers on the bottom member, said second member being disposed directly above said bottom member and separated by a second predetermined spacing, different than said first spacing, when said upper portion is in said second orientation to engage the top surface of a single container on the bottom member or a stack of containers on the bottom member.

5,484,183

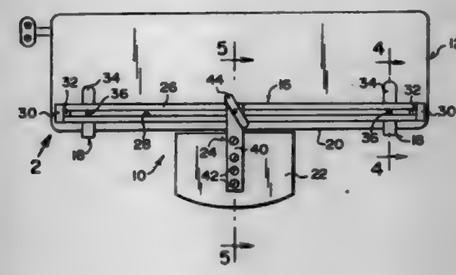
ADJUSTABLE SUN VISOR ATTACHMENT

Thomas F. Rosa, 25 Ward Ave., Middletown, R.I. 02842-5512

Filed Jan. 5, 1995, Ser. No. 368,855

Int. Cl.[6] B60J *3/02*

U.S. Cl. 296—97.6 **2 Claims**



1. An adjustable sun visor attachment for a sun visor in a vehicle comprising:

a) an elongated track component including:

an elongated flat bar having a T-shaped channel longitudinally formed there along; and a pair of end caps, each said end cap having a projection inserted into one end of said T-shaped channel in said flat bar;

b) means for attaching said track component horizontally and adjacent to a long edge of the sun visor including;

a pair of spring clamps; and a pair of fasteners for securing each said spring transversely to said flat bar, so that said spring clamps can be clipped onto the sun visor at the long edge thereof;

c) a generally rectangular panel; and

d) means for coupling said panel to said track component, so that said panel can be adjusted lengthwise in said track component along the long edge of the sun visor said coupling means including

a slide element which rides within said T-shaped channel within said flat bar;

a bracket arm;

a plurality of screws to affix said bracket arm to said panel in a vertical position; and

a wing head set screw arranged to secure an upper end of said bracket arm to said slide element, so that said wing head set screw is adjustable between loose and tight positions in which said slide element can be moved along said T-shaped channel of said flat bar to vary the position of the panel and in which said slide element is held stationary within said T-shaped channel releasably to fix the panel stationary in a selected position along the channel, respectively.

5,484,184

OPENABLE VEHICLE ROOF WITH A FLEXIBLE SCREEN TO COVER A VISIBLE GAP ON THE SIDE

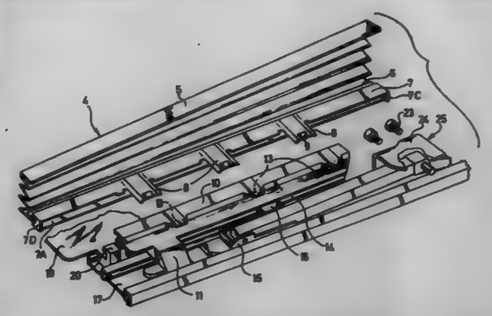
George Kohlpaintner, Martinsried; Kurt Kugler, Stockdorf; Stjepan Radmanic, Mammendorf; Roland Wittal, Munich, and Manfred Nowak, Kaufering, all of, Germany, assignors to Webasto Karosseriesysteme GmbH, Stockdorf, Germany

Filed Feb. 2, 1995, Ser. No. 382,575

Claims priority, application Germany, Feb. 2, 1994, 44 03 163.7

Int. Cl.[6] B60J *7/22*

U.S. Cl. 296—217 **9 Claims**



1. An openable vehicle roof of the type having a cover for selectively closing and at least partially exposing a roof opening in a fixed roof panel by either of rearward sliding or upward pivoting movements of the cover relative to the fixed roof panel, with a flexible screen located on each of opposite lateral sides of the cover for covering a laterally visible gap between the cover and the fixed roof panel resulting from upward pivoting of the cover above the fixed roof panel; wherein a top end of each screen is connected to the cover near a respective side edge thereof; wherein a bottom end of each screen is supported or slide means to slide lengthwise in a guideway connected to the fixed roof panel; and wherein a rail on the bottom end of each screen simultaneously forms a guideway and a stop for a driver of a sliding liner located underneath the cover.

5,484,185

VEHICLE ROOF WITH A SERIES OF PLATES

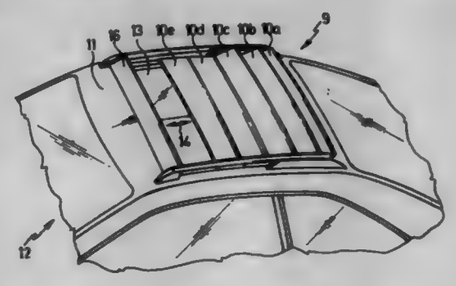
Wolfram Salz, Stockdorf, and Burkhard Reinsch, Neuried, both of, Germany, assignors to Webasto Karosseriesysteme GmbH, Stockdorf, Germany

Filed Mar. 3, 1995, Ser. No. 398,079

Claims priority, application Germany, Mar. 4, 1994, 44 07 286.4

Int. Cl.[6] B60J *7/047*

U.S. Cl. 296—220 **16 Claims**



1. Vehicle roof with a series of plates for selectively closing and at least partially opening a roof opening in a fixed roof surface, the plates, in a closed position, bordering one another and forming a continuous panel of plates, each plate being slidably guided along

a path of movement in a guide device that is connected with the fixed roof surface, on each lateral side of the roof opening, on a pair of guide elements which are spaced one forward of the other in a sliding direction, so that, when the plates are displaced along the guide device in an opening direction, the plates of the continuous panel of plates perform a translational movement during which the panel of plates is separated into individual plates in a plate-by-plate manner commencing with a rearmost plate of the plate system, the panel of plates being reestablished in a plate-by-plate manner commencing with a forwardmost plate when the plates are displaced along the guide device in a closing direction; wherein slidable beating units are provided as a means for supporting the plates for sliding movement along a common guide track with a respective rear guide of one of the plates and a forward guide of a rearwardly next plate in the series of plates connected thereto, interlocking pairs of said slidable beating units together by a respective one of the plates until separation thereof; and wherein each of said bearing units is provided with a respective blocking device that is responsive to sliding movement of the panel of plates bringing the respective bearing unit to a predetermined position with respect to the guide track, each blocking device releasing the rear guide of the respective plate from the respective bearing unit, when the roof is opened, for enabling a pivoting movement the respective plate, and when closing the roof, interlocking the rear guide of the respective plate with the respective bearing unit.

5,484,186

ELECTRICAL CIRCUIT AND TRIM PANEL

Kim L. Van Order, Hamilton; Lee Garvelink; Rick A. Van Vuren, both of Holland; Jerry M. De Jong, West Olive, and Alex C. Ramon, Holland, all of Mich., assignors to Prince Corporation, Holland, Mich.

Division of Ser. No. 875,644, Apr. 28, 1992, Pat. No. 5,309,634. This application Feb. 2, 1994, Ser. No. 190,595

Int. Cl.[6] B60R *13/02*

U.S. Cl. 296—97.5 **64 Claims**



1. A decorative vehicle trim panel assembly, comprising:

a panel adapted to be mounted to a vehicle, said panel having at least one aperture formed therein;

at least one panel conductor carried on said panel and fixed to said panel to extend across at least a portion of said at least one aperture, said at least one panel conductor adapted to be connected to the vehicle's electrical system; and

an electrical accessory adapted to be carried on said panel, said electrical accessory including at least one accessory conductor and at least one insulation displacement contact coupled to said accessory conductor, said at least one insulation displacement contact being connected to said at least one panel conductor through said at least one aperture.

5,484,187

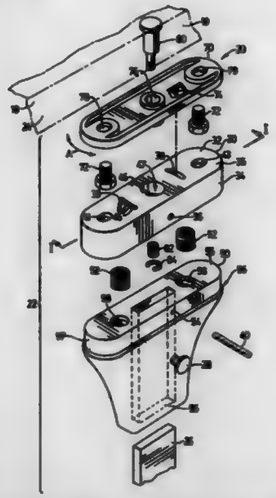
CHAIR ARMREST ADJUSTMENT MECHANISM

Frank Doerner, and William S. Stumpf, both of Kitchener, Canada, assignors to Doerner Products Ltd., Waterloo, Canada

Filed Apr. 11, 1994, Ser. No. 226,013

Int. Cl.[6] A47C *7/54;* **B60N** *2/46*

U.S. Cl. 297—411.3 **15 Claims**



1. A chair armrest adjustment mechanism comprising:

a top member having attachment means for mounting said member to an armrest pad,

support means for mounting to an armrest support,

mounting means for mounting said top member to said support means for side-to-side rotational movement of said top member relative to said support means,

limiting means for limiting side-to-side rotational movement of said top member on said support means comprising a pin and slot arrangement, said pin extending from one of said top member and said support means and said slot extending in another of said top member and said support means, said slot comprising an arcuate array of holes, each of said holes sized such that on insertion of said pin into any one of said holes, said top member is fixedly positioned with respect to side-to-side rotational movement on said support means.

5,484,188

DENTAL PATIENT CHAIR

Klaus Stoeckl, Bensheim, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 25, 1993, Ser. No. 111,418

Claims priority, application European Pat. Off., Sep. 24, 1992, 92116291

Int. Cl.[6] A61G *15/12*

U.S. Cl. 297—408 **22 Claims**

1. A dental patient chair, comprising:

a lower body rest part that is height-adjustable;

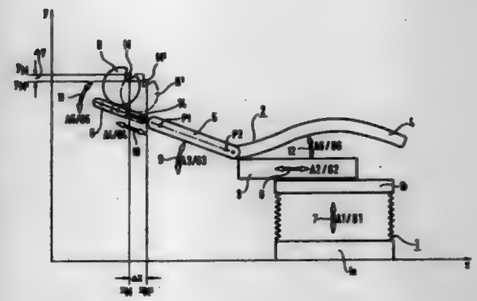
a back rest that is variable in inclination;

a head rest part that is position adjustable relative to the back rest;

adjustment means having controllable drives for position adjusting the lower body rest part, the back rest and the head rest part;

a control means containing a plurality of selectable programs respectively corresponding to different chair positions defined by an adjusted position of the lower body rest part, the back rest, and the head rest part, said different chair positions being allocated to specific treatment surfaces at teeth of the upper jaw and of the lower jaw, for activating the adjustment means according to one of the selectable programs; and

an operating unit having an operating area on which the tooth rows of the upper jaw and lower jaw are represented as a diagram, said diagram including two opposed semi-circular arrays representing a patients mouth wherein the semi-circular arrays are divided into a plurality of sections representing specific areas of the teeth, said sections representing teeth for treatment of which approximately identical chair positions are required, means for optically displaying said sections on the operating area, and operating means having selected keys which each directly correlate with one of the sections for activating the control means upon actuation of said operating means to adjust the lower body rest part, the back rest and the head rest part in combination into the chair position represented by a selected section.



5,484,189

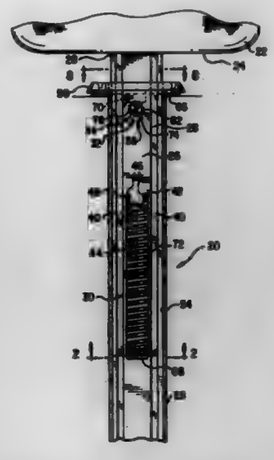
RETRACTABLE POP-UP HEAD REST USABLE WITH A VEHICLE PASSENGER SEAT

James Patterson, 214-2885 Boys Road, Duncan, British Columbia, Canada

Filed Jun. 24, 1994, Ser. No. 264,875

Int. Cl.[6] A47C *7/36*

U.S. Cl. 297—410 **21 Claims**



1. A retractable pop-up head rest assembly for use with a vehicle passenger seat comprising:

a head rest mounted for vertical movement from a normally retracted position adjacent the seat to an extended operative position;

the vertical movement provided by an elongated shaft 26 slidable relative to an elongated hollow outer shell and carrying said head rest and movable therewith, said shaft being mounted for rocking movement within a gap formed in the seat;

biasing means mounted below said head rest for resiliently urging said head rest to move vertically from said retracted position towards said extended operative position;

vertical restraining means mounted below said head rest for restraining the vertical upward movement of said shaft from said retracted position;

said shaft being rockably movable between a first position where said vertical restraining means restrains said shaft from upward vertical movement and a second position where said shaft is caused to move vertically upwardly by said biasing means;

horizontal restraining means mounted below said head rest for restraining the rocking movement of said shaft from said first position to said second position and operable in response to a predetermined amount of force being exerted thereon caused by the rapid deceleration of the vehicle so as to permit said shaft to rock from said first position to said second position thereby causing said biasing means to urge said shaft from said retracted position towards said operative position.

5,484,190

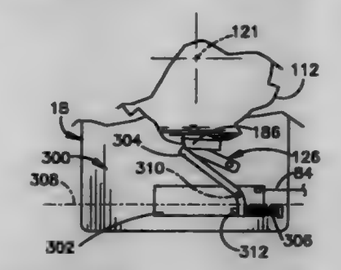
SEAT BELT RETRACTOR LOCK

Steven G. Corrion, Oxford, and Donald E. Foxworth, Marysville, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Nov. 3, 1993, Ser. No. 147,863

Int. Cl.[6] B60R *22/357;22/40*

U.S. Cl. 297—476 **20 Claims**



1. Apparatus comprising:

a frame;

a spool having rachet teeth, said spool being supported on said frame for rotation in a winding direction and an unwinding direction;

a locking pawl supported on said frame for movement between an unlocking position spaced from said ratchet teeth and a locking position located in the path of movement of said ratchet teeth, said pawl blocking rotation of said spool in said unwinding direction when said pawl is in said locking position; and

actuator means for moving said pawl from said unlocking position to said locking position, said actuator means including a first actuator member, a second actuator member, and a spring;

said first actuator member being supported for movement relative to said frame against the bias of said spring, said first actuator member being thus movable into an actuated position;

said second actuator member being supported for movement relative to said frame with said first actuator member, said second actuator member being thus movable against said pawl to move said pawl from said unlocking position to said locking position upon movement of said first actuator member into said actuated position;

said second actuator member is further supported for movement relative to said first actuator member against a bias of said

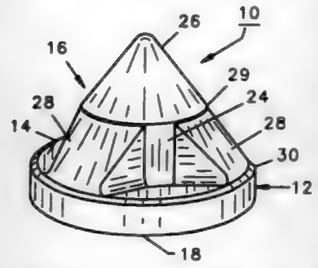
spring when said first actuator member is in said actuated position, said second actuator member being thus movable relative to said first actuator member by said pawl, whereby said second actuator member enables said pawl to be moved by said ratchet teeth from said locking position toward said unlocking position against the bias of said spring upon rotation of said spool in said winding direction when said first actuator member is in said actuated position.

5,484,191

INSERT FOR TUNGSTEN CARBIDE TOOL

Phillip A. Sollami, Herrin, Ill., assignor to The Sollami Company, Herrin, Ill.

Filed Sep. 2, 1993, Ser. No. 114,832
Int. Cl.[6] E21B *10/00*
U.S. Cl. 299—105 **18 Claims**



1. 1. An insert formed of tungsten carbide for a cutting tool, comprising in combination

a base having a first side and a second side, a peripheral edge bordering on said first side, and said second side having a shape adapted to be secured to said cutting tool,

a column centrally located on said first side and extending perpendicularly thereto along the longitudinal axis of said insert,

said column having a cutting surface at the end thereof remote from said base,

a plurality of buttresses extending radially from said column between said base and said column, and

said cutting surface being formed of a harder grade of tungsten carbide than that of which said base is formed.

5,484,192

MOUNTING OF AN AXLE SPINDLE OF AN AGRICULTURAL IMPLEMENT

Wilfred J. Degelman, Raymore, Canada, assignor to Degelman Industries Ltd., Regina, Canada

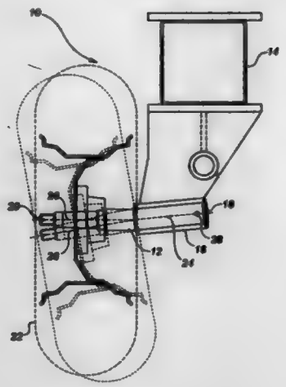
Filed Jun. 21, 1994, Ser. No. 263,237
Int. Cl.[6] B60B *35/10*
U.S. Cl. 301—131 **3 Claims**

1. A mounting for an axle spindle of an agricultural implement, comprising:

a sleeve is secured to a frame of the agricultural implement;

the axle spindle has a frame end which is received in the sleeve and a wheel end on which a wheel is mounted, the axle spindle is bent and by rotating the frame end of the axle spindle relative to the sleeve the wheel end of the axle spindle is movable between a substantially horizontal travel position and a downwardly inclined field working position; and

means for locking the axle spindle in one of the travel position and the field working position including a aligned apertures in the sleeve, and a transverse passage through the axle spindle, the transverse passage only aligning with the apertures in the travel position and the field working position whereby the axle spindle is secured to the sleeve by means of a bolt in one of the travel position and the field working position.

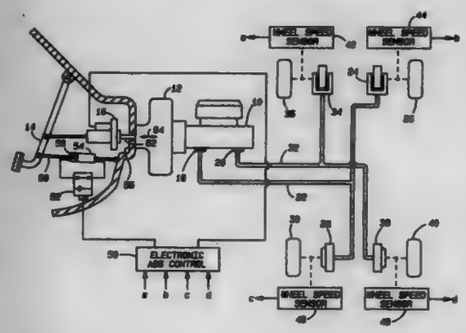


5,484,193

SINGLE CHANNEL BEST EFFORT ANTI-LOCK BRAKE SYSTEM

Edward N. Fuller, Manchester, and Herbert L. Linkner, Jr., Dexter, both of Mich., assignors to Kelsey-Hayes, Romulus, Mich.

Filed Oct. 21, 1994, Ser. No. 327,582
Int. Cl.[6] B60T *8/32*
U.S. Cl. 303—113.1 **16 Claims**



1. A best effort single channel anti-lock brake system for an automotive vehicle having a foot pedal, a master brake cylinder responsive to the depression of the foot pedal to provide pressurized brake fluid proportional to the pressure applied to said foot pedal and a brake actuator associated with each wheel of the vehicle, said anti-lock brake system comprising:

at least one wheel speed sensor associated with at least one of the wheels of the vehicle, said at least one wheel speed sensor generating a wheel speed signal having a value indicative of the rotational speed of said at least one wheel;

an electronic control having logic means for detecting when said at least one wheel is approaching a locked state to initiate an anti-lock mode of operation in response to said wheel speed signal, said electronic control further comprising means for generating a foot pedal inhibit signal and cyclic brake pressure control signals in response to said logic means being in said anti-lock mode of operation;

means connected between the foot pedal and a stationary member of the vehicle for inhibiting further depression of the foot pedal in response to said foot pedal inhibit signal; and

means independent of said means for inhibiting connected between the foot pedal and the master cylinder for cyclically controlling the brake fluid pressure applied to the brake actuators by the master cylinder in response to said cyclic brake pressure control signals, said cyclically controlled brake fluid

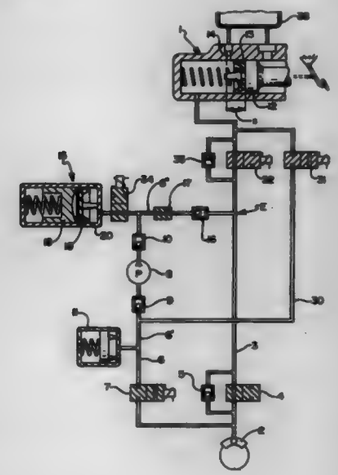
pressure selected to maintain a maximum friction between the wheels of said vehicle and the road surface being engaged by said wheels.

5,484,194

SWITCH VALVE AND ACCUMULATOR ON PUMP DISCHARGE LINE FOR PRESSURE CONTROL DURING TRACTION CONTROL

Hans-Dieter Reinartz, Frankfurt am Main, and Erhard Beck, Weilburg, both of, Germany, assignors to ITT Automotive Europe GmbH, Germany

PCT No. PCT/EP92/02938, § 371 Date Jul. 25, 1994, § 102(e) Date Jul. 25, 1994, PCT Pub. No. WO93/14961, PCT Pub. Date Aug. 5, 1993
PCT Filed Dec. 17, 1992, Ser. No. 256,805
Claims priority, application Germany, Jan. 23, 1992, 42 01 732.7
Int. Cl.[6] B60T *8/48*
U.S. Cl. 303—116.2 **4 Claims**



1. A brake pressure control unit, in particular for providing traction slip control, comprising:

a master cylinder connected to at least one wheel brake through brake piping, said wheel brake being associated with a driven wheel, said master cylinder having a piston adapted to move longitudinally within said master cylinder and a seal associated with said piston;

a pedal adapted to be depressed by a vehicle operator, said pedal being operatively coupled with said piston such that depression of said pedal causes said piston and seal to move within said master cylinder;

a pressure line connected to an inlet point of said brake piping;

a pump that delivers fluid through said pressure line;

a separating valve between said inlet point of said brake piping and said master cylinder;

a connecting line between said master cylinder and a suction side of said pump;

a traction slip control valve inserted in said connecting line;

a transitional accumulator connected to said pressure line; and

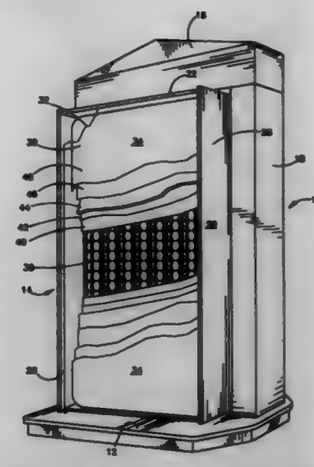
a switch valve connected to said pressure line between said accumulator and a discharge side of said pump, said switch valve being in a closed position during a traction slip control action to thereby isolate said accumulator from said pressure line during said traction slip control action, said switch valve opening during a traction slip control action when said pedal is depressed such that fluid within said pressure line is delivered into said accumulator, to thereby prevent damage to said seal in said master cylinder.

5,484,195

BEDDING SYSTEM DISPLAY ASSEMBLY

Thomas J. O'Donnell, Westlake, Ohio, assignor to Sealy, Inc., Cleveland, Ohio

Filed Apr. 13, 1994, Ser. No. 227,842
Int. Cl.[6] A47F *3/10*
U.S. Cl. 312—125 **15 Claims**



15. A display assembly displaying an interior construction of a bedding system, said display assembly comprising a pedestal and a bedding system to be displayed, said bedding system comprising a mattress and a foundation, each of said mattress and foundation having a respective interior assembly defining two opposed major surfaces and at least one layer of material covering each of said major surfaces, said mattress and foundation being arranged in facing relation so that said bedding system defines two outer major surfaces open to visual inspection, a portion of the layers of material covering both outer major surfaces being cut away so that the interior assembly of said mattress and interior assembly of said foundation are open to visual inspection, said bedding system being rotatably mounted on said pedestal so that the interior assembly of said mattress and the interior assembly of said foundation can be viewed from the same location by rotation of said bedding assembly with respect to said pedestal.

5,484,196

MEDICINE CABINET WITH RELOCATABLE CANTILEVER SHELVES

Young R. Kim, Pomona, Calif., assignor to Pacific Precision Metals, Inc., Azusa, Calif.

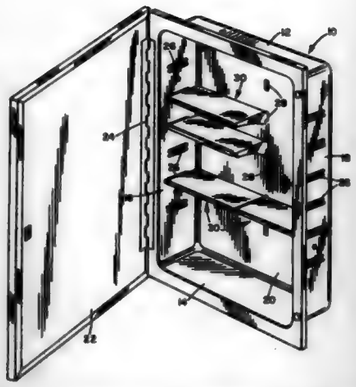
Filed Jan. 10, 1994, Ser. No. 179,066
Int. Cl.[6] A47B *67/02*
U.S. Cl. 312—242 **29 Claims**

1. A cabinet, comprising:

a housing comprising a first side wall having a forward portion and a rearward portion, a second side wall having a forward portion and a rearward portion, an upper wall having a forward portion and a rearward portion, a lower wall having a forward portion and a rearward portion, and a rear wall adjacent each said rearward portion;

said rear wall having a plurality of narrow vertical slots elongated in the direction of an axis parallel to said side walls, and each said side wall having a plurality of horizontal slots parallel to said upper and lower walls; and

a plurality of shelves, each shelf having a forward edge, a rearward edge, a first end, and a second end, the distance between said first and second ends defining a length, said first end having a tab for engaging one of said horizontal slots, said second end having a hook elongated in a direction perpendicular to said forward and rearward edges, said shelf



being resiliently deflectable with respect to said first end for engaging said hook in one of said vertical slots, each said vertical slot having a width greater than a combined thickness of two said hooks for engaging one said hook or for engaging two of said hooks simultaneously.

5,484,197

RELEASABLE LATCH FOR A TELESCOPING SLIDE ASSEMBLY

Carl E. Hansen, Greenfield, and James D. Hobbs, Plainfield, both of Ind., assignors to General Devices Co., Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 38,171, Mar. 29, 1993. This application Nov. 29, 1993, Ser. No. 158,524

Int. Cl.[6] A47B *88/10; F16C 21/00*

U.S. Cl. 312—334.12 **40 Claims**



1. A telescoping slide assembly comprising

interconnected load-carrying, intermediate, and stationary slide members movable relative to one another to extend and retract the load-carrying and intermediate slide members relative to the stationary slide member between fully extended and retracted positions, the intermediate slide member moving in a channel formed in the stationary slide member, the load-carrying slide member moving in a channel formed in the intermediate slide member, and the stationary slide member including a latching lip.

means for locking the intermediate slide member to the stationary slide member to prevent relative movement between the intermediate slide member and the stationary slide member upon movement of the intermediate slide member to its fully extended position, the locking means including a latch blade having a blade-pivoting ramp portion, a retraction-blocking latch portion and a base portion pivot means for pivotably mounting the base portion to the intermediate slide member at a pivot point so that the latch blade pivots between a locking position wherein the retraction-blocking latch portion engages the latching lip on the stationary slide member to block movement of the intermediate slide member to its fully retracted position and an unlocking position wherein the retraction-blocking latch portion disengages the latching lip on the stationary slide member to allow movement of the intermediate slide member to its fully retracted position, and spring means for yieldably biasing the latch blade to its locking position engaging the stationary slide member Once the intermediate slide member reaches its fully extended position, said spring means being coupled to the intermediate slide member and positioned to lie between the blade-pivoting ramp portion and the pivot point,

cam means on the load-carrying slide member for engaging the blade-pivoting ramp portion of the latch blade while the retraction-blocking latch portion engages the latching lip on the Stationary Slide member to pivot the latch blade against the spring means from its locking position to its unlocking position in response to movement of the load-carrying slide member toward its fully retracted position so that the retraction-blocking latch portion on the latch blade disengages the latching lip on the stationary slide member automatically to permit the intermediate slide member to move from its fully extended position toward its fully retracted position, and

wherein the latch blade is formed to include a top edge positioned to lie between the blade-pivoting ramp portion and the pivot point, the top edge is formed to include a spring-receiving notch, and the spring means includes a retaining post mounted on the intermediate slide member and a biasing spring having one end coupled to the retaining post and another end extending into the spring-receiving notch formed in the top edge to abut the latch blade.

5,484,198

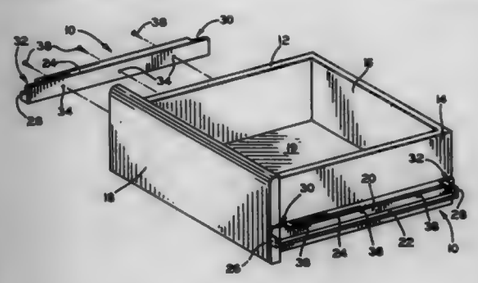
DRAWER GUIDE ASSEMBLY

Peter P. Pilliod, Holland, Ohio, assignor to Progressive Furniture, Inc., Swanton, Ohio

Filed Sep. 13, 1994, Ser. No. 305,270

Int. Cl.[6] A47B *88/14*

U.S. Cl. 312—334.18 **5 Claims**



1. A drawer guide assembly for use on each of opposite side walls of a drawer and an article of furniture of the type which a drawer is slidably insertable into and removable from the article of furniture, the assembly comprising:

roller pin assemblies;

means for attaching at least two of said roller pin assemblies to the opposite side walls of either the drawer or the article of furniture;

elongate guide rail assemblies for receiving and guiding said roller pin assemblies, said rail assemblies including a central web, a lower flange extending laterally from the web and terminating at each end with an upstanding shoulder, and an upper flange parallel with and spaced from the lower flange and terminating to form an opening between each of the respective ones of the upstanding shoulders of the lower flange to provide an opening to receive [said]the roller pin assemblies; and

means for attaching said rail assemblies to [said]the drawer or the article of furniture to which said roller pin assemblies were not attached.

5,484,199

GUIDE RAIL ASSEMBLY FOR DRAWERS

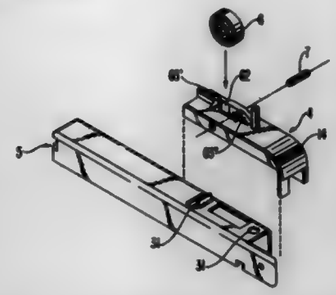
Ingo Gauer, Höchst, and Hermann Hämmerle, Lustenau, both of, Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Jan. 13, 1995, Ser. No. 372,375

Claims priority, application Austria, Jan. 17, 1994, A67/94

Int. Cl.[6] A47B *88/10*

U.S. Cl. 312—334.33 **3 Claims**



1. A guide rail assembly for use on each of opposite sides of a drawer to guide movement of the drawer into and out of an article of furniture, said assembly comprising:

a supporting rail to be attached to a furniture side wall;

a pull-out rail to be attached to the drawer;

an intermediate rail between said supporting rail and said pull-out rail;

respective pulleys mounted on front and rear ends of said intermediate rail;

a cable running on said two pulleys and fastened to said supporting rail and to said pull-out rail;

a guide member mounted on a front portion of said intermediate rail, said guide member having a downwardly directed cap covering a front end of said intermediate rail, a longitudinal rail web including a rectilinear portion and a front, bent-down portion, and an opening adjacent said rail web; and

a guide roller supported within said opening of said guide member.

5,484,200

MIXER

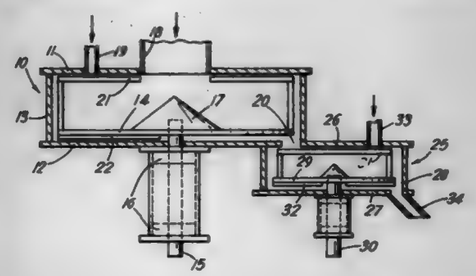
John J. Bradshaw, Derby, United Kingdom, assignor to BPB Industries Public Limited Company, Slough, United Kingdom

Filed Mar. 1, 1994, Ser. No. 203,404

Claims priority, application United Kingdom, Mar. 1, 1993, 9304120

Int. Cl.[6] B28C *7/04*

U.S. Cl. 366—15 **16 Claims**



1. Apparatus for the preparation of a foamed slurry of gypsum plaster for use in the preparation of gypsum products comprising:

at least one rotary mixer element operative in a first mixing zone to develop relatively high shear to produce an initial dispersion of the gypsum plaster, the first mixing zone having inlets for the gypsum plaster and a liquid medium; and

at least one rotary mixer element operative in a second mixing zone of relatively low shear in direct communication with the first mixing zone, the second mixing zone being provided with an inlet for a foam component and an outlet for the foamed slurry of gypsum plaster.

5,484,201

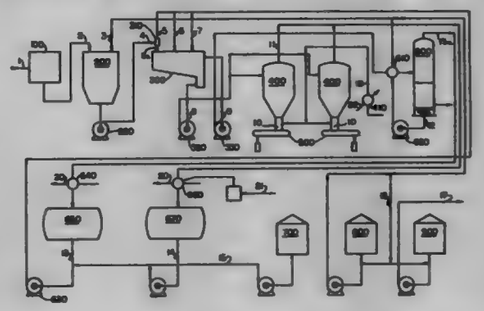
SYSTEM FOR THE RECOVERY OF OIL AND CATALYST FROM A CATALYST/OIL MIX

James A. Goolsbee, 2201 Locklane, Pasadena, Tex. 77502

Continuation of Ser. No. 830,233, Jan. 31, 1992, abandoned. This application May 2, 1994, Ser. No. 236,865

Int. Cl.[6] B01F *7/02;* **B01J** *38/50*

U.S. Cl. 366—15 **8 Claims**



1. An apparatus for recovering oil from a catalyst/oil mix, comprising:

a mixer for mixing the catalyst/oil mix with a solvent to dissolve the oil, overall catalyst flow through said mixer being substantially horizontal;

vertical baffles in the mixer for separating wet catalyst from solvent and dissolved oil, said baffles defining at least one upstream region and at least one downstream region that is shielded from said upstream region to enhance settling, said upstream region including a mixing zone and a settling zone;

floor baffles in said mixing zone, said floor baffles being parallel to the floor of the mixer and positioned below the lower ends of said vertical baffles;

means for flowing additional solvent across the floor of the mixer below the floor baffles and parallel to said floor;

a suction leg at the lowest point on the mixer for removing a stream consisting primarily of wet catalyst;

a suction pan near the surface of the fluid in the mixer for removing a stream consisting primarily of solvent and oil;

means for removing the wet catalyst from the mixer;

means for drying the wet catalyst to produce dry catalyst;

means for separating dissolved oil from the solvent; and

means for recovering the oil and the solvent in a reusable form.

5,484,202

AEROSOL CONTAINMENT SYSTEM

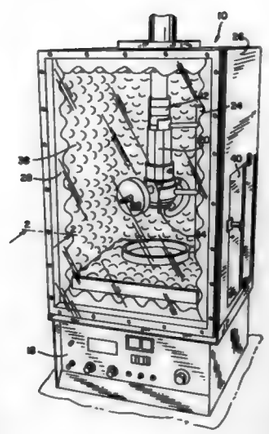
Glenn R. Gourley, and Bill L. Kreamer, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Feb. 1, 1995, Ser. No. 382,492

Int. Cl.[6] B01F *11/00*

U.S. Cl. 366—120 **21 Claims**

1. In an ultrasonic apparatus having a signal generator for generating high frequency sound waves to a convertor which transforms electrical energy to mechanical energy in the form of oscillations to a horn having a probe immersed in a sample disposed in a sample container, the combination comprising:



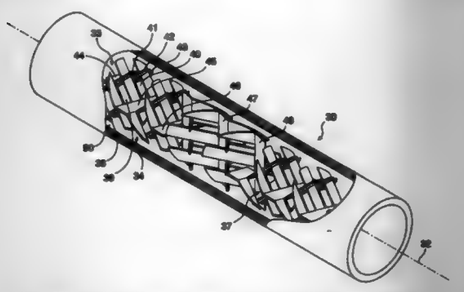
a shielding arrangement having one end sealed against said horn and another end sealed against said sample container, said shielding arrangement defining an enclosed aerosol containment chamber for preventing aerosols generated by the oscillation of said probe in said sample from becoming airborne.

5,484,203

MIXING DEVICE

Leonard T. King, Long Beach; Leo Nelmida, Lake Forest, and Frank Estrada, Long Beach, all of Calif., assignors to Komax Systems Inc., Wilmington, Calif.

Filed Oct. 7, 1994, Ser. No. 319,838
Int. Cl.[6] B01F *5/06*
U.S. Cl. 366—337 **9 Claims**



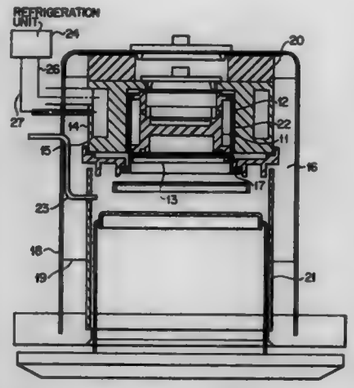
1. A stationary material mixing apparatus for the mixing of a fluid stream comprising a conduit having length, a cross-section, a longitudinal axis through said length and a chamber extending longitudinally through said length opening at a first upstream and second downstream ends of said conduit and including said longitudinal axis, at least two mixing elements occupying the entire cross-section of said conduit along the longitudinal axis thereof, said mixing elements comprise a plurality of abutting elements wherein each element has a length along the longitudinal axis where adjacent elements axially overlap defining mixing matrices inducing both counter-rotating angular velocities relative to said longitudinal axis and simultaneous inward and outward radial velocities relative to said longitudinal axis on materials moving through said mixing matrices, each element having a length along the longitudinal axis where said elements do not axially overlap, the axially non-overlapping lengths of said elements along the length of the longitudinal axis defining draft spaces for the recombination of said materials subsequent to movement through the mixing matrices, each mixing element being characterized as having a central flat portion aligned along said longitudinal axis and a set of at least three ears emanating in each of four planes from said central flat portion, each ear within each plane being spaced apart from adjacent ears within that plane by an amount approximately equal to the width of each ear itself.

5,484,204

MECHANICAL COOLING SYSTEM

Robert L. Damley, Collingswood, N.J., assignor to TA Instruments, Inc., New Castle, Del.

Filed Sep. 21, 1994, Ser. No. 309,769
Int. Cl.[6] G01N *25/00*; G01K *17/00*; F25B *39/02*
U.S. Cl. 374—10 **36 Claims**



27. A cooling head for a differential scanning calorimeter cell comprising:

(a) a heat exchanger comprising a thick-walled cylinder, said cylinder having at least one cooling cavity therein;

(b) a heat exchanger support ring supporting and positioning the heat exhanger with a minimum contact structure;

(c) a flange having an inner bore, said inner bore being attached to the differential scanning calorimeter cell, and said flange engaging the heat exchanger support ring with a minimum contact structure; and

(d) means for passing a refrigerant through the at least one cooling cavity.

5,484,205

TEMPERATURE INDICATOR AND WATCH PROVIDED WITH SUCH A TEMPERATURE INDICATOR

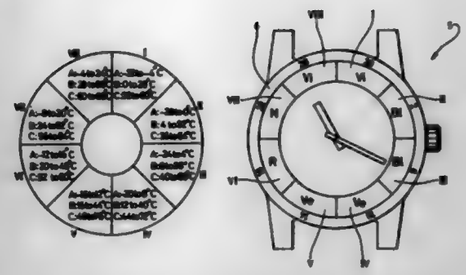
Joachim Grupp, Neuchâtel, and Jean-Charles Poll, Les Geneveys-sur-Coffrane, both of, Switzerland, assignors to Asulab S.A., Bienne, Switzerland

Filed Jun. 9, 1994, Ser. No. 257,299
Claims priority, application Switzerland, Jul. 23, 1993, 2245/93; France, Jul. 30, 1993, 93 09531
Int. Cl.[6] G01K *1/14;11/12;* G04B *47/06*
U.S. Cl. 374—142 **16 Claims**

1. A temperature indicator comprising a substrate having a plurality of distinct juxtaposed zones including a first zone and a last zone; each zone being covered by a first and a second thermosensitive material respectively reacting within a first and a second temperature range each temperature range having a first extremity and a second extremity,

said second extremity of said first temperature range of the first thermosensitive material in each respective zone being separated from the first extremity of the second temperature range of the second thermosensitive material in the same zone by a third temperature range in which said first and second thermosensitive materials are both inactive,

the third temperature ranges being non-overlapping and distinct from each other and forming together a first detection range within which the temperature is indicated by one of said zones in which said thermosensitive materials are both inactive.

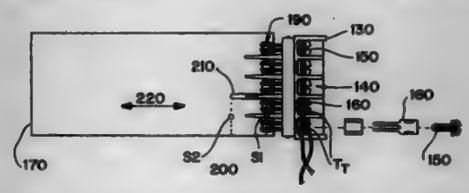


5,484,206

METHOD AND APPARATUS FOR SENSING A COLD JUNCTION TEMPERATURE

John Houldsworth, 11622 Old Brookville Ct., Reston, Va. 22094

Filed Dec. 28, 1993, Ser. No. 174,023
Int. Cl.[6] G01K *7/13;7/01;1/16*
U.S. Cl. 374—181 **33 Claims**



15. An apparatus for estimating a temperature at a selected position comprising:

insulating means for insulating the selected position to constrain a heat flow in a first direction;

first sensor means, located a first distance from the selected position in the first direction, for measuring a first temperature;

second sensor means, located a second distance from the selected position in the first direction, for measuring a second temperature; and

temperature estimating means for dynamically estimating the temperature at the selected position from the weighted difference of the first temperature and the second temperature.

28. A method for estimating a temperature at a selected position comprising the steps of:

(a) insulating the desired position to generate a heat flow in a first direction;

(b) measuring a first temperature, at a first distance from the selected position in the first direction;

(c) measuring a second temperature, at a second distance from the selected position in the first direction; and

(d) dynamically estimating the temperature at the selected position from a weighted difference of the first temperature and the second temperature.

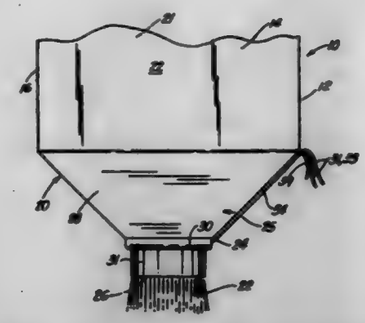
5,484,207

DISCHARGE OUTLET FOR A BULK BAG UTILIZING A SIDE ENTRY RELEASE

Daniel R. Schnaars, 204 "A" St., and Jean-André Beard, 215 St. Benjamin Dr., both of Lafayette, La. 70506

Filed Jul. 28, 1994, Ser. No. 282,071
Int. Cl.[6] B65D *33/28;33/36*
U.S. Cl. 383—67 **16 Claims**

1. A bulk material transport bag, comprising:



a) a bulk containing space, defined by at least four side walls and a bottom wall, having a discharge opening formed therein;

b) means associated with the bottom wall to form the bottom wall from a flat configuration when the discharge opening is closed, to a conical configuration when the discharge opening is open;

c) a drawstring for opening the discharge opening from a remote point near an outer edge of the bottom wall, so that the bottom wall is configured to the conical configuration, and bulk material flows from the opening; and

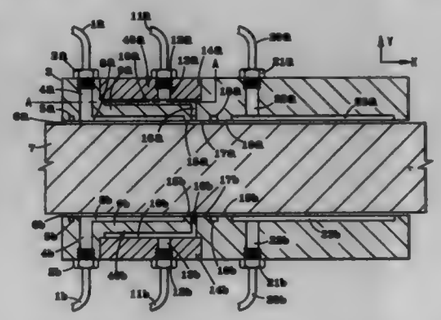
d) a string having first and second ends, the string forming a loop on one end and having a second end extending to the remote point formed around a drawstring near the outer edge of the bottom wall, the loop formed around the drawstring, so that when the drawstring is pulled, the loop is likewise pulled to move any sag in the drawstring down the length of the drawstring, in order to provide additional drawstring for allowing full opening of the conical discharge of the bag from the remote point.

5,484,208

ELASTICALLY SUPPORTED SELF-COMPENSATING FLOW RESTRICTORS FOR OPTIMIZING HYDROSTATIC BEARING PERFORMANCE

Nathan R. Kane, Austin, Tex., and Alexander H. Slocum, Concord, N.H., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 9, 1994, Ser. No. 239,742
Int. Cl.[6] F16C *32/06*
U.S. Cl. 384—12 **9 Claims**



1. A hydrostatic self-compensating bearing for a linear bearing rail or spindle shaft having, in combination, opposed fluid supply pressure and collector grooves and corresponding pockets interconnected so that when a load is applied, one pocket approaches the rail or shaft while the opposite pocket moves away therefrom, allowing flow from the corresponding opposite supply grooves to the corresponding collector grooves to increase and decrease, respectively, providing compensation; each fluid supply pressure

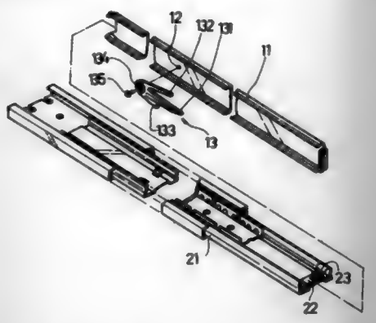
groove surrounding a self-compensating flow restrictor, elastically connected with its surrounding structure, whereby, as the pressure in each collector groove and its oppositely located pocket increases and decreases, respectively, a change in the differential pressure across the elastically supported restrictors causes a deflection thereof respectively away from and toward the rail or shaft, further increasing and decreasing the pressure in the corresponding pocket to provide compensation supplemental to the first-named compensation.

5,484,209

STEEL BALL BEARING SLIDING MECHANISM FOR DRAWERS

Kvo-Chan Weng, No. 196, Shin-Juang Lii, Tuu-Kuh Jeun, Yun-Lin Hsien, Taiwan, Prov. of China

Filed Dec. 30, 1993, Ser. No. 176,574
Int. Cl.[6] F16C *29/04*
U.S. Cl. 384—18 **4 Claims**



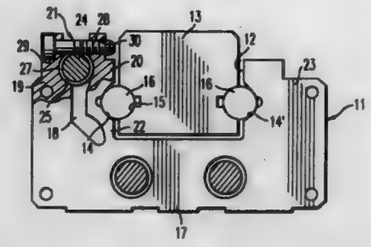
1. A steel ball bearing type sliding mechanism for drawers comprising:
a sliding rail,
a retaining plate, and
an intermediate rail characterized in that:
said sliding rail is formed into an appropriate shape and is provided with a plurality of securing holes in appropriate positions, a retaining plate is secured onto the securing holes by fasteners;
said retaining plate is formed into a one-piece body by a pressed plate and a blocked plate, the width of the pressed plate is made to be smaller than the width of the blocked plate, the pivotal joint of the pressed plate and the blocked plate is formed into a shoulder portion, the blocked plate and the pressed plate are provided, in the appropriate locations, with positioning holes respectively, the number of the positioning holes are equal to the number of the securing holes, in addition, the two ends of the pressed plate and the blocked plate are extended and provided with resilient plates;
said retaining plate is movable along the axial direction of the fasteners, the two ends of the resilient plates come in contact with the internal surface of the sliding rail, urging the retaining plate so that an appropriate distance is maintained between the retaining plate and the internal surface of the sliding rail;
said intermediate rail, having an appropriate shape, is provided with a blocking member on one side of the open end, at least one blocking plate is provided protruding from an appropriate position of the blocking member, one end of the blocking plate is provided with a slanted surface;
by such configuration, when the retaining plate is moved to the blocking member, its shoulder portion is retained by the blocking plate, by pressing the retaining plate disengages it from the blocking plate, when the position of the retaining plate is restored, the slanted surface of the blocking plate pushes the retaining plate automatically so that the sliding rail is positioned securely into the intermediate rail with ease.

5,484,210

SLIDING BLOCK WITH ADJUSTABLE TRACK POSITIONING

Fiorenzo Gallone, Milan, Italy, assignor to T.M.T. Transmissioni Meccaniche Torino S.r.l., Milan, Italy

Filed Oct. 11, 1994, Ser. No. 320,756
Claims priority, application Italy, Jan. 12, 1993, MI93U0785
Int. Cl.[6] F16C *29/12*
U.S. Cl. 384—49 **17 Claims**



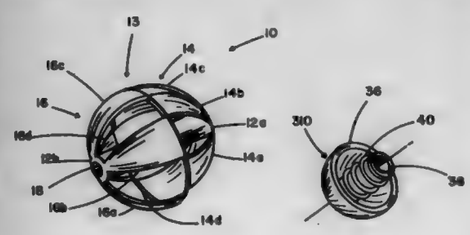
1. A sliding block with adjustable track positioning comprising a prismatic body, in one face of which there is a longitudinal recess arranged to receive a rail by way of rolling elements positionable in respective tracks, said body being essentially of C-shaped cross-section comprising a central part from which two flanges extend, characterized in that in at least one of said flanges of said C-shaped cross-section there is provided a second longitudinal recess which divides it into separate portions connected together at said central part, said second recess has a cross-section in the form of an open L with its lower end facing said first recess, said second recess containing elements for adjusting the distance between said two separate portions.

5,484,211

SELF-ALIGNING FLANGED BEARING

Robert D. Uthoff, 18 Claraned Hts., St. Louis, Mo. 63026

Filed Oct. 14, 1994, Ser. No. 323,009
Int. Cl.[6] F16C *23/04*
U.S. Cl. 384—192 **9 Claims**



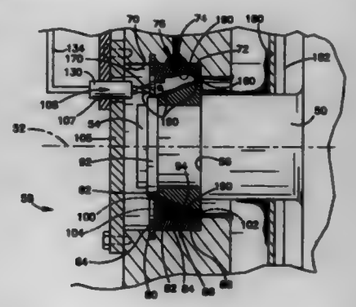
1. A one-piece, self-aligning bearing, comprising:
a cylindrical bearing sleeve of uniform thickness having a first outwardly convex hemispherical flange projecting from a first end of the sleeve and arching longitudinally toward an opposite second end of the sleeve, the first flange being of uniform wall thickness and being outwardly spaced from all portions of the bearing sleeve between the first and second ends of the sleeve,
wherein the first flange comprises a plurality of longitudinal spherical segments separated by longitudinal spaces,
and further comprising a second outwardly convex hemispherical flange projecting from the second end of the sleeve and arching longitudinally toward the first end of the sleeve, the second flange being of uniform wall thickness and being outwardly spaced from all portions of the bearing sleeve between the first and second ends,
wherein the outer rims of the first and second flanges integrally mate to form a spherical outer shell surrounding and spaced from the bearing sleeve between the first and second ends of the sleeve.
7. A one-piece, self-aligning bearing, comprising:
a hemispherical outer bearing wall having a convex inner surface; and
a tubular central inner wall having an inner cylindrical bearing surface extending longitudinally therethrough and having a first end integrally attached to a center of the convex inner surface of said hemispherical outer wall and projecting coaxially along the central axis of the outer wall, to a point beyond the outer edge of said hemispherical outer wall, both wall portions being made of injection molded plastic of uniform wall thickness.

5,484,212

METHOD OF LUBRICATING PRINTING CYCLINDER BEARINGS

Glenn A. Guaraldi, Kingston, and David C. Barke, Portsmouth, both of N.H., assignors to Heidelberg Druckmaschinen AG, Heidelberg, Germany

Filed Jan. 14, 1994, Ser. No. 182,804
Int. Cl.[6] F16C *19/26;37/00*
U.S. Cl. 384—462 **2 Claims**



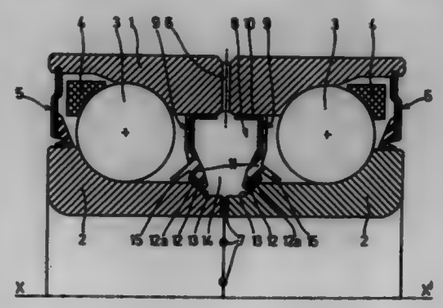
1. A method of lubricating an apparatus including a first rotatable member (16), a second rotatable member (18), and bearing means for supporting the rotatable members (16, 18) to rotate, the bearing means including a bearing (58) having a plurality of rolling elements (100) in the space between a pair of opposed bearing race surfaces (88, 94) which rotate relative to each other upon rotation of the rotatable members (16, 18), the rolling elements (100) having surfaces (104) supported in rolling contact with the bearing race surfaces (88, 94), said method comprising the steps of:
a) rotating the rotatable members (16, 18);
b) initiating and subsequently terminating a flow of substantially air-free grease into the space between the bearing race surfaces (88, 94) while the rotatable members (16, 18) continue to rotate, said flow of grease being terminated when an initial quantity (160) of grease has thereby been placed in said space, said initial quantity (160) of grease comprising a full load of grease which extends throughout said space; and
c) initiating and subsequently terminating a flow of grease-free pressurized air into said space while the rotatable members (16, 18) continue to rotate, said flow of pressurized air being initiated after said initial quantity (160) of grease is placed in said space and thus being directed against said full load of grease;
said flow of pressurized air spreading a first portion of said initial quantity (160) of grease into coatings (190) which extend over the rolling element surfaces (104) and the bearing race surfaces (88, 94), said flow of pressurized air removing a second portion of said initial quantity (160) of grease from said space, said second portion of said initial quantity (160) comprising substantially all of said initial quantity (160) which is not included in said coatings (190).

5,484,213

ROLLING-CONTACT BEARING EQUIPPED WITH A SEALING DEVICE FOR PASSAGE OF FLUID

Claude Caillaut, Saint Roch; Christophe Bonnin; Christophe Houdayer, both of Tours; Christian Rigaux, Artannes sur Indre; Martha Berges; Eric Beghini, both of Tours; Marc Defosses, Parcay Meslay, and Olivier Message, Tours, all of, France, assignors to SKF France, Clamart Cedex, France

Filed Nov. 23, 1994, Ser. No. 346,298
Claims priority, application France, Dec. 1, 1993, 93 14396
Int. Cl.[6] F16C *33/72; B60C 23/00*
U.S. Cl. 384—486 **23 Claims**



1. Rolling-contact bearing comprising:
a rotating race and a non-rotating race, each of which having ducts therethrough for passage of fluid,
rolling elements between the rotating and non-rotating races, and
a sealing device fitted between the rotating and non-rotating races in order to define a leaktight intermediate chamber in fluid communication with the ducts for passage of fluid,
the intermediate chamber having two flexible walls with free end parts which form two first sealing lips in frictional contact with frictional contact surfaces of one of the races of the bearing,
the frictional contact surfaces being inclined with respect to an axis of rotation of the bearing, and
the flexible walls extending substantially parallel to the frictional contact surfaces, so that contact pressure between the first sealing lips and the contact surfaces varies in the same direction as the pressure of fluid in the intermediate chamber of the sealing device.

5,484,214

SERIAL PRINTING APPARATUS INCLUDING AN ERROR CORRECTING CAPABILITY AND HAVING A MEMORY

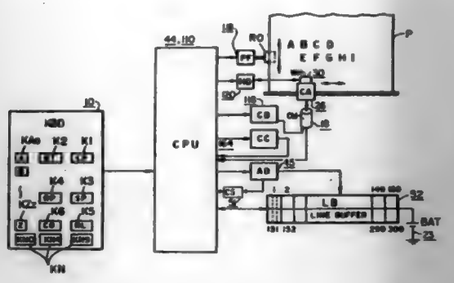
Hiroyuki Ueda, Kawasaki; Yasuaki Yamada, Matsudo; Toshiaki Ozawa, Chiba; Hiroharu Nakajima, Kodaira, and Hiroatsu Kondo, Zushi, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 627,919, Dec. 17, 1990, Pat. No. 5,322,376, which is a continuation of Ser. No. 230,677, Aug. 8, 1988, abandoned, which is a continuation of Ser. No. 63,781, Jun. 22, 1987, abandoned, which is a continuation of Ser. No. 883,447, Jul. 10, 1986, abandoned, which is a continuation of Ser. No. 664,945, Oct. 26, 1984, abandoned, which is a continuation of Ser. No. 314,441, Oct. 23, 1981, abandoned. This application Jun. 30, 1992, Ser. No. 906,678

Claims priority, application Japan, Jan. 31, 1980, 55-152103; Jan. 31, 1980, 55-152104; Jan. 31, 1980, 55-152105; Jan. 31, 1980, 55-152106; Nov. 17, 1980, 55-160692; Nov. 17, 1980, 55-160693; Nov. 25, 1980, 55-160694; Nov. 25, 1980, 55-164527; Nov. 28, 1980, 55-166630; Nov. 28, 1980, 55-166635

Int. Cl.[6] B41J *5/00*

U.S. Cl. 400—63 31 Claims



1. A recording method in a recording apparatus comprising paper feed means, moving means, memory means, first instruction means, and first control means, said method comprising the steps of:

moving a recording medium in a forward or reverse direction with the paper feed means;

recording on the recording medium with a recording head and moving the recording head with the moving means in a direction at a right angle relative to a direction of moving of the recording medium;

storing document information including line pitch information, line break information, and character pitch information for a plurality of lines in the memory means;

instructing the recording head with the first instruction means to move to a position opposite to a character recorded at a preceding line from a particular position at a last line where the recording head has last performed recording;

controlling the paper feed means and the moving means with the first control means so that the recording head is moved to a position opposite to the character recorded at the preceding line, on the basis of the instruction of the first instruction means, the line pitch information, the line break information and the character pitch information stored in the memory means;

instructing the recording head with second instruction means to move to a position opposite to the particular position at the last line from the position of the character recorded at the preceding line; and

controlling the paper feed means and the moving means so that the recording head is moved to a position opposite to the particular position at the last line, on the basis of the instruction of the second instruction means, information indicative of the particular position at the last line, and information indicative of a current position of the recording head.

5,484,215

TICKET ISSUING DEVICE FOR A TICKET PREPARING AND ISSUING MACHINE

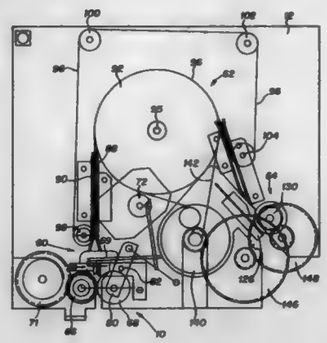
Maurice Fillod, and Daniel Gautherot, both of Besancon, France, assignors to Schlumberger Industries, Montrouge, France

Filed Feb. 17, 1995, Ser. No. 390,334

Claims priority, application France, Feb. 17, 1994, 94 01812; Mar. 29, 1994, 94 03659

Int. Cl.[6] B41J *2/325;3/44*

U.S. Cl. 400—120.18 23 Claims



1. A device for preparing and issuing tickets carrying information in magnetic form comprising means for providing portions of recording physical medium having the length of a ticket, means for recording magnetic information on the recording medium and means for issuing tickets, wherein the ticket preparing means comprise magnetic writing means which comprise:

a flywheel pivotally mounted about an axis and having a peripheral surface;

a flexible, endless belt for entraining portions of ticket medium;

entraining means for causing displacement of one of the two parts constituted by the belt and said flywheel,

guide means for said belt such that the path followed by said belt has a part in which it is applied under pressure to a peripheral part of the peripheral surface of the flywheel, through which the two parts are entrained by mutual friction;

means for engaging a first end of a portion of ticket medium between the part of said belt that is in contact with the periphery of said flywheel and the peripheral surface of said flywheel, whereby said portion of medium is entrained by the rotation of said flywheel through nipping between the belt and the peripheral surface over the part of its periphery to which said belt is applied, then freed outside said peripheral part; and

magnetic recording means disposed opposite the part of the peripheral surface of the flywheel to which said belt is applied.

5,484,216

SUPPORTING DEVICE FOR A VIBRATION DRIVEN ACTUATOR

Atsushi Kimura; Yoshifumi Nishimoto; Hideki Tanaka, all of Yokohama; Hiroyuki Seki, Urawa; Toshiaki Harada, Kawasaki; Yoshitaka Okamura, Machida, and Shinji Yamamoto, Tokyo, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1995, Ser. No. 158,779

Claims priority, application Japan, Dec. 3, 1992, 4-324235

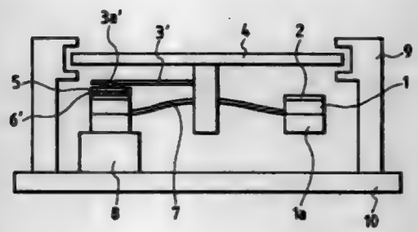
Int. Cl.[6] B41J *19/00*

U.S. Cl. 400—319 7 Claims

1. A vibration driven apparatus, comprising:

a stationary member having a contact surface; comprising:

a stationary member having a contact surface;



a vibration generating member, having a contact surface contactable with the contact surface of said stationary member;

an elastic supporting member provided on said vibration generating member; and

a pressing member for biasing said stationary member and said vibration generating member in a press contact state, wherein said vibration generating member moves relative to said stationary member by a vibration of said vibration generating member, and wherein said elastic supporting member includes means for exerting a force on said vibration generating member less than a force the pressing member exerts on the vibration generating member.

5,484,217

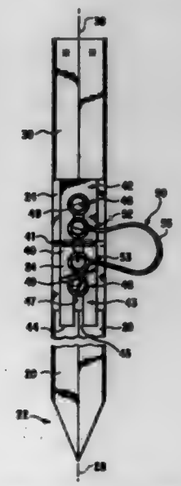
RESTORABLE BREAKAWAY POST

Frank E. Carroll, and George W. Frejd, both of Woodstock, Ill., assignors to Docks, Inc., Woodstock, Ill.

Filed Jul. 15, 1994, Ser. No. 275,794

Int. Cl.[6] F16D *9/00*

U.S. Cl. 403—2 19 Claims



1. A restorable breakaway post compriting:

a base post;

first means for fixing a position of said base post;

a breakaway post, said breakaway post spaced from said base post;

a breakable splice plate;

second means for securing one plate end portion of said breakable splice plate with respect to said base post and for securing an opposite plate end portion of said breakable splice plate with respect to said breakaway post;

an elongated flexible member;

third means for securing one member end portion of said flexible member with respect to said base post and for securing an opposite member end portion of said flexible member with respect to said breakaway post; and

fourth means for fixedly mounting a baseplate with respect to said breakaway post, and upon an impact force applied to said baseplate said fourth means allowing said baseplate to pivot with respect to said breakaway post.

5,484,218

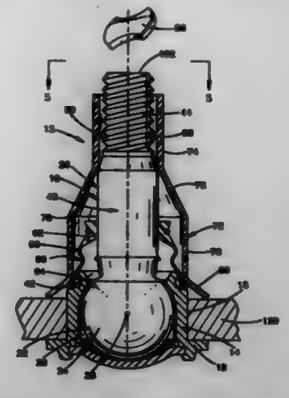
PROTECTIVE COVER FOR A BALL JOINT ASSEMBLY

Russell T. Fellows, Mt. Clemens, Mich., assignor to TRW Inc., Lyndhurst, Ohio

Filed Dec. 20, 1993, Ser. No. 170,015

Int. Cl.[6] F16C *11/06;* B62D *7/16*

U.S. Cl. 403—12 13 Claims



1. A protective cover for a ball joint assembly having a socket with a ball stud and a seal between the socket and ball stud, said cover comprising:

a generally cylindrical side wall for enclosing the stud;

radially inwardly extending retaining means on said side wall for engaging a shank of the stud to prevent removal of said cover from the ball joint assembly, said retaining means having a first position in which said retaining means engages the stud to resist removal of said cover from the ball joint assembly and a second position in which said retaining means is moved radially outwardly of the stud to permit removal of said cover from the ball joint assembly; and

means for preventing said retaining means from moving from its first position to its second position, said preventing means comprising a removable part connected with said side wall, said retaining means being movable from its first position to its second position when said removable part has been removed from said side wall.

5,484,219

SIX-DEGREE-OF-FREEDOM COMPLIANCY/ BREAKAWAY DEVICE

Douglas R. Drew; Michael A. Paul, and V. Edward Stubbs, III, all of Lynchburg, Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Feb. 22, 1994, Ser. No. 200,047

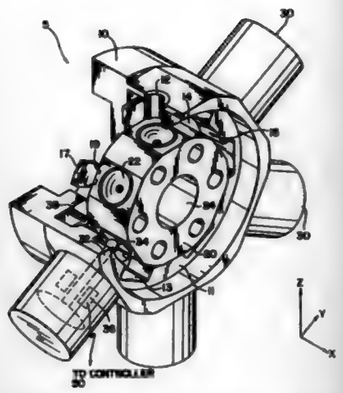
Int. Cl.[6] F16D *3/02*

U.S. Cl. 403—57 20 Claims

1. A six-degree of freedom compliancy joint for use between a first part and a second part, the joint comprising:

a housing having an interior, the housing connected to the first part;

a float block movably disposed within the interior of the housing and movable in a plurality of directions, the float block connected to the second part, the float block having a compliancy limit of six-degrees of freedom;



force means for applying force on the float block for centering the float block within the housing while allowing the float block to move within the housing;

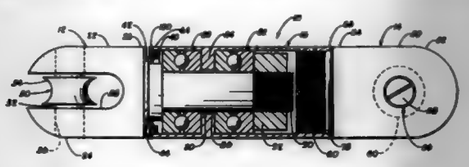
release means for releasing the float block from the housing, the release means including an internal support circumferentially extending within the interior of the housing, the internal support having a plurality of blocking portions spaced apart from each other, and a plurality of fingers connected to the float block, each finger located behind a blocking portion of the internal support; and

sensing means for sensing when the float block is near the compliancy limit.

5,484,220
SWIVEL CONNECTOR

Charles T. Lewis, Bethany; Charles A. Lewis, Oklahoma City; Thomas J. Pogue, III, and Sidney E. Pogue, both of Midwest City, all of Okla., assignors to Lewis Manufacturing Company, Oklahoma City, Okla.

Filed Aug. 19, 1993, Ser. No. 109,292
Int. Cl.[6] F16D *3/60*; F16J *15/32*
U.S. Cl. 403—165 **13 Claims**



1. A swivel connector comprising:

a first swivel member comprising:

a head having a first end and a second end, wherein the first end supports a connector assembly;

a frusto-conical shoulder extending from the second end of the head; and

a cylindrical neck extending from the shoulder, the cylindrical neck cooperating with the shoulder to form a seal engaging surface;

a second swivel member comprising a head having a first end and a second end, wherein the first end supports a connector assembly;

a tubular body having a first end and a second end and supported between the first and second swivel members so that the first end of the tubular body is adjacent to but spaced a distance from the shoulder of the first swivel member and so that the inner wall of the tubular body adjacent the first end of the first swivel member is spaced a distance from the cylindrical neck of the first swivel member whereby the inner wall of the tubular body and the shoulder and the cylindrical neck of the first swivel member define an annular seal receiving space;

a swivel assembly housed in the tubular body and adapted to connect the first and second swivel members for rotation relative to each other, a portion of the swivel assembly being in communication with the seal receiving space;

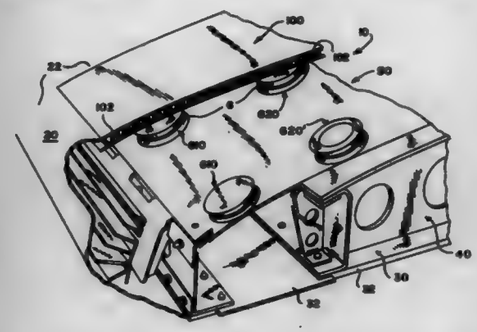
a first seal adapted to seal the joint between the second end of the tubular body and the second end of the second swivel member; and

a second seal inside the annular seal receiving space and comprising an annular body and an inner resilient flange, the outer aspect of the annular body being attached to the inner wall of the first end of the tubular body opposite the cylindrical neck and the flange terminating in a flexible tip which extends to engage the seal engaging surface to form therewith a one-way flap valve whereby extrusion of debris from the swivel assembly is permitted but entry of debris into the swivel assembly through the seal receiving space is substantially prevented.

5,484,221
PANEL MOUNTING SYSTEM

Steven P. DeCoux, Long Beach, Calif., assignor to Rockwell International Corp., Seal Beach, Calif.

Filed Mar. 7, 1994, Ser. No. 206,691
Int. Cl.[6] F16B *1/00*; B64C *1/12*
U.S. Cl. 403—203 **16 Claims**



13. A fastening system in combination with a panel member and an underlying support structure, comprising:

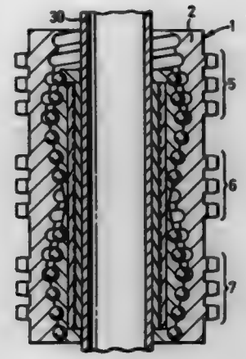
a plurality of cushioning elements having an upper portion bonded to an underside of said panel member and a lower portion bonded to the underlying support structure, said cushioning elements carrying means for separating said upper portion front said lower portion wherein each of said cushioning elements is made from a foamed material.

5,484,222
APPARATUS FOR GRIPPING A PIPE

Joerg E. Schulze-Beckinghausen, Garbsen, Germany, assignor to Weatherford/Lamb, Inc., Houston, Tex.

Filed Jan. 14, 1994, Ser. No. 182,299
Claims priority, application United Kingdom, Jan. 8, 1993, 9320919
Int. Cl.[6] E21B *17/10*
U.S. Cl. 403—307 **32 Claims**

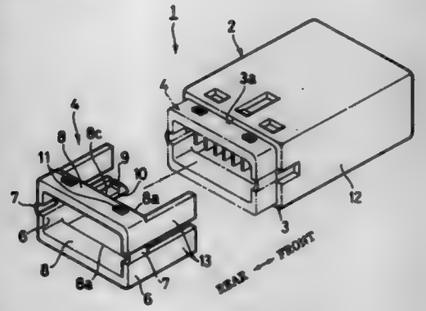
1. An apparatus for gripping a pipe, which apparatus comprises an outer member having a first inclined inner surface, and an inner member having a first inclined outer surface, the arrangement being such that, in use, on rotation of said outer member relative to said inner member in one sense said first inclined inner surface co-operates with said first inclined outer surface so that said inner member moves towards a pipe to be gripped, and wherein the outer surface of the inner member is provided with at least two ball bearings and the inner surface of the outer member is provided with at east one groove for accommodating said ball bearings.



5,484,223
DOUBLE TERMINAL STOP CONNECTOR

Hitoshi Saito, Shizuoka, Japan, assignor to Yazaki Corporation, Japan

Filed Jan. 21, 1994, Ser. No. 184,444
Claims priority, application Japan, Jan. 22, 1993, 5-001383 U
Int. Cl.[6] F16B *1/00*; H01R *13/436*
U.S. Cl. 403—329 **8 Claims**



1. A double terminal stop connector comprising:

a terminal stop frame having an axis, a first pair of opposing frame walls, and a pair of end walls joined with the frame walls:

a pair of flexible hinge members aligned with the axis and interposed between upper and lower portions of each of the end walls so that the two opposing frame walls can be elastically compressed at the hinges;

a temporary engagement arm having an end stopper surface integrally formed thereon and a temporary engagement projection, the temporary engagement arm extending from one of the two opposing frame walls of the terminal stop frame; and

at least one complete engagement projection formed on at least one outer surface of each of the two opposing frame walls of the terminal stop frame; and

a connector housing adapted to receive the terminal stop frame and having formed therewith:

a temporary engagement slot engageable with the temporary engagement arm projection when the terminal stop frame is temporarily engaged with the connector housing at a temporary engagement first position; and

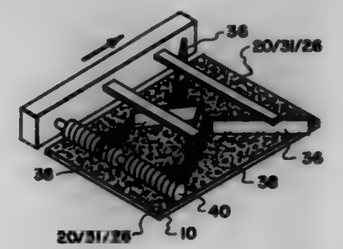
at least one complete engagement hole engageable with the at least one complete engagement projection when the terminal stop frame is compressed and thereby completely engaged with the connector housing at a complete engagement second position;

wherein the end stopper surface is brought into contact with an end surface of the connector housing at the first temporary engagement position and displaced from the end surface of the connector housing, and wherein the flexible hinge members are compressed for insertion to the second position where complete engagement of the terminal stop frame joined with the connector housing is achieved.

5,484,224
METHOD OF RESURFACING AN ASPHALT SURFACE

Edward T. Lynch, P.O. Box 427, Chino, Calif. 91708

Filed Aug. 4, 1994, Ser. No. 285,704
Int. Cl.[5] E01C *7/06*
U.S. Cl. 404—77 **6 Claims**



1. The method of resurfacing an asphalt surface comprising the steps of:

heating by convection a portion of the asphalt surface;

scarifying said portion to a preselected depth creating a layer of loose aggregate material on a solid surface;

applying a quantity of oil to said loose aggregate material;

thoroughly mixing said loose aggregate material and said oil utilizing at least two pairs of curved blades with one said pair having a V-shaped section and then supplying said loose aggregate material and said oil to an auger for further mixing and distribution across said solid surface;

screeding said loose aggregate material mixed with said oil forming a level surface; and

rolling said level surface achieving compaction plus cementing of said loose aggregate material.

5,484,225
TRAFFIC CHANNELIZING DEVICE

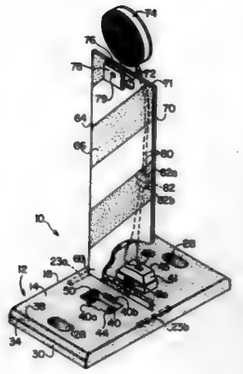
Randy L. Warner, Harrisburg, Pa., assignor to Protection Services, Inc., Harrisburg, Pa.

Continuation-in-part of Ser. No. 179,127, Jan. 10, 1994, abandoned. This application Apr. 21, 1994, Ser. No. 230,905
Int. Cl.[6] E01F *9/04*
U.S. Cl. 404—9 **27 Claims**

1. A two-part traffic channelizing device comprising:

a vertical member having a bottom portion; and

a base having a slot, the slot being configured to receive the bottom portion of the vertical member, so that the bottom portion of the vertical member can be releasably inserted into the slot and held therein by compression and friction bonds alone, the compression and friction being sufficient to hold the bottom portion in the slot until a separating force is applied to the vertical member to release the compression and friction bonds and separate the vertical member from the base.

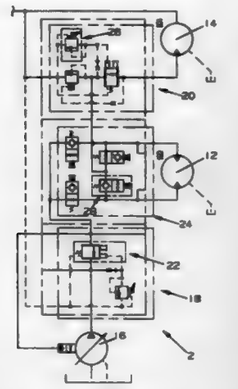


5,484,226

CONTROLLING APPARATUS FOR ASPHALT PAVERS

David Emerson, and Andrew W. Green, both of Geneva, Ill., assignors to Caterpillar Paving Products Inc., Minneapolis, Minn.

Filed Jan. 18, 1994, Ser. No. 181,930
Int. Cl.[6] E01C *19/00*
U.S. Cl. 404—84.05 13 Claims



1. In an apparatus for controlling material laydown of asphalt with an asphalt paver having a conveyor and a rotatable auger, said auger being adapted to receive asphalt discharging from the conveyor and move and spread said asphalt, and a sensor associated with the auger for sensing the amount of asphalt material adjacent the auger and delivering first and second signals in response to sensed respective excesses and deficiencies of sensed asphalt material, the improvement comprising:

a first hydraulic motor connected to and driving the auger;

a second hydraulic motor connected to and driving the conveyor;

a hydraulic pump connected to both the auger motor and the conveyor motor and adapted to provide pressurized fluid for the operation of said auger and conveyor, said auger motor and conveyor motor connected in series with the pump;

first controlling means for receiving said signals and controlling the speed of said auger in response to said received signals, said first means includes a set point signal and the speed of the auger is changed in response to the received signals differing from the set point signal by a preselected magnitude; and

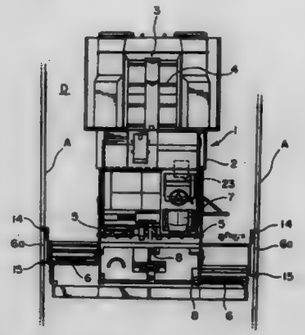
second means for controlling said conveyor only in response to the speed of said auger and said conveyor being free of a conveyor sensor.

5,484,227

CONTROL DEVICE FOR ASPHALT FINISHER

Hachiro Ikeda; Noriaki Miyamoto, both of Tagajo; Ryoei Umeda, Tokyo; Hidenori Yasu, Kadoma; Mitsuo Fukukawa; Yukiei Masuyama, both of Tokyo; Shoji Kinoshita, Kounosu; Yukio Takagi, Tokyo; Tomohiro Gocho, Omiya; Fumio Goto, Gunma; Akio Ishii, Gunma; Tetsuo Ogawa, Gunma; Yoshun Hasegawa, Yokohama; Keitaro Hironaka, Yokohama, and Yasuhiro Ogoshi, Yokohama, all of, Japan, assignors to Niigata Engineering Co., Ltd., and The Nippon Road Co., Ltd., both of Tokyo, Japan

Filed Apr. 6, 1994, Ser. No. 223,644
Claims priority, application Japan, Apr. 9, 1993, 5-083658; Apr. 9, 1993, 5-083659
Int. Cl.[6] E01C *19/48*
U.S. Cl. 404—84.1 17 Claims



1. A device for controlling the extension or retraction of a plurality of screeds in an asphalt finisher comprising:

a screed controller disposed on a vehicle member for extending and retracting said plurality of screeds to the left or to the right of said asphalt finisher so as to perform a levelling operation;

a detection device disposed on a side region of a screed for detecting the position of a reference line generated in relation to a roadside line;

a master controller for computing a deviation of the current travel direction of said screed from said reference line in accordance with the output data from said detection device when said vehicle member travels so as to perform paving, and adjusts the extension or retraction of said screed controller in accordance with a computed deviation so as to force said screed to move along an image of the reference line.

5,484,228

CONTINUOUS MOVING HIGHWAY DEPRESSION CUTTING APPARATUS AND METHOD

Glen E. Thomas, and Amona D. Thomas, both of 1111 Riverside Dr., Moore Haven, Fla. 33471

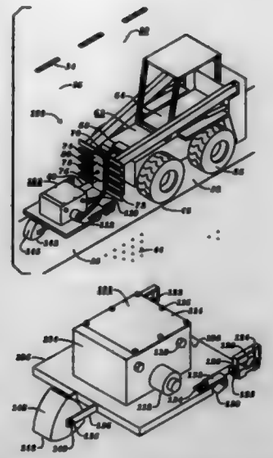
Continuation-in-part of Ser. No. 118,961, Sep. 10, 1993, Pat. No. 5,391,017. This application Feb. 21, 1995, Ser. No. 391,708
Int. Cl.[6] E01C *23/09*
U.S. Cl. 404—90 21 Claims

13. A machine for cutting a series of depressions in a surface of a road, the machine comprising;

a) a cutting head, the cutting head having a first end and a second end, the cutting head capable of milling the surface of the road to form one of the depressions;

b) a first cam member and a second cam member, the first cam member located in close proximity to the first end of the cutting head, the second cam member located in close proximity to the second end of the cutting head, the first cam member and the second cam member adaptable to rotate in a synchronized manner, the first cam member and the second cam member adaptable to rotate along the surface of the road as the machine is propelled along the road, the first cam member and the second cam member each having a plurality of camming groups, each of the camming groups providing for transferring a raising movement and a lowering movement to the cutting head, the lowering movement causing the cutting head to move into contact with the surface of the road to begin a cutting operation, the raising movement causing the cutting head to move out of contact with the surface of the road to terminate the cutting operation, the cutting operation forming one depression within the series of depressions;

whereby movement of the machine along the road will rotate the first cam member and the second cam member in unison, each complete rotation of the cam member causing the sequential lowering movement and raising movement of the cutting head, causing the cutting head to move down and into contact with the surface of the road and up and out of contact with the surface of the road to form a group of depressions during rotation of the cam members.



material to cause movement of said material when a front portion of said bed is raised with respect to a rear portion of said bed;

a receptacle mounted to said vehicle for receiving said material passing through said portion of said outlet and having means for varying a size of an opening in said receptacle for controllably dispensing a variable amount of said material received by said receptacle; and

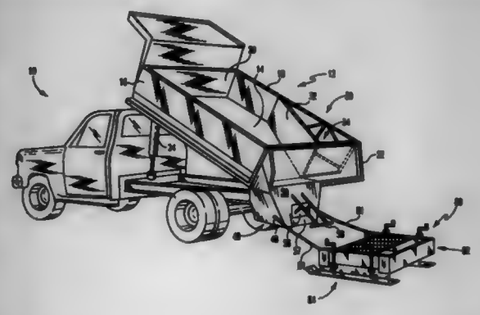
leveling means coupled to said vehicle for leveling said dispensed material.

5,484,229

ROAD REPAIRING SYSTEM AND APPARATUS

Roger R. Reece, 9415 E. 500 South, Upland, Ind. 46989

Filed Mar. 31, 1994, Ser. No. 220,737
Int. Cl.[6] E01C *19/22*
U.S. Cl. 404—110 16 Claims



1. A system for use with a vehicle having a bed having a floor and a plurality of walls defining a containment region for carrying a material and having a moveable panel defining an outlet in said bed for dispensing material to a surface, comprising:

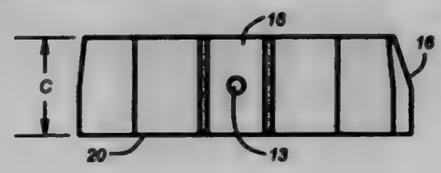
directing means positioned in said bed for directing said material to a portion of said outlet as gravitational force acts on said

5,484,230

CONCRETE BLOCK REVETMENT SYSTEM FOR SOIL EROSION PREVENTION

Terry R. Rudloff, Rte. 2 Box 95, Fayetteville, Tex. 78940

Filed Jul. 8, 1994, Ser. No. 272,876
Int. Cl.[6] E02B *3/12*
U.S. Cl. 405—20 6 Claims



1. A concrete block system for use in preventing soil erosion and comprising a plurality of blocks having:

(a) an upper surface and a lower surface each being generally of a square shaped cross section;

(b) a plurality of side surfaces comprising at least two pairs of opposite side surfaces being generally parallel to each other, each pair of said generally parallel surfaces having on one surface thereof a male key tab and on the opposite of said generally parallel surface a female key tab, said male and female key tabs being oriented vertically from said upper surface to said lower surface such that when engaged with other blocks they interact to restrict horizontal movement of the blocks

(c) one pair of said generally parallel surfaces having at least two cable passages passing through said block and the other pair of said generally parallel surfaces having at least one cable tunnel extending therebetween through said blocks for the reception of cables so that when cables are placed therein an array of blocks is formed comprising a mat; and

(d) at least one of said pairs of said generally parallel side surfaces having near said upper surface, an inward taper on each of said generally parallel surfaces, such that the area of said upper surface has a slightly smaller cross sectional area than said lower surface and whereby when plural blocks are laid in a side by side horizontal relationship said inwardly tapered surfaces form a channel between said blocks for the passage of flowing water thereby increasing the downward pressure of the flowing water across the surface of the block.

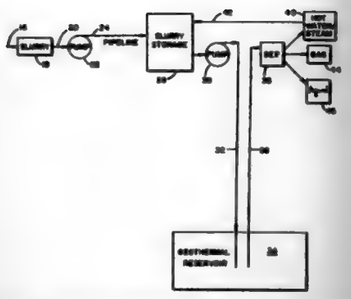
5,484,231

DISPOSAL OF SLURRIES OF MUNICIPAL WASTE IN DEEP GEOTHERMAL RESERVOIRS

William L. Cannan, Mandeville, La., and Alfred R. Jennings, Jr., Plano, Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 29, 1993, Ser. No. 158,333
Int. Cl.[6] B09B *3/00*
U.S. Cl. 405—128 17 Claims

1. A process for obtaining products from municipal waste using a geothermal steam compartment or reservoir comprising:



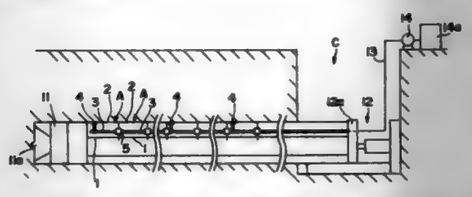
a) placing a slurry of municipal waste into a geothermal steam compartment or reservoir;
b) sealing the geothermal steam compartment or reservoir;
c) retorting the municipal waste slurry under retorting conditions in the geothermal steam compartment or reservoir for a time sufficient to remove recoverable products from the municipal waste; and
d) removing the resultant products from the geothermal steam compartment or reservoir which products are selected from a member of the group consisting of ammonia, urea, nitrites, nitrates, phosphates, and mixtures thereof.

5,484,232

METHOD FOR INJECTING LUBRICANT AND FILLER IN THE PIPE-JACKING METHOD

Mitsutoshi Hayashi, Ohmiya; Akitaka Fujita, Tokyo; Shingo Nagashima, Tokyo; Minoru Kurashina, Tokyo; Makoto Kajiyama, Zama, and Hideki Uno, Tokorozawa, all of, Japan, assignors to Tokyo Gas Company Ltd., and Kabushiki Kaisha Iseki Kaihatsu Koki, both of Tokyo, Japan

Filed Feb. 15, 1994, Ser. No. 196,443
Claims priority, application Japan, Mar. 3, 1993, 5-065945; Mar. 22, 1993, 5-085114; Nov. 9, 1993, 5-279296
Int. Cl.[6] F16L *1/00*
U.S. Cl. 405—184 **13 Claims**



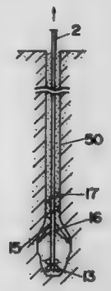
1. A method of injecting lubricant into a space between the outside of double-wall pipes and the ground in the propelling process of double-wall pipes compriaing the steps of:
preparing double-wall pipes each of which comprises an inner pipe and an outer pipe which has at least one supply pipe for lubricant provided between the inner pipe and the outer pipe, and a discharge port formed in the outer pipe;
propelling a tunneling machine and a double-wall pipe following the tunneling machine from a start vertical shaft toward an arrival vertical shaft by a pipe-jacking machine;
connecting a supply pipe of double-wall pipe which has been propelled with a supply pipe of a new double-wall pipe;
connecting the supply pipe of the new double-wall pipe with a lubricant feeder;
thereafter propelling the tunneling machine and the double-wall pipes following the tunneling machine by the pipe-jacking machine while lubricant is pumped through the supply pipes to the discharge port by the lubricant feeder and injected through the discharge port into a space between the outside of the double-wall pipes and the ground;
wherein a new double-wall pipe is connected with the double-wall pipe which has been propelled, and with the lubricant feed, the lubricant is supplied from an upstream side in a propelling direction to discharge ports of double-wall pipes.

5,484,233

EXCAVATOR AND A METHOD OF FORMING A MODIFIED GROUND IN AN EARTHEN FOUNDATION WITH THE USE OF THE SAME

Mitsuhiro Kunito, Osaka, Japan, assignor to Kabushiki Kaisha Ask Ken Kyusho, Osaka, Japan

Filed Oct. 27, 1994, Ser. No. 329,835
Claims priority, application Japan, Mar. 1, 1994, 6-031524
Int. Cl.[6] E02D *3/12*
U.S. Cl. 405—240 **16 Claims**



1. A method of forming a modified ground in an earthen foundation with the use of an excavator having at least one rotary shaft, said method comprising the steps of:
inserting said rotary shaft into the earthen foundation to form therein a hole by rotating said rotary shaft until said hole is excavated to reach a predetermined depth;
withdrawing said rotary shaft away from the bottom of said hole while rotating said rotary shaft and jetting a consolidating fluid from at least one pair of upper and lower nozzles of said rotary shaft against soil surrounding said hole to break the same for enlarging the diameter of said hole in such a manner as to perform an in-situ mixing and stirring of said consolidating fluid and soil, whereby forming said modified ground having a larger diameter than said hole; and
wherein said upper and lower nozzles are provided in said rotary shaft such that said consolidating fluid jetted from said upper nozzle in a downwardly diagonal direction collides with that jetted from said lower nozzle to generate a joined jet of said consolidating fluid in a downwardly diagonal direction.

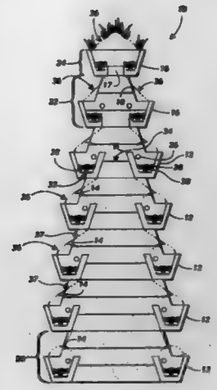
5,484,234

BUILDING MODULE FOR PLANTABLE WALLS WITH A BULK FILLING MATERIAL

Leonard A. Worden, 11 Meadowcrest Rd., Hooksett, N.H. 03106

Filed Sep. 30, 1994, Ser. No. 315,838
Int. Cl.[6] E02D *29/02*
U.S. Cl. 405—284 **29 Claims**

1. A wall structure forming a substantially upright, planar bin wall for receiving and supporting a bulk filling material and defining a generally vertical wall plane, said wall structure comprising a longitudinal bin extending substantially parallel to the wall plane, at least one cross beam extending substantially perpendicular to the wall plane and to said longitudinal bin, and at least one weir in said longitudinal bin for retaining water.

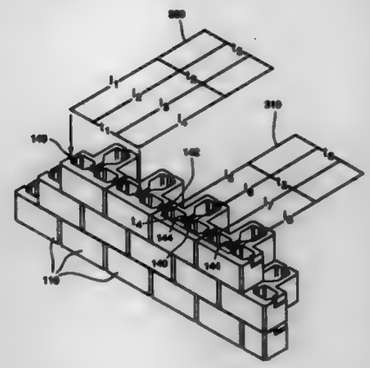


5,484,235

RETAINING WALL SYSTEM

William K. Hilliker, 3718 Lakeridge Dr., Grapevine, Tex. 76051, and Thomas P. Taylor, 2500 Cranberry La., Euless, Tex. 76039

Filed Jun. 2, 1994, Ser. No. 252,738
Int. Cl.[6] E02D *29/02*
U.S. Cl. 405—284 **21 Claims**



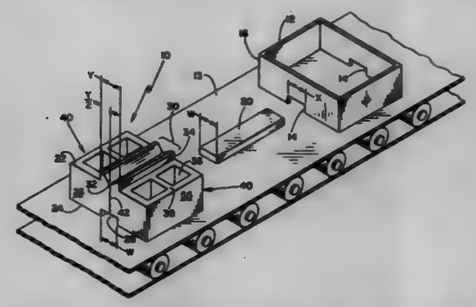
1. A retaining wall system for an earthen formation comprising:
a plurality of modular blocks having a transverse groove formed in a top surface thereof, said blocks being assembled in generally horizontal rows and vertically stacked with the transverse grooves in certain adjacent blocks within each row aligned; and
a welded wire component attached to said certain blocks to lock said certain blocks together transversely and provide a connection therefor to one side of the blocks, the welded wire component having a plurality of longitudinal and transverse wires, wherein one or more of the transverse wires extends through the aligned transverse grooves of said certain blocks and said longitudinal wires extend laterally to one side of said certain blocks for embedment in an earthen formation substantially adjacent the retaining wall.

5,484,236

METHOD OF FORMING CONCRETE RETAINING WALL BLOCK

Robert A. Gravier, Bloomington, Minn., assignor to Allan Block Corporation, Eden, Minn.

Filed Oct. 25, 1993, Ser. No. 142,715
Int. Cl.[6] E02D *29/02*
U.S. Cl. 405—286 **17 Claims**



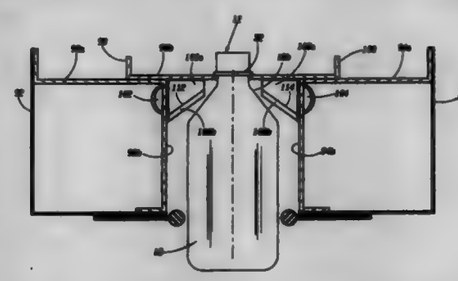
1. A method of creating a construction block adapted to form retaining walls or the like, comprising the steps of:
(a) forming a member having a major upper surface and major lower surface and a plurality of edges, said upper major surface having a ridge extending laterally across a midsection thereof between an opposed pair of said edges with said ridges extending upwardly and away from said upper major surface by a predetermined first dimension, said lower major surface having a notch extending laterally across a midsection thereof between said opposed pair of edges with said notch extending upwardly from said lower major surface by a dimension substantially equal to said predetermined first dimension, wherein said laterally extending ridge is parallel to and disposed vertically above said laterally extending notch; and
(b) splitting said member along a center of both said ridge and said notch to define a pair of said construction blocks, wherein each said construction block has rough textured front surface defined by splitting the member in half, a recess extending laterally thereunder, and a lip extending laterally thereover wherein the height of said lip is substantially equal to the depth of said recess.

5,484,237

PNEUMATIC CONVEYOR APPARATUS HAVING AIR DEFLECTORS

Keith A. Langenbeck, 4005 University Blvd., Dallas, Tex. 75205

Continuation-in-part of Ser. No. 999,770, Dec. 29, 1992, Pat. No. 5,299,889. This application Dec. 10, 1993, Ser. No. 165,396
Int. Cl.[6] B65G *51/02*
U.S. Cl. 406—86 **8 Claims**



1. Apparatus for pneumatically conveying an article along a predetermined path, said apparatus comprising:

first and second pneumatic means positionable on respective opposite sides of the predetermined path for providing a pneumatic flow to move the article along the predetermined path, said pneumatic flow including a component for lifting the article as the article is moved along the predetermined path;

retaining means for retaining the article in a relatively upright position as the article is moved along the predetermined path; and

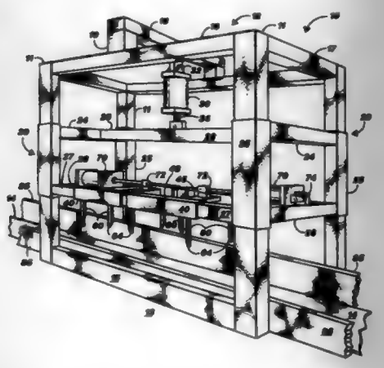
deflecting means mounted with at least one of said first and second pneumatic means and extending into said predetermined path for deflecting the pneumatic flow toward the article, said deflecting means including at least one deflector mounted with each of said first and second pneumatic means and extending into said predetermined path, each deflector having relatively flat first and second members, the first member of each deflector being oriented substantially in a vertical plane, the second member of each deflector depending upwardly from the corresponding first member at a predetermined angle of inclination and being coincident therewith along a predetermined boundary which extends generally upwardly and inwardly from the pneumatic means with which the corresponding deflector is mounted, the first and second members of each deflector being cooperable to direct pneumatic flow generally upwardly and inwardly from the corresponding pneumatic means.

5,484,238

REFUSE BAG OPENING DEVICE

Joseph B. Bielagus, Tualatin, Oreg., assignor to Beloit Technologies, Inc., Wilmington, Del.

Filed Oct. 11, 1994, Ser. No. 321,371
Int. Cl.[6] B02C *23/02*
U.S. Cl. 414—412 **9 Claims**



1. An apparatus for opening refuse bags comprising:

a frame;

a subframe mounted to the frame for reciprocating vertical motion;

a conveyor which transports the refuse bags to be opened along a path through the frame below the subframe;

at least two sleeves slidably mounted to the subframe for horizontal motion with respect to the subframe;

at least one tine connected to each sleeve and extending downwardly toward the conveyor;

a subframe actuator extending between the frame and the subframe wherein the subframe actuator moves the subframe between an elevated position in which the tines are above the refuse bags on the conveyor, and a lowered position in which the tines engage the refuse bags on the conveyor; and

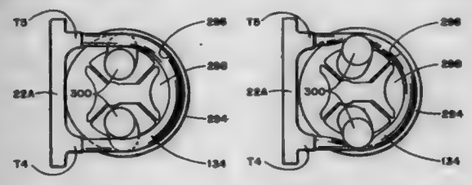
sleeve actuators which extend between the subframe and the sleeves, the sleeve actuators operating to displace the sleeves horizontally with respect to the subframe when the subframe is in the lowered position to disrupt the refuse bags carried on the conveyor and discharge the contents thereof.

5,484,239

PERISTALTIC PUMP AND VALVE ASSEMBLY FOR FLUID PROCESSING SYSTEMS

Arthur S. Chapman, Solvang, Calif., and Warren P. Williamson, Loveland, Ohio, assignors to Baxter International Inc., Deerfield, Ill.

Filed Dec. 22, 1993, Ser. No. 173,516
Int. Cl.[6] F04B *43/08*
U.S. Cl. 417—477.8 **21 Claims**



1. A system for processing cellular suspensions comprising

a fluid path for conveying the cellular suspension from source for processing, the fluid path including flexible tubing for engagement with an external peristaltic pumping element,

a peristaltic pumping element for the flexible tubing comprising a pump race for receiving the tubing, a pump rotor carrying at least one roller, and a drive mechanism for rotating the rotor within the pump race,

a roller locating mechanism that moves the pump roller between a retracted position free of contact with the received tubing and an extended position at least partially within the pump race for operative contact with the received tubing,

a controller for operating the peristaltic pumping element

(i) in a pumping mode, during which the rotor is rotated with the roller located in its extended position, and

(ii) in a valving mode, during which rotation of the rotor is terminated and the roller is selectively moved between its extended position to block fluid flow through the flexible tubing and its retracted position to permit fluid flow through the flexible tubing, and,

a valve element operatively associated with the fluid path independent of the peristaltic pumping element for controlling fluid flow through the fluid path, the controller being operable in at least one of the pumping mode and the valving mode for also operating the valve element.

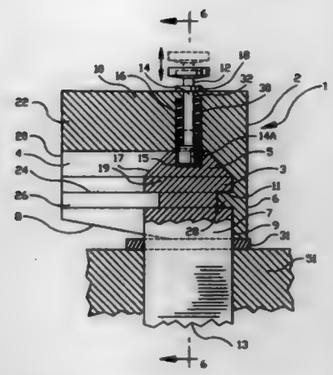
5,484,240

RELEASABLE, MODULAR, MULTI-USE FASTENER FOR VEHICLES

Gary F. Rosenberg, 1532 B Virginia St., Berkeley, Calif. 94703

Filed Sep. 1, 1994, Ser. No. 299,521
Int. Cl.[6] B61D *45/00*
U.S. Cl. 410—110 **8 Claims**

1. A releasable, modular, multi-use fastener for detachably securing a variety of items, to a vehicle, comprising a post unit having a plurality of sides each of which has integral to it a groove, a frusto-pyramidically shaped portion above said groove, a central cavity, said post being adapted to be affixed to a vehicle, and a catch adapted to be lockably assembled with and released from said post, comprising a receiver portion and a plunger, said receiver portion having a cavity which is defined by a top wall, said top wall having an undersurface, a plurality of lateral wales, and a plurality of internally extending tracks integral to said lateral walls, said lateral walls extend downward from said undersurface of said top wall so as to provide a laterally-facing mouth, said internally extending tracks provide a slot which extends inwardly from said laterally-facing mouth said catch also being designed and constructed such that the lower surface formed by the plurality



of said lateral walls is angled downward away from said laterally-facing mouth and toward the most opposite of said lateral walls, said catch being designed and constructed of such a size that said head portion of said post can be moved laterally into and out of assembly through said laterally-facing mouth and such that said tracks of said receiver portion are spaced from one another only slightly greater than the width of said grooves, said post being of adequate length to accommodate a variety of items to be attached to the vehicle by means of the fastener.

5,484,241

COLLAPSIBLE VOID FILLER

Gerald A. Haywood, Hohenwald; Gregory S. King, Mount Pleasant, and Anthony J. Sansone, Franklin, all of Tenn., assignors to Shippers Paper Products Company, Glenview, Ill.

Filed Dec. 22, 1994, Ser. No. 361,298
Int. Cl.[6] B32B *3/12*; B65D *19/34*; B61D *45/00*
U.S. Cl. 410—154 **16 Claims**



1. A void filler device, capable of being expanded from a collapsed configuration to an expanded configuration, and collapsed from said expanded configuration to said collapsed configuration, comprising:

an inner core member having a substantially parallelepiped configuration comprising four sides and four corners;

a housing member substantially surrounding said inner core member, and comprising a top wall, a bottom wall, and a pair of side walls attached to a first pair of opposite ones of said four corners of said inner core member;

said inner core member comprising a plurality of interlocking members wherein each one of said interlocking members has a depth dimension which is sized so as to contact and space apart said top and bottom walls of said housing member so as to restrict inward movement of said top and bottom walls and thereby rigidify said void filler when said void filler device is disposed in said expanded configuration; and

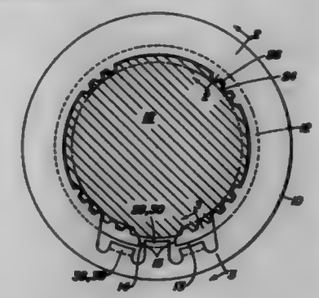
first fold line means, defined between said top wall and said pair of side walls, and between said bottom wall and said pair of side walls, for permitting said top and bottom walls to be folded with respect to said side walls when said void filler device is alternatively expanded and collapsed between said collapsed and expanded configurations as a result of said first pair of said four corners of said core member moving toward and away from each other, and second fold line means, defined within both of said top and bottom walls and extending across said top and bottom walls between a second pair of opposite ones of said four corners of said inner core member, for permitting said top and bottom walls of said housing member to move outwardly away from said inner core member and inwardly toward said inner core member when said void filler device is alternatively collapsed and expanded between said collapsed and expanded configurations.

5,484,242

SNAP RING RETAINING WASHER

Duane F. Meyer, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jul. 12, 1994, Ser. No. 274,090
Int. Cl.[6] F16B *21/18*
U.S. Cl. 411—353 **7 Claims**



1. A washer for retaining a snap ring in an annular groove of a shaft, the shaft having at least one axially extending spline and the snap ring having opposed ends that define a gap, the washer comprising:

a substantially flat, annular body adapted to be positioned on the shaft adjacent to the snap ring;

at least one tooth extending from the body for interlocking with the spline of the shaft in order to retain the body from rotating relative to the shaft; and

a stop extending from the body including a substantially radially extending leg and a foot that extends substantially perpendicularly from the leg for nesting in the gap in order to retain the snap ring from rotating relative to the shaft.

5,484,243

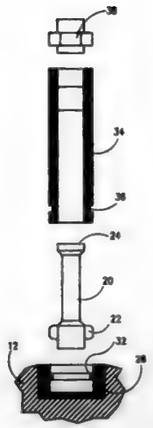
CARRIAGE AND RELEASE MECHANISM FOR AIRBORNE STORE

Yacov Yacobovitch, Kiryat Motzkin, Israel, assignor to State of Israel-Ministry of Defense Armament Development Authority-Rafael, Haifa, Israel

Filed Aug. 4, 1994, Ser. No. 285,686
Claims priority, application Israel, Aug. 5, 1993, 106607
Int. Cl.[6] F16B *19/00*; *21/18*
U.S. Cl. 411—353 **7 Claims**

1. A mechanism for carrying a store by, and for releasing and ejecting the store from, a carrier, comprising:

(a) a hanger connected to the store, said hanger having a hollow portion which is formed with a substantially circumferential inner recess;



(b) a spring ring dimensioned to fit within said inner recess of said hanger, said spring ring being substantially circular and having a diameter which is smaller than the diameter of said inner recess, said spring ring being dimensioned to fit completely within said inner recess when a sufficient outward radial force is exerted upon it;

(c) a cylinder connected to the carrier, said cylinder being at least partially hollow, one end of said cylinder being dimensioned to fit within said hollow portion of said hanger and having a substantially circumferential outer recess for accommodating at least a portion of said spring ring, so that when said portion of said spring ring engages said outer recess of said cylinder said hanger and said cylinder, and therefore the store and the carrier, are securely connected to each other;

(d) a plunger slidable within said hollow cylinder, said plunger having a plurality of wings near one of its ends for pushing said spring ting into said inner recess of said hanger; and

(e) forcing means for bringing about the forceful sliding of said plunger toward the store so as to cause said wings of said plunger to force said spring ting radially outward into said inner recess of said hanger, thereby allowing said hanger to disconnect from said cylinder, allowing the store to separate from the carrier.

5,484,244

SELF-LOCKING THREADED FASTENERS

Ronald J. Glovan; John C. Tierney; Leroy L. McLean, and Lawrence L. Johnson, all of Butte, Mont., assignors to MSE, Inc., Butte, Mont.

Filed Feb. 7, 1994, Ser. No. 192,696
Int. Cl.[6] F16B *35/04;37/16;* B23P *11/02*
U.S. Cl. 411—424 **4 Claims**



1. A threaded fastener comprising:

a threaded member and

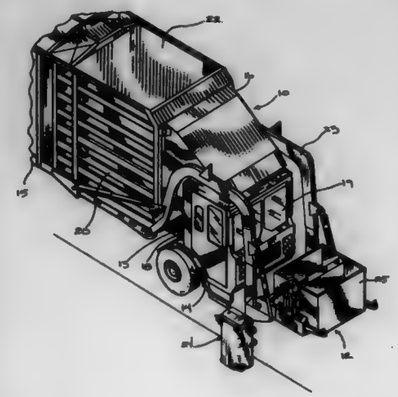
a coating of shape memory alloy on the threads of the member.

5,484,245

MOTOR POWERED INTERMEDIATE CONTAINER AND METHOD OF USE

William D. Zopf, Chattanooga, Tenn., assignor to Heil, Chattanooga, Tenn.

Continuation of Ser. No. 877,488, May 1, 1992, abandoned. This application Jan. 31, 1994, Ser. No. 189,486
Int. Cl.[6] B65F *3/04*
U.S. Cl. 414—408 **9 Claims**



1. An motor powered intermediate container in combination with a refuse collection vehicle, wherein said refuse collection vehicle includes forwardly extending arms suitable for engaging, lifting and emptying directly into said vehicle a front loader refuse container filled with refuse, said motor powered intermediate container comprising:

an intermediate container carried by said forwardly extending arms; said intermediate container having support means for supporting said intermediate container on said forwardly extending arms;

an assembly extendable to the curb side of the vehicle and carried by said intermediate container;

said assembly having motor powered means including a dumping assembly and an extendable element carrying an engagement assembly;

said dumping assembly having motor powered means to empty the contents of a curb side refuse container into said intermediate container;

said engagement assembly having motor powered means to hold the refuse container during the emptying operation; and

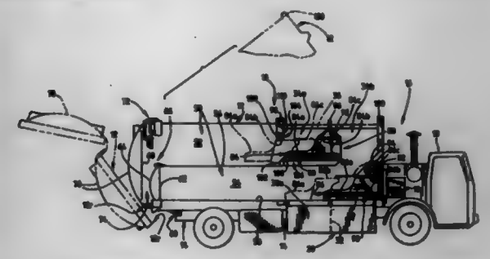
said extendable element having motor powered means to extend said extendable element and said engagement assembly into engagement with the refuse container, whereby the use of said motor powered intermediate container converts said refuse collection vehicle from collection by lifting front loader refuse containers and emptying them directly into said vehicle to collection by collecting from curb side refuse containers to said intermediate container carried by said forwardly extending arms.

5,484,246

COLLECTING, HAULING AND DELIVERING APPARATUS FOR RECYCLABLE MATERIALS

Larry D. Horning, Crestline; Eugene R. Grubaugh, Galion; Thomas E. Pfeifer, Galion, and Carroll R. Johnson, Galion, all of Ohio, assignors to Galion Holding Company, Galion, Ohio

Continuation of Ser. No. 886,439, May 20, 1992, Pat. No. 5,288,196, which is a continuation-in-part of Ser. No. 565,172, Aug. 8, 1990, abandoned, which is a continuation-in-part of Ser. No. 389,626, Aug. 4, 1989, abandoned. This application Feb. 1, 1994, Ser. No. 189,750
Int. Cl.[6] B65F *3/02;3/12*
U.S. Cl. 414—409 **14 Claims**



1. An apparatus for collecting and transporting recyclable waste material, comprising:

(a) a body mountable to a vehicle and extending longitudinally between a forward end and a rearward end, the body enclosing a material-receiving volume;

(b) a horizontal wall within the body forming separated upper and lower material-receiving compartments;

(c) first and second loading openings positioned at the top of the body, the first loading opening in continuous communication with only the forward end of the lower compartment, and the second loading opening in continuous communication with only the forward end of the upper compartment;

(d) a first door for closing the rear end of the lower compartment;

(e) a second door for closing the rear end of the upper compartment;

(f) a bucket movable between a lower loading position at the bottom of the body and an elevated discharge position at the top of the body, the bucket having separated bins for receiving said waste material, each bin being aligned with one of the loading openings when the bucket is in the discharge position to dump said waste material into one of said compartments; and

(g) first and second waste material compactors, the first compactor being located to compact waste material within said lower compartment and the second compactor being located to compact waste material within said upper compartment; said second compactor being movable rearwardly along a platform elevated relative to said horizontal wall.

5,484,247

BAG BREAKER

Brian K. Clark, and Roy R. Miller, both of Eugene, Oreg., assignors to Bulk Handling Systems, Inc., Eugene, Oreg.

Filed May 16, 1994, Ser. No. 243,849
Int. Cl.[6] B65G *69/00*
U.S. Cl. 414—412 **27 Claims**

9. A system for removing materials from a container, comprising:

a first cylinder;

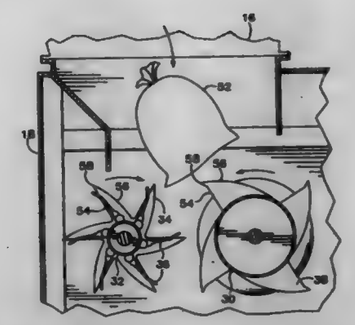
means for rotating the first cylinder in a first rotational direction and at a first rotational speed;

a first set of fins that protrude from an outside surface of the first cylinder, said first set of fins being oriented to hook the container at a first location when the container drops onto the first cylinder and onto the first set of fins responsive to gravity acting on the container;

a second cylinder spaced a given distance from the first cylinder;

a second set of fins that protrude from an outside surface of the second cylinder a given lateral distance apart from one of the first set of fins, the container moved by the first set of fins against the second set of fins;

means for rotating the second cylinder in a second rotational direction and at a second rotational speed greater than the first rotational speed of the first cylinder so that the second set of fins hook onto a second location of the container spaced laterally from the first location stretching the second location of the container further apart from the first location at a rate proportional to a speed differential between the first rotational speed and the second rotational speed until the container tears open allowing the materials inside the container to fall out.

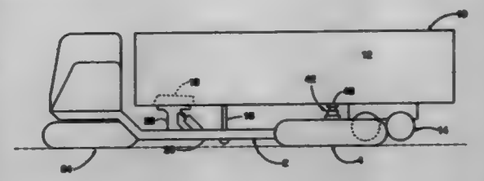


5,484,248

ENDLESS TRACK TRANSPORTER FOR SEMI-TRAILERS

Robert J. Purcell, Washington, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Oct. 20, 1994, Ser. No. 325,755
Int. Cl.[6] B60P *3/00*
U.S. Cl. 414—458 **8 Claims**



1. An endless track transporter for an on-highway semi-trailer having a body, rearwardly positioned wheels, a forwardly positioned landing gear and a more forwardly positioned hitch assembly, comprising:

first and second spaced apart supporting beams, each beam having a rearward portion and a forward portion;

a hitch assembly connected to the forward portion of the first and second supporting beams and being mateable with the on-highway semi-trailer hitch;

first and second endless track systems, each positioned on an opposed side of a respective supporting beam rearward portion with said supporting beams being positioned between said track systems and respectfully connected thereto;

a gate system having first and second portions with each gate portion having first and second end portions, said first end portion of each gate portion being pivotally connected to a rearward portion of a respective supporting beam and being pivotally moveable between a first position at which the second end portion of each gate portion are in lockable engagement with one another and defining a support extend-

ing transversely between the supporting beams and a second position at which said second end portions are spaced one from the other;

means for releasably locking the second end portions of the gate portions one to the other; and

first and second lifting jacks each having a supporting member and each jack being connected to a respective gate portion at a location adjacent a respective endless track system and each supporting member being moveable between a lowered position at which the supporting members have an elevation less than the lower most height of a semi-trailer body expected to be transported and a raised position at which the supporting members are in contact with the semi-trailer body and said semi-trailer body is elevated by said jacks to an elevation at which the semi-trailer wheels are spaced from the ground.

5,484,249

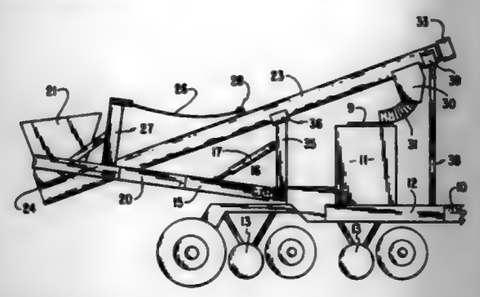
GRAIN SEEDER LOADER

Dennis Klatt, 1131 Tenth St., Sheldon, Iowa 51201

Filed Jan. 17, 1995, Ser. No. 372,919

Int. Cl.[6] B60P *1/40*

U.S. Cl. 414—523 **5 Claims**



1. In combination with a distribution device for particulate material having a material bin mounted on a frame, elevator means for filling said bin comprising an elevator including a trough for holding particulate material and means in said trough to move said material, mounting means for said elevator attached to said trough and pivotally connected to said frame on a substantially horizontal axis, said elevator having discharge means at the upper end of said elevator adapted to discharge into said bin and a lower end opposite said discharge means, hopper means attached to said mounting means adjacent said lower end of said elevator, means for pivoting said lower end of said elevator pivotally connected on a nearly vertical axis to said hopper means and being open to said hopper means whereby particulate material in said hopper means will drop into said lower end of said elevator, and whereby said upper end pivots about said means for pivoting for lateral movement of said upper end across said bin to provide nearly uniform distribution of material in said bin.

5,484,250

COUPLING FOR HEAVY-DUTY MACHINE

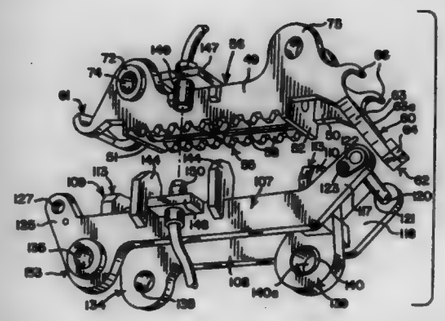
Charles P. Gilmore, Jr., Oto, Iowa, and Dale R. Johnson, Hudson, Wis., assignors to Gilmore Transportation Services, Inc., Missouri Valley, Iowa

Continuation of Ser. No. 147,169, Nov. 3, 1993, Pat. No. 5,360,313, which is a continuation of Ser. No. 919,915, Jul. 27, 1992, abandoned. This application Oct. 28, 1994, Ser. No. 330,798

Int. Cl.[6] B66C *23/56*

U.S. Cl. 414—723 **4 Claims**

4. In a heavy-duty machine including a ground-supporting base having an operator station, a boom pivotally mounted at one end to the base to swing vertically, a stick cylinder pivotally connected at one end to said boom, a stick pivotally mounted to the free end of the boom to swing vertically relative to the boom, a working tool mounted on the free end of the stick, a quick-connect/disconnect coupling between the stick and the boom for attaching the stick to the boom, and means for controlling the connect and disconnect functions of the coupling, the improvement in the coupling which comprises, a first coupling member on the boom and a second coupling member on the stick, said first coupling member having means for pivotally connecting one end of the first coupling member to the free end of the boom and means at the other end of the first coupling member for pivotally connecting to the other end of the stick cylinder, guiding means on the first coupling member coacting with guidable means on the second coupling member to guidably bring the members into mating relationship, the guiding means on the first coupling member including a grabber means on one end and a picker means on the other end, the guidable means on the second coupling member including a pin means mounted transversely to the longitudinal axis of the second coupling member, means for interchangeably mounting the pin means at either end of the second coupling member to coact with either the grabber means or the picker means during coupling, and locking means on said coupling members for locking the first and second coupling members together in coupled relation and unlocking the members to allow separation and decoupling.



5,484,251

APPARATUS FOR OVERTURNING LONG-WEB ROLLS

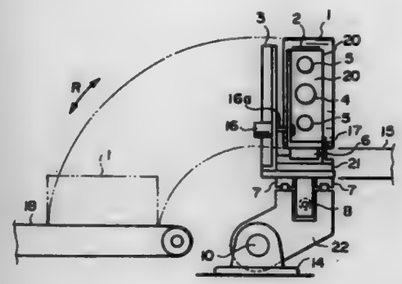
Akihiro Sanda, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 31, 1994, Ser. No. 331,750

Claims priority, application Japan, Nov. 1, 1993, 5-273553

Int. Cl.[6] B66C *1/62*

U.S. Cl. 414—731 **5 Claims**



1. An apparatus for overturning a long-web roll, wherein said long web has been wound up and placed on a first resting surface in a first state such that a longitudinal wind-up axis of the long-web roll is substantially parallel to the first resting surface, then is overturned to a second state, in which the longitudinal wind-up axis is substantially perpendicular to the first state, and transferred onto a second resting surface, the apparatus comprising:

i) a chuck for holding the long-web roll, which is placed on the first resting surface, by nipping an outer circumference of the long-web roll from both sides in a radial direction,

ii) a support capable of being set at a supporting position that stands facing a front end face of the long-web roll, which is held by said chuck, said front end face being directed towards the side of the second resting surface,

iii) a rotating transfer unit operable for rotating said support and said chuck together with each other by an angle of approximately 90° and thereby placing the long-web roll, which is held by said chuck, on the second resting surface such that said front end face may rest on the second resting surface, and

iv) a unit operable for moving said chuck with respect to said support, which is set at said supporting position, in the direction along the wind-up axis of the long-web roll after said rotating transfer unit begins operating, and thereby bringing said front end face of the long-web roll into contact with said support.

5,484,252

SAMPLE HOLDING APPARATUS

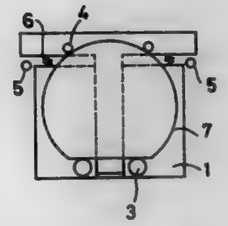
Hiroto Mutoh, Tokyo, Japan, assignor to Seiko Instruments Inc., Tokyo, Japan

Filed Feb. 22, 1994, Ser. No. 199,446

Claims priority, application Japan, Feb. 22, 1993, 5-032303

Int. Cl.[6] B65G *47/24*

U.S. Cl. 414—783 **6 Claims**



1. In a sample holding apparatus in which a sample having an edge surface is held and displaced between a preliminary test chamber and a main sample chamber by a transfer means, the improvement comprising: a main body which linearly moves with the transfer means in a movement direction between the preliminary test chamber and the main sample chamber; at least one main body pin fixed to said main body for holding the edge surface of the sample; a holding body mounted on said main body and slidable relative to said main body in the movement direction of the main body during movement of said sample holding apparatus in the vicinity of a stop position within the preliminary test chamber; a plurality of holding body pins fixed to said holding body for holding the edge surface of the sample together with said main body pin; an elastic member having one end fixed to said main body and a second end fixed to said holding body for continuously providing a force which attracts said holding body to said main body; and a support member fixed to be brought in contact with said holding body from the exterior of the sample holding apparatus when the sample holding apparatus is brought to the stop position within the preliminary test chamber, whereby, when the sample holding apparatus moves in the movement direction from the preliminary test chamber to the main sample chamber, the sample is held by said main body and said holding body and when the test holding apparatus moves in a reverse direction the sample is released.

5,484,253

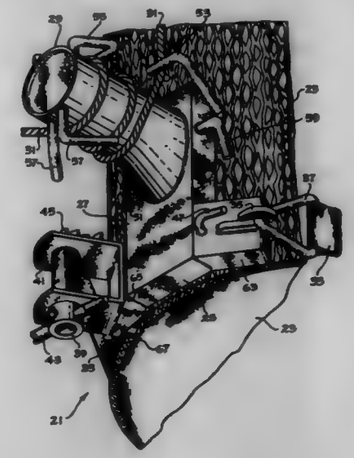
CONFORMED FRAME APPARATUS FOR HANDLING LOADS INVOLVED IN ARBOR RIGGING PROCEDURES

Kent H. Johnson, 521 Hawthorne Ave., Los Altos, Calif. 94024

Filed Nov. 7, 1994, Ser. No. 335,033

Int. Cl.[6] A01G *17/00*

U.S. Cl. 414—787 **18 Claims**



15. A frame apparatus which is constructed to be mounted on and conformed to the trunk of a tree for use by arborists in handling loads involved in an arbor procedure, said frame apparatus comprising,

frame means for engaging a curved surface of the trunk of a tree at three triangularly disposed locations,

said frame means including a lower, horizontally extending, frame structure conformed to the curvature of the trunk for engaging the trunk at first and second locations at end portions of the lower frame structure,

said frame means including a vertical, upwardly extending, frame structure having an upper end for engaging the trunk at a third location at the upper end of the vertical frame structure,

said lower frame structure having a configuration, when mounted on the trunk, which is sufficiently conformed to the curvature of a tree trunk so as to enable said lower frame structure to engage the trunk at said first and second locations and without the need to cut into the existing curvature of the tree trunk,

load beam means mounted on the frame means and extending outwardly from an outer side of the frame means for receiving turns of rope in frictional engagement to handle loads incurred during an arbor procedure,

attachment means operatively associated with the lower frame structure for pulling the end portions of the lower frame structure into secure engagement with the trunk at the first and second lower locations and for positioning the upper end of the vertical frame structure for a secure engagement with the trunk at the third upper location when a load is applied to the load beam means during an arbor procedure,

pad means at each of said three triangularly disposed locations for resiliently gripping the opposed portion of the trunk in a way which minimizes damage to the tree.

5,484,254

CUP STACKING APPARATUS

Max Schiffelholz, Peter-Henlein-Strasse 10, D-8870 Gunzburg, Germany

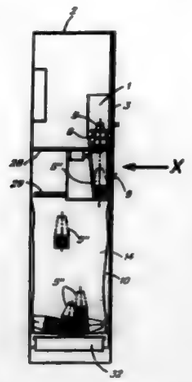
PCT No. PCT/EP92/01794, § 371 Date May 24, 1993, § 102(e) Date May 24, 1993, PCT Pub. No. WO93/03460, PCT Pub. Date Feb. 18, 1993

PCT Filed Aug. 7, 1992, Ser. No. 39,182

Claims priority, application Germany, Aug. 8, 1991, 41 26 260.3

Int. Cl.[6] B65F *1/08*

U.S. Cl. 414—788.2 **12 Claims**



1. An apparatus for collecting cups having an opening at one end, comprising:

a cup insertion chamber having a plurality of walls defining a side opening and a floor defining a bottom opening;

a cup collection chamber disposed below said insertion chamber and having a plurality of walls and a top opening;

a transfer device positioned between said cup insertion chamber and said cup collection chamber allowing a cur received in said side opening of said cup insertion chamber to fall in a path through said transfer device and then into said cup collection chamber only when the open end of said cup is turned downwards, and wherein said transfer device comprises:

a guide chamber having walls defining an upper opening in communication with said bottom opening into said insertion chamber, and a lower opening in communication with said top opening into said collection chamber;

a catch member, which is movable in a controllable manner between two states: a first state in which said member extends into said path of said cup to prevent said cup from falling through said transfer device and a second state in which said member retracts and said cup is released to fall through said transfer device into said collection chamber; and

a sensor, said sensor being responsive to a marking on said cup to actuate said catch member into said second state to release said cup to fall into said collection chamber only when a cup in said guide chamber has its open end turned downwardly.

5,484,255

HIGH CAPACITY, HIGH SPEED DOCUMENT ACCUMULATOR

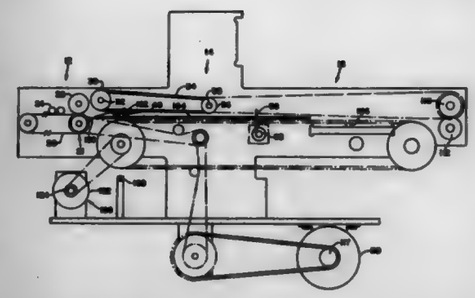
Kenneth W. Lowell, Bristol, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Apr. 18, 1994, Ser. No. 229,934

Int. Cl.[6] B65H *31/34*

U.S. Cl. 414—789 **21 Claims**

1. A collating machine for stacking sheets of paper fed seriatim thereto from a singulating feeder, comprising:



a deck including a stacking area;

a plurality of upper, endless, elastic belts, each of said belts moving around a pair of upstream and downstream pulleys suspended above said deck;

a plurality of ramp guide blocks adjustably secured to said deck between said pairs of pulleys, wherein a lower reach of each of said belts is lower than the highest section of said ramp guide blocks;

means for stopping each of the sheets at a downstream end of said stacking area, said stacking area being a section of said deck between said stopping means and said ramp guide blocks;

means situated upstream from said pulleys for feeding each of the sheets over said ramp guide blocks toward said stacking area until a trail edge of the sheet moves from control of said feeding means, wherein said belts convey the sheet to said stopping means; and

pusher means for squaring the collation against said stopping means and for transporting the collation from the stacking area.

5,484,256

CLAMPING DEVICE, ESPECIALLY FOR CLAMPING A STACK DURING STACK CHANGES IN A STACKING APPARATUS

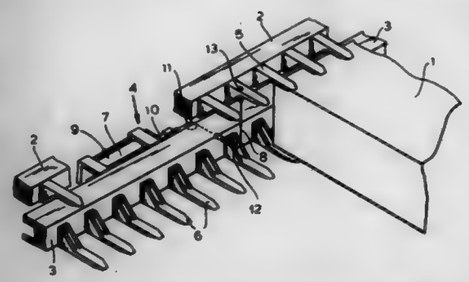
Ernst Claassen, Goch, Germany, assignor to Jagenberg Papiertechnik GmbH, Neuss, Germany

Filed Jan. 20, 1995, Ser. No. 377,526

Claims priority, application Germany, Jan. 22, 1994, 44 01 818.5

Int. Cl.[6] B65G *57/02*

U.S. Cl. 414—790.8 **20 Claims**



1. A clamping device for a stack of sheets, comprising:

a pair of parallel clamping bars each having a longitudinal dimension;

respective arrays of tongues projecting from said clamping bars and adapted to engage a stack of sheets between said arrays; and

drive means for relatively displacing said bars perpendicular to the longitudinal dimensions of said bars to clamp said stack between said arrays, said drive means including:

at least one traction drive,

an elongated flexible element connected to said traction drive at one end of said element and to one of said bars at an opposite end of said element and at an attachment location on said one of said bars, and

a direction-changing guide on the other of said bars around which said element passes between said ends, said element passing between said location and said guide perpendicular to the longitudinal dimensions said bars.

5,484,257

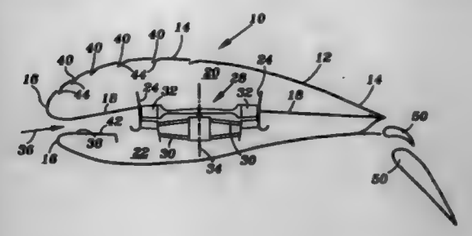
WIND ENERGY DEVICE

Norbert L. Osborn, 1012 Meadowcreek Dr., #1154, Irving, Tex. 75038

Filed Feb. 6, 1995, Ser. No. 384,135

Int. Cl.[6] F03D *5/00*

U.S. Cl. 415—2.1 **12 Claims**



1. A device for generating rotating shaft power from atmospheric air comprising:

an airfoil having a top surface and a leading edge;

a partition disposed within said airfoil along the length thereof, said partition forming an upper chamber and a lower chamber within said airfoil;

said partition including an aperture creating a fluid communication path between said upper and lower chambers;

said leading edge of said airfoil including an aperture disposed adjacent said lower chamber;

said top surface of said airfoil including an aperture disposed adjacent said upper chamber; and

a turbine disposed within said partition aperture adapted to be driven by fluid pressure entering said leading edge aperture of said airfoil and exiting said top surface aperture of said airfoil.

5,484,258

TURBINE AIRFOIL WITH CONVECTIVELY COOLED DOUBLE SHELL OUTER WALL

Anne M. Isburgh, Loveland, and Ching-Pang Lee, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Mar. 1, 1994, Ser. No. 203,246

Int. Cl.[6] F01D *5/18*

U.S. Cl. 415—115 **12 Claims**

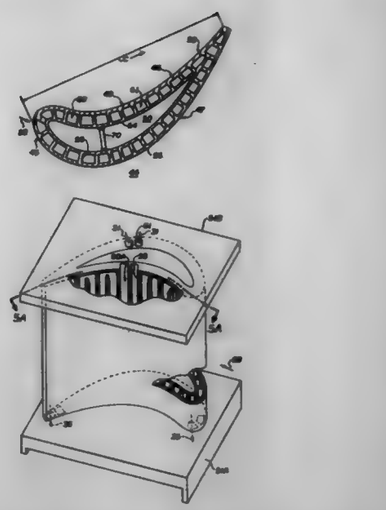
1. A coolable airfoil for use and exposure in a hot gas flow of a gas turbine engine, said coolable airfoil comprising:

a hollow body section including a chordwise extending leading edge suction (operably) connected to a pressure side and a suction side of the airfoil,

a one-piece integrally formed double shell outer wall surrounding at least one radially extending cavity and extending chordwise through said leading edge section, pressure side, and suction side,

said outer wall comprising an inner shell and an outer shell integrally formed with tying ribs therebetween of the same material as said shells,

said tying ribs operably constructed to space apart said shells such that said shells are essentially parallel and mechanically and thermally tie said shells together, and



said ribs forming radially extending convective cooling passages between said shells wherein said inner shell is devoid of any apertures along said convective cooling passages.

5,484,259

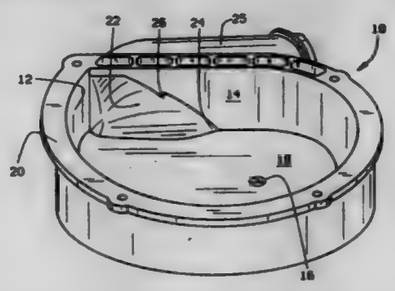
LOW NOISE CENTRIFUGAL BLOWER

Sohail Ahmed, Ballwin; John E. King, and Kevin M. May, both of Florissant, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jun. 13, 1994, Ser. No. 259,295

Int. Cl.[6] F04D *29/66*

U.S. Cl. 415—119 **7 Claims**



1. A centrifugal air blower comprising an integrated housing and an outlet conduit whereby the intersection of the housing and the outlet provides an opening which is defined by a vertical line extending from a base of the housing upwardly terminating in a straight horizontal line ending in a parabolic curve downwardly terminating at the base, the parabolic curve being interrupted by a fin extending downwardly into the opening and positioned to generate at least one vortex in a flow of air from the housing through the opening and into the outlet.

5,484,260

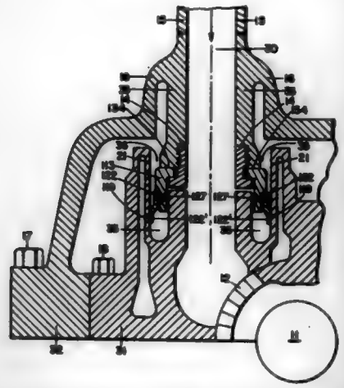
STEAM TURBINE BELL SEALS

Ronald E. Brandon, 652 Jubilee St., Melbourne, Fla. 32940

Continuation-in-part of Ser. No. 175,522, Dec. 30, 1993, Pat. No. 5,443,589. This application Jun. 8, 1995, Ser. No. 488,765

Int. Cl.[6] F01D *25/26*

U.S. Cl. 415—134 **4 Claims**



1. In a turbine employing a double shell construction of inner and outer shells and bell seals having sealing engagement with the inner shell, the improvement comprising a replaceable, cylindrical extension seal threadedly engaged with each bell seal and having a sealing surface in sealing engagement with the inner shell, the extension seal being replaceable when wear or damage occurs to its sealing surface thereby avoiding replacement of the bell seal.

5,484,261

SYSTEM FOR REGULATING AIR SUPPLY CONDITIONS OF A TURBO SHAFT MACHINE

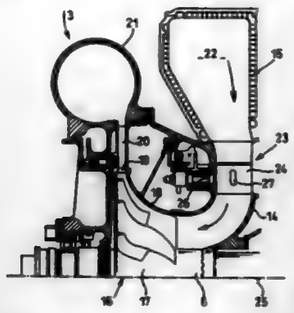
Pierre Biscay, Lons; Alain J. Farrando, Pau; Philippe D. Joubert, Angais; Jean-Bernard Martin, Ondres, and Hubert H. Vignau, Navailles-Angos, all of, France, assignors to Turbomeca, Bordes, France

Continuation of Ser. No. 113,836, Aug. 30, 1993, abandoned. This application Jan. 30, 1995, Ser. No. 380,448

Claims priority, application France, Sep. 25, 1992, 92 11457

Int. Cl.[6] F01D *17/12*

U.S. Cl. 415—151 **11 Claims**



1. A centrifugal compressor assembly comprising an air intake conduit and a system for regulating air supply conditions of said centrifugal compressor, said system comprising in combination a series of directing vanes mounted in said compressor air intake conduit so as to be moveable between an open position and a closed position, said directing vanes all being mounted in a ring shape with each said vane being pivotable about an axis parallel to the axis of said ring, and including a throughway opening extending longitudinally through at least one said vane for creating a secondary air flow through said regulating system.

5,484,262

LOW PROFILE FAN BODY WITH HEAT TRANSFER CHARACTERISTICS

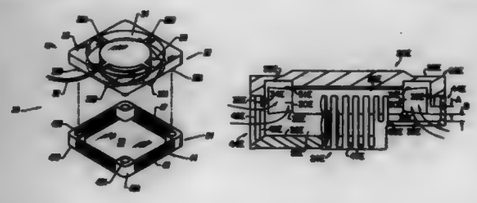
Daniel L. Thomas, San Jose, Calif.; John W. Hoover, Huntington, and Charles R. Marracino, Torrington, both of Conn., assignors to Nidec Corporation, Torrington, Conn.

Continuation-in-part of Ser. No. 965,654, Oct. 23, 1992, Pat. No. 5,288,203. This application Feb. 22, 1994, Ser. No. 199,331

The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.

Int. Cl.[6] F04D *29/58*

U.S. Cl. 415—178 **46 Claims**



1. An apparatus for cooling an electronic component having an exposed surface, comprising:

means for moving air to cool the electronic component; and

a heat transfer body defining a base portion for engaging the exposed surface of the electronic component, and a heat transfer passageway receiving the air moving means to move air through the passageway and cool the electronic component, the heat transfer body including at least one heat transfer surface disposed in the heat transfer passageway to enhance the heat transfer capacity of the heat transfer body, and the heat transfer body and air moving means defining substantially equal dimensions in an axial direction of the air moving means.

25. An apparatus for cooling an electronic component having an exposed surface, comprising:

a fan including a plurality of fan blades radially spaced relative to each other about an axis of the fan, each fan blade defining a first axial edge, a second axial edge on a substantially opposite side of the blade relative to the first axial edge, and a radial edge between the first and second axial edges;

a heat transfer body defining a base portion for engaging the exposed surface of the electronic component, a plurality of heat transfer members projecting from the base portion in substantially the axial direction of the fan and defining a plenum chamber receiving the plurality of fan blades; and

a pressure differential surface disposed adjacent to the radial edges of a plurality of the fan blades, the radial edges of a plurality of the fan blades being at least partially exposed to the adjacent heat transfer members thereby defining an air flow path across the radial edges of the fan blades exposed to the heat transfer members, and the first axial edges of the fan blades being located adjacent to and spaced from the base portion of the heat transfer body further defining an air flow path between the first axial edges and the base portion.

5,484,263

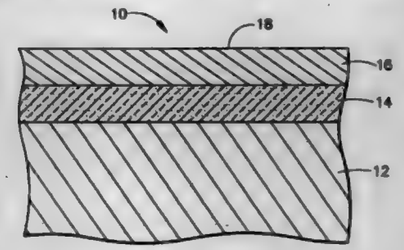
NON-DEGRADING REFLECTIVE COATING SYSTEM FOR HIGH TEMPERATURE HEAT SHIELDS AND A METHOD THEREFOR

Bangalore A. Nagaraj, West Chester; Antoinette E. Well, Cincinnati, and John W. Devitt, Loveland, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 17, 1994, Ser. No. 324,303

Int. Cl.[6] B32B *15/04*; F01D *9/02*

U.S. Cl. 415—200 **10 Claims**



1. A metal article in an environment in which the article is subject to thermal radiation while at an elevated service temperature, the article having a heat shield comprising:

a barrier layer on a surface of the article; and

a reflective layer on the barrier layer such that the reflective layer reflects most of the thermal radiation incident on the article, the reflective layer being formed from a material which is selected from the group consisting of the noble metals, noble metal alloys and aluminum, wherein the barrier layer is sufficiently thick so as to substantially prevent degradation of the reflective layer at the elevated service temperature, such that the reflectivity of the reflective layer is not degraded at the elevated service temperature.

5,484,264

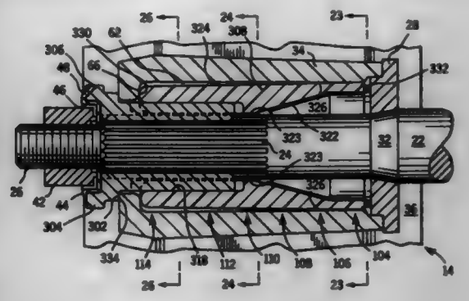
TORSIONALLY TWISTING PROPELLER DRIVE SLEEVE AND ADAPTER

Michael A. Karls, Hilbert, and Daniel R. Lindgren, Fond du Lac, both of Wis., assignors to Brunswick Corporation, Lake Forest, Ill.

Continuation-in-part of Ser. No. 40,108, Mar. 30, 1993, Pat. No. 5,322,416, which is a continuation-in-part of Ser. No. 809,938, Dec. 18, 1991, Pat. No. 5,244,348. This application Mar. 8, 1994, Ser. No. 207,832

Int. Cl.[6] F01D *5/30*

U.S. Cl. 416—204 R **24 Claims**



1. A marine drive comprising a propeller with a hub, an axially extending propeller shaft, a drive sleeve adapter drivingly engaging said propeller shaft, a shock absorbing drive sleeve in said propeller hub mounting said propeller hub to said drive sleeve adapter on said propeller shaft wherein said drive sleeve adapter comprises an inner diameter portion engaging said propeller shaft in driving relation and an outer diameter portion engaging said shock absorbing drive sleeve in driving relation, and wherein said shock absorbing drive sleeve comprises a first inner diameter portion engaging said adapter in driving relation and a first outer diameter portion at least partially rotatable relative to said propeller hub, a second outer diameter portion axially spaced from said first outer diameter portion and engaging said propeller hub in driving relation, wherein said second outer diameter portion snugly engages said propeller hub, and said first outer diameter portion at least partially rotates relative to said propeller hub in response to rotation of said propeller shaft drivingly engaging said drive sleeve adapter which drivingly engages said drive sleeve such that when said propeller strikes an object, the shock is absorbed by torsional twisting of said drive sleeve wherein said first outer diameter portion continues to rotate to a further rotated position than said second outer diameter portion.

5,484,265

EXCESS TEMPERATURE AND STARTING SAFETY DEVICE IN PUMPS HAVING PERMANENT MAGNET COUPLINGS

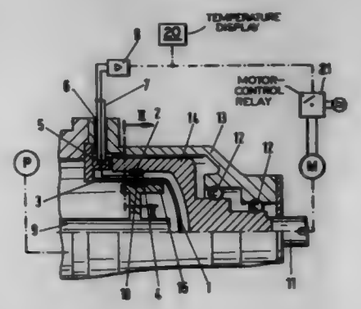
Stefan Horvath, Dessau; Karl Schmidt, Waldkraiburg; Henry Schommer, Jettenbach, and Gerhard Fiedler, Dessau, all of, Germany, assignors to Junkalor GmbH Dessau, Dessau, Germany

Filed Feb. 8, 1994, Ser. No. 193,656

Claims priority, application Germany, Feb. 9, 1993, 43 03 629.5

Int. Cl.[6] H02H *5/04*; *11/00*

U.S. Cl. 417—32 **9 Claims**



1. A pump apparatus comprising:

a motor having a drive shaft;

a pump having a rotor shaft;

a permanent magnet coupling between said shafts and include:

an annular array of permanent magnets on said motor shaft,

an array of permanent magnets on said rotor shaft juxtaposed radially with the array of permanent magnets on said motor shaft across an annular gap whereby said rotor shaft is magnetically coupled with said motor shaft, and

a stationary gap-forming cup in said annular gap between said array and composed of an antimagnetic metallic material; and

an excess temperature and starting-safety monitoring device which includes a thermocouple having one conductor formed by said cup and another conductor affixed to said cup for monitoring temperature in said gap and eccentric running at said gap.

5,484,266

HIGH SPEED ELECTRICALLY DRIVEN AXIAL-FLOW PUMP AND BOAT DRIVEN THEREBY

José Murga, 9, chemin des Rouillères, CH-2000 Neuchatel, Switzerland

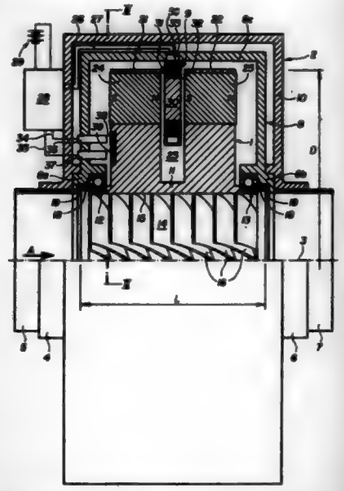
PCT No. PCT/CH94/00023, § 371 Date Oct. 19, 1994, § 102(e) Date Oct. 19, 1994, PCT Pub. No. WO94/18458, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 3, 1994, Ser. No. 313,233

Claims priority, application Switzerland, Feb. 3, 1993, 00304/93

Int. Cl.[6] F04B *49/06*

U.S. Cl. 417—44.1 16 Claims



1. A high speed electrically driven axial-flow pump comprising a stator with a sealed casing, a rotor located inside said stator casing so that it can rotate on an axis of rotation, said rotor having a tubular central portion forming an exterior wall of a central channel for receiving a continuous axial flow of a liquid, with blades in said channel; and

electromagnetic drive means for driving said rotor comprising, magnets on the rotor being arranged around said tubular central portion, said magnets cooperating with electrical coils on the stator which are inside said sealed casing, wherein the rotor is shorter in length than an exterior diameter of the rotor.

5,484,267

COOLING DEVICE FOR A PUMP AND CORRESPONDING BARRIER TANK

Robert E. Rockwood, Windham, N.H., assignor to Environamics Corp., Hudson, N.H.

Continuation-in-part of Ser. No. 200,012, Feb. 22, 1994. This application Mar. 17, 1994, Ser. No. 214,288

Int. Cl.[6] F04B *39/06*

U.S. Cl. 417—53 15 Claims

1. A pump system comprising:

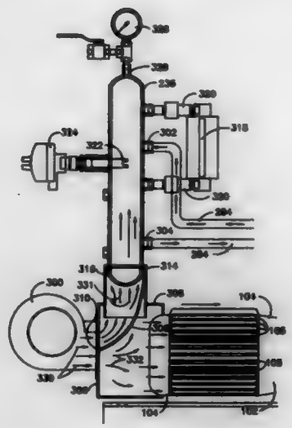
a motor for rotating a pump shaft within a pump;

a fluid pumping impeller coupled to said pump shaft, said impeller for pumping a fluid from a fluid inlet to a fluid outlet defined in said pump;

a rotating fluid seal disposed within said pump;

a temperature stabilizing chamber adjacent said rotating seal, said chamber housing a temperature stabilizing fluid for maintaining said seal at a substantially constant and acceptable temperature;

a conduit system for circulating said temperature stabilizing fluid from said chamber to a fluid cooling tank remote from said seal, and thereafter back to said chamber from said tank;



a blower affixed adjacent said pump by way of a cowl, said cowl being disposed between said blower and said motor;

said blower for simultaneously blowing air across both said motor and said tank so as to cool each of said motor and the temperature stabilizing fluid in said tank, the result being that said seal is maintained at a substantially constant and acceptable temperature as said temperature stabilizing fluid is circulated back into said chamber adjacent said seal after being cooled by said blower while in said cooling tank.

5,484,268

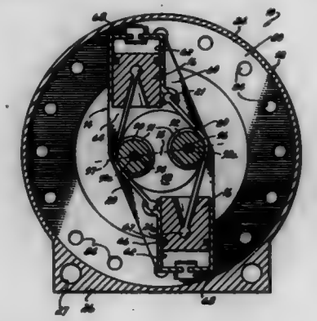
POSITIVE DISPLACEMENT CENTRIFUGAL PUMP

Robert P. Swank, Mansfield, Ohio, assignor to Impact MST Incorporated, Cincinnati, Ohio

Continuation-in-part of Ser. No. 637,602, Jan. 2, 1991, Pat. No. 5,228,840, which is a continuation-in-part of Ser. No. 271,166, Nov. 14, 1988, Pat. No. 4,990,062. This application Jul. 15, 1993, Ser. No. 92,356

Int. Cl.[6] F04B *19/00*

U.S. Cl. 417—211 32 Claims



1. A positive displacement centrifugal pump apparatus for pumping fluid, comprising:

a pressure generating mass, said mass being rotatable and radially movable relative to a first axis;

a pumping unit having intake and exhaust means for intaking and exhausting fluid;

tensioning means including a flexible, non-elastic tensioning element operatively connected to said mass;

rotating means for effecting rotation of said mass relative to said first axis such that centrifugal force acting on said mass in the course of rotation and without the application of any other force to said mass forces said mass to move radially outwardly away from said first axis and said tensioning means in the course of rotation of said mass is operable to cause said mass to move radially inwardly toward said axis; and

means interconnecting said mass to said pumping unit whereby inward and outward radial movement of said mass relative to said axis effects intake and exhaust of fluid from said pumping unit.

5,484,269

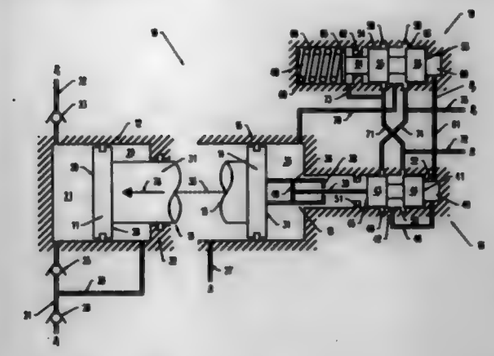
FLUID INTENSIFIER

Ralph L. Vick, Granada Hills, Calif., assignor to Moog Inc., East Aurora, N.Y.

Filed Apr. 24, 1995, Ser. No. 426,883

Int. Cl.[6] F04B *17/00;35/02*

U.S. Cl. 417—225 11 Claims



1. A fluid intensifier, comprising:

a pump piston mounted for sealed sliding movement within a pump cylinder;

a rod having one end mounted on said pump piston and having a portion sealingly penetrating an end wall of said pump cylinder;

said pump piston having a large-area surface facing into a first end chamber and having a small-area surface facing into a second end chamber;

a first source of pressurized fluid;

inlet conduit means operatively arranged to permit unidirectional flow from said first source to said first end chamber;

communicating conduit means operatively arranged to permit unidirectional flow from said first end chamber to said second end chamber;

outlet conduit means operatively arranged to permit unidirectional flow from said second end chamber to an outlet;

a drive piston mounted for sealed sliding movement within a drive cylinder, said drive piston being connected to said rod for movement therewith, said drive piston having a surface facing into a drive end chamber;

a second source of pressurized fluid; and

control valve means for alternately communicating said drive end chamber with said second source or a fluid return such that when said drive end chamber communicates with said second source, said pump piston will be driven to decrease the volume of said first end chamber and to provide a first intensified pressure at said outlet and when said drive end chamber communicates with said return, said pump piston will be driven to decrease the volume of said second end chamber and to provide a second intensified pressure at said outlet.

5,484,270

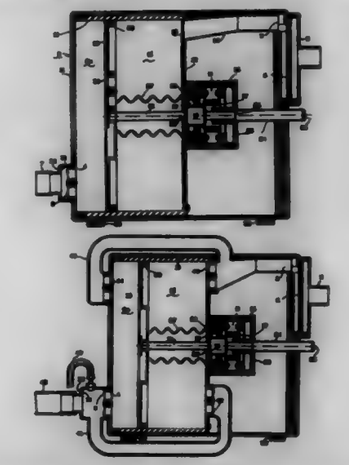
PUMP PARTICULARLY USEFUL IN RESPIRATOR APPARATUS AND EXHALATION VALVE ASSEMBLY THEREFOR

Carmeli Adahan, Netivei Am 11, Ramot Gimmel, 97552 Jerusalem, Israel

Filed Feb. 28, 1994, Ser. No. 202,950

Int. Cl.[6] F04B *35/04;* A61M *16/00*

U.S. Cl. 417—415 10 Claims



1. A reciprocating pump particularly useful in ventilator apparatus, comprising:

a pump housing having an inlet at one end, an outlet at another end, and a cylinder between said inlet and outlet;

a piston reciprocatable axially within said cylinder and dividing its interior into an inlet chamber communicating with said inlet, and an outlet chamber communicating with said outlet;

a fixed wall within said inlet chamber and having a passageway therethrough communicating with said inlet; a drive housing fixed to said wall and including a motor having a rotor rotatable by the energization of said motor;

a nut rotatable within said drive housing and fixed to said rotor to rotate therewith;

and a screw threadedly coupled at one end to said nut and fixed at its opposite end to said piston;

said piston being supported by a single rotatable bearing between said nut and the drive housing and a seal between said piston and the cylinder.

5,484,271

COMPACT CONTROLLABLE VANE PUMP

Bodo Stich, Wiesbaden, Germany, assignor to Mercedes-Benz Aktiengesellschaft, Stuttgart, Germany

PCT No. PCT/DE92/01059, § 371 Date Sep. 13, 1994, § 102(e) Date Sep. 13, 1994, PCT Pub. No. WO93/14318, PCT Pub. Date Jul. 22, 1993

PCT Filed Dec. 15, 1992, Ser. No. 244,601

Claims priority, application Germany, Jan. 9, 1992, 42 00 305.9

Int. Cl.[6] F01C *21/16*

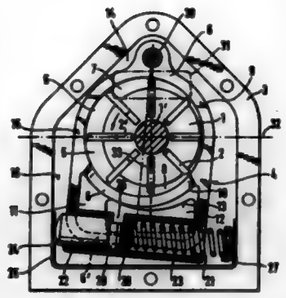
U.S. Cl. 418—26 13 Claims

1. A vane pump comprising:

a vane-pump casing;

a rotor rotatable mounted in said casing for rotation about an axis and having outwardly biased vanes thereon;

a control collar mounted in said casing for movement transverse to said axis and surrounding said rotor whereby said vanes engage a surface of said collar and define cells therewith decreasing in volume toward a pressure region upon rotation of said rotor relative to said collar, said collar being formed



with at least one recess exposed to pressure in said region and open toward an exterior of said collar;

an adjustment member in said recess biased by pressure therein and reacting against said casing to adjust a position of said control collar in dependence upon a pumping parameter; and

a lining of a wear resistant material extending in said casing in a region where said casing is engaged by said adjustment member.

5,484,272

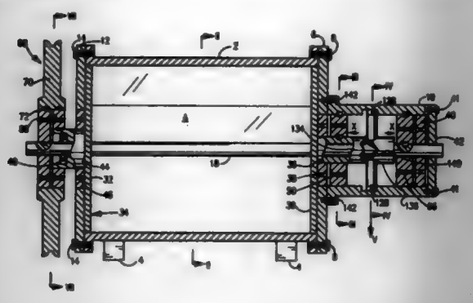
ROTARY INTERNAL COMBUSTION ENGINE

Clarence G. Horn, R.R. 1, Box 2340, Urbana, Mo. 65767

Filed Jun. 20, 1994, Ser. No. 262,213

Int. Cl.[6] F01C *1/063*

U.S. Cl. 418—35 10 Claims



1. A phasing system for a rotary internal combustion engine having first and second vane pairs rotatable around a common drive shaft having a given circumference and extending axially through a cylindrical body member which encloses said vanes and sections the engine into four angularly adjustable chambers, said engine further comprising overrunning clutches or the like to ensure that said drive shaft is rotatable in one direction only by one or both vane pairs, comprising:

a. a first sleeve like cam, rigidly attached to said first vane pair and coaxial with said drive shaft, said cam having an operable surface extending radially and coaxially to said drive shaft;

b. a second sleeve like cam, coaxial with said drive shaft and rigidly interconnected to said second vane pair via said drive shaft, said cam having an operable surface extending not only radially and coaxially to said drive shaft, but also facing the operable surface of said first sleeve like cam; and

c. at least one longitudinal cam having a boss in wiping contact with said drive shaft, slidable between first and second limits along the axis of said drive shaft, and positioned between said sleeve like cams such that said boss engages the operable surfaces of each sleeve like cam.

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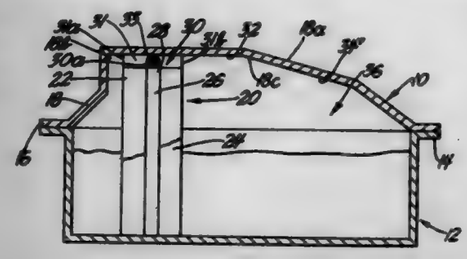
AIRBAG COVER AND APPARATUS FOR PRODUCING AN INVISIBLE TEAR SEAM THEREIN

Thomas Parker, Strafford, and Peter Iannazzi, Hampton, both of N.H., assignors to Davidson Textron Inc., Dover, N.H.

Division of Ser. No. 951,874, Sep. 28, 1992, Pat. No. 5,288,103. This application Dec. 2, 1993, Ser. No. 161,888

Int. Cl.[6] B29C *41/04*

U.S. Cl. 425—112 9 Claims



1. A thermoplastics casting mold assembly for forming an outer skin including an integral tear seam for a cover assembly for an air bag unit, the outer skin formed of a relatively strong thermoplastic material and having a tear seam subsequently formed integrally thereof of a relatively weak thermoplastic material with the tear seam corresponding to the general shape of a door or doors covering the outlet from a canister for the air bag in the air bag unit, the mold assembly comprising:

a thin shell mold having spaced sidewalls and an undivided inner surface; an unsealed portion on said undivided inner surface for receiving a strong thermoplastic material castable thereagainst, a sealable portion on said undivided inner surface, said sealable portion located inboard of said spaced sidewalls;

a tear seam defining gasket having a configuration including free ends laterally spaced from said sidewalls of said shell mold; said configuration corresponding generally to the shape and width of the tear seam; and

a tear seam pattern corresponding generally to the shape of said tear seam defining gasket for holding said tear seam defining gasket against said sealable portion of said undivided inner surface to form a sealed gasket footprint on said undivided inner surface corresponding the exact shape and width of the tear seam.

5,484,274

ENCAPSULATION MOLDING EQUIPMENT

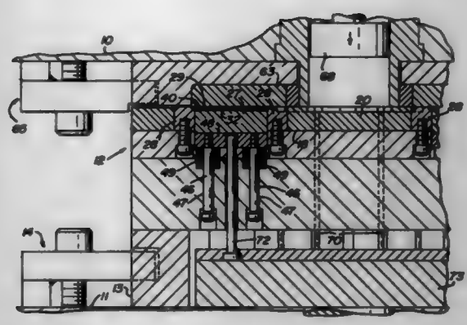
H. Karl Neu, Furlong, Pa., assignor to Neu Dynamics Corp., Ivyland, Pa.

Continuation of Ser. No. 271,149, Jul. 6, 1994, Pat. No. 5,409,362, which is a continuation-in-part of Ser. No. 108,335, Aug. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 52,545, Apr. 23, 1993, Pat. No. 5,405,255, which is a continuation-in-part of Ser. No. 981,742, Nov. 24, 1992, Pat. No. 5,316,463. This application Nov. 10, 1994, Ser. No. 337,668

Int. Cl.[6] B29C *45/34*

U.S. Cl. 425—116 4 Claims

1. Encapsulating mold equipment for use in a mold press having a base platen, an upper platen having an upper mold surface overlying said base platen, said base platen and said upper platen



being relatively movable between an open position and a closed position, said equipment comprising:

encapsulating fluid passage means on said base platen, said encapsulating fluid passage means including a surface raised relatively to said base platen and having runner passages formed therein for distribution of said encapsulating fluid to the mold under pressure;

a mold base member;

means for support of said mold base member on said base platen in adjacent relationship to said raised surface and to the runner passages in said raised surface of said encapsulation fluid delivery means, said mold base member having a substantially imperforate upwardly facing substantially planar support surface for support of strip material having an upper surface with a plurality of spaced apart devices to be encapsulated disposed thereon, said strip material having a substantially flat lower surface interfacing with said upwardly facing planar support surface;

a substantially rectangular cavity insert disposed on the mold base member in overlying relationship to said strip material, said cavity insert having a plurality of cavities extending therethrough, said cavities being spaced in a plurality of rows extended lengthwise of the cavity insert, there being a cavity for each of the devices on the upper surface of said piece of strip material, the cavities being dimensioned and positioned to receive said devices and a charge of encapsulating fluid sufficient to form an encapsulating layer covering each said device on said piece of strip material, said cavity insert having a lower sealing surface surrounding each cavity and cooperating with the upper surface of said strip material on said upwardly facing planar support surface to form with said strip material a seal surrounding each said device, said cavity insert further having an upper sealing surface cooperating with said mold surface of said upper mold platen to form a seal with said upper mold plate when the upper and lower platens are in the closed position;

said cavity insert having first and second side edges and gate passage means comprising gate grooves formed exclusively in said upper sealing surface, said gate grooves extending from said runner passages adjacent one of said side edges to said cavities, said gate grooves and said runner passages in said raised surface being in fluid communication when the cavity insert is disposed on said mold base member for the delivery of a charge of encapsulating fluid from said runner passages through said gate grooves to each of said cavities;

cavity insert support means on said base platen for support of said cavity insert independently of said mold base member; and

adjustable means acting on the mold base member and moving the mold base member relatively upwardly, whereby a carrier strip supported on said mold base member is maintained in sealing relationship with the lower surface of said cavity insert.

5,484,275

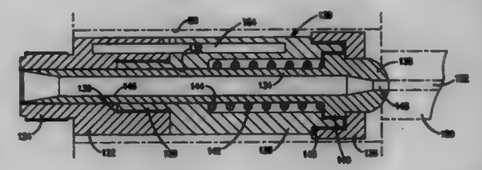
NOZZLE CONSTRUCTION FOR A TRIPLE STACK MOLDING ARRANGEMENT

Yosif Kushnir, Kansas City, Mo., assignor to Dollins Tool, Inc., Independence, Mo.

Continuation of Ser. No. 106,702, Aug. 16, 1993, Pat. No. 5,370,523. This application Jun. 10, 1994, Ser. No. 258,529

Int. Cl.[6] B29C *45/20*

U.S. Cl. 425—190 6 Claims



1. A nozzle construction for a stack mold having a flow passage for molten plastic extending between a pair of mold parts which separate when the mold is opened, said nozzle construction comprising:

a base for installation in the passage in one of the mold parts;

a body having a detachable connection with said base and a length to extend in the passage into the other of the mold parts, said base and body cooperating to present a bore therethrough;

a nozzle element having a shank mounted in said bore for axial sliding and a head projecting out of said body to mate with a seat on said other mold part, said nozzle element having a passageway therethrough presenting a flow path for the plastic;

means for limiting the extension of said head out of the body; and

spring means for urging said nozzle element in a direction to maintain said head on said seat in the event of differential thermal expansion of portions of the mold.

5,484,276

CURING APPARATUS FOR MOLDING COMPOUND

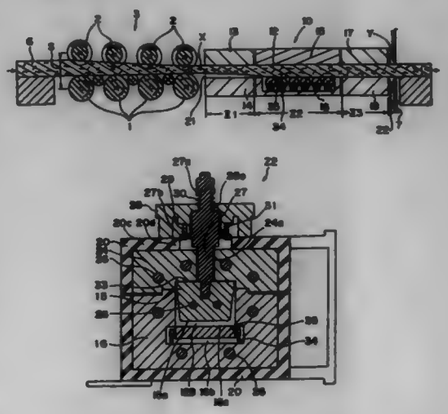
Yuzo Hayakawa, Takarazuka, and Masahiro Hakotani, Yamatokoriyama, both of, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 18, 1993, Ser. No. 154,401

Claims priority, application Japan, Nov. 20, 1992, 4-312318

Int. Cl.[6] B29C *43/22;43/52*

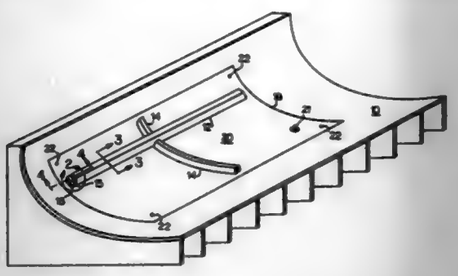
U.S. Cl. 425—343 17 Claims



1. A curing apparatus for use in curing a sheet molding compound which has been formed in a predetermined shape by a shaping device, said curing apparatus comprising:

a first pair of molds disposed along and on opposing sides of a path of transport of the sheet molding compound;
a curing heater operably mounted along said path of transport of the sheet molding compound;
wherein said molds define therebetween a sheet molding compound-receiving cavity;
wherein one of said molds is movable towards and away from the other of said molds so as to constitute a means for automatically changing a cross-sectional shape of said cavity when the sheet molding compound is present in said cavity and undergoes thermal expansion or contraction;
wherein at least one biasing element is provided and elastically biases, toward said cavity, the one of said molds which is movable toward and away from the other of said molds; and
wherein said at least one biasing element comprises a first coil spring biasing said one of said molds toward said cavity, and a second coil spring biasing said one of said molds away from said cavity.

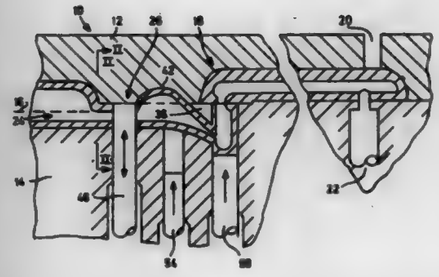
5,484,277
MANDRELESS MOLDING SYSTEM
William E. Lindsay, Mesa, Ariz., assignor to McDonnell Douglas Corporation, Huntington Beach, Calif.
Filed Dec. 26, 1989, Ser. No. 456,888
Int. Cl.[6] B29C *62/00*
U.S. Cl. 425—388 **5 Claims**



1. A hybrid vacuum bag for forming a fiber reinforced resin matrix composite structure with stiffeners between said hybrid vacuum bag and a primary tool, comprising:
an elastomeric sheet with means to attach a vacuum line;
at least one rigid cavity oriented away from said primary tool, having an inside and an outside, inserted in and sealed to said elastomeric sheet and said cavity having at least one aperture;
an elastomeric tube, having an inside and an outside surface, inserted in each of said rigid cavities and extending from each of said at least one aperture;
means to seal said outside of said elastomeric tube against the inside of said rigid cavity at said at least one aperture; and
means to provide an open vent passageway from said inside of said elastomeric tube.

5,484,278
BLOW-OUT VENT VALVE
Karl Berdan, Midland, Canada, assignor to Pebra GmbH Paul Braun, Altbrach, Germany
Filed Feb. 14, 1994, Ser. No. 195,507
Int. Cl.[6] B29C *45/26;45/40*
U.S. Cl. 425—533 **16 Claims**

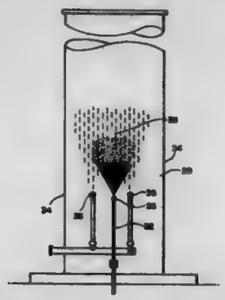
1. A molding machine comprising a mold having a core portion and a cavity portion defining a cavity therebetween to mold an article to a predetermined shape, said portions being relatively movable between a closed position in which said article is molded and an open position in which said molded article can be ejected from said mold; an inlet to supply molding material to said cavity,



a gas inlet communicating with said cavity to supply pressurized gas to the interior of the article to be molded; an outlet to receive material expelled from said cavity by application of pressurized gas thereto, and a vent valve assembly to control flow of material to said outlet from said cavity, said assembly including a passageway extending between said cavity and said outlet, a valve member operable to control flow through said passageway, and a shear located in said passageway between said valve member and said cavity and operable to sever material in said passageway from said article in said cavity as said article is ejected from said cavity.

5,484,279
METHOD AND APPARATUS FOR DISPOSAL OF LANDFILL GAS CONDENSATE
David Vonasek, Bothell, Wash., assignor to Emcon, Inc., San Mateo, Calif.
Continuation of Ser. No. 34,523, Mar. 22, 1993, abandoned. This application Feb. 3, 1995, Ser. No. 384,399
Int. Cl.[6] F23D *14/00*
U.S. Cl. 431—202 **20 Claims**





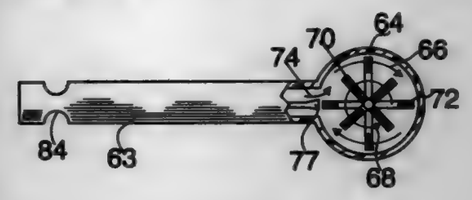
1. Apparatus for disposing of a condensate produced within a gas collection piping system of a landfill comprising;
means for atomizing said condensate, and means for introducing said atomized gas condensate into a single landfill gas flare, said flare having a cylindrical stack at least two feet in diameter and having an opening at its bottom to let in atmospheric air and open at the top for exhausting byproducts of combustion and having a generally circular burner nozzle located within said stack for burning landfill produced gas, said means for introducing said liquid condensate into said flare being located at a central location of said cylindrical stack and said circular burner nozzle whereby said condensate is vaporized and said contaminants are thermally destroyed.

16. A method for disposing of a gas condensate formed in a gas collection piping system of a landfill including the steps
atomizing said condensate, and
injecting said atomized condensate into a single combustion zone of a landfill gas flare, said flare having a cylindrical stack and a circular burner nozzle, to vaporize said condensate and thermally destroy any contaminants.

5,484,280

Patent Not Issued For This Number

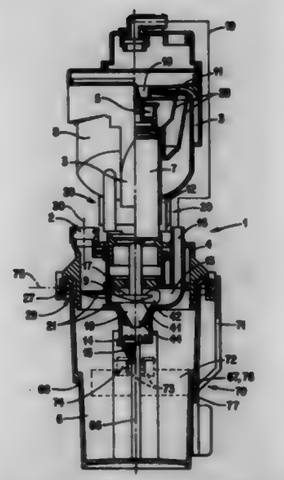
5,484,281
SHOWERHEAD TOOTH CLEANSING APPARATUS
Alex Renow, and Barry S. Renow, both of 49 Bobwhite La., Hicksville, N.Y. 11801
Filed Mar. 21, 1994, Ser. No. 215,049
Int. Cl.[6] A61G *17/02*
U.S. Cl. 433—80 **17 Claims**



1. A dental hygiene device comprising:
a) means for attaching said dental hygiene device to a water outlet commonly found in residential or commercial bathrooms,
b) a hydrodynamic pulsating means,
c) a dentifrice reservoir,
d) a flexible hose,
e) a handle having quick fastening attachment means for interchanging of dental hygiene attachments,
f) a counter rotating toothbrush,and
g) a dental hygiene attachment, said dental hygiene attachment including a toothbrush having a round head configuration comprising an inner set and outer set of individual hydrodnamically driven counter-rotating elements which are directly connected to an inner circular bundle of rotatable bristles rotating in one direction and an outer bundle of rotating bristles rotating in an opposite direction respectively, thus, improving oral cleaning.

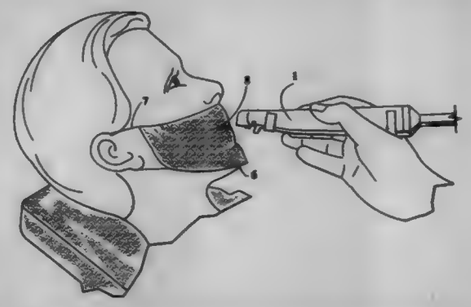
5,484,282
CENTRIFUGR SEPARATOR FOR SEPARATING A MIXTURE OF WASTE SOLID AND WASTE LIQUID
Werner Trawoger, Huebe 26, and Bruno Pregenzer, Huebe 30, both of A-6173 Oberperfuss, Austria
PCT No. PCT/AT92/00043, § 371 Date Oct. 8, 1993, § 102(e) Date Oct. 8, 1993, PCT Pub. No. WO92/18062, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 1, 1992, Ser. No. 129,203
Claims priority, application Austria, Apr. 12, 1991, 775/91
Int. Cl.[6] A61C *17/06*
U.S. Cl. 433—92 **11 Claims**

1. A separator for separating a dental waste mixture of solids and liquids, said separator comprising: a separator housing having a mixture inlet for the mixture of solids and liquids that are to be separated, an outlet for discharging separated liquids, and a settling tank collecting separated liquids up to a preset maximum settling level, said mixture inlet opening into a top region of the settling



tank; a full casing centrifuge arranged in the separator housing and having a top inlet opening, a bottom drain opening vertically discharging by gravity solids and liquid residues into the settling tank after each centrifuging phase, and a top liquid outlet passing cleaned liquids into the discharge outlet of the separator housing, said settling tank being removably arranged on the separator housing below the bottom drain opening; a pump means having a suction pipe extending downwards into the settling tank; and a connecting line connecting the pump means with the top inlet opening of the centrifuge.

5,484,283
METHOD AND APPARATUS FOR TREATING HARD DENTAL SUBSTANCES
Manfred Francetzki, Bensheim, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Jul. 28, 1993, Ser. No. 98,107
Claims priority, application Germany, Aug. 11, 1992, 42 26 512.2
Int. Cl.[6] A61C *1/16;1/00;3/00*
U.S. Cl. 433—116 **19 Claims**



1. An apparatus for treating hard dental substances in an indirect treatment technique, said apparatus comprising in combination a treatment handpiece, extraction means, an intraoral video camera having a target subject reproducible on a monitor and shielding means, said shielding means adapted to be arranged at the patient's mouth to cover the mouth and to prevent the emergence of particles from the patient's mouth while enabling access to the entire interior of the mouth, said shielding means being a tube-shaped structure of flexibly deformable material that conforms to a body contour of the mouth and which allows insertion of a hand holding an instrument to enable the insertion and introduction of the

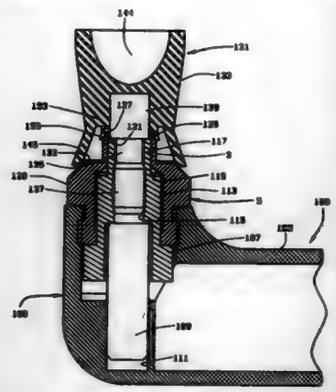
treatment handpiece, the camera and the extraction means into the patient's mouth to a preparation location and still surround the handpiece, camera and extraction means to prevent the emergence of the particles.

5,484,284

DENTAL PROPHYLAXIS TOOL AND ANGLE USING IT

Ronald L. Bailey, Harvester, Mo., assignor to Young Dental Manufacturing Company, Inc., Earth City, Mo.

Filed Jul. 28, 1994, Ser. No. 281,765
Int. Cl.[6] A61C *3/06*
U.S. Cl. 433—125 **23 Claims**



1. In combination a prophylaxis tool and a dental prophylaxis angle;

the angle including a hollow head, a hollow sleeve extending from said head, an upwardly extending driven member rotatably received in said head, means for driving said driven member received in said sleeve, an upwardly extending stem on said head having an annular knife edge, said driven member having a boss extending into said stem;

said tool including a body having an upper section, a lower section, a shaft which is received in said driven gear to secure said tool to said angle; said body lower section having a deformable annular ring concentric with said tool shaft, said annular knife edge of said stem cutting into a bottom edge of said ring to form a ring seal with said stem, said ring having a diameter no greater than 1.3 times the diameter of said annular edge of said stem.

5,484,285

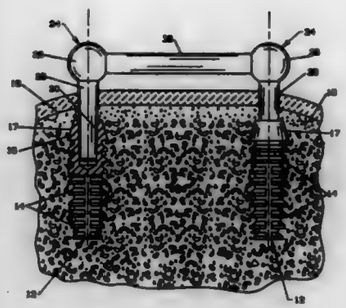
OVERDENTURE BAR APPARATUS AND METHOD FOR INSTALLING SAME

Vincent J. Morgan, 23 Bowditch Rd., Boston, Mass. 02136, and Norman J. Shepherd, 26 River Rd., Merrimack, Mass. 01860

Filed Jun. 16, 1994, Ser. No. 261,065
Int. Cl.[6] A61C *8/00;13/12;19/04;3/02*
U.S. Cl. 433—173 **15 Claims**

1. An overdenture bar assembly comprising first and second implant means, each having a tapered circular bore having a longitudinal axis,

first and second bar attachment members each having a head portion and a tapered post portion having a longitudinal axis extending from the head portion, a cross-section of the post portion taken perpendicular to the longitudinal axis of the post portion being circular, the taper of the post portion selected relative to the taper of the bore to form a locking joint, the head portion of each bar attachment member formed with a transversely extending bore having a longitudinal axis generally perpendicular to the longitudinal axis of the respective post portion, and



a bar having an outer periphery selected to be closely received in the transversely extending bore of each head portion, the bar having opposite ends, each end received in a respective transversely extending bore with the post portions each received in a respective implant means.

5,484,286

METHOD FOR THE PREPARATION OF IMPLANTS MADE OF TITANIUM OR ALLOYS THEREOF

Stig G. W. Hansson, Askim, Sweden, assignor to Aktiebolaget Astra, Sodertalje, Sweden

PCT No. PCT/SE91/00672, § 371 Date Apr. 23, 1993, § 102(e) Date Apr. 23, 1993, PCT Pub. No. WO92/05745, PCT Pub. Date Apr. 16, 1992
PCT Filed Oct. 4, 1991, Ser. No. 39,153
Claims priority, application Sweden, Jan. 8, 1990, 9003286
Int. Cl.[6] A61C *8/00*
U.S. Cl. 433—201.1 **9 Claims**

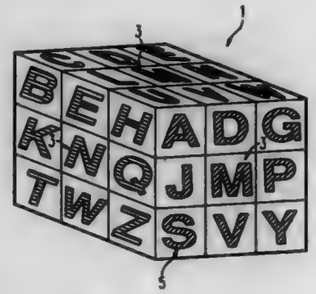
1. A method for treating the surface of implants of titanium or an alloy of titanium wherein the surface is blasted with particles of a titanium oxide.

5,484,287

CHARACTER REVEALING GAME, METHOD OF MAKING, AND METHOD OF PLAYING

Abelardo Concepcion-Diaz, Fajardo, Puerto Rico, assignor to Commonwealth of Puerto Rico, San Juan, Puerto Rico

Filed Mar. 16, 1994, Ser. No. 213,708
Int. Cl.[6] G09B *19/22*
U.S. Cl. 434—128 **19 Claims**



15. A method of playing a character revealing game, comprising the steps of:

(a) selecting one of a plurality of pictoral characters appearing on a surface area of ternary game piece;

(b) revealing all indicia with which the selected one of said plurality of pictoral characters appears on said ternary game piece;

(c) arranging character revealing elements having indicia identical to said indicia with which said selected one of said plurality of pictoral characters appears on said ternary game piece in an additive manner such that a total physical length of said character revealing elements is formed; and

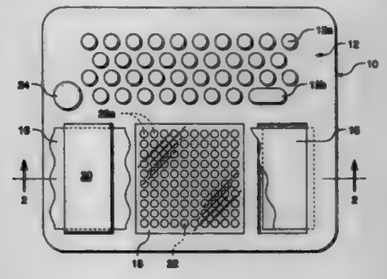
(d) ascertaining said selected one of said plurality of pictoral characters via decoding means of a character decoding device, said selected one of said plurality of pictoral characters corresponding to said total physical length of said character revealing elements.

5,484,288

APPARATUS FOR TEACHING INSCRIPTION OF CHARACTERS

Michael DelGigante, 2168 60 St., Brooklyn, N.Y. 11204

Filed Mar. 25, 1994, Ser. No. 218,122
Int. Cl.[6] G09B *11/04*
U.S. Cl. 434—163 **2 Claims**



1. Teaching apparatus for guiding a person in executing one or more strokes for inscribing any selected character of a set of characters, said apparatus including

a keyboard having means comprising a key or a combination of keys for selecting each character of the set of characters to be inscribed,

character inscription means including a light-transmitting panel for supporting inscription material and display means having a bottom and having right and left sides, said display means underlying said panel for displaying a selected character upright relative to said bottom, said display means including an array of devices having visually contrasting inactive and actuated states, said devices being distributed along lines to be followed by a person in executing strokes for inscribing said set of characters, and

selective means responsive to said character selecting means for actuating selected devices of said display means so as to display said selected character, said selective means including means causing the actuation of said selected devices to be sequential in accordance with strokes to be executed by a person in inscribing the selected character and at a sequencing rate appropriate to guide the execution of such strokes, and

said apparatus having means for supporting a roll of tracing material at the right of the display means in readiness to be drawn to the left and across said inscription-material-supporting panel, whereby a left-to-right sequence of upright characters may be inscribed on the tracing material by drawing the tracing material bearing one or more previously inscribed characters across said panel to the left and concurrently positioning a fresh area of the tracing material over said panel in readiness for another character to be inscribed to the right of the last previously inscribed character.

5,484,289

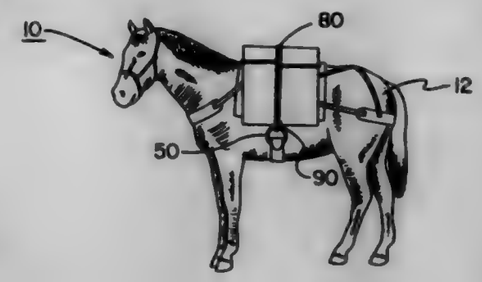
Patent Not Issued For This Number

5,484,290

ANIMAL PACKING DUMMY

Simon Fisher, Circle 7 Ranch, Glenburn, Star Rte., Fall River Mills, Calif. 96028

Filed Jul. 29, 1994, Ser. No. 282,364
Int. Cl.[6] G09B *19/00*
U.S. Cl. 434—225 **7 Claims**



1. Apparatus for providing a user a safe and accurate way of learning to tie knots involved with packing equipment on packing animals comprising, in combination:

a molded plastic replica of a packing animal having a front portion, a back portion, and a head portion extended upwards therefrom, a stomach portion located below the back portion, a pair of opposed cinch portions each extended between the back portion and the stomach portion, a hoof portion located below the stomach portion, and a rear portion extended from the stomach portion, cinch portion, and back portion at a location opposite the front portion, the replica further having a saddle with a base integrally coupled to the back portion and extended downwards therefrom to the cinch portions and with the base including a front end and a rear end, a first pair of cross bars coupled to the front end of the base and extended upwards therefrom, a second pair of cross bars coupled to the rear end of the base and extended upwards therefrom, a front collar extended from the front of the base and integrally wrapped around the front portion in a closed loop configuration about the head portion, a rear collar extended from the rear of the base and integrally wrapped around the rear portion and back portion, and an elongated cinch belt integrally wrapped around the stomach portion such that its ends are extended upwards towards the cinch portion, the replica having a height of about 9 inches as measured vertically from the hoof portion to the back portion and a length of about 12 inches as measured horizontally from the front portion to the rear portion;

a pair of rigid metal cinch rings, each cinch ring coupled to a separate end of the cinch belt;

a pair of pack boxes, each pack box formed of a rectangular block of plastic having a top face, a bottom face, and side faces extended therearound, each box further having a pair of spaced loops formed of nylon cord coupled to the top face of a block at a location near the juncture of the top face with a side face and with a pair spaced loops securable over a cross bar of the first pair and a cross bar of the second pair for allowing a pack box to hang downwards across a cinch portion;

a generally rectangular tarp formed of a cloth material for covering the pack boxes when secured to the cross bars;

a pair of lash lines formed of nylon cord, each lash line used for coupling the pack boxes to the base and cinch rings using knots, thereby securing the pack boxes to the replica; and

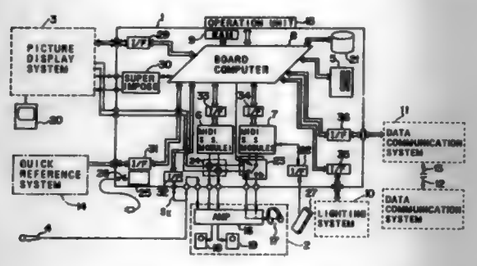
an instruction manual describing how to tie a diamond hitch knot, a double diamond knot, a box-hitch knot, and a sling hitch knot with the diamond hitch knot, double diamond knot, box-hitch knot, and sling hitch knot used for securing the pack boxes to the replica.

5,484,291

APPARATUS AND METHOD OF PLAYING KARAOKE ACCOMPANIMENT

Toshiki Nakai; Mitsuyoshi Amano; Kazuhiro Miyamoto; Yoshiyuki Akiba, and Masuhiro Sato, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 25, 1994, Ser. No. 279,523
Claims priority, application Japan, Jul. 26, 1993, 5-184181
Int. Cl.[6] G09B 5/08; G10H 1/36
U.S. Cl. 434—307 A 11 Claims



1. A karaoke apparatus comprising:
a karaoke information reproducing unit for reproducing MIDI sound source control information stored in a storage unit;
a MIDI sound source control unit for producing first MIDI sound source control information and second MIDI sound source control information from the MIDI sound source control information reproduced by the karaoke information reproducing unit;
a first MIDI sound source for producing first karaoke accompaniment information from the first MIDI sound source control information;
a second MIDI sound source for producing second karaoke accompaniment information from the second MIDI sound source control information; and
a mixing unit for mixing the first karaoke accompaniment information and second karaoke accompaniment information to output mixed karaoke accompaniment information.

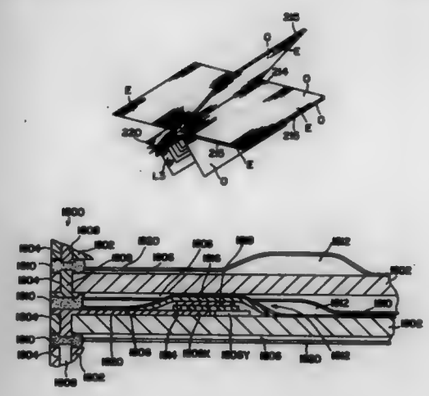
10. A method of playing karaoke accompaniment comprising the steps of:
reproducing first MIDI sound source control information including note data of a plurality of notes and output timing data of the notes from a storage unit;
producing second MIDI sound source control information by modifying the output timing data of the first MIDI sound source control information;
producing first karaoke accompaniment information from the first MIDI sound source control information;
producing second karaoke accompaniment information from the second MIDI sound source control information; and
mixing the first karaoke accompaniment information and second karaoke accompaniment information in accordance with the output timing data of the notes in the first and second MIDI sound source control information.

5,484,292

APPARATUS FOR COMBINING AUDIO AND VISUAL INDICIA

Stephen L. McTaggart, 12037 N. 62nd Pl., Scottsdale, Ariz. 85254

Continuation-in-part of Ser. No. 685,278, Apr. 15, 1991, Pat. No. 5,167,508, which is a continuation-in-part of Ser. No. 396,129, Aug. 21, 1989, abandoned. This application Nov. 24, 1992, Ser. No. 980,649
Int. Cl.[6] G09B 5/00
U.S. Cl. 434—317 36 Claims



1. Apparatus for combining audio and visual indicia comprising:
a plurality of leaves, each leaf comprising pages of visual material opposing sides thereof;
each leaf comprising a modular substrate sheet folded to form the pages and including a plurality of interpage connectors located at predetermined positions;
a plurality of switches each of said switches formed integral to an associated leaf and associated with a portion of said visual material, each switch being operatively connected to respective interpage connectors on said leaf;
a common electronic circuit for selectively effecting respective outputs related to respective portions of said visual material;
interpage conductive paths electrically connecting said interpage connectors of said respective switches to the common electronic circuit, such that operation of said common electronic circuit is effected in accordance with activation of said switches on said respective leaves;
a printed circuit of flexible conductive ink is on the front side of said modular substrate sheets, having electrical connections between said pages at said interpage connectors; and
wherein said interpage conductive paths comprise an interconnect sheet folded into a plurality of flaps having at least one flexible conductor printed thereon for receiving said plurality of leaves, each leaf being sandwiched between corresponding interconnect sheet flaps, wherein said electrical connections between said pages are coupled to corresponding conductors on said interconnect sheet.

18. Apparatus of the type comprising a plurality pages of visual material bound together at one edge, improved wherein:
first and second pages cooperate to form a leaf, each of the first and second pages having interior and exterior surfaces, with the visual material viewable at the exterior surfaces, and disposed such that the interior surfaces face each other within the interior of the leaf; and the leaf includes:
at least a first conductor formed of conductive ink on the interior surface of the first page, disposed in predetermined relationship with an associated portion of the visual material of the leaf;
a spacer interposed between said page interior surfaces; and
a second conductor formed of conductive ink on the interior surface of the second page disposed relative said first conductor and the spacer such that said first and second conductors

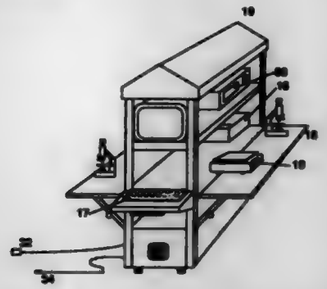
are normally isolated from each other, but effect an electrical connection in response to a predetermined pressure applied thereto.

5,484,293

MOBILE LEARNING LABORATORY FOR MULTI-DISCIPLINE SELF-STUDY

M. Barnecut Ford, and R. Hirst, both of 16233 Reitan Rd., Bainbridge Island, Wash. 98110

Filed Jun. 30, 1994, Ser. No. 269,437
Int. Cl.[6] A47B 39/00
U.S. Cl. 434—432 1 Claim



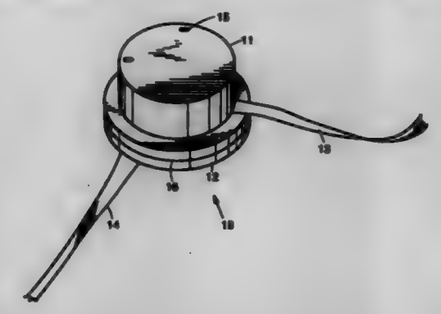
1. A mobile learning laboratory adapted for instruction of a human individually, or a plurality of humans simultaneously, which comprises:
a plurality of experimental devices each including means for demonstrating and teaching;
a plurality of interactive devices for presenting visual, audible, touch, taste, and smell information and receiving human responses;
consumable items comprising a plurality of consumable materials and a plurality of consumable objects associated with said experimental devices and said interactive devices;
a plurality of operator training means, associated with said experimental devices, said consumable items, and said interactive devices for allowing the human to learn the operation and use of said experimental devices, said consumable items, and said interactive devices;
network means for transmitting data between said experimental devices and said interactive devices and remote systems and remote library resources;
electrical apparatus comprising a plurality of electrical connector means associated with said experimental devices and said interactive devices for permanently connecting said experimental devices and said interactive devices for the supply of electrical power and signals;
connection confirmation means, associated with said experimental devices and said interactive devices and said electrical apparatus, for identifying failures of said electrical apparatus and failures of connections between said electrical apparatus;
replenishment warning means, associated with said experimental devices and said consumable items and said interactive devices, for periodic replenishing of said consumable items;
instruction update means, associated with said experimental devices and said consumable items and said interactive devices, for modifying or adding to contents of said instruction;
power supply means, associated with said electrical apparatus, for providing a plurality of electrical power supplies to said experimental devices and said interactive devices;
a mobile platform having handle means and wheel means for moving the platform between locations and a plurality of receptacles and a plurality of surfaces for mounting and storing said experimental devices, said consumable items, and said interactive devices;
said receptacles comprising a plurality of compartments for carrying said consumable items;
working surfaces comprising a plurality of supporting surfaces for said experimental devices and including hinge means and latch means for stowing the working surfaces when moving said mobile platform;
slave platform connection means, associated with said experimental devices, said interactive devices, said network means, said electrical apparatus, said mobile platform, and said working surfaces, for connecting said experimental devices, said interactive devices, said network means, said electrical apparatus on a plurality of said mobile platforms.

5,484,294

BRUSHLESS ROTARY CONNECTOR

Mohi Sobhani, Racine, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 7, 1994, Ser. No. 335,235
Int. Cl.[6] H01R 39/10; 23/66
U.S. Cl. 439—21 15 Claims



1. A brushless rotary connector comprising:
a first housing;
a first relatively flat flexible printed circuit disposed in the first housing and having a conductive contact disposed on a surface thereof;
a first flexible cable coupled to the conductive contact of the first flexible printed circuit for coupling electrical signals thereto and therefrom;
a second housing;
a second relatively flat flexible printed circuit disposed in the second housing and having at least a portion of a conductive ring disposed on a surface thereof that contacts the conductive contact of the first flexible printed circuit;
a second flexible cable coupled to the conductive ring of the second flexible printed circuit for coupling the electrical signals therein and therefrom; and
means for securing the first and second housings together so that the conductive contact and ring contact each other;
wherein the first and second housings and first and second printed circuits are free to rotate relative to each other, and wherein as the housings rotate, the conductive contact and ring of the flexprint circuits maintain electrical contact with each other to couple the electrical signals through the connector.

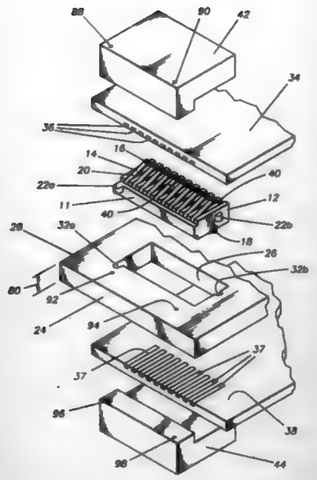
5,484,295

LOW PROFILE COMPRESSION ELECTRICAL CONNECTOR

Thomas E. Mowry, Cardiff, and Peter A. Kurbikoff, San Diego, both of Calif., assignors to Teledyne Electronic Technologies, San Diego, Calif.

Filed Apr. 1, 1994, Ser. No. 222,653
Int. Cl.[6] H01R 9/09
U.S. Cl. 439—66 9 Claims

1. An electrical connector which comprises:



a flat base having a first side, a second side opposite said first side, a first edge, and a second edge opposite said first edge;

a U-shaped recess in said base, said recess consisting of a first open groove on said first side of said base, a second open groove on said second side of said base, and a medial open groove along said first edge of said base, said medial open groove joining said first and second open grooves to form a U-shaped recess wrapping around both said sides and said first edge of said base;

a substantially U-shaped contact arm having a substantially straight medial portion, a substantially straight first contact end and a substantially straight second contact end, said medial portion of said contact arm being mounted in said base near said second edge, said medial portion extending through said base from said first open groove to said second open groove, with said first contact end extending along said first open groove at an oblique angle from said medial portion and said second contact end extending along said second open groove at an oblique angle from said medial portion; and

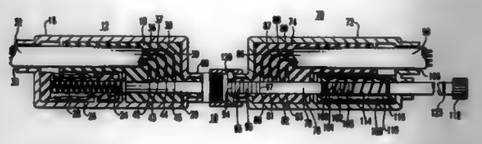
a substantially flat housing having a first side corresponding to said first side of said base and a second side corresponding to said second side of said base, said housing being formed with an aperture therethrough for receiving and stationarily holding said base in said aperture to respectively project said first end and said second end of said contact arm from said first side and said second side of said housing to establish an electrical pathway from said first side to said second side of said housing through said contact arm.

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ELECTRICAL CONNECTOR APPARATUS

Michael A. Taylor, Annapolis, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 14, 1994, Ser. No. 194,893
Int. Cl.[6] H01R *13/44*
U.S. Cl. 439—140 **6 Claims**



1. In an underwater electrical connector having a male plug and a female receptacle, which receptacle includes an electrically insulating inner body having an elongated cylindrical chamber extending therethrough, a spring loaded stopper occupying said chamber when said plug and said receptacle are unmated to exclude the surrounding ambient medium and adapted to move in said chamber against action of said spring when said plug and said receptacle are mated, at least one electrical contact on the inner surface of said chamber, a receptacle cable having at least one electrical conductor connected to said contact, and a fluid-containing pressure compensation bladder into which said stopper may move, said plug comprising:

a) a plug housing including an electrically insulating inner body;

b) locking means for coupling said plug and said receptacle together;

c) said electrically insulating inner body of said plug housing having an elongated cylindrical chamber therethrough which aligns with the cylindrical chamber of said receptacle when said plug and receptacle are coupled together;

d) a rod positioned within said cylindrical chamber of said plug and being moveable outside of said plug housing;

e) said rod including at least first and second spaced apart contacts on the surface thereof, with said contacts being electrically connected to one another;

f) at least one electrical contact on the inner surface of said cylindrical chamber of said plug;

g) a plug cable mounted in said plug housing and having at least one electrical conductor connected to said latter contact;

h) means at one end of said rod for moving said rod, after said plug and receptacle are coupled together, to displace said stopper such that said first contact on said rod engages said electrical contact on the inner surface of said chamber of said receptacle, with the distance between said first and second contacts on said rod being such that when so engaged, said second contact engages said electrical contact on the inner surface of said chamber of said plug thereby making electrical connection between said plug and receptacle cables; and

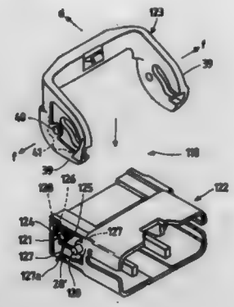
i) said locking means being so constructed and arranged so as to exclude the surrounding ambient medium from contacting any of said contacts on said rod during mating and unmating of said receptacle and plug.

5,484,297

LEVER FITTING-TYPE CONNECTOR

Hiroki Takahashi; Motoyoshi Suzuki, and Naoto Taguchi, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Sep. 27, 1994, Ser. No. 312,798
Claims priority, application Japan, Sep. 27, 1993, 5-239295; Jan. 4, 1993, 5-247721; Jan. 4, 1993, 5-247722
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—157 **7 Claims**



1. A lever fitting-type connector comprising:

a lever returning spring having a connector-side engagement lever and a lever-side engagement lever which extends from a coil portion;

a connector housing including a shaft portion and one spring end engagement portion which are formed on an outer wall surface thereof, and the one spring end engagement portion engaged with the connector-side engagement lever; and

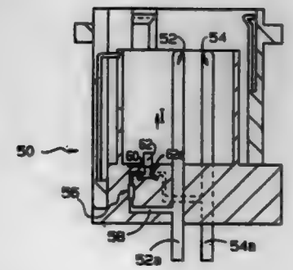
a U-shaped lever having an engagement hole for the shaft-portion and another spring end engagement portion which is engaged with the lever side engagement lever wherein the connector-side engagement lever is linear and the one spring end engagement portion includes a recessed portion defined by a side wall and a bottom wall, an insertion hole communication with the recessed portion for receiving a distal end of the connector-side engagement lever and a retaining pawl extending from said side wall with a lever receiving-gap defined by said pawl and said bottom wall in which said connector-side engagement lever is received and retained.

5,484,298

SELF-TERMINATING XLR CONNECTOR DEVICE

Alan Flum; Michael A. Zampini, both of Boca Raton, and Norman A. Allum, Boynton Beach, all of Fla., assignors to Sony Corporation, Tokyo, Japan, and Sony Electronics Inc., Park Ridge, N.J.

Filed Feb. 8, 1994, Ser. No. 193,538
Int. Cl.[6] H01R *13/703*
U.S. Cl. 439—188 **8 Claims**



1. A self-terminating XLR connector device, matably connectable to a second connector device, comprising:

a housing;

a plurality of male pins terminals positioned in said housing each having a first portion for matably attaching to a corresponding terminal of the second connector device and a second portion for establishing an electrical connection with a signal line;

and a movable switching member positioned in said housing and on one side of said plurality of male pin terminals for detecting when said self-terminating XLR connecting device is matably connected with the second connecting device, said movable switching member having a first position when said self-terminating XLR connecting device is matably connected to the second connector device and a second position when said self-terminating XLR device is unconnected to the second connecting device;

wherein said movable switching member opens an electrical path between first conductive element and a second conductive element when in said first position, and closes said electrical path when in said second position;

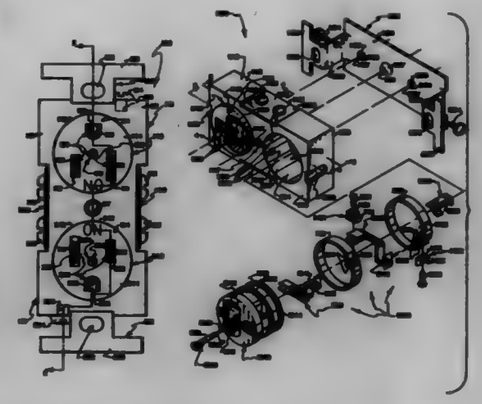
said self-terminating XLR connector device further comprising an internal resistor located along said electrical path in series with said switching member and in said housing.

5,484,299

SWITCHING TYPE ELECTRICAL RECEPTACLES HAVING SELECTIVELY ORIENTABLE PLUG-RECEIVING CONTACT CARRIERS

Marc A. Schlesinger, 24325 Hilltop Dr., Beachwood, Ohio 44122

Filed Jun. 6, 1994, Ser. No. 254,549
Int. Cl.[6] H01R *29/00*
U.S. Cl. 439—188 **20 Claims**



1. An electrical receptacle, comprising:

a) housing means including a nonconductive body formed from electrically insulating material, with the body having exterior wall means for defining a front face and a rear face, and with the body having interior wall means located between the front and rear faces for defining a forwardly opening chamber, with the interior wall means including a generally cylindrical interior wall 1) that extends perimetrically about at least a portion of the chamber, 2) that opens through the front face of the body, and 3) that extends rearwardly from the front face while also extending substantially concentrically about an imaginary forwardly-rearwardly extending center axis that extends substantially centrally through the chamber;

b) carrier means including a generally cylindrical, nonconductive carrier formed from electrically insulating material having a front portion that defines a generally circular front face, and a rear portion formed by rear surfaces that include a generally cylindrical exterior wall that is sized and configured to permit the rear portion of the carrier to be moved along the center axis relative to the body so as to effect insertion of the rear portion of the carrier into the chamber of the body to an "assembled" configuration wherein the exterior surface of the carrier extends concentrically about the center axis while being surrounded in relatively closely spaced relationship by the interior surface of the body so that, with the interior surface of the body and the exterior surface of the carrier being sized and configured such that, when the the carrier and the body are in said "assembled" configuration, the carrier can be rotated about the center axis relative to the body between a first relative orientation that defines an "off" position and a second relative orientation that defines an "on" position;

c) mounting means connected to the body and to the carrier for retaining the carrier and the body in said assembled position while, at the same time, permitting the carrier to rotate about the center axis relative to the body between said "off" and "on" positions;

d) carrier passage means defined by the carrier including a plurality of carrier passages that each have 1) an associated forward end region, 2) an associated rearward end region, and 3) an associated connecting region that extends between and communicates the associated forward and rearward end regions, with the forward end regions opening through the front face of the carrier at spaced locations, and with the rearward end regions opening through the rear surfaces of the carrier at spaced locations;

e) housing passage means defined by the body including a plurality of body passages that each have 1) an associated interior end region, 2) an associated exterior end region, and 3) an associated communicating region that extends between and communicates the associated interior and exterior end regions, with the interior end regions opening through the interior wall means at spaced locations, and with the exterior end regions opening through the exterior wall means at spaced locations;

f) carrier contact means including a plurality of electrically conductive members each of which extends through a separate one of the carrier passages for defining 1) an associated female contact, 2) an associated sliding contact, and 3) an associated interconnecting portion, with the associated female contact being situated near the forward end region of the associated carrier passage, with the associated sliding contact being situated near the rearward end region of the associated carrier passage, and with the associated interconnecting portion extending uninterrupted through the associated carrier passage to electrically interconnect the associated female electrical contact and the associated sliding contact;

g) housing contact means including a plurality of electrically conductive elements each of which extends through a separate one of the body passages for defining 1) an associated interior contact, 2) an associated exterior contact, and 3) an associated intercoupling portion, with the associated interior contact being situated near the interior end region of the associated carrier passage, with the associated exterior contact being situated near the associated exterior end region, with the associated intercoupling portion extending uninterrupted through the associated body passage to electrically interconnect the associated interior contact and the associated exterior contact;

h) with the sliding contacts and the interior contacts being configured such that, when the carrier and the body are in said "assembled" configuration and are rotated relative to each other about the center axis to said "on" position, each of the sliding contacts engages and establishes electrical connection with a separate one of the interior contacts; and,

i) with the sliding contacts and the interior contacts being configured such that, when the carrier and the body are in said "assembled" configuration and are rotated relative to each other about the center axis to said "off" position, at least one of the sliding contacts disengages and provides no electrical connection with any of the interior contacts.

5,484,300

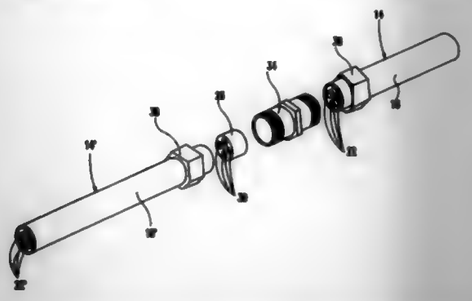
PRE-BUSSED RIGID CONDUIT

Robert I. Whitney, Brookville, Ind.; Lisa C. Simmering, Fair Play, S.C.; Glenn S. O'Nan, Hamilton, Ohio; Aubrey Bryant, Liberty, Ind., and Steven F. Reed, Oxford, Ohio, assignors to Square D Company, Palatine, Ill.

Continuation-in-part of Ser. No. 912,071, Jul. 8, 1992, Pat. No. 5,266,044. This application Jun. 30, 1993, Ser. No. 85,341

Int. Cl.[6] H01R *4/60*

U.S. Cl. 439—207 **15 Claims**



1. A section of pre-bussed conduit comprising in combination:

a substantially rigid enclosure extending along a longitudinal axis between a first end region and a second end region, said enclosure defining an inside surface having a plurality of pockets extending along said longitudinal axis between said first and second end regions;

a plurality of substantially rigid conductors within said enclosure, said plurality of rigid conductors extending from said first end region of said enclosure to said second end region of said enclosure, each said conductor being partially enclosed within an insulating sheath and being received within one of said pockets;

a support member for supporting said plurality of conductors within said enclosure in alignment with said longitudinal axis, said support member separating said plurality of conductors one from the other; and

said plurality of rigid conductors forming a pattern that is uniform in cross-section along the length of said section so that said plurality of rigid conductors form a pattern of male connectors on each end of said section.

5,484,301

INERTIA LOCKING-TYPE WATERPROOF CONNECTOR

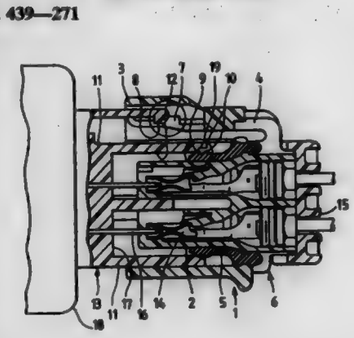
Seiji Koumatsu, and Kimihiro Abe, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jul. 5, 1994, Ser. No. 266,874

Claims priority, application Japan, Jul. 6, 1993, 5-166803

Int. Cl.[6] H01R *13/52*

U.S. Cl. 439—271 **8 Claims**



1. An inertia locking-type waterproof connector comprising:

a female connector housing;

a male connector housing for connection with the female connector housing;

an elastic lock arm provided on one of the male connector housing and the female connector housing, wherein the elastic lock arm includes a retaining projection;

an engagement portion provided on the other of the male connector housing and the female connector housing, said engagement portion for engaging with the retaining projection;

a packing interposed between the male connector housing and the female connector housing for providing a waterproof seal, said packing including a seal lip in sliding contact with either the male connector housing or the female connector housing; and

wherein the retaining projection, engagement portion, and packing are positioned so that, during insertion of the male connector housing into the female connector housing, the initial abutment of the retaining projection with the engagement portion coincides with the initial abutment of the seal lip with either the male connector housing or the female connector housing.

5,484,302

LATCHING DEVICE AND A CARD EDGE CONNECTOR WITH SUCH A LATCHING DEVICE

Tomoo Yamada, Yokohama, and Yoshitsugu Fujiura, Tokyo, both of, Japan, assignors to The Whitaker Corporation, Wilmington, Del.

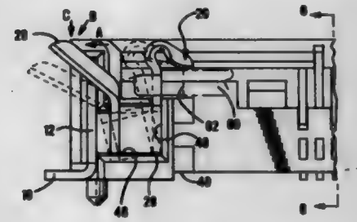
Filed Mar. 18, 1994, Ser. No. 210,801

Claims priority, application Japan, May 31, 1993, 5-034102

U

Int. Cl.[6] H01R *4/38*

U.S. Cl. 439—326 **15 Claims**



1. A card edge connector having a latching device and an auxiliary board, said latching device having a first arm and a second arm, wherein the second arm includes a latching unit and a latching release unit, characterized in that:

when the latching device is inserted into a receptacle compartment in the connector, the first arm is biased (resiles) toward the second arm for fixing the latching device in the receptacle compartment, and wherein the lasching unit includes arcuate shoulders to fit into arcuate recesses of the auxiliary board.

5,484,303

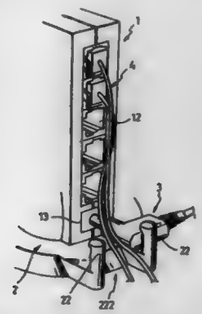
STRUCTURE OF A HUB

Dean Cheng, Hsin Chu, Taiwan, Prov. of China, assignor to D-Link Corporation, Hsin Chu, Taiwan, Prov. of China

Filed Nov. 9, 1994, Ser. No. 338,102

Int. Cl.[6] H01R *4/50*

U.S. Cl. 439—345 **4 Claims**



1. A hub for distribution of a plurality of network signal transmission lines, comprising:

a hub body having at least one protrusion raised from a bottom side with a plurality of projecting strips radially extended from said at least one protrusion;

a base plate having at least one mounting hole on a top side of said plate with a plurality of mounting slots spaced around said mounting hole wherein said at least one protrusion can be accommodated into said at least one mounting hole;

at least one upright post disposed at one end on the top side of said base plate; and

wherein when said hub body is fastened to said base plate, said at least one upright post is spaced from said hub body at a distance in which an electric plug of a the power cable can be fitted.

5,484,304

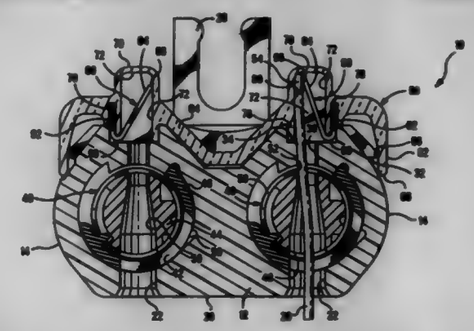
ELECTRICAL CONNECTOR WITH WIRE INDICATOR AND WIRE RETAINER

Harry M. Capper; Sam Denovich, both of Harrisburg, Pa.; Kenneth C. Hawk, Clemmons, N.C.; David R. Radliff, Harrisburg, and James W. Robertson, Oberlin, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 6, 1994, Ser. No. 254,482

Int. Cl.[6] H01R *4/24*

U.S. Cl. 439—409 **17 Claims**



7. An electrical connector of the type including wire-receiving openings thereinto for termination of an end of a wire length to a terminal within the connector, comprising:

an assembly including a housing containing at least one terminal disposed in a terminal-receiving cavity thereof and having at least one wire-receiving aperture thereinto along a wire-receiving face of said housing such that an end of a wire is insertable for termination to said terminal for electrical connection to another conductor; and

a wire retainer provided within the assembly having at least one wire retention section associated with at least one said wire-receiving aperture such that a portion of a said wire is engaged and retained fully inserted within the assembly by said wire retention section to resist inadvertent retreat of said wire end toward said wire-receiving aperture after full insertion, prior to termination by said terminal.

5,484,305

MICRO-CONNECTOR AND AUTOMATED TOOL FOR APPLICATION THEREOF

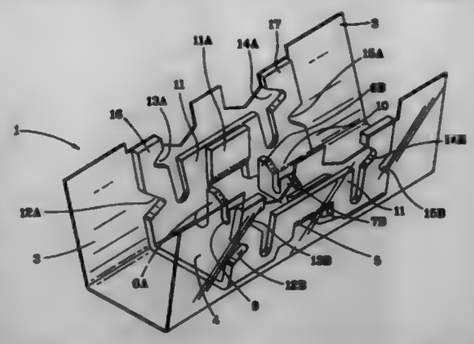
Milton E. Diniz, and Vagner Fuzetti, both of Braganca Paulista, Brazil, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 28, 1994, Ser. No. 277,467

Claims priority, application Brazil, Jul. 28, 1993, 9303027

Int. Cl.[6] H01R *4/44*

U.S. Cl. 439—421 **10 Claims**



1. An electrical connector with a body member having a bottom portion with electrical terminals and a pair of crimpable wall

portions extending therefrom, said walls define a generally U-shaped cross-section of said body member, said electrical connector comprising:

at least a pair of deflectable legs formed on opposed sides of said body member on respective walls thereof, said deflectable legs are adapted for crimpable engagement with wires to be terminated in said electrical terminals, and at least one of said deflectable legs comprises a pair of cut-outs for facilitating deformation of said at least one deflectable leg; and

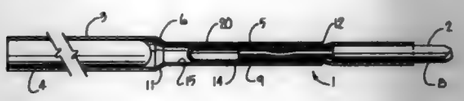
a rod member formed on each of said respective walls adjacent to a respective one of said deflectable legs, each said rod member is adapted for engaging and stuffing said wires into said electrical terminals.

5,484,306

QUICK-CONNECT TERMINAL AND RECEPTACLE

Terry P. Mawby, Paola, and Ronny N. Galloway, Louisburg, both of Kans., assignors to Interconnect Devices Inc., Kansas City, Kans.

Filed Oct. 20, 1994, Ser. No. 326,521
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—441 **3 Claims**



1. A quick-connect electrical connector assembly comprising:

a) a tubular receptacle for holding an electrical test probe, said receptacle having an open, terminal end;

b) a tubular terminal sized for insertion within said receptacle terminal end, said terminal having an inner bore and with at least one barb protruding into said inner bore and having a sharp edge so as to engage and trap a connector wire inserted into said terminal with said wire pinched within said inner bore by said barb and inhibited from removal; and

c) a sealing ring extending between said receptacle and said terminal for substantially maintaining a vacuum seal.

5,484,307

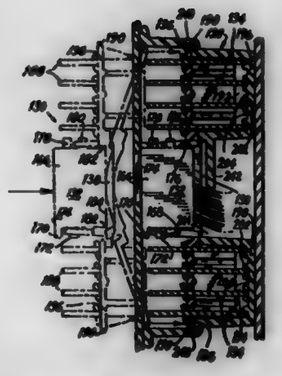
FLUSH MOUNTED TELEPHONE JACK

Jay Garthwaite, Fort Morgan; Kenneth Hotchkiss, Golden; Arthur B. Woodward, Lakewood; Brian Lee, Longmont, all of Colo.; Walter C. Lewis, East Northport, and Ferdinand E. Orbeta, Briarwood, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Continuation of Ser. No. 322,650, Oct. 13, 1994, abandoned, which is a continuation of Ser. No. 156,176, Nov. 22, 1993, Pat. No. 5,356,310, which is a continuation of Ser. No. 921,194, Jul. 28, 1992, Pat. No. 5,266,049, which is a continuation of Ser. No. 692,109, Apr. 26, 1991, Pat. No. 5,133,675, which is a continuation of Ser. No. 578,038, Aug. 14, 1990, abandoned, which is a continuation of Ser. No. 447,339, Dec. 12, 1989, abandoned, which is a continuation of Ser. No. 310,269, Feb. 13, 1989, abandoned, which is a continuation of Ser. No. 161,531, Feb. 29, 1988, abandoned, which is a continuation of Ser. No. 15,757, Feb. 6, 1987, abandoned. This application May 11, 1995, Ser. No. 438,808
Int. Cl.[6] H01R *13/60*
U.S. Cl. 439—535 **10 Claims**

1. A wiring device capable of installation within a standard electrical outlet box for electrically connecting at least two conductors comprising:

a. a housing member fabricated of insulating material having a top wall, a bottom wall and two side walls each joined along one marginal edge to a back wall to form a housing member enclosed on five sides and open on the front face, said top and bottom walls each having a recess therein;



b. at least one pair of ribs on the interior of said back wall to receive therebetween and support a second end of a connector terminal;

c. at least one connector terminal having a first end to make electrical contact with an electrical conductor and a second end adapted to fit between said at least one pair of ribs to position and support said second end of said at least one connector terminal;

d. a flexible and resilient support made of insulating material and having a first end and a second end and having at least one aperture therethrough for receiving said at least one connector terminal at a position intermediate said first and second ends of said connector terminal, said support having a length greater than the distance between the inside surfaces of said top wall and said bottom wall; and

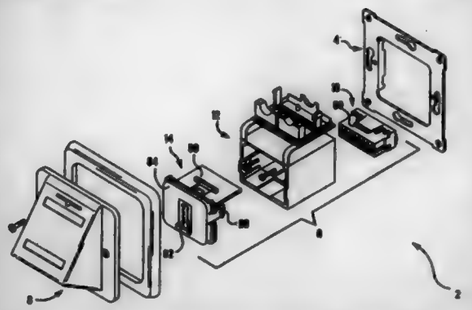
e. said support having an initial linear configuration and adapted to be bowed to decrease the effective length thereof so that it can be advanced through said housing member open front face and allowed to return to its initial configuration with said first end in one of said top and bottom wall recesses and said second end in the other of said top and bottom recesses and the second end of said at least one connector terminal inserted between said at least one pair of ribs.

5,484,308

DATA COMMUNICATIONS OUTLET KIT

Klaus-Peter Gotz, Lorach; Rainer Schwan, Einhausen, and Günter Feldmeier, Lorach, all of, Germany, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Apr. 15, 1994, Ser. No. 230,054
Claims priority, application United Kingdom, Apr. 29, 1993, 9308850
Int. Cl.[6] H01R *13/60*
U.S. Cl. 439—536 **21 Claims**



1. A communications outlet kit for electrical connection between an electrical communications cable and an external connector, the outlet kit comprising a connector module, the connector module

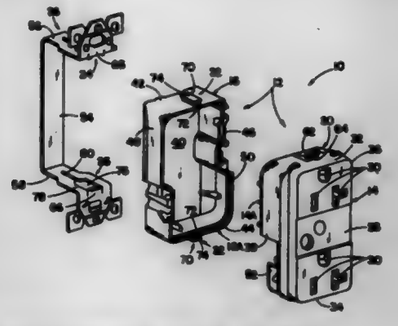
comprising a housing, an insert for electrical connection to the external connector, and a connector for electrical connection between the insert and the communications cable, the insert and the connector mountable to the housing; the outlet characterized in that the housing is one integral part that is breakably separable into individual housing components for assembly of the connector module.

5,484,309

ELECTRICAL RECEPTACLE ASSEMBLY WITH INTERFERENCE FITTING AND LATCHING PARTS

Carol Z. Howard, Fairfield, and Ward E. Strang, Oxford, both of Conn., assignors to Hubbell Incorporated, Orange, Conn.

Filed Oct. 31, 1994, Ser. No. 331,981
Int. Cl.[6] H01R *13/74*
U.S. Cl. 439—539 **20 Claims**



1. An electrical receptacle assembly, comprising:

(a) a housing having a front cover and a back cover, said back cover being separate from and mateable with said front cover;

(b) a mounting bridge fitted behind said back cover and over spaced portions of said mated front and back covers; and

(c) a plurality of pairs of securement elements defined on respective opposite wall portions of said front and back covers and on respective opposite portions of said mounting bridge being disposed adjacent to said opposite wall portions of said front and back covers, said pair of securement elements on said back cover being interferance fittable with one pair of said securement elements on said mounting bridge, and said pair of securement elements on said front cover being latchable with another pair of said securement elements on said mounting bridge, for releasably securing said mated front and back covers to said mounting bridge.

5,484,310

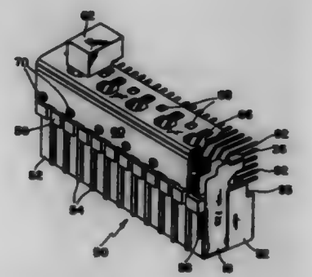
SHIELDED ELECTRICAL CONNECTOR

David M. McNamara, Lyndeborough; Daniel B. Provencher, Weare, both of N.H.; Philip T. Stokoe, Attleboro, Mass.; William E. Howard, New Boston, N.H., and Mark W. Gallus, Somerville, Mass., assignors to Teradyne, Inc., Boston, Mass.

Division of Ser. No. 43,195, Apr. 5, 1993, Pat. No. 5,403,206. This application Mar. 6, 1995, Ser. No. 399,393
Int. Cl.[6] H01R *13/658*
U.S. Cl. 439—608 **25 Claims**

1. A connector for electrical signals of the type having a first housing and a second housing having openings therein and being adapted to be mated to the first housing, comprising:

a) a first plurality of conductive members attached to said first housing, each of said conductive members having a projecting portion disposed to project into an opening in the second housing when the first and second housings are mated, with the projecting portions disposed in a rectangular array having a plurality of adjacent rows with the same number of conductive member in each row;



b) a second plurality of conductive members, each disposed within an opening in the second housing, each of the second plurality of conductive members disposed to make contact with a projecting portion of at least one of the first plurality of conductive members when the first and second housings are mated; and

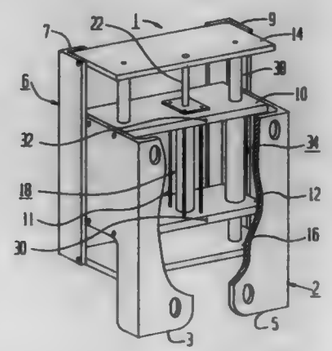
c) at least one conductive sheet mounted in the second housing and disposed between two adjacent rows of the projecting portions when the first housing and second housing are mated, said conductive sheet being attached to at least one of the conductive members of the second housing.

5,484,311

VARIABLE HEIGHT OUTBOARD MOTOR MOUNT

Timothy P. Detwiler, Coatesville; Charles G. Detwiler, Jr.; Edward C. Berdick, both of Downingtown, and Peter M. Draper, Honey Brook, all of Pa., assignors to Detwiler Industries, Inc., Honey Brook, Pa.

Filed Feb. 28, 1994, Ser. No. 203,411
Int. Cl.[6] B63H *20/08*
U.S. Cl. 440—61 **20 Claims**



1. A motor mount for adjustably supporting an outboard motor from a transom of a boat, said motor mount comprising:

first and second brackets;

means for connecting one of said brackets to a transom;

means for mounting an outboard motor to the other of said brackets;

guide means, connected to said first and second brackets, for constraining said brackets to relative movement in a predetermined, substantially straight, path, said path being substantially vertical when said one of said brackets is connected to a transom by said connecting means;

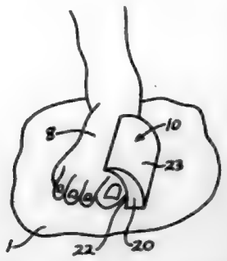
means, connected to said first and second brackets, for effecting movement of said brackets relative to each other in said path;

in which said first bracket comprises first and second plates disposed with the first plate above the second plate, and means rigidly connecting said first and second plates together;

in which said second bracket comprises third and fourth plates, the third plate being located above said first plate and the fourth plate being located below said second plate, and means rigidly connecting the third and fourth plates together; and

in which said guide means comprises at least one elongated tubular member extending from said first plate to said second plate, and being rigidly connected to said first and second plates, a rod extending through said tubular member, said rod being rigidly connected to said third and fourth plates, and means comprising a pair of bearings mounted in said tubular member, said bearings being spaced from each other in the direction of the length of said tubular member, said rod extending through said bearings and being slidable therein but held thereby against translation relative to said substantially straight path.

5,484,312
SURFBOARD FOOT PIECE
Jesse G. Zepeda, 4644 Spruce, Bellaire, Tex. 77401
Filed Jul. 22, 1994, Ser. No. 278,832
Int. Cl.[6] B65B 35/79
U.S. Cl. 441—74 9 Claims

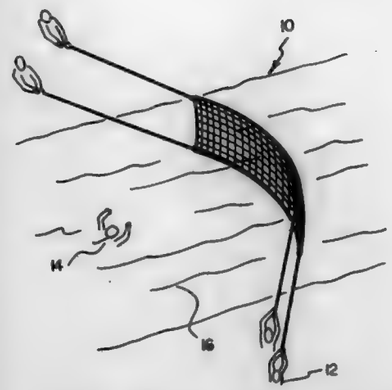


1. An improved foot piece for attachment to a surfboard, said foot piece comprising an elongated fin-like body having an elongated flat base for attachment to the deck of said surfboard and upwardly projecting inner and outer side surfaces both of which curve in the same direction and terminate in an elongated tip so that said fin-like body, when viewed in cross section, curves toward said one direction and decreases in width from said base toward said tip, said inner side surface providing in cooperation with said surfboard deck a laterally unobstructed curved pocket for unobstructed lateral engagement by the medial side of a surfboard users foot, said elongated tip being and remaining free of any attachments so that during use lateral movement of said users foot into and out of engagement and with said curved pocket is totally unimpeded.

5,484,313
RESCUE NET
Don P. Rachal, and Shirley J. Rachal, both of 2511 Woodland Rd., Mobile, Ala. 36693
Filed Jan. 19, 1995, Ser. No. 375,588
Int. Cl.[6] B63C 9/00
U.S. Cl. 441—80 2 Claims

1. A rescue net for providing a way of capturing a human victim immersed in rushing water such as that found in a rapidly flowing river or flash flood area comprising, in combination:

a net formed of a flexible foldable nylon material coated with polypropylene and having a tensile strength of between about 6,000 to 9,000 pounds, the net having a rectangular border formed of a top edge, a bottom edge, two opposed side edges extended between the top edge and bottom edge to create four corners, an eyelet coupled within each corner, and a grommet secured within each eyelet and with the border having a length of about 50 feet and a width of about 10 feet, the net



further having a mesh portion extended across and coupled to the border with the mesh portion formed of a first set of parallel spaced flat straps extended perpendicularly between and coupled to the top and bottom edges of the border and a second set of spaced parallel flat straps extended perpendicularly between and coupled to the side edges of the border and also coupled to the first set of straps and with the first set and second set of straps in combination defining a matrix of rectangular through holes, the net additionally including a plurality of hand straps secured to the mesh portion for allowing a human victim a firm grip when captured;

four rigid metal oval openable carabiners with each carabiner removably secured to a separate grommet of the net;

four pieces of rope with each piece having a proximal end fastened to a separate carabiner and a distal end holdable by a user for allowing the net to be placed in an extended configuration;

a plurality of battery-powered water-proof strobe lights removably secured to the top edge of the net for illuminating an area near the net and providing a visual indication to a human victim of the net's presence;

a carrying bag for carrying the net, carabiners, pieces of rope, and strobe lights, the carrying bag formed of a nylon material coated with polypropylene, the carrying bag having a bottom portion with a side portion integral with and extended upwards from the bottom portion to define a hollow interior and a central opening for allowing access to the interior, the carrying bag further having a draw-string closure coupled about the central opening and a grommet secured to the bottom portion, the carrying bag additionally including a handle coupled thereto and a pair of shoulder straps coupled thereto; and

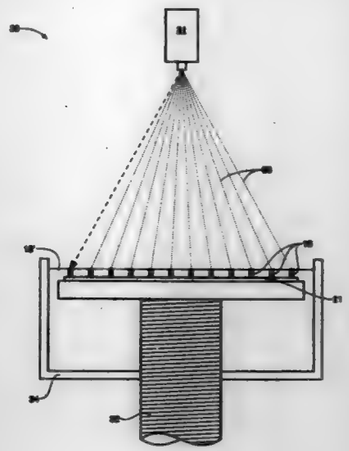
wherein the net, carabiners, pieces of rope, and strobe lights in combination weigh no more than 30 pounds.

5,484,314
MICRO-PILLAR FABRICATION UTILIZING A STEREOLITHOGRAPHIC PRINTING PROCESS
Warren M. Farnworth, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.
Filed Oct. 13, 1994, Ser. No. 322,903
Int. Cl.[6] H01J 9/18
U.S. Cl. 445—24 20 Claims

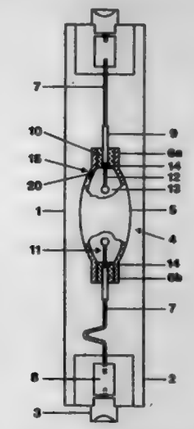
1. A method for fabricating columnar supports used for an evacuated display, said method comprising the following steps:

covering an electrode plate with a layer of material having a depth, said material for forming said columnar supports, said depth of said layer representing the height of said columnar supports; and

selectively irradiating said material with light energy in a pattern causing said material to harden, said hardened material comprising said columnar supports.



5,484,315
METHOD FOR PRODUCING A METAL-HALIDE DISCHARGE LAMP WITH A CERAMIC DISCHARGE VESSEL
Stefan Juengst, Zorneding; Stefan Kotter, Puchheim; Hartmuth Buttlan, Feuchtwangen; Roland Huettinger, Jesenwang, and Juergen Helder, Munich, all of, Germany, assignors to Patent-Treuhand-Gesellschaft F. Elektrische Gluehlampen mbH, Munich, Germany
PCT No. PCT/DE92/00372, § 371 Date Apr. 7, 1994, § 102(e) Date Apr. 7, 1994, PCT Pub. No. WO93/07638, PCT Pub. Date Apr. 15, 1993
PCT Filed May 6, 1992, Ser. No. 211,608
Claims priority, application Germany, Jan. 11, 1991, 9112690 U
Int. Cl.[6] H01J 9/32;9/38;9/40
U.S. Cl. 445—26 22 Claims



1. A method for producing a metal-halide discharge lamp, which has a ceramic discharge vessel (4) defining two ends (6a, 6b) and enclosing a discharge volume, one (6a) of said ends defining a pump end,

two sealing means, each sealing means closing one of the ends,

two electrodes (11) located in the discharge volume;

two electrically conductive ;lead-throughs, one each for one electrode and connecting a respective one of said electrodes through the respective sealing means which are located at said ends (6a, 6b) of the ceramic discharge vessel (4);

characterized by the following steps:

a) producing a first electrode system and a second electrode system, at least one of said electrode systems comprising one of the electrodes (11) and one of the sealing means, including one of the lead-throughs;

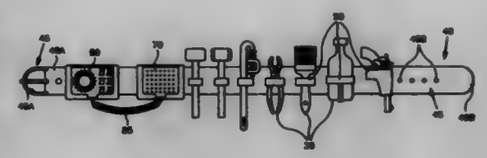
b) equipping the two ends (6a, 6b) each with a respective electrode system;

c) sealing off the two ends by heating, while leaving open, in the vicinity of the first or pump end (6a), a filling bore (15; 24; 29; 31; 31'; 36) which connects the discharge volume to an external space and sealing off the second end (6b) completely as a blind end;

d) evacuating and filling the discharge volume through the filling bore (15; 24; 29; 31; 31'; 36); and in the filling process introducing a solid body containing metal halide into the discharge volume:

e) closing the filling bore (15: 24; 29; 31; 31'; 36) and sealing the discharge volume in gas-tight fashion by slowly heating the region of the bore over a large surface area.

5,484,316
SOUND EFFECTS BELT
Mark E. Poirier, 1041 Westward Way, Costa Mesa, Calif. 92627
Filed Nov. 29, 1994, Ser. No. 346,573
Int. Cl.[6] A63H 33/00;33/30;5/00
U.S. Cl. 446—28 7 Claims



1. A novelty for producing audible sounds for play comprising:

a utility strap-on belt for wearing around the waist, the belt having two-part attachment means, a first end of the belt having a first part of the two-part attachment means, with a second end of the belt providing a second part of the two-part attachment means, the first and the second parts being engagable for closing the belt around a waist of a wearer so that the belt is secured therearound, the belt further providing a plurality of prop holding means;

an electrical circuit attached to the strap-on belt providing, sound signal storage means for storing a plurality of sound effects signals, sound signal selection means for choosing at least one of the sound effects signals for playback, playback means for enabling the playback of the selected sound effects signals, sound clearing means for clearing previously selected sound effects signals, sound output means for producing audible sounds from the selected sound effects signals, and a portable electrical power source;

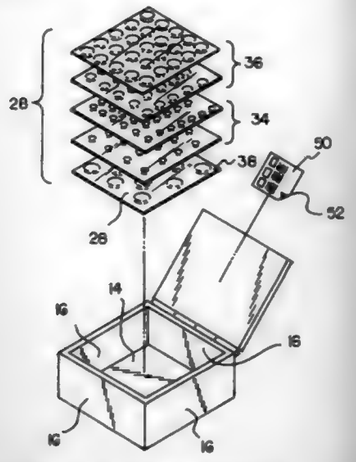
a plurality of props, each of the prop holding means adapted for carrying at least one of the props and for holding the electrical circuit;

at least one of the sound effects being similar to a sound made by at least one of the props, whereby, in play, a prop may be removed from the belt and used in play while enunciating the corresponding sound from the sound output means to provide for more realistic play.

5,484,317

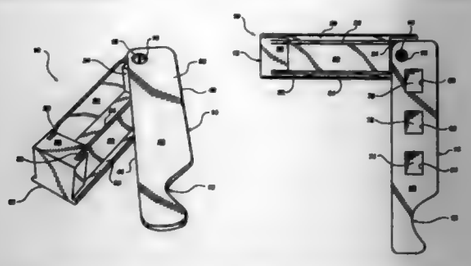
Patent Not Issued For This Number

5,484,318
STRESS REDUCTION KIT
Todd M. Mayert, and Curtis Mayert, both of 2613 20th Street SW, Calgary, Alberta, Canada
Filed Mar. 6, 1995, Ser. No. 400,744
Int. Cl.[6] A63H *33/00*
U.S. Cl. 446—75 **6 Claims**



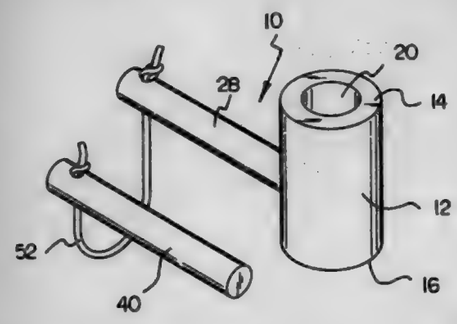
3. A novelty stress reduction kit comprising:
a container having a hollow interior and an opening for allowing access to the interior;
a lid securable over the opening of the container;
a set of sheets of bubble-type packing material, each sheet having a plurality of hand-burstable air-filled bubbles formed thereon, the sheets of the set positionable in stacked relation to define a deck and with the deck snugly positionable within the interior of the container with the lid closeable thereover, the set of sheets including a plurality of subsets of sheets and with the subsets of sheets each having different characteristic colors;
a color-coded instruction sheet associating a color of a subset of sheets with a description of a type of stress, whereby a user determines the type of stress currently being experienced and notes the associated color, selects a sheet with the same color as the noted color, and then bursts the bubbles on the sheet for relieving the stress.

5,484,319
BOX CALL APPARATUS AND METHOD
Michael L. Battey, Pineville, N.C., assignor to Primos, Inc., Jackson, Miss.
Filed Jan. 10, 1995, Ser. No. 370,710
Int. Cl.[6] A63H *5/00*
U.S. Cl. 446—397 **3 Claims**



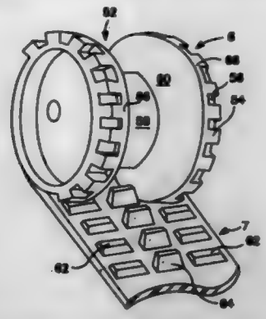
1. A box call apparatus for imitating natural sounds of game animals, comprising:
a base;
a box frame secured to the base;
a vertical wall mounted in the box frame, the vertical wall having a top edge surface;
a lid pivotally coupled to the box frame, the lid comprising a handle portion, a main body section, and a sound producing section, the main body section extending from the handle portion, the main body section including a top surface, a contoured bottom surface, and a recessed area formed in the bottom surface, the sound producing section being mounted to the main body section for contacting the top edge surface of the vertical wall to produce sounds to imitate natural sounds of a game animal, the sound producing section being generally wedge-shaped, the recessed area being sized to receive the generally wedge-shaped sound producing section, the main body section having a contoured surface surrounding the recessed area, the sound producing section being mounted in the recessed area such that the contoured bottom surface and the contoured surface of the sound producing section join to form a contiguous surface;
the main body section including a length and a plurality of cavities along the length for mounting weight materials to change the weight of the lid.

5,484,320
ANIMAL CALL
Earl J. Becker, 34 Church La., Wayne, N.J. 07470
Filed May 12, 1995, Ser. No. 440,488
Int. Cl.[6] A63H *5/00*
U.S. Cl. 446—418 **3 Claims**



1. An animal call for creating a sound similar to eating sounds made by squirrels and woodpeckers comprising, in combination:
a cylindrical drum having a first end, a second end, and an intermediate extent therebetween, the first end having an aperture formed therein, the second end having an aperture formed therein, the aperture formed in the first end having a width about twice as wide as the aperture formed in the second end, the intermediate extent having a receiving recess formed therein;
an elongated handle having a first end, a second end, and an intermediate extent therebetween, the first end secured within the receiving recess formed in the intermediate extent of the cylindrical drum, the elongated handle positioned orthogonally to the cylindrical drum, the elongated handle having a through hole formed inwardly of the second end thereof;
a striking bar having a first end, a second end, and an intermediate extent therebetween, the striking bar having a through hole formed inwardly of the second end thereof;
a leather thong having a first end and a second end, the first end secured to the through hole of the elongated handle, the second end secured to the thorough hole of the striking bar.

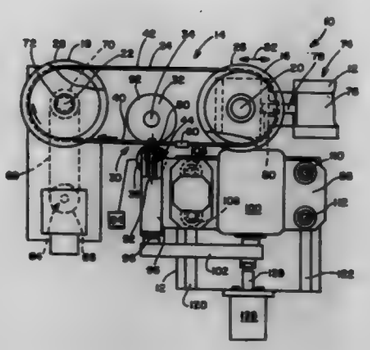
5,484,321
RADIO-CONTROLLED TRACK VEHICLES
Zenichi Ishimoto, Tokyo, Japan, assignor to Nikko Co., Ltd., Tokyo, Japan
Filed Feb. 7, 1992, Ser. No. 832,571
Int. Cl.[6] A63H *17/14*; B62D *55/205*; F16H *7/02*
U.S. Cl. 446—433 **7 Claims**



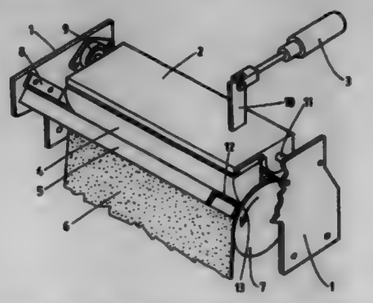
1. A radio-controlled track-driven toy vehicle, comprising a vehicle chassis having at least one electric motor, a pair of circular rear drive wheels driven by said at least one electric motor, a pair of front driven wheels, and a pair of endless drive belts each travelling about a respective one of said rear drive wheels and front driven wheels, wherein said rear drive wheels each comprise a central circumferential groove dividing said rear drive wheels into a pair of opposed radially-outwardly extending annular portions comprising wheel teeth alternating with recesses, said central cylindrical groove of said rear drive wheels being defined by a pair of opposed radial shoulders extending radially outwardly to the radially outermost surfaces of said wheel teeth, thereby segregating said recesses from said groove, said drive belts each comprising two rows of lateral belt teeth meshing with said wheel teeth and a third row of central belt teeth being received within said central recess, each of said two rows of lateral belt teeth being displaced from said third row of central teeth, thereby defining a longitudinally extending flat belt region between the third row of central teeth and each of the two rows of lateral teeth, said front driven wheels comprising a central circumferential groove dividing each of said front wheels into a pair of opposed radially-outwardly extending portions having smooth cylindrical surfaces.

5,484,322
METHOD OF REMOVING AN EXPOSED CORD ON A POWER TRANSMISSION BELT, AN APPARATUS FOR CARRYING OUT THE METHOD, AND A POWER TRANSMISSION BELT MADE BY PRACTICING THE METHOD
Takaji Nagai; Toshiki Sawauchi, both of Kobe, and Mitsuhiro Ishihara, Okawa, all of, Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan
Division of Ser. No. 887,345, May 21, 1992, Pat. No. 5,392,567. This application Nov. 10, 1994, Ser. No. 337,933
Claims priority, application Japan, May 31, 1991, 3-156726; Jun. 17, 1991, 3-54467
Int. Cl.[6] B24B *49/00*
U.S. Cl. 451—5 **30 Claims**

1. A method of removing a portion of a cord that is exposed on a side surface of a power transmission belt, said method comprising the steps of:
providing an endless power transmission belt having inside and outside surfaces, laterally oppositely facing side surfaces, and a cord exposed on a part of one of the side surfaces;
running the belt in an endless path; and
grinding the cord that is exposed on the part of the one side surface as the belt is run in the endless path without grinding the entirety of the one side surface to thereby avoid fraying of the cord at the one side surface.



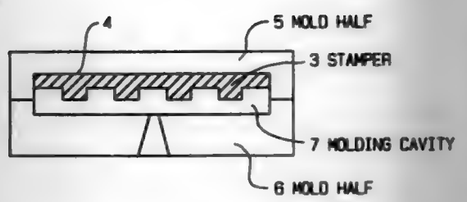
5,484,323
BELT CLEANER
Robert K. Smith, 52 Drayton Street, Bowden, 5007, Australia
PCT No. PCT/AU92/00373, § 371 Date May 5, 1994, § 102(e) Date May 5, 1994, PCT Pub. No. WO93/01896, PCT Pub. Date Feb. 4, 1993
PCT Filed Jul. 22, 1992, Ser. No. 185,793
Claims priority, application Australia, Jul. 22, 1991, PK7332
Int. Cl.[6] B24B *53/10*
U.S. Cl. 451—10 **7 Claims**



1. A cleaning unit for cleaning an abrasive surface of a moving sanding belt in a sanding machine having a casing, said unit including:
a cartridge holder containing a cleaning cartridge for mounting in the interior of said casing of the sanding machine adjacent said moving sanding belt;
at least one fluid-operated cylinder connected to said cartridge holder;
sensing means provided on said belt sander to sense passage of material through said belt sander; and
means actuated by said sensing means for actuating said cylinder upon the passage of material to be sanded passing through the sanding machine, so that upon actuation of the said cylinder, said cleaning cartridge moves to contact the said moving sanding belt.

5,484,324
STAMPER FOR INJECTION MOLDING
Norio Okabayashi; Motohiro Kawasaki, and Kazushi Takahashi, all of Himeji, Japan, assignors to Daicel Chemical Industries, Ltd., Japan
Division of Ser. No. 773,750, Oct. 10, 1991, abandoned. This application Oct. 23, 1992, Ser. No. 965,461
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—28 **4 Claims**

1. A process for fabricating a stamper for injection molding a plastic substrate for an optical disk comprising the steps of



(a) polishing a rear-surface of the stamper to a surface roughness value less than 0.1 S, and

(b) re-roughening the polished rear-surface to a surface roughness value between 0.3 to 2.0 S, wherein both said surface roughness values are measured according to Japanese Industrial Standard JIS B 0601.

5,484,325

BLAST NOZZLE CONTAINING WATER ATOMIZER FOR DUST CONTROL

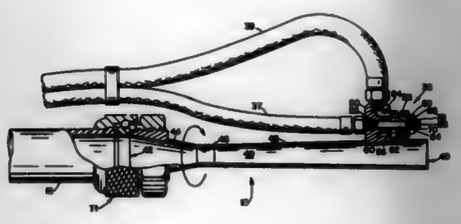
James D. Shank, Vestal, N.Y., assignor to Church & Dwight Co., Inc., Princeton, N.J.

PCT No. PCT/US93/09409, § 371 Date Jan. 27, 1994, § 102(e) Date Jan. 27, 1994, PCT Pub. No. WO94/08753, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 7, 1993, Ser. No. 182,115

Int. Cl.[6] B24C *5/00*

U.S. Cl. 451—38 **45 Claims**



10. A process for removing contaminants from the surface of a solid substrate comprising; directing at said substrate a stream of abrasive particles capable of stripping said contaminants from said surface upon contact therewith, said abrasive particles being directed at said substrate by means of a blast nozzle comprising a hollow converging inlet portion, a downstream hollow diverging outlet portion which diverges to an outlet from a venturi orifice placed intermediate of said converging and diverging portions, said outlet and said orifice having a circular cross-section and the length of said diverging outlet portion being about 18–24 times the diameter of said orifice forming a separate stream of atomized water droplets by atomizing water with compressed air and directing said separate stream of atomized water droplets to said solid surface to suppress dust formation as said abrasive particles contact said solid surface.

5,484,326

SEMICONDUCTOR INGOT MACHINING METHOD

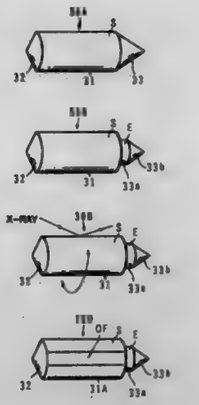
Yoshihiro Hirano, and Atsushi Ozaki, both of Annaka, Japan, assignors to Shin-Etsu Handotai Company, Ltd., Tokyo, Japan

Filed Nov. 30, 1993, Ser. No. 159,501

Claims priority, application Japan, Nov. 30, 1992, 4-320533

Int. Cl.[6] B24B *1/00;7/00*

U.S. Cl. 451—41 **2 Claims**



1. A semiconductor ingot machining method for grinding and cutting grown but unprocessed semiconductor ingots (**10**) said cutting being executed after said grinding, said grinding being executed with one grinding device for each one of said semiconductor ingots, said grinding comprising the following sequential steps of:

selecting a semiconductor ingot;

mounting said unprocessed semiconductor ingot in said grinding device and cylindrically grinding said semiconductor ingot (S) while rotating said semiconductor ingot around an axis (**91**) to form a cylindrical body portion having a circumferential surface;

irradiating with x-rays said semiconductor ingot (**30A**, **30B**) mounted in said grinding device while rotating said semiconductor ingot around the axis, detecting diffraction of said x-rays and determining an azimuth reference position based upon a peak detected value of said x-rays (**93**); and

stopping rotation of said semiconductor ingot mounted in said grinding device and grinding said semiconductor ingot parallel to the axis at said azimuth reference position so as to form selectively an orientation flat (OF) and a notch;

for each one of said ground semiconductor ingots (**30D**), said cutting being executed with one inner diameter saw slicing machine, said cutting comprising the following sequential steps of:

cutting off a first of two cone-shaped ends (**33***b*) of said semiconductor ingot by placing an inner diameter blade of said inner diameter saw slicing machine perpendicular to said circumference surface of said semiconductor ingot which has been cylindrically ground (**101**);

cutting off a first wafer sample (**34**) from a first cut side of said cylindrical body portion (**31B**) of said semiconductor ingot (**102**);

reversing an axis direction of said semiconductor ingot (**103**);

cutting off a second of the two cone-shaped end (**32**) of said semiconductor ingot by placing said inner diameter blade perpendicular to the circumferential surface of said semiconductor ingot which has been cylindrically ground (**104**);

cutting off a second wafer sample (**41**) from a second cut side of said cylindrical body portion (**31B**) of said semiconductor ingot (**105**); and

cutting off a third wafer sample (**43**) from said cylindrical body portion of said semiconductor ingot to divide said cylindrical body portion (**31D**) into a plurality of blocks (**42**, **44**) (**105**).

5,484,327

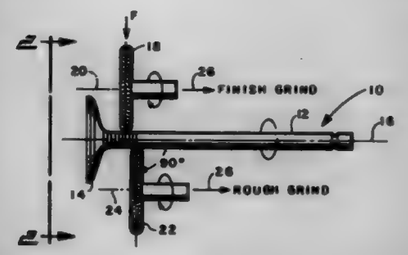
METHOD AND APPARATUS FOR SIMULTANEOUSLY GRINDING A WORKPIECE WITH FIRST AND SECOND GRINDING WHEELS

Joseph A. Kovach, Aurora, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 21, 1993, Ser. No. 79,430

Int. Cl.[6] B24B *5/00*

U.S. Cl. 451—49 **41 Claims**



1. A dual wheel grinding machine comprising workpiece supporting means for supporting a workpiece for rotation about a first axis of rotation,

a first grinding wheel supported for rotation about a second axis of rotation which is substantially parallel to said first axis of rotation,

a second grinding wheel supported for rotation about a third axis of rotation which is substantially parallel to said first axis of rotation,

said first grinding wheel being operable to engage with said workpiece at a location which is substantially diametrically opposed to the location at which said second grinding wheel engages with said workpiece,

each of said first and second grinding wheels imparting a tangential grinding force and a radial grinding force relative to said first axis of rotation to the workpiece, and

control means for controlling the radial grinding force imparted to the workpiece by said first and second grinding wheels to control the radial grinding force imparted to the workpiece by said first grinding wheel to be substantially opposed to the radial grinding force imparted to the workpiece by said second grinding wheel to prevent distortion of the workpiece in a radial direction relative to said first axis of rotation and wherein said control means for controlling the radial grinding force imparted to the workpiece by said first and second grinding wheels to be substantially opposed includes:

first means for controlling the width of the cutting surface of the first grinding wheel, the sharpness of the first grinding wheel and the depth of cut of the first grinding wheel to predetermine the radial grinding force exerted on the workpiece by said first grinding wheel, and second means for controlling the width of the cutting surface of said second grinding wheel, the sharpness of said second grinding wheel, the sharpness of said second grinding and the depth of cut of said second grinding wheel to preset the radial grinding force exerted on the workpiece by said second grinding wheel so that the radial grinding force exerted by the first grinding wheel is substantially opposed to the radial grinding force imparting to the workpiece by said second grinding wheel.

5,484,328

SANDING TOOL

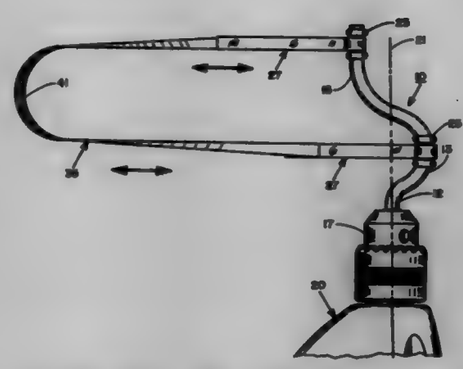
Laurence O. Osterman, 2812 Ferndale Pl., Utica, N.Y. 13501

Filed Nov. 30, 1994, Ser. No. 347,502

Int. Cl.[6] B24B *23/06*

U.S. Cl. 451—356 **8 Claims**

1. Sanding apparatus that is mountable in a motor driven chuck that includes:



a crankshaft having a shank capable of being secured in a rotatable motor driven chuck so that the shank rotates about the axis of rotation of said chuck,

a first offset crank arm and a second offset crank arm attached for rotation to said shank, said arms being angularly offset from each other in regard to the direction of rotation of said crankshaft,

a first rotor means connected to said first crank arm and a second rotor means connected to said second crank arm, and

a flexible sanding belt connected at one end to said first rotor means and at the other end to the second rotor means whereby the belt is caused to reciprocate through an arcuate path of travel as the crankshaft turns about the axis of rotation of said chuck.

5,484,329

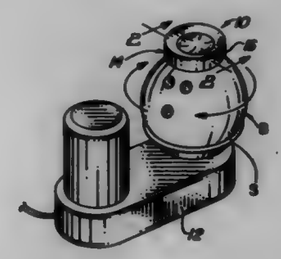
BOWLING BALL SURFACE FINISHING TOOL ASSEMBLY

Terry Engelbrektson, 2931 N. Main St., Walnut Creek, Calif. 94596

Filed Nov. 14, 1994, Ser. No. 338,420

Int. Cl.[6] B24D *15/00*

U.S. Cl. 451—523 **22 Claims**



1. A tool assembly for finishing a spherical surface of a bowling ball, comprising:

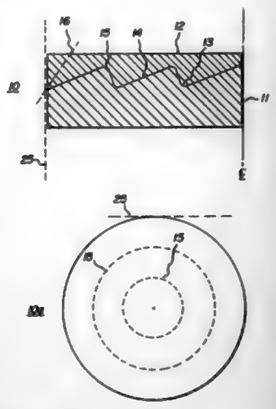
(a) a tool having a body fabricated from a pliable material, said body having a pair of opposite faces and a pair of concave-shaped depressions each formed in a respective one of said opposite faces of said body, one of said concave-shaped depressions having a larger chordal length than the other of said concave-shaped depressions;

(b) a first fastening material disposed within and fixed to a surface of each of said concave-shaped depressions; and

(c) a pair of flexible disks each being of a size adapted to fit in a respective one of said concave-shaped depressions and having an abrasive material on a first side of said disk and a second fastening material fixed to a second side of said disk being releasably attachable to said first fastening material such that said disk may be releasably mounted to said surface

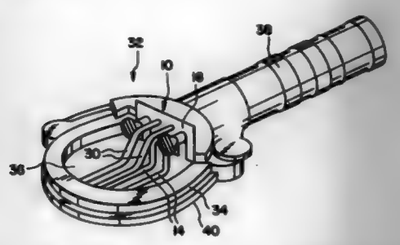
of and within said respective one of said concave-shaped depressions of said body.

5,484,330
ABRASIVE TOOL INSERT
Gary M. Flood, Canal Winchester, and David M. Johnson, Westerville, both of Ohio, assignors to General Electric Company, Worthington, Ohio
Filed Jul. 21, 1993, Ser. No. 95,631
Int. Cl.[6] E21B *10/46*
U.S. Cl. 451—540 4 Claims



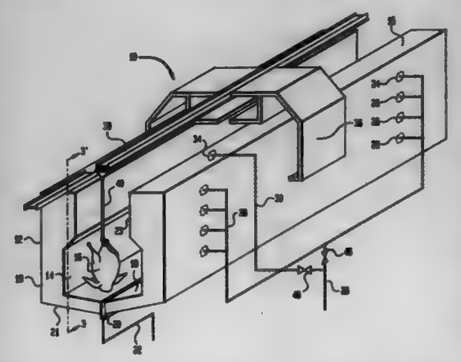
1. A tool insert, comprising:
a substrate;
a continuous abrasive layer having a periphery forming a cutting surface, said abrasive layer integrally formed on said substrate and defining an interface therebetween,
wherein said interface includes a plurality of sloped regions forming a concentric circular pattern about a central axis of the insert, said interface having a sawtooth shaped contour in cross section having at least one sloped region and a surface extending from said cutting surface such that said abrasive layer is thicker at said cutting surface than at regions immediately and radially interior to said cutting surface.

5,484,331
METHOD AND DEVICE FOR HOT FAT TRIMMING
Dennis Buhlke, Evans, Colo., assignor to Monfort, Inc., Greeley, Colo.
Filed Apr. 23, 1993, Ser. No. 52,136
Int. Cl.[6] A22C *17/00*
U.S. Cl. 452—134 35 Claims



1. A knife guide for use in a hot fat trimming operation, comprising a guide capable of retaining a pre-determined thickness of fat on meat during said trimming operation, said guide comprising at least one meat contacting means enabling said guide to compress fat substantially to the surface of said meat while a knife carrying said guide is being drawn across said meat, said contacting means comprising rod-shaped material and having a leading edge that has a shape selected from the group consisting of wedged, spherical, and conical shapes to allow said guide to pass through fat and follow the surface contour of the meat, without cutting said meat; and at least one deflection means positioned above said contacting means for deflecting fat away from said meat after fat has been severed by said knife.

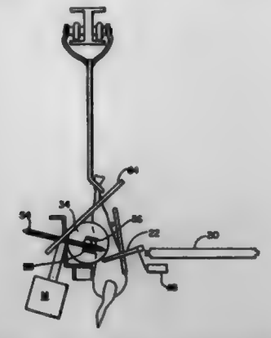
5,484,332
POULTRY WASHING APPARATUS AND METHOD
Jeffrey L. Leech, Hopewell, N.J.; James T. Elfstrum, Yorktown Heights, N.Y., and William E. Swartz, Cranbury, N.J., assignors to Rhone-Poulenc Inc., Cranbury, N.J.
Filed Aug. 28, 1992, Ser. No. 937,881
Int. Cl.[6] A22C *21/04*
U.S. Cl. 452—173 22 Claims



1. An apparatus used for reducing the amount of pathogenic bacteria associated with a bird or other edible animal comprising:
(a) a unit having an interior portion having side and bottom walls, an exterior portion having side and bottom walls and end walls connecting said interior portion to said exterior portion wherein the area of said interior portion provides a space which completely surrounds one or more of the birds or animals being treated;
(b) one or more deluge nozzles mounted within said interior portion of said unit and connected to a source of a bacteria reducing chemical solution to enable the bacteria reducing chemical solution to be applied to the entire interior of the body cavity of the bird or animal being treated;
(c) one or more spray nozzles mounted within said interior portion of said unit and connected to a source of a bacteria reducing chemical solution to enable the bacteria reducing chemical solution to be applied to the entire external surfaces of the bird or animal being treated;
(d) one or more lines for connecting said one or more deluge nozzles and said one or more spray nozzles to the source of the bacteria reducing chemical solution; and

(e) one or more connectors for connecting the exterior portion or end walls of said unit to an existing overhead conveyor located within the facility where the bird or animal is being treated.

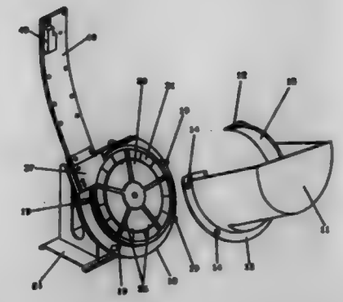
5,484,333
LOADER FOR BREAST PROCESSOR
Eugene G. Martin, Denver, and Scott Cook, Strasburg, both of Pa., assignors to Foodcraft Equipment Company, Lancaster, Pa.
Continuation-in-part of Ser. No. 98,807, Jul. 29, 1993, Pat. No. 5,374,214. This application Sep. 21, 1994, Ser. No. 309,876
Int. Cl.[6] A22C *21/00*
U.S. Cl. 452—182 7 Claims



1. A mechanism for automatically transferring a top portion of an animal carcass, having an open abdominal cavity, whose bottom portion is suspended from a foot shackle conveyor, onto a separate conveyor as the top portion is cut from the lower portion, while leaving the lower portion suspended in the foot shackle conveyor, said mechanism comprising
means for preventing the carcass from swinging in the foot shackle conveyor,
means carrying a series of tines along a path which approaches the carcass path at the level of the abdominal cavity's opening so that each tine is directed at and then enters the cavity through the opening,
a pivot connection between the carrying means and each tine, so that the tine can pivot between a raised position, as it approaches the opening, and a depressed position as it extends into the cavity, and
a knife for separating the upper and lower halves after the tine has entered the cavity,
said carrying path thereafter leading away from the foot shackle conveyor.

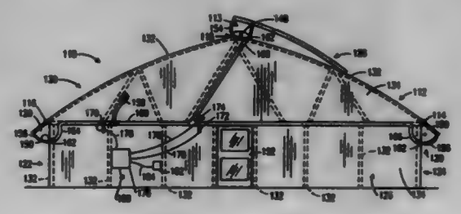
5,484,334
COIN HANDLING APPARATUS WITH COIN FILTER AND IMPROVED COIN INTERLOCK
Allen J. Evdokimo, 1720 Terrace Heights La., Reno, Nev. 89523
Filed Apr. 1, 1994, Ser. No. 221,727
Int. Cl.[6] G07D *3/00*
U.S. Cl. 453—3 45 Claims

29. For use in a coin hopper used to transport coins from a coin mass volume to a transfer station, a coin feeder assembly comprising:
an agitator/coin filter device for rejecting coins having a predetermined characteristic, said agitator/coin filter device comprising an agitator disc portion and a coin filter disc portion having a filter surface facing said agitator disc portion, said filter surface including means for defining coin inlets when said coin filter disc portion is combined with said agitator disc portion; and



a coin transport disc secured to said agitator/coin filter device and having a plurality of peripherally distributed coin stops located adjacent the outer diameter of said disc for receiving coins passing through said agitator/coin filter device.

5,484,335
VENTILATED ENCLOSURE
Douglas A. Holmberg, 13430 Hobson St. Rd., Lithia, Fla. 33547
Continuation-in-part of Ser. No. 937,444, Aug. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 462,839, Jan. 10, 1990, Pat. No. 5,000,000. This application May 2, 1994, Ser. No. 236,576
Int. Cl.[6] F24F *7/00*
U.S. Cl. 454—250 16 Claims



1. A ventilated enclosure comprising a pair of side walls, a pair of end walls and a roof including at least one roof section, a ridge vent having an upper and lower portion formed adjacent a portion of said roof section and at least one side vent having an upper and a lower portion formed adjacent a portion of one of said side walls, a first elongated inflatable member disposed adjacent said side vent and a second elongated inflatable member disposed adjacent said side vent, said first and second elongated inflatable members each movable between a first and second position disposed in operative relationship relative to said ridge vent and said side vent respectively to selectively control air flow through said ridge vent and said side vent respectively and to permit air circulation through said ventilated enclosure when said first and second elongated inflatable members are each in said first position and to seal said ridge vent and said side vent respectively when said first and second elongated inflatable members are each in the second position, a first sealing member and second sealing member each extending substantially the length of said first elongated inflatable member adjacent said upper portion and lower portion of said ridge vent respectively to engage said first elongated inflatable member when in said second position to seal said ridge vent and a first sealing member and second sealing member each extending substantially the length of said second elongated inflatable member adjacent said upper portion and said lower portion of said side vent respectively to engage said second elongated inflatable member when in said second position to seal said side vent and an end sealing means disposed adjacent opposite end portions of said second elongated inflatable member to engage opposite end por-

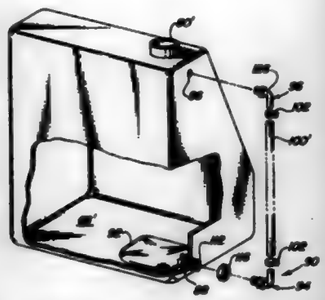
tions of said second elongated inflatable means when said second elongated inflatable means is in said second position to seal the end portions thereof.

5,484,336

TANK STRUCTURE FOR A HARVESTER

Kenneth C. McConnell, Ankeny, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Feb. 22, 1994, Ser. No. 200,789
Int. Cl.[6] A01D *75/00*
U.S. Cl. 460—119 **19 Claims**



1. In an agricultural harvester having a fore-and-aft extending frame supporting an engine, tank structure for receiving and storing a fluid material such as grease having a preselected specific gravity and relatively high viscosity so that the fluid material does not flow freely through a small tube, the tank structure comprising:

an upright material container having a bottom and sidewall structure extending upwardly from the bottom;

a flexible bladder supported near the lower end of the container, the flexible bladder being at least partially filled with a liquid having a specific gravity approximately equal to the preselected specific gravity of the stored material and a viscosity less the viscosity of the material; and

level indicating structure connected to the flexible bladder and including a tube extending upwardly above the level of the bottom for receiving the fluid therein and providing a level indication dependent on the level of material in the container.

5,484,337

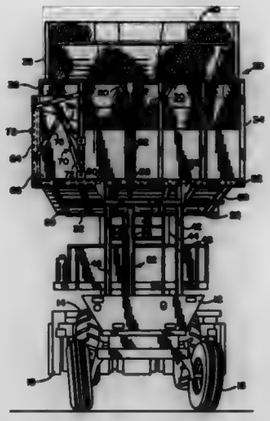
CONTROL SYSTEM FOR A COTTON HARVESTER

James W. Robinson, Orion; Alan H. Ludwig, Hinsdale, and Lindy M. Tribbett, Woodridge, all of Ill., assignors to Case Corporation, Racine, Wis.

Filed Jun. 1, 1994, Ser. No. 252,578
Int. Cl.[6] A01F *12/60*
U.S. Cl. 460—119 **27 Claims**

1. A control system for a cotton harvester having a mobile frame, a plurality of row units mounted at a fore end of the frame for harvesting cotton from plant rows as the harvester is driven across a field, a basket for receiving cotton harvested by said row units, said basket being elevationally movable relative to the frame between a harvesting position and an elevated position and comprising a floor with spaced walls extending upwardly therefrom, and wherein said basket includes a door movable between open and closed positions, and a conveyor for discharging cotton from said basket, said basket further including a first motor assembly for controlling the elevation of said basket, a second motor assembly for controlling the position of said door, and a third motor assembly for operating said conveyor, said control system comprising:

operational circuitry interposed between a power source and said second and third motor assemblies, said operational circuitry including a first sensor for monitoring the elevational position of said basket, a first switch connected to said first sensor for



operating said second motor assembly to open said door after said first sensor detects said basket is in said elevated position, a second sensor for monitoring the position of the door, and a second switch connected to said second sensor for operating said third motor assembly to operate said conveyor, said second switch and said second sensor being connected in series to said first sensor so that said conveyor is operated after said basket is raised to said elevated position and said door is opened;

by-pass circuitry for connecting said power source to said second and third motor assemblies used to position the door and operate the conveyor, said by-pass circuitry including said second sensor for monitoring said door position, wherein said second sensor is connected to said third motor assembly so that said conveyor is operated after said second sensor detects said door is in said open position; and

a control switch having a first position wherein said operational circuitry is enabled during normal operation of the harvester to discharge cotton in response to a predetermined manual sequence of said switches, said control switch being movable to a second position wherein said by-pass circuitry is enabled for automatically affecting the discharge of cotton from said basket without requiring manual operation of said first and second switches.

5,484,338

TORQUE VARIATION ABSORBING DEVICE HAVING FRICTION MEMBERS IMPARTING DIFFERENT HYSTERESIS CHARACTERISTICS TO THE DEVICE

Kazuyuki Watanabe, Kariya; Junji Kagiyama, and Masakazu Kamiya, both of Toyoake, all of, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 24, 1993, Ser. No. 36,404
Claims priority, application Japan, Mar. 31, 1992, 4-076974
Int. Cl.[6] F16D *3/12*
U.S. Cl. 464—68 **6 Claims**

1. A torque variation absorbing device comprising:

a drive body adapted to be connected to a drive member;

a driven body adapted to be connected to a clutch mechanism;

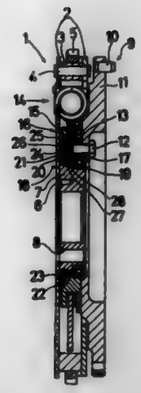
a damping mechanism disposed between the drive body and the driven body;

a hysteresis mechanism disposed between the drive body and the driven body, the hysteresis mechanism including:

a first friction member disposed between the drive body and the driven body to generate friction during relative movement between the drive body and the driven body,

a plate member which rotates with one of the drive body and the driven body,

at least one second friction member disposed between the plate member and said one of the drive body and the driven body to



generate friction during relative movement between the drive body and the driven body, and

an engaging member disposed at the other one of the drive body and the driven body to engage the second friction member when the drive body rotates a predetermined angle with respect to the driven body;

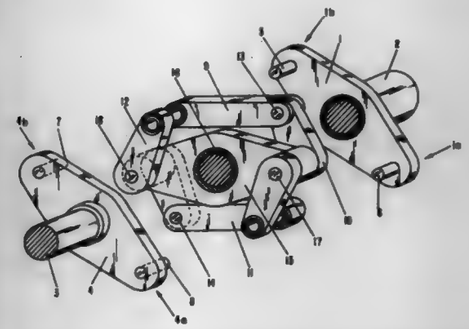
a torque limiting mechanism for limiting torque generated between the drive body and the driven body after the first and second friction members have generated friction.

5,484,339

ARTICULATED COUPLING

Ivan W. Birloukov, and Hasan G. Usmanov, both of Moskow, Russian Federation, assignors to Hackforth GmbH & Co. KG, Herne, Germany

Filed Nov. 5, 1993, Ser. No. 149,192
Claims priority, application Germany, Nov. 5, 1992, 42 37 327.1
Int. Cl.[6] F16D *3/62*
U.S. Cl. 464—69 **7 Claims**



1. An articulated coupling for transmitting engine power from a hollow input shaft to an output shaft; said coupling comprising:

a hollow input shaft;

a first flange fixedly connected to said input shaft, said first flange having a first and a second free end;

an output shaft;

a second flange fixedly connected to said output shaft, said second flange having a first and a second free end being positioned on said output shaft so that said first end of said first flange is aligned with said first end of said second flange and said second end of said first flange is aligned with said second end of said second flange;

a first pair of links connecting said first end of said first flange to said second end of said second flange;

a second pair of links connecting said second end of said first flange to said first end of said second flange;

an intermediate member positioned overhung on said hollow shaft;

said first and said second pairs of links pivotably supported at said intermediate member;

all of said links of said first and said second pairs of links having an identical effective length;

said links of each said pairs of links pivotably connected to one another;

wherein a projection of articulation points of said two pairs of links onto a plane positioned perpendicular to said output shaft forms corners of a square;

wherein one said link of said first pair of links and one said link of said second pair of links are positioned diametrically opposite one another with respect to said intermediate member and are pivotably connected with a center portion thereof to said intermediate member; and

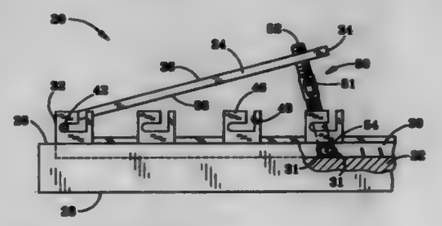
wherein each said one link of said first and said second pairs of links have two arms connected to said center portion, said two arms positioned on opposite end faces of said intermediate member.

5,484,340

UNIVERSAL MOUNT FOR A COMPRESSOR PRIME MOVER

Ross E. Campbell, Kings Mountain, and Neville D. Kapadia, Huntersville, both of N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Mar. 21, 1994, Ser. No. 215,331
Int. Cl.[6] F16H *7/08*; F04B *35/04*
U.S. Cl. 474—101 **4 Claims**



1. An apparatus comprising:

a machine driven by a belt;

a prime mover for driving the belt; and

mounting means for adjustably mounting the prime mover in belt tensioning and belt driving relation to the machine, the mounting means accomplishing the adjustable mounting of the prime mover while continuously locating the prime mover in belt driving alignment with the machine, the mounting means comprising,

1) a base plate, having upper and lower surfaces, fixedly mounted to the machine, the upper surface having formed therein a channel;

2) a support plate having first and second ends, and upper and lower surfaces, the support plate having formed therethrough a plurality of apertures arranged in predetermined locations for mounting the prime mover in belt driving alignment with the machine;

3) pivotal mounting means attached to the first end of the support plate, the pivotal mounting means defining an axis of rotation;

4) at least one pair of locators which are fixedly attached to the base plate, and which removably receive the pivotal mounting means to adjustably locate the support plate with respect to the base plate; and

b 5) means for pivotally adjusting the support plate about the axis of rotation, the pivotal adjustment means having opposed first and second ends, and wherein the first end

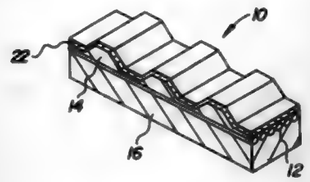
engages the support plate and the second end is slidable, into and out of predetermined positions, in the elongated channel.

5,484,341

TOOTHED BELT FOR POWER TRANSMISSION AND MANUFACTURING METHOD

Toru Fujiwara, Tokorozawa; Yoshinori Itoh, Hanno, and Masato Tomobuchi, Sakado, all of, Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Feb. 2, 1995, Ser. No. 382,419
Claims priority, application Japan, Feb. 4, 1994, 6-032002
Int. Cl.[6] F16G *1/28*
U.S. Cl. 474—205 **2 Claims**



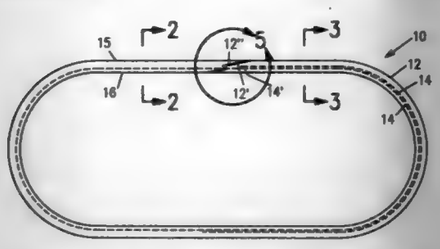
1. A toothed belt in which surfaces of teeth of a tooth rubber are covered with a tooth cloth, characterized in that an impregnated layer of an RFL solution is formed on said tooth cloth and an impregnated layer of a rubber paste containing carbon in an amount of 10 phr, or less, relative to polymer is formed on said RFL solution impregnated layer; and an amount of a solid content of said RFL solution stuck on said tooth cloth is in the range of from 3 to 20 wt % relative to the weight of said tooth cloth, and an amount of a solid content of said rubber paste stuck on said tooth cloth is in the range of from 6 to 18 wt % relative to the weight of said tooth cloth.

5,484,342

ADJUSTABLE ENDLESS BELT FOR USE IN POWER TRANSMISSION

Paul Beck, 21660 Pacific Coast Hwy., Malibu, Calif. 90265

Filed Dec. 2, 1994, Ser. No. 349,019
Int. Cl.[6] F16G *7/00*
U.S. Cl. 474—254 **23 Claims**



1. An endless belt for use in power transmission comprising an outer length of flexible tear-resistant material having abutting extended ends and forming a closed loop, said length of material defining an outer surface, an inner surface substantially parallel to said outer surface and an endless channel extending longitudinally therethrough, said channel being spaced a distance from said inner surface less than one-half of the distance between said inner surface and said outer surface, a ribbon of a flexible tear-resistant material disposed within said channel and extending about said loop defined by said outer length of material, said ribbon defining first and second portions, said second portion extending across said abutting ends of said outer length of material and overlapping said first portion of said ribbon within said channel, and an adhesive disposed within said channel securing said second portion of said ribbon to said first portion thereof so as to maintain said outer length of material in said closed loop.

13. A process for forming an endless belt of desired length and substantially uniform construction for use in power transmission comprising the following steps:

a. cutting to a desired length an outer belt of flexible tear-resistant material having an interior channel extending longitudinally therethrough and a radial slit extending from an outer surface of the belt to said channel such that the extended ends thereof define mating surfaces;

b. disposing an adhesive within and along said channel;

c. inserting a first portion of a flexible reinforcing ribbon of tear-resistant material through said slit into said channel such that one end of said ribbon is proximate one end of said belt, said first portion of said ribbon extends along said belt within said channel in contact with said adhesive and a second portion of said ribbon projects therefrom proximate the other end of said belt;

d. forming said belt into a closed loop such that the extended ends thereof are in an abutting relationship;

e. directing the second portion of said reinforcing ribbon about a portion of said loop and into said channel in said belt through said slit such that said second portion of said ribbon extends from said first portion across said abutting ends of said belt and overlaps a portion of said first portion of said ribbon within said channel; and

f. allowing said adhesive to set whereupon said second portion of said ribbon is bonded to said first portion thereby forming an endless belt of a desired length and substantially uniform construction.

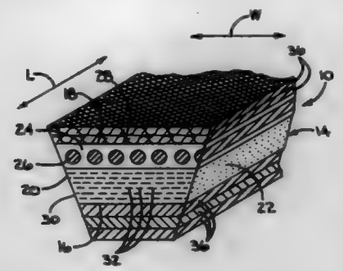
23. An apparatus for forming a reinforced endless belt of a desired size for use in power transmission, said apparatus comprising: drive means for moving through said apparatus a predetermined finite length of belt material having an interior channel extending longitudinally therethrough and a slit extending between an outer surface thereof and said channel; spreader means for widening the slit in the length of belt material as said drive means moves the length of belt material thereby; means for continuously and selectively injecting an adhesive into the channel in the length of belt material through the widened slit therein as said drive means moves said length thereby; means for holding a supply of reinforcing ribbon; and means operatively connected to said drive means for directing the reinforcing ribbon from said holding means into the channel in the length of belt material through the widened slit therein and disposing the ribbon in a flat disposition within the channel in contact with the adhesive therein as said drive means moves said length of belt material thereby such that a leading end of the ribbon is disposed proximate a leading end of the length of belt material and the ribbon extends in a flat disposition throughout the length of the channel and, upon bringing the leading end of the length of belt material into abutment with the other end thereof so as to form a closed loop, said directing means and said drive means cause the ribbon to extend across the abutting ends of said length of belt material and controllably overlap a desired length of the reinforcing ribbon previously disposed in the channel by said directing means whereby upon deactivating said drive means, severing the reinforcing ribbon between said holding means and said directing means and reactivating said drive means, the trailing end of said ribbon is disposed in a flat disposition within the channel and upon removing the formed closed loop of belt material and reinforcing ribbon from said apparatus and holding said ends of belt material in an abutting relationship as said adhesive sets, a continuous belt of substantially uniform construction is formed.

5,484,343

POWER TRANSMISSION BELT

Masayoshi Nakajima, Higashinada; Takashi Kinoshita, Takasago; Arata Hasegawa, Nishi, and Yoshiaki Onaka, Hyogo, all of, Japan, assignors to Mitsuboshi Belting Ltd., Nagata, Japan

Filed Jan. 24, 1995, Ser. No. 377,205
Claims priority, application Japan, Apr. 28, 1994, 6-114303
Int. Cl.[6] F16G *1/00*
U.S. Cl. 474—266 **20 Claims**



1. A power transmission belt comprising:

a belt body having a length, an inside, an outside, and laterally spaced side surfaces; and

a reinforcing fabric on at least one of the inside and outside of the body,

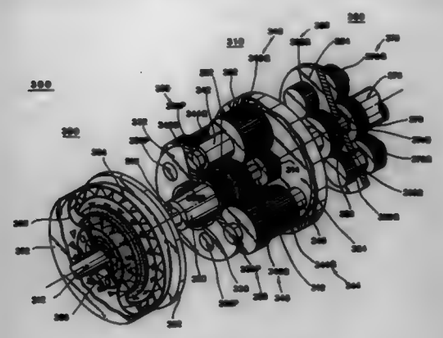
said reinforcing fabric formed from first yarns comprising a mixture of polymethaphenylene isophthalamide fibers and polyethylene terephthalate fibers.

5,484,344

STEPLESS AUTOMATIC VARIABLE TRANSMISSION

Jong O. Ra, Seoul; Joon Y. Lim, Kyungki-Do, and Wan M. Yoo, Incheon, all of, Rep. of Korea, assignors to Hae Sung Engineering Co., Ltd., Rep. of Korea

Division of Ser. No. 166,921, Dec. 10, 1993, Pat. No. 5,415,597. This application Feb. 24, 1995, Ser. No. 394,151
Claims priority, application Rep. of Korea, May 29, 1993, 93-9404; Jun. 9, 1993, 93-9946
Int. Cl.[6] F16H *37/06*
U.S. Cl. 475—59 **18 Claims**



1. A speed change system **310** comprising:

an input shaft **312** with a first section **312A**, a second section **312B**, and a terminal end **312C** for receiving rotational input;

an input sun gear **314** integrally formed on said input shaft to enable simultaneous rotation with said input shaft;

a control shaft **316** coaxially and rotatably mounted on said input shaft **312** to enable independent rotation about said input shaft and further including a control sun gear **318** integrally formed thereon;

a medium speed control shaft **320** rotatably and coaxially mounted on said control shaft **316** to enable independent rotation about said control shaft and further including a medium speed sun gear **322** integrally formed thereon;

a carrier **332** rotatably and coaxially mounted on said medium speed control shaft **320** to enable independent rotation about said medium speed control shaft;

a carrier **334** rotatably and coaxially mounted on said input shaft to enable independent rotation about said input shaft **312**;

a plurality of locking pins **336, 338** secured to and interlinking said carriers **332, 334** to enable simultaneous rotation of said carriers;

a plurality of input differential gears **340** with each said input differential gear **340G** rotatably mounted on each said locking pin **336P** and being meshed with said input sun gear **314**;

a plurality of control differential gears **344** with each said control differential gear **344G** rotatably mounted on each said locking pin **338P** and meshed with each said input differential gear **340** and said control sun gear **318**, respectively;

a plurality of medium speed differential gears **346** with each said medium speed differential gear **346G** integrally formed with each said control differential gear **344** and rotatably mounted on each said locking pin **338P** and being meshed with said medium speed sun gear **322**;

an output ring gear **352** including a ring gear shaft **354** having an axial bore **350** formed therein to rotatably receive said terminal end **312C** of said input shaft **312** and meshed with each said input differential gear **340G**;

a low speed brake means **396** for applying a braking force to said control shaft **316**;

a medium speed brake means **397** for applying a braking force to said medium speed control shaft **320**; and

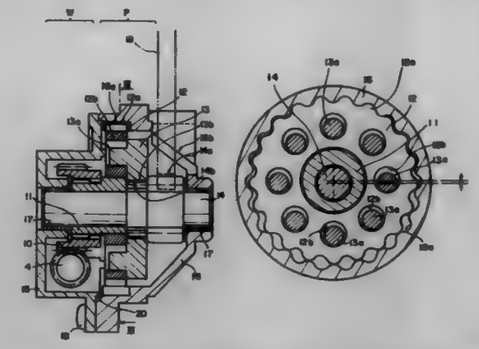
a reverse rotation brake means **398** for applying a braking force to said carrier **332**.

5,484,345

COMPACT GEAR REDUCER FOR ROTATION THROUGH AN ANGLE IN EITHER DIRECTIONS

Sueo Fukaya, Ohbu, Japan, assignee to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Oct. 13, 1993, Ser. No. 135,489
Claims priority, application Japan, Jan. 15, 1992, 4-276970
Int. Cl.[6] F16H *1/16;1/32*
U.S. Cl. 475—162 **8 Claims**



1. A gear reducer for obtaining rotation of an output shaft reducing a rotation of an input shaft, comprising:

a casing;

said input shaft;

said output shaft;

first and second pairs of bearings in said casing supporting said input shaft and said output shaft, respectively;

a worm pinion disposed between said first pair of bearings on said input shaft so as to rotate with the rotation of said input shaft;

a worm wheel rotatably disposed between said second pair of bearings on said output shaft and meshing with said worm pinion;

a planetary gear structure of a trochoid-tooth-profile inscribing type which is disposed between said second pair of bearings on said output shaft and located adjacent to said worm wheel, said planetary gear structure including an eccentric member rotating with said worm wheel, a trochoid-tooth-profile external gear fitted on an outer periphery of said eccentric member and rotating eccentrically, a trochoid-tooth-profile internal gear secured to said casing and meshing with said external gear in an inscribing manner, and a coupling flange being coupled to said external gear for deriving only a rotating component of said external gear,

wherein said flange of said planetary gear structure and said output shaft are coupled to each other.

5,484,346

STEPLESS SPEED CHANGING APPARATUS

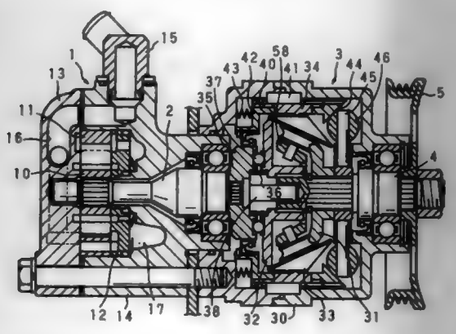
Yoshitomo Tokumoto, Yamatokooriyama, and Osamu Sano, Kashihara, both of, Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Oct. 27, 1994, Ser. No. 331,134

Claims priority, application Japan, Nov. 9, 1993, 5-279947; Aug. 22, 1994, 6-197062

Int. Cl.[6] F16H *15/48*

U.S. Cl. 475—185 **5 Claims**



1. A stepless speed changing apparatus, comprising:

an input shaft and an output shaft supported coaxially;

an input disk and an output disk mounted on opposing ends of said input shaft and said output shaft, respectively;

a plurality of planetary cones disposed in the circumferential direction of said input disk and the output disk and being in rolling contact with the outer circumferences of said input disk and said output disk;

a speed change ring movable in the axial direction thereof which is arranged substantially concentrically with the axes of said input shaft and said output shaft and are in rolling contact with all of said planetary cones on the cone generating lines of said planetary cones substantially parallel to said axes;

a plurality of movable bodies which move in the radial direction of said input shaft under the action of the centrifugal force due to rotation of said input shaft; and

movement converting means in contact with said movable bodies for converting the movement of said movable bodies into the movement of said speed change ring.

5,484,347

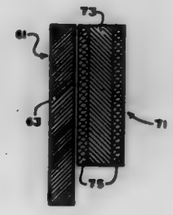
VARIABLE RATE LOCKING DIFFERENTIAL WITH PYROLITIC-CARBON FRICTION CLUTCH

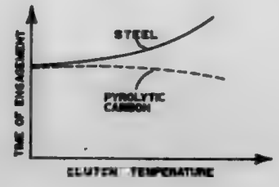
Ralph E. Holmquist, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 29,083, Mar. 10, 1993, abandoned. This application Sep. 27, 1993, Ser. No. 127,391

Int. Cl.[6] F16H *1/44;* **F16D** *11/00;13/60*

U.S. Cl. 475—231 **10 Claims**





1. A differential gear mechanism of the type including a gear case defining a gear chamber, differential gear means disposed in said gear chamber, said differential gear means including at least one input gear and first and second output gears; lock-up means for locking up said differential gear means to retard differentiating action, said lock-up means including clutch means operable between an engaged condition, effective to retard relative rotation between said gear case and said output gears, and a disengaged condition; said lock-up means further including cam means operatively associated with said clutch means, and including first and second cam members, said second cam member being axially movable relative to said first cam member in response to relative rotation therebetween to effect said engaged condition of said clutch means; said clutch means comprising active clutch means disposed immediately adjacent said second cam member and affecting the time of engagement of said clutch means; characterized by:

(a) said active clutch means comprising at least a pair of engaging clutch surfaces, one of said pair of said clutch surfaces comprising a pyrolytic carbon friction material, and the other of said pair of said clutch surfaces comprising a non-pyrolytic carbon friction material; and

(b) said clutch means further comprising inactive clutch means disposed adjacent said active clutch means, and operable to provide a major portion of the torque-transmitting capacity of said clutch means, said inactive clutch means comprising a plurality of pairs of engaging clutch surfaces, all of said clutch surfaces comprising a non-pyrolytic carbon friction material.

5,484,348

DIFFERENTIAL UNIT

David Brown, Suffolk, and John M. Lipman, Norfolk, both of, United Kingdom, assignors to Lotus Cars Ltd., Norfolk, United Kingdom

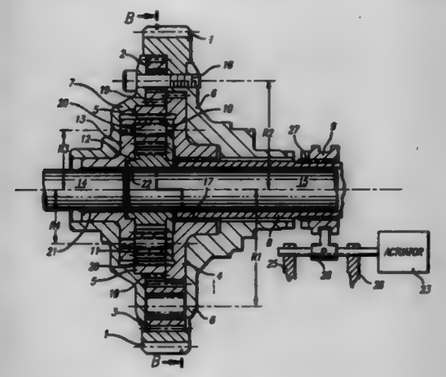
PCT No. PCT/GB92/01505, § 371 Date Sep. 28, 1993, § 102(e) Date Sep. 28, 1993, PCT Pub. No. WO93/03939, PCT Pub. Date Mar. 4, 1993

PCT Filed Aug. 14, 1992, Ser. No. 122,528

Claims priority, application United Kingdom, Aug. 14, 1991, 9117520

Int. Cl.[6] F16H *1/28*

U.S. Cl. 475—248 **11 Claims**



1. A differential unit comprising;

input means for receiving power;

a first arrangement of gears for delivering power to first output means;

a second arrangement of gears for delivering power to second and third output means; wherein

the first arrangement of gears transmits power from the input means for receiving power to both the first output means and an input means of the second arrangement of gears and operates as a differential connected between the first output means and the input means of the second arrangement of gears,

the second arrangement of gears transmits power from the input means thereof to both the second and third output means and operates as a differential connected between the second and third output means;

the first arrangement of ears is an epicyclic arrangement comprising a first annulus gear which provides the input means for the differential, a first plurality of planet gears, a first planet gear carrier and first and second gears,

the second arrangement of gears is an epicyclic arrangement comprising a second annulus gear which provides the input means for the second arrangement of gears, a second plurality of planet gears, a second planet gear carrier and a third sun gear, and one gear serves as both the first sun gear of the first arrangement and the annulus gear of the second arrangement, the second sun gear providing the first output means, the second planet gear carrier providing the second output means and the third sun gear providing the third output means.

5,484,349

STEPLESS AUTOMATIC VARIABLE TRANSMISSION

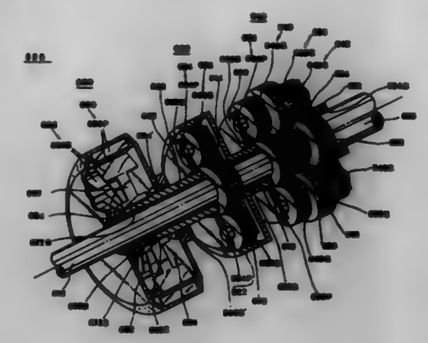
Jeng O. Ra, Seoul; Joon Y. Lim, Kyungki, and Wan M. Yoo, Incheon, all of, Rep. of Korea, assignors to Hae Sung Engineering Co., Ltd., Rep. of Korea

Division of Ser. No. 166,921, Dec. 10, 1993, Pat. No. 5,415,597. This application Feb. 24, 1995, Ser. No. 393,691

Claims priority, application Rep. of Korea, May 29, 1993, P93-9404; Jun. 9, 1993, U.M.93-9946 U

Int. Cl.[6] F16H *3/62*

U.S. Cl. 475—275 **9 Claims**



1. A speed change system **610** comprising:

an input shaft **612** with a first section **612A**, a second section **612B** and a terminal section **612C** for receiving rotational input with an input sun gear **616** integrally formed between said second section **612B** and said terminal section **612C** of said input shaft to enable simultaneous rotation with said input shaft;

a speed change shaft **618** with a first end **618A'** and a second end **618A** rotatably and coaxially mounted on said input shaft **612** and having a reverse rotation sun gear **620** integrally formed at said first end **618A'**;

an output shaft **626** having a first end **626A** with an output sun gear **628** integrally formed thereat and with said first end of said output shaft being rotatably and coaxially mounted on said terminal section **612C** of said input shaft to enable independent rotation about said input shaft;

a carrier **630** rotatably and coaxially mounted on said speed change shaft **618** to enable independent rotation about said speed change shaft **618**;

a carrier **634** rotatably and coaxially mounted on said output shaft **626** to enable independent rotation about said output shaft **626**;

a plurality of locking pins **636** with each locking pin **636P** secured to and interlinking said carriers **630**, **634** to enable simultaneous rotation of said carriers **630**, **634**;

a plurality of input planetary gears **638** with each said input planetary gear **638G** being rotatably mounted on each said locking pin **636P** and being meshed with said input sun gear **616**;

a plurality of reverse rotation planetary gears **640** with each said reverse rotation planetary gear **640G** being rotatably mounted on each said locking pin **636P** and being meshed with said reverse rotation sun gear **620**;

a plurality of output planetary gears **642** with each said output planetary gear **642G** being rotatably mounted on each said locking pin **636P** and being meshed with said output sun gear **628**;

said input planetary gear **638G**, said reverse rotation planetary gear **640G** and said output planetary gear **642G** being integrally formed to enable simultaneous rotation about each respective said locking pin **636P**;

a forward rotation brake means **659** for applying a braking force to said carriers **630**, **634**; and

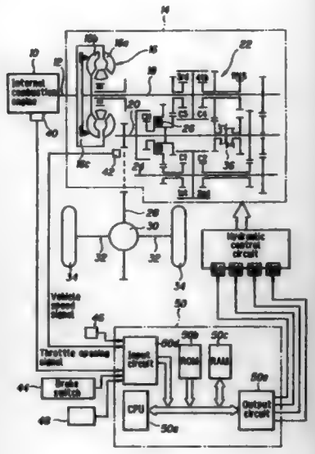
a reverse rotation brake means **699** for applying a braking force to said speed change shaft **618**.

5,484,350

CONTROL SYSTEM FOR VEHICLE AUTOMATIC TRANSMISSION

Hiroshi Ishikawa; Hideo Furukawa; Masatoshi Shinuzu, and Norio Nakauchi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1994, Ser. No. 295,546
Claims priority, application Japan, Aug. 31, 1993, 5-238896
Int. Cl.[6] F16H *59/04;59/62*
U.S. Cl. 477—97 5 Claims



1. A system for controlling an automatic transmission of a vehicle, having an internal combustion engine connected to said automatic transmission for driving one or more wheels of said vehicle, comprising:

a hydraulic control circuit connected to said automatic transmission;

an electronic control means for controlling said automatic transmission through said hydraulic control circuit;

a load detecting means for detecting an operating load on said engine and sending a first output signal representing the engine load to said electronic control means;

a vehicle speed detecting means for detecting the vehicle speed and sending a second output signal representing the vehicle speed to said electronic control means;

an altitude detecting means for detecting the altitude of a place where said vehicle travels and sending a third output signal representing the altitude to said electronic control means;

wherein said electronic control means computes an index indicative of a driving resistance of the vehicle based at least on said second signal, and compares said index with a predetermined reference value stored in a memory in said electronic control means to determine if the vehicle is hill climbing or hill descending;

wherein said electronic control means actuating said hydraulic control circuit for carrying out gear shifting control including changing the gear shifting characteristics of said transmission to be suitable for either hill climbing or hill descending based on said determination; and

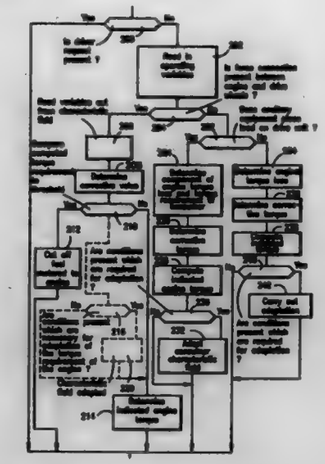
wherein said electronic control means corrects at least one of said index indicative of a driving resistance of the vehicle and said predetermined reference value to be compared therewith in response to said third output signal.

5,484,351

ARRANGEMENT FOR CONTROLLING THE TORQUE TO BE SUPPLIED BY A DRIVE UNIT OF A MOTOR VEHICLE

Hong Zhang, Bietigheim-Bissingen, and Martin Streib, Vaihingen/Enz, both of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 1, 1993, Ser. No. 69,606
Claims priority, application Germany, Jun. 20, 1992, 42 20 243.4; Feb. 17, 1993, 43 04 779.3
Int. Cl.[6] B60K *41/04*
U.S. Cl. 477—113 14 Claims



1. An arrangement for controlling the torque of a drive unit of a motor vehicle during at least one of the following modes of operation of the vehicle: stationary and rolling, the arrangement comprising:

means for determining a pregiven desired value for the torque to be supplied by the drive unit;

means for adjusting said pregiven desired value while considering the load applied to said drive unit;

correcting means for correcting said desired value in dependence upon the torque requirement of the transmission unit of the motor vehicle so as to cause the rotational speed of the drive unit to be constant essentially independently of the load when said motor vehicle is stationary or rolling with the drive unit being at idle or in the near-idle range.

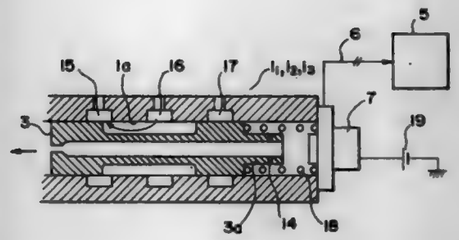
5,484,352

SWITCH FOR DETECTING OPERATION OF CONTROL VALVE SPOOL

Masaaki Kuma, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP91/01618, § 371 Date May 26, 1993, § 102(e) Date May 26, 1993, PCT Pub. No. WO92/09838, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 26, 1991, Ser. No. 66,082
Claims priority, application Japan, Nov. 30, 1990, 2-130436
Int. Cl.[6] F16H *61/12*
U.S. Cl. 477—125 10 Claims

1. Apparatus comprising: a detector switch for detecting the operation of a valve spool of a transmission control valve, said detector switch being provided on said control valve adjacent to said spool, a controller for turning ON and OFF an electromagnetic valve connected to said control valve in order to change the hydraulic pressure in a transmission clutch, characterized in that said detector switch is capable of transmitting a signal to said controller when said valve spool abuts against said detector switch in order to confirm that an electrical signal transmitted to said electromagnetic valve has been transformed into the operation of said valve spool of said control valve; characterized in that said controller comprises a preventing function which prevents a double engagement when speed stages are changed such that in a case where the detector switches corresponding to the speed stages remain in an ON state simultaneously, said controller brings operations to an emergency stop and opens all the transmission clutches, and a self-determining function which determines whether or not a signal transmitted to an electromagnetic valve accords with a signal received from its detector switch.

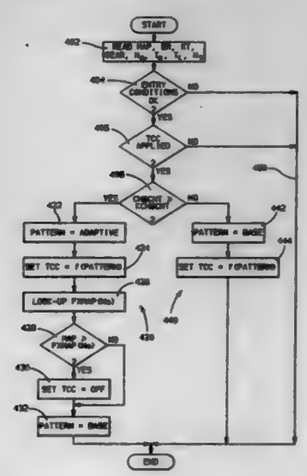


5,484,353

METHOD FOR REDUCING DRIVELINE DISTURBANCES BY CONTROLLING TORQUE CONVERTER CLUTCH APPLICATION

Jeffrey P. Lux, Yokohama, Japan; John W. Boughner, Middle Park, Australia, and Joseph R. Dulzo, Redford, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 14, 1994, Ser. No. 195,133
Int. Cl.[6] F16H *61/14;* B60K *41/02*
U.S. Cl. 477—169 8 Claims



6. In a vehicle having a torque converter coupling the output of an internal combustion engine to the input of a transmission gearset, the torque converter having a selectively engageable torque converter clutch operable in a release mode and apply mode for effectuating hydrodynamic and mechanical coupling, respectively, between the internal combustion engine output and transmission gearset input, a method for reducing torque induced driveline disturbances by controlling the mode of the torque converter clutch operation comprising:

establishing the torque converter clutch mode in accordance with a base apply/release pattern;

measuring a first quantity related to engine speed;

measuring a second quantity related to engine load;

predicting a driveline disturbance event from said first and second quantities by detecting continuous engine operation wherein said second quantity exceeds a predetermined function of said first quantity for a predetermined interval; and

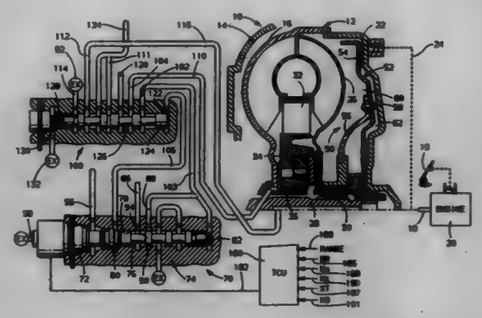
overriding said base apply/release pattern to release said torque converter clutch when said driveline disturbance event is predicted.

5,484,354

CONTROLLED CAPACITY TORQUE CONVERTER CLUTCH CONTROL SYSTEM

William J. Vukovich, Ypsilanti, and Melissa M. Koenig, Ann Arbor, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 2, 1994, Ser. No. 298,962
Int. Cl.[6] B60K *41/02*
U.S. Cl. 477—174 6 Claims



1. In a motor vehicle including a fluidic torque converter adapted to transmit torque between an input member thereof coupled to an engine output shaft and an output member thereof coupled to a vehicle drivetrain, the torque being positive when the engine is driving the vehicle drivetrain and negative when the vehicle drivetrain is driving the engine, a variable torque capacity clutch mechanism connected between the input and output members of said torque converter wherein clutch slip is positive when the input member rotational speed exceeds the output member rotational speed and negative when the output member rotational speed exceeds the input member rotational speed, and a clutch actuating mechanism for controlling the torque capacity of said clutch according to the net fluid pressure differential thereacross, a torque converter clutch control comprising:

control means for establishing a pressure control signal in response to a plurality of vehicle control inputs for controlling the clutch actuating mechanism in one of a plurality of modes of operation;

an off mode of operation wherein said pressure control signal causes substantially zero pressure differential across said clutch mechanism to cause substantially zero clutch torque capacity;

an apply mode of operation operable during periods of positive torque for transitioning from the off mode of operation to a controlled capacity mode of operation, wherein during said apply mode of operation the pressure control signal varies to cause positive slip to decrease toward a reference slip;

a controlled capacity mode of operation wherein the pressure control signal varies to increase and decrease the pressure differential across the clutch mechanism to maintain the clutch mechanism slip substantially at said reference slip, said pressure control signal comprising a summation of a torque adaptive quantity which value varies with a predetermined correlation to a measure of engine output torque and a slip adaptive quantity whose value varies in a first predetermined direction and a second predetermined direction when the clutch mechanism positive slip is respectively greater than and less than the reference slip; and

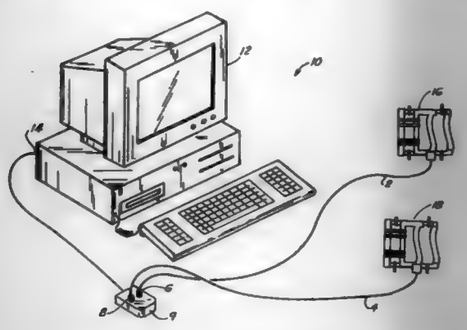
a release mode of operation for transitioning from the controlled capacity mode of operation to the off mode of operation wherein during said release mode of operation the pressure control signal varies to decrease the pressure differential across the clutch mechanism to cause clutch torque capacity to decrease.

5,484,355

SYSTEM FOR THERAPEUTIC EXERCISE AND EVALUATION

Theodore I. King, II, Milwaukee, and Barbara L. Basaj, Menomonee, both of Wis., assignors to Smith & Nephew Roylnn, Inc., Memphis, Tenn.

Filed Oct. 1, 1993, Ser. No. 130,584
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—4 **12 Claims**



1. A therapeutic exercise system for patient exercise of a patient, comprising:
- a computer for running a program, said computer having a first input for a first on/off signal and having a second input for a second on/off signal;
- a first exercise device coupled to said first input of said computer, said first exercise device adapted for providing said first on/off signal to said first input of said computer responsive to activation by the patient through patient exercise using said first exercise device;
- a second exercise device coupled to said second input of said computer, said second exercise device adapted for providing said second on/off signal to said second input of said computer responsive to activation by the patient through patient exercise using said second exercise device;
- an exercise motivating program for running on said computer, said exercise motivating program providing feedback to the patient responsive to said first on/off signal indicating activation of said first exercise device by patient exercise and responsive to said second on/off signal indicating activation of said second exercise device by patient exercise.

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Patent Not Issued For This Number

5,484,357

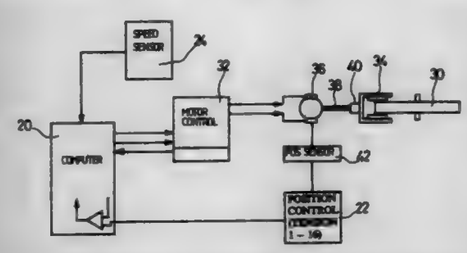
Patent Not Issued For This Number

5,484,358

AUTOMATIC MAGNETIC CONTROLLER FOR MAGNETIC TENSION BY SETTING WATTAGE

Leao Wang, and Peter Wu, both of Taichung, Taiwan, Prov. of China, assignors to Greenmaster Industrial Corp., Taichung, Taiwan, Prov. of China

Filed Jul. 13, 1994, Ser. No. 274,422
Int. Cl.[6] A63B *69/00*
U.S. Cl. 482—9 **4 Claims**



1. An automatic magnetic controller for magnetic tension comprising:
- a flywheel;
- a magnetic member located proximate said flywheel;
- a computer;
- a positioning controller which is calibrated into sixteen divisions for adjusting tension applied to the flywheel by the magnetic member, said positioning controller being electrically connected to said computer; and
- a sensor installed at the flywheel and connected with said computer, wherein the sensor senses a number of rotations per minute of the flywheel and sends a signal to said computer indicative of the number of rotations per minute, wherein a formula for the correlation between wattage and calories is included in said computer, such that the wattage and the calories to be exhausted are set through said computer, and while a user is exercising, the computer receives the signal from said sensor, and the computer sends a signal to adjust a distance between said magnetic member and said flywheel, so as to regulate the tension and maintain the wattage at a constant value.

5,484,359

CHIN MUSCLES TONIFIER

Germano N. Wabafiyebazu, 280 Crichton Street, Apt. 5, Ottawa, Ontario, Canada

Continuation-in-part of Ser. No. 942,856, Sep. 10, 1992, abandoned. This application Jan. 3, 1994, Ser. No. 176,647
Int. Cl.[6] A63B *9/16*
U.S. Cl. 482—11 **7 Claims**



1. A facial exercise device for exercising the facial muscles of a user comprising:
- a face encircling member, the face encircling member including:
- a stretchable elastic means having a padded covering adapted to substantially encircle a user's head about the facial area and adapted to extend thereabout from a user's forehead to beneath a user's chin,

the face encircling member configured to provide a substantially unobstructed opening for acceptance of the face of a user, whereby the stretchable elastic means provides tension around a user's face for exercising the facial muscles of the user,

the face encircling member including means for adjustably mounting and positioning the face encircling member about a user's face,

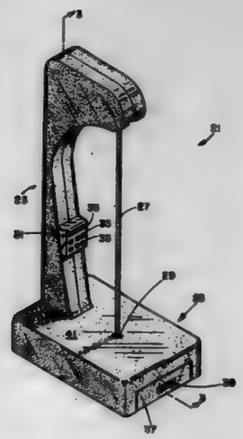
the means for adjustably mounting and positioning including:
- a first rearwardly extending lower mounting tension adjusting belt means fixedly secured to the face encircling member at one side thereof and adjustably secured to an opposite side thereof at a point adapted to be positioned between a user's chin and a user's forehead,
- a second rearwardly extending top tension adjustable belt means connected at one end to the face encircling member at an upper forehead portion of the face encircling member,
- a rearwardly located non-extendable carrier and positioning member connected to and extending from the second top belt means to the first lower belt means,
- the lower belt means being slidably mounted and positioned by the carrier and positioning member, and positionable to thereby mount the lower belt below a user's ears at the back of a user's head, and
- the second top belt means being connected at another end other than the one end to the carrier and positioning member to position the top belt means on a user's head.

5,484,360

CONTINUOUS ROPE CLIMB EXERCISER

Terry M. Haber, 25011 Castlewood, El Toro, Calif. 92630; William H. Smedley, 33285 Blanche Dr., Lake Elsinore, Calif. 92330, and Clark B. Foster, 23631 Wakefield Ct., Laguna Niguel, Calif. 92677

Filed Jun. 23, 1994, Ser. No. 264,709
Int. Cl.[6] A63B *7/04*
U.S. Cl. 482—37 **8 Claims**



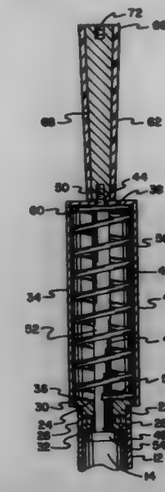
1. A rope climb exercise device comprising:
- an overhanging davit structure;
- a base, supporting said davit structure;
- a length of rope fed vertically downwardly from said overhanging davit structure support; and
- a controlled speed feed mechanism connected to said rope and configured to control the feeding of said rope from said overhanging davit structure;
- a base platform covered by said base;
- at least one flange set supported by said base platform;
- a pair of spaced apart axles supported by said flange set, each axle rotatably supporting an associated compression pulley; and
- a gear motor having a shaft supporting a drive pulley interposed between said compression pulleys.

5,484,361

SPRING-LOADED SKI POLE FOR UPPER BODY WORKOUT

Rodney A. Dunn, 111 Sheldon St., Dowagiac, Mich. 49047-1350

Filed Nov. 15, 1994, Ser. No. 339,801
Int. Cl.[6] A63B *22/10*
U.S. Cl. 482—51 **1 Claim**



1. A spring-loaded ski pole for upper body workout for enabling a skier to obtain a better workout and adding impetus as the pole is released from snow comprising, in combination:
- a ski pole having an open first end, a second end, and an intermediate extent therebetween, the second end having a pointed tip, a circular basket secured to the ski pole upwardly of the second end;
- a base portion having a first end and a second end, the second end secured within the open first end of the ski pole by a pair of screws on either side thereof, the first end having an outwardly extending lip integral therewith, the outwardly extending lip extending beyond the diameter of the ski pole, the base portion having an aperture formed through the first end and the second end;
- a housing having an open first end, a closed second end, an inner surface, and an outer surface, the open first end having a diameter greater than the outwardly extending lip of the base portion, the closed second end having an aperture formed therethrough;
- a steel rod having a first end, a second end, and an intermediate extent therebetween, the steel rod situated within the housing and retained within the aperture formed through the first end and the second end of the base portion, the first end having a stop integral therewith, the stop positioned beyond the second end of the base portion preventing the steel rod from exiting the base portion, the second end being externally threaded, the second end extending upwardly through the aperture of the closed second end of the housing;
- a spring enveloping the intermediate extent of the steel rod, the spring having a first end resting on the first end of the base portion and a second end resting against the inner surface of the closed second end of the housing, the spring allowing the housing and steel rod to be moved downwardly relative to the ski pole and the base portion to a thrust position, the spring then returns the housing and the steel rod to a beginning position;
- a hand grip having a first end, a second end, and an intermediate extent therebetween, the first end having an internally

threaded aperture therein, the internally threaded aperture couples with the externally threaded second end of the steel rod, the second end having an aperture therein, a removable wrist strap securable within the aperture of the second end.

5,484,362

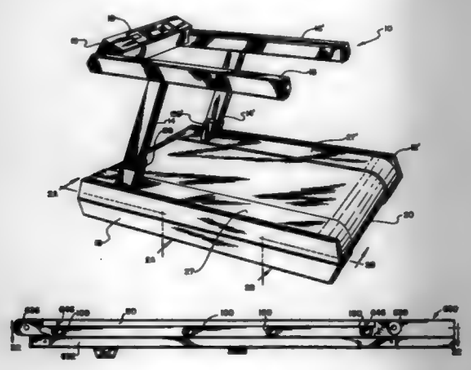
EXERCISE TREADMILL

Richard E. Skowronski, Elk Grove Village; Kenneth F. Lantz, Oak Park, both of Ill.; Tomas F. Leon, deceased, late of Chicago, Ill.; Donald J. Alexander, Milwaukee, Wis.; George Kolomayets, Chicago, Ill.; Vincent C. Adams, Buffalo Grove, Ill.; Eugene B. Szymczak, Glen Ellyn, Ill.; Edward W. Minnich, Palatine, Ill., and Wade K. Totzke, Algonquin, Ill., assignors to Life Fitness, Franklin Park, Ill.

Continuation-in-part of Ser. No. 636,906, Apr. 17, 1991, Pat. No. 5,382,207, which is a continuation-in-part of Ser. No. 452,885, Dec. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 368,450, Jun. 19, 1989, abandoned. This application Jun. 3, 1994, Ser. No. 254,030

Int. Cl.[6] A63B *22/02*

U.S. Cl. 482—54 **15 Claims**



1. An exercise treadmill, comprising:

a frame structure including two rotatable pulleys, said pulleys being positioned substantially parallel to each other, and a pair of spaced apart longitudinal frame members for providing longitudinal structural support for said frame structure;

means for rotating one of said pulleys;

an endless, moveable surface looped around said pulleys to form an upper run and a lower run, said movable surface being rotated when one of said pulleys is rotated, and providing an exercise surface on which a user can walk or run while exercising;

a deck member secured beneath at least a portion of said upper run; and

support means, including a plurality of resilient support members secured to said deck member and slideably abutting said frame structure, for supporting said deck member on said frame structure effective to both permit said deck member to deflect downwardly with a variable rate of deflection in response to the impact force of the user's feet on said exercise surface and to permit at least limited longitudinal movement of said deck member with respect to said frame structure when said deck member is deflected downwardly.

5,484,363

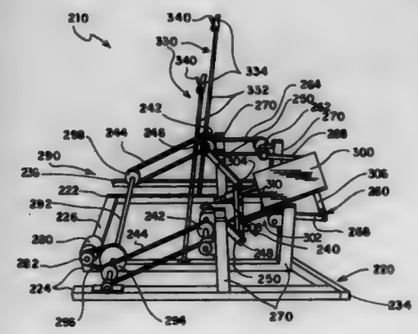
MOGUL SKIING SIMULATING DEVICE

Kevin Creelman, 104 Center St., Ste. 100, Kodiak, Ak. 99615, and Terry G. Jacobs, NE. 18911 N. Shore Rd., Tahuya, Wash. 98588

Continuation-in-part of Ser. No. 21,138, Feb. 23, 1993, Pat. No. 5,342,265. This application Jul. 25, 1994, Ser. No. 280,114

Int. Cl.[6] A63B *69/18*

U.S. Cl. 482—71 **19 Claims**



1. An exercise apparatus for simulating alpine mogul skiing comprising:

a base;

a first crank assembly supported by said base, said first crank assembly being rotatable through a complete circle about a first axis of rotation;

a second crank assembly supported by said base, said second crank assembly being rotatable through a complete circle about a second axis of rotation, said first axis of rotation being parallel to said second axis of rotation;

a platform support slidably and pivotally attached to said first crank assembly and pivotally attached to said second crank assembly;

a primer mover supported by said base; and

a power transmitting element connecting said prime mover to said first and second crank assemblies.

5,484,364

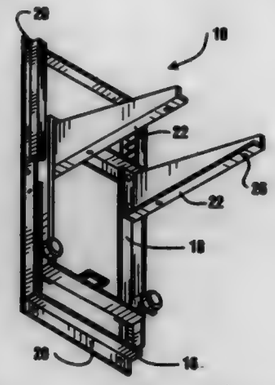
ADJUSTABLE STRIKING BAG SUPPORT APPARATUS

Richard J. Boring, 1109 Mulberry Rd., Brunswick, Ohio 44212

Filed May 7, 1993, Ser. No. 60,458

Int. Cl.[6] A63B *69/00*

U.S. Cl. 482—87 **21 Claims**



1. A vertically adjustable striking bag support support apparatus, comprising:

a fixed frame means, said fixed frame means adapted for attachment to a generally vertically extending support surface;

said fixed frame means including vertically extending slot means in a lower portion thereof, and a plurality of vertically spaced member accepting means in an upper portion thereof;

a movable frame means adapted for vertical movement on said fixed frame means, said movable frame means including an arm portion said arm portion extending from said movable frame means in a direction away from said support surface said arm portion adapted for holding a platform and striking bag in supported relation therewith;

said movable frame means including slot engaging member means for engagement in said slot means and adapted for vertical movement therein;

said movable frame means further including a projection member means on upper portion thereof for selective engagement with said spaced member accepting means, whereby said projection member means is held in supported relation by said accepting means at a selected vertical elevation.

5,484,365

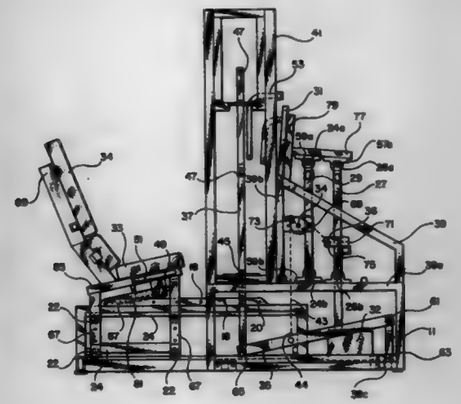
LEG PRESS EXERCISE MACHINE

Arthur A. Jones, Ocala, and Philip Sencil, Anthony, both of Fla., assignors to MedX Corporation, Ocala, Fla.

Continuation-in-part of Ser. No. 909,658, Jul. 7, 1992, Pat. No. 5,256,125, and a continuation-in-part of Ser. No. 921,112, Jul. 29, 1992, Pat. No. 5,338,274, and a continuation-in-part of Ser. No. 145, Jan. 4, 1993, Pat. No. 5,304,107, and a continuation-in-part of Ser. No. 20,807, Feb. 22, 1993, Pat. No. 5,342,270. This application May 13, 1993, Ser. No. 60,657

Int. Cl.[6] A63B *21/06;23/04*

U.S. Cl. 482—97 **2 Claims**



2. A leg press machine comprising in combination, a footrest mounted for movement about a generally horizontal axis in response to engagement by the legs of an exerciser, resistance means for opposing movement of the footrest in one direction about said axis, transmission means including a pair of generally parallel links connecting the footrest to said resistance means for transmitting movement from the footrest to the resistance means, and a counterweight located below said axis and fixed to one of said generally parallel links, said counterweight biasing said links and said footrest to extend in generally vertical planes, and wherein said resistance means includes a weight stack including a rod and one or more weights connected to the rod, and said transmission means includes a lever below the weights and pivotally connected to the rod to raise the rod when the footrest is moved in said one direction.

5,484,366

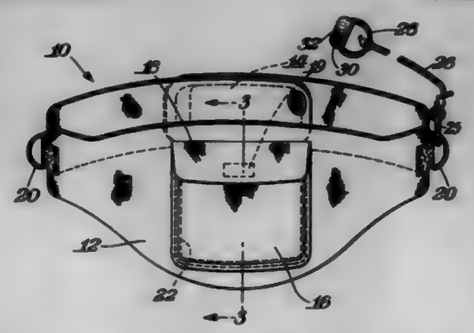
AEROBIC/CROSS TRAINING EXERCISE BELT

William T. Wilkinson, P.O. Box 572, Crownsville, Md. 21032-0572

Continuation of Ser. No. 35,636, Mar. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 972,251, Nov. 5, 1992, abandoned. This application Sep. 27, 1994, Ser. No. 312,691

Int. Cl.[6] A63B *21/065*

U.S. Cl. 482—105 **18 Claims**



1. An aerobic/cross training belt comprising:

a belt having a first end and a second end configured to encircle a user's waist, said belt having a first means for fastening on said first end and a complementary fastening means on said second end and being configured to engage said first means whereby the ends can be fastened together to form a closed loop belt,

a lumbar support positioned between said ends of said belt at a rear body of said belt so as to support the lumbar of a user when the ends of said belt are positioned on a forward facing frontal area of a user, said lumbar support including at least one pocket means containing at least on thermal gel-pack,

at least one attachment means attached to said belt between the lumbar support and an end of the belt,

at least one elongated resilient member having ends, a first end of said resilient member being fastened to said attachment means and a second end of said resilient member being connected to a means configured to be engaged by a user, whereby a user may perform an exercise by pulling on said means for engaging while simultaneously receiving support and thermal therapeutic treatment at a lumbar region of the user.

5,484,367

WEIGHT SET HAVING MEANS TO PREVENT ROTATION OF THE WEIGHTS ON THE BAR

Ralph E. Martinez, 1961 W. Admiralty St., Colton, Calif. 92324-8624

Filed Dec. 8, 1994, Ser. No. 351,675

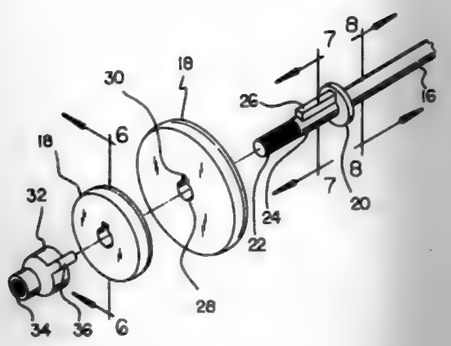
Int. Cl.[6] A63B *21/075*

U.S. Cl. 482—107 **3 Claims**

1. A toy weight set comprising:

an elongated bar formed of a polymeric material shaped so as to define opposed threaded ends, the bar having a pair of spaced flanges equally spaced from the respectively opposed ends of the bar wherein the opposed threaded ends continue into a smooth neck area intersecting the flanges and wherein the bar is further shaped so as to define a projecting key extending substantially orthogonally from the smooth neck area; and,

a plurality of weighs formed of a polymeric material wherein each of the weights is circular in configuration and includes a through-extending center aperture having a keyway corresponding to the key permitting direction of the threaded end and smooth neck area of one of the ends of the elongated bar therethrough such that the projecting key is received in the keyway.



5,484,368

MULTI-FUNCTION PULL BAR

Shao-Ying Chang, No. 764, Chung Shan South Road, Yang Mei, Taoyuan, Taiwan, Prov. of China

Filed Jun. 30, 1994, Ser. No. 269,099
Int. Cl.[6] A63B *21/02*
U.S. Cl. 482—122 6 Claims



1. A multi-function pull bar, comprising:

a main bar body having an extensible dual sleeve tube structure, the main bar body including:

an inner tube having, at one end thereof, a first end housing having a hollow interior and a pull cord outlet on a surface thereof; and

an outer tube slidably fitted to a tube portion of the inner tube and having, at one end thereof, a second end housing having the same construction as the first end housing, the first end housing and the second end housing being disposed at opposite ends of the main bar body; and

a pull cord device including:

first and second pulley assemblies rotatably arranged in an interior of the first and second end housings, respectively, the first and second pulley assemblies including first and second pulleys, respectively;

first and second extensible pull cords of equal length, first ends of the first and second pull cords being attached to the first and second pulleys, respectively, and second ends of the first and second pull cords leading to an outside of the first and second end housings through the pull cord outlets in the first and second end housings, respectively, after the first and second pull cords pass through the inner tube, over the second and first pulleys, respectively, return through the inner tube, and wind over the first and second pulleys, respectively; and

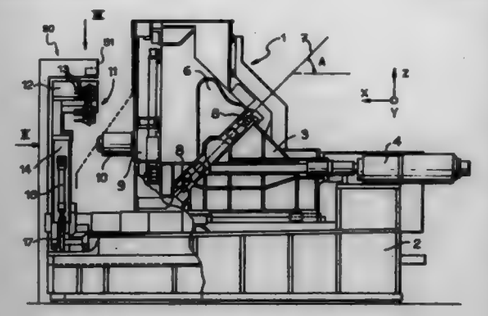
two spring hook devices connected respectively to the second ends of the first and second pull cords.

5,484,369

MACHINE TOOL WITH A DYNAMIC TOOL MAGAZINE

Osvaldo Scarzello, Torino, Italy, assignor to Comau S.p.A., Grugliasco, Italy

Filed Sep. 30, 1994, Ser. No. 314,266
Claims priority, application Italy, Jan. 13, 1993, TO93A0748
Int. Cl.[6] B23Q *3/157*
U.S. Cl. 483—56 5 Claims



1. High speed production unit for performing machining operations, comprising

a bed,

a first slide slidably mounted along a first horizontal axis on said bed,

a second slide slidably mounted on said first slide along a second horizontal axis orthogonal to said first horizontal axis, said second slide having a lower sliding plane inclined at an angle lower than 90° with respect to the horizontal plane,

a third slide slidably mounted along a third vertical axis on said second slide and carrying a tool head,

a tool magazine for the tool head having a support body provided with means for supporting a plurality of tools each provided with means for quick coupling to said tool head, said support body being static with respect to said bed; said head being adapted to pick up and store tools in said static magazine in order to provide for the different operations of a machining cycle programmed on a given piece to be machined,

wherein said production unit is provided with an auxiliary dynamic tool magazine for the tool head, said dynamic magazine having a support body provided with means for supporting a plurality of tools each provided with means for quick coupling to said tool head, and wherein said body of said dynamic magazine is displaceable between an operative position, in which it is adjacent to the working area of said tool head, so as to allow for a broken or worn tool to be discharged by the tool head into the dynamic magazine and a new tool provided at the dynamic magazine to be picked up by the tool head, and an inoperative position, in which said body of said dynamic magazine is spaced apart from working area of the tool head, so as to allow for replacement of broken or worn tools without any interference with the machining cycle of the tool head.

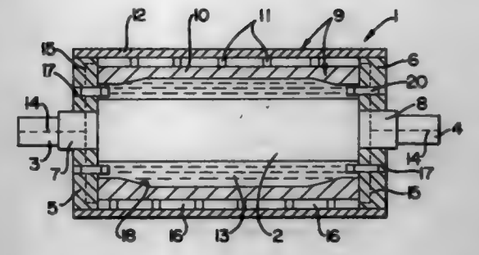
5,484,370

ROTATABLY SUPPORTED ROLL

Dietmar Jenke, Radevormwald; Josef Majsai, Huckeswagen, and Winfried Wubken, Remscheid, all of, Germany, assignors to Barmag AG, Remscheid, Germany

Filed Jun. 1, 1994, Ser. No. 252,222
Claims priority, application Germany, Jun. 2, 1993, 43 18 313.1
Int. Cl.[6] B21B *29/00*
U.S. Cl. 492—4 14 Claims

1. A roll adapted to form a nip with another roll in a film production line, and which is characterized by the ability to permit the nip to be readily adjusted, said roll comprising



a pair of axially spaced apart end disks, with each of said disks including an outwardly extending axial journal,

a jacket fixed between said disks so as to define a closed chamber therebetween and so that said journals are coaxially aligned, said jacket comprising a hollow interior member which includes a cylindrical exterior surface, and an exterior member coaxially surrounding said exterior surface of said interior member in a spaced apart arrangement so as to define an annular space therebetween.

an incompressible liquid filling said chamber, and

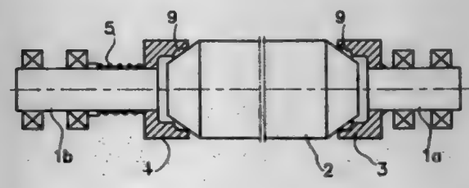
means for controllably pressurizing said liquid in said chamber so as to cause the jacket to radially bulge to a controlled extent, and comprising at least one axial opening extending axially through at least one of said disks, with said one opening including an internally threaded bore which communicates with said chamber, and a threaded plug threadedly mounted in said threaded bore in an axially adjustable manner so as to permit adjustment of the pressurization of the liquid in said chamber.

5,484,371

BALL AND SOCKET JOINT FOR INTERCONNECTING A CERAMIC ROLLER TO A BEARING

David Gautier, Maubeuge, France, assignor to Vesuvius France S.A., Feignies, France

Continuation of Ser. No. 204,678, Mar. 1, 1994, abandoned.
This application May 26, 1995, Ser. No. 453,559
Claims priority, application France, Mar. 5, 1993, 93 02761
Int. Cl.[6] B41F *31/02*
U.S. Cl. 492—16 10 Claims



1. Roller comprised of a shell of refractory material, rotatable about an axis, said shell having two ends and a bearing surface defined at each of these ends, two end caps mounted rotatably on at least one shaft at each of the ends of said shell and rotatable about the same axis as said shell, and receiving the bearing surfaces of the shell along a contact zone, these end caps being of a material having a higher coefficient of expansion than that of the refractory material of the shell, and a spherical joint means at each of the ends of the shell for preventing a decrease of said contact zone between said bearing surfaces and said end caps despite thermal differential expansion between said roller and end caps and flexing of said shell under load, said joint means including first and second joint members, each of which has a spherical surface that engages the other, said contact zone being defined at the inter-engagement between said spherical surfaces.

5,484,372

COMPOUND ROLL AND METHOD OF PRODUCING SAME

Ryosaku Nawata; Kenji Date, and Toshiyuki Hattori, all of Kitakyusyu, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Division of Ser. No. 25,669, Mar. 3, 1993, Pat. No. 5,355,932.
This application Aug. 11, 1994, Ser. No. 287,718
Claims priority, application Japan, Mar. 6, 1992, 4-484707
Int. Cl.[6] B22D *13/02*
U.S. Cl. 492—58 5 Claims

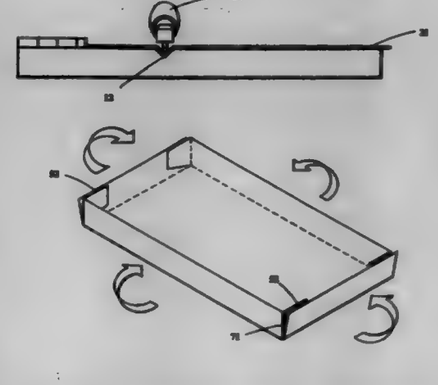
1. A compound roll produced by centrifugal casting comprising a shell portion made of a hard, high-alloy cast steel or iron having excellent wear resistance and resistance to surface roughening and a core portion made of a tough cast iron or steel, said high-alloy cast steel or iron of said shell portion having a composition consisting essentially, by weight ratio, of 1.0–3.0% of C, 2.0% or less of Si, 2.0% or less of Mn, 2.0–15.0% of Cr, 10.0% or less of Mo, 2.0–8.0% of V, the balance being substantially Fe and inevitable impurities, an average diameter of crystal grains constituting a matrix of the metal structure of said shell portion being 100 μm or less in a range from a surface to a depth of 50 mm when determined by an image analysis method on the crystal grains having diameters exceeding 30 μm, and said crystal grains satisfying the formula: $m_2 \leq 1.2\ m_1$, wherein m_1 is an average diameter of said crystal grains at the surface of said shell portion, and m_2 is an average diameter of said crystal grains at the depth of 50 mm.

5,484,373

KIT FOR MAKING BOXES AND METHOD FOR USING

Martin R. Carbone, 2519 Bath St., Santa Barbara, Calif. 93105

Filed Dec. 10, 1993, Ser. No. 165,375
Int. Cl.[6] B31B *47/00;1/62*
U.S. Cl. 493—59 2 Claims



2. A method for making a box having a preferred height, said box having a bottom portion and a matingly engaging top portion, comprising the steps of:

(a) presenting a kit comprising; (i) at least one sheet of foldable card stock material; (ii) a scoring plate having (1) a flat planar top surface dimensioned to accommodate and support a sheet of said card stock placed thereupon; (2) a guide rail presenting a first vertical edge affixed thereto; and (3) a scoring groove including an elongate straight indentation in said top surface oriented parallel to, and spaced a uniform distance from said guide rail vertical edge; (iii) a plurality of spacing strips, each one of said plurality of spacing strips having a length, a width and a second vertical edge, said width being less than said uniform distance, and wherein the length of at least one spacing strip of said plurality of spacing strips is at least as long as said scoring groove; (iv) a scoring tool operable for forcing a portion of a sheet of said card stock into said scoring

groove; and (v) adhesive means operable for non-releasably joining adjacent tabs at respective corners of said card stock;

(b) selecting at least one spacer strip from the kit such that the width of the spacer strip, or the total width of a combination of spacer strips, plus the preferred height equals the uniform distance between the groove and first vertical edge of the guide rail on the scoring plate;

(c) placing the spacer strip upon the top surface of the scoring plate with the second vertical edge of the spacer strip parallel to the first vertical edge of the guide rail and the width of the spacer being selected so that the distance between said second vertical edge and the scoring groove is substantially equal to the preferred height;

(d) placing a first card stock having at least three corners ad three straight edges on the scoring plate so that one straight edge of said at least three straight edges of said card stock is in contact with said vertical edge of said at least one spacer;

(e) making a straight scoring line parallel to the said one straight edge by scoring said card stock along the length of said scoring groove employing scoring tool means operable for pressing a portion of said card stock into said scoring groove;

(f) repeating steps (d) and (e) for each of said straight edges of said card stock, said straight scoring lines intersecting at a point near each corner of said card stock;

(g) making a first cut along a scoring line at each corner of said card stock, the cut extending from the point of intersection of the scoring line with the outer edge of the card stock to the point where the scoring line intersects with another scoring line;

(h) making a second cut in each corner of the card stock, the second cut being adjacent to the first cut and extending from the inner terminus of the first cut to the edge of the card stock to form a wedge shaped notch and two adjacent tabs at each corner of the card stock;

(i) folding said notched card stock along each score line to form box sides having said adjacent tabs at each corner;

(j) affixing said adjacent tabs of said card stock to one another to form the bottom portion of the box;

(k) making the top portion of the box by substituting a second card stock for the first card stock wherein the second card stock is congruent with the first card stock and wherein each of said straight edges on said second card stock is longer than the corresponding straight edge on the first card stock and repeating steps (d) through (j).

5,484,374

METHOD AND APPARATUS FOR ATTACHING A SPOUT TO A CONTAINER

Jerry G. Buchner, and A. S. Worrell, both of Algonquin, Ill., assignors to Nimco Corporation, Crystal Lake, Ill.

Filed Oct. 25, 1991, Ser. No. 783,038

Int. Cl.[6] B31B *1/90*

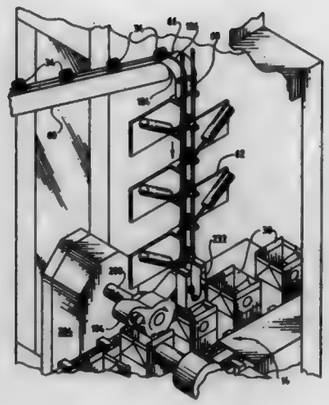
U.S. Cl. 493—87 **108 Claims**

1. An apparatus for attaching a spout having a flanged end to a preformed hole in an open-ended, partially formed container, comprising:

(a) an anvil having at least one mandrel projecting therefrom;

(b) drive means for engaging the flanged end of the spout on said mandrel, for rotating said anvil to pass said mandrel and the spout through the open end of the container, and for inserting the spout into the hole; and

(c) means for securing the flanged end of the spout to the inner wall of the container.



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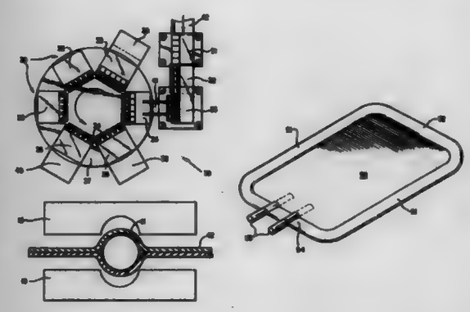
METHOD & APPARATUS FOR SEALING FITMENT TUBES INTO POUCHES

Joseph E. Owensby, Spartanburg, and Gregory E. McDonald, Simpsonville, both of S.C., assignors to W. R. Grace & Co.-Conn., Duncan, S.C.

Division of Ser. No. 942,565, Sep. 9, 1992, Pat. No. 5,324,233. This application Mar. 11, 1994, Ser. No. 209,129

Int. Cl.[6] B31B *1/84;49/04*

U.S. Cl. 493—190 **14 Claims**



1. A method of attaching fitment tubes to flexible film comprising the steps of:

a) introducing a web of flexible film into a means for forming the side and bottom peripheral seams defining at least one pouch having one unsealed open end;

b) introducing said pouch to a cutting means and contouring the pouch and removing it from the web of flexible film;

c) introducing at least one fitment tube mounted on a mandrel between the flexible film layers of the unsealed open end of said pouch;

d) introducing said pouch with said fitment tubes to a sealing means;

e) sealing said at least one fitment tube to said pouch and sealing said unsealed open end:

f) cooling the seal of step e) using a cooling means; and

g) affixing fitments to the fitment tubes;

the improvement comprising using a pair of hot bars as the sealing means to seal said fitment tubes and said pouch open end at a desired temperature and pressure, and further characterized by using a pair of cold bars as the cooling means of step f) at a desired temperature and pressure.

5,484,376

READY TO LOAD BAG PACK, METHOD OF FORMING AND SYSTEM

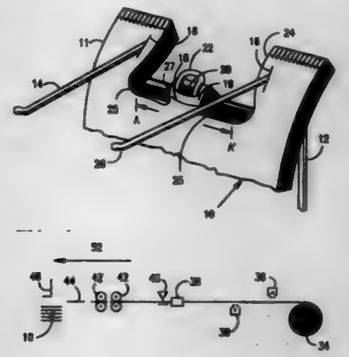
Randolph D. Prader, Fairport, and Graham Smith, Walworth, both of N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 152,781, Nov. 15, 1993, abandoned, which is a continuation of Ser. No. 529,806, May 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 495,070, Mar. 19, 1990, Pat. No. 5,087,234. This application Sep. 19, 1994, Ser. No. 308,860

The portion of the term of this patent subsequent to Feb. 11, 2009, has been disclaimed.

Int. Cl.[6] B31B *23/86;27/60*

U.S. Cl. 493—194 **16 Claims**



1. A method of forming a pack of gusseted, polyethylene film, integrally extended handle bags comprising:

(a) providing a collapsed tube of polyethylene film, said tube having internal and external film surfaces;

wherein said external film surface contain first regions which will become bag mouth cut-edge regions and second regions which will become bag handle cut-edge regions when the film surfaces are severed to simultaneously form integrally-extended double loop handles and open mouth cut-edge regions between said integrally-extended double loop handles;

(b) corona discharge treating at least part of the external film surface of said tube in the regions which will become the bag mouth cut-edge regions and leaving untreated the external film surface of at least one lateral side of said tube in the regions which will become one of the handle cut-edge regions;

(c) forming side gussets in said tube;

(d) traverse-sealing said tube at bag-length distances apart to form a series of end-sealed gusseted pillowcases;

(e) separating and stacking a plurality of said pillowcases in at least general registration;

(f) applying pressure to one end of the stack and severing all the film layers along a cut-edge line so as to form integrally-extended double loop handles and an open mouth region in each bag and simultaneously or sequentially forming handle support orifices in each handle, said bags in said stack being releasably adherent along at least part of said bag mouth cut-edge regions, with adhesion created solely by the combination of said severing and said pressure, in the absence of any added heat at said corona discharge treated bag mouth cut-edge regions of said external film surface of said tube.

5,484,377

CARTON BLANK ERECTOR AND FEEDER

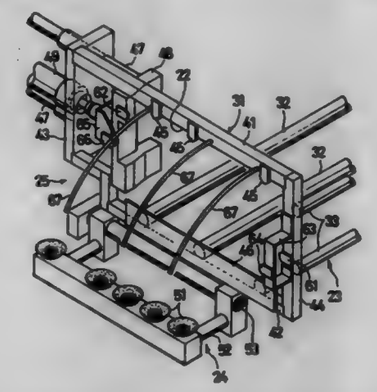
Michio Ueda; Seizo Kawamura; Toshio Kanematsu; Masamitsu Mihara, and Takayuki Hashimoto, all of Tokushima, Japan, assignors to Shikoku Kakoki Co., Ltd., Tokushima, Japan

Filed Dec. 22, 1993, Ser. No. 171,470

Claims priority, application Japan, Dec. 25, 1992, 4-088776 U

Int. Cl.[6] B31B *3/80;5/78*

U.S. Cl. 493—316 **4 Claims**



1. A carton blank erector and feeder for unfolding a folded flat blank into a square or rectangular cross sectional tube, then feeding each of the unfolded blanks to a bottom forming mandrel and fitting the unfolded blank around the mandrel, said carton blank erector and feeder comprising:

a magazine having a delivery opening at one end and accommodating flat blanks as arranged closely side by side from said one delivery opening end toward a second end thereof;

transport means for withdrawing the blank from the delivery opening and transporting the blank along a path to a guide rail which is in alignment with the bottom forming mandrel; and

means for unfolding the blank while the blank is being transported by the transport means, the unfolding means having at least two unfolding claws provided at edge portions of the delivery opening so as to be engageable with opposite ends of the blank to be withdrawn from the delivery opening, and at least two unfolding ensuring claws arranged downstream of the unfolding claws at an intermediate portion of the path so as to be engageable with the respective blank ends after the blank ends are released from the unfolding claws.

5,484,378

SHEET FOLDING METHOD

Norman S. Braithwaite, P.O. Box 992815, Redding, Calif. 96099-2815

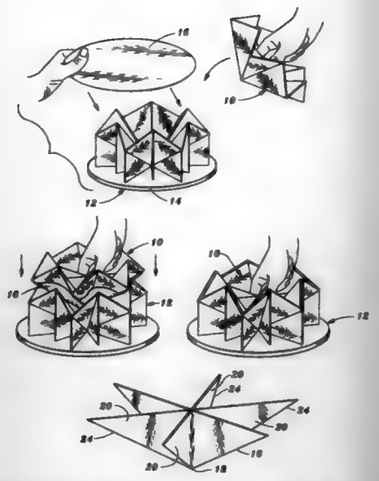
Filed Jul. 14, 1994, Ser. No. 275,288

Int. Cl.[6] B65H *45/12*

U.S. Cl. 493—356 **9 Claims**

1. A method of folding a flat sheet of material into a decorative symmetrical object having a plurality of interconnected sheet panels defined by fold lines converging to a central locus, each sheet panel being angularly disposed relative to each adjacent sheet panel and defining a predetermined angle with respect thereto about a fold line, said method comprising the steps of:

placing a substantially flat sheet of flexible material between a male die member and a female die member, said male die member having male die segments corresponding in shape and number to the shape and number of interconnected sheet panels of a decorative symmetrical object to be formed from said substantially flat sheet of flexible material interconnected by male die corners converging to a central locus and corre-



sponding to the locations of the fold lines of the decorative symmetrical object, and said female die member having female die segments also corresponding in shape and number to the shape and number of interconnected sheet panels of a decorative symmetrical object to be formed from said substantially flat sheet of flexible material interconnected by female die corners converging to a central locus and corresponding to the locations of the fold lines of the decorative symmetrical object;

bringing said male die member and said female die member into engagement with said sheet of flexible material at opposed sides of said sheet of flexible material;

pushing said sheet of flexible material into said female die member with said male die member to change the shape of said sheet of flexible material;

terminating relative movement between said male die member and said female die member with the segments thereof in registry and when said sheet of flexible material is compressed therebetween and crease lines are formed in the sheet of flexible material by registered male die corners and female die corners and when said sheet of flexible material is partially folded about said crease lines to form panels partially folded with respect to one another;

withdrawing the male die member from the female die member;

removing the partially folded sheet of flexible material from said female die member; and

manually manipulating the removed partially folded sheet of flexible material to compress adjacent panels along said crease lines to complete the folding of said sheet of flexible material along said crease lines and form said decorative symmetrical object.

5,484,379

FOLDER ASSEMBY FOR PRINTING PRESS

Rudolf Stäb, Frankenthal, Germany, assignor to Albert-Frankenthal Aktiengesellschaft, Wurzburg, Germany

Filed Sep. 1, 1993, Ser. No. 114,617

Claims priority, application Germany, Sep. 1, 1992, 42 29 059.7

Int. Cl.[6] B41F *13/56*; B42C *1/04*

U.S. Cl. 493—359 **5 Claims**

1. A cylinder portion of a folder assembly usable to cut and fold a paper web in a web-fed rotary printing machine, said cylinder portion comprising:

a pair of cooperating drawing rollers for engagement of said paper web;

a collection cylinder having a peripheral surface provided with counter cutting devices and sheet grippers, said collection cylinder receiving a leading portion of said paper web from said pair of cooperating drawing rollers, said sheet grippers gripping a leading edge of said leading portion of said paper web;

a cutting cylinder having sheet cutting blades, said sheet cutting blades on said cutting cylinder contacting said counter cutting devices on said peripheral surface of said collection cylinder at an intake point to sever said leading portion of said paper web into segments; and

a belt conveyor system located adjacent said collection cylinder and intermediate said pair of drawing rollers and said intake point and contacting said leading portion of said paper web disposed on said peripheral surface of said collection cylinder before, in a direction of paper web travel, said intake point formed by said contact of said sheet cutting blades on said cutting cylinder with said counter cutting devices on said collection cylinder, said collection cylinder and said belt conveyor system imparting a prestress in said direction of paper web travel to said leading portion of said paper web, said belt conveyor system contacting said prestressed leading portion of said paper web disposed on said peripheral surface of said collection cylinder only before said intake point and through an angle of wrap sufficient to prevent said prestressed leading portion of said paper web being cut by said cutting cylinder and said collection cylinder at said intake point after said belt conveyor system from springing back along said collection cylinder in a direction opposite to said direction of paper web travel prior to the gripping of a newly created leading edge of said prestressed paper web by said sheet grippers on said collection cylinder in order to allow said sheet grippers to grip said newly created leading edge.

5,484,380

BOX HANDLING SYSTEM

Earl Bevins, 8645 17th Ave., Kenosha, Wis. 53135

Filed Sep. 9, 1994, Ser. No. 303,514

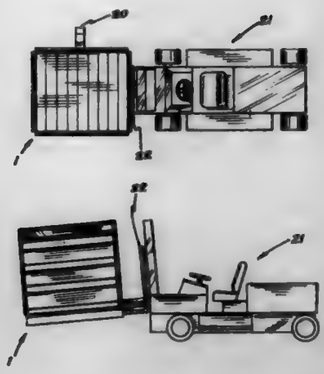
Int. Cl.[6] B31B *1/78*

U.S. Cl. 493—480 **4 Claims**

1. In a collapsible container having side walls which are pivotable with respect to one another, having no top and a detachable base, said base having a frame member at its periphery provided with an opening on two opposite sides, said base being secured to said walls by means of a pair of clips, one such clip being permanently affixed to each of a pair of opposite walls, and engaging said base through said openings; the method of manipulating said container which consists of detaching said base and collapsing said side walls by:

a. supporting such container securely in balance by means of its base on a forklift;

b. moving the container against a stationary finger element to depress one of its walls inwardly, near its clip, sufficiently to disengage said clip from said corresponding base opening;



c. moving said container away from said finger element, and moving said container forward on said forklift sufficiently to enable said container to fall forward when said fork is so tilted;

d. simultaneously tilting said container forward with respect to said forklift and laterally towards the depressed side of said container, whereby said opposite clip disengages from said base, and said walls fall to one side and forward from said forklift and collapse.

5,484,381

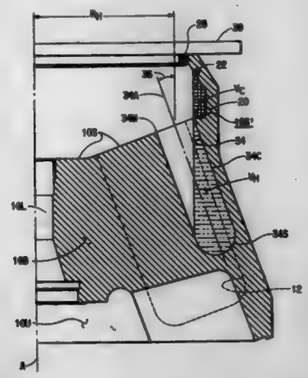
CENTRIFUGE ROTOR HAVING LIQUID-CAPTURING HOLES

Raymond G. Potter, Southbury, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 26, 1994, Ser. No. 329,343

Int. Cl.[6] B04B *7/06;5/02*

U.S. Cl. 494—12 **3 Claims**



1. A centrifuge rotor adapted for rotation in a nonevacuated chamber about an axis of rotation, the rotor having a predetermined plurality M of cavities therein,

each of the cavities having a mouth, each mouth having a point thereon that lies a predetermined maximum distance from the axis of rotation, the points of maximum distance defining a circular locus centered on the axis of rotation,

each cavity being adapted receive a container therein, each container being sized to hold a predetermined volume of liquid therein, each cavity having an axis extending therethrough, the axis of each cavity being inclined at a predetermined angle with respect to the axis of rotation, the predetermined angle of inclination of each cavity defining a volume V_R of liquid that is released from a single container in the event of rupture thereof during rotation of the rotor, wherein an arc extending between the axes of two adjacent cavities has a predetermined arcuate length S,

wherein the improvement comprises:

a predetermined number N of liquid-capturing holes disposed in the rotor, each liquid-capturing hole being configured with a cylindrical portion and a spherical bottom portion each liquid-capturing hole having an axis extending therethrough, the axis of each hole being inclined at a predetermined angle with respect to the axis of rotation, each hole being sized and inclined such that each hole is able to capture therein a predetermined volume V_H of liquid while the rotor is rotating,

each of the liquid-capturing holes having a mouth thereon, at least some portion of the mouth of each liquid-capturing hole lying radially outboard of the circular locus defined by the points of maximum distance,

the number N of holes and the volume V_H of each hole satisfying the relationship:

$$N \cdot V_H \geq n \cdot V_R,$$

where n is an integer less than or equal to M,

each liquid capturing hole being disposed between two adjacent cavities such that a radius extending from the axis of rotation to the axis of any one of the holes bisects the arc of length S between the cavities adjacent to said one of the holes.

5,484,382

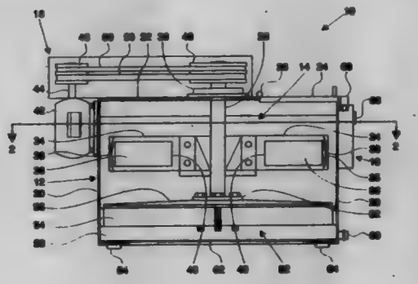
METHOD FOR EXTRACTING WASTE FLUID FROM A USED VEHICLE FILTER

Earl Frederick, 10205 Southern Ave., SE., Albuquerque, N.M. 87123

Continuation of Ser. No. 120,722, Sep. 13, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 458,222

Int. Cl.[6] B04B *5/02*

U.S. Cl. 494—37 **7 Claims**



2. A method for extracting waste fluid residing in a vehicle filter, the filter having a filter element enclosed in a housing having a first end and a second end and having an opening for connection to an engine on the second end of the housing, the method comprising the steps of:

punching at least one aperture in the first end of the housing;

providing an extractor comprising

a centrifuge rotatable about an axis and having at least one means for supporting at least one used filter such that the at least one filter's aperture is oriented radially outward from the axis of rotation of the centrifuge, and

means for rotating the centrifuge;

placing the filter in the extractor such that at least one of the apertures in the housing faces away from the axis of rotation; and

rotating the centrifuge with the rotating means such that waste fluid residing in the use filter is caused to exit from the filter's aperture.

5,484,383

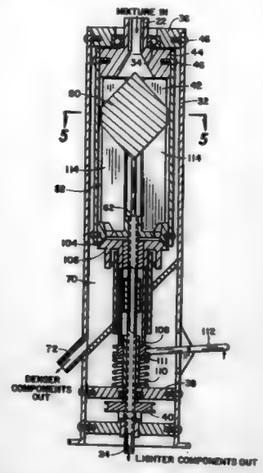
ORBITAL SEPARATOR FOR SEPARATING MORE DENSE AND LESS DENSE COMPONENTS OF A MIXTURE HAVING A CONTROLLABLE DISCHARGE PASSAGEWAY

Ernest C. Fitch, Jr., and Ing T. Hong, both of Stillwater, Okla., assignors to Bardyne, Inc., Stillwater, Okla.

Division of Ser. No. 180,766, Jan. 7, 1994, Pat. No. 5,370,600, which is a continuation of Ser. No. 962,686, Oct. 19, 1992, abandoned, which is a division of Ser. No. 550,375, Jul. 10, 1990, Pat. No. 5,156,586. This application Nov. 28, 1994, Ser. No. 345,077

Int. Cl.[6] B04B *11/00*

U.S. Cl. 494—48 **11 Claims**



1. An orbital separator device for separating more denser and less dense components of a mixture, comprising:

a separation container having an inlet end and an outlet end;

an inlet tube secured to said separation container inlet end and communicating with said separation container by which said mixture is introduced into said separation container;

a rotational outlet tube secured to said separation container outlet end and communicating with said separation container, said inlet and outlet tubes being coaxial with each other, said outlet tube providing a path for the flow of a less dense component of said mixture out of said separation container;

means of applying rotational energy to said separation container whereby said separation container is rotated about an axis that is coaxial with said inlet and outlet tubes;

a denser component discharge opening adjacent said separation container outlet end;

an annular closure member coaxially and slideably received on said outlet tube and positioned adjacent said discharge opening; and

means to selectably position said closure member relative to said discharge opening to thereby vary the area of said discharge opening.

5,484,384

MINIMALLY INVASIVE MEDICAL DEVICE FOR PROVIDING A RADIATION TREATMENT

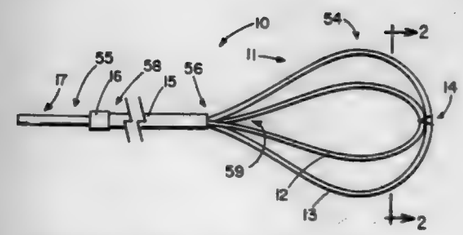
Neal E. Fearnot, West Lafayette, Ind., assignor to MED Institute, Inc., West Lafayette, Ind.

Continuation-in-part of Ser. No. 647,280, Jan. 29, 1991, Pat. No. 5,354,257. This application Oct. 11, 1994, Ser. No. 321,106

Int. Cl.[6] A61N *5/00*

U.S. Cl. 600—3 **17 Claims**

1. A minimally invasive medical device for providing a radiation treatment, comprising:



an outer sheath having a distal end, a proximal end, and a passage extending longitudinally therein; and

an inner elongated member having an expandable distal portion and a proximal portion that is slidably disposed in said passage of said outer sheath, said proximal portion having a proximal end extending from said proximal end of said outer sheath and movable with respect to said proximal end of said outer sheath for extending said expandable distal portion from said distal end of said outer sheath, said expandable distal portion biased to an expanded condition when extended from said distal end of said outer sheath, said expandable distal portion also including a radiation source.

5,484,385

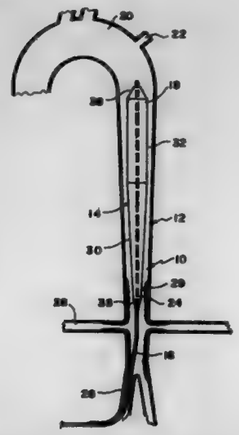
INTRA-AORTIC BALLOON CATHETER

Michael L. Rishton, Reading, Mass., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Apr. 21, 1994, Ser. No. 230,832

Int. Cl.[6] A61B *19/00*

U.S. Cl. 600—16 **20 Claims**



1. An intra-aortic balloon catheter assembly for accommodation within an aorta generally tapering between a maximum cross-sectional area adjacent the aortic arch and a generally smaller cross-sectional area adjacent renal arteries spaced from the aortic arch; the balloon catheter assembly being adapted for enhanced resistance to failure from abrasive calcification deposits within the aorta in the vicinity of the renal arteries, said balloon catheter assembly comprising an elongate catheter and an elongate balloon mounted to the catheter, said balloon having opposed first and second end portion, and comprising an inflatable flexible membrane said balloon being inflatable and having an inflated configuration comprising a first elongate section of predetermine length extending inward from said first end portion of said balloon and adapted to be positioned within the aorta to extend inwardly from the smaller cross-sectional area of the aorta toward the aortic arch, said inflated balloon between said first elongate section and said second end portion defining a second section, said first elongate section, along the length thereof, having a smaller cross-sectional area than said second section of said inflated balloon, said second section having a predetermined membrane thickness, said first section having a membrane thickness greater than the membrane thickness of said second section.

5,484,386

HAMMER-LIKE TOOL FOR RELIEVING STIFFNESS IN THE NECK AND SHOULDER

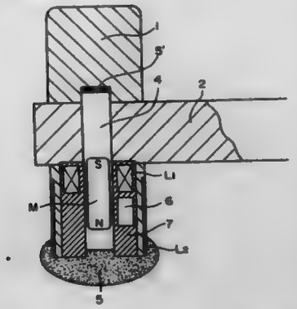
Kazumi Masaki, Osaka, Japan, assignor to Ken Hayashibara, Okayama, Japan

Filed Sep. 7, 1994, Ser. No. 301,816

Claims priority, application Japan, Sep. 7, 1993, 5-246157

Int. Cl.[6] A61H *23/02*

U.S. Cl. 601—21 **7 Claims**



1. A hammer-like tool for relieving stiffness in the neck and shoulder, which comprises:

(a) an elongated cylindrical housing provided as a head of said hammer-like tool;

(b) a free-floating magnet having a magnetic flux of about 100–100,000 gauss, enclosed in said cylindrical housing;

(c) an induction coil provided near the periphery of said cylindrical housing to surround it;

(d) a high-frequency oscillator circuit having an input terminal connected to said induction coil and being provided in the head of said hammer-like tool, said circuit generating a high-frequency current; and

(e) a load coil provided near the face of said hammer-like tool and connected to the output terminal of said high-frequency oscillator circuit, said load coil generating a high-frequency electromagnetic wave in the range of about 100 KHz to 10 MHz.

5,484,387

METHOD AND DEVICE FOR LOOSENING CONNECTIVE TISSUE AND STIMULATING BLOOD CIRCULATION

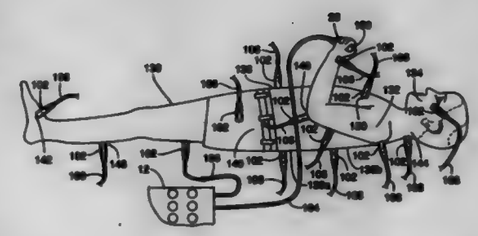
Sylvester A. Pitzen, Phoenix, Ariz., assignor to Sono Therapy Institute, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 139,634, Oct. 19, 1993, abandoned, which is a continuation of Ser. No. 800,135, Nov. 29, 1991, abandoned, which is a continuation-in-part of Ser. No. 483,405, Feb. 11, 1990, abandoned. This application Aug. 12, 1994, Ser. No. 289,414

Int. Cl.[6] A61H *7/00*

U.S. Cl. 601—15 **6 Claims**

1. A method wherein an operator applies a massaging operation to a subject for loosening connective tissue of the subject having areas of undesired tightness that restricts the flow of blood through arteries and veins that are rooted in the connective tissue, said connective tissue underlying the skin surface of a designated body portion of a subject and separated from the skin surface by multiple skin layers, said method comprising:



positioning a pair of electrodes, a first electrode having a blunt contact surface held by and positioned by the operator on the skin surface of the designated body portion, said blunt contact surface when pressed against the skin surface by the operator being highly conductive of electrical current to said skin surface, and remotely positioning and independently securing a second electrode on the skin surface of a second body portion of the subject at a position remote from the position of the first electrode and not in contact with the operator, said second electrode being highly conductive of electrical current to the skin surface of said second body portion whereby a shortest path connection between the electrodes passes from one electrode to the other electrode in a path that extends down through the connective tissue of said designated body portion;

passing electrical current between said electrodes wherein said current is in the form of a low frequency wave with an electrical potential sufficient to stimulate the connective tissue underlying the first electrode; and

systematically moving the first electrode by the operator from area to area on the designated body portion, and at each area clamping the electrode to the skin surface and moving the electrode and underlying skin layers relative to the body portion for determining areas of connective tissue tightness by the operator, and repetitively working the underlying skin areas of connective tissue tightness with said blunt contact surface of said first electrode pressed tightly to the skin by the operator for loosening connective tissue in the determined areas of tightness.

5,484,388

METHOD AND DEVICE FOR TREATING BONE DISORDERS BY APPLYING PRELOAD AND REPETITIVE IMPACTS

C. Andrew L. Bassett, Bronxville, N.Y., and Govert L. Bassett, Charlotte, N.C., assignors to Osteo-Dyne, Inc., Morrisville, N.C.

Filed Jul. 2, 1993, Ser. No. 85,300

Int. Cl.[6] A63B *21/00*

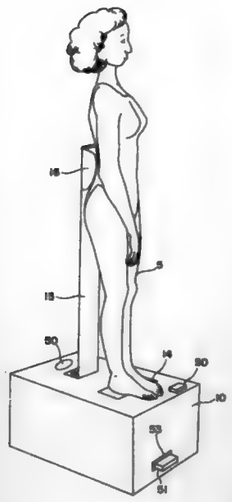
U.S. Cl. 601—27 **21 Claims**

1. A method of treating a bone in a patient comprising the steps of:

maintaining the patient in a static and stationary position;

preloading the bone in a first direction determined according to the patient's skeletal tissue; and

applying to the bone in a second direction opposite to the first direction a series of impulses determined according to the patient's skeletal tissue such that the series of impulses delivers to the bone a prescribed impact load at a prescribed impact rate, the prescribed impact load and prescribed rate being chosen to generate electrical signals in the bone such that a majority of energy of the electrical signals lies between 0.1 Hz and 1 kHz, and the peak amplitude values of the electrical signals lie between 15 and 30 Hz.



5,484,389

INSTRUMENTED ORTHOPEDIC RESTRAINING DEVICE AND METHOD OF USE

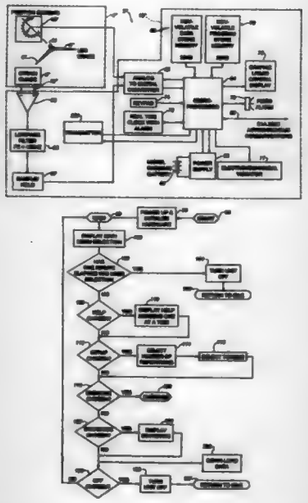
John G. Stark, 19390 Walden Trail, Deephaven, Minn. 55391; Richard G. Lund, Crystal, Minn.; Cecil H. Nelson, Chanhassen, Minn., and Brynn D. Rogers, Minneapolis, Minn., assignors to John G. Stark, Deephaven, Minn.

Continuation of Ser. No. 733,207, Jul. 19, 1991, Pat. No. 5,368,546, which is a continuation of Ser. No. 483,139, Feb. 21, 1990, Pat. No. 5,052,375. This application Aug. 31, 1994, Ser. No. 298,591

The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.

Int. Cl.[6] A61H *1/02*

U.S. Cl. 601—34 24 Claims



1. A personal orthopedic restraining device for use to restrain flexibly connected body portions of an individual, the personal orthopedic device comprising:

(a) restraining means for restraining movement of a first flexibly connected body portion of an individual relative to a second flexibly connected body portion of an individual;

(b) stress sensing means, operatively attached to the restraining means, for providing an output signal representative of a sensed stress in the restraining means;

(c) memory storage device; and

(d) control means, operably coupled to the stress sensing means and the memory storage device, for processing the stress sensing means output signal according to a previously programmed routine to obtain a routine result, the control means storing the routine result in the memory storage device such that the routine result can be used by the personal orthopedic restraining device to monitor forces between flexibly connected body portions of an individual.

24. A method of using a personal orthopedic restraining device which restrains flexibly connected body portions of an individual, the method comprising the steps of:

(a) providing an orthopedic restraining device, the orthopedic restraining device including: restraining means for restraining movement of a first flexibly connected body portion of an individual relative to a second flexibly connected body portion of an individual, stress sensing means, operatively attached to the restraining means, for providing an output signal representative of a sensed stress in the restraining means, memory storage device, output port means for communicating a routine result from the memory storage device to a remote device external to the personal orthopedic restraining device, and control means, operatively coupled to the stress sensing means, the memory storage device, and the output port means, for processing the stress sensing means output signal according to a previously programmed routine to obtain a routine result, the control means storing the routine result in the memory storage device; and

(b) communicating the routine result from the memory storage device to the remote device via the output port such that analysis of the routine result can be conducted at a later time.

5,484,390

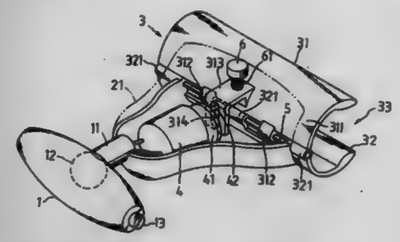
RECIPROCATING AND PINCHING MASSAGE DEVICE

Wang C. Chiang, 2F., No. 3, Lane 280, Chung-Chan Rd., Hsin Tien Cith, Taipei Hsien, Taiwan, Prov. of China

Filed Dec. 13, 1994, Ser. No. 357,613

Int. Cl.[6] A61H *7/00*

U.S. Cl. 601—133 1 Claim



1. A vibrating/massaging device comprising:

an operating handle,

a main body connected to said operating handle via a ball bearing and a steering rod disposed between said operating handle and said main body,

and a clamp portion disposed in front of said main body;

said main body comprises an upper cover and a lower seat,

said clamp portion comprises an upper lip and a lower lip, said upper lip having an inner portion which is integrally provided at a rear edge adjacent to said main body with two side shaft holders and a middle push plate,

said lower lip being an integral part of said lower seat and extending forward from said lower seat with two lateral ends of said lower lip laterally projecting beyond two sides of said lower seat, said lower lip further including at two outer ends and a middle point three hollow cylindrical shaft holders integral to said lower lip,

said upper lip being pivotally connected to said lower lip by means of a shaft passing through said two side shaft holders of said upper lip and said three shaft holders of said lower lip,

said push plate having a downward extension on which a vertical slot is formed through which a driving rod eccentrically disposed on a turning disc extends,

said turning disc being driven by a battery-powered motor disposed inside said main body, said motor being actuated by means of a push-button power switch provided on said operating handle; wherein

when said motor is actuated; said turning disk rotates, thereby driving said eccentric driving rod against said push plate and accordingly causing said upper lip to reciprocate along said shaft side to side relative to said lower lip, said push plate including at a top side an adjusting knob and a compression spring disposed between said adjusting knob and said push plate below said upper cover such that the size of an opening defined by said upper lip and said lower lip can be adjusted by turning said adjusting knob.

5,484,391

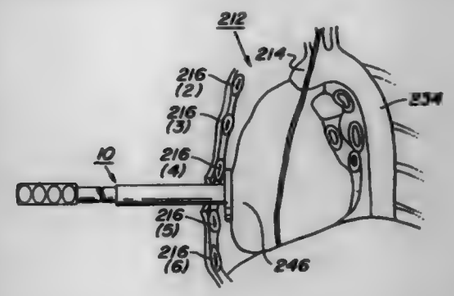
DIRECT MANUAL CARDIAC COMPRESSION METHOD

Robert F. Buckman, Jr., 125 Chew La., Radnor, Pa. 19087, and Michael M. Badellino, 213 Grown Lane Ter., Hatboro, Pa. 19040

Division of Ser. No. 922,714, Jul. 30, 1992, abandoned. This application Jan. 14, 1994, Ser. No. 182,906

Int. Cl.[6] A61H *1/00*

U.S. Cl. 601—135 40 Claims



1. A method of heart massage, the method comprising the steps of employing a heart massager having a heart-contacting member with a heart-contacting surface which is at least partially concave, said heart-contacting member being connected to a handle, the heart-contacting member having a plane tangential to the member's concave surface in a region the handle is attached to the heart-contacting member, the handle being substantially upright with respect to the plane;

(a) making an incision in the skin in an intercostal space;

(b) surgically separating said intercostal space;

(c) inserting said heart massager through said intercostal space and guiding the heart-contacting member onto the ventricular region of said heart; and

(d) periodically depressing and releasing the handle so that the heart's ventricles are alternately compressed and allowed to return to their non-compressed condition, the substantially upright handle imparting downward forces to the heart-contacting member during the periodic depressions.

5,484,392

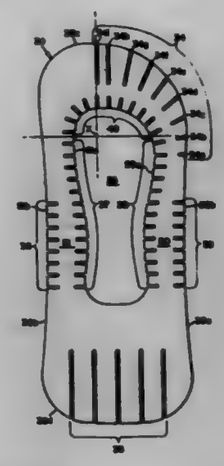
WRIST SUPPORT AND WRIST SUPPORT STAY

Robin M. Sydor, St. Paul, and Thomas M. Grimm, Robbinsdale, both of Minn., assignors to Ergodyne Corporation, St. Paul, Minn.

Division of Ser. No. 146,301, Nov. 2, 1993, Pat. No. 5,397,296. This application Dec. 14, 1994, Ser. No. 355,513

Int. Cl.[6] A61F *13/00*

U.S. Cl. 602—5 7 Claims



1. A stay, comprising:

(a) a support member having first and second sides, a top and a bottom said support member formed of a material having a memory, whereby after flexing said support returns to its original configuration;

(b) a plurality of slits formed in said support member, wherein said support member provides support and said slits allow for additional flexibility; and

(c) said support member having an opening in its interior wherein said stay is adapted to overlie the wrist area of a wearer so that while in use, said opening releases compression of a median nerve of a wearer.

5,484,393

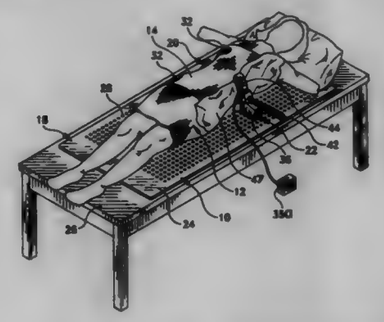
APPARATUS FOR FORMING A SCOLIOSIS BRACE

D. Barry McCoy, Exeter, R.I., assignor to Northeast Orthotics and Prosthetics, Providence, R.I.

Division of Ser. No. 61,672, May 14, 1993, Pat. No. 5,360,392. This application Apr. 15, 1994, Ser. No. 228,219

Int. Cl.[6] A61F *5/02*; A61G *13/00*

U.S. Cl. 602—6 2 Claims



1. An apparatus for positioning a scoliotic patient during the formation of a cast for forming a scoliosis brace for the patient, the

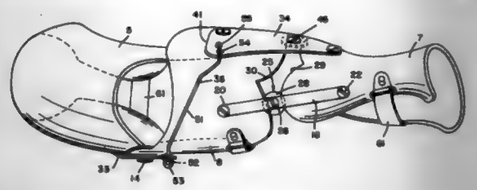
patient having a torso, said apparatus comprising a casting board for receiving said patient in a laying-down position thereon and at least three pressure pads for applying pressure to opposite sides of the torso of said patient, said pressure pads being repeatably releasable and securable in a plurality of predetermined positions on said casting board, said casting board having a matrix of a plurality of predetermined positions for repeatably receiving said pressure pads thereon.

5,484,394

METHOD AND APPARATUS FOR ROTATING A WRIST

Robert D. Singer, Clive, and Ernest A. Trickey, Des Moines, both of Iowa, assignors to ElectroBionics Corporation, Des Moines, Iowa

Continuation-in-part of Ser. No. 718,774, Jun. 21, 1991, Pat. No. 5,219,323. This application Jun. 14, 1993, Ser. No. 76,111
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—16 **27 Claims**



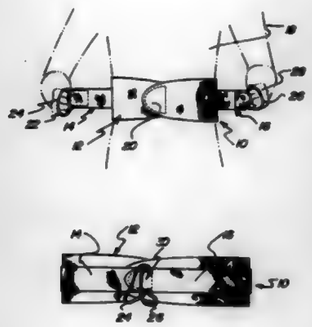
1. Apparatus for rotating a human wrist about the longitudinal axis of an arm, comprising:
- A. means for attachment to the arm above the elbow;
- B. means for attachment to the arm below the elbow and above the wrist and pivotally connected to said means for attachment to the arm above the elbow;
- C. rotatable means for attachment to the wrist; and
- D. connecting said means for attachment to the arm below the elbow to said rotatable means for causing said rotatable means to rotate the wrist when the elbow is flexed or extended.

5,484,395

FIREMAN'S BACK BRACE

William P. DeRoche, 3564 Tiffany La., Shoreview, Minn. 55126

Filed Aug. 25, 1994, Ser. No. 295,408
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—19 **1 Claim**



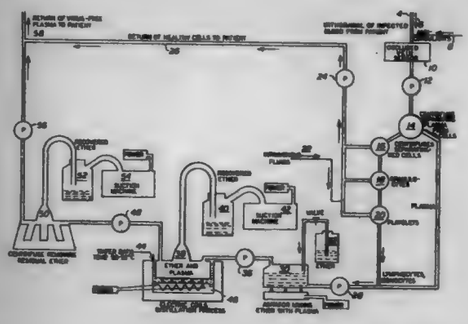
1. A new and improved fireman's back brace for adjustably supporting a lumbar spine portion of a firefighter's back comprising:
- a lumbar spinal support belt having an exterior surface, an interior surface, and a strap tensioning member affixed to said exterior surface to provide adjustable tension thereto, said lumbar spinal support belt comprises an inelastic wide band member having a first end portion, a central portion, and a second end portion wherein said first end portion is a free end having a first portion of a support belt co-acting fastener disposed thereupon, said central portion has a means for fastening said strap tensioning member thereto, and second end portion is a free end having a second portion o a support belt co-acting fastener disposed thereupon, said strap tensioning member comprises and elastic material having a co-acting fastener for releasably attaching each said free end together;
- manual engagement means for each free end of said strap tensioning member, said manual engagement member comprises a cord material forming a loop permanently fastened at each end of the free ends of said strap tensioning member; and
- fastening means in fixed association to said lumbar spinal support belt for detachably affixing said fireman's back brace to a portion of a fireman's garment worn equipment.

5,484,396

METHOD AND DEVICE FOR TREATMENT OF HIV INFECTIONS AND AIDS

Sadeque S. Naficy, 12823 Memorial Dr., Houston, Tex. 77024

Filed Nov. 17, 1988, Ser. No. 272,535
The portion of the term of this patent subsequent to Sep. 28, 2008, has been disclaimed.
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—4 **32 Claims**



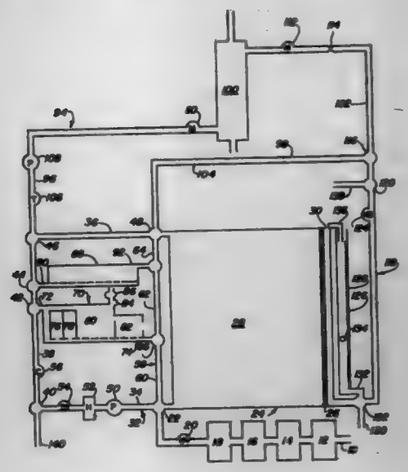
1. A method of extracorporeal treatment for viral infections of blood including HIV (Human Immunodeficiency Virus) infections caused by enveloped viruses which in mature form or virion have an envelope with spikes containing lipids or lipid-containing materials, said method comprises:
- withdrawing infected blood from a patient,
- separating said infected blood into substantially healthy components including red cells and platelets, and substantially infected components including plasma, white cells, and cell-free virus or virion,
- returning said healthy components to said patient,
- mixing and treating said infected components with an organic solvent for said lipids or lipid-containing materials of said envelope selected from the group consisting of ethers, alcohols, volatile chlorinated hydrocarbons, acetone, and chloroform in an amount and for a period of time sufficient to dissolve said lipids or lipid-containing materials of said envelope whereby said spikes destroyed, depriving the virus of means for penetrating and infecting fresh and healthy host cells, thus killing said enveloped virus,
- after the completion of said mixing and treating of said infected components with said organic solvent, substantially separating and removing said organic solvent from said treated components, at a temperature below approximately 56° C., and thereafter
- returning said treated components to said patient.

5,484,397

ARTIFICIAL KIDNEY FOR FREQUENT (DAILY) HEMODIALYSIS

Zbylut J. Twardowski, 304 Devine Ct., Columbia, Mo. 65203

Division of Ser. No. 748,036, Aug. 21, 1991, Pat. No. 5,336,165. This application Nov. 22, 1993, Ser. No. 155,993
The portion of the term of this patent subsequent to Aug. 9, 2011, has been disclaimed.
Int. Cl.[6] A61M *5/00*; B01D *61/00*
U.S. Cl. 604—5 **14 Claims**



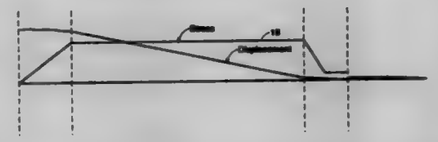
4. A hemodialyzer apparatus, which comprises:
- a dialyzer membrane having first and second sides; a dialysate flow path positioned for passing dialysis solution across the first side of said membrane; a blood flow path positioned for passing blood across the second aide of said membrane for dialysis thereof;
- a solution storage tank connected to said dialysate flow path; venous and arterial connectors communicating with said blood flow path, for alternative connection with a vascular system of a patient and with each other;
- a wnter inlet conduit;
- a first conduit communicating with said solution storage tank and extending from said water inlet conduit to receive water therefrom;
- apparatus for providing desired amounts of dialysis solution solutes to said water in a manner providing water containing said dialysis solution solutes in dissolved form in said solution storage tank, to thus provide a desired quantity of said dialysis solution in a first operating mode;
- apparatus for providing desired amounts of antimicrobial and cleaning agent to said water to provide said antimicrobial and cleaning agent dispersed in said water in said solution storage tank, to provide a desired quantity of antimicrobial cleaning solution in a second operating mode;
- a second conduit connected between said dialysis flow path and said blood flow path, plus a one-way valve to selectively permit one-way flow of antimicrobial cleaning solution from said blood flow path to said dialyzate flow path for discard; and
- valve and control means to selectively and automatically provide and control fluid flow throughout the apparatus.

5,484,398

METHODS OF MAKING AND USING ULTRASONIC HANDPIECE

Robert B. Stoddard, Boulder, Colo., assignor to Valleylab Inc., Boulder, Colo.

Filed Mar. 17, 1994, Ser. No. 210,787
Int. Cl.[6] A61B *17/32*
U.S. Cl. 604—22 **11 Claims**



1. An ultrasonic surgical handpiece for providing surgical effects at an operational site on a patient comprising:
- a handpiece having a proximal end for handling and manipulation by a surgeon, the handpiece having a distal end;
- a housing of the handpiece shaped to be handheld, the housing having a hollow for enclosing ultrasonics;
- a tool extending from the distal end of the handpiece;
- a distal tip on the tool away from the distal end;
- a vibrator supported within the hollow of the housing and connected to the tool for transmitting thereto ultrasonic frequency energy, the vibrator having an opening;
- an axis passing through the tool along which axial vibration at high frequencies are transmitted;
- a tool bore extending along the axis through the tool to carry debris and fluid through the vibrator opening and for cooling the vibrator while providing fluid flow from the distal tip to the proximal end;
- a source of suction connected to the proximal end for drawing fluid through the tool bore and the vibrator opening for cooling the vibrator in the housing;
- a flue positioned about the tool and extending along the axis from the distal end toward the distal tip, the flue carried cantilever and sealed against the distal end;
- a source of fluid connected to the distal end;
- a space between the tool and the flue for guiding fluid from the distal end toward the distal tip, and
- a tool port extending from the space to the bore to permit passage of fluid from the source of fluid to the source of suction, the tool port located near low stress regions on the tool, the tool port near nodes of the tool to minimize the effect of stress concentration due to removal of material from the tool through the tool port, the tool port axially positioned near the distal end for collection of fluid for cooling the vibrator so that there is thermal intimacy between the vibrator and the fluid and debris removed from the operational site.

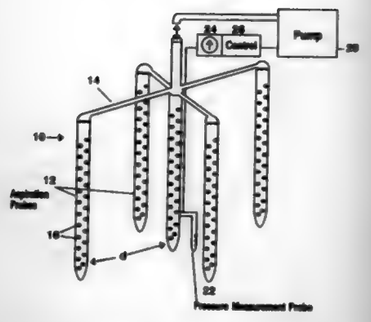
5,484,399

PROCESS AND DEVICE TO REDUCE INTERSTITIAL FLUID PRESSURE IN TISSUE

Gene R. DiResta, Yonkers; Jonghin Lee, Astoria, both of N.Y., and Ehud Arbit, Englewood, N.J., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Continuation of Ser. No. 842,267, Feb. 27, 1992, abandoned. This application Jan. 13, 1994, Ser. No. 181,356
Int. Cl.[6] A61N *1/30*
U.S. Cl. 604—21 **9 Claims**

1. An apparatus for reducing interstitial fluid pressure in a tumor comprising:
- an aspiration device having a plurality of aspiration tubes connected to a manifold means, each of said tubes having a plurality of aspiration holes;
- means for connecting the manifold means to a suction source for creating suction inside the aspiration tubes, having a pressure value less than the interstitial fluid pressure but having a pressure value which will not result in removing or damaging



the tumor, to thereby reduce the interstitial fluid pressure inside the tumor when the tubes are located in the tumor; and

a measurement probe mounted to one of the plurality of aspiration tubes for measuring the interstitial fluid pressure within the tumor, wherein an aperture of the measurement probe is spaced apart from the aspiration tube to which it is mounted at a sufficient distance so that a pressure measured by the measurement probe is not substantially affected by the suction present at the plurality of aspiration holes of the plurality of aspiration tubes.

5,484,400

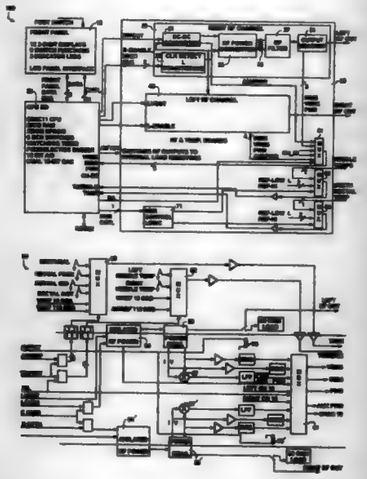
DUAL CHANNEL RF DELIVERY SYSTEM

Stuart D. Edwards, Los Altos; Hugh R. Sharkey, Redwood City; Ingemar H. Lundquist, Pebble Beach; Ronald G. Lax, Grass Valley; Bruno Strul, Palo Alto, and Roger A. Stern, Cupertino, all of Calif., assignors to Vidamed, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 929,638, Aug. 12, 1992, abandoned, and a continuation-in-part of Ser. No. 12,370, Feb. 2, 1993, Pat. No. 5,370,675, and a continuation-in-part of Ser. No. 61,072, May 14, 1993, Pat. No. 5,385,544. This application Mar. 23, 1994, Ser. No. 216,315

Int. Cl.[6] A61B *17/39*

U.S. Cl. 604—22 **9 Claims**



1. A dual channel RF power delivery and monitoring system for delivering controlled radio energy to each of two stylets adjustably protruding from a catheter in order to provide for destruction of target tissue in the area of each of said stylets, said system comprising:

two independent power delivery channels wherein each of said channels includes a means for controlling power output from said channels;

temperature measurement means responsive to input temperature signals associated with said catheter and said stylets;

autocalibration means including a precision reference voltage source switchably connected to said temperature measurement means;

multiplexing means for switchably receiving said input temperature signals and for switching said reference voltage source.

5,484,401

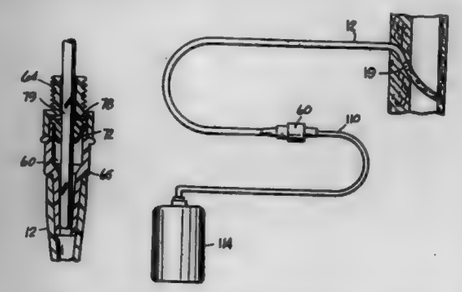
TREATMENT METHOD FOR PLEURAL EFFUSION

Michael Rodriguez, Nashville, Tenn.; Bonnie B. Vivian, Evergreen, and Shirley K. Freeman, Pine, both of Colo., assignors to Denver Biomaterials, Inc., Evergreen, Colo.

Continuation-in-part of Ser. No. 971,722, Nov. 4, 1992, abandoned. This application May 31, 1994, Ser. No. 251,692

Int. Cl.[6] A61M *39/04;39/24*

U.S. Cl. 604—28 **2 Claims**



1. Method of producing a sclerosing effect in the pleural of a human to reduce pleural effusion, comprising inserting a catheter through the chest wall of the patient so that an end of the catheter is in the pleural space; repeatedly accessing the pleural space to repeatedly drain pleural effusion from the pleural space by inserting a tube into a valve in the catheter to open the valve and access the catheter, to produce a sclerosing effect in the pleural space to reduce pleural effusion.

5,484,402

SURGICAL SUCTION IRRIGATOR

Heber Saravia, San Francisco; Christopher S. Jones, Palo Alto, and Charles L. Nelson, Pleasanton, all of Calif., assignors to Stryker Corporation, Kalamazoo, Mich.

Filed Dec. 30, 1993, Ser. No. 176,130

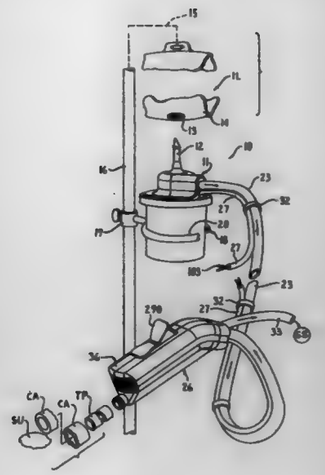
Int. Cl.[6] A61M *1/00;5/00*

U.S. Cl. 604—35 **18 Claims**

1. A surgical irrigation system suitable for endoscopic and other surgical procedures, comprising:

a hand held handpiece having a forward protruding hollow tip for supplying irrigation liquid to a surgical site, hand actuable control means for controlling irrigation liquid flow to said tip, and an irrigation liquid inlet;

an irrigation liquid supply unit connected to said inlet, said hand actuable control means on said handpiece comprising a hand actuable rocker member and an irrigation rocking lever responsive to movement of said hand actuable rocker member for opening and closing irrigation liquid flow through an irrigation liquid path in said handpiece from said inlet to said tip, said handpiece including a suction path therein for connection to an external suction source and connected to said tip, said control means including a suction rocking lever responsive to movement of said rocker member for closing and opening suction flow through said suction path through



said handpiece, said rocker member having a first actuated position which simultaneously opens said irrigation liquid flow through said handpiece and closes said suction path, said rocker member having a second actuated position which simultaneously closes said irrigation liquid flow and opens said suction path through said handpiece, said irrigation liquid and suction paths through said handpiece comprising respective flexible pinchably closeable hoses, fixed anvil means backing said hoses, said irrigation rocking lever and suction rocking lever having respective pinch elements thereon and spring means urging said rocking levers to a rest position pinching closed said irrigation liquid hose and suction hose.

5,484,403

HYPODERMIC SYRINGE FOR IMPLANTING SOLID OBJECTS

Jay F. Yonkum, Norco, and Sammy E. Wooldridge, Alta Loma, both of Calif., assignors to Avid Marketing, Inc., Norco, Calif.

Filed Apr. 5, 1994, Ser. No. 223,117

Int. Cl.[6] A61M *31/00;* A61F *13/20*

U.S. Cl. 604—59 **13 Claims**



1. A device for implanting solid objects comprising:

a canula adapted to receive an implant object into its interior at the distal end and having an obstruction which prevents the implant object from moving from the distal end to the proximal end;

a means for holding the implant object in a fixed position within the canula prior to implantation, the holding means being selected from the group conisting of (1) an open-ended slot at the distal end of the canula, the inside diameter of the canula being less than the outside diameter of the implant object and (2) a plurality of crimped regions on the canula surface.

5,484,404

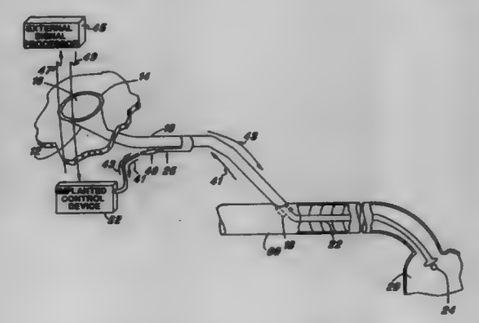
REPLACEABLE CATHETER SYSTEM FOR PHYSIOLOGICAL SENSORS, TISSUE STIMULATING ELECTRODES AND/OR IMPLANTABLE FLUID DELIVERY SYSTEMS

Joseph H. Schulman, Santa Clarita, and Alfred E. Mann, Beverly Hills, both of Calif., assignors to Alfred E. Mann Foundation for Scientific Research, Sylmar, Calif.

Filed May 6, 1994, Ser. No. 239,357

Int. Cl.[6] A61N *1/04*

U.S. Cl. 604—66 **19 Claims**



1. A replaceable catheter system comprising:

a surgically implantable elongated tubular catheter holder having a proximal end and a distal end;

a replaceable catheter disposed within the catheter holder, the replaceable catheter having a proximal end and a distal end oriented such that the distal end of the replaceable catheter extends beyond the distal end of the catheter holder; and

a means for electronically sensing and controlling prescribed physiological conditions connected to the distal end of the replaceable catheter;

whereby the electronic sensing means can be readily replaced by removing the replaceable catheter from the catheter holder, connecting another electronic sensing means to the distal end of the replaceable catheter, and inserting the replaceable catheter into the catheter holder.

5,484,405

DRINKING DEVICE FOR HANDICAPPED PERSONS

William E. Edstrom, Sr., 28324 E. Main St., Waterford, Wis. 53185

Filed Jul. 12, 1994, Ser. No. 273,896

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—77 **15 Claims**

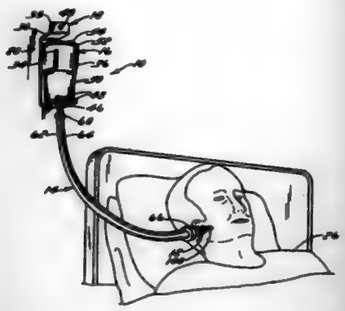
1. A drinking device comprising:

(A) a source of liquid;

(B) a drinking valve; and

(C) a tubing assembly for supplying liquid from said source to said valve, said tubing assembly including

(1) a hollow, flexible tube having an inlet connected to said source and an outlet connected to said valve, and



(2) a semi-rigid stiffener extending along and beside an outside edge of said flexible tube and being attached to said flexible tube, said stiffener, in combination with said flexible tube, being (a) sufficiently flexible to permit said tubing assembly to be semi-permanently bent into a position in which said valve is easily accessible by the mouth of a user and (b) sufficiently rigid to hold said tubing assembly in said position after bending while forming the sole support for said valve.

5,484,406

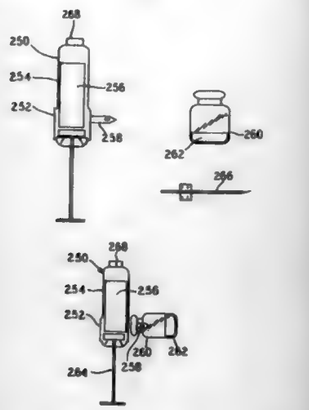
IN-LINE DRUG DELIVERY DEVICE FOR USE WITH A STANDARD IV ADMINISTRATION SET AND A METHOD FOR DELIVERY

Joseph Wong, Gurnee, and Irwin B. Levine, Mundelein, both of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 978,555, Nov. 19, 1992, Pat. No. 5,385,547. This application Dec. 16, 1993, Ser. No. 168,594

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—87 **17 Claims**



1. A device for mixing a solution with a beneficial agent in a container thereby forming a mixture for further administration, the device comprising:

a substantially hollow member having a length and an interior containing a solution and further having walls that at least partially define an exterior of the hollow member and are capable of, at least in part, being biased inwardly thereby exerting a pressure on the solution contained within the hollow member, the length of the hollow member being greater than the width;

means for piercing constructed and arranged substantially perpendicularly to the length of the hollow member and integrally connected to and extending from a wall of the hollow member wherein the means for piercing provides fluid communication between the interior of the substantially hollow member at a lower section of the hollow member and the container; and

a port constructed and arranged at an end of the hollow member opposite the lower section, the port providing access to the interior of the hollow member.

5,484,407

CATHETER WITH STEERABLE DISTAL END

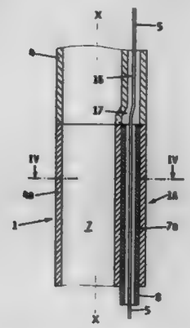
Peter Osypka, Basler Strasse 109, D-7889 Grenzach-Wyhlen, Germany

Filed May 19, 1994, Ser. No. 246,002

Claims priority, application Germany, Jun. 24, 1993, 43 20 962.9

Int. Cl.[6] A61M *37/00;25/00*

U.S. Cl. 604—95 **34 Claims**



1. A catheter comprising an elongated flexible tubular member including a distal end portion having a first flexibility, an intermediate portion having a lesser second flexibility and at least one longitudinally extending lumen, said tubular member having an at least substantially circular external cross-sectional outline; means for deforming said distal end portion including an elongated flexing element extending within said cross-sectional outline from said distal end portion, through said intermediate portion and to a proximal end portion of said tubular member, said flexing element being a band and being movable relative to and longitudinally of said intermediate portion; and a guide for said element, said guide being disposed within said outline of said tubular member.

5,484,408

INNERLESS CATHETER

Matthew M. Burns, Minneapolis, Minn., assignor to SciMed Life Systems, Inc., Minneapolis, Minn.

Continuation of Ser. No. 13,149, Feb. 1, 1993, abandoned, which is a continuation of Ser. No. 730,224, Jul. 15, 1991, abandoned, which is a continuation of Ser. No. 337,272, Apr. 13, 1989, Pat. No. 5,032,113. This application Jun. 20, 1994, Ser. No. 262,224

Int. Cl.[6] A61M *29/00;25/00*

U.S. Cl. 604—96 **1 Claim**



1. A balloon catheter assembly comprising:

(a) a single lumen shaft having multiple sections connected end to end having a proximal end and a distal end with a single first lumen exteading therethrough;

(b) an inflatable balloon having a proximal end, a distal end and an interior volume defined therein, wherein the proximal end of the balloon is connected to the distal end of the shaft, the interior volume of the balloon further in fluid communication with the first lumen;

(c) a distal inner tube extending proximally through the interior volume of the balloon from the distal end of the balloon and connected thereto, the distal inner tube having a second lumen extending therethrough in fluid communication with both the first lumen and outside the distal end of the balloon catheter; and,

(d) a guide wire extending through at least the lumen of the distal inner tube, wherein resistance to fluid flow between the first lumen and the second lumen, when the guide wire is extending therethrough, is substantially greater than resistance to fluid flow between the first lumen and the interior volume of the balloon.

5,484,409

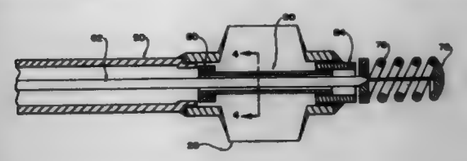
INTRAVASCULAR CATHETER AND METHOD FOR USE THEREOF

Robert Atkinson, New Brighton; Peter Keith, Fridley; Louis G. Ellis, St. Anthony; Dale Schmaltz, St. Paul, and David Robinson, Channassen, all of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Continuation-in-part of Ser. No. 843,647, Feb. 28, 1992, which is a continuation-in-part of Ser. No. 830,479, Feb. 4, 1992, which is a continuation of Ser. No. 398,756, Aug. 25, 1989, abandoned. This application Feb. 26, 1993, Ser. No. 23,950

Int. Cl.[6] A61M *5/00;29/00*

U.S. Cl. 604—96 **22 Claims**



1. A balloon catheter system comprising:

a. an elongate shaft having a proximal and a distal end with a lumen extending therethrough;

b. an inflatable balloon having a proximal end and a distal end with an interior volume defined therein, said proximal end of said balloon affixed to said elongate shaft proximate the distal end thereof;

c. means for fluid communication between said interior volume of said balloon and said lumen of said elongate shaft;

d. a sealing sleeve having a proximal end and a distal end and a lumen extending therethrough, said lumen of said sealing sleeve axially aligned with said lumen of said elongate shaft, wherein said proximal end of said sealing sleeve is distal of said means for fluid communication; and,

e. a guide wire slidably received through said lumen of said elongate shaft and said lumen of said sealing sleeve, said guide wire including a sleeved portion forming an exterior surface of said guide wire at a location along said guide wire corresponding to the sealing sleeve of said catheter when said guide wire is positioned in said catheter during use, wherein a close tolerance between said sleeved portion of said guide wire and said sealing sleeve forms a seal therebetween during inflation of said inflatable balloon while said guide wire remains slidably received within said lumens.

5,484,410

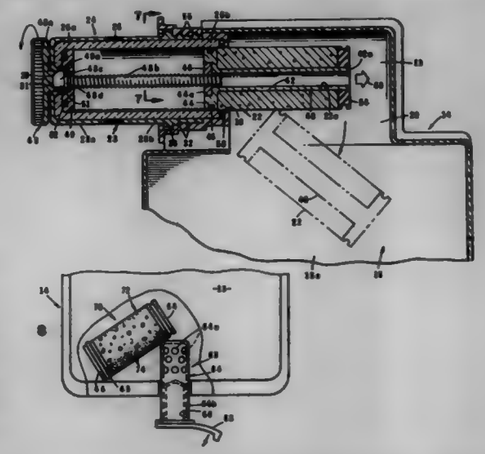
MIXING AND DELIVERY SYSTEM

Marshall S. Kriesel, St. Paul, and Thomas N. Thompson, Richfield, both of Minn., assignors to Science Incorporated, Bloomington, Minn.

Continuation-in-part of Ser. No. 989,097, Feb. 1, 1993, Pat. No. 5,385,546, which is a continuation-in-part of Ser. No. 903,651, Jun. 24, 1992, Pat. No. 5,385,545. This application Dec. 22, 1994, Ser. No. 362,842

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—89 **20 Claims**



1. An apparatus for controllably intermixing a first component and a second fluid component comprising:

(a) a first container having an inlet port and a fluid reservoir for containing the fluid component;

(b) adding means for presenting the first component to the fluid component for intermixing therewith, comprising a support upon which the first component is removably affixed;

(c) a second container assembly interconnectable with said inlet port of said first container, said container assembly including a second container for containing said support; and

(d) ejection means for ejecting said support from said second container and into said fluid reservoir.

5,484,411

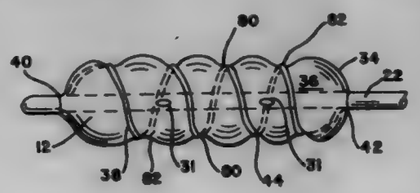
SPIRAL SHAPED PERFUSION BALLOON AND METHOD OF USE AND MANUFACTURE

Mark Inderbitzen, Miramar, and Susana Martinez, Pembroke Pines, both of Fla., assignors to Cordis Corporation, Miami Lakes, Fla.

Filed Jan. 14, 1994, Ser. No. 182,729

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—96 **13 Claims**



1. A dilation catheter for use in medical procedures comprising: an elongated flexible tubular member; a dilating balloon disposed on said tubular member, said balloon member having an interior and exterior surface, said balloon having a collapsed condition of a size allowing said balloon to be transported through a body vessel,

and said balloon having an expanded condition of a size allowing said exterior surface to engage a body vessel wall; a longitudinally extending spiral wall formed integrally with said exterior surface, said spiral wall defining a longitudinally extending spiral channel spaced radially inwardly from said exterior surface when said balloon is in its expanded condition; and means for passing fluid between said balloon member and said tubular member to vary said balloon member between its collapsed and expanded conditions;

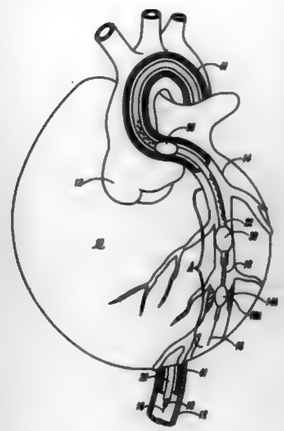
further including a membrane disposed over said longitudinally extending spiral channel, said membrane sealingly connected to the exterior surface of said balloon, and said membrane includes a perforation therethrough at said spiral channel.

5,484,412

ANGIOPLASTY METHOD AND MEANS FOR PERFORMING ANGIOPLASTY

Brien E. Pierpont, 2028 Brightwaters Blvd., St. Petersburg, Fla. 33704

Filed Apr. 19, 1994, Ser. No. 229,545
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—101 **20 Claims**



1. A catheter assembly, comprising,

an elongated hollow anchoring catheter having a distal end, and a tubular wall with inner and outer surfaces,

a hollow guiding catheter having a distal end and a proximal end housing said anchoring catheter,

a first anchoring balloon member attached to the outer surface of said tubular wall of the anchoring catheter and adapted upon inflation to project outwardly from said tubular wall to engage the guiding catheter and secure said anchoring catheter within said guiding catheter,

an elongated balloon dilatation catheter longitudinally extending through said anchoring catheter and having a distal end,

a dilatation balloon attached to the distal end of said balloon dilatation catheter,

a second anchoring balloon member attached to the inner surface of said tubular wall and adapted upon inflation to project inwardly from said tubular wall of the anchoring catheter to engage and retain said dilatation catheter against movement with respect to said anchoring catheter,

means associated with said catheter assembly for independently inflating and deflating said first and second anchoring balloon members;

means for inflating the dilatation balloon; and

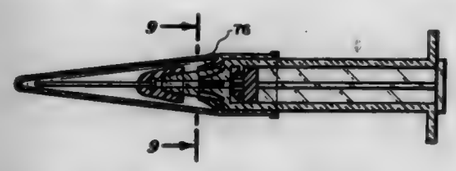
a guide wire extending through the dilatation catheter and along which the dilatation catheter is slidable.

5,484,413

DISPOSABLE MEDICAL SYRINGE WITH SAFETY PROTECTION

Abraham Gevorgian, Montebello, Calif., assignor to Alexis M. Gevorgian, and Artin V. Gevorgian, both of Montebello, Calif.

Filed Nov. 23, 1994, Ser. No. 344,937
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—110 **8 Claims**



1. In a non-reusable, disposable syringe having a generally cylindrical barrel with a forward end portion that is tapered to a smaller diameter, and a needle assembly including a needle base fitted over and around said forward end portion of said barrel and a pointed needle extending forwardly of said needle base, a needle trap for protecting the needle from contact, comprising:

a hollow plastic housing having a cylindrical rearward end portion adapted to fit over said cylindrical barrel;

said hollow plastic housing also having a generally cone-shaped forward end portion whose forward extremity is closed;

a locking member of generally hollow cylindrical shape disposed within said hollow plastic housing, having a rearward end portion firmly secured to said rearward end portion of said housing, and a forward end portion with flexible, circumferentially spaced, inwardly tapering fingers that taper inwardly more rapidly than said cone-shaped forward end of said housing;

said needle trap being adapted to be placed over said needle assembly and slid over said barrel until said cylindrical rearward end of said plastic housing seats upon said cylindrical barrel;

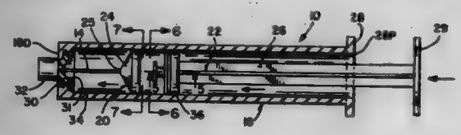
said fingers of said locking member flexing outwardly to pass over said needle base and then flexing inwardly to assume a position behind said needle base, thus preventing said needle trap from being removed.

5,484,414

SYRINGE INCORPORATING A SELF-CONTAINED RETRACTABLE NEEDLE

Paul A. Pace, 610 67th St., Brooklyn, N.Y. 11220

Filed Sep. 21, 1994, Ser. No. 309,726
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—110 **1 Claim**



1. A syringe incorporating a self-contained retractable needle, comprising:

a) a syringe housing, having a proximal end and a distal end, having a bore extending into the syringe housing from the proximal end, and having a circular nose at the distal end;

b) a needle assembly, having a needle seat which is conical in shape, having an apex, and being substantially the same diameter as the piston, the needle assembly having a keyhole opposite the apex, the needle assembly further having a needle which protrudes from the apex and is in fluid communication with the keyhole, the needle extends through the circular nose when in an operable position, wherein the housing has a forward cone in the bore at the distal end which

mates with the conical shape of the needle seat, to ensure stability and rigidity of the needle during injections; and

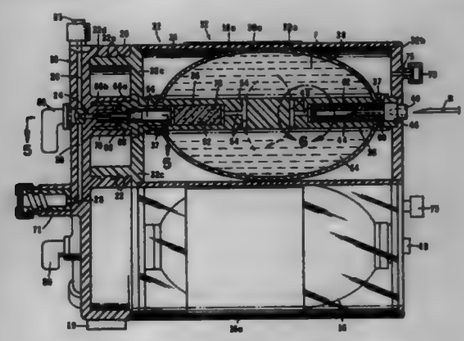
c) a plunger assembly, extending into the bore, having a piston on one end and a thumb plate on an opposite end, the piston having a slightly smaller diameter than the bore for a tight fit therebetween while still allowing slidable movement of the piston within the bore, the piston having a face and having a key protruding from the face, the key being of the same shape as the key hole and being slightly smaller in size so that it when aligned the key may enter the key hole, when the key is rotated and is no longer aligned with the key hole it may not exit the key hole, thus mating the needle assembly with the plunger assembly so that the needle may be retracted into the syringe housing, wherein the key is rectangular in shape, and the key hole is rectangular in shape, wherein the key further comprises a cylindrical key shaft between the key and the piston, wherein the syringe housing has a resilient elastomeric seal embedded in said distal end of said syringe housing so that the needle may be retracted into the syringe housing.

5,484,415

FLUID DISPENSING APPARATUS

Marshall S. Kriesel, St. Paul, Minn., assignor to Science Incorporated, Bloomington, Minn.

Continuation-in-part of Ser. No. 156,685, Nov. 22, 1993, Pat. No. 5,433,709, which is a continuation-in-part of Ser. No. 53,723, Apr. 26, 1993, Pat. No. 5,354,278, which is a continuation-in-part of Ser. No. 870,521, Apr. 17, 1992, Pat. No. 5,263,940. This application Feb. 3, 1994, Ser. No. 192,031
The portion of the term of this patent subsequent to Jul. 18, 2012, has been disclaimed.
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—132 **17 Claims**



1. A fluid dispensing apparatus comprising:

(a) a mounting base having first and second fluid inlets, a fluid outlet in communication with said fluid inlets, and valve means in communication with said fluid outlet for controlling fluid flow through said outlet; and

(b) at least two fluid dispensing devices connected to said mounting base, each said device comprising:

(i) a housing having walls defining an internal chamber and support means for supporting a stored energy source within said internal chamber, said housing also having connection means for connecting said housing to said mounting base, said support means having an inlet chamber and an outlet chamber in communication with one of said first and second fluid inlets of said base; and

(ii) filling means for introducing fluid into said inlet chamber of said support means;

(iii) a generally tubular shaped elastomeric member connected proximate its ends to said support means, said elastomeric member having a central portion distendable by fluid flowing into said inlet chamber of said support means from a first position in proximity with said support means to second position; and

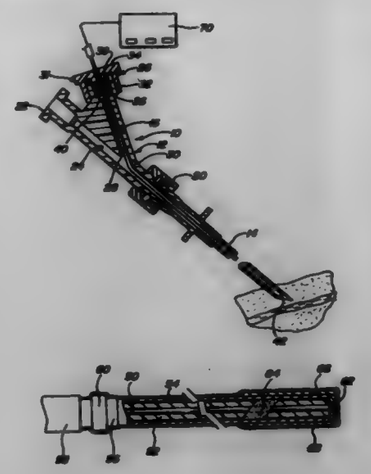
(iv) adding means disposed within said outlet chamber of said support means for adding an additive to fluid introduced into said inlet chamber by said filling means, said adding means comprising a container and an additive contained within said container.

5,484,416

COAXIAL CABLE VASCULAR ACCESS SYSTEM FOR USE IN VARIOUS NEEDLES

Darin Gittings, Sunnyvale, Calif., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Aug. 5, 1993, Ser. No. 102,607
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—164 **22 Claims**



1. A vascular access system for accurately locating body structures, such as blood vessels, within a patient, comprising:

a housing having a first opening adapted to be connected to a needle, a second opening axially opposite said first opening adapted to be connected to a syringe, said housing having a first channel with ends at said first and second openings, respectively, said housing having a third opening and a second channel beginning at said third opening and terminating at a medial location in said first channel, said second channel intersecting said first channel at said medial location; and

a flexible, axially movable, and adjustable probe partially disposed within said housing such that said probe extends through said third opening, said second channel, said medial location, a portion of said first channel and said first opening, respectively, such that a portion of said probe extends beyond said housing at said first and third openings, respectively, said probe being axially movable within said first and second channels such that said probe has an adjustable length relative to said housing, said probe being adapted to be axially movable within a needle that is properly attached to said housing first opening, said probe comprising means at one end for emitting ultrasonic signals and for receiving ultrasonic signals that are reflected off of body structures, whereby a user can interpret the reflected signals to thereby locate preselected body structures within a patient.

5,484,417

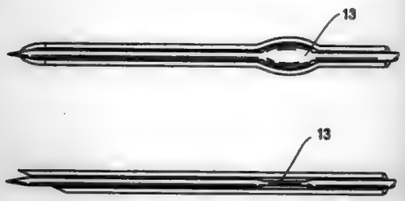
MICROCANNULA

Harold D. Waitz; Hal Sternberg; Paul E. Segall, all of Berkeley, and Bruce Cohen, Richmond, all of Calif., assignors to BioTime, Inc., Berkeley, Calif.

Continuation of Ser. No. 237,826, May 4, 1994, abandoned, which is a continuation-in-part of Ser. No. 25,158, Mar. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 687,843, Apr. 19, 1991, abandoned. This application Nov. 30, 1994, Ser. No. 348,743

Int. Cl.[6] A61M *5/178*

U.S. Cl. 604—165 **17 Claims**



1. A microcannula, comprising:

a hollow tube having a cross sectional size smaller than a 24 gauge needle and larger than a 29 gauge needle, said tube having a beveled tip wherein the angle of said bevel is 25°±0.5° and a segment of said tube distal to the tip having an expanded outside diameter; and

a solid conically pointed trochar tightly but removably fitted in the lumen of said tube, said trochar sufficiently long to protrude beyond the leading edge of said beveled tip, said trochar having a swedged segment in contact with the inside wall of said tube, said swedged segment being located at a point distal to said conical point and providing sufficient friction against said tube so as to restrict movement of said trochar in said tube.

5,484,418

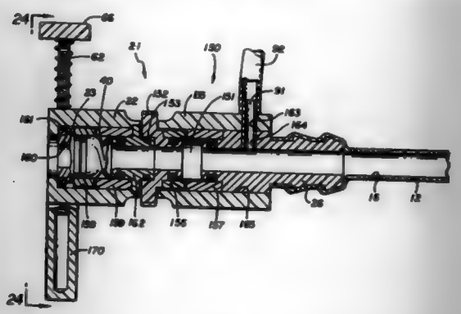
DUAL VALVE REINFORCED SHEATH AND METHOD

Dinah B. Quinchon, San Jose; Wesley D. Sterman, San Francisco; Ronald G. Williams, Menlo Park; David C. Dillow, Cupertino, and Steven G. Baker, Sunnyvale, all of Calif., assignors to EndoVascular Technologies, Inc., Menlo Park, Calif.

Division of Ser. No. 109,131, Aug. 19, 1993, Pat. No. 5,395,349, which is a continuation-in-part of Ser. No. 807,089, Dec. 13, 1991, Pat. No. 5,256,150. This application Nov. 2, 1994, Ser. No. 333,229

Int. Cl.[6] A61M *39/22*

U.S. Cl. 604—167 **26 Claims**



1. A sheath assembly comprising:

an elongate sheath tube formed of a flexible material having proximal and distal extremities and having a passage extending therethrough;

a first valve secured to the proximal extremity of said sheath tube and movable between open and closed positions, said first valve having a central opening therein in registration with the passage in said sheath tube; and

a second valve disposed proximal and proximate said first valve and movable between open and closed positions, said second valve having a central opening therein in registration with the central opening in said first valve and with the passage in said sheath tube,

wherein said first valve and said second valve when open permit a medical instrument to be inserted into said sheath tube and when closed form a hemostatic seal about the instrument.

5,484,419

HAND-HELD DEVICE FOR FEEDING A SPRING WIRE GUIDE

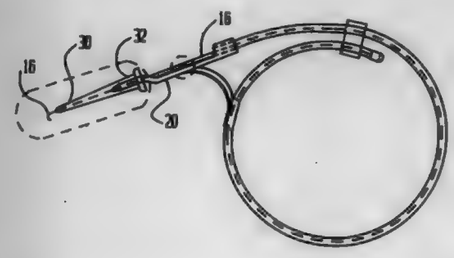
Philip B. Fleck, Douglasville, Pa., assignor to Arrow International Investment Corporation, Wilmington, Del.

Continuation of Ser. No. 908,713, Jun. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 608,234, Nov. 2, 1990, Pat. No. 5,125,906. This application Jun. 27, 1994, Ser. No. 267,004

The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—171 **11 Claims**



1. A hand-held spring wire guide feeding apparatus comprising:

a longitudinal base having an attached rear end having an opening for feeding a spring wire guide;

a flexible tube for holding a spring wire guide and having a proximal end attached to said attached rear end,

said longitudinal base having a forward end affixed to a removable tube defining a bore therethrough for receiving and straightening said spring wire guide as it is fed from said rear end,

a central open section separating said rear and forward ends for providing finger access to said spring wire guide so as to advance said spring wire guide between said rear end and said forward end; and

a handle affixed to the underside of said longitudinal base proximate to said central open section for holding and supporting said wire guide feeding apparatus, said handle configured to cup at least one finger of the user and further having means for securing the distal end of said flexible tube to said handle.

5,484,420

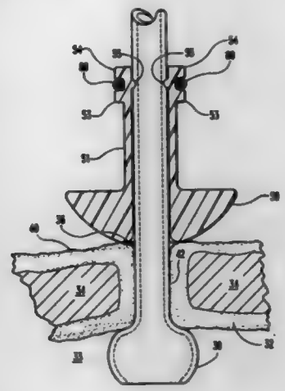
RETENTION BOLSTERS FOR PERCUTANEOUS CATHETERS

Ronald D. Russo, Barrington, R.I., assignor to Wilson-Cook Medical Inc., Winston-Salem, N.C.

Continuation-in-part of Ser. No. 911,171, Jul. 9, 1992, Pat. No. 5,267,968. This application Dec. 7, 1993, Ser. No. 163,843

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—178 **5 Claims**



1. A retention bolster for retaining a tubular medical device against the epidermal surface at the exit site of the device from the body of a patient, said bolster comprising:

a main body having a convexly curved exterior surface portion for contacting the epidermal surface and an upstanding cylindrical portion extending therefrom; and

means plural for securely attaching said main body to the tubular medical device including a longitudinal bore adapted for slidably receiving the tubular medical device therethrough, said longitudinal bore extending through said convexly curved exterior portion and said upstanding cylindrical portion, and means for securely retaining the tubular medical device within said longitudinal bore; wherein said main body is attachable to the tubular medical device with said convexly curved exterior portion in contact with the epidermal surface, and wherein said main body is rockable along contacting portions between said convexly curved exterior portion and the epidermal surface in response to movement of the tubular medical device about the exit site; and

wherein said upstanding cylindrical portion is elongated and is resiliently flexible to thereby supportively allow the tubular medical device to be bent therein laterally away from said exit site without kinking.

5,484,421

SAFETY SYRINGE

Anthony V. Smocer, 309 Dogwood Dr., Cross Junction, Va. 22625

Continuation-in-part of Ser. No. 112,927, Aug. 30, 1993, abandoned. This application Jul. 1, 1994, Ser. No. 269,985

Int. Cl.[6] A61M *5/32;5/00*

U.S. Cl. 604—195 **7 Claims**

1. A safety syringe comprising:

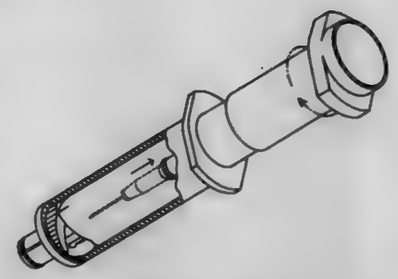
a needle capsule including a needle for transmitting blood from a patient to a vial;

a syringe body for mounting the needle capsule;

a depository for safely receiving a used needle capsule;

said depository and said syringe being readily rotatable in relation to each other; and

toggle means for propelling the needle capsule into the depository upon a predetermined amount of relative rotation between the depository and the syringe, said toggle means including a split ring/shoulder lock mechanism for securing the needle capsule within the syringe.



5,484,422

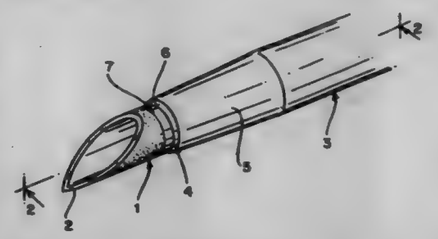
CATHETER NEEDLE HAVING SURFACE INDICATION THEREON AND PROCESS FOR FORMING SUCH CATHETER

Thomas E. Sloane, Jr., West Redding, and Zinovy Altman, Bristol, both of Conn., assignors to Critikon, Inc., Fla.

Filed Sep. 10, 1993, Ser. No. 120,109

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—272 **3 Claims**



1. A catheter assembly comprising:

an insertion needle having a sharpened point and a passage defined therein;

a catheter having a hub and a distal portion of tubular material disposed over said needle and ending in a distal tip;

said needle having a surface finish of a first visual quality over a major portion thereof and a second visual portion immediately adjacent the distal tip of said catheter indicating the tip of the catheter on the surface of the needle wherein said second visual portion is a modified surface finish which is more reflective than the remainder of the surface finish of the needle.

5,484,423

NEEDLE, FOR EXAMPLE EPIDURAL NEEDLE

Wilhelm Waskönig, Aguadulce, and José J. R. Olive, Barcelona, both of, Spain, assignors to te me an Logistics, Spain

Continuation-in-part of Ser. No. 50,074, May 5, 1993, Pat. No. 5,364,373. This application Apr. 15, 1994, Ser. No. 228,267

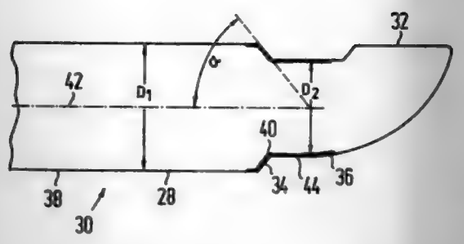
Claims priority, application Spain, Apr. 16, 1993, 9300780

The portion of the term of this patent subsequent to Nov. 15, 2011, has been disclaimed.

Int. Cl.[6] A61M *5/32;5/31;5/00*

U.S. Cl. 604—272 **6 Claims**

1. A needle usable as an epidural needle for lumbar puncture or local anesthesia, including a needle point with a lateral opening therein, a central needle body, and a distal end which is connectable to a holder, the needle point, in use, penetrating tissue and positioning its opening between the ligamentum flavum and the dura mater membrane;



the invention comprising said needle body having an outer surface, said outer surface of the needle body having a roughness between N3 (0.1 μm) and N2 (50 μm) according to ISO standard 1302 thereon, for providing a resistance which inhibits its advance when penetrating through tissue,

said needle body having a cross-sectional enlargement at a distance from the needle point,

the outer surface of the needle body having the roughness locally in the region of the cross-sectional enlargement.

5,484,424

BLOOD FILTERING DEVICE HAVING A CATHETER WITH LONGITUDINALLY VARIABLE RIGIDITY

Jean-Philippe Cottenceau, Anthony, and Gérard Chevillon, Montrouge, both of, France, assignors to Celsa L.G. (Societe Anonyme), Chasseneuil, France

Filed Nov. 16, 1993, Ser. No. 152,361

Claims priority, application France, Nov. 19, 1992, 92 13909

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—282 **8 Claims**



1. A device adapted to be implanted in a vessel of a patient's body, for trapping blood clots, said device comprising:

an elongated blood filter holding means comprised of a body having an axis and a length in the direction of said axis, said body also having a proximal end and a distal end; and

a blood filter connected to the distal end of said elongated blood filter holding means,

stiffening means embedded in the body of said elongated blood filter holding means for stiffening said elongated blood filter holding means in a longitudinally variable manner over its length, wherein said stiffening means are stiffer towards the distal end of the holding means than towards the proximal end for attenuating a substantially axial force exerted on said blood filter when the device is implanted.

5,484,425

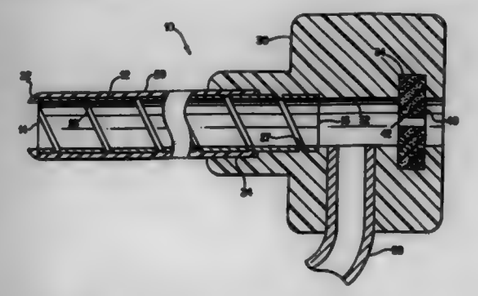
RADIOPAQUE NON-KINKING THIN-WALLED INTRODUCER SHEATH

Robert E. Fischell, Dayton, Md., and Tim A. Fischell, Nashville, Tenn., assignors to Cathco, Inc., Dayton, Md.

Continuation-in-part of Ser. No. 965,961, Nov. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 517,213, May 1, 1990, Pat. No. 5,180,376. This application Oct. 12, 1994, Ser. No. 321,806

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—282 **53 Claims**



1. An introducer sheath for percutaneous insertion into a vessel of a human body comprising:

(a) a flat wire metal coil having a distal end and a proximal end and having some separation defining a space between adjacent turns of the flat wire metal coil, the interior surface of said flat wire metal coil forming an interior lumen of the sheath;

(b) a plastic covering that is fitted onto and is in contact with the exterior surface of said flat wire metal coil, said plastic covering extending into the space between each of said adjacent turns of the flat wire metal coil without covering the interior surface of the flat wire metal coil whereby said separation between all of said adjacent turns of said flat metal coil is maintained when said introducer sheath is bent, each of said turns of said flat wire metal coil having a predetermined thickness within the approximate range of 0.75 to 3.0 mils with a predetermined width to thickness ratio between 12 and 80; and,

(c) a plastic adapter including a hemostasis valve located at the proximal end of the sheath for inserting guide wires and/or catheters through the sheath and into a vessel of the human body.

5,484,426

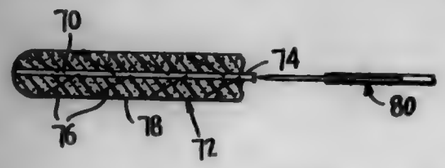
MULTIFUNCTIONAL DEVICES FOR USE IN ENDOSCOPIC SURGICAL PROCEDURES AND METHODS THEREFOR

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Division of Ser. No. 600,775, Oct. 23, 1990, Pat. No. 5,374,261, which is a continuation-in-part of Ser. No. 556,081, Jul. 24, 1990, Pat. No. 5,074,840. This application Oct. 1, 1993, Ser. No. 130,484

Int. Cl.[6] A61M *31/00*; A61F *13/20*; A61B *17/00*

U.S. Cl. 604—286 **6 Claims**



1. A multifunctional device in combination with an energy transmitting probe for transmitting energy to anatomical tissue for use in an endoscopically performed operative procedure of the type where a narrow portal is established to provide access to an internal operative site and said device is introduced to the operative site through the narrow portal, said energy transmitting probe including an electrical energy transmitting probe and said multifunctional device including sponge means for absorbing body fluids at the operative site and passage means extending entirely through said sponge means and receiving said electrical energy transmitting probe for treating tissue at the operative site.

5,484,427

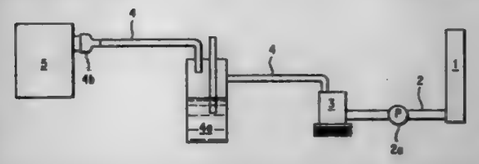
BODY VACUUM

Delmar Gibbons, 204 Oregon St., Kellogg, Id. 83837

Continuation-in-part of Ser. No. 642,966, Jan. 18, 1991, abandoned. This application Sep. 9, 1992, Ser. No. 942,060

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—313 **3 Claims**



1. A method of cleaning the body surface of a mammal comprising the steps of:

(1) forcing a flowable liquid fluid through a first conduit connected to a brush portion having soft bristles that do not mat, said first conduit terminating within said brush at or immediately above said bristles, wherein said fluid is forced against said body surface to be cleaned; and

(2) removing said flowable liquid fluid under negative pressure produced by a negative pressure generator from the area being cleaned wherein said fluid passes through a second conduit from said brush portion under negative pressure.

5,484,428

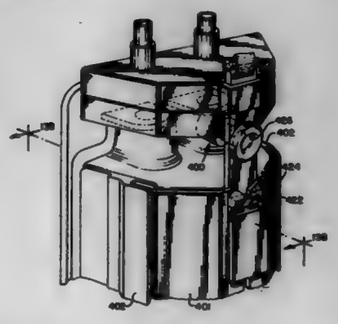
FLUID COLLECTION CONTAINER

Nancy Drainville, Attleboro, Mass., and Augustus Felix, Providence, R.I., assignors to C.R. Bard, Inc., Murray Hill, N.J.

Continuation of Ser. No. 73,607, Jun. 7, 1993, Pat. No. 5,374,257, which is a continuation of Ser. No. 856,387, Mar. 23, 1992, abandoned. This application Mar. 8, 1994, Ser. No. 208,423

Int. Cl.[6] A61M *5/14*

U.S. Cl. 604—319 **12 Claims**



1. A fluid collection container, comprising:

a collection bag having a variable volume interior and including a flexible wall which is collapsible and distendible;

said collapsible collection bag including a first port in communication with said variable volume interior and having a proximal end which is connectable to a source of suction, and

a second port in communication with said variable volume interior and having a proximal end which is connectable to a tube for conducting the fluid to be collected;

a stent engaging framework extending from said collection bag;

a rigid stent which is releasably engageable with said stent engaging framework to maintain said collection bag in a distended position;

said bag including a vent in communication with said variable volume interior and having a port communicable with the air outside of said bag; and

a valve selectively moveable from a first position which seals said vent port to a second position which unseals said vent port, whereby in said second position air bleeds through said vent port into said variable volume interior facilitating disengagement of said stent from said stent engaging framework when said collection bag has been subject to a vacuum, wherein said valve includes an actuator which is operatively connected with said rigid stent when said stent is releasably engaged with said stent engaging framework.

5,484,429

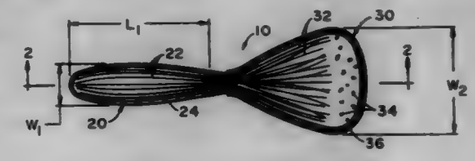
INTERLABIAL SANITARY PAD

John P. Vukos, and Randy E. Meirowitz, both of Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 976,152, Nov. 13, 1992, abandoned. This application Aug. 3, 1993, Ser. No. 101,523

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.1 **16 Claims**



1. An interlabial sanitary pad comprising:

(a) an absorbent fluid pickup module having a liquid-pervious cover and configured to fit between the labia of a woman, wherein said cover surrounds said pickup module, said pickup module having a first predetermined height dimension; (b) an absorbent fluid capacity module communicating with and extending longitudinally from said pickup module, said capacity module being enclosed in a liquid-impervious baffle, said capacity module having generally a flattened fan shape and adapted to be positioned exterior of said labia, said capacity module having a second predetermined height dimension; and

(c) fluid-wicking fibers contained in both said pickup and capacity modules, said fibers are longitudinally oriented and are capable of carrying fluid from said pickup module to said capacity module, said first height dimension of said pickup module being greater than said second height dimension of said capacity module.

5,484,430

SANITARY NAPKIN HAVING TRANSVERSELY SEGMENTED CORE

Thomas W. Osborn, III, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

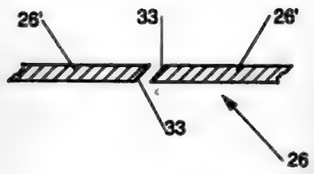
Continuation of Ser. No. 827,555, Jan. 28, 1992, abandoned, which is a continuation of Ser. No. 630,451, Dec. 19, 1990, abandoned. This application Sep. 30, 1993, Ser. No. 129,980

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.1 **6 Claims**

1. A sanitary napkin having a longitudinal centerline, two longitudinal side margins, and two lateral side margins, said sanitary napkin comprising:

a liquid pervious topsheet;



a liquid impervious backsheet at least partially peripherally joined to said topsheet;

a transversely segmented absorbent core positioned between said topsheet and said backsheet, said transversely segmented absorbent core being divided into a plurality of independent segments having transverse edges; and

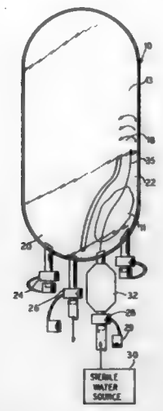
a means to promote relative longitudinal movement between adjacent segments of said core which comprises said transverse edges of said independent core segments being mutually co-bevelled.

5,484,431

SYSTEM FOR CREATING AT A SITE, REMOTE FROM A STERILE ENVIRONMENT, A PARENTERAL SOLUTION

Mike Scharf, McHenry; Mike Finley, Park City; Joe Veillon, McHenry; Jim Kipp; Tom Dudar, both of Palatine; Jim Owens, McHenry, and Jim Ogle, Glenview, all of Ill., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 29, 1991, Ser. No. 647,109
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—403 **39 Claims**



1. A system for creating at a site, remote from a sterile environment, a parenteral solution in a large volume parenteral container comprising:

a flexible container having an interior that is empty prior to adding a fluid except for a prepackaged amount of a solute that is housed in the interior of the container, the container including at least one port, and a sterilizing filter in fluid communication with the interior and the port, the container being so constructed and arranged that the fluid flows from the port, through the filter and into the interior of the container; and

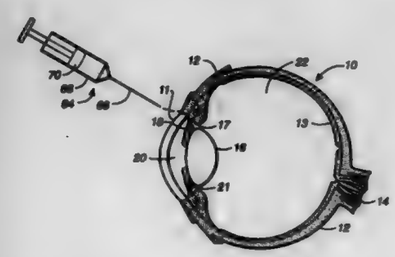
a source of sterile water including means for establishing fluid flow from the source of sterile water into the port.

5,484,432

COLLAGEN TREATMENT APPARATUS

Bruce J. Sand, Hidden Hills, Calif., assignor to Laser Biotech, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 930,973, Aug. 17, 1992, Pat. No. 5,304,169, and a continuation-in-part of Ser. No. 926,331, Aug. 6, 1992, Pat. No. 5,374,265, which is a continuation-in-part of Ser. No. 546,252, Jun. 29, 1990, Pat. No. 5,137,530, which is a continuation-in-part of Ser. No. 374,958, Jun. 30, 1989, Pat. No. 4,976,709, which is a continuation-in-part of Ser. No. 285,379, Dec. 15, 1988, abandoned, which is a continuation of Ser. No. 170,070, Mar. 14, 1988, abandoned, Ser. No. 67,381, Jun. 24, 1987, abandoned, and Ser. No. 914,169, Oct. 1, 1986, abandoned, which is a continuation-in-part of Ser. No. 781,225, Sep. 27, 1985, abandoned, said Ser. No. 930,973is a continuation-in-part of Ser. No. 771,547, Oct. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 546,252, Oct. 4, 0, which is a continuation-in-part of Ser. No. 374,958, Oct. 4, 0, which is a continuation-in-part of Ser. No. 285,379, Oct. 4, 0, which is a continuation of Ser. No. 170,070, Oct. 4, 0, Ser. No. 67,381, Oct. 4, 0, and Ser. No. 914,169, Oct. 4, 0, which is a continuation-in-part of Ser. No. 781,225, Oct. 4, 0. This application Apr. 14, 1994, Ser. No. 227,781
Int. Cl.[6] A61N *5/06*
U.S. Cl. 606—5 **24 Claims**



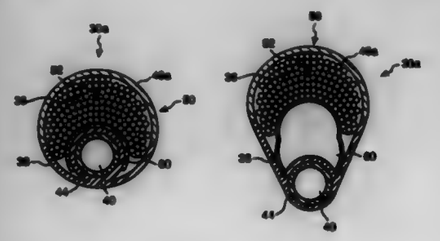
1. Apparatus for shrinking collagen tissue, comprising means for applying a reagent to the tissue to reduce threshold shrinkage temperature, and means for irradiating the tissue with energy having a wavelength in a range of about 1.80 to about 2.55 microns.

5,484,433

TISSUE ABLATING DEVICE HAVING A DEFLECTABLE ABLATION AREA AND METHOD OF USING SAME

Kevin D. Taylor; Dan J. Hammersmark, both of Colorado Springs, Colo., and Timothy J. Wood, Santa Clara, Calif., assignors to The Spectranetics Corporation, Colorado Springs, Colo.

Filed Dec. 30, 1993, Ser. No. 177,895
Int. Cl.[6] A61N *5/06*
U.S. Cl. 606—17 **19 Claims**



1. An apparatus for ablating biological tissue having a deflectable ablation area, comprising:

an elongated catheter having a distal end, a proximal end, an elongated body portion, and a first cross-sectional area at said distal end when said catheter is in an undeflected state including;

a sheath,

a plurality of optical fibers located within said sheath and extending between said proximal end and said distal end of said catheter, each optical fiber in said plurality of optical fibers having distal end and an end surface at said distal end, wherein an ablation area is located at said distal end of said elongated catheter, said ablation area being defined by a closed figure that encompasses said end surfaces of all of said optical fibers, said optical fibers generally pointing in an axial direction of said elongated catheter when said catheter is in said undeflected state, and

deflecting means for selectively deflecting all of said optical fibers generally away from said axial direction of said elongated catheter such that at least a portion of said ablation area extends beyond said first cross-sectional area of said catheter and such that an amount of light energy over said entire ablation area remains constant whether or not said deflecting means is actuated, said deflecting means being contained within said sheath.

5,484,434

ELECTROSURGICAL SCALPEL

Robert L. Cartmell, Bellbrook, and Carl E. Goubeaux, Troy, both of Ohio, assignors to New Dimensions in Medicine, Inc., Dayton, Ohio

Filed Dec. 6, 1993, Ser. No. 162,782
Int. Cl.[6] A61B *17/39*
U.S. Cl. 606—37 **18 Claims**



1. A surgical scalpel for cutting the tissue of a patient and for selectively applying an electrosurgical cutting current or an electrosurgical coagulation current from an electrosurgical generator to the patient, said electrosurgical generator having an electrical power terminal, a cutting switching terminal, and a coagulation switching terminal, said generator providing an electrosurgical cutting current at said electrical power terminal when said cutting switching terminal is electrically connected to said electrical power terminal, and said generator further providing an electrosurgical coagulation current at said electrical power terminal when said coagulation switching terminal is electrically connected to said electrical power terminal, comprising:

a scalpel body with a contoured external surface configured to be held comfortably in the hand of a surgeon, said contoured external surface defining a thumb depression on one side of the scalpel body operatively adapted to receive the thumb of the hand of the surgeon therein, and a finger groove on the opposite side of the scalpel body, running generally perpendicular to the longitudinal axis of the body, operatively adapted to receive the second finger of the hand of the surgeon therein,

an electrically conductive blade, mounted on and extending from said scalpel body, for cutting the tissue of a patient and for selectively applying electrosurgical cutting current or electrosurgical coagulation current to the tissue of a patient,

a cable for electrical connection to the electrosurgical generator, said cable including an electrical power conductor connected at a first end of said cable to said electrically conductive blade, a cutting switching conductor, and a coagulation switching conductor, said cable further including an electrical connector attached at a second end of said cable for electrically connecting said electrical power conductor to said electrical power terminal, for electrically connecting said cutting switching conductor to said cutting switching terminal, and for electrically connecting said coagulation switching conductor to said coagulation switching terminal, and

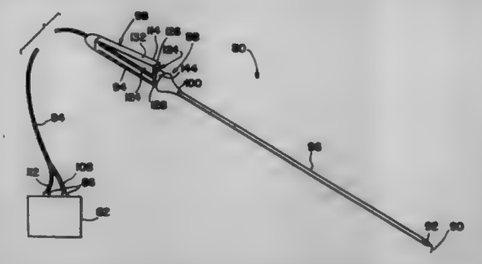
manual switch means, mounted on said scalpel body and electrically connected to said electrical power conductor, said cutting switching conductor, and said coagulation switching conductor, for selectively connecting either said cutting switching conductor or said coagulation switching conductor to said electrical power conductor when it is desired to supply electrosurgical cutting current or electrosurgical coagulation current, respectively, to said electrically conductive blade from said electrosurgical generator via said electrical power conductor.

5,484,435

BIPOLAR ELECTROSURGICAL INSTRUMENT FOR USE IN MINIMALLY INVASIVE INTERNAL SURGICAL PROCEDURES

Richard P. Fleenor, Englewood, and Robert L. Bromley, Louisville, both of Colo., assignors to Conmed Corporation, Utica, N.Y.

Continuation-in-part of Ser. No. 821,753, Jan. 15, 1992, abandoned. This application Nov. 8, 1993, Ser. No. 149,183
Int. Cl.[6] A61B *17/39*
U.S. Cl. 606—46 **14 Claims**



1. A bipolar electrosurgical instrument for use in minimally invasive surgical procedures on internal portions of a patient's body, wherein access to said internal portions of said patient's body is obtained via an access cannula, said instrument comprising:

an instrument body including a rearward portion for handling by a user and an elongated forward portion for insertion through said access cannula;

active electrode means, extending forwardly from a front end of said forward portion of said instrument body, for transmitting electrical signals so as to produce electrosurgical effects adjacent to said active electrode means, said active electrode means including gripping means for gripping tissue adjacent to said active electrode means, wherein said active electrode means is capable of transmitting at least a first electrical signal for tissue cutting;

passive electrode means extending forwardly from said front end of said forward portion of said instrument body in closely spaced relationship relative to said active electrode means, said passive electrode means including a passive tissue contact surface having an area greater than that of an active tissue contact surface of said active electrode means, wherein said passive electrode means forms a portion of a circuit for transmitting said electrical signals substantially without producing electrosurgical effects adjacent to said passive electrode means; and

positioning means for providing relative movement between said active electrode means and said passive electrode means

after said active electrode means and said passive electrode means have been inserted through said access cannula, said positioning means operative for arranging said active electrode means and said passive electrode means between a first arrangement, wherein said active tissue contact surface and said passive tissue contact surface are separated by a first distance, and a second arrangement, wherein said active tissue contact surface and said passive tissue contact surface are separated by a second distance less than said first distance such that, during use, tissue can be gripped in said first arrangement and moved for cutting in said second arrangement.

5,484,436

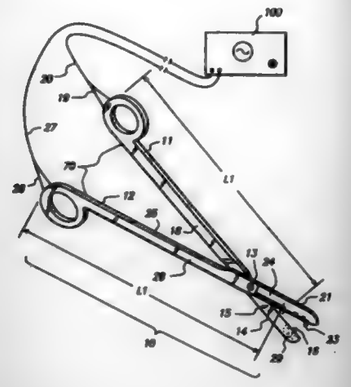
BI-POLAR ELECTROSURGICAL INSTRUMENTS AND METHODS OF MAKING

Philip E. Eggers, Dublin, and Andrew R. Eggers, Ostrander, both of Ohio, assignors to Hemostatic Surgery Corporation, Georgetown, Cayman Islands

Continuation-in-part of Ser. No. 877,703, May 1, 1992, Pat. No. 5,324,289, and a continuation-in-part of Ser. No. 877,704, May 1, 1992, Pat. No. 5,330,471, each , May 1, 0which is a continuation-in-part of Ser. No. 711,920, Jun. 7, 1991, abandoned. This application Jun. 24, 1994, Ser. No. 265,225

Int. Cl.[6] A61B *17/39*

U.S. Cl. 606—48 **18 Claims**



1. An instrument for hemostatically cutting tissue by passing a current therethrough, the instrument comprising:

a first and second shearing members having first and second shearing surfaces, first and second cutting edges and first and second electrodes located adjacent to the first and second cutting edges, respectively, each of the first and second cutting edges having a length;

a layer of electrically insulative material disposed on at least one of the first and second shearing members to form the substantially the entire length of one of the first and second cutting edges; and

a pin pivotally joining the first and second shearing members so that the first shearing member moves relative to the second shearing member in a scissors-like cutting motion wherein the first and second shearing members close together to sever tissue located therebetween and so that a current flows between the first and second shearing members through the tissue to cause hemostasis thereof,

wherein the insulative layer disposed on at least one of the first and second shearing members is deposited,by plasma deposition at supersonic velocities.

5,484,437

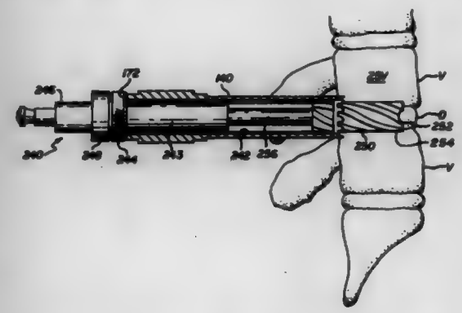
APPARATUS AND METHOD OF INSERTING SPINAL IMPLANTS

Gary K. Michelson, 438 Sherman Canal, Venice, Calif. 90291

Continuation-in-part of Ser. No. 285,935, Jun. 13, 1988, Pat. No. 5,015,247, which is a division of Ser. No. 698,674, May 10, 1991, abandoned. This application Jun. 10, 1993, Ser. No. 74,781

Int. Cl.[6] A61B *17/56;17/00*

U.S. Cl. 606—61 **35 Claims**



1. A method for inserting a spinal implant between two adjacent vertebra comprising inserting a spinal distractor in the disc space on one or both sides of the spinal column to provide for proper spacing of the disc space between the vertebra, inserting over the spinal distractor a hollow tubular member having engagement means for engaging two adjacent vertebrae into the vertebrae; removing the spinal distractor from the hollow tubular member; passing a drill through the tubular member to drill a hole in the disc and a portion of the two adjacent vertebrae; removing the drill; inserting an implant in the vertebrae through the tubular member; and then removing said tubular member.

5,484,438

INTRAMEDULLARY NAIL WITH SCREW-RECEIVING SOLID INSERT

Dietmar Pennig, Hans-Driesch-Strasse 12, 50935 Köln, Germany

Continuation of Ser. No. 101,838, Aug. 4, 1993, abandoned. This application Nov. 23, 1994, Ser. No. 344,223

Claims priority, application Germany, Feb. 13, 1992, 42 04 246.1; Feb. 20, 1992, 42 05 118.5

Int. Cl.[6] A61B *17/72*

U.S. Cl. 606—64 **9 Claims**



1. A medullary nail of metal comprising a cylindrical body having a longitudinal axis and a local cavity near the end region of the nail, said cavity extending transverse to the longitudinal axis to a depth exceeding the radius of the nail and open at least on one side of the nail, and a plug-like insert of a single material solidly filling the cavity and externally conforming to and continuous with the local outer surface profile of the nail and consisting of a material which can be readily drilled or into which a screw can readily be driven.

5,484,439

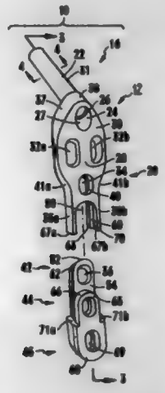
MODULAR FEMUR FIXATION DEVICE

C. Donald Olson, Palos Verdes, and Mark G. Urbanski, Indian Wells, both of Calif., assignors to Alphatec Manufacturing, Inc., Palm Desert, Calif.

Continuation of Ser. No. 946,742, Sep. 16, 1992, abandoned. This application Apr. 25, 1994, Ser. No. 233,037

Int. Cl.[6] A61F *5/00*

U.S. Cl. 606—65 **15 Claims**



1. An implant for the fixation of a bone fracture comprising:

an upper side plate with an inner surface, an outer surface, at least one mounting hole, a beveled receiving channel located below a cylindrical barrel and a head, wherein said barrel comprises an elongated hollow cylinder positioned at an oblique angle with respect to said head so that when the inner surface of said head is mounted against the cortical wall of a bone said barrel is substantially aligned with the longitudinal axis of the femoral neck; and

a lower side plate with an inner and outer surface, said lower side plate also having a beveled outward flange slidably engagable at an engagement location with said beveled receiving channel in said upper side plate, said beveled outward flange being thinner than any other part of the lower side plate, and said lower side plate including at least one mounting-hole for mounting said lower side plate to a cortical wall.

5,484,440

BONE SCREW AND SCREWDRIVER

Randall N. Allard, Plymouth, Ind., assignor to Zimmer, Inc., Warsaw, Ind.

Continuation of Ser. No. 970,968, Nov. 3, 1992, abandoned. This application Aug. 18, 1994, Ser. No. 292,592

Int. Cl.[6] A61B *17/56;17/58*

U.S. Cl. 606—73 **4 Claims**



1. In combination, a bone screw and a bone screw screwdriver for driving said bone screw, said bone screw having a partially enclosed tapered groove, said screwdriver comprising:

a handle portion;

a longitudinally extending sleeve connected to said handle portion and having a bore therethrough, said sleeve having a distal end;

a drive rod slidably disposed within said bore, said rod having a proximal end and a distal end and a longitudinal axis, said rod distal end being located adjacent said sleeve distal end;

a tapered tongue on said distal end of said drive rod for attaching the bone screw to said drive rod, said tapered tongue sized to interfit within and interlock to said partially enclosed tapered groove; and

locking means for urging said sleeve distal end and said tongue together to thereby clamp the screw therebetween, in which said locking means further includes a resilient biasing means for resiliently retracting and biasing said drive rod distal end toward said sleeve distal end to retain the bone screw on said tongue, and wherein the biasing means enables the tongue on the drive rod to be selectively extended from the sleeve distal end to enable the bone screw to be attached to the tongue, and wherein said tapered tongue positively interlocks with the tapered groove in the bone screw in all but one direction while the tongue is extended from the sleeve distal end, and wherein said one direction is transverse to the longitudinal axis of the drive rod, and wherein the taper of said tongue has a narrow end and a wide end, said sleeve distal end includes a longitudinally extending tab which engages the bone screw over said tapered narrow end of said tongue to act as a stop and positively block the bone screw from disengaging from said tongue when the drive rod distal end is retracted.

5,484,441

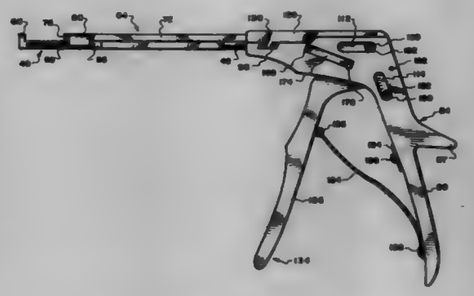
RONGEUR SURGICAL INSTRUMENT

Tibor Koros, and Gabriel Koros, both of 610 Flinn Ave., Moorpark, Calif. 93021

Continuation-in-part of Ser. No. 716,577, Jun. 17, 1991, abandoned. This application Oct. 23, 1991, Ser. No. 780,431

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—79 **36 Claims**



1. A surgical instrument comprising:

an elongated first shaft member having a distal end and a proximal end;

a footplate mounted at the distal end of said first shaft member and extending generally transversely to said first shaft member;

an elongated second shaft member having a distal end and a proximal end, said Second shaft member being mounted adjacent said first shaft member for reciprocating movement relative thereto;

cutting means located at said distal end of said second shaft member, said second shaft member being moveable between a first position in which said cutting means is spaced away from said footplate and a second position in which said cutting means is abutting said footplate;

said cutting means comprises a U-shaped segment having a sharpened cutting edge at said distal end of said second shaft member;

an aperture in said U-shaped segment disposed in the base of the U in said U-shaped segment and at the end of said U-shaped segment closest to said proximal end of said second shaft member;

means for actuating said surgical instrument, said actuating means being moveable between a first position and a second position; and

means for operatively connecting said actuating means to drive said second shaft member, said connecting means operating to vary the nature of the linkage between said actuating means and said second shaft member.

5,484,442

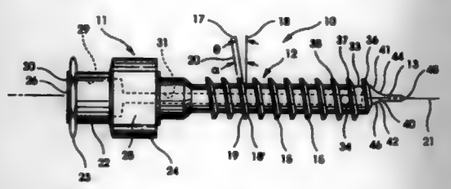
INTRAOSSEOUS NEEDLE

Richard J. Melker; Peter F. Gearen; Gary J. Miller, all of Gainesville, Fla.; Michael P. DeBruyne, Bloomington, Ind., and Lisa Molitor, Gainesville, Fla., assignors to Cook Incorporated, Bloomington, Ind., and University of Florida Research Foundation, Inc., Alachua, Fla.

Continuation of Ser. No. 627,020, Dec. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 261,699, Oct. 24, 1988, abandoned. This application May 11, 1992, Ser. No. 884,323

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—79 **18 Claims**



1. An intraosseous needle, comprising:

a threaded shaft having first and second opposing ends and a passageway extending from the first end toward the second end;

boring means for initiating penetration of said shaft into bone, said boring means formed as part of said second end; and

wherein said shaft has at least one opening proximal to the second end and in communication with the passageway;

wherein said boring means is generally conical with a pointed tip;

wherein said boring means is solid and has at least two cutting edges;

wherein said at least one opening is a side port located behind said boring means; and

wherein said boring means has a pair of concave indentations which define said at least two cutting edges.

5,484,443

INSTRUMENT FOR INSERTING A PROTECTIVE SLEEVE INTO THE MEDULLARY CANAL OF A BONE

Joanne M. Pascarella, Cordova, Tenn., and John V. Vanore, Burr Ridge, Ill., assignors to Wright Medical Technology, Inc., Arlington, Tenn.

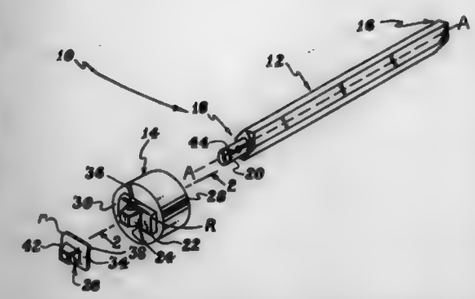
Continuation of Ser. No. 37,510, Mar. 24, 1993, abandoned, which is a continuation of Ser. No. 817,265, Jan. 3, 1992, abandoned. This application Sep. 22, 1994, Ser. No. 310,651

Int. Cl.[6] A61F *5/00*; A61B *17/58*

U.S. Cl. 606—86 **21 Claims**

1. An instrument for surgically implanting a grommet for a flexible bone joint replacement prostheses, comprising:

a handle having a central axis with opposed proximal and distal ends, the distal end being configured with a first connection comprising a threaded external surface;



a head connectable to said handle and having opposed proximal and distal portions, including a base extending axially from the distal portion, the proximal portion being configured with a second connection comprising a threaded internal bore for mating engagement with the first connection;

a post protruding distally from the base and having a cross-section which is tapered in a distal direction from a thicker portion at the intersection of the post with the base toward the tip of the post.

5,484,444

DEVICE FOR THE IMPLANTATION OF SELF-EXPANDING ENDOPROSTHESES

Reto Braunschweiler, Winterthur, and Michel Bachmann, Romanel, both of, Switzerland, assignors to Schneider (Europe) A.G., Bulach, Switzerland

Filed Oct. 14, 1993, Ser. No. 137,676

Claims priority, application European Pat. Off., Jan. 31, 1992, 9211867

Int. Cl.[6] A61B *19/00*; A61M *25/00*

U.S. Cl. 606—108 **14 Claims**



1. An implanting device in combination with a tubular radially self-expanding endoprosthesis comprising: an elongated inner core element having an outer surface over which said endoprosthesis is placed and a tubular outer body that can be moved in relation to said core element and that at least partially surrounds said core element and said endoprosthesis to hold said endoprosthesis in a radially contracted state, the endoprosthesis having a longitudinal length in a radially contracted state, wherein said core element has a stamping on its outer surface corresponding to at least 10% and at most 50% of the longitudinal length of the contracted endoprosthesis, the stamping essentially complementing the shape of an inner surface of said endoprosthesis when said endoprosthesis is in a radially contracted state.

5,484,445

SACRAL LEAD ANCHORING SYSTEM

Henricus M. Knuth, Kerkrade, Netherlands, assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 12, 1993, Ser. No. 135,108

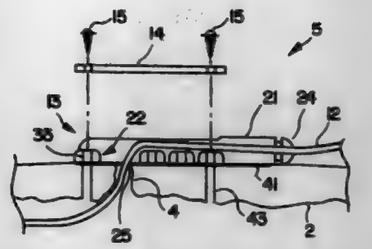
Int. Cl.[6] A61N *1/00*

U.S. Cl. 606—129 **21 Claims**

1. A system for anchoring a lead to the sacrum comprising:

a base, said base having at least one mounting hole therethrough, said base having a lead hole therethrough;

a sleeve mounted to said base, said sleeve having a lead lumen therethrough, said Lead lumen corresponding with said lead



hole through said base, said lead lumen having means for fixing said lead to said sleeve, said sleeve and lumen being substantially parallel to said base;

at least one fastener to be introduced through said mounting hole into said sacrum and thereby anchor the lead; and

a stress distribution member to distribute the stress exerted from said fastener on said base.

5,484,446

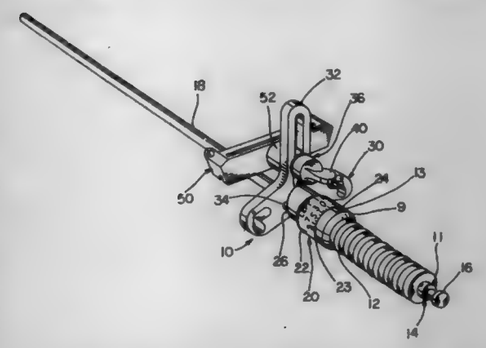
ALIGNMENT GUIDE FOR USE IN ORTHOPAEDIC SURGERY

Dennis W. Burke, Milton, Mass.; Thomas Petersen, San Diego, Calif.; David Krueger, Warsaw, and Rodney L. Bays, Pierceton, both of Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Filed Jun. 27, 1994, Ser. No. 265,884

Int. Cl.[6] A61B *17/15;17/17*

U.S. Cl. 606—87 **7 Claims**



1. An alignment guide for an orthopaedic instrument, the alignment guide including an intramedullary rod, a base plate pivotally connected adjacent one end of the rod, and a cam means carried by the rod in engagement with cam follower mounted on the base plate for orienting the base plate at an angle relative to the rod.

5,484,447

CALIPERS FOR USE IN OPHTHALMIC SURGERY

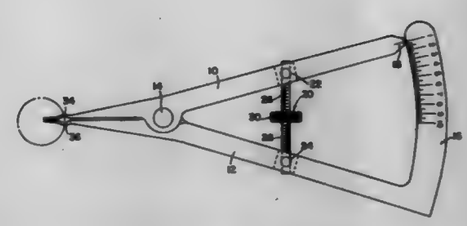
Terence A. Waldock, Meppershall, and John L. Pearce, Bromsgrove, both of, England, assignors to Duckworth & Kent Limited, England

Filed Jul. 26, 1994, Ser. No. 280,427

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—107 **7 Claims**

1. A caliper for ophthalmic surgery comprising a pair of arms which are relatively pivotable about a pivot axis, each arm terminating at one end in a tip with the tips movable between closed and open positions upon said pivot movement, an outwardly directed cutting blade carried by one of the tips, adjusting means to permit controlled pivoting movement of said arms, and scale means to provide an indication of the amount of tip separation, wherein the tips of the arms are adapted to be insertable into an incision in eye



tissue and to open the incision to a predetermined dimension by cutting to permit the insertion of an ocular lens.

5,484,448

GARMENT AND METHOD FOR COOLING BODY TEMPERATURE

Sandra L. Steele, Kingston, and Harry W. Nettleton, Hansville, both of Wash., assignors to Steele and Associates, Inc., Kingston, Wash.

Filed May 7, 1993, Ser. No. 59,239

Int. Cl.[6] A61F *7/00*

U.S. Cl. 607—108 **19 Claims**



1. A cooling garment, comprising:

(a) opposed front and back panels to substantially cover a user's torso;

(b) a plurality of substantially rectangular elongated pockets affixed to the front and back panels, each of the pockets having a releasably secured opening; and

(c) one or more insulating sleeves retaining cooling packs of a size corresponding to the elongated pockets, wherein the cooling packs being confined within the pocket or pockets adjacent to a portion of the user's torso subject to less heat stress are retained in insulating sleeves having a higher insulation value than insulating sleeves retaining cooling packs confined within the pocket or pockets adjacent to a portion of the user's torso subject to more heat stress.

5,484,449

TEMPORARY SUPPORT FOR A BODY LUMEN AND METHOD

Rodney R. Amundson, Lindstrom; Vincent W. Hull, Fridley; Robert S. Schwartz, Rochester, and Rodney G. Wolff, Minnetonka Beach, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

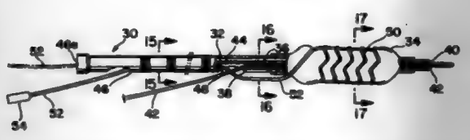
Continuation-in-part of Ser. No. 818,649, Jan. 7, 1992, abandoned. This application Dec. 13, 1993, Ser. No. 167,279

Int. Cl.[6] A61M *25/10*

U.S. Cl. 606—108 **14 Claims**

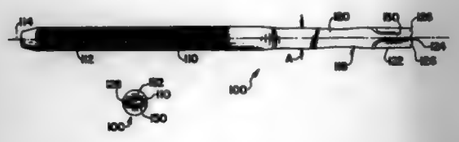
1. A device for providing temporary support to a body lumen comprising:

(a) a catheter having a proximal end and a distal end and a balloon at the distal end:



(b) a continuous winding on the balloon, the winding comprising a wire having a first end and a second end, the wire wound into a generally cylindrical shape around the balloon;
(c) inflation means for inflating the balloon to radially expand the winding into supporting contact with the body lumen:
(d) an elongated lead having a first end and a second end, the first end attached to one of the first and second ends of the wire of the winding: and
(e) gripping means at the second end of the lead remote from the winding for grasping and withdrawing the lead, thereby uncoiling the winding and facilitating its removal in an opened condition, wherein the lead at least partially occupies a lumen at the distal end of the catheter.

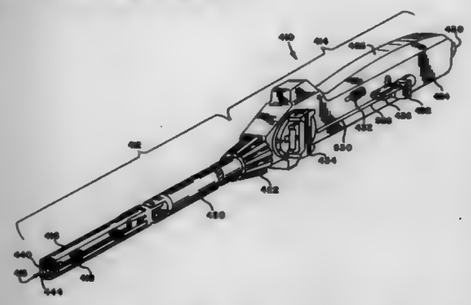
5,484,450
PENILE PROSTHESIS IMPLANT INSERTION INSTRUMENT
Adel W. Mohamed, P.O. Box 2266, Smithfield, N.C. 27577
Filed Jun. 20, 1994, Ser. No. 262,659
Int. Cl.[6] A61B *19/00*
U.S. Cl. 606—108 **8 Claims**



1. An instrument for use in penile prosthesis implant surgery, the implant being of the type including a pair of inflatable, generally cylindrical members made of silicone material and capable of being punctured by a needle point and a fluid tube coupled to each cylindrical member, the instrument being constructed and arranged to aid in the final insertion of each cylindrical member into a corpus cavernosum of the penis and prevent damage to a cylindrical member upon closing an associated incision by suturing, the incision being made for the purpose of inserting the cylindrical member into a corpus cavernosum of the penis or for accessing the cylindrical member within the penis, the instrument comprising:
an elongated handle constructed and arranged to be grasped and maneuvered by a user, and an elongated tool extending from said handle, said tool including a connecting portion connected to said handle and a distal tool portion extending from said connecting portion and sized for insertion into a corpus cavernosum of the penis, said distal tool portion being in the form of an arcuate wall defining a smooth concave surface and a smooth convex surface opposite said concave surface, said arcuate wall including surfaces defining a notch in a distal end which opens away from the handle, the surfaces defining the notch being constructed and arranged to engage the fluid tube of an associated cylindrical member so as to move a portion of the cylindrical member into a portion of the corpus cavernosum of the penis,
said concave surface defining a recess of generally constant depth so as to be complimentary to an external shape of the cylindrical member, whereby movement of the distal tool portion into the incision so that the concave surface is disposed about a portion of the cylindrical member protects the cylindrical member portion from inadvertent puncture by a suture needle during closing of the incision.

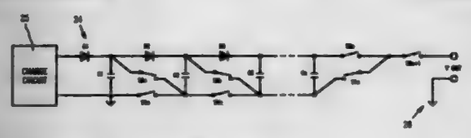
5,484,451
ENDOSCOPIC SURGICAL INSTUMENT AND STAPLES FOR APPLYING PURSE STRING SUTURES
Ernest Akopov; Vytchesnly Astashov; Nikolai Tvorogov, and Sergei Udalov, all of Moscow, Russian Federation, assignors to Ethicon, Inc., Somerville, N.J.
Continuation-in-part of Ser. No. 881,010, May 8, 1992, Pat. No. 5,242,457. This application Sep. 3, 1993, Ser. No. 117,260
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—139 **15 Claims**





1. A cartridge for holding surgical staples and suture comprising:
a cartridge housing defining a) an interior portion, b) a central longitudinal slot for permitting passage of a longitudinally extending suture out of said cartridge housing, and c) a plurality of staple receiving slots for permitting passage of staples out of said cartridge;
a staple base within said housing for releasably holding staples;
a retainer plate within said housing, said retainer plate having a plurality of hooks for releasably engaging said staples; and
a staple pusher bar within said housing for closing said staples, said staple pusher bar being longitudinally movable from an open position wherein said staples are open to a closed position wherein said staples are closed.

5,484,452
CURRENT LEAKAGE PREVENTION MECHANISM FOR USE IN A DEFIBRILLATOR CIRCUIT
Eric Persson, Minnetonka, Minn., assignor to Survivа-Link Corporation, Minneapolis, Minn.
Filed Mar. 31, 1993, Ser. No. 41,006
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **13 Claims**



1. A defibrillator apparatus, comprising:
a) a plurality of capacitors;
b) means to charge said capacitors;
c) means to connect said capacitors to a patient;
d) semiconductor means to switch said capacitors between said charge means and said connection means to thereby charge said capacitors in parallel and to discharge said capacitors in series, simultaneously, and
e) means to limit current leakage to the patient only during charging of said capacitors.

5,484,453
COMPOSITION AND PROCESS FOR TREATING TEXTILE MATERIALS
Bernd-Dieter Baehr, Neuss; Hildegard von Delden, Hilden, and Wolfgang Lillotte, Moenchengladbach, all of, Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany
PCT No. PCT/EP92/00904, § 371 Date Nov. 2, 1993, § 102(e) Date Nov. 2, 1993, PCT Pub. No. WO92/19806, PCT Pub. Date Nov. 12, 1992
PCT Filed Apr. 23, 1992, Ser. No. 140,118
Claims priority, application Germany, May 2, 1991, 41 14 241.1; Japan, Jan. 31, 1992, 42 02 720.9
Int. Cl.[6] D06M *23/06;* D06L *3/02*
U.S. Cl. 8—111 **18 Claims**

1. A process for the aerosol/superheated steam application of water-based treatment liquors by spraying in the continuous treatment of web-form textile materials, wherein said water-based treatment liquors consist essentially of water, an anionic surfactant, a nonionic surfactant, sodium hydroxide, hydrogen peroxide, and a deaerating agent consisting of phosphoric acid triesters of lower, at least partly alkoxylated alkyl alcohols which is either dissolved, homogeneously emulsified or homogeneously dispersed in said water-based treatment liquors in a quantity of at least 0.01 to 0.02% by weight.

10. A process for the aerosol/superheated steam application of water-based treatment liquors by spraying in the continuous treatment of web-form cellulose-containing textile material with a water-based liquor containing per liter
5 to 30 ml of a preparation in the form of an aqueous solution or dispersion containing 5 to 20% by weight anionic surfactant, 2 to 10% by weight nonionic surfactant, 5 to 20% by weight of deaerating agents comprising phosphoric acid triesters of lower, at least partly alkoxylated alkyl alcohols, 1 to 10% by weight chelating agents and 0.1 to 1% by weight magnesium salts, based in each case on the water-containing preparation,
10 to 100 g sodium hydroxide,
10 to 40 ml hydrogen peroxide (100%), and
10 to 50 ml of a stabilizer
in a quantity of 100 to 300% by weight, based on the weight of the textile material, for simultaneous desizing, scouring and bleaching.

5,484,454
ADSORBENTS COMPOSED OF INORGANIC OXIDES MODIFIED WITH ORGANIC DYES
Kirsten Furhmann, Hanover; Alf-Eric Wischnat, Lehrte; Thomas Schulz, Bad Pyrmont, and Michael Hoffmeister, Hanover, all of, Germany, assignors to Engelhard Process Chemicals GmbH, Nienburg/Weaser, Germany
Filed Oct. 5, 1994, Ser. No. 318,441
Claims priority, application Germany, Jan. 14, 1993, 43 35 027.5
Int. Cl.[6] B01J *20/32;20/04;* D06P *3/80*
U.S. Cl. 8—523 **4 Claims**

1. A method for producing a particulate adsorbent, comprising impregnating shaped bodies composed of an adsorbent inorganic oxide selected from the group consisting of silicon dioxide, alumosilicate and mixtures thereof with an aqueous solution consisting of water, an indicator dye selected from the group consisting of phenolphthalein, cresol red and thymol blue, and sufficient alkali carbonate to render the solution alkaline, and thereafter drying the impregnated bodies.

5,484,455
CATIONIC DYEABLE NYLON DYED WITH VINYL SULFONE DYES TO GIVE OVERDYE FASTNESS
Larry C. Kelley, Dalton, Ga., assignor to Hoechst Celanese Corporation, Somerville, N.J.
Filed May 26, 1994, Ser. No. 249,493
Int. Cl.[6] D06P *3/10;* C09B *62/503*
U.S. Cl. 8—539 **4 Claims**

1. A process for dyeing cationic polyamides which compriaes applying a previnylized vinyl sulfone dye to said polyamide at an acidic pH to form an ionic bond between said vinyl sulfone dye and the amino groups of said polyamide wherein said vinyl sulfone dye contains only one sulfo substituent; applying an alkaline solution to said cationic polyamide and heating said polyamide to form a covalent bond between said polyamide amino groups and said vinyl sulfone dye.

5,484,456
DYEING METHODS TO PRODUCE DEEP DYEINGS WITH PHTHALOCYANINE DYES
Tadashi Hinke, Kobeshi; Yasokazu Inoue, Nishinomiyashi, and Hiroshi Soga, Kobeshi, all of, Japan, assignors to Sandoz Ltd., Basel, Switzerland
Filed Mar. 4, 1994, Ser. No. 206,476
Int. Cl.[6] C09B *62/00;* D06P *3/66*
U.S. Cl. 8—543 **13 Claims**

1. A process for deep dyeing of cellulose fibers comprising the step of:
dyeing the fibers with at least one phthalocyanine reactive dye in a liquor containing more than 80 g/l of a salt wherein the liquor is at a pH of at least 11.5 and at a temperature of over 100° C.

5,484,457
CONTINUOUS PRODUCTION OF SURFACE DYEINGS ON CELLULOSE FIBER TEXTILE MATERIALS
Joerg Schulze, Ludwigshafen; Harald Schlaefer, Weisenheim; Kurt Bacher, Ludwigshafen; Wolfgang Schrott, Boehl-Iggelheim, and Erich Kromm, Weisenheim, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany
PCT No. PCT/EP93/01172, § 371 Date Oct. 31, 1994, § 102(e) Date Oct. 31, 1994, PCT Pub. No. WO93/23605, PCT Pub. Date Nov. 25, 1993
PCT Filed May 12, 1993, Ser. No. 318,886
Claims priority, application Germany, May 20, 1992, 42 16 591.1
Int. Cl.[6] C09B *62/00;* D06P *5/00;3/66*
U.S. Cl. 8—543 **11 Claims**

1. A process for the continuous production of surface dyeings on cellulose fiber textile materials, which comprises:
a) initially treating the textile materials with an aqueous liquor containing:
i) from about 5 g/l to about 100 g/l of at least one compound selected from the group consisting of benzyl halide quaternized condensation products of precondensates of trialkanolamines with ureas, cyclic carbonates and epihalohydrins and condensation products of piperazine with epichlorohydrin; and
ii) from about 0.02 g/l to about 1 g/l of a phosphoric triester whose alcohol component derives from aliphatic, aryl-substituted aliphatic alcohols, phenols or alkyl-substituted phenols having in each case 6 to 18 carbon atoms in the alcohol or phenol radical; and
b) dyeing said treated textile materials in another bath containing reactive dyes in an aqueous medium and then fixing the dyes by treatment with an alkaline liquor.

5,484,458

TRIPHENDIOXAZINE COMPOUNDS, PROCESSES FOR THEIR PREPARATION AND THEIR USE AS DYESTUFFS

Werner H. Russ, Flörsheim; Horst Tappe, Dietzenbach, and Christian Schumacher, Frankfurt am Main, all of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

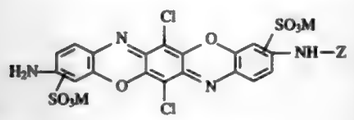
Filed May 16, 1994, Ser. No. 243,111

Claims priority, application Germany, May 18, 1993, 43 16 539.7; Feb. 2, 1994, 44 03 065.7

Int. Cl.[6] C09B *62/002;62/503;67/22;* **D06P** *1/38*

U.S. Cl. 8—549 **11 Claims**

1. A triphendioxazine compound of the formula (1)

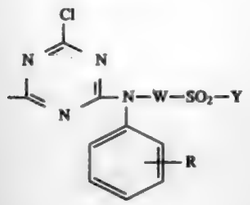


(1)

in which:

M is hydrogen or an alkali metal; and

Z is a radical of the formula (2)



in which

R is hydrogen, sulfo, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, nitro or cyano,

W is alkylene having 3 to 6 carbon atoms and

Y is vinyl, or is ethyl which is substituted in the β-position by a substituent which can be eliminated under the action of alkali to form the vinyl group.

5,484,459

MIXTURE OF WATER SOLUBLE REACTIVE DYES AND THEIR USE

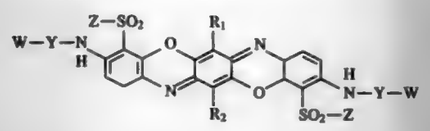
Walter Helmling, West Warwick, R.I., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Jun. 29, 1994, Ser. No. 267,639

Int. Cl.[6] C09B *62/503;67/24*

U.S. Cl. 8—549 **5 Claims**

1. A dye mixture consisting essentially of at least one blue dye, in an amount of about 5 to 95 weight percent, of the formula:



wherein:

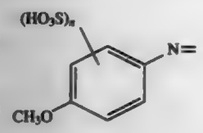
R_1 and R_2 are independently selected from H and Cl;

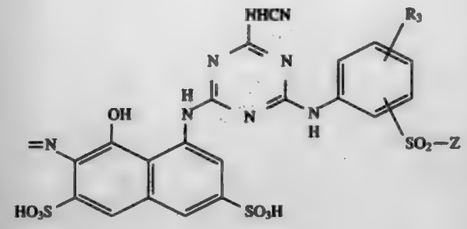
Y is independently selected from a C_2–C_6 alkylene group which may be interrupted by a hetero atom and the —NHCO— group;

W is independently selected from $—OSO_3H$, $—SO_3H$, and —COOH;

Z is independently selected from $—CH=CH_2$ and $CH_2—CH_2—X$;

X is a group independently selected from $—OSO_3H$, $—SSO_3H$, $—OPO_3H_2$ and an O-Acyl of the formula —O—CO—R wherein R is a C_1 to C_4 alkyl; and at least one red dye, in an amount from about 95 to about 5 percent by weight, of the formula:





(2)

wherein:

n is 0, 1, 2;

R_3 is selected from —H, $—CH_3$, $—OCH_3$;

Z is selected from $—CH=CH_2$ or $CH_2—CH_2—X$;

X is selected from $—OSO_3H$, $—SSO_3H$, $—OPO_3H_2$, and an O-Acyl of the formula —O—CO—R— wherein R is a C_1 to C_4 alkyl.

5,484,460

DYE MIXTURES CONTAINING AZO DYES HAVING A COUPLING COMPONENT FROM THE DIAMINOPYRIDINE SERIES

Hermann Loeffler, Speyer; Gunther Lamm, Hassloch; Volker Bach, Neustadt; Arno Lange, Bad Duerkheim; Helmut Reichelt, Neustadt, and Herbert Rothmaier, Altdorf, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

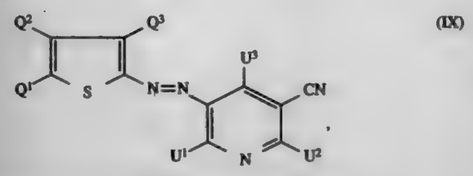
Division of Ser. No. 159,301, Nov. 30, 1993, Pat. No. 5,403,363. This application Nov. 9, 1994, Ser. No. 338,208

Claims priority, application Germany, Dec. 7, 1992, 42 41 116.5; Mar. 2, 1993, 43 06 391.8

Int. Cl.[6] C09B *67/22;67/38;* **D06P** *1/16;3/54*

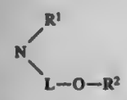
U.S. Cl. 8—638 **11 Claims**

1. A dye mixture comprising at least one red azo dye of the formula IX



(IX)

where one of U^1 and U^2 is a radical of the formula



and the other is a radical of the formula NH-B, where

L is C_2-C_8-alkylene, which may be interrupted by 1 or 2 oxygen atoms in ether function,

R^1 is hydrogen or C_1-C_4-alkyl, which may be substituted by hydroxyl, C_1-C_4-alkoxy or C_1-C_8-alkanoyloxy,

R^2 is hydrogen, C_1-C_4-alkyl, benzyl, phenyl or C_1-C_8-alkanoyl and

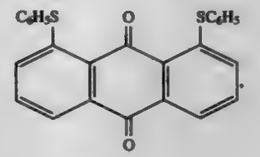
B is hydrogen, C_1-C_4-alkyl which may be hydroxyl-substituted, or a radical of the formula L-O-R^2, where L and R^2 are each as defined above,

U^3 is hydrogen or C_1-C_4-alkyl,

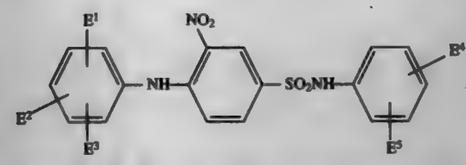
Q^1 is cyano, formyl, nitro or C_1-C_9-alkoxycarbonyl, which may be interrupted by 1 or 2 oxygen atoms in ether function,

Q^2 is hydrogen, C_1-C_4-alkyl, C_1-C_4-alkoxy, phenyl, which may be methyl-, methoxy- or chlorine-substituted, benzyl, which may be methyl-, methoxy- or chlorine-substituted, C_1-C_4-alkylsulfonyl, chlorine, bromine or C_1-C_4-alkoxycarbonyl, which may be interrupted by 1 or 2 oxygen atoms in ether function, and

Q^3 is cyano, nitro, C_1-C_9-alkoxycarbonyl, which may be interrupted by 1 or 2 oxygen atoms in ether function, or C_1-C_4-alkylsulfonyl, mixed with at least one dye selected from the group consisting of dyes of the formulae X, XI and XII where dyes of the formulae X and XI are yellow dyes

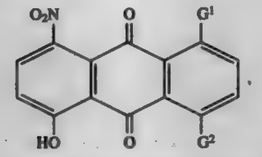


(X)



(XI)

where E^1, E^2, E^3, E^4 and E^5 are independently of each other hydrogen, C_1-C_4-alkyl, C_1-C_4-alkoxy, halogen or phenoxy, and dyes of the formula XII are blue anthraguinone dyes



(XII)

where one of the two radicals G^1 and G^2 is hydroxyl and the other is phenylamino, which may be substituted by hydroxy, C_1-C_4-alkyl or C_1-C_4-alkoxy, the dye of formula IX and each dye of formula X, XI or XII present in the dye mixture being present in amount adequate to match a selected hue different from that matched by any individual dye.

5,484,461

METHOD FOR PRODUCING A LI(AL) ANODE FOR A LITHIUM BATTERY

Rothman Ulf, Skanör, Sweden, and Jesper Mailing, Odense, Denmark, assignors to Inclusion AB, Sweden

PCT No. PCT/SE90/00473, § 371 Date Dec. 30, 1991, § 102(e) Date Dec. 30, 1991, PCT Pub. No. WO91/01045, PCT Pub. Date Jan. 24, 1991

PCT Filed Jul. 2, 1990, Ser. No. 778,875

Claims priority, application Sweden, Jul. 6, 1989, 8902461

Int. Cl.[6] H01M *4/04*

U.S. Cl. 29—623.5 **1 Claim**

1. Method for producing a Li(Al) anode for a lithium battery, in which Li and Al are pyrometallurgically alloyed in inert atmosphere and the formed alloy after cooling is ground to a homogenous powder, characterized in that the powder is pressed or extruded to form an elongated anode element (2) around a current conductive thread (1), which extends from at least one end of the anode element as a connector wire and in that the anode element is provided with an enclosure (3) of microporous separator material wherein a plurality of separate anode elements (2) at certain intervals on a current conductive thread (1) are formed in a continuous process, including the provision of the enclosures (3) of microporous separator material.



5,484,462

LOW SULFUR DIESEL FUEL COMPOSITION WITH ANTI-WEAR PROPERTIES

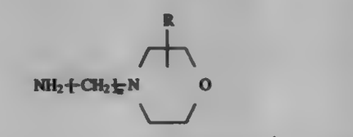
Sheldon Herbstman, New City, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 21, 1994, Ser. No. 309,693

Int. Cl.[6] C10L *1/22*

U.S. Cl. 44—334 **12 Claims**

1. A fuel composition comprising a mixture of hydrocarbons boiling in the range from about 320° F. to 620° F. and a sulfur content of about 0.05 wt. %, or below, containing from about 1 to about 20 PTB of aminoalkylmorpholine of formula:



where R is hydrogen or a C_1–C_{10} alkyl radical, and n is a number between about 2 and about 10.

5,484,463

POLY(OXYALKYLENE) HYDROXY AND AMINO AROMATIC CARBAMATES AND FUEL COMPOSITIONS CONTAINING THE SAME

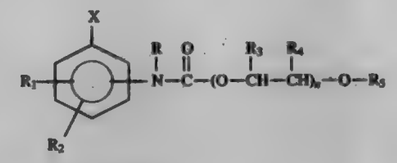
Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Chemical Company, San Ramon, Calif.

Filed May 2, 1994, Ser. No. 236,737

Int. Cl.[6] C10L *1/22*

U.S. Cl. 44—387 **33 Claims**

9. A fuel composition comprising a major amount of hydrocarbons boiling in the gasoline or diesel range and an effective detergent amount of a compound of the formula:



or a fuel-soluble salt thereof; wherein

X is hydroxy or amino;

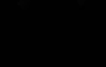
R is hydrogen or lower alkyl having 1 to 6 carbon atoms;

R_1 and R_2 are each independently hydrogen, hydroxy, lower alkyl having 1 to 6 carbon atoms, lower alkoxy having 1 to 6 carbon atoms, nitro, amino, N-alkylamino wherein the alkyl

group contains 1 to 6 carbon atoms, or N,N-dialkylamino wherein each alkyl group independently contains 1 to 6 carbon atoms;

R_3 and R_4 are each independently hydrogen or lower alkyl having 1 to 6 carbon atoms;

R_5 is hydrogen, alkyl having 1 to 30 carbon atoms, pheayl, aralkyl or alkaryl having 7 to 36 carbon atoms, or an acyl group having the formula:



wherein R_6 is alkyl having 1 to 30 carbon atoms, phenyl, or aralkyl or alkaryl having 7 to 36 carbon atoms;

and n is an integer from 5 to 100.

5,484,464

METHODS AND COMPOSITIONS FOR INCREASING THE BENEFITS OF RHIZOBIUM INOCULATION TO LEGUME CROP PRODUCTIVITY

Sanford C. Gleddie; Mary E. Leggett, both of Saskatoon; Wendell A. Rice, and Perry E. Olsen, both of Beaverlodge, all of, Canada, assignors to Philom Bios, Inc.., and Her Majesty the Queen in right of Canada, both of Saskatchewan, Canada

Filed Dec. 29, 1993, Ser. No. 174,335

Int. Cl.[6] A01N *63/00*; A01C *1/06*

U.S. Cl. 47—57.6 **29 Claims**

1. A method of improving growth and productivity of a legume crop by co-inoculating seeds of said legume with the fungus *Penicillium bilaii* and a *Rhizobium sp.* known to infect and form nitrogen-fixing nodules on said legume and growing said inoculated seeds; said growth and productivity being improved in comparison with an identical legume crop grown under identical conditions from uninoculated seeds or seeds inoculated with said *Rhizobium sp.* alone.

5,484,465

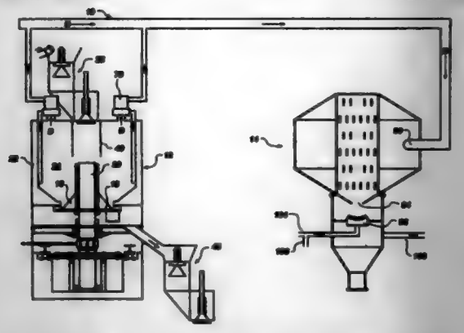
APPARATUS FOR MUNICIPAL WASTE GASIFICATION

Wesley P. Hilliard, Huntington, and Scott Barney, Ferron, both of Utah, assignors to Emery Recycling Corporation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 100,249, Aug. 2, 1993, abandoned. This application Apr. 4, 1994, Ser. No. 222,625

Int. Cl.[6] C10J *3/42*

U.S. Cl. 48—76 **32 Claims**



1. An apparatus for waste gasification comprising:

a generally cylindrical first combustion chamber comprising:

means for feeding waste material into the first combustion chamber;

a rotatable tuyere for supporting an annular column of waste material, said tuyere having a base portion and a central column extending from the base towards the means for feeding waste material, wherein the central column in combination with an interior first combustion chamber wall define an annular region for said column of waste material;

an ash collection region for collecting ash removed from the column of waste material;

a plurality of angled vanes attached to the tuyere base for facilitating removal of ash formed within the annular column of waste material into the ash collection region;

means for introducing an oxidizer into the first combustion chamber to react with the waste material so as to maintain a temperature within the first combustion chamber from about 600° F. to about 2100° F.;

means for removing ash from the ash collection region;

means for withdrawing combustion gases from the first combustion chamber and feeding said combustion gases to a second combustion chamber, wherein said second combustion chamber comprises:

a restricting orifice having an opening that is smaller in cross-sectional area than a cross-sectional area of said second combustion chamber such that the combustion gases moving through said second combustion chamber pass through said restricting orifice;

a target provided downstream of the restricting orifice, wherein said target has an impingement surface that faces the restricting orifice, said impingement surface having a larger surface area than the cross-sectional area of the restricting orifice so that combustion gases passing through the orifice impinge against said impingement surface of said target; and

means for introducing an oxidizer into the second combustion chamber adjacent the target; and

means for withdrawing a relatively clean producer gas from the second combustion chamber.

5,484,466

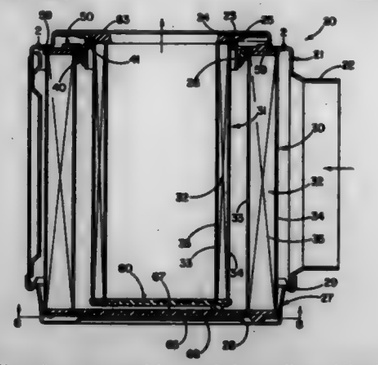
AIR FILTER ELEMENT WITH RADIAL SEAL SEALING GASKET

Gene W. Brown; Farrell F. Calcaterra, and Daniel Sleicher, all of Kearney, Nebr., assignors to Baldwin Filters, Inc., Kearney, Nebr.

Filed Feb. 14, 1994, Ser. No. 195,219

Int. Cl.[6] B01D *46/02;27/08*

U.S. Cl. 55—498 **11 Claims**



1. A filter element comprising a tubular media pack having first and second ends said media pack comprising inner and outer radially spaced and coaxial tubular liners each having inner and outer sides and having first and second ends, a tube of filter media located between and coaxial with said liners, a separate preformed annular basket made of elastomeric material having a mounting port ion and an integral sealing portion, said gasket being located with said mounting portion abutting the first end of one of the liners and with said sealing portion extending along one side of said one liner, and a ring of moldable potting compound encapsulating at least a part of said mounting portion of said gasket and a portion of the first end of said one liner, to thereby secure the mounting portion of the gasket to the first end of said media pack.

5,484,467

PROCESS FOR THE PRODUCTION OF DECORATIVE GLASS CERAMIC ARTICLES

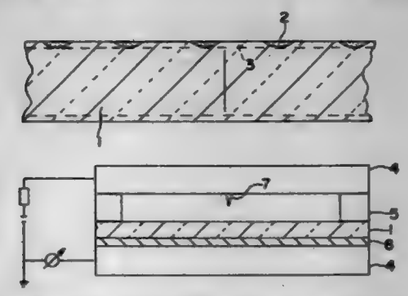
Peter Nass, Mainz; Otmar Becker, Langen; Klaus Kristen, Wiesbaden; Waldemar Weinberg, Seibersbach; Manfred Borens; Roland Leroux, both of Stadecken-Elsheim, and Jürgen Thürk, Schornsheim, all of, Germany, assignors to Schott Glaswerke, Mainz, Germany

Filed Aug. 16, 1993, Ser. No. 106,755

Claims priority, application Germany, Aug. 14, 1992, 42 26 946.6

Int. Cl.[6] C03B *32/02*; C03C *17/00;3/085*

U.S. Cl. 65—33.4 **14 Claims**



1. A process for production of a decorative glass-ceramic article comprising:

connecting a substrate surface to an anode of a voltage source, wherein said substrate is an unceramized glass substrate, and,

while said glass substrate is at a temperature within the range of the glass transition temperature of said glass substrate up to and including 100° C. above said glass transition temperature, producing a current between said anode and a cathode of said voltage source and through said glass substrate whereby a sufficient depth of said surface of said glass substrate is altered to permit a decoration to sink entirely or partially into said surface;

applying a decoration to said surface; and

ceramizing said glass substrate to obtain a decorated glass ceramic article wherein, during ceramization, said decoration sinks entirely or partially into said surface of said glass substrate and wherein burning-in of said decoration occurs simultaneously with said ceramization.

5,484,468

CEMENTED CARBIDE WITH BINDER PHASE ENRICHED SURFACE ZONE AND ENHANCED EDGE TOUGHNESS BEHAVIOR AND PROCESS FOR MAKING SAME

Åke Östlund, Täby; Ulf Oskarsson, Tumba; Per Gustafson, Huddinge, and Leif Åkesson, Älvsjö, all of, Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed Feb. 7, 1994, Ser. No. 192,628

Claims priority, application Sweden, Feb. 5, 1993, 9300376

Int. Cl.[6] C22C *29/02*

U.S. Cl. 75—236 **16 Claims**

1. A coated cemented carbide insert with rounded edge surfaces with improved edge toughness containing WC and cubic phases based on a metal carbide and/or carbonitride in a binder phase based on cobalt and/or nickel with a binder phase enriched surface zone essentially free of cubic phase wherein the binder phase content along a line essentially bisecting a rounded edge surface is greater near the edge than the nominal content of binder in the insert as a whole, decreases away from the edge, cubic phase is present along said line and the binder phase content in the outermost 25 μm thick surface zone is >1 of the binder phase content in the inner of the insert.

5,484,469

METHOD OF MAKING A SINTERED METAL COMPONENT AND METAL POWDER COMPOSITIONS THEREFOR

Howard G. Rutz, Newtown, and Sidney Luk, Lafayette Hill, both of Pa., assignors to Hoeganaes Corporation, Riverton, N.J.

Continuation of Ser. No. 917,869, Jul. 21, 1992, abandoned, which is a division of Ser. No. 835,808, Feb. 14, 1992, Pat. No. 5,154,881. This application Jan. 13, 1995, Ser. No. 372,138

Int. Cl.[6] B22F *1/00;5/00*

U.S. Cl. 75—252 **21 Claims**

1. An iron-based powder composition comprising:

(a) an iron-based powder; and

(b) an amide lubricant, in an amount up to about 15% by weight of said composition, that is the reaction product of about 10–30 weight percent of a C_6–C_{12} linear dicarboxylic acid, about 10–30 weight percent of a C_{16}–C_{22} monocarboxylic acid, and about 40–80 weight percent of a diamine having the formula $(CH_2)_x(NH_2)_2$ where x is 2–6.

5,484,470

ENHANCEMENT OF GOLD LIXIVIATION USING NITROGEN AND SULFUR HETEROCYCLIC AROMATIC COMPOUNDS

Sigridur S. Kristjánsdóttir, and Jeffery S. Thompson, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 28, 1994, Ser. No. 281,966

Int. Cl.[6] C22B *11/08*

U.S. Cl. 75—722 **22 Claims**

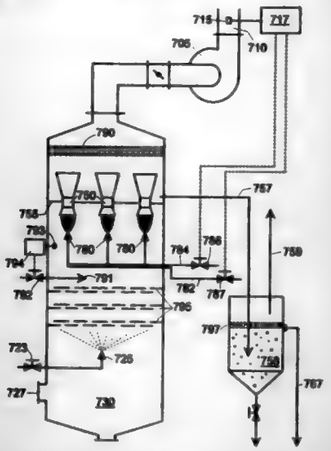
1. A process for enhancing the dissolution of gold in a lixiviation system containing ligand and oxidant, comprising adding to said lixiviation system a catalytic amount of an aromatic heterocyclic compound containing a heteroatom selected from the group consisting of nitrogen and sulfur in the ring; provided that said heteroatom and the heterocyclic ring are available for coordination to the surface of the undissolved gold metal.

5,484,471

VENTURI SCRUBBER AND METHOD OF USING THE SAME

James J. Schwab, Napa, Calif., assignor to Envirocare International, Inc., Novato, Calif.

Continuation-in-part of Ser. No. 904,208, Jun. 25, 1992, Pat. No. 5,279,646. This application Jan. 14, 1994, Ser. No. 182,639
Int. Cl.[6] B01F *3/04*
U.S. Cl. 95—8 20 Claims



1. An air pollution control system for cleansing a flow of contaminated gas, said gas flow having both contaminant particles and contaminant gas, comprising:

a venturi scrubber,

nozzle means for introducing a spray of fine droplets of a scrubbing liquid into said venturi scrubber to remove at least some of said contaminant particles and contaminant gas from said flow of contaminated gas, the amount of gas removed from said gas flow exceeding the amount of gas that would dissolve in the combined volume of said spray droplets according to Henry's law,

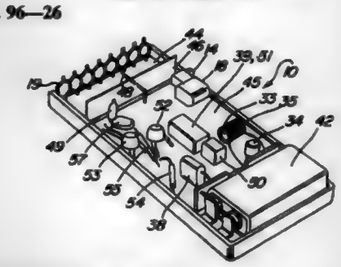
collection means for collecting said liquid droplets after they have flowed through said venturi scrubber, said collection means comprising an enclosed container for holding said droplets after they have been consolidated into a volume of liquid, such that a portion of the gases dissolved in said droplets are released within said volume of liquid forming bubbles which travel to the surface of said volume of liquid transporting at least some of the particulate contaminant material along with them.

5,484,472

MINIATURE AIR PURIFIER

Stanley Weinberg, 575 Tigertail Rd., Los Angeles, Calif. 90049

Filed Feb. 6, 1995, Ser. No. 384,511
Int. Cl.[6] B03C *3/32*
U.S. Cl. 96—26 21 Claims



1. A portable air purifier comprising:

a housing sized to be readily carried on the person of a user,

a battery, disposed within the housing, for supplying a low voltage;

circuit means connected to the battery for transforming the low voltage into a sufficiently high voltage to support a corona discharge;

an ionization chamber within the housing and having an opening to the outside of the housing;

a needle point emitter for creating a corona discharge, the needle point emitter disposed within the ionization chamber and electrically connected to the circuit means; and

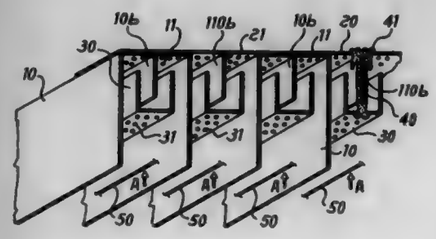
an electrically conductive grid over the opening between the ionization chamber and the outside of the housing, said grid connected to the battery so that when the corona discharge occurs at the needle point emitter, negatively charged ions produced by the corona discharge are attracted to said grid, completing an electrical circuit and thereby causing a mass flow of air which produces an emerging air current flowing through said grid and out of the ionization chamber.

5,484,473

TWO-STAGE ELECTROSTATIC FILTER WITH EXTRUDED MODULAR COMPONENTS PARTICULARLY FOR AIR RECIRCULATION UNITS

Luigi Bontempi, Via Lombardi 14/16, Calvisano (Brescia), Italy

Filed Jul. 19, 1994, Ser. No. 276,912
Claims priority, application Italy, Jul. 28, 1993, MI93A1693
Int. Cl.[6] B03C *3/51*
U.S. Cl. 96—65 7 Claims



1. A two-stage electrostatic filter for air recirculation units, comprising at least one ionization stage formed by parallel facing walls in which is located a high-potential electrode, and at least one precipitation stage formed by parallel walls of negative potential in relation to the ionization stage, wherein said ionization and precipitation stages are comprised of at least one inverted U-shaped cathode, the opposite ends of which are mechanically and electrically integral with a transverse supporting section and within which is provided at least one baffle extending parallel to outer arms of the U-shaped cathode throughout the length of the section but with a height lower than that of said arms and having means for cooperating with a U-shaped anode counterposed thereto and rendered mechanically integral by means of insulated supports, there being also provided further cathodes for the modular expansion of the filter in the direction of its width.

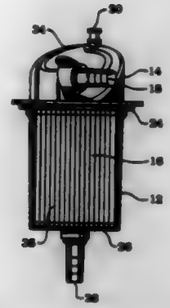
5,484,474

INVERTED DOME ARTERIAL FILTER

Martin J. Weinstein, Salisbury, Mass., and Alfred P. Intoccia, Nashua, N.H., assignors to C.R. Bard, Inc., Murray Hill, N.J.

Continuation of Ser. No. 52,787, Apr. 23, 1993, Pat. No. 5,312,479. This application Mar. 8, 1994, Ser. No. 208,614
The portion of the term of this patent subsequent to May 17, 2011, has been disclaimed.
Int. Cl.[6] B01D *19/00*
U.S. Cl. 96—209 20 Claims

1. A filter for filtering fluids, comprising:



a housing defining a substantially toroidal flow path and a filter element chamber;

a fluid inlet in fluid flow communication with the substantially toroidal flow path and directed substantially tangential to the fluid flow path; wherein the height of the substantially toroidal flow path rises from the location of the inlet, around the periphery of the housing to a highest point located approximately 180° opposite the fluid inlet;

gas outlet aperture located at the highest point on the substantially toroidal flow path; and in gas flow communication with the substantially toroidal flow path and located approximately 180° from the fluid inlet with respect to the substantially toroidal flow path;

a filter element supported within the filter element chamber of the housing;

a filter element support located within the housing and centrally disposed with respect to the toroidal flow path; and

a fluid outlet in fluid flow communication with the filter element chamber.

5,484,475

MICELLAR-BASED INK COMPOSITIONS

Marcel P. Breton, Mississauga, and Geoffrey A. R. Nobes, Montreal, both of, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 29, 1994, Ser. No. 297,069
Int. Cl.[6] C09D *11/02;11/12*
U.S. Cl. 106—20 C 30 Claims

1. An ink composition consisting essentially of water, a colorant, an organic component miscible with water, and micelles which comprise an ethoxylated alcohol.

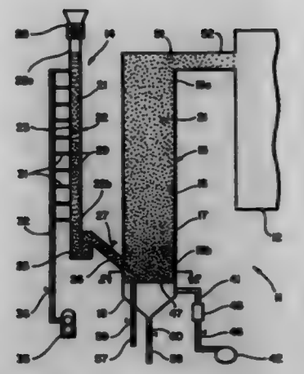
5,484,476

METHOD FOR PREHEATING FLY ASH

Thomas J. Boyd, Huntersville, N.C., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jan. 11, 1994, Ser. No. 179,677
Int. Cl.[6] C04B *18/06;14/36;20/04*
U.S. Cl. 106—405 13 Claims

1. A method for preheating particles of carbonaceous fly ash having an autoignition temperature in a preheating vessel having lower and upper portions with approximately equivalent suspension densities prior to injecting the particles of fly ash into a combustor where the particles of fly ash are combusted under oxidation conditions comprising the steps of introducing the particles of fly ash into the lower portion of the preheating vessel, heating the particles of fly ash in the preheating vessel to a temperature approximately equal to said autoignition temperature to form preheated particles of fly ash and introducing additional particles of fly ash into the lower portion of the preheating vessel so as to cause the preheated particles of fly ash to be injected from the upper portion of the preheating vessel into the combustor, the heating of the particles of fly ash in the preheating vessel decreasing the amount of time the particles of fly ash are in the combustor



below the autoignition temperature and thereby increasing the amount of carbon in the particles of fly ash oxidized within the combustor.

5,484,477

COATING COMPOSITION, GRANULES COATED WITH SAME, AND METHOD OF REDUCING DUST GENERATION

Billy L. George; Stefan A. Babirad, both of Hudson, Wis., and Delmon H. Penny, Little Rock, Ark., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 26,441, Mar. 4, 1993, Pat. No. 5,362,566.
This application Oct. 7, 1994, Ser. No. 319,611
Int. Cl.[6] C09K *3/22;* C09D *191/00;7/12;* C09C *3/08*
U.S. Cl. 106—499 16 Claims

1. A coatable composition suitable for reducing dust generation during processing of granular materials, the composition consisting essentially of:

a) an organic oil;

b) an optional adhesion agent; and

c) a tackifier consisting essentially of an organic material having a glass transition temperature of no less than about 120° C. and a naphthenic oil present in sufficient amount to give the tackifier a kinematic viscosity ranging from about 3,000 to about 5,000 centistokes at 100° C.; said organic oil being compatible with the tackifier and the optional adhesion agent.

5,484,478

HIGH TEMPERATURE SET RETARDED CEMENT COMPOSITIONS AND METHODS

Lance E. Brothers, Ninnekah, Okla., assignor to Halliburton Company, Duncan, Okla.

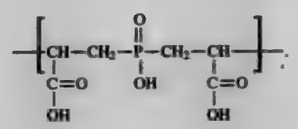
Filed Apr. 19, 1995, Ser. No. 424,167
Int. Cl.[6] C04B *24/00;24/04*
U.S. Cl. 106—696 11 Claims

1. A set retarded cement composition for cementing a zone in a well comprising:

hydraulic cement;

sufficient water to form a slurry; and

a set retarding polymer containing repeating units having the formula



5,484,479

METHOD OF MANUFACTURING SYNTHETIC AGGREGATE

LaVerne Weber, Elgin, Ill., assignor to American Fly Ash Company, Naperville, Ill.

Continuation of Ser. No. 801,062, Dec. 3, 1991, abandoned. This application Dec. 21, 1993, Ser. No. 172,019
Int. Cl.[6] C04B *14/02*
U.S. Cl. 106—705 16 Claims

1. A method of making an unfired aggregate consisting of preparing an initial mixture of fly ash and liquid with said fly ash being a Class C fly ash with CaO levels of at least approximately 20% by weight, and said liquid being one selected from the group consisting of water, and a combination of water and a set sequestering admixture, and working said mixture such that the mixture has a consistency of soil, consolidating said mixture to at least about 90 percent relative density before said mixture completes an initial set, forcing air trapped in said mixture out of said mixture during said step of consolidating, and crushing said hardened mass into aggregate after said mixture has cured into a hardened mass.

5,484,480

USE OF ALUMINA CLAY WITH CEMENT FLY ASH MIXTURES

Robert W. Styron, Marietta, Ga., assignor to JTM Industries, Inc., Kennesaw, Ga.

Filed Oct. 19, 1993, Ser. No. 138,762
Int. Cl.[6] C04B *7/34;14/02*
U.S. Cl. 106—706 10 Claims

1. In a method of improving the initial green strength of pellets formed from a cementitious mixture comprising: 1) about 85 wt. % and greater Class "F" fly ash having an SiO_2 coating surrounding an aluminate containing core, and, 2) a lime containing hydraulic cement component, the improvement comprising:

a) reacting said lime and said SiO_2 coating with a finely divided alumina containing material selected from the group consisting of calcium aluminate and alumina clays, said alumina containing material being present in an amount of at least about 5% of the combined dry weight of said mixture;

b) adding sufficient water to hydrate said mixture; and

c) forming pellets from said hydrated mixture whereby said pellets are characterized by their ability to be dropped from a height of about 30 feet to a concrete surface without disintegrating upon contact with said surface.

5,484,481

PROCESS FOR THE COLOURATION OF BUILDING MATERIALS

Günter Linde, Krefeld, and Manfred Eitel, Kempen, both of, Germany, assignors to Bayer AG, Leverkusen, Germany

Filed Oct. 17, 1994, Ser. No. 323,739
Claims priority, application Germany, Jan. 27, 1993, 43 36 613.9
Int. Cl.[6] C04B *14/00;* C09C *1/22;1/34;1/36*
U.S. Cl. 106—712 17 Claims

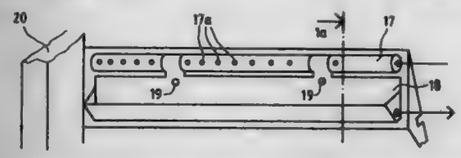
1. Process for producing granules for the colouration of building materials selected from the group consisting of concrete and asphalt by granulated inorganic pigments, wherein inorganic pigments are mixed with at least one binder selected from the group consisting of lignin sulphonates, formaldehyde condensates, gluconic acid, sulphated polyglycol ethers, solutions of inorganic salts, water, oils, aqueous solutions of polysaccharides and aqueous solutions of cellulose ethers, with formation of a cohesive powder, this powder is subjected to a compacting stage at line forces of 0.1 to 15 kN/cm to form flakes having a density of 0.5 to 3.0 g/cm^3, the flakes are then broken down by subsequent rough-grinding on a screen granulator into pregranulate and powder and these are completely pelletized by rerolling on a rotating pan or in a rotating drum to form the granulated pigments which are then mixed with the building materials.

5,484,482

METHOD AND APPARATUS FOR LIMITING THE COATING WIDTH AND/OR PREVENTING DAMAGE TO ROLL ENDS WHILE COATING OR SURFACE-SIZING PAPER

Rauno Rantanen, Muurame; Markku Lummila, and Hannu Korhonen, both of Jyväskylä, all of, Finland, assignors to Valmet Paper Machinery, Inc., Helsinki, Finland

Filed Mar. 23, 1994, Ser. No. 217,160
Claims priority, application Finland, Mar. 25, 1993, 931341
Int. Cl.[6] B05C *1/08*
U.S. Cl. 118—203 20 Claims



1. Method for limiting the width of a coating and/or preventing damage to end areas of a roll while coating or surface-sizing paper or other web material in a coating device in which a coating agent is introduced into an application zone defined by lateral seals, a moving base selected from the group consisting of a face of a roll, a paper web passed over a roll and a board web passed over a roll, a front wall contiguous with said moving base, and a coating member in a nip-forming relationship with said moving base, said coating member comprising either a rotating bar or a blade extending along a length of said moving base upstream from said front wall, and wherein said coating member is loaded against said moving base and spreads a coating agent onto said moving base in said nip, and in which device excess coating agent is removed by a recirculation system, the method comprising the steps of:

spraying a liquid in an area outside of said coating width between ends of the roll and said lateral seals in a running direction of said moving base either onto the roll before said coating member or directly into said nip, to lubricate said nip and dilute said coating agent in the area between the ends of the roll and said lateral seals, the liquid being sprayed from a location between said front wall and said nip, and

removing excess amounts of the sprayed liquid via a collection system separate from said recirculation system for said coating agent to prevent entry of the excess liquid into said recirculation system for said coating agent and said coating agent from being diluted by the sprayed liquid.

5,484,483

THERMAL TREATMENT APPARATUS

Mitsusuke Kyogoku, Tama, Japan, assignor to ASM Japan, K.K., Tokyo, Japan

Filed Feb. 4, 1994, Ser. No. 192,147
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—719 2 Claims

1. A thermal treatment apparatus for semiconductor materials comprising:

a reaction chamber for providing a predetermined chemical reaction to the semiconductor materials;

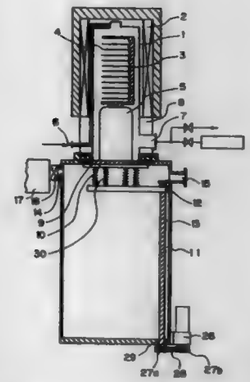
a heating system around said reaction chamber;

a transfer system for moving a boat supporting workpieces of the semiconductor materials into and out from said reaction chamber;

a transfer system containing chamber for insulating said transfer system from the atmosphere;

a vent provided on a wall of said reaction chamber in order to evacuate gases in said reaction chamber, said vent being positioned between said heater and said transfer system containing chamber, an inner diameter of said vent being more than 50 millimeter;

a seal flange is driven by said transfer system, and said seal flange separates the transfer system containing chamber from the reaction chamber;



said seal flange is a double structure comprising of an upper flange section made of a high purity material and a lower flange section made of a metal material, such that the upper flange and the reaction chamber are sealed through a sealant when the lower flange is positioned at its movable limit;

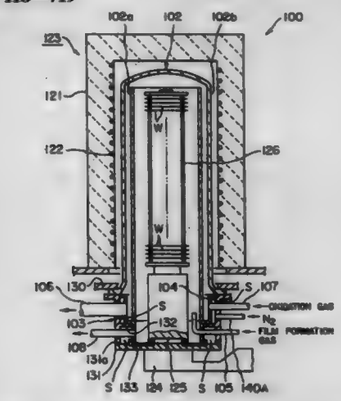
said seal flange and a mobile section is connected by a spring member, said mobile section is moved by said transfer system, a resiliency of said spring member, which is produced by moving the mobile section after moving the seal flange to the movable limit, is greater than such a force that exerts to push and open the flange when a process pressure in the reaction chamber is greater than a pressure in said transfer system containing chamber during the process, so that the mobile section is stopped and held at said movable limit.

5,484,484

THERMAL PROCESSING METHOD AND APPARATUS THEREFOR

Kenichi Yamaga, Sagamihara; Yuichi Mikata, Kawasaki, and Akihito Yamamoto, Kanagawa, all of, Japan, assignors to Tokyo Electron Kabushiki, Japan; Tokyo Electron Kabushiki Kaisha, and Kabushiki Kaisha Toshiba, Tokyo, all of, Japan

Filed Jun. 30, 1994, Ser. No. 269,039
Claims priority, application Japan, Jul. 3, 1993, 5-190862; Jul. 8, 1993, 5-194256; Jul. 14, 1993, 5-196851; Dec. 22, 1993, 5-346436; Dec. 24, 1993, 5-347784; Dec. 24, 1993, 5-347785
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—719 4 Claims



1. A vertical thermal processing apparatus that is provided in a lower portion of a vertical reaction tube thereof with a metal manifold connected to a gas supply pipe and an exhaust pipe, and wherein a large number of objects to be processed are placed in a support device and conveyed into said reaction tube through a lower edge opening of said manifold, said vertical thermal processing apparatus comprising:

a cover of a heat-resistant material provided so as to shield an inner peripheral surface of said manifold; and

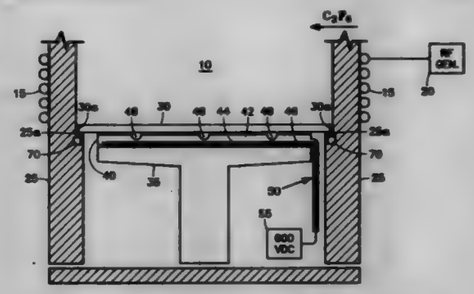
inert gas introduction means for introducing an inert gas into a space between said cover and said inner peripheral surface of said manifold.

5,484,485

PLASMA REACTOR WITH MAGNET FOR PROTECTING AN ELECTROSTATIC CHUCK FROM THE PLASMA

Robert A. Chapman, 972-6 Asilomar Ter., Sunnyvale, Calif. 94086

Filed Oct. 29, 1993, Ser. No. 145,990
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 R 12 Claims



1. A plasma reactor for processing substrates comprising:

a chamber;

an electrostatic chuck having a support portion for holding a substrate, said electrostatic chuck being disposed in said chamber and dividing said chamber into first and second chamber sections located on opposite sides of said support portion;

a source of plasma precursor species;

a power source for generating a plasma from said plasma precursor species in said first chamber sections;

a side wall of said chamber surrounding a periphery of the chuck with a circumferential gap between said side wall and any substrate held by the chuck; and

a magnet disposed adjacent to said circumferential gap, said magnet having a magnetic field having a substantial component directed through the gap to inhibit impingement of plasma on surfaces of the chuck and any substrate held by the chuck which exist in said second chamber section, said magnet being disposed in substantially the same plane as the support portion of the electrostatic chuck.

5,484,486

QUICK RELEASE PROCESS KIT

Greg Blackburn; Donald L. Johnson; Richard McGovern, all of San Jose, and Yan Rozenzon, Mountain View, all of Calif., assignors to Applied Materials, Inc, Santa Clara, Calif.

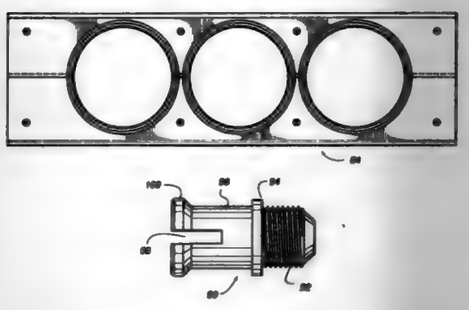
Filed May 2, 1994, Ser. No. 237,508
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—728 27 Claims

1. In an apparatus for processing of substrates within a reactive gas environment, said apparatus including a processing surface, the improvement comprising:

a cover assembly removeably mounted to said processing surface to protect the processing surface from the effects of substrate processing;

at least one substrate-supporting pedestal removeably mounted on said processing surface; and

ring means for removeable mounting upon said pedestal about the pedestal periphery, one of said pedestal or ring means



peripherally mounting one or more protruding fasteners, with the other of said pedestal or ring means being provided with complementary fastener engagement means, said fasteners and complementary fastener engagement means being configured to enable the ring means and pedestal to be snapped together or apart for instant engagement or disengagement as desired, whereby the ring means may be easily and quickly mounted and demounted for cleaning and replacement without disturbing the pedestals, as well as to permit quick access to the pedestals when the pedestals require cleaning or replacement.

5,484,487

CLEANSER FOR RELEASING ADHERENT DEPOSITS FROM SURFACES

Gregg Motsenbocker, 26142 Walnut Hills Dr., Lake Arrowhead, Calif. 92317

Division of Ser. No. 74,887, Jun. 9, 1993, Pat. No. 5,415,800.
This application Mar. 31, 1995, Ser. No. 414,199
Int. Cl.[6] C09D *9/00*; C11D *7/26;7/50*
U.S. Cl. 134—6 **5 Claims**

1. A method of releasing adherent deposits from a surface comprising:

a. applying to an adherent deposit on a surface an environmentally safe cleanser consisting essentially of the following components, whose percentages are expressed relative to the total weight of these components without including other materials that might be included in minor amounts which do not interfere with the intended action of the cleanser:

Ethylene glycol n-Butyl Ether (Glycol EB), between about 5.0% and about 40.0%;

Acetone, between about 5.0% and about 40.0%; and

Dibasic ester selected from the group consisting of dimethyl adipate, dimethyl glutarate and dimethyl succinate, and mixtures of any two or more of them, between about 5.0% and about 40.0%; and optionally water to make 100%; and

b. permitting said cleanser to contact said deposit for a time sufficient to release said deposit from said surface; and

c. removing said released deposit from said surface.

5,484,488

METHODS FOR MELTING AND DISPERSING PARAFFIN WAX IN OIL FIELD PRODUCTION EQUIPMENT

Paul R. Hart, and J. Michael Brown, both of The Woodlands, Tex., assignors to BJ Services Company, U.S.A., Houston, Tex.

Filed Apr. 6, 1994, Ser. No. 223,919
Int. Cl.[6] B08B *9/02;9/08*
U.S. Cl. 134—22.13 **15 Claims**

1. A method for removing paraffin wax deposits from the surfaces of oilfield production equipment during oil production by melting and subsequently dispersing said deposits comprising:

adding to oil in said equipment an acidic compound, whereby said acidic compound flows to said deposits;

adding to oil in said equipment a neutralizer compound, whereby said neutralizer compound flows to said deposits and chemically reacts with said acidic compound thereby generating heat sufficient to melt said paraffin wax deposits, and forms an organic salt which disperses said deposits into the oil; and

wherein at least one of said acidic compound and said neutralizer compound is an organic compound.

5,484,489

AZEOTROPIC COMPOSITIONS CONTAINING PERFLUORINATED CYCLOAMINOETHER

Richard M. Flynn, Mahtomedi; Mark W. Grenfell, Woodbury; Frank W. Klink, Oak Park Heights, and Daniel R. Vitcak, Oakdale, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 41,693, Apr. 1, 1993, Pat. No. 5,401,429.
This application Jan. 6, 1995, Ser. No. 369,505
Int. Cl.[6] B08B *3/08;3/10*; C23G *5/036*
U.S. Cl. 134—42 **6 Claims**

1. A method of removing a contaminant from an article comprising the step of contacting said article with an azeotropic composition to remove the contaminant from the article, wherein the azeotropic composition, when fractionally distilled, produces a distillate fraction which is an azeotrope, and said azeotropic composition consists essentially of:

(A) perfluorocycloaminoether selected from the group consisting of perfluoro-N-methylmorpholine and perfluoro-N-ethylmorpholine, wherein the amount of said perfluorocycloaminoether in the azeotropic composition is within about 10% of the quantity, by weight, of the perfluorocycloaminoether contained in the azeotropic distillate fraction; and

(B) organic solvent selected from the group consisting of 2,2,4 -trimethylpentane and cyclopentane, wherein the amount of said organic solvent in the azeotropic composition is within about 10% of the quantity, by weight, of the organic solvent contained in the azeotropic distillate fraction;

with the proviso that if the perfluorocycloaminoether is perfluoro-N-methylmorpholine, the organic solvent is either 2,2,4-trimethylpentane or cyclopentane, and if the perfluorocycloaminoether is perfluoro-N-ethylmorpholine, the organic solvent is 2,2,4-trimethylpentene; and

where the azeotropic distillate fraction produced from the azeotropic composition consisting essentially of perfluoro-N-methylmorpholine and 2,2,4 -trimethylpentane, contains about 98 weight percent perfluoro-N-methylmorpholin and about 2 weight percent 2,2,4-trimethylpentane and has a boiling point of 51° C. at one atmosphere pressure; and

wherein the azeotropic distillate fraction produced from the azeotropic composition consisting essentially of perfluoro-N-methylmorpholine and cyclopentane contains about 81 weight percent perfluoro-N-methylmorpholine and 19 weight percent cyclopentane and has a boiling point of 36° C. at ambient pressure; and

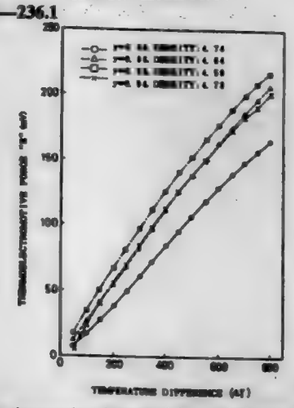
wherein the azeotropic distillate fraction produced from the azeotropic composition consisting essentially of perfluoro-N-ethylmorpholine and 2,2,4 -trimethylpentane contains about 90 weight percent perfluoro-N-ethylmorpholine and about 10 weight percent 2,2,4-trimethylpentane and has a boiling point of 71° C. at one atmosphere pressure.

5,484,490

P-TYPE THERMOELECTRIC MATERIAL

Shigeki Tokita, Okazaki; Makoto Okabayashi, Anjo; Takashi Amano, Nagoya, and Isao Nishida, Tokyo, all of, Japan, assignors to Technova Inc., and National Research Institute for Metals, both of Tokyo, Japan

Filed Feb. 23, 1994, Ser. No. 200,321
Claims priority, application Japan, Feb. 23, 1993, 5-033192; Feb. 10, 1994, 6-16630
Int. Cl.[6] H01L *35/14*
U.S. Cl. 136—236.1 **20 Claims**



1. A P-type thermoelectric material, consisting essentially of:

iron disilicide;

manganese; and

aluminum;

said manganese and said aluminum dissolved in or alloyed with said iron disilicide;

said manganese contained in an amount of from 1.67 to 4.1 atomic % with respect to a total sum of iron atoms, silicon atoms, manganese atoms and aluminum atoms taken as 100 atomic %;

said aluminum contained in an amount of from 1.33 to 2.67 atomic % with respect to said total sum; and

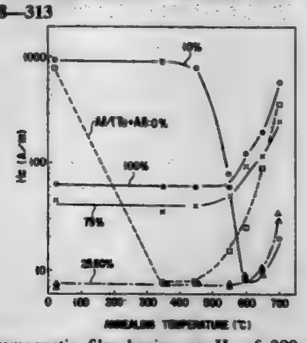
a sum of said manganese and said aluminum in an amount of from 4.0 to 5.34 atomic % with respect to said total sum.

5,484,491

FERROMAGNETIC FILM

Hitoshi Iwasaki; Yuichi Ohsawa, and Reiko Kondoh, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 954,042, Sep. 30, 1992, abandoned.
This application Jan. 31, 1994, Ser. No. 188,747
Claims priority, application Japan, Sep. 30, 1991, 3-250674; Sep. 30, 1991, 3-252448
Int. Cl.[6] C22C *19/07*; H01F *1/147*
U.S. Cl. 148—313 **7 Claims**



4. A ferromagnetic film having an H_c of 200 A/M or less consisting of an alloy represented by the formula:

$Co_xFe_yAl_z$

wherein

x, y, and z represent atomic % and satisfy:

$73<x<94$,

$5<y\leq 15$,

$1<z<12$, and

$x+y+z=100$, and wherein

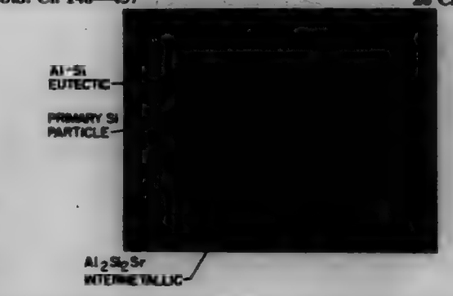
said film shows fcc-phase (111) orientation.

5,484,492

AL-SI ALLOYS AND METHOD OF CASTING

Kevin P. Rogers, Ringwood, Australia, and Christian Simensen, Oslo, Norway, assignors to Comalco Aluminum Limited, Melbourne, Australia

Continuation of Ser. No. 852,178, Apr. 3, 1992, abandoned.
This application Jul. 7, 1994, Ser. No. 272,509
Claims priority, application Australia, Aug. 9, 1989, PJ5698
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[6] C22C *21/00*
U.S. Cl. 148—437 **26 Claims**



1. A cast hypereutectic Al-Si alloy having 12% to 15% Si, and at least one element selected from a first group of elements consisting of Cr, Mo, Nb, Ta, Ti, Zr, V and Al, at least one element selected from a second group of elements consisting of Ca, Co, Cr, Cs, Fe, K, Li, Mn, Na, Rb, Sb, Sr, Y, Ce, elements of the Lanthanide series and elements of the Actinide series, and a third group of elements, with the balance, apart from incidental impurities, being Al; the alloy having the at least one element from each of the first and second groups of elements in an amount such that the alloy has a microstructure in which any primary Si present is substantially uniformly dispersed, with the microstructure predominantly comprising a eutectic matrix; the elements of the third group comprising:

Cu	1.5 to 5.5%	Pb	0 to 0.2%
Ni	1.0 to 3.0%	Cr	0 to 0.1%
Mg	0.1 to 1.0%	Si modifier	0.001 to 0.1%
Fe	0.1 to 1.0%	(Na, Sr)	
Mn	0.1 to 0.8%	B (elemental)	0.05% maximum
Zr	0.01 to 0.1%	Ca	0.03% maximum
Zn	0 to 3.0%	P	0.03% maximum
Sn	0 to 0.2%	Others	0.05% maximum each,

wherein the at least one element selected from said first group is present in the alloy as a compound providing stable nucleant particles, said compound being selected from carbide, boride, nitride, aluminide, phosphide and mixtures thereof, provided that said compound excludes Al boride; wherein the at least one element selected from the second group is present in said alloy as an intermetallic phase present as crystals thereof of which at least a proportion of said crystals have been nucleated by said stable nucleant particles; wherein said at least one element of said first group is present in an amount in excess of 0.005% up to 0.25% subject to there being not more than 0.1% Ti added as an Al-Ti-B master alloy; wherein said at least one element of said second

group is present in an amount of from 0.1 to 3.0 wt %; wherein said at least one element of the first group is not solely Ti where said at least one element of the second group is solely Sr; wherein, where an element of the third group is also present in the melt as an element of said second group, the total amount of the element in the melt is in excess of the indicated upper amount of that element in said third group; wherein, where the element of said second group is Fe, it is present in an amount of at least 1.5%, where the element of the second group is Mn, it is present in an amount of at least 1%, and where the element of the second group is Sr, it is present in an amount of at least 0.11%; and wherein where said element of said first group is Zr, it is present at a level in excess of 0.1%; all percentages being by weight.

5,484,493

ALUMINUM BASE ALLOY

David K. Young, Henderson, Ky.; William C. Setzer; Francis P. Koch, both of Evansville, Ind.; Robert A. Rapp, Columbus, Ohio; Michael J. Pryor, Woodbridge, Conn., and Noel Jarrett, New Kensington, Pa., assignors to KB Alloys, Inc., Robards, Ky.

Division of Ser. No. 71,187, Jun. 2, 1993, Pat. No. 5,415,708. This application Jan. 27, 1995, Ser. No. 379,167

Int. Cl.[6] C22C *21/00*

U.S. Cl. 148—437 **8 Claims**

1. An aluminum-titanium-boron alloy consisting essentially of from 0.1 to 3.0% boron, from 1 to 10% titanium, balance essentially aluminum, wherein the alloy contains $TiAl_3$ particles having a diameter of less than 25 microns, and wherein the matrix contains TiB_2 particles dispersed throughout having an average particle size of less than 1 micron, and wherein the matrix contains clusters of said TiB_2 particles with said clusters being defined as greater than 10 microns in size and with said matrix containing an average of less than 4 of said clusters per 2 cm^2.

5,484,494

AMORPHOUS ALLOY AND METHOD FOR ITS PRODUCTION

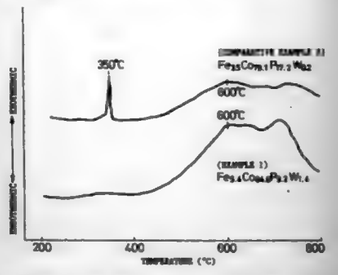
Masaharu Oda; Kensuke Kamada, and Takatoshi Kubo, all of Otake, Japan, assignors to Mitsubishi Rayon Company, Inc., Tokyo, Japan

Filed Nov. 14, 1994, Ser. No. 331,549

Claims priority, application Japan, May 14, 1992, 4-122219

Int. Cl.[6] C25D *3/56*; C22C *45/04*

U.S. Cl. 148—561 **2 Claims**



1. A method for producing an amorphous alloy characterized by electrodepositing an amorphous alloy in which at least the atomic ratio of iron and cobalt is 90% or more of cobalt, the phosphorus content is 4–16 atomic % and the tungsten content is 0.5–5 atomic %, said method using an electrolyte bath containing;

divalent iron ion 0.01–0.2 mol/l

divalent cobalt ion 0.1–2.0 mol/l

phosphite ion 0.01–0.2 mol/l

tungstate ion or phosphotungstate ion 0.005–0.1 mol/l and the electrodepositing is performed at

pH 1.0–2.2

current density 1–40 A/dm^2

bath temperature 20°–80° C.

5,484,495

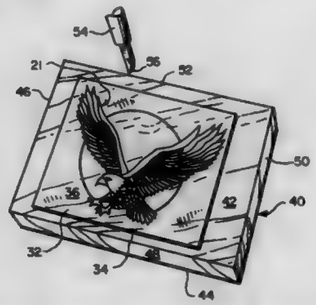
METHOD FOR CARVING WOOD ACCURATELY, ARTISTICALLY, AND IN A TIME EFFICIENT MANNER

John E. Moore, 326 E. 1900 North, Provo, Utah 84604

Filed Jul. 29, 1994, Ser. No. 282,662

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—62 **6 Claims**



1. A method of carving wood comprising the steps of:

providing a wood workpiece comprising at least one smooth uncarved surface for carving;

placing an adhesively backed film of synthetic resinous material carrying lines collectively comprising an image in an adhered relation upon the surface of the wood workpiece;

manually inserting a cutting blade through the film into the wood and moving the inserted blade along image lines to cut through the film at the image and to carve the image in the wood through the film;

de-adhering residual film from the wood surface and discarding the de-adhered residual film.

5,484,496

PROCESS FOR MANUFACTURING A PREFABRICATED BOW

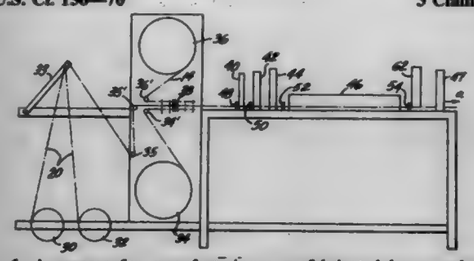
Bernhard Hackenberg, Munchen, Germany, assignor to Landsberger Bandweberei GmbH & Co KG, Landsberg/Lech, Germany

Filed Jan. 16, 1992, Ser. No. 821,997

Claims priority, application Germany, Jan. 22, 1991, 91 00 705.4 U; Apr. 11, 1991, 91 04 4308.8 U; Apr. 12, 1991, 41 12 039.6

Int. Cl.[6] D04D *7/10*

U.S. Cl. 156—70 **3 Claims**



1. A process for manufacturing a prefabricated bow product comprising feeding intermittently in the same direction to a desired length, in a spaced, parallel, superposed relationship at least one elongate strip and at least one elongate tape which is narrower than said strip while guiding said strip and said tape in said spaced, parallel, superposed relationship, forming notches intermittently in the longitudinal edges of said strip, joining said strip and said tape

in a superposed relationship behind said notches with a longitudinal clip extending substantially longitudinally in the direction of feed of said strip and said tape after said notches have been formed, disposing substantially annular clips around said strip in said notches, severing said strip and said tape behind said longitudinal clip, and forming said prefabricated bow product.

5,484,497

PROCESS OF BONDING AROMATIC POLYAMIDE FIBERS TO RUBBER COMPOUNDS

Akinori Fujiwara, and Katsuhiko Hata, both of Kobe, Japan, assignors to Bando Chemical Industries, Ltd., Kobe, Japan

Division of Ser. No. 911,377, Jul. 13, 1992, Pat. No. 5,306,369, which is a continuation of Ser. No. 456,636, Dec. 22, 1989, abandoned. This application Dec. 6, 1993, Ser. No. 161,486

Claims priority, application Japan, Dec. 23, 1988, 63-327234; Dec. 23, 1988, 63-327235

Int. Cl.[6] B29C *35/02*; B32B *33/00*; C09J *5/04*

U.S. Cl. 156—110.1 **3 Claims**

1. A process of bonding aromatic polyamide fibers to rubber compounds wherein the rubber is natural rubber, styrene/butadiene rubber, acrylonitrile/butadiene rubber, ethylene/propylene rubber, epichlorohydrin rubber or fluorocarbon rubber, which comprises:

a first step of treating fibers with an aqueous mixture consisting essentially of a resorcinol/formalin resin and a latex of a polymer selected from the group consisting of polyvinyl chloride, chlorinated rubber, chlorinated polyethylene, poly-(dichlorobutadiene) and a copolymer of dichlorobutadiene and containing chlorine in amounts of not less than 45% by weight based on the polymer; the polymer being contained in the aqueous mixture in amounts of 50–1000 parts by weight in relation to 100 parts by weight of the resorcinol/formalin resin;

a second step of treating the fibers with an adhesive composition consisting essentially of at least one activating agent selected from the group consisting of polyisocyanate compounds and polyepoxy compounds in amounts of 10–90 parts by weight and an adhesive rubber which is the same as the rubber in the rubber compounds in the amounts of 90–10 parts by weight in organic solvents; the adhesive composition containing solids in amounts of 10–50% by weight; and

a third step of placing the fibers in close contact with the rubber compound and then vulcanizing the rubber together with the fibers.

5,484,498

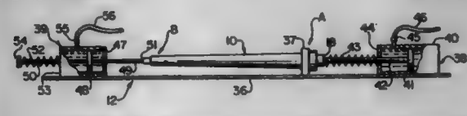
MOLDED ARTICLE AND METHOD AND APPARATUS FOR MAKING SAME

Harold P. Hogarth, 88 Westbrook Dr., O'Fallon, Mo. 63366, and Wayne E. Hogarth, 8605 7th St., Downey, Calif. 90241

Continuation-in-part of Ser. No. 855,462, Mar. 20, 1992, abandoned, which is a continuation of Ser. No. 712,991, Jun. 10, 1991, abandoned, which is a continuation of Ser. No. 504,079, Apr. 5, 1990, abandoned, which is a continuation of Ser. No. 300,215, Jan. 23, 1989, abandoned, which is a continuation of Ser. No. 46,637, May 7, 1987, abandoned. This application Nov. 18, 1992, Ser. No. 977,927

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—189 **32 Claims**



1. A method of molding an elongated, tapered, seamless and hollow member of net shape having a length of 3 to 90 feet, a diameter of 0.1 inches to 4 feet and a taper of 0.002 inches per linear inch to infinite taper comprising providing an elongated, tapered mandrel, applying a composite material consisting of a matrix of reinforcing fibers combined with a resin material on said mandrel, providing a one piece shell having an elongated, tapered bore, inserting said mandrel with said composite material applied thereon into said bore of said shell to provide a mold assembly, heating said mold assembly, applying a tensile force at one end of said mandrel while simultaneously applying a compressive force at the other end of said mandrel, displacing said mandrel and shell longitudinally toward each other under said tensile force and said compressive force to compress said composite material, allowing said mold assembly to cool while continuing to apply said tensile and compressive forces on said composite material and separating said shell and mandrel and removing said hollow member from said mandrel.

5,484,499

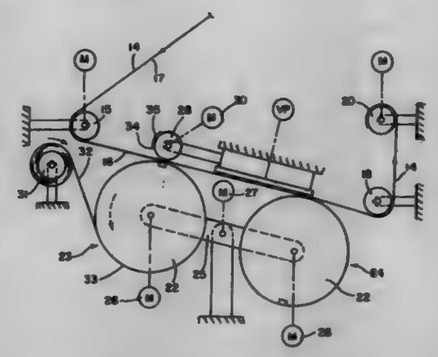
METHOD AND APPARATUS FOR LAYING UP LAMINATES OF ADHESIVE BACKED SHEETS

Carl R. Marschke, Phillips, Wis., assignor to Converex, Inc., Madison, Wis.

Filed Dec. 17, 1993, Ser. No. 168,812

Int. Cl.[6] B32B *31/00*;*31/12*;*31/18*;*35/00*

U.S. Cl. 156—193 **23 Claims**



1. A method for laying up multi-layer stacks of sheets from a continuous web of material having an adheaive coating on one side, said method comprising the steps of:

(1) attaching a first leading edge of the web to the surface of a first rotatable drum;

(2) rotating the first drum to cause winding of a selected number of wraps of the web thereon to form a multi-layer cylindrical master stack;

(3) controlling web tension during winding to cause each succeeding wrap of the web to be in relatively greater tension than the preceding wrap;

(4) cutting through the formed cylindrical stack generally transversely of the web; and,

(5) unwrapping the cut stack from the drum to permit the tensile stress differential in the web wraps to stabilize to form a flat master stack of generally rectangular sheets of equal length.

5,484,500

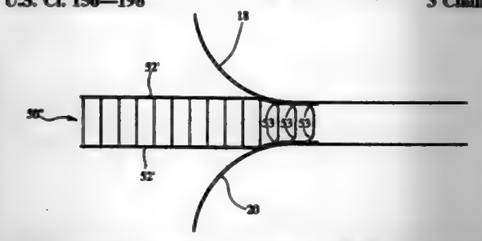
METHOD FOR FORMING STRUCTURAL PANELS HAVING A CORE WITH THERMOPLASTIC RESIN FACINGS

Christine M. Kaufmann, Boothwyn, Pa.; Dale L. Murschell, Woodstown, N.J.; Dennis A. Nollen, Newark, Del.; Anthony R. Saracino, and Joseph D. Trentacosta, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 44,364, Apr. 2, 1993, abandoned, which is a division of Ser. No. 592,179, Oct. 9, 1990, Pat. No. 5,328,744. This application Oct. 11, 1994, Ser. No. 320,582

Int. Cl.[6] B30B *5/06;* **B32B** *31/04;31/08;31/20*

U.S. Cl. 156—198 **3 Claims**



1. A method for bonding a sheet of thermoplastic polyetherketoneketone resin material to each side of a core member in the form of a honeycomb structure of aramid paper having a plurality of adjoining cells formed of walls perpendicular to each side to form a bonded structure comprising passing the core and said thermoplastic polyetherketoneketone sheet material in mating surface contact through a belt press for a residence time period of less than 2.3 minutes under positive pressure while heating said core and said thermoplastic polyetherketoneketone sheet material above the softening point of the core to a temperature of about 650° F. in said belt press whereby said walls are folded at each side in the direction generally opposite to the direction of movement of the core to increase the surface area of the honeycomb structure contacting said thermoplastic polyetherketoneketone resin material; and cooling said core and said sheet material in said belt press while maintaining said positive pressure.

5,484,501

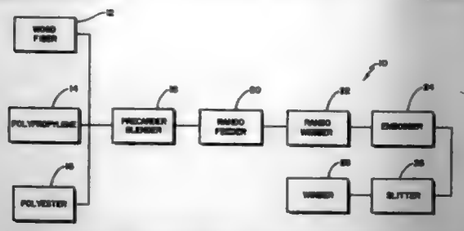
METHOD OF MANUFACTURING AN IMPROVED WOOD FIBER MAT FOR SOIL APPLICATIONS

William M. W. Jacobsen, Jr., Hickory, N.C.; L. Carl Belt, Lebanon, and Ernest De Pass, Bound Brook, both of N.J., assignors to Conwed Fibers, a division of Leucadia, Inc., New York, N.Y.

Continuation of Ser. No. 947,946, Sep. 18, 1992, Pat. No. 5,330,828, which is a continuation of Ser. No. 638,497, Jan. 7, 1991, abandoned. This application Jun. 24, 1994, Ser. No. 265,458

Int. Cl.[6] B31D *5/00;* **B29C** *59/04*

U.S. Cl. 156—209 **9 Claims**



1. A process for manufacturing a mat comprising the steps of:
weighing and mixing together predetermined quantities of wood fibers and a thermoplastic fiber material having a melting temperature below 400° F., the wood fibers diameter being determined by a mesh screen, the wood fiber diameter ranging in size by using mesh screens between 8 mesh and 100 mesh, and the wood and thermoplastic fibers being sized to allow the mat to become an integral part of the soil surface;
blending the fibers together, the mixed blend of wood and thermoplastic fibers entangling to form a mat which has a porosity which permits vegetation to grow through the mat;
laying the mixture of fibers onto a moving conveyor;
bonding selected areas of the mat using a pair of embossing rolls, the embossing rolls being heated such that the compression caused by the embossing rolls causes the thermoplastic material to melt and bond in the selected areas, wherein the unselected areas maintain their porosity to permit vegetation to germinate therethrough.

5,484,502

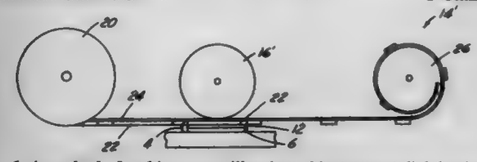
UV-HARD COAT TRANSFER

Larry M. Bozanic, Westland, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 3, 1990, Ser. No. 562,166

Int. Cl.[6] B44C *1/165*

U.S. Cl. 156—235 **1 Claim**



1. A method of making a rear illuminated instrument dial, having a design surface, said method comprising the steps of:
providing an ink transfer including an ink carrier film and an ink layer embodying-the design to be transferred;
contacting said ink layer face to face with said dial under conditions of temperature and pressure which causes said ink layer to adhere to said dial;
separating said ink layer from said ink carrier film with said ink layer remaining on said dial;
providing a UV-hard coat transfer including a UV-hard coat carrier coated with a cured UV-hard coat layer;
contacting said UV-hard coat layer face to face with said ink layer under conditions of temperature and pressure which causes said UV-hard coat layer to adhere to said ink layer; and
separating said UV-hard coat layer from said UV-hard coat carrier and said UV-hard coat layer remaining on said ink layer.

5,484,503

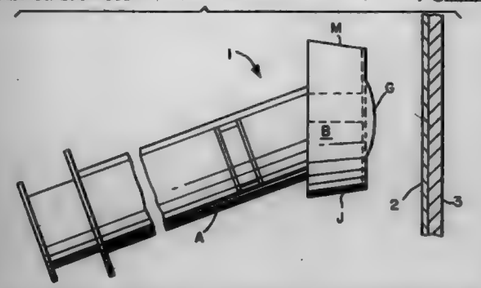
PROCESS FOR SEALING MEMBRANE IN ELECTROCHEMICAL CELL

Walther G. Grot, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 511,180, Apr. 17, 1990. This application Feb. 23, 1993, Ser. No. 23,218

Int. Cl.[6] C09J *5/02*

U.S. Cl. 156—333 **7 Claims**



1. A process for sealing a membrane to an electrochemical cell gasket comprising: (i) applying a sealant composition to either the membrane, the electrochemical cell gasket or both, wherein the sealant composition comprises (a) 20–50 weight percent fluoropolymer on a dry basis, (b) the fluoropolymer having particles with a diameter no greater than 25 micrometers, (c) 0–5 weight percent thickener dispersed in an amount of a single phase liquid medium chosen to add to 100 weight percent, and (d) the liquid medium comprising 50–100 weight percent of a low-volatility liquid and 0–50 weight percent of a more volatile liquid; and (ii) contacting the membrane and the electrochemical cell gasket so as to form a bond or seal therebetween.

5,484,504

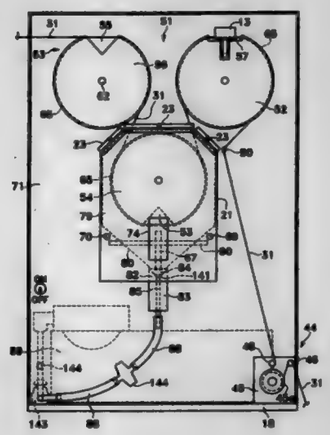
DEVICE FOR ATTACHING EGGS OF PREDACEOUS INSECTS TO STRING AND A DELIVERY SYSTEM

Walker L. Tedders, Jr., and John L. Blythe, both of Perry, Ga., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Dec. 29, 1993, Ser. No. 175,058

Int. Cl.[6] B05B *7/14*

U.S. Cl. 156—433 **3 Claims**



1. A device for attaching beneficial insect eggs to string comprising
a string delivery means that includes
a means for housing a spool of string,
a spool of string,
a means to guide said string from said housing means to a downstream portion of the device;
a pulley wheel assembly that includes
a glue pulley wheel,
a recirculating hopper pulley wheel, and
a final guide pulley wheel;
a glue application system that includes
a container means for holding a supply of glue,
an arrangement of tubing between said container means and said glue pulley wheel,
a means for controlling the flow of glue wherein said means is inserted in said tubing, and
a means for contacting said string in the pulley wheel assembly with said glue wherein said means is a wick inserted in said glue pulley wheel and is connected to said container means by said tubing; and
an egg supply system with recirculating hopper with an air lifting means for lifting eggs from the base of said hopper to glue coated string fed through the hopper by said pulley wheel assembly.

5,484,505

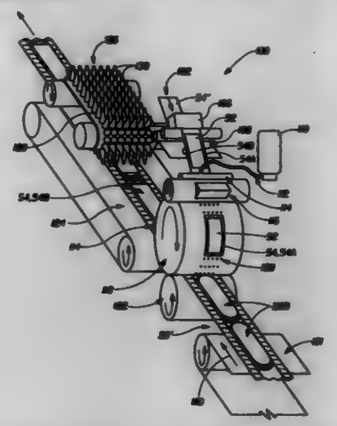
APPARATUS FOR ATTACHING A FASTENER TO A PROFILED ABSORBENT ARTICLE

Cathy L. Isaksen; Louis P. Brukhart, and Franklin A. Klaene, Jr., all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 320,765, Oct. 19, 1994, abandoned, which is a continuation of Ser. No. 84,047, Jun. 28, 1993, abandoned. This application May 11, 1995, Ser. No. 439,387

Int. Cl.[6] B32B *31/06;31/12;31/18;31/20*

U.S. Cl. 156—470 **2 Claims**



1. An apparatus for affixing a strip of pressure sensitive adhesive to a compressible absorbent article that has a maximum caliper and regions of different caliper and compressibility, said apparatus comprising:
means for forming said absorbent article;
a primary surface which serves as an anvil against which said absorbent article may be placed;
a compressible component comprising a surface with a plurality of compressible, resilient elements projecting therefrom in a direction toward said primary surface, wherein said primary surface and the elements comprising said compressible component are spaced a distance apart;
a pressure sensitive adhesive fastener application mechanism; and
a mechanism for bringing said absorbent article in between said compressible component and said primary surface while the distance between the elements on said compressible component and said primary surface is less than the maximum caliper of the absorbent article.

5,484,506

SMOOTH BORE WELDING OF THERMOPLASTIC TUBING

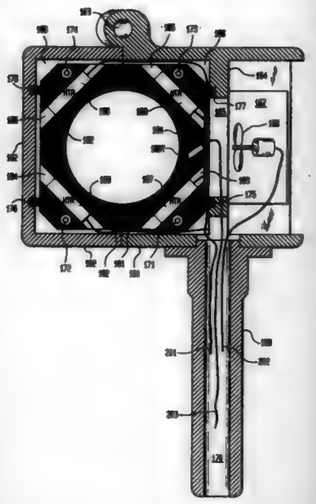
Paul R. DuPont, Andover; Richard B. Schwarz, Lincoln Park; Richard N. Dubord, and Michael L. Simone, both of Hackettstown, all of N.J., assignors to Saul-Tech Incorporated, Lafayette, N.J.

Filed May 16, 1994, Ser. No. 242,722

Int. Cl.[6] B29C *65/02*

U.S. Cl. 156—503 **13 Claims**

1. Portable apparatus for butt-welding a pair of thermoplastic tubes, comprising:
a. a hinged heating/cooling chamber for receiving the butt ends of said pair of tubes;
b. a respective heater block resiliently mounted in each half of said hinged chamber;
c. a radiator sector insertable into each said heater respective block; said heater block and said radiator sector being coaxially centered about said tubes when inserted into said apparatus, each said radiator sector having a first portion intimately



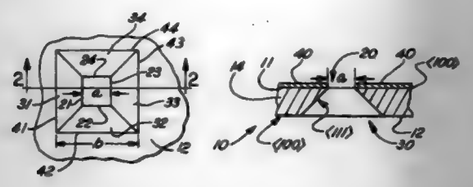
conforming in heat transfer relationship to said heater block and an arcuate portion for embracing the outer periphery of said pair of thermoplastic tubes.

5,484,507

SELF COMPENSATING PROCESS FOR ALIGNING AN APERTURE WITH CRYSTAL PLANES IN A SUBSTRATE

John C. Ames, Colorado Springs, Colo., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 1, 1993, Ser. No. 160,531
Int. Cl.[6] B23P *15/00*
U.S. Cl. 156—644.1 **9 Claims**



1. A method for removing material from and defining an N-sided polygon aperture of known cross sectional area through a first major surface of a wafer of crystalline material, with the first major surface including therein first and second intersecting major crystal axes, the method comprising the steps of:

a. depositing on the first major surface a first mask and defining therein a first intermediate polygon aperture having at least 4N+2 sides, where N is a positive integer, with at least one side of the first intermediate polygon aperture being generally parallel to the first major crystal axis, and with the intersection of a second side and a third side of the first intermediate polygon aperture being located generally along the second major crystal axis, and

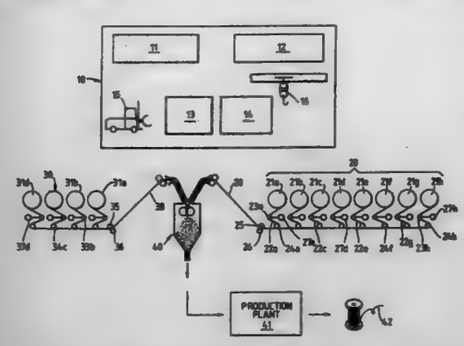
b. anisotropically etching into the first major surface of the crystal through the first intermediate polygon aperture in the first mask for defining the N-sided polygon aperture therein, with the included angle between the second and third sides of the first intermediate polygon aperture expanding through the anisotropic etching to another of the N sides of the polygon located along the second major crystal axis, thereby defining the N-sided polygon having a known cross-sectional area.

5,484,508

METHOD OF MAKING A LIQUID FEEDSTOCK FROM A PLURALITY OF PULP SHEET STOCK ROLLS

Philip J. Urwin, Coventry, and Iain R. Jack, Nuneaton, both of, United Kingdom, assignors to Courtaulds Fibres (Holdings) Ltd., London, England

Filed May 24, 1993, Ser. No. 67,432
Int. Cl.[6] D21B *1/04*
U.S. Cl. 162—28 **12 Claims**



1. In the production of a liquid feedstock, used in a cellulosic fibre producing plant, from a plurality of stock rolls of flexible wood pulp sheet material, said rolls differing from one another in a specific property, the improvement which comprises creating a pluri-layer web having at least four different layers of wood pulp sheet material by drawing one layer from each of at least four different stock rolls, selecting the rolls from which said layers are drawn so that said web has an aggregate value of a selected property within a preselected range, breaking up the pluri-layer web to create a mass of comminuted pieces of wood pulp and feeding said comminuted pieces as input feedstock to the plant for forming said liquid feedstock.

5,484,509

SURFACE SIZING COMPOSITION AND METHOD

Amir Famili, Orefield, and Gerald D. Miller, Emmaus, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 54,659, Apr. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 17,050, Feb. 12, 1993, abandoned. This application Aug. 3, 1994, Ser. No. 285,259
Int. Cl.[6] D21H *21/16*
U.S. Cl. 162—135 **22 Claims**

1. A method for treating paper which comprises applying to the surface of the paper an aqueous 1–15 wt % polyvinyl alcohol sizing composition consisting essentially of 75–99.9 wt % polyvinyl alcohol which is at least 95 mole % hydrolyzed and 0.1– 25 wt % ketene dimer.

5,484,510

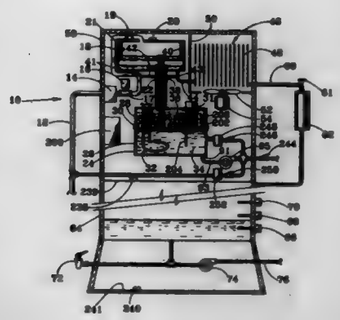
WATER DISTILLING APPARATUS

Micheal O. Hartman; Dale J. Kinder, both of Benton; Randy E. Rainey, Conway; Arthur R. Helmich, and Daniel E. Willis, both of Benton, all of Ark., assignors to Dew Enterprises, Inc., Benton, Ark.

Filed Oct. 26, 1993, Ser. No. 143,437
Int. Cl.[6] B01D *3/42; C02F 1/04*
U.S. Cl. 202—162 **18 Claims**

1. A distillation apparatus for purifying incoming water containing contaminants, comprising:

an inlet valve positioned along an inlet flow line for controlling the flow of said incoming water;



an evaporation unit in fluid communication with said inlet flow line for heating said incoming water to generate steam, said evaporation unit including a heating chamber therein defined by a heating pan for receiving said incoming water and producing said generated steam, and a heating means;

a condenser unit in fluid communication with the evaporation unit for cooling said steam to form water condensate;

an outlet conduit for said water condensate;

a probe assembly including an electrically conductive pan sense probe positioned within said evaporation unit heating chamber for contact with said generated steam; and

a detection system including detecting means responsive to said electrically conductive pan sense probe for detecting an electrical conductivity of said generated steam within said evaporation unit, said detection system further including comparison means for producing a signal when said electrical conductivity of said generated steam is compared to a selected electrical conductivity.

5,484,511

PROCESS FOR THE REMOVAL OF IMPURITIES FROM HYDRAZINE HYDRATE

Wolfgang Ohlendorf, Leverkusen; Michael Batz, Leichlingen; Hans-Heinrich Moretto, Leverkusen; Peter Schmidt, Leverkusen, and Gerhard Jonas, Leverkusen, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 26, 1994, Ser. No. 296,570
Claims priority, application Germany, Sep. 2, 1993, 43 29 599.1
Int. Cl.[6] B01D *3/10; C01B 21/16*
U.S. Cl. 203—41 **7 Claims**

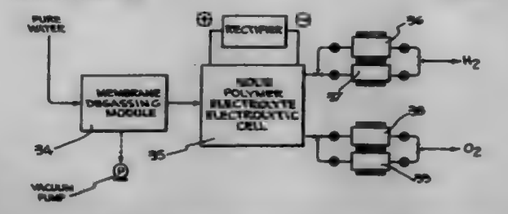
1. A process for the removal of organic secondary constituents and dissolved salts from hydrazine hydrate and aqueous solutions thereof to obtain hydrazine hydrate with a TOC content of 50 to 150 ppm and a chloride content of about 0.2 ppm, which consists of distilling under reduced pressure hydrazine hydrate or an aqueous solution thereof, passing the resulting hydrazine hydrate vapor through a bed of an adsorbent and, after passing through the bed, condensing the vapor in order to obtain hydrazine hydrate with a TOC content of 50 to 150 ppm and a chloride content of about 0.2 ppm, and regenerating the adsorbent.

5,484,512

METHODS AND APPARATUSES FOR PRODUCING HIGH PURITY OXYGEN AND HYDROGEN

Takashi Sasaki, Hyogo; Hiroyuki Harada, Tokyo, and Akihiko Hogetsu, Hyogo, all of, Japan, assignors to Shinko Pantec Co., Ltd., Kobe, and Mitsubishi Corporation, Tokyo, both of, Japan

Filed May 23, 1994, Ser. No. 247,670
Int. Cl.[6] C25B *1/10*
U.S. Cl. 204—129 **5 Claims**



3. A method of producing oxygen and hydrogen of high purity comprising the steps of:

(a) degassing a gas in pure water using a membrane degassing module including an air drier using a fluorocarbon resin hollow fiber membrane to provide degassed water;

(b) feeding only the degassed water continuously or intermittently into a solid polymer electrolyte electrolytic cell having an unporous solid polymer electrolyte electrolytic membrane made of a cation exchange membrane wherein a platinum group metal is joined to opposite sides of the solid polymer electrolyte membrane to form an anode and a cathode;

(c) effecting membrane electrolysis; and

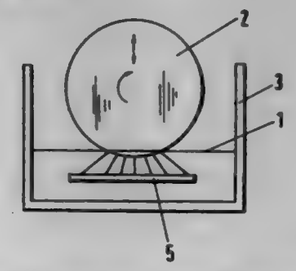
(d) dehumidifying individually by dehumidifying means the oxygen generated at the anode and hydrogen generated at the cathode, wherein the dehumidifying means includes a plurality of molecular sieves connected in parallel.

5,484,513

PROCESS AND APPARATUS FOR PRODUCING A ROUGH GENERATED SURFACE ON A CYLINDRICAL BODY OF ROTATION

Andrej D. Dejneko; Wladimir N. Skorochodov, both of Moskau; Sergej L. Kozar; Wladilen S. Lepekin, both of Lipezk; Wladimir P. Schumilow, Moskau, all of, U.S.S.R.; Mihail-Dan Gutu; Udo Riedesel, both of Hemer, Germany, and Heinz F. Rogowsky, Dortmund, Germany, assignors to Sundwiger Eisenhutte Maschinenfabrik GmbH & Co., Heger, Germany

Filed Feb. 1, 1994, Ser. No. 189,960
Claims priority, application Germany, Feb. 5, 1993, 43 03 447.0
Int. Cl.[6] C25F *3/02; 7/00*
U.S. Cl. 204—129.1 **13 Claims**



1. A process for producing a rough generated surface on a cylindrical body of rotation, comprising

immersing said body along its entire length into a tank containing an electrolyte and a plate-shaped anode extending longitudinally relative to said body so that only a peripheral portion

of said body is immersed in said tank, said peripheral portion being a fractional part of the width of said plate-shaped anode,

with said body acting as a cathode, causing an electric current to pass through said tank so that electrical discharges are focused on said peripheral portion of said body thereby to roughen it, and

rotating said body in said tank.

5,484,514

ELECTROLYZER

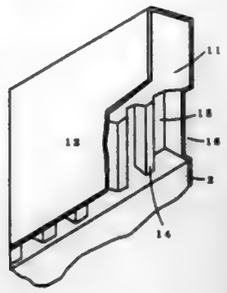
Shinji Katayama, Tamano, Japan, assignor to Chlorine Engineers Corp., Ltd., Tokyo, Japan

Filed May 2, 1994, Ser. No. 236,273

Claims priority, application Japan, Apr. 30, 1993, 5-104429

Int. Cl.[6] C25B *9/00;15/08*

U.S. Cl. 204—255 **5 Claims**



1. An electrolyzer comprising a vertical electrolyzer unit including a partition plate formed by superimposing a pair of anode- and cathode-side partitions provided with mutually fittable recesses and projections, and an electrode plate connected to said projections on each side of said partition plate to define an electrolytic chamber, and which further includes in an upper part thereof a gas-liquid separating chamber for an electrolyte which is formed from a member integral with each of said partitions,

wherein the area of a cross-section of said gas-liquid separating chamber taken along a plane perpendicular to a flow passage of said gas-liquid mixture flow inside said gas-liquid separating chamber, which said flow passage leads to a discharge opening, is larger at a part closer to said discharge opening than at a part farther from said discharge opening.

5,484,515

DEVICE FOR GENERATING AN ELECTRIC SIGNAL LINEARLY DEPENDENT UPON THE OXYGEN CONTENT OF A GASEOUS MIXTURE

Olivier De Pous, Geneva, Switzerland, and Gérard Horlaville, La Roche sur Foron, France, assignors to Honda Motor Company Ltd., Tokyo, Japan

Continuation of Ser. No. 17,009, Feb. 19, 1987, abandoned, which is a continuation of Ser. No. 706,864, Feb. 28, 1985, abandoned. This application Oct. 11, 1988, Ser. No. 256,193

Claims priority, application European Pat. Off., Mar. 5, 1984, 84810105

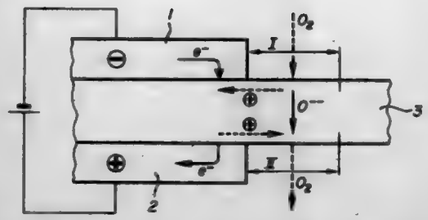
The portion of the term of this patent subsequent to Aug. 7, 2007, has been disclaimed.

Int. Cl.[6] G01N *27/407*

U.S. Cl. 204—425 **9 Claims**

1. An electrolytic cell sensor for determining the oxygen content of a sample gas, the sensor comprising:

(a) first electrode means acting as an anode, for the conversion of 0^- ions to 0_2 gas, which anode is not conductive of ions;



(b) second electrode means, acting as a cathode, for the conversion of 0_2 to 0^- ions, said cathode being formed from a nonporous electroconductive material which is not conductive of ions;

(c) solid electrolyte means for conducting 0^- ions between said anode and said cathode; the electrolyte means separating said electrodes and being impervious to the passage of 0_2, the cathode being in electronic contact with the electrolyte means and exposed to a sample gas; the anode being in electronic contact with the electrolyte means and exposed to a reference gas;

(d) power means for applying a DC current across said electrode means;

wherein the nonporous cathode material is shaped so as to expose said electrolyte means directly to said sample gas, an area of sample gas/electrolyte contact being defined by a cathode/electrolyte junction boundary line;

wherein the ionic resistance of said electrolyte means is less than 10^4 ohm/cm of said cathode/electrolyte junction boundary line;

wherein the voltage applied by said power means is from 0.2 to 20 volts/cm of said cathode/electrolyte junction boundary line;

and wherein the electrolyte is heated to a temperature of at least 500° C., so that the current flowing across the electrodes of the sensor is controlled by the rate of ionization of 0_2 in the sample gas at said area of sample gas/electrolyte contact.

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RESIN PRODUCTS AND PROCESS FOR PRODUCING THE SAME

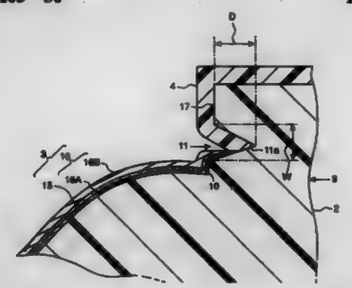
Toshikazu Funahashi; Yasuhiko Ogisu; Mamoru Kato; Shigeyuki Takahashi, and Toshiya Uemura, all of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Aichi, Japan

Filed Apr. 8, 1994, Ser. No. 225,286

Claims priority, application Japan, Apr. 9, 1993, 5-083603; Apr. 9, 1993, 5-083604; Jul. 1, 1993, 5-163623; Jul. 27, 1993, 5-185236; Jul. 27, 1993, 5-185238; Sep. 17, 1993, 5-231834; Dec. 20, 1993, 5-320297; Dec. 20, 1993, 5-320298; Apr. 1, 1994, 6-065277

Int. Cl.[6] C25D *5/56;5/02*

U.S. Cl. 205—50 **19 Claims**



1. A resin product having a decorative plating layer, comprising:

a resin base material, provided with to-be-plated portions and to-be-unplated portions;

one or more grooves formed on said resin base material so as to define boundaries between said to-be-plated portions and said to-be-unplated portions, said boundaries forming predetermined contour lines and having bottoms;

a decorative plating layer formed on said to-be-plated portions, said decorative plating layer consisting of a chemical plating layer formed on said resin base material and an electroplating layer formed on said chemical plating layer;

a coating layer formed on said to-be-unplated portions; and

step sections within said to-be-plated portions, formed along and abutting said grooves, said step sections being utilized as guides to facilitate the positioning of a mask on the plating layer formed on the step sections to insure an appropriate edge at the boundaries when the mask for covering the plating layer is applied to said base material prior to forming said coating layer.

5,484,517

METHOD OF FORMING MULTI-ELEMENT THIN HOT FILM SENSORS ON POLYIMIDE FILM

Purnell Hopson, Jr., Seaford, Va., assignor to Administrator, National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 8, 1994, Ser. No. 209,589

Int. Cl.[6] C25D *5/00*

U.S. Cl. 205—88 **7 Claims**



1. A method of forming a multi-element thin hot film sensor on a polyimide film substrate comprising the steps of:

cleaning a surface of the polyimide substrate;

forming a first layer of nickel by evaporation on the cleaned polyimide surface and simultaneously bombarding the surface with an ion beam, wherein the simultaneous ion beam bombardment and nickel deposition are performed under a vacuum;

forming a second layer, wherein the second layer is further comprised of an initial layer of copper deposited by evaporation in a vacuum on the first layer of nickel, and a remaining thickness of copper formed by electroplating, wherein the vacuum is continuous throughout deposition of both the nickel layer and the initial copper layer;

defining a sensor pattern in the copper and nickel layers.

5,484,518

ELECTROPLATING PROCESS

Robert L. Goldberg, Sharon, Mass., assignor to Shipley Company Inc., Marlborough, Mass.

Filed Mar. 4, 1994, Ser. No. 206,733

Int. Cl.[6] C25D *5/54*

U.S. Cl. 205—166 **15 Claims**

8. A process for electroplating a substrate having metallic regions and non-metallic regions with a metal, said process comprising the steps of providing an aqueous dispersion of particles selected from the group consisting essentially of conductive metal sulfides and oxides and a surfactant, said particles being present in a concentration ranging between 0.1 and 5 percent by weight of said dispersion, coating said substrate with said dispersion and drying said coating whereby said substrate is coated with a substantially continuous layer of said particles, and electroplating said metal onto said continuous layer of particles.

5,484,519

METHOD AND APPARATUS FOR TRANSPORTING AND DISPLAYING NECKTIES

Frank Fenton, Edison, N.J.; Jeffrey Spiegel, New York, N.Y.; Thomas Shea, Norwalk, Conn., and Lawrence Stuart, Morristown, N.J., assignors to Randa Corp., N.Y.

Division of Ser. No. 912,984, Jul. 14, 1992, Pat. No. 5,249,668.

This application Feb. 23, 1993, Ser. No. 21,075

Int. Cl.[6] B65D *85/62*

U.S. Cl. 206—279 **17 Claims**



1. A vertically elongated container for transporting an apparatus for suspending slender articles of clothing, said apparatus including a rotatable load bearing means, a frame having a plurality of individual outwardly extending tines, and a support bracket attached to the geometric center of said frame, said apparatus being completely positionable within the container while carrying the slender articles of clothing, said container comprising:

an upright standing container having rigid walls;

said container interiorly divided into a plurality of vertically extending compartments by partitining elements the number of compartments corresponding to the number of individual outwardly extending tines, each partition element having a centrally located recess extending downwardly from a top edge thereof; and

a top closure;

whereby the slender articles of clothing carried by the apparatus are simultaneously contained within the container and supported by the edges of the walls forming the vertically extending compartments in a manner allowing the apparatus to be directly and easily removed from the container and suspended from a horizontally extending bar or rod, without the slender articles of clothing being wrinkled, soiled or otherwise damaged.

5,484,520

SELF-ADHESIVE CARBONACEOUS GRAINS AND PROCESS FOR PRODUCING HIGH-DENSITY AND HIGH-STRENGTH CARBON ARTIFACTS SHOWING A FINE MOSAIC TEXTURE OF OPTICAL ANISOTROPY DERIVED FROM SUCH GRAINS

Isao Mochida, Fukuoka; Ryuji Fujiura, Ibaraki; Takashi Kojima, Ibaraki, and Hitoshi Sakamoto, Ibaraki, all of, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan

Filed Dec. 7, 1994, Ser. No. 350,679

Claims priority, application Japan, Dec. 9, 1993, 5-309382; Dec. 16, 1993, 5-316767

Int. Cl.[6] C10G *73/36*

U.S. Cl. 208—22 7 Claims

1. Self-adhesive carbonaceous grains that contain 0.5–1.5 wt % of a quinoline-soluble but pyridine-insoluble component and at least 97 wt % of a quinoline-insoluble component and which is prepared by the heat treatment in a nonoxidizing atmosphere of a mesophase pitch that is obtained by polymerizing a condensed polycyclic hydrocarbon or a substance containing the same in the presence of hydrogen fluoride and boron trifluoride.

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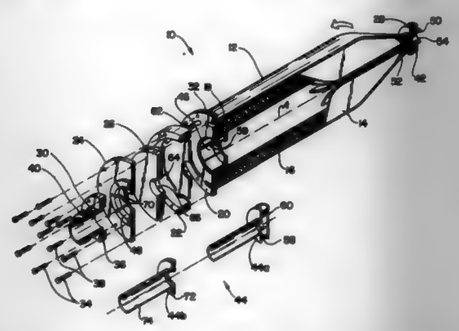
ROTARY DRUM FLUID/LIQUID SEPARATOR WITH ENERGY RECOVERY MEANS

Robert W. Kramer, Friendswood, Tex., assignor to United Technologies Corporation, Harford, Conn.

Filed Mar. 29, 1994, Ser. No. 219,587

Int. Cl.[6] B01D *17/038*

U.S. Cl. 210—86 21 Claims



1. A fluid/liquid separator for separating the mixture of the fluid and liquid into separate components of fluid and liquid comprising a rotating drum rotating about a central axis, a first pumping means attached to said rotating drum including a rotating housing extending radially inward toward said central axis for defining a first compartment and a second compartment disposed in axial alignment with said first compartment, means for imparting rotary motion to said rotating drum so that the angular velocity of said rotating drum is sufficiently high to separate the fluid from the liquid admitted into said rotating drum through an inlet in said first compartment, said first pumping means having an inlet for admitting said separated fluid into said first pumping means for pumping said separated fluid, fluid passage means interconnecting said first pumping means and an outlet in said second compartment, a second pumping means including a second rotating housing attached to said rotating drum and being in axial alignment with said first pumping means and being disposed in said second compartment and being in fluid flow relationship with said separated liquid, liquid passage means interconnecting said second pumping means and an outlet formed in said second compartment and an energy recovery means disposed between said first pumping means and said second pumping means for reducing the power demand on the means for imparting rotary motion.

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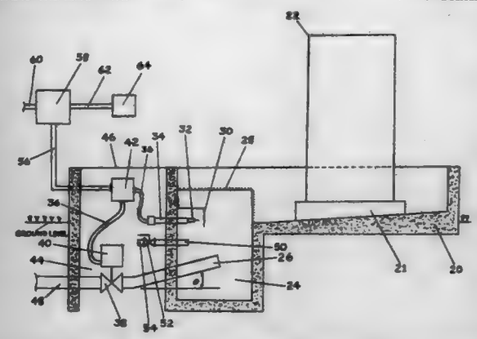
AUTOMATIC OIL SPILL CONTAINMENT SYSTEM WITH THERMAL DISPERSION CONTROL

James L. Entrekin, 4511 Old Tavern Rd., Birmingham, Ala. 35242

Filed May 16, 1994, Ser. No. 245,366

Int. Cl.[6] B01D *17/12*

U.S. Cl. 210—86 4 Claims



1. An automatic oil spill containment and water discharge system whereby oil is captured, and accumulated water is released, including, in combination:

a) a means for capturing spilled oil and water in a containment basin having an inlet water drain pipe and a sump and creating an interface between said oil and water;

b) a means for detecting the presence and location of said interface with a thermal dispersion interface control, having an interface probe portion of said control located at a predetermined level in the sump of said containment basin;

c) a piping means and said interface probe portion both being placed in relation to the inlet water drain pipe such that water may be drained from said containment basin without discharging any oil; and

d) a means for automatic fail safe controlling of a water drain valve, responsive to said means for detecting, and, connected to said inlet water drain pipe such that water is discharged and oil is retained in said containment basin.

2. The system, described in claim 1 wherein said means for detecting includes:

a) a single interface probe located at a predetermined level in said sump and

b) an interface control circuit board portion connected to said interface probe via a shielded electric cable, the interface control circuit board portion thus being able to distinguish between the presence of oil, water and air surrounding the interface probe due to the effect of the thermal dispersion properties of these fluids on two RTD's located in said interface probe, the circuit board portion operably connected to set point relays so as to control said water drain valve and an alarm.

5,484,523

ARRANGEMENT FOR A FILTER FOR THE PURIFICATION OF OIL

Aegir Björnsson, Vallgatan 17, Smögen, Sweden

PCT No. PCT/SE91/00266, § 371 Date Oct. 14, 1993, § 102(e) Date Oct. 14, 1993, PCT Pub. No. WO92/18219, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 15, 1991, Ser. No. 133,158

Int. Cl.[6] B01D *35/147*

U.S. Cl. 210—130 14 Claims

1. Filtration apparatus for purification of oil, comprising:

a housing, having an inlet and an outlet;

a rigid hollow core with an interior longitudinally mounted in said housing, said core having first and second ends;

filtration means for filtering said oil mounted about said hollow core, said filtration means being formed of cellulose filter paper wrapped tightly into a roll about said core and having a high pressure end adjacent the second end of said core and a low pressure end adjacent the first end of said core, said roll having an outer periphery;

bowl means formed of liquid impermeable material substantially engaging the outer periphery of said roll having an end portion positioned adjacent the low pressure end of said filtration means for flowing said oil through said housing so that said oil flows axially through said filtration means from said high pressure end to said low pressure end and radially outwardly to said hollow core;

wherein said high pressure end communicates with said inlet;

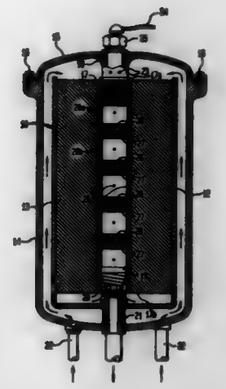
means for connection said low pressure end of said filtration means with said outlet;

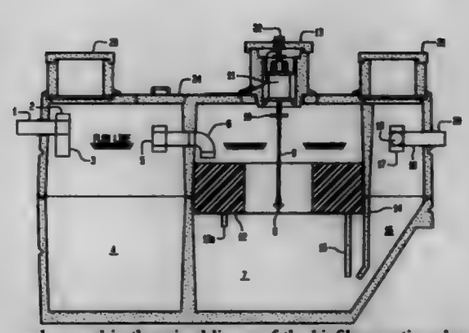
a plurality of sets of radial passages in said hollow core, said sets of radial passages being separated apart from one another longitudinally along said hollow core, said plurality of sets of radial passages extending between the interior of said hollow core and said filtration means;

plug means for closing the first end of said hollow core;

first valve means situated at said second end of said hollow core and adjacent the high pressure side of said filtration means for establishing fluid communication between said interior of said hollow core and said high pressure end of said filtration means; and

at least one overflow valve means mounted within said hollow core and separating said plurality of sets of radial passages into an upstream set between said second end of said hollow core and an upstream side of said overflow valve means and a downstream set between the first end of said hollow core and a downstream side of said overflow valve means, wherein said overflow valve means opens at a predetermined pressure differential between the upstream and downstream sides of said overflow valve means to permit oil flow through said upstream set of plurality of passages to said downstream set of plurality of passages.





submerged in the mixed liquor of the biofilm-aeration chamber, and biofilm growing on the submerged stationary biofilm support structure;

c) the aerator comprising a spinning subsurface aspirator adapted to cause a pressure differential to exist between the aspirator tip arm apertures and ambient air such that ambient air is drawn into the subsurface aspirator and expelled into the mixed liquor through the subsurface aspirator, the subsurface aspirator comprising a hollow aspirator tip, the aspirator tip comprising a hollow core, hollow arms protruding radially from the hollow core, and apertures at the tip of each hollow arm.

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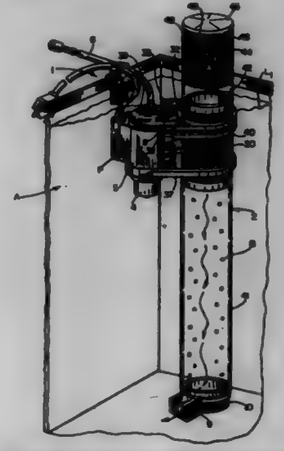
FOAM FRACTIONATION PROTEIN SKIMMER ASSEMBLY

Edmund J. Mowka, Jr., Mentor, Ohio, assignor to Aquarium Systems, Inc., Mentor, Ohio

Filed Jul. 13, 1994, Ser. No. 274,255

Int. Cl.[6] A01K *63/04*; C02F *1/24*

U.S. Cl. 210—169 25 Claims



1. An apparatus for removing organic waste material from water within an aquarium comprising an air/water contact column having plural chambers including a pump interface chamber having an external water intake port extending outwardly from said pump interface chamber, a contact chamber below said pump interface chamber having a bottom water outlet opening, and a foam concentration chamber above said foam interface chamber, a foam collection cup removably attached to an upper end of said foam concentration chamber, said water intake port having an opening of a width greater than the external width of said pump intact chamber, and an aerating water pump having a water discharge nozzle inserted into said opening in said external water intake port, said water discharge nozzle having a water discharge opening of a width substantially equal to the internal width of said pump inter-

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5,484,524

WASTEWATER TREATMENT APPARATUS

David S. MacLaren, Gates Mills, and Nianfa Tang, Richmond Hts., both of Ohio, assignors to JET, Inc., Cleveland, Ohio

Filed Feb. 1, 1993, Ser. No. 11,866

Int. Cl.[6] C02F *3/06*

U.S. Cl. 210—151 13 Claims

1. A biofilm-aeration plant for treating wastewater comprising:

a) a pre-treatment chamber wherein organic and inorganic solids are settled out of solution; and

b) a biofilm-aeration chamber, connected to the pre-treatment chamber and adapted to degrade organics and digest mixed liquor suspended solids, comprising an aerator, means for reducing the particle size of the suspended solids and dissolved organic matter, a stationary biofilm support structure

face chamber, said water discharge nozzle having an outer end terminating within said water intake port outwardly of the interior of said pump interface chamber, said aerating water pump including a pumping chamber, a water intake to said pumping chamber, means for controlling the water flow through said water intake into said pumping chamber, and means for supplying air to said water intake which varies in proportion to the water flow through said water intake.

5,484,526

MEMBRANE PLATE FOR PLATE FILTER PRESSES

Heinz Bonn, Kreuzau-Winden, Germany, assignor to Eberhard Hoesch & Söhne GmbH, Verfahrens- und Anlagentechnik, Düren, Germany

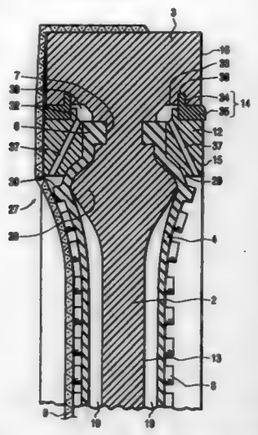
PCT No. PCT/EP91/01584, § 371 Date Feb. 5, 1993, § 102(e) Date Feb. 5, 1993, PCT Pub. No. WO92/21423, PCT Pub. Date Dec. 10, 1992

PCT Filed Aug. 21, 1991, Ser. No. 969,214

Claims priority, application Germany, Jun. 6, 1991, 4118620

Int. Cl.[6] B01D *25/168*

U.S. Cl. 210—229 **6 Claims**



1. In a membrane plate to be assembled with additional plates to form a filter press, the membrane plate comprising

a plate member composed of a plate wall having a peripheral region provided with a plate wall groove, and a plate frame surrounding said plate wall at said peripheral region; said plate frame having a plate frame lateral surface extending in a plane substantially parallel to and directed away from a plane of said plate wall, and a plate frame interior peripheral surface facing in a direction of said plate wall and being oriented generally perpendicularly to the plane of said plate frame lateral surface;

a flexible press membrane disposed adjacent at least one side of said plate wall to be acted upon by a pressure medium, said membrane having a continuous peripheral edge bead and being seated in said plate wall groove;

a holding frame covering said edge bead on a side of said edge bead directed away from said plate wall, said holding frame having a holding frame exterior peripheral surface facing toward said plate frame interior peripheral surface; and

connecting means for securing said holding frame to said plate frame and for permitting movement of said holding frame in a direction perpendicular to the plane of said plate wall between first and second positions; in said first position said holding frame being closer to said wall plate groove than in said second position;

the improvement wherein said connecting means comprises

a continuous peripheral groove in said plate frame interior peripheral surface;

a continuous, elastic member supported on said holding frame exterior peripheral surface; said elastic member comprising a continuous, elastic web projecting from said holding frame exterior peripheral surface and being received by said continuous peripheral groove;

securing means for securing said elastic member to said holding frame and wherein said membrane and said elastic member are formed of an elastomeric material having a shore hardness less than a shore hardness of said holding frame.

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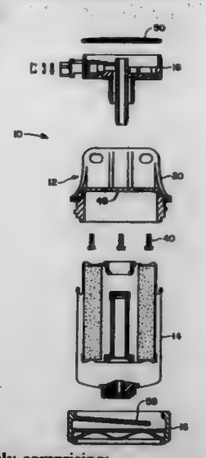
MODULE FOR FILTER ASSEMBLY BASE

Leon P. Janik, Suffield, and M. Craig Maxwell, Colchester, both of Conn., assignors to Stanadyne Automotive Corp., Windsor, Conn.

Filed Dec. 13, 1993, Ser. No. 166,226

Int. Cl.[6] B01D *35/30*

U.S. Cl. 210—232 **11 Claims**



1. A filter assembly comprising:

base means comprising a first module having an inlet, an outlet, and integral first and second axial conduits in fluid communication with said inlet and outlet respectively, said base means further comprising a second module formed separately of said first module, said second module having an aperture for receiving said first and second axial conduits, and joining means for joining said first module to said second module;

filter cartridge means engaging said base means and fluidically communicating with said base means via said first and second conduits, said cartridge means having filtering means for filtering a liquid which traverses a flow path through said filtering means from said first conduit;

and retainer means for lockably securing said cartridge means to said second module.

5,484,528

FILTRATION EQUIPMENT FOR HOLLOW FIBER MODULE

Masayoshi Yagi, Miyoshi, and Yoshio Sunaoka, Higashimatsuyama, both of, Japan, assignors to Organo Corporation, Tokyo, Japan

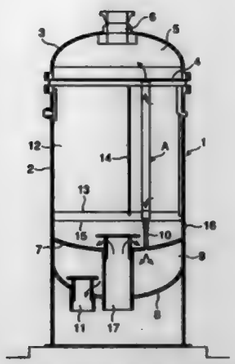
Filed Aug. 26, 1994, Ser. No. 296,834

Claims priority, application Japan, Sep. 13, 1993, 5-227259

Int. Cl.[6] B01D *63/00*

U.S. Cl. 210—321.8 **13 Claims**

1. Filtration equipment comprising a filter vessel, a first fluid-tight partition and a second fluid-tight partition horizontally disposed at upper and lower positions respectively remote from each other in said filter vessel to form a first compartment, a second compartment and a third compartment in this order from above, and a hollow fiber modules having upper and lower filtrate outlet



ports, vertically disposed in said second compartment, said hollow fiber modules are individually upward-detachably fixed in said filter vessel, and having the ends fitted in said partitions, and fluid tightly joined with a lower water collection tube communicating with said third compartment by means of jointing means capable of vertical elastic movement; an inlet connected to said second compartment, wherein fluid fed into said second compartment through said inlet is filtered through the walls of porous hollow fibers in said hollow fiber modules, while the filtrate is conducted in to said first compartment vin said upper filtrate outlet ports of said hollow fiber modules as into said third compartment via said lower filtrate outlet ports of said hollow fiber modules and said lower water collection tube, said filtrate collected in said first and third compartments is then discharged therefrom out of said vessel through outlet means.

5,484,529

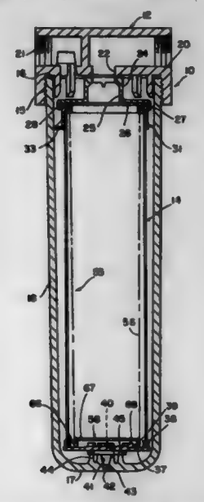
BAG FILTER SYSTEM WITH MULTIFILTER ADAPTABILITY

Dilip Malugade, Oostburg, and Mark A. Wessel, Sheboygan, both of Wis., assignors to Ametek, Inc., Plymouth Products Division, Sheboygan, Wis.

Filed Jun. 29, 1994, Ser. No. 268,206

Int. Cl.[6] B01D *29/27*

U.S. Cl. 210—448 **11 Claims**



1. In a filter system including a tubular housing and a removable and recloseable end cap for enclosing a replaceable tubular bag filter, which bag filter includes an open upper end defined by one of a rigid annular shape-retaining lip and a flexible annular end sleeve, and including a rigid foraminous tubular cage supported in the housing for enclosing and supporting the filter bag, said cage having annular upper and lower ends, the improvement comprising:

sealing means for holding the tubular cage between the bottom of the housing and the end cap, said sealing means including a compressible lower end seal between the annular lower end of the cage and the bottom of the housing and an upper end seal between the annular upper end of the cage and the end cap, said upper end seal and end cap being operative upon closure of said end cap to capture and seal the open end of the bag filter along the annular upper end of the cage.

5,484,530

SEPARATION OF ENANTIOMERS OF NON-STEROIDAL ANTI-INFLAMMATORY DRUGS AND CHIRAL SELECTOR THEREFOR

William H. Pirkle, Champaign; Christopher J. Welch, Northbrook, both of Ill., and Bo R. Lamm, Goteborg, Sweden, assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

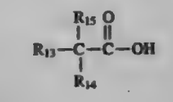
Division of Ser. No. 89,861, Jul. 9, 1993, Pat. No. 5,387,338, which is a division of Ser. No. 847,449, Mar. 9, 1992, Pat. No. 5,256,293, which is a continuation-in-part of Ser. No. 763,043, Sep. 20, 1991, abandoned. This application Oct. 11, 1994, Ser. No. 321,200

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—635 **45 Claims**

1. A process for separating enantiomers which comprises:

contacting a mixture of enantiomers of a first compound having a first and second optical configuration, said first compound having the formula

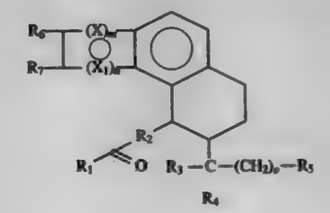


wherein

R_{13} is an aryl or a nitrogen, sulfur or oxygen containing heterocyclic moiety either of which may be unsubstituted or substituted with lower alkyl, lower alkoxy, aryl, alkoxyaryl, aralkyl, aryloxy, aroyl, alkanoyl, aralkanoyl or halogen, and

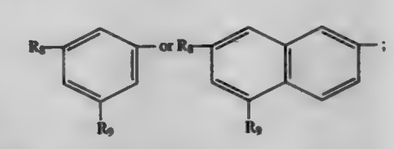
R^{14} and R^{15} are each independently hydrogen or lower alkyl,

with a chiral selector, said chiral selector being an R or S enantiomer of a compound having the formula



wherein

R_1 is



R_2 is O, S or NH;

R_3 and R_4 are each independently hydrogen or lower alkyl;

R_5 is hydrogen or $CH{=}CH_2$;

R_6 and R_7 are each independently hydrogen, lower alkyl or R_6 and R_7 are attached to form a 6 member aromatic ring;.
X is O, S, NH or CH;
X_1 is O, S, NH or CH;
m is 0 or 1;
n is 0 or 1; and
R_8 and R_9 are each independently NO_2, $N(R_{10})_3^+$, CN, $COOR_{11}$, SO_3H or COR_{12}, wherein R_{10}, R_{11} and R_{12} are each independently hydrogen or lower alkyl; and
o is 0 or an integer from 1 to 12, under conditions effective to form a complex between an enantiomer of said first compound having said first optical configuration and an enantiomer of said chiral selector; and recovering the non-complexed enantiomer of said first compound having said second optical configuration.

5,484,531

PROCESS FOR THE REMOVAL OF INORGANIC SALTS

Norbert Kuehne, Haan, Germany; Manfred Biermann, Cincinnati, Ohio; Jochen Jacobs, Wuppertal, and Ansgar Behler, Bottrop, both of, Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP93/00298, § 371 Date Oct. 17, 1994, § 102(e) Date Oct. 17, 1994, PCT Pub. No. WO93/15826, PCT Pub. Date Aug. 19, 1993
PCT Filed Feb. 8, 1993, Ser. No. 290,802
Claims priority, application Germany, Feb. 17, 1992, 42 04 700.5
Int. Cl.[6] B01D *61/00*
U.S. Cl. 210—653 **20 Claims**

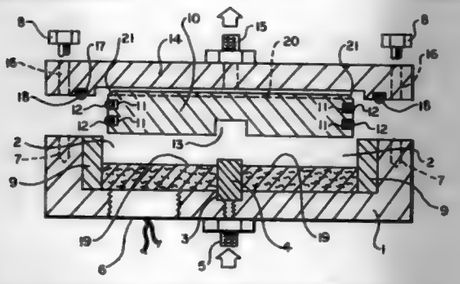
1. A process for the removal of inorganic salt from an aqueous mixture consisting essentially of said inorganic salt, and an organic composition caspable of micelle formation, said mixture containing the organic composition at a concentration above the critical micelle concentration, the process comprising: subjecting the aqueous mixture to ultrafiltration in an ultrafiltration membrane having a molecular weight cutoff higher than the molecular weight of the organic composition, and recovering the organic composition with a retentate and the inorganic salt with a permeate.

5,484,532

RADIAL FLOW CHROMATOGRAPHY

Richard G. Rice, Baton Rouge, La., assignor to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.

Division of Ser. No. 23,144, Feb. 24, 1993, Pat. No. 5,433,847, which is a continuation of Ser. No. 580,582, Sep. 11, 1990, which is a continuation-in-part of Ser. No. 430,495, Nov. 1, 1989, abandoned. This application May 30, 1995, Ser. No. 454,534
The portion of the term of this patent subsequent to Jul. 18, 2012, has been disclaimed.
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—656 **7 Claims**



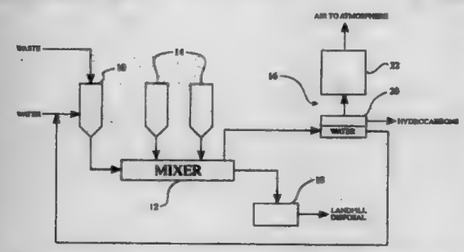
1. A process for separating at least two different species in a fluid, said process comprising the steps of:
(a) introducing the fluid containing the species into a bed, wherein the bed:
(i) has the shape of a right circular cylinder;
(ii) is comprised of sorbent particles, wherein the mean diameter of said particles is less than 300 micron, and wherein the distribution of said particles within said bed is substantially uniform; and
(iii) has a porosity less than thirty percent; and
(iv) wherein the gaps and dead volume in the bed are substantially less than are the gaps and dead volume in a comparable bed formed from the same type of particles, where the comparable bed is formed by dry-packing the particles as a powder; and
(b) driving the fluid through the bed in a radial direction, said radial driving being substantially uniform.

5,484,533

METHOD FOR THE STABILIZATION AND DETOXIFICATION OF WASTE MATERIAL

Paul Crawford, Bryan, and James Gafford, Ingleside, both of Tex., assignors to A.C.T. Partnership, Ltd.

Filed Jan. 4, 1994, Ser. No. 177,127
Int. Cl.[6] C02F *1/28*
U.S. Cl. 210—660 **19 Claims**



1. A process for the treatment of a slurry containing waste material comprising the steps of:
(a) mixing the slurry with a treatment composition containing natural zeolite seed selected from the group consisting of clinoptilolite, chabazite, heulandite, phillipsite, mordenite, and mixtures thereof; crystalline quartz; aluminum trihydrate; sodium carbonate or sodium hydroxide or potassium hydroxide or potassium carbonate, and dolomitic calcium oxide or calcium oxide or dolomitic limestone and dolomitic quicklime to form a treatment mixture including natural zeolite crystals and synthetic zeolite crystals; and
(b) adsorbing the waste material of the slurry within the natural zeolite crystals and synthetic zeolite crystals thereby producing stabilized waste material.

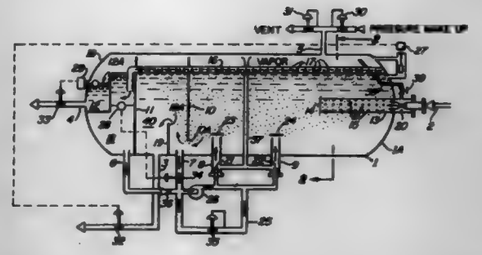
5,484,534

ENERGY CONSERVING METHOD OF WATER TREATMENT

Jerry M. Edmondson, 510 Canal St., Newport Beach, Calif. 92663

Filed Jul. 8, 1994, Ser. No. 273,005
Int. Cl.[6] B01D *17/035;* **C02F** *1/24;9/00*
U.S. Cl. 210—703 **3 Claims**

1. An improved method for removing finely dispersed oil and solids particles from water using induced gas flotation comprising:
providing a containment vessel having partitions dividing said vessel into multiple compartments for receiving and processing water containing finely dispersed oil and solids particles;
feeding said water with oil and solid particles therein to a first compartment of said vessel, said feed includes passing said water with oil and solid particles therein through a first venturi inductor means for inducing gas vapor into said water entering the containment vessel;



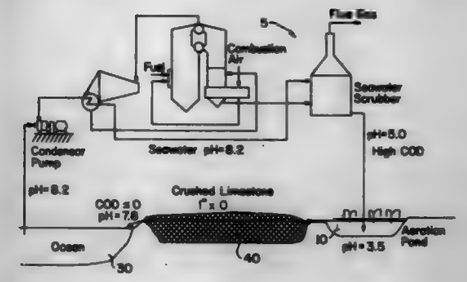
removing a portion of the processed water from a second compartment in the containment vessel for recycle with a pump;
pumping said portion of processed water from said second compartment through a second venturi inductor means for inducing gas vapor into said recycled portion of the water and feeding the gasified water from said second venturi means into said first compartment;
removing skimmings containing water, oil and solid particles collected at the upper surface of the water being processed, said skimmings removal occurring within said containment vessel;
delivering said skimmings into a third compartment within the containment vessel and separating the water from the oil and solids particles;
and circulating and commingling said separated water separated from the oil and solid particles in the third compartment with the said recycled water utilizing the same pump to circulate the commingled water back to said second venturi inductor means and into said first compartment.

5,484,535

SEAWATER EFFLUENT TREATMENT DOWNSTREAM OF SEAWATER SO_2 SCRUBBER

William Downs, Washington Township, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed May 19, 1994, Ser. No. 246,024
Int. Cl.[6] C02F *1/66;1/72*
U.S. Cl. 210—724 **12 Claims**



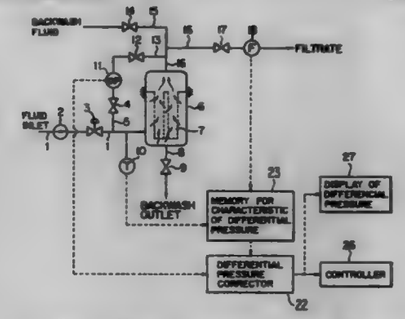
1. A method for treating effluent seawater produced by a flue gas desulfurization process utilizing seawater, the method comprising:
aerating the effluent seawater in an aeration pond;
channeling the aerated effluent seawater from said aeration pond through a limestone bed percolating channel having a height, a width and a length, and an upper surface exposed to the atmosphere, and then channeling said aerated effluent seawater to a natural seawater source.

5,484,536

FILTER BACKWASH CONTROL METHOD AND APPARATUS

Shinichi Yamaguchi, Kanagawa, and Sachio Doi, Yokosuka, both of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 945,952, Sep. 17, 1992, abandoned. This application Jul. 11, 1994, Ser. No. 272,621
Claims priority, application Japan, Sep. 17, 1991, 3-236311
Int. Cl.[6] B01D *24/46*
U.S. Cl. 210—741 **8 Claims**



1. In a filter, a method of backwashing a filter medium in response to a pressure difference across the same, which comprises:
(a) constantly monitoring a pressure difference, across a filter medium of a fluid being filtered by constantly monitoring a pressure difference between fluid entering the filter medium on an upstream side of the filter medium and fluid which has passed through the filter medium on a downstream side of the filter medium;
(b) constantly monitoring the temperature and flow rate of the fluid;
(c) memorizing pressure difference characteristics of the filter at various temperatures and flow rates of the fluid including a pressure difference characteristic at a rated temperature and rated flow rate of the fluid;
(d) computing a correction coefficient by comparing the pressure difference characteristic at the monitored temperature and monitored flow rate of the fluid with the pressure difference characteristic at the rated temperature and rated flow rate of the fluid;
(e) correcting the monitored pressure difference by the correction coefficient in order to obtain a corrected pressure difference at the rated temperature and rated flow rate of the fluid; and
(f) backwashing the filter medium when the corrected pressure difference rises to a set value.

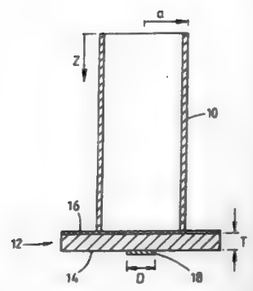
5,484,537

PARTICLE MANIPULATION IN AN ULTRASONIC FIELD

Glenn Whitworth, Marlboro, N.H., assignor to Public Health Laboratory Service Board, Great Britain

PCT No. PCT/GB91/00373, § 371 Date Nov. 16, 1992, § 102(e) Date Nov. 16, 1992, PCT Pub. No. WO91/13674, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 8, 1991, Ser. No. 927,647
Claims priority, application United Kingdom, Mar. 14, 1990, 9005705
Int. Cl.[6] B01D *43/00*
U.S. Cl. 210—748 **23 Claims**

1. Apparatus adapted for manipulation of particles in an ultrasonic field, comprising a chamber containing the particles in fluid suspension, the chamber being at least in part defined by a cylindrical pressure-release wall acoustic transducer means adapted to generate an acoustic wave, with an acoustic wavelength, along the cylindrical axis through excitation of a single acoustic mode; and transducer drive means, the arrangement being such that on exci-



tation, the particles are radially displaced symmetrically of the cylindrical axis wherein the mean dimension of the cylindrical wall perpendicular to the cylindrical axis is greater than five times said acoustic wavelength.

5,484,538

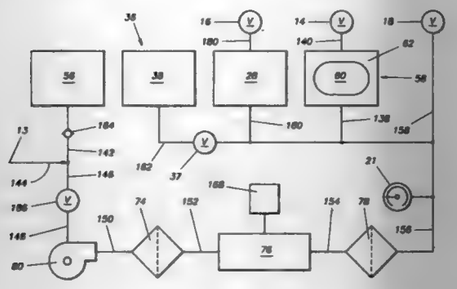
MULTIPLE SERVICE WATER PURIFIER AND DISPENSER AND PROCESS OF PURIFYING WATER

Mark S. Woodward, Longview, Tex., assignor to Texavia International, Inc., Longview, Tex.

Filed Sep. 14, 1993, Ser. No. 120,979

Int. Cl.[6] B01D *37/00;63/00*

U.S. Cl. 210—767 **13 Claims**



12. A multiple service water purifier and dispensing system for purified water comprising a housing containing:

conduit means for receiving input water;

means for moving the water through said conduit;

means for filtering solids from the water, disinfecting the water, and removing chemical contaminants from the water connected in any order in series arrangement relationship to said conduit to purify the water;

means for dispensing the purified water at room temperature connected to said conduit downstream of said serial arrangement of said filtering, disinfecting and chemical contaminant removing means;

means for heating the purified water and dispensing the heated purified water connected to said conduit downstream of said serial arrangement of said filtering, disinfecting and chemical removing means;

chiller unit means for chilling the purified water and dispensing the chilled purified water connected to said conduit downstream of said serial arrangement of said filtering, disinfecting and chemical contaminant removing means; and

freezer unit means for making ice from the purified water and storing and dispensing the purified ice connected to said conduit downstream of said serial arrangement of said filtering, disinfecting and chemical contaminant removing means,

wherein the chiller and freezer unit means operatively share a single refrigeration system.

5,484,539

PROCESS FOR FILTERING POLYMER MELTS WITH DEAD SPOT REDUCTION

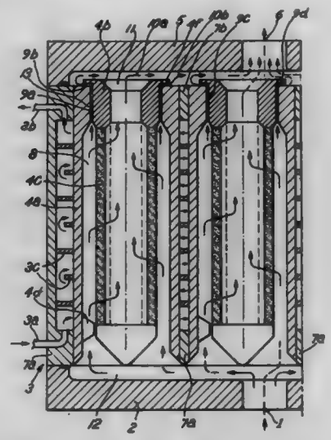
Paul Tersi, Altenstadt; Wolfgang Briegel, Hanau; Dieter Cermak, Friedrichsdorf, and Michael Schulze, Offenbach am Main, all of, Germany, assignors to Zimmer Aktiengesellschaft, Germany

Division of Ser. No. 252,753, Jun. 2, 1994. This application Mar. 30, 1995, Ser. No. 413,686

Claims priority, application Germany, Nov. 8, 1993, 43 38 129.4

Int. Cl.[6] B01D *35/18*

U.S. Cl. 210—774 **8 Claims**



1. A process for polymer melt filtration comprising

providing a filtration apparatus comprising a plurality of vertically-disposed, closely-spaced heat exchanger pipes surrounded by a heat carrier fluid, each pipe enclosing a filter cartridge radially spaced therefrom to form an annular space around each cartridge, said annular space terminating at its upper end in a plurality of narrow channels,

charging molten polymer upwardly into said annular space,

dividing said molten polymer in each pipe into a primary stream and a secondary stream,

passing said primary stream laterally through said cartridge and out the upper end of said cartridge,

passing said secondary stream upwardly through said narrow channels,

combining said primary and secondary streams flowing from said plurality of pipes, and

discharging said combined streams from the upper end of said filtration apparatus,

said secondary stream constituting between 0.03 and 3.0 wt. % of

the total weight of the combined streams.

5,484,540

CONCENTRATED FABRIC SOFTENING COMPOSITIONS

Bruno A. J. Hubesch, Tervuren, Belgium, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US92/00661, § 371 Date Dec. 10, 1993, § 102(e) Date Dec. 10, 1993, PCT Pub. No. WO92/15745, PCT Pub. Date Sep. 17, 1992

PCT Filed Jan. 30, 1992, Ser. No. 178,243

Claims priority, application European Pat. Off., Mar. 8, 1991, 91200507; Jul. 3, 1991, 91870105; Nov. 22, 1991, 91870187

Int. Cl.[6] D06M *13/17;13/352;13/46*

U.S. Cl. 252—8.8 **13 Claims**

1. A concentrated aqueous fabric softening composition comprising from 10% to 35% by weight of a cationic fabric softening

active comprising a mixture of ditallow dimethyl ammonium chloride and ditallow imidazoline, said composition further comprising

from 0.3% to 3% by weight of the total composition of a linear fatty alcohol ethoxylate of the formula $RO(Etox)_n$, wherein R is a linear C_8–C_{18} alkyl chain, and n representing the weighted average ethoxylation degree is of from 8 to 10, or mixtures thereof;

from 0.5% to 6% by weight of the total composition of a nonionic hydrophilic polymer selected from the group consisting of polyethylene glycol having a molecular weight of from 2,000 to 10,000; and

from 0 to 0.5% by weight of the total composition of a linear or cyclic polydialkylsiloxane of the formula:

$$R—[—SiR_2—O—]_m—SiR_3$$

wherein R is a C_1–C_5 alkyl chain, and m is an integer of from 1 to 500, or mixtures thereof.

5,484,541

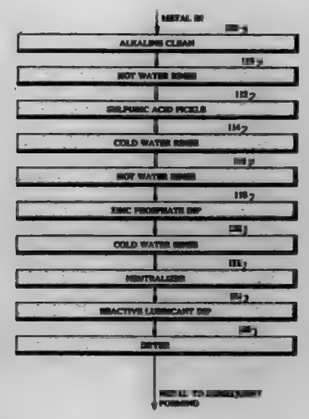
PROCESS AND PRODUCT FOR LUBRICATING METAL PRIOR TO COLD FORMING

Gerald W. Przybylski, Naperville, Ill.; Patrick J. Connor, Brighton, and David W. Peters, Rochester, both of Mich., assignors to Century Chemical Corporation, Naperville, Ill.

Filed May 17, 1994, Ser. No. 245,244

Int. Cl.[6] C10M *129/40*

U.S. Cl. 252—17 **35 Claims**



1. A composition for lubricating a metal workpiece prior to cold forming, the composition consisting essentially of:

an aqueous alkaline stearate compound adapted to, and present in an amount sufficient to impart metal lubrication between about 180° F. and about 320° F.;

an aqueous alkaline palmitate compound adapted to, and present in an amount sufficient to impart metal lubrication below about 160° F.;

an aqueous metallic stearate compound adapted to, and present in an amount sufficient to impart metal lubrication between about 320° F. and 440° F.;

a polymeric glycol adapted to, and present in an amount sufficient to provide temperature stability, act as a carrier for the aqueous compounds, and impart a waxy lubrication to the metal;

a compound adapted to, and present in an amount sufficient to act as a carrier for the aqueous compounds and to provide a translucent film barrier on the metal;

an alkaline buffering agent adapted to, and present in an amount sufficient to provide dispersion, viscosity and stability; and

a hydrotropic agent adapted to, and present in an amount sufficient to solubilize the lubricating composition.

5,484,542

SULFURIZED OVERBASED COMPOSITIONS

John M. Cahoon, Mentor; Jack L. Kara, Richmond Hts.; Nai Z. Huang, Mayfield Hts., and James P. Roski, Euclid, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 940,594, Sep. 4, 1992, abandoned. This application Sep. 26, 1994, Ser. No. 312,428

Int. Cl.[6] C10M *159/20;159/24*

U.S. Cl. 252—18 **48 Claims**

1. A composition comprising at least one sulfurized overbased product made by contacting (A) at least one overbased product with (B) sulfur and/or at least one source of sulfur selected from the group consisting of a sulfur halide, a combination of sulfur or a sulfur oxide with hydrogen sulfide, and a sulfurized organic compound;

said overbased product (A) being made using at least one acidic material and at least one organic material to be overbased, with the proviso that when said acidic material is other than SO_2 or a source of SO_2 said overbased product (A) is contacted with an effective amount of SO_2 or a source of SO_2 to displace at least part of said acidic material, and wherein said organic material to be overbased is at least one sulfur containing acid other than a phosphorus containing acid.

5,484,543

AMIDE CONTAINING FRICTION MODIFIER FOR USE IN POWER TRANSMISSION FLUIDS

John E. Chandler, Edison; Antonio Gutierrez, Mercerville; Jack Ryer, East Brunswick; Yasuhiko Yoneto, Fujisawa; Ricardo A. Bloch, Scotch Plains; Raymond F. Watts, Long Valley, and Robert D. Lundberg, Bridgewater, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 31,937, Mar. 15, 1993, Pat. No. 5,395,539, which is a continuation of Ser. No. 425,939, Oct. 24, 1989, abandoned, which is a continuation-in-part of Ser. No. 261,640, Oct. 24, 1988, abandoned. This application Nov. 18, 1994, Ser. No. 342,067

Int. Cl.[6] C10M *133/16;135/22*

U.S. Cl. 252—51.5 A **10 Claims**

1. Amine salt composition derived from the reaction of at least one Component-1 amine with at least one Component-2 acid wherein:

A. Component-1 is at least one reaction product derived from reacting:

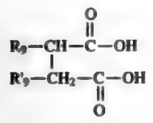
(i) amine having from about 2 to about 60 total carbon atoms, at least 2 and up to about 15 nitrogen atoms, with at least one of said nitrogen atoms being present in the form of a primary amine group, and at least one of the remaining nitrogen atoms being present as primary or secondary amine groups, and

(ii) aliphatic mono acid having from about 10 to about 30 carbon atoms; said reaction being conducted in a manner and under conditions sufficient to (a) react at least one amine group of reactant A-i amine with the acid group of reactant A-ii acid to form an amide and (b) provide the resulting Component-1 reaction product with at least one reactive primary or secondary amine group; and

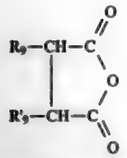
B. Component-2 is the reaction product derived from reacting:

(i) alcohol represented by the structural formula: wherein R_6 and R_7 each independently can represent hydrogen or C_1 to C_6 alkyl; (a), (b), (c), and (d) each independently represent a number which can vary from 1 to about 3; and Z represents a linking group selected from —S—, —S—S—, —O—, and $>NR_8$ wherein R_8 can represent hydrogen, C_1 to about C_4 alkyl, or C_1 to about C_4 monohydroxy substituted alkyl; and

(ii) from about 1 to about 2 moles per mole of alcohol of an acid or anhydride represented by the respective structural formulas:



and



wherein R'_9 is hydrogen C_1 to C_6 aliphatic hydrocarbyl, R_9 is an aliphatic hydrocarbyl group containing from about 12 to about 50 carbons; said reaction being conducted in a manner and under conditions sufficient to (a) react at least one hydroxy group of reactant B-i with at least one carboxyl group of reactant B-ii to form ester and (b) provide the resulting Component-2 reaction product with at least one reactive carboxyl group.

5,484,544

LUBRICATING COMPOSITION, PREPARATION PROCESS AND APPLICATIONS, PARTICULARLY AS AN ADDITIVE IN OILS

Guy Dion Biro, 48, avenue du Château, 94300 Vincennes, and Renan de Bona Biro, 7, rue du Dôme, 75116 Paris, both of, France

PCT No. PCT/FR92/00641, § 371 Date Apr. 20, 1994, § 102(e) Date Apr. 20, 1994, PCT Pub. No. WO93/01262, PCT Pub. Date Jan. 21, 1993

PCT Filed Jul. 6, 1992, Ser. No. 170,356

Claims priority, application European Pat. Off., Jul. 5, 1991, 91401865

Int. Cl.[6] C10M *171/00;* **C08J** *3/09*

U.S. Cl. 252—54 **26 Claims**

1. Lubricating particles comprising solid particles of fluorinated (co)polymer of a size less than or equal to 1 μm coated with an ethoxylated nonylphenol having 10 to 12 ethylene oxide molecules and in that it is substantially anhydrous and miscible with lubricating oil.

5,484,545

MAGNETIC PARTICLES FOR MAGNETIC RECORDING MEDIUM AND PROCESS FOR PRODUCING THE SAME

Kazuyuki Hayashi; Minoru Ohsugi; Hiroko Morii, and Norio Sugita, all of Hiroshima, Japan, assignors to Toda Kogyo Corporation, Hiroshim, Japan

Filed Nov. 10, 1993, Ser. No. 149,834

Claims priority, application Japan, Nov. 11, 1992, 4-327322

Int. Cl.[6] C04B *35/26;* **B32B** *18/00*

U.S. Cl. 252—62.58 **13 Claims**

1. Magnetic particles for magnetic recording which comprise

(a) magnetic particles selected from the group consisting of acicular and lamellar magnetic particles of acicular magnetic iron oxide particles, acicular magnetic iron oxide particles containing a metal other than Fe, acicular magnetic iron oxide particles coated with a Co compound, acicular magnetic metal particles containing iron, fine lamellar Ba ferrite particles, fine lamellar Sr ferrite particles, fine lamellar Ba-Sr ferrite particles and mixtures thereof, and

(b) not less than 0.01 wt %, calculated as Al, SiO_2 or Al and SiO_2, based on said magnetic particles, of ultrafine particles composed of an oxide or hydroxide containing Al, Si or both Al and Si and adhered to the surfaces of said magnetic particles;

wherein said magnetic particles have not less than 0.50 of a molecular-weight-dependent parameter α represented by the formula (I):

$$As=K_1 \cdot M^{\alpha} \quad (I)$$

where M represents a number-average molecular weight of a binder, As represents a saturation adsorption of the binder, and K_1 represents a constant dependent on the binder and a solvent used for measuring As.

5,484,546

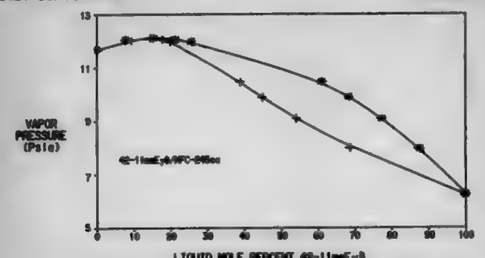
REFRIGERANT COMPOSITIONS INCLUDING AN ACYLIC FLUOROETHER

Barbara H. Minor, Elkton, Md.; Tuneen E. C. Chisolm, Newark, and Glenn S. Shealy, Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 64,183, May 19, 1993, abandoned. This application May 13, 1994, Ser. No. 242,511

Int. Cl.[6] C09K *5/04;3/30;* **C08J** *9/14;* **C11D** *7/50*

U.S. Cl. 252—67 **9 Claims**



1. An azeotropic or azeotrope-like composition consisting essentially of about 1 to about 60 weight percent 1,1,1,2,2,3,3-heptafluoro-3-(1,2,2,2-tetrafluoroethoxy)propane and about 40 to about 99 weight percent of 1,1,2,2,3-pentafluoropropane wherein said composition has a vapor pressure of about 15 psia at 25° C.

2. An azeotropic or azeotrope-like composition consisting essentially of about 1 to about 30 weight percent 1,1,1,2,2,3,3-heptafluoro-3-(1,2,2,2-tetrafluoroethoxy)propane and about 70 to about 99 weight percent of 1,1,1,2,3-pentafluoropropane wherein said composition has a vapor pressure of about 16.4 psia at 25° C.

3. An azeotropic or azeotrope-like composition consisting essentially of 98–99 weight percent 1,1,1,2,2,3,3-heptafluoro-3 (1,2,2,2-tetrafluoroethoxy)propane and 1–2 weight percent of 1,1,1,2,3-pentafluoropropane wherein said composition has a vapor pressure of about 8.5 to 9 psia at 25° C.

5,484,547

LOW TEMPERATURE HEAT TRANSFER FLUIDS

Abel Mendoza, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 861,056, Apr. 1, 1992, abandoned. This application Jan. 7, 1994, Ser. No. 178,592

Int. Cl.[6] C09K *15/00*

U.S. Cl. 252—73 **7 Claims**

1. A heat transfer fluid consisting essentially of

(1) from 30 to 60 weight percent of a glycol component selected from the group consisting of propylene glycol, glycerol, 1,3-butanediol, diethylene glycol and triethylene glycol;

(2) from 10 to 60 weight percent of a second component selected from the group consisting of 1,3-dixolane, 2,2-dimethyl-1,3-dioxolane, glycerol formal, and solketal and 1,3-dioxanes;

(3) from 0 to 50 weight percent of a third component selected form the group consisting of urea, imidazole and alkali metal salts;

(4) from 0 to 30 weight percent of a C_{1-3} alcohol; and

(5) optionally, corrosion inhibitors in addition to any urea or alkali metal salts which may be present as part of the third component.

5,484,548

LOW-FOAM SCOURING POWDER

Eva Kiewert; Lothar Pioch, both of Duesseldorf; Wolfgang Seiter, Neuss, and Winfried Wichelhaus, Mettmann, all of, Germany, assignors to Henkel Kommanditgesellschft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP91/02451, § 371 Date Jul. 29, 1993, § 102(e) Date Jul. 29, 1993, PCT Pub. No. WO92/13936, PCT Pub. Date Aug. 20, 1992

PCT Filed Dec. 19, 1991, Ser. No. 94,141

Claims priority, application Germany, Jan. 30, 1991, 41 02 744.2

Int. Cl.[6] C11D *3/22*

U.S. Cl. 252—179.17 **19 Claims**

1. A low-foaming scouring powder comprising

A) from 70 to 99% by weight of an abrasive;

B) from 0.5 to 15% by weight of a surfactant component comprising at least one anionic, nonionic, or amphoteric surfactant wherein from 2 to 100% thereof is at least one alkyl glycoside having a degree of oligomerization of from 1.2 to 1.4; and

C) balance to 100% by weight of other components compatible with scouring powders.

5,484,549

POTENTIATED AQUEOUS OZONE CLEANING COMPOSITION FOR REMOVAL OF A CONTAMINATING SOIL FROM A SURFACE

Robert D. Hei, Cottage Grove; Thomas R. Oakes, Lake Elmo, and Guang-jong J. Wei, Mendota Heights, all of Minn., assignors to Ecolab Inc., St. Paul, Minn.

Filed Aug. 30, 1993, Ser. No. 114,193

Int. Cl.[6] C11D *3/395;7/06;7/54*

U.S. Cl. 252—103 **18 Claims**

1. A composition for cleaning inorganic or organic soil from a surface, the composition comprising:

(a) an aqueous medium;

(b) at least about 100 parts of a Lewis base per million parts by weight of the composition; and

(c) an effective concentration of ozone sufficient to produce an oxidation-reduction potential of at least +350 mV with respect to an Ag/AgCl reference electrode.

5,484,550

MATERIALS EXHIBITING LARGE NON-LINEAR OPTICAL PROPERTIES

Mark Warner, Cambridge, England, assignor to Non-Linear Optics Limited, Jersey, Channel Islands

Continuation-in-part of Ser. No. 689,797, May 21, 1991, abandoned. This application Feb. 28, 1994, Ser. No. 202,547

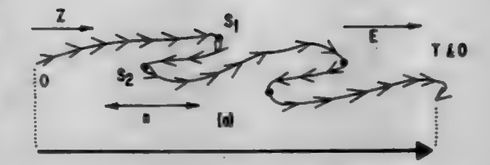
Claims priority, application United Kingdom, Nov. 26, 1988, 8827664

Int. Cl.[6] C09K *19/52*

U.S. Cl. 252—299.01 **12 Claims**

1. A main-chain polymeric nematic liquid crystal material having both a non-linear optical (NLO) response and poling orderability, comprising:

a semi-flexible polymeric backbone and stereo-regular, like-oriented elements incorporated in said polymer backbone, said elements comprising:



(a) a plurality of NLO elements, and

(b) dipolar elements,

wherein the like orientation of said elements is capable of being retained and reversed by migration of dipole-reversing molecular defects along said polymer backbone.

5,484,551

SUBSTITUTED PHENYL 4-[(E)-ALK-2-ENOYLOXY]BENZOATES

Stephen Kelly, Möhlin, and Martin Schadt, Seltisberg, both of, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

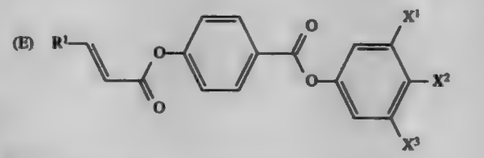
Filed May 12, 1995, Ser. No. 439,618

Claims priority, application Switzerland, Jun. 29, 1994, 2067/94

Int. Cl.[6] C09K *19/20;* **C07C** *255/00;69/76;25/13*

U.S. Cl. 252—299.67 **20 Claims**

15. A liquid crystalline mixture comprising at least two components, wherein at least one component is a compound of the formula



wherein

R^1 is alkyl with 1 to 12 carbon atoms;

X^1, X^3 each independently is halogen or hydrogen; and

X^2 is halogen or cyano.

5,484,552

ENCAPSULATED LIQUID CRYSTAL STRUCTURES, APPARATUS CONTAINING THE SAME, AND METHODS THEREFOR

Mark F. Wartenberg, San Jose; Harriette Atkins, Mt. View; Robert H. Reamey, Palo Alto; Laurence Welsh, San Carlos; James Strain, Newark; Janusz Wójtowicz, Palo Alto; Wayne Montoya, Newark; Paul S. Drzaic, Palo Alto; John Havens, Menlo Park; Akira Tomita, Redwood City, and Aldrich N. K. Lau, Palo Alto, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 28,497, Mar. 9, 1993, Pat. No. 5,427,713, which is a continuation-in-part of Ser. No. 850,378, Mar. 10, 1992, abandoned. This application Apr. 4, 1995, Ser. No. 416,555

Int. Cl.[6] C09K *19/54;* **G02F** *1/13*

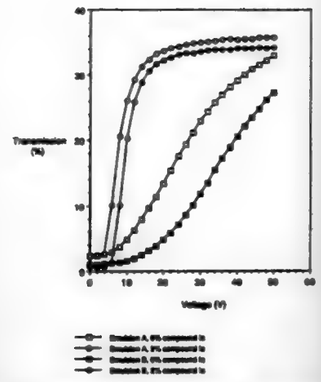
U.S. Cl. 252—299.5 **8 Claims**

1. A liquid crystal device having a reduced operating field E_{50}, comprising

a first electrode;

a second electrode, at least one of the first and second electrodes being transparent; and

an encapsulated liquid crystal structure between the electrodes, comprising (a) a containment medium; (b) a liquid crystal composition dispersed in the containment medium; and (c) additive means which reduces the operating field E_{50} of the



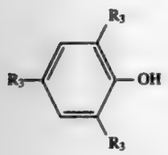
device by at least 10%; the additive means being selected from the group consisting of:
(i) a diol of the structure



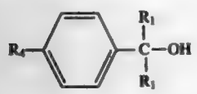
or diester thereof, where each R_1, which may be the same or different, is hydrogen or a C_1–C_{18} alkyl or fluoroalkyl group and R_2 is a divalent moiety selected from the group consisting of



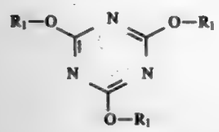
(ii) a phenolic compound of the structure



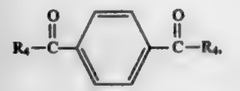
where each R_3, which may be the same or different, is hydroxyl or a C_1–C_{18} alkyl or fluoroalkyl group;
(iii) a substituted benzylic alcohol of the structure



where each R_1, which may be the same or different, is as previously defined and R_4 is a C_1–C_{18} alkyl, hydroxyalkyl, or fluoroalkyl group;
(iv) a cyanurate compound of the structure



where each R_1, which may be the same or different, is as previously defined;
(v) a C_5 to C_{20} hydrocarbon or fluorinated alcohol;
(vi) a diketone of the structure



where R_4 is as previously defined; and
(vii) a C_5–C_{20} carboxylic acid.

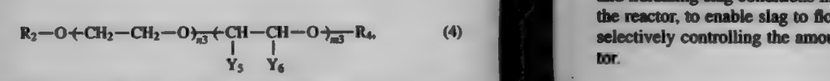
5,484,553

AQUEOUS, STORABLE WETTING AGENT WHICH IS LOW-FOAMING IN APPLICATION

Christian Guth, Birsfelden, Switzerland, and Albert Stehlin, Rosenau, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

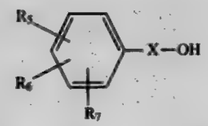
Continuation of Ser. No. 47,887, Apr. 15, 1993, abandoned, which is a continuation of Ser. No. 586,094, Sep. 19, 1990, abandoned. This application Dec. 8, 1993, Ser. No. 163,612
Claims priority, application Switzerland, Sep. 26, 1989, 3478/89
Int. Cl.[6] B01F *17/02;17/42*
U.S. Cl. 252—351 **6 Claims**

1. An aqueous storable wetting agent which is low-foaming in application consisting essentially of
(a) 10 to 80% by weight of a nonionic surfactant of the general formula

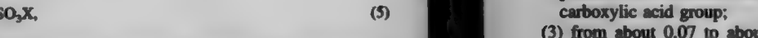


(4)

in which R_2 is C_9-to C_{14}alkyl, R_4 is hydrogen or C_1-to C_4alkyl, one of the radicals Y_5 and Y_6 is hydrogen and the other is ethyl, n_3 is an integer from 4 to 8 and m_3 is an integer from 1 to 3;
(b) 1 to 10% by weight of a hydrotropic agent selected from the group consisting of aromatic alcohols of the formula



in which X is $-(CH_2)_{1-6}-$, $-CH=CH-CH_2-$ or $-O-(CH_2)_{2-6}-$ and R_5, R_6 and R_7, independently of one another, are hydrogen, hydroxyl, halogen or C_1–C_6alkoxy; and alkyl sulfates of the formula



(5)

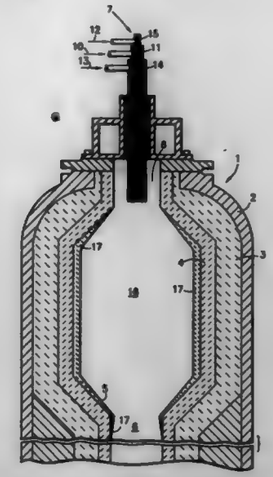
in which R_8 is an aliphatic, saturated, branched or straight-chain radical of 4 to 24 carbon atoms and X is hydrogen, an alkali metal or ammonium;
(c) 0 to 4% by weight of an nonpolar organic solvent; and
(d) water to add up 100%.

5,484,554

OXIDANT INJECTION FOR IMPROVED CONTROLLED OXIDATION

Dinh-Cuong Vuong, Nederland, Tex.; Donald D. Brooker, Junction, N.Y.; James S. Faisetti, New Fairfield, Conn., and James K. Wolfenbarger, Torrance, Calif., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 6,028, Jan. 15, 1993, Pat. No. 5,338,489. This application Aug. 15, 1994, Ser. No. 290,218
Int. Cl.[6] C01B *3/22;3/24*
U.S. Cl. 252—373 **14 Claims**



1. In a process for removing slag from a partial oxidation reactor under conditions of controlled oxidation wherein derivatizing agent is provided to derivatize the slag at a temperature sufficient to fluidize the derivatized slag to flow out of said reactor, the improvement which comprises selectively derivatizing and fluidizing slag in a first predetermined portion of the reactor to enable slag removal at a first rate of flow, while limiting the derivatizing and fluidizing slag conditions in a second predetermined portion of the reactor, to enable slag to flow at a second rate of flow, thereby selectively controlling the amount of slag removal from said reactor.

5,484,555

METHOD FOR CREATING A PH JUMP SYSTEM

Frederik Schepers, Breukelen, Netherlands, assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 945,188, Sep. 15, 1992, abandoned. This application Mar. 24, 1994, Ser. No. 217,538
Int. Cl.[6] C11D *3/26;3/28;3/30;3/33*
U.S. Cl. 252—541 **11 Claims**

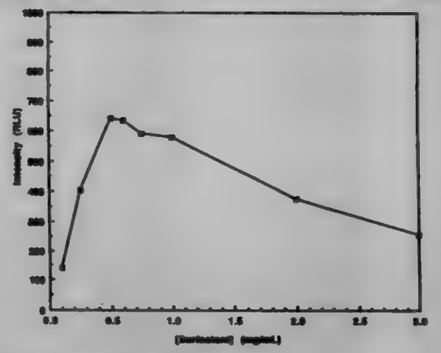
1. A method for creating a pH jump system while cleaning fabric or hard surfaces comprising using a composition which comprises:
(1) 5% to 90% by wt. of a detergent surfactant selected from the group consisting of soap,anionic,nonionic, amphoteric and zwitterionic surfactants and mixtures thereof.
(2) from about 0.05 to about 50% by weight of an N-containing compound selected from the group consisting of ammonia,primary amines, secondary amines, tertiary amines and compounds which contain both a nitrogen atom and at least one carboxylic acid group;
(3) from about 0.07 to about 25% by weight of a metal salt comprising metal cation and an anion wherein the metal cation is selected from the group consisting of Zn^{2+}, Al^{3+}, Mn^{2+}, Mn^{3+}, Mn^{4+}, Fe^{2+} and Fe^{3+} and wherein the anion is any anion suitable to deliver the cation to the solution; said metal cation comprising from 0.070% to 25% by weight of the composition;
wherein the molar ratio of metal cation to N-containing compound is from 0.1 to 2.0;
wherein the pH of the undiluted solution is 5.0 to 8.0;
wherein said method comprises diluting the composition in an aqueous washing liquor such that the pH of the composition increases at least 0.5 pH units when diluted in said water, said dilution being such that there is at least 0.5 g/l aqueous solution.

5,484,556

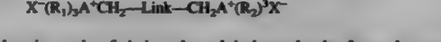
METHODS AND COMPOSITIONS PROVIDING ENHANCED CHEMILUMINESCENCE FROM CHEMILUMINESCENT COMPOUNDS USING DICATIONIC SURFACTANTS

M. Hashem Akhavan-Tafti, and Zahra Arghavani, both of Sterling Heights, Mich., assignors to Lumigen, Inc., Southfield, Mich.

Division of Ser. No. 82,091, Jun. 24, 1993, Pat. No. 5,451,347. This application May 16, 1995, Ser. No. 442,303
Int. Cl.[6] C09K *3/00*
U.S. Cl. 252—700 **14 Claims**



1. A composition which comprises:
(a) a light producing molecule which is activatable to produce chemiluminescence; and
(b) an enhancer which is a compound which comprises:



wherein each of A is selected independently from the group consisting of phosphorus and nitrogen atoms, wherein X is an anionic counterion, R_1 and R_2 are selected from the group consisting of alkyl and aralkyl groups containing up to 20 carbon atoms and R_1, and R_2 are different, and wherein Link is a carbon chain group selected from the group consisting of dialkylenearyl, aryl, alkylene, alkenylene and alkynylene groups containing 4 to 20 carbon atoms.

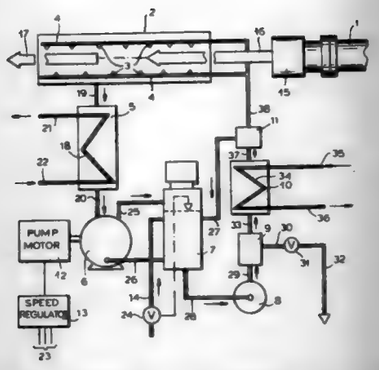
5,484,557

METHOD OF AND APPARATUS FOR THE COOLING OF EXTRUDED PLASTIC PROFILES OR SECTIONS

Hans Groeblacher, Feasterville, Pa., assignor to Mikron Industries, Kent, Wash.

Filed Oct. 5, 1993, Ser. No. 131,714
Int. Cl.[6] B29C *47/90*
U.S. Cl. 264—37 **24 Claims**

1. A method of cooling a hot extruded thermoplastic section, comprising the steps of:
(a) enclosing the hot extruded thermoplastic section to be cooled in a vacuum tank;
(b) generating a selected subatmospheric isobaric pressure in said tank at which liquid water sprayed onto the extruded section will vaporize;



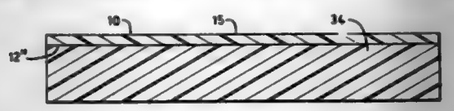
(c) spraying a sufficient amount of liquid water into said tank and onto the extruded section to vaporize the liquid water to produce water vapor within said tank and cool the extruded section to a rigid state while within said tank at said selected pressure;
(d) withdrawing from said tank said water vapor produced in said tank and condensing said withdrawn water vapor in sufficient amounts to maintain said selected pressure in said tank during the cooling of the extruded section, thereby producing condensed water; and
(e) using said condensed water as at least part of said liquid water sprayed in step (c) onto the extruded section.

5,484,558

METHOD FOR MAKING FLEXIBLE TRANSDUCERS FOR USE WITH PHOTON TUNNELING MICROSCOPES

John M. Guerra, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 981,270, Nov. 25, 1992, Pat. No. 5,349,443. This application May 20, 1994, Ser. No. 246,797
Int. Cl.[6] B29D *11/00*
U.S. Cl. 264—1.240 **15 Claims**



1. A method for making a transparent, flexible optical transducer for use with a photon tunneling microscope having an objective lens with a predetermined field of view in measuring the macrotopography of a sample surface, said method comprising the steps of:
providing a rigid substrate having an optically smooth surface that is larger than the field covered by said microscope objective lens;
covering said smooth surface of said substrate with a curable material that is ten micrometers or more in thickness;
curing said material on said substrate to solidify it; and
peeling said material from said substrate to provide said transducer.

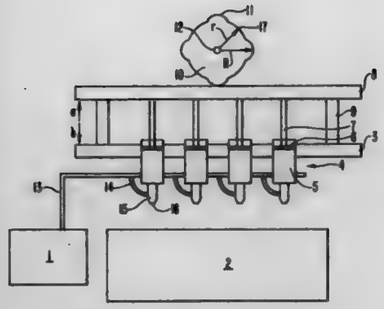
5,484,559

APPARATUS AND PROCESS FOR MANUFACTURING BALLS MADE OF A CERAMIC MATERIAL

Herbert L. Johns, Madison, Ohio, assignor to Zircoa Inc., Solon, Ohio

Filed Apr. 14, 1994, Ser. No. 227,329
Int. Cl.[6] B29B *9/10*
U.S. Cl. 264—9 **26 Claims**

3. An apparatus comprising:
a liquid material storage tank;



a cylinder device comprising a cylindrical internal space and a nozzle connected thereto at one end of and fluidly communicating with said internal space for dispensing liquid material from said internal space, said cylinder device being fluidly connected to said liquid material storage tank for receiving a liquid material therefrom;
a piston reciprocably disposed in said internal space of said cylinder device for causing liquid material in said internal space to be dispensed in drops from said nozzle;
a catch basin located below said nozzle of said cylinder device for receiving drops of liquid material dispensed from said nozzle by said piston; and
a drive means for reciprocably driving said piston in said internal space of said cylinder device toward and away from said nozzle in a predetermined piston stroke length in the internal space such that complete movement of said piston in one direction through said predetermined stroke length dispenses one droplet of liquid material and complete movement of said piston in an opposite direction through said predetermined stroke length allows said internal space to be refilled with liquid material from said liquid material storage tank for dispensing of a next droplet of liquid material, wherein the volume defined in said internal space of said cylinder device by said predetermined stroke length corresponds to the volume of a single drop of liquid material.

17. A process of manufacturing balls of a ceramic material, comprising the steps of:
(a) filling a fluent ceramic material from a storage tank into at least one cylinder device comprising a cylinder with a nozzle and a piston therein by moving the piston a predetermined stroke length in the cylinder in a first direction;
(b) dispensing a drop of the fluent ceramic material from the nozzle by moving the piston the predetermined stroke length in the cylinder in a second direction opposite to the length in the cylinder in a second direction opposite to the first direction corresponding to an amount of material that matches a desired ball diameter; and
(c) receiving the drop of the fluent ceramic material in a gelatinizing solution.

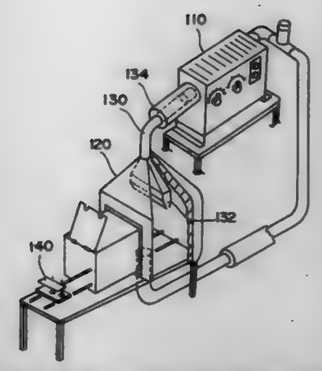
5,484,560

METHOD FOR TREATING SURFACE OF THERMOPLASTIC RESIN ARTICLE

Makoto Moriyama; Kouichi Kuwano, both of Osaka, and Ikuo Tochizawa, Hyogo, all of, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 125,169, Sep. 23, 1993, abandoned. This application Jan. 26, 1995, Ser. No. 378,769
Claims priority, application Japan, Sep. 24, 1992, 4-255070
Int. Cl.[6] B29C *71/02;71/04*
U.S. Cl. 264—483 **12 Claims**

1. A method for treating a surface of a thermoplastic resin article comprising:
carrying out for the resin article a surface-heating treatment, which comprises heating only a surface layer of the resin article up to a melting point of the thermoplastic resin or a higher temperature followed by cooling said surface layer, and
thereafter carrying out a surface-activating corona treatment for the resin article,
wherein the heating in the surface-heating treatment is carried out by blowing onto the resin article surface a hot wind having a temperature higher than a melting point of the resin article by 30° to 450° C., and
wherein the blowing of a hot wind is carried out at a wind speed of 1 to 40 m/sec for a treating period of 0.5 to 20 seconds.

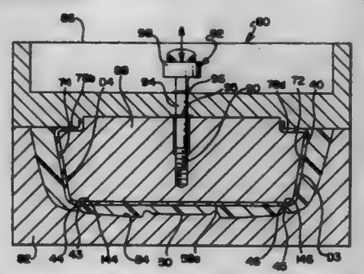


5,484,561

METHOD OF MAKING A UNITARY INFLATABLE RESTRAINT CONTAINER

John C. Weber, Springboro, and Bobby Edwards, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 897,114, Jun. 11, 1992, abandoned. This application Jun. 16, 1994, Ser. No. 260,618
Int. Cl.[6] B29C *44/06;44/12*
U.S. Cl. 264—46.4 **3 Claims**



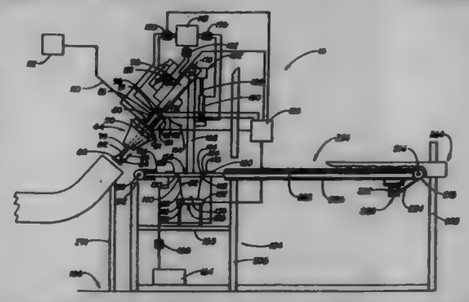
1. A method of manufacturing a unitary container, having a structural substrate with a foam covering, for an air bag comprising the steps of
a. providing a molded plastic structural substrate having a slot defining a door,
b. providing a mold having a mold body, a mold cover and a core mounted on the mold cover, the core having a plurality of upstanding spaced blades,
c. placing the structural substrate over the core prior to closing the mold cover with the upstanding spaced blades projecting out through the slot of the structural substrate such that the upstanding blades project out beyond the structural substrate and into spaced relation to the mold body when the mold cover is closed,
d. injecting a urethane foam into the mold body such that the urethane foam is located between the structural substrate and the mold body when the mold cover is closed,
e. closing the mold cover and simultaneously positioning the structural substrate and the upstanding blades in spaced apart relation to the mold body with the upstanding blades extending partially into the urethane foam for producing a notched tear line on the urethane foam when the foam is cured and
f. curing the foam after closing the mold cover to form a foam cover integral with the structural substrate and the foam cover having a notched tear line along said slot.

5,484,562

SHEET FED ARTICLE FORMING SYSTEM

Donald E. Weder, Highland, Ill., and Franklin J. Craig, Valley Park, Mo., assignors to Highland Supply Corporation, Highland, Ill.

Continuation of Ser. No. 54,611, Apr. 29, 1993, Pat. No. 5,407,343, which is a division of Ser. No. 747,778, Aug. 20, 1991, Pat. No. 5,238,382. This application Oct. 11, 1994, Ser. No. 320,712
Int. Cl.[6] B29C *31/08;51/08;51/44*
U.S. Cl. 264—40.1 **24 Claims**



1. A method for forming a sheet of material into an article and for unloading the article, comprising:
providing an article forming apparatus comprising: a frame having a support surface with opposite sides for supporting a sheet of material;
a male die secured to said frame wherein said male die has an upper end, a lower end, and an outer peripheral surface extending between the lower end and the upper end, the male die for forming an article in conjunction with a female die, for removing the article thus formed from the female die and for transferring the article to an unloading position for unloading and collecting the article;
a female die secured to said frame and having an upper end, a lower end, and an opening extending from the upper end toward the lower end thereof, the opening being shaped to receive a portion of said male die in a forming position for forming an article;
conveying means for moving the sheet of material from a loading position wherein the sheet of material is spaced a distance from said male die and said female die, to a loaded position wherein the sheet of material is positioned between said male die and said female die;
sensing means for producing a signal when the sheet of material is in the loaded position;
means for moving at least one of said male die and said female die from a storage position wherein said male die is spaced a distance from said female die, to the forming position wherein said male die is at least partially disposed in the opening of said female die, and from the forming position to the storage position, said die moving means moving at least one of said male die and said female die to the forming position in response to the signal from said sensing means;
article ejecting means for unloading an article from the male die after the article has been removed from the female die, the article ejecting means having an end portion which is aligned with an aperture in the lower end of the male die when the article ejecting means is in a storage position; and
cylinder means for moving the end portion of the article ejecting means into an unloading position for unloading the article from the male die;

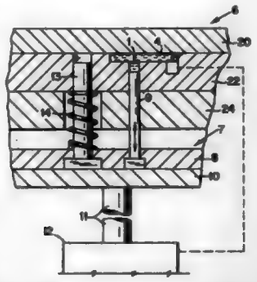
disposing a sheet of material in a loading position on the conveying means;
conveying the sheet of material to a loaded position wherein the sensing means emits a signal when the sheet of material is in a loaded position thereby actuating the die moving means and forming an article from the sheet of material, said article adhering to the outer peripheral surface of the male die for removal from the female die;
moving the male die with the article adhered thereto to an unloading position; and
actuating the cylinder means causing the ejector means to unload the article from the male die.

5,484,563

INJECTION MOLDING PROCESS USING A RESIN RESERVOIR CONTAINING A RETRACTABLE PISTON

Hirotaka Miyazaki, Shizuoka; Hiromitsu Sakai, Aichi, and Tsuneyoshi Okada, Kanagawa, all of, Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Continuation of Ser. No. 68,923, May 28, 1993, abandoned.
This application Mar. 1, 1995, Ser. No. 396,863
Claims priority, application Japan, Jun. 5, 1992, 4-145791
Int. Cl.[6] B29C *45/00;45/03*
U.S. Cl. 264—69 **6 Claims**



1. An injection molding process for making a molded article having increased tensile strength due to a reinforced weld, comprising providing a mold provided with a resin reservoir having a retractable piston and protruding from a mold cavity in at least one of divided resin passages ranging from a point where injected molten resin is divided into two streams to a weld formed by union of the two resin streams, feeding the molten resin into the mold while the piston is in a retracted state or an advanced state to form the weld, and after filling the mold with the injected molten resin, then either advancing, with vibration, the piston toward the mold cavity side to force the resin from the resin reservoir into the mold cavity or retracting, with vibration, the piston to withdraw the resin from the mold cavity side into the resin reservoir, so as to cause migration of the resin in the weld to thereby force the resin on one side of the weld into the resin on another side, thus reinforcing the weld thereby increasing the tensile strength of the injection molded article due to the vibration of the piston during either the advancing or the retracting of the piston.

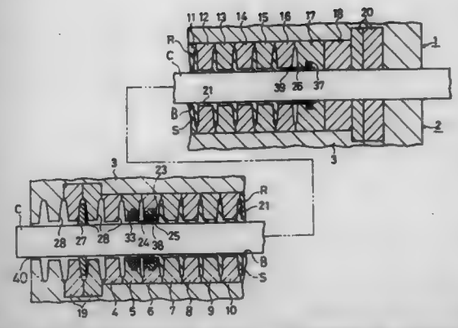
5,484,564

METHOD FOR MANUFACTURING A LONG NON-CERAMIC INSULATOR IN MOLD LONGITUDINALLY SHORTER THAN THE INSULATOR

Daisaku Goto, Konan, Japan, assignor to NGK Insulators, Ltd., Nagoya, Japan

Filed Dec. 27, 1993, Ser. No. 172,807
Claims priority, application Japan, Dec. 28, 1992, 4-347840
Int. Cl.[6] B29C *45/36;45/10;33/12*
U.S. Cl. 264—219 **10 Claims**

1. A method of molding a unitary non-ceramic insulator housing in a mold having head and tail portions defining the end portions of



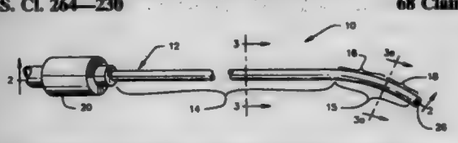
said mold, said mold further having a longitudinally extending inner cavity for receiving moldable insulating material and for molding a corrugated surface of an insulator or insulating tube, said method comprising the steps of:
positioning an insulating core through the center portion of the inner cavity of said mold such that said core extends beyond the head and tail portions of said mold, said core having a head and tail portion corresponding to the head and tail portions of said mold;
molding a first insulator housing around said core, said first insulator housing having a head portion and a tail portion corresponding to the head and tail portions of said mold;
removing said first insulator housing from said mold to a location within said mold such that the tail portion of said insulator housing and of said core is moved toward the head portion of said mold;
positioning said tail portion of said first insulator housing and said tail portion of said core within said head portion of said mold by at least one first jig;
molding a second insulator housing around said corel said second insulator housing having a head portion moldably attached to the tail portion of said first insulator housing during the molding process of said second insulator housing such that said first and second insulator housing form a unitary insulator housing,
wherein said at least one first jig comprises first and second annular shaped members adjacently spaced with respect to each other within said mold for providing a molding surface whereon said first housing is attached to said second housing, each of said first and second annular shaped members having an inner diameter;
and wherein said corrugated surface comprises a plurality of skirts and trunks, the inner diameter of said first annular member being smaller than a diameter of said cavity which forms said trunks and the inner diameter of said second annular member being equal to or greater than the diameter of said first annular member and less than said diameter of said cavity.

5,484,565

METHOD FOR MAKING A MEDICAL CATHETER

Charles E. Larsen, Aguadilla, Puerto Rico; Leonard Pinchuk, Miami, Fla., and Thomas D. Weldon, Aguadilla, Puerto Rico, assignors to Namic Caribe, Inc., Aguadilla, Puerto Rico

Continuation of Ser. No. 703,486, May 21, 1991, abandoned.
This application Jun. 8, 1993, Ser. No. 74,270
Int. Cl.[6] B29C *61/06;71/00*
U.S. Cl. 264—230 **68 Claims**



1. A method for making a polymeric article comprising:
providing an article of a polymeric material;

contacting said article with a swelling agent; and
contacting said article with a plasticizer, said swelling agent a solvent for said article and said plasticizer, said swelling agent selected so as to swell said article from about 10% to about 300%, said plasticizer absorbed into said article in an amount sufficient to minimize the risk of trauma to human tissue.

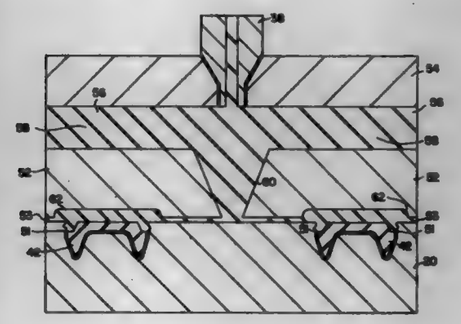
18. A method for making a catheter having at least a body portion and an end portion, said end portion being more pliable or flexible than said body portion, the method comprising:
forming an elongated, polymeric tube, said tube having a lumen and including a body portion and an end portion;
contacting said end portion with a swelling agent; and
contacting said end portion with a plasticizer, said swelling agent selected so as to swell said article from about 10% to about 300%, said swelling agent a solvent for said tube and said plasticizer, said plasticizer absorbed into said end portion in an amount sufficient to minimize the risk of trauma to human tissue.

5,484,566

METHOD OF MANUFACTURE OF A PARTIALLY LAMINATED RUBBER CLOSURE

Mark E. Gabbard, Salisbury, Md., assignor to Wheaton Inc., Millville, N.J.

Filed Mar. 7, 1994, Ser. No. 207,133
Int. Cl.[6] B29C *43/18;45/14*
U.S. Cl. 264—250 **7 Claims**



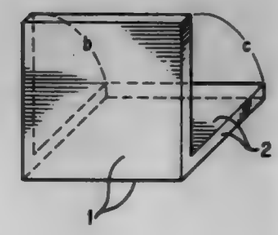
1. A method of manufacture of a partially laminated rubber closure comprising:
placing a sheet of a barrier coating material in a closure precursor mold and partially closing said mold;
injecting rubber into said mold;
fully closing said mold under heat and pressure sufficient to mold and cure said rubber and form a closure precursor, said sheet forming a layer of barrier coating material on said closure precursor;
removing said closure precursor from said precursor mold;
positioning said closure precursor in a final mold;
introducing additional rubber, by injection molding, laterally into said final mold from a plurality of locations equally spaced around said closure precursor so as to fill said final mold and minimize forces tending to dislodge said closure precursor from said position in said final mold; and
applying heat and pressure to said final mold to cure said additional rubber thereby forming said partially laminated rubber closure.

5,484,567

METHOD FOR PRODUCING A THIN-WALLED MOLDED ARTICLE OF A POLYACETAL RESIN

Masahiko Niino, and Sadao Ibe, both of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

PCT No. PCT/JP93/01651, § 371 Date Jun. 13, 1994, § 102(e) Date Jun. 13, 1994, PCT Pub. No. WO94/09676, PCT Pub. Date May 11, 1994
PCT Filed Nov. 12, 1993, Ser. No. 244,952
Claims priority, application Japan, Nov. 13, 1992, 4-303565
Int. Cl.[6] B29C *45/00;* **C08L** *59/00*
U.S. Cl. 264—328.1 **2 Claims**



1. A method for producing a thin-walled molded article of a polyacetal resin comprising adding 10 to 1000 ppm of boron nitride having an average particle diameter of 1 to 10 μm and a content of diboron trioxide of 0.005 to 1.0% by weight to a polyacetal resin and molding an article having a maximum wall thickness of 0.2 to 1 mm by injection molding.

5,484,568

ELECTRICAL HEATING ELEMENT, RELATED COMPOSITES, AND COMPOSITION AND METHOD FOR PRODUCING SUCH PRODUCTS USING DIELESS MICROPYRETIC SYNTHESIS

Jainagesh A. Sekhar, and Naiping Zhu, both of Cincinnati, Ohio, assignors to University of Cincinnati, Cincinnati, Ohio

Division of Ser. No. 847,782, Mar. 5, 1992, which is a continuation-in-part of Ser. No. 822,181, Jan. 16, 1992, abandoned. This application Jan. 3, 1994, Ser. No. 176,773
Int. Cl.[6] B22F *3/16;3/23*
U.S. Cl. 419—41 **8 Claims**

1. A method for the preparation of ceramic composite articles having improved mechanical stability, room temperature fracture toughness, oxidation resistance at temperatures up to 1900° C., and stable electrical conductivity at said temperatures, comprising the steps of:
(a) blending a mixture comprising up to 95% by weight of a particulate filler material, between about 5% and 95% by weight of at least one reactive system, wherein said reactive system comprises at least two particulate combustible materials which will react exothermically with one another by micropyretic synthesis and are present in such proportion to one another that combustion will occur when ignited, up to 90% of a plasticizer selected from the group consisting of polyvinyl butyral, polyurethane, colloidal silica, 2%–5% aqueous chemical cellulose solution, phospboric acid, bentonite, fused silica and its activator and mixtures thereof, and a sufficient amount of solvent in order to form a slurry, said slurry mixture being combustible as such, without further processing;
(b) extruding said slurry to form a wire, plate or shaped wire; and
(c) combusting said shape, by ignition at a temperature between about 150° C. and 1250° C.

5,484,569

SILVER PALLADIUM ALLOY

Arthur S. Klein, Orange, and Edward F. Smith, III, Madison, both of Conn., assignors to The J. M. Ney Company, Bloomfield, Conn.

Filed Aug. 12, 1994, Ser. No. 289,509
Int. Cl.[6] C22C *5/06;5/08;30/00*
U.S. Cl. 420—503 13 Claims

1. A silver/palladium alloy for electronic applications consisting essentially of:

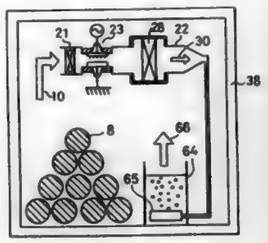
(a) 35–60 percent by weight silver;
(b) 20–44 percent by weight palladium;
(c) 5–20 percent by weight copper;
(d) 1–7 percent by weight nickel;
(e) 0.1–5 percent by weight zinc;
(f) 0.06 to 0.18 percent by weight boron;
(g) up to 0.05 percent by weight rhenium; and
(h) up to 1 percent by weight of modifying elements selected from the group consisting of ruthenium, zirconium and platinum, said alloy exhibiting high oxidation and tarnish resistance.

5,484,570

MICROBE PROPAGATION PRENVENTION METHOD

Akira Ikeda; Yasuhiro Tanimura; Naoki Nakatsugawa; Masaaki Tanaka, all of Hyogo; Hiroshige Konishi, Shizuoka; Toshie Hiraoka, Shizuoka; Shinji Nishio, Shizuoka, and Hiroto Kawahira, Shizuoka, all of, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 156,419, Nov. 22, 1993. This application Sep. 22, 1994, Ser. No. 310,715
Claims priority, application Japan, Nov. 24, 1992, 4-334960; Aug. 31, 1993, 5-216602; Nov. 12, 1993, 5-283762
Int. Cl.[6] B01J *19/00*
U.S. Cl. 422—1 6 Claims



1. A microbe propagation preventing method comprising the steps of:

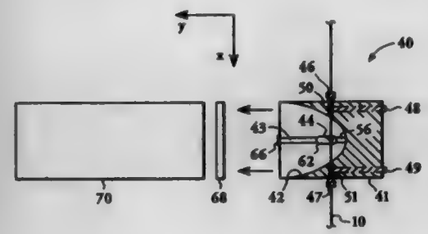
drawing a gas using a wind blower;
passing the gas through an air duct from an upstream position of the air duct to a downstream position of the air duct;
generating ions in said gas in an ionization chamber to form an ionized gas;
providing the ionized gas to an ozone decomposing chamber disposed downstream from said ionization chamber;
decomposing ozone in the ionized gas by the ozone decomposing chamber;
housing an object in an enclosed area in which microbes can propagate; and
supplying the ionized gas without ozone to the enclosed area to prevent substantial microbe propagation.

5,484,571

ENHANCED FLUORESCENCE DETECTION OF SAMPLES IN CAPILLARY COLUMN

Stephen L. Pentoney, Jr., Yorba Linda, Calif., and Wilbur Kaye, Princeville, Hi., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 772,823, Oct. 8, 1991, abandoned. This application Jun. 23, 1994, Ser. No. 264,417
Int. Cl.[6] G01N *21/31;21/01;27/447*
U.S. Cl. 422—82.08 34 Claims



1. An apparatus for collecting and detecting fluorescent emission of a sample migrating within a capillary separation channel defined by a capillary tube comprising:

an axially-symmetrical concave fluorescence collector having a convex reflective surface, and defining a focal point and a mouth, the body of the collector having holes through which the capillary tube passes, the capillary tube being positioned such that the sample migrates within the capillary tube past the focal point, the capillary tube being oriented at approximately a right angle to the axis of the collector;

irradiation means for irradiating the sample as it migrates within the capillary tube past the focal point so as to cause the sample to emit fluorescence, some of the fluorescence being reflected off the reflective surface of the collector and substantially all of the fluorescence emanating from the mouth of the collector, the body of the collector having at least one hole through which the radiation from the irradiation means passes, the irradiation means being positioned with respect to the capillary tube and the collector much that radiation from the irradiation means irradiates the sample within the capillary tube at the focal point at a right angle to the capillary tube directly without first reflecting from the reflective surface of the collector, wherein irradiation of the sample directly by the irradiation means causes radiation from the irradiation means to scatter from the capillary tube in a scatter plane normal thereto, some of the scattered radiation being directed along with the emitted fluorescence onto the reflective surface,

detection means for detecting radiation emitted from the sample including the reflected fluorescence; and

spatial blocking means for blocking scattered radiation from reaching the detection means, the spatial blocking means comprising an opaque blocking strip at the mouth of the collector, the spatial blocking means intersecting the axis of the collector and the scatter plane at the mouth of the collector but blocking only a minimal portion of the fluorescence at the mouth of the collector.

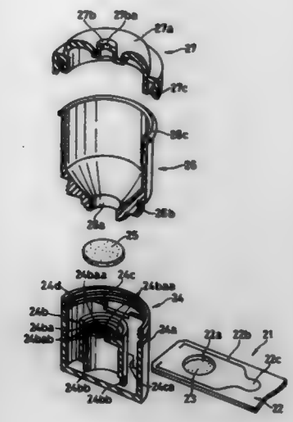
5,484,572

APPARATUS FOR COLLECTING MEDICAL TEST SPECIMENS

Takaaki Katakura; Hidemasa Mouri, both of Yokohama, and Minoru Nakamuta, Ryugasaki, all of, Japan, assignors to Taiho Industries Co., Ltd., Tokyo, Japan

Filed Jun. 8, 1994, Ser. No. 257,187
Claims priority, application Japan, Jan. 1, 1993, 5-267740
Int. Cl.[6] B01L *11/00;3/00*
U.S. Cl. 422—101 4 Claims

1. A specimen collection apparatus, comprising:



a specimen collection element which includes a plate provided with a hole at one end and a film capturing specimens affixed to one surface of the plate so that the film covers the hole,

a lower cup closed at the bottom portion thereof, said lower cup having a hole in a peripheral wall thereof for inserting the specimen collection element and which has a central hollow holder,

an upper cup the lower portion of which is detachably engaged with a top portion of the lower cup, said upper cup having an open top and being provided with an outlet in a base portion thereof at a position corresponding to the position of the holder in the lower cup and which engages with the lower cup to form an airtight state when the specimen collection element is inserted therein,

a liquid permeable spacer mounted on the holder of the lower cup in contact with the film of the inserted specimen collection element, and

a compression mechanism positioned on said open top of said upper cup, said compression mechanism increasing the air pressure in the upper cup and including one of a pressurization cup and a pressurization top and an air pressure source which increases the air pressure in the upper cup.

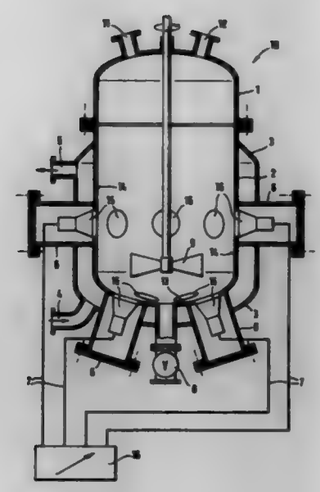
5,484,573

REACTOR FOR CARRYING OUT CHEMICAL REACTIONS

Harald Berger, Kelkheim; Norbert Dragesser, Weinbach; Rudolf Heumueller, Rodgau; Erich Schaetzer, Bensheim, and Manfred Wagner, Hofheim, all of, Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Aug. 26, 1993, Ser. No. 112,686
Claims priority, application Germany, Aug. 28, 1992, 42 28 618.3
Int. Cl.[6] B06B *1/00;* C08F *2/00;* B01F *11/00*
U.S. Cl. 422—128 7 Claims

1. A reactor for a chemical reaction, said reactor comprising: a vessel having a bottom and side walls, and an interior defined by said walls for containing the chemical reaction; at least one ultrasonic transducer facing into the interior of the vessel; and means for driving each ultrasonic transducer operably connected to each transducer; wherein each ultrasonic transducer is integral with at least one wall of the vessel; and, cap is positioned over each ultrasonic transducer.

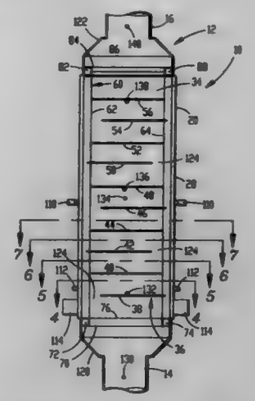


5,484,574

APPARATUS AND METHOD FOR REMOVAL OF VOLATILE ORGANIC COMPOUNDS FOR GAS STREAMS

Virgil J. Macaluso, Independence; Marvin E. Holloway, Cherryvale, and John J. Albright, Independence, all of Kans., assignors to Catalytic Industrial Group, Inc., Independence, Kans.

Continuation of Ser. No. 853,803, Mar. 19, 1992, abandoned. This application Jun. 17, 1993, Ser. No. 79,209
Int. Cl.[6] F01N *3/10;* B01D *53/34*
U.S. Cl. 422—171 5 Claims



1. An apparatus for the removal of volatile organic compounds from gas streams comprising:

an elongated reaction vessel presenting an interior, a gas stream inlet and a gas stream outlet;

a plurality of catalytic pads and means for mounting said pads within said vessel to define a gas stream flow path for promoting contact of said gas stream with said pads; and

a plurality of gas-fired catalytic heater units disposed within said vessel to direct catalytically-derived infrared radiation toward said pads, including means mounting said heater units adjacent said pads for directing said catalytically-derived infrared radiation against the pads,

said gas-fired catalytic heater units being oriented for heating and destruction of a first fraction of said volatile organic compounds, with the position of the gas-fired catalytic heater

units and catalytic pads being correlated for cooperatively destroying a substantial proportion of said volatile organic compounds.

5,484,575

CATALYTIC CONVERTER FOR THE CATALYTIC TREATMENT OF EXHAUST GAS

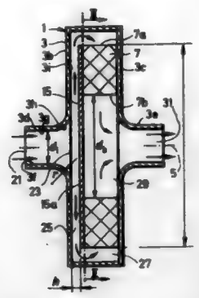
Pieter D. Steenackers, Heverlee, Belgium, assignor to Scambin Industrial Developments Aktiengesellschaft, Schaan, Liechtenstein

Continuation of Ser. No. 878,425, May 4, 1992, abandoned. This application Sep. 8, 1994, Ser. No. 303,285

Claims priority, application Switzerland, May 2, 1991, 1316/91

Int. Cl.[6] B01D *50/00*; F01N *3/08*

U.S. Cl. 422—176 **44 Claims**



1. A catalytic converter for catalytic treatment of exhaust gas comprising:

a casing having an inner space, an inlet communicating with the inner space and having an orifice for conducting the exhaust gas into the inner space, and an outlet,

a gas-permeable catalyst element located in the inner space for catalytic treatment of the exhaust gas entering the inner space,

a guide surface located within the inner space for guiding the exhaust gas to the catalyst element, and

a counter-surface encompassing the orifice and located opposite the guide surface;

wherein the inlet has an axis and comprises an inner surface section that is one of substantially cylindrical and substantially conical and makes, when the inner surface section is substantially conical, an angle of at most 25° with the axis and has an internal diameter d_i at an end thereof nearer to the orifice,

wherein the inlet has a transition surface section for continuously connecting the inner surface section thereof with the counter-surface, the transition surface section curving and widening toward the counter-surface in a section through the axis,

wherein the guide surface is located opposite the orifice, the transition surface section and the counter-surface, at least major parts of the guide and counter-surfaces forming angles of at least 60° with the inlet axis,

wherein the guide surface is spaced from the counter-surface, at a portion thereof adjacent to a wider end of the transition surface, a distance h equal at most 70% of the internal diameter d_i of the inner surface section of the inlet,

wherein the guide surface limits, together with the counter-surface, a deflection cavity and is shaped such that at least a substantial part of the exhaust gas supplied to the catalytic converter is lead through the deflection cavity in a direction directed away from the axis to a border section of the deflection cavity before the exhaust gas enters into the catalyst element, and

wherein the border section surrounds the orifice at a radial distance of the axis which is at least 1.5 times of the internal diameter d_i.

5,484,576

FIXED BED REACTORS HAVING A SHORT CATALYST BED IN THE DIRECTION OF FLOW

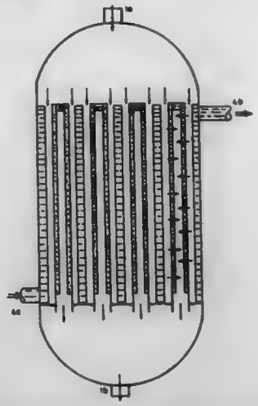
Reinhard Langer; Hans-Josef Buysch, both of Krefeld, and Paul Wagner, Düsseldorf, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 4, 1993, Ser. No. 26,329

Claims priority, application Germany, Mar. 12, 1992, 42 07 905.5

Int. Cl.[6] B01J *8/02*

U.S. Cl. 422—211 **12 Claims**



1. In a reactor for the continuous reaction of gaseous substances comprising a plurality of fixed beds of catalyst and means for directing a gas through said fixed beds of catalyst and heat transfer means for transferring heat to or from said gas, the improvement wherein each of said catalyst beds is arranged in a sheet configuration having a thickness of from 0.05 to 10 cm and is contained between two surfaces, each of said surfaces comprises a covering that is perforated or porous sufficiently to permit the passage of a gas, but not the catalyst, perpendicularly therethrough, and wherein said heat-transfer means comprises a plurality of heat transfer surfaces of a sheet configuration similar to that of said catalyst beds, each of which is positioned in substantial alignment with and spaced apart from one of said two surfaces covering said plurality of catalyst beds a distance of from about 0.1 to 10.0 cm, to form thereby a space between one of said two surfaces covering said plurality of catalyst beds and one of said plurality of heat transfer surfaces, with the side of the heat transfer surface opposite the catalyst bed being in contact with a heat transfer medium, whereby a gas fed to said reactor will pass through at least one of said spaces and come into contact with at least one of said heat transfer surfaces either before passing through said catalyst bed, after passing through said catalyst bed, or both, whereupon heat may be transferred between said gas and said catalyst, as well as between said gas and said heat transfer surface and wherein said catalyst bed, including said surface covering, has a minimum resistance to fluid flow of 2 mbar to 10 bar.

5,484,577

CATALYTIC HYDROCARBON REFORMER WITH ENHANCED INTERNAL HEAT TRANSFER MECHANISM

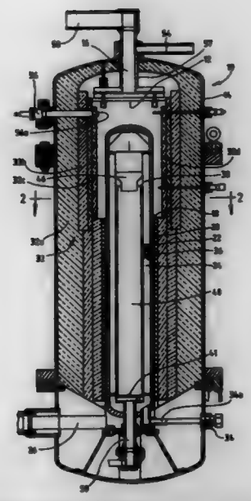
Richard F. Buswell, Glastonbury, Conn.; Ronald Cohen, Boca Raton, Fla.; Joseph V. Clausi, Portland; Stanley L. Leavitt, North Canton, both of Conn., and David S. Watkins, Coquitlam, Canada, assignors to Ballard Power System Inc., North Vancouver, Canada

Filed May 27, 1994, Ser. No. 250,371

Int. Cl.[6] B01J *8/06*

U.S. Cl. 422—211 **4 Claims**

1. A catalytic hydrocarbon reformer for converting raw hydrocarbon fuel into a reformate gas stream comprising hydrogen, said reformer comprising:



(a) a substantially cylindrical closed vessel, said vessel having a top end and a bottom end, said vessel comprising at least one insulation layer adjacent the interior surface of its side wall;

(b) at least one substantially cylindrical reactor tube disposed within said reformer vessel, said reactor tube comprising an outer annular catalyst chamber defined by the volume between said exterior surface and a concentric inner gas return tube;

(c) a burner disposed within said reformer vessel, said burner capable of generating and directing a combustion gas stream toward the bottom of said reactor vessel and toward said reactor tube assembly;

(d) an exhaust guide sleeve disposed between said reactor tube and said at least one insulation layer, said exhaust guide sleeve being concentric with said reactor tube; and

(e) a catalyst fines collection tube having a separator affixed at or near the top thereof, said collection tube concentrically disposed within said gas return tube such that a gas return annulus is formed between said annular catalyst chamber and said collection tube;

wherein the radial distance between said reactor tube and said exhaust guide sleeve is sufficiently small to cause flow of said combustion gas stream along the exterior surface of the reactor tube assembly to be turbulent.

5,484,578

TWO-PHASE DISTRIBUTOR SYSTEM FOR DOWNFLOW REACTORS

Gregory P. Muldowney, Glen Mills, Pa.; Ronald A. Weiss, Flemington, N.J., and Julian A. Wolfenbarger, Newtown, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jun. 20, 1994, Ser. No. 262,715

Int. Cl.[6] B01J *8/02*; B01D *11/02*; *47/16*

U.S. Cl. 422—220 **25 Claims**

1. A two-phase distributor system for directing vapor and liquid downwardly across the surface of a fixed bed of solids comprising:

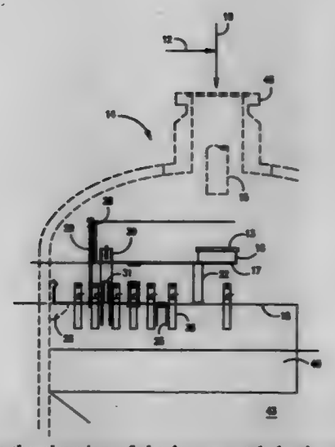
a distributor tray;

a plurality of vertical, open-ended downpipes extending through said tray;

a first array of said downpipes having a plurality of vertically spaced elevations of holes above the level of said tray; and

a second array of said downpipes having an elevation of holes at substantially the same height above the level of said tray as at least one of the elevations of holes in said first array, and having no elevation of holes corresponding to the lowermost elevation of holes in said first array;

whereby the liquid flow rate through said distributor tray at a given liquid height is reduced when said liquid height falls below the elevation of the lowermost holes in said second array, thereby maximizing the liquid level above the lowermost elevation of holes in said first array.



5,484,579

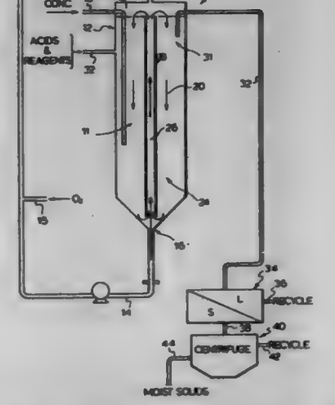
HYDROMETALLURICAL RECOVERY OF COPPER AND ZINC FROM COMPLEX SULFIDE ORES

Robert N. O'Brien, Victoria, Canada, assignor to R & O Mining Processing Ltd., Vancouver, Canada

Continuation of Ser. No. 9,844, Jan. 27, 1993, abandoned. This application Sep. 19, 1994, Ser. No. 308,570

Int. Cl.[6] C22B *15/00*; *19/00*

U.S. Cl. 423—36 **9 Claims**



1. A continuous hydrometallurgical process for single stage conversion of copper sulfides or zinc sulfides from ores containing copper sulfides, zinc sulfides, or both, and that are contained in finely divided materials into recoverable precipitates while minimizing emissions of nitrogen gas and N_2O, the process comprising:

contacting finely divided materials selected from the group consisting of an ore, a concentrate, and a mixture of an ore and a concentrate, and in which the ore or concentrate contains compositions selected from the group consisting of a copper sulfide, a zinc sulfide, and mixtures of copper sulfide and zinc sulfide, with sulfuric acid and nitric acid to form a reaction mixture of the materials and the sulfuric acid and nitric acid;

while concurrently mixing and maintaining the mixture at a temperature of between about 110° C. and 170° C.; and while introducing a source of oxygen to the mixture;

wherein the sulfuric acid is present in a volume amount of between about 40% and 65% based on the volume of the reaction mixture; and

wherein the nitric acid is present in a ratio of between about 0.5 and 3.0 mole of nitric acid per mole of sulfide in the finely divided materials, the amounts of sulfuric acid and nitric acid present in the mixture being sufficient to form a light colored precipitate of water soluble sulfate salts of copper sulfate or zinc sulfate or both, and a dark colored precipitate of sulfur and gangue; and

wherein the amount of introduced oxygen is sufficient to form regenerated nitric acid from the nitrogen-containing by-products.

5,484,580

HIGH TEMPERATURE SORBENTS FOR OXYGEN

Pramod K. Sharma, La Canada, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 991,003, Dec. 16, 1992, Pat. No. 5,314,853. This application Jan. 19, 1994, Ser. No. 184,897

Int. Cl.[6] C01B *13/00*; B01J *20/10*

U.S. Cl. 423—219 **4 Claims**

1. A method of reducing the oxygen content of a gas to below parts-per-billion level comprising the steps of;

passing the gas through a sorbent at a temperature from 200° C. to 1000° C.;

said sorbent comprising a porous alumino silicate support containing 1 to 10% by weight of transition metal ion selected from the group consisting of copper and cobalt exchanged with a metal of said support and from 0.05 to 1.0% by weight of a platinum group metal activator deposited in the support.

5,484,581

PROCESS FOR THE PRODUCTION OF PRECIPITATED SILICA

Heinz Esch, Bonn; Robert Kuhlmann, Erftstadt; Mattias Neumueller, Hasselroth; Karin Otto, Hanau, and Ralf Rausch, Kreuzau, all of, Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Filed Aug. 4, 1994, Ser. No. 285,672

Claims priority, application Germany, Aug. 7, 1993, 43 26 576.6; Jul. 5, 1994, 44 23 493.7

Int. Cl.[6] A61K *7/16;7/18*; C09K *3/14*; C01B *33/12*

U.S. Cl. 423—335 **11 Claims**

1. A process for the production of a precipitated silica, said process comprising simultaneously adding alkali silicate with a weight modulus SiO_2:alkali oxide=2.5–3.9:1 and a mineral acid to an initial amount of water, which has been adjusted to a pH value of 7.0 to 9.9 or 10.0 to 10.7 by the addition of water glass, to form a mixture, holding constant the pH value of said mixture between 7.0 and 9.9 or 10.0 to 10.7 during the addition of said alkali oxide and mineral acid, wherein the initial precipitation temperature is 50°–90° C. and an increase in viscosity occurs after at most 25% of the duration of precipitation, adjusting the pH value to less than or equal to 6 from said pH value of 7.0 to 9.9 once a silica content of greater than 120 g/l has been reached or adjusting the pH value to less than or equal to 6 from said pH value of 10.0 to 10.7 once a silica content of greater than 150 g/l has been reached; wherein said precipitated silica has a BET surface area of 10–130 m^2/g, a CTAB surface area of 10–70 m^2/g, an average particle diameter of 5–20 μm, a Cu abrasion value in a 10% glycerol dispersion of 4–50 mg and thickening behavior in a CMC solution (20% dispersion) of 300–3500 mPa·s.

5,484,582

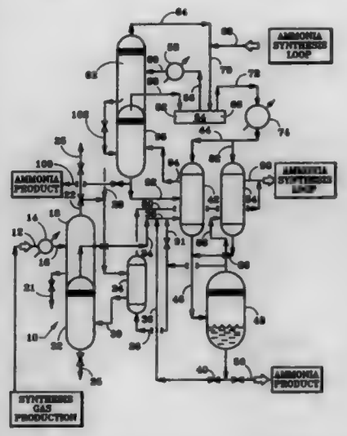
PROCESS FOR AMMONIA RECOVERY IN AMMONIA PRODUCTION

Jing M. Lee, 11602 Blair Meadow, Stafford, Tex. 77477

Filed Oct. 27, 1993, Ser. No. 144,186

Int. Cl.[6] C01C *1/04*

U.S. Cl. 423—359 **21 Claims**



1. A process for ammonia recovery in an ammonia plant, comprising the steps of:

(a) introducing an excess liquid ammonia stream into a syngas makeup stream to form a mixed vapor-liquid refrigerant stream;

(b) cooling a high pressure, ammonia-containing syngas stream against the mixed vapor-liquid stream to form ammonia condensate in the syngas stream and vaporize ammonia in the mixed vapor-liquid stream;

(c) separating liquid ammonia from the mixed vapor-liquid stream from step (b) to form a liquid ammonia stream and a syngas compressor feed stream; and

(d) compressing the syngas compressor feed stream from step (c) and a syngas recycle stream from the ammonia synthesis loop to form the high pressure, ammonia-containing syngas stream for cooling in step (b).

5,484,583

FILLER MATERIAL CONTAINING AN ANION SUBSTITUTED HYDROTALCITE

Donald K. Grubbs, Rector, and Peter E. Valente, III, Apollo, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 928,748, Aug. 13, 1992, Pat. No. 5,362,457. This application Jul. 21, 1994, Ser. No. 278,581

Int. Cl.[6] C01B *31/30*

U.S. Cl. 423—420.2 **8 Claims**

1. A method of producing a filler material for use as a 25–65 wt. % filler in a polymer system containing a polymer selected from the group consisting of latex, polypropylene, polyester, polyamide, polyurethane, polystyrene, PET, ethylene, low density polyethylene, ethylene-vinyl acetate, ethylene ethyl acrylate, nylon, polybutylene terephtalate, nylon-6, acrylonitrile-butadiene-styrene and polymers that require processing at temperatures above approximately 220° C., comprising the steps of:

(a) forming a substantially carbonate free aqueous slurry having a pH above about 13, said aqueous slurry comprising about 50–150 grams/liter Al_2O_3, about 5–100 grams/liter MgO, at least about 100 grams/liter NaOH and about 25–200 grams/liter NaBr; and

(b) heating said slurry to a temperature greater than about 80° C. and less than about 150° C.

5,484,584

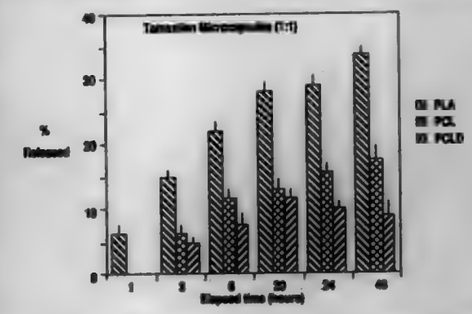
THERAPEUTIC AND DIAGNOSTIC USE OF MODIFIED POLYMERIC MICROCAPSULES

Sidney Wallace, Houston; David Yang, Sugar Lan; Michael Wallace, Houston; Chun Li, Houston, and Li-Ren Kuang, Houston, all of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 592,020, Oct. 2, 1990, abandoned. This application Jul. 17, 1992, Ser. No. 916,348

Int. Cl.[6] A61K *51/00*; B01J *13/02*; B32B *5/16*

U.S. Cl. 424—129 **14 Claims**



1. A method of selective in vivo delivery to uterus tissue comprising administering to a mammal an effective amount of a pharmaceutically acceptable preparation of poly(benzyl L-glutamate) microspheres covalently attached to estrone.

5,484,585

COMPOSITIONS OF IODOBENZOIC ACID DERIVATIVES AND PHARMAECUTICALLY ACCEPTABLE CLAYS FOR VISUALIZATION OF THE GASTROINTESTINAL TRACT

Stephen B. Ruddy, Schwenksville; Gregory L. McIntire, West Chester; Mary E. Roberts, Downingtown; Brent D. Douty, Coatesville, and Eugene R. Cooper, Berwyn, all of Pa., assignors to Sterling-Winthrop Inc., New York, N.Y.

Continuation-in-part of Ser. No. 216,988, Mar. 23, 1994, Pat. No. 5,385,720, which is a continuation-in-part of Ser. No. 29,756, Mar. 11, 1993, Pat. No. 5,312,616. This application May 5, 1994, Ser. No. 239,090

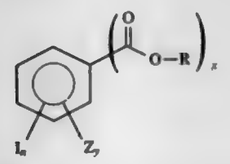
The portion of the term of this patent subsequent to May 17, 2011, has been disclaimed.

Int. Cl.[6] A61K *49/04*

U.S. Cl. 424—9.45 **20 Claims**

1. An x-ray contrast composition for oral or retrograde examination of the gastrointestinal tract comprising on a % weight per volume basis:

(a) from about 5 to 45% of an x-ray contrast producing agent having the formula, or a pharmaceutically acceptable salt thereof



wherein

Z is H, halo, C_1–C_{20} alkyl, cycloalkyl, lower alkoxy, cyano, where the alkyl and cycloalkyl groups can be substituted with halogen or halo-lower-alkyl groups;

R is C_1–C_{25} alkyl, cycloalkyl, or halo-lower-alkyl, each of which may be optionally substituted with halo, fluoro-lower-alkyl, aryl, lower-alkoxy, hydroxy, carboxy, lower-alkoxy carbonyl or lower-alkoxy-carbonyloxy; $(CR_1R_2)_p$—$(CR_3{=}CR_4)_m$Q, or $(CR_1R_2)_p$—C≡C—Q;

R_1, R_2, R_3 and R_4 are independently lower-alkyl, optionally substituted with halo;

x is 1–3

y is 1–4;

n is 1–5;

m is 1–15;

p is 1–10; and

Q is H, lower-alkyl, lower-alkenyl, lower-alkynyl, lower-alkylene, aryl, or aryl-lower alkyl;

(b) from about 0.1 to 10% of a pharmaceutically acceptable clay selected from the group consisting of: montmorillonite, beidelite, nontronite, hectorite and saponite;

(c) from about 1.0 to 20% of a surfactant selected from the group consisting of nonionic, anionic, cationic and zwitterionic surfactants;

(d) from about 0 to 15% of an excipient; and

(e) water to make 100% by volume.

5,484,586

NAIL POLISH BASE AND METHOD

Zetta Bedard, 1033 N. Havenhurst Dr., Los Angeles, Calif. 90046

Filed Oct. 14, 1994, Ser. No. 323,516

Int. Cl.[6] A61K *7/043*

U.S. Cl. 424—61 **12 Claims**

1. An improved nail polish base coat which promotes the growth of healthy, smooth, thick, and strong fingernails, comprising:

an enamel base coat; and

calcium, zinc gluconate, magnesium, a mild aqueous acidic solution comprising about four to six percent of acetic acid, ethanol, and vitamins mixed into suspension with the enamel base coat.

5,484,587

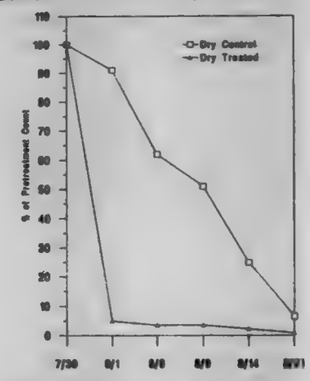
DIABROTICINE BAIT

Keith Branly, Brandon, Fla.; James M. Gaggero, Citrus Heights, Calif.; Chel W. Lew, and Cathy S. Lamb, both of San Antonio, Tex., assignors to Micro Flo Company, Mulberry, Fla.

Filed Oct. 31, 1991, Ser. No. 784,506

Int. Cl.[6] A01N *25/28;65/00;47/10*

U.S. Cl. 424—84 **31 Claims**



1. A bait composition useful for controlling diabroticine beetle populations, said composition comprising:

particulate composite baits exhibiting sizes of less than 1000 μm in diameter and comprising:

(a) 0.01–99 wt % of diabroticidal insecticide particles;

(b) 0.01–99 wt % of a feeding stimulant comprising a cucurbitacin-containing material wherein the feeding

stimulant is present in amounts effective to stimulate compulsive feeding in diabroticine beetles and said feeding stimulant is homogeneously admixed with said insecticide throughout said bait; and

(c) a binding agent comprising gelatin and a gum for binding together the insecticide particles and the feeding stimulant.

5,484,588

ATTRACTING AND INGESTION-STIMULATING AGENT FOR COCKROACH

Kazumasa Ogino, Ageo; Haruo Shimamura, Yono; Kazuyuki Tomisawa, Ina; Fumio Urushizaki, Ageo; Masami Nemoto, Okegawa, and Tuguchika Yoshida, Ageo, all of, Japan, assignors to Taisho Pharmaceutical, Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01059, § 371 Date Feb. 2, 1993, § 102(e) Date Feb. 2, 1993, PCT Pub. No. WO92/02134, PCT Pub. Date Feb. 20, 1992

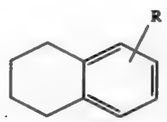
PCT Filed Aug. 8, 1991, Ser. No. 965,289

Claims priority, application Japan, Aug. 9, 1990, 2-210680

Int. Cl.[6] A01N *33/04;33/06*

U.S. Cl. 424—84 **2 Claims**

1. A method of attracting and ingestion-stimulating cockroaches comprising applying, to a location wherein cockroaches are present in the environment, a composition for attraction and ingestion-stimulation of said cockroaches wherein said composition comprises from 0.01% to 0.25% by weight of one or more compounds represented by the formula



wherein R represents an amino group or an aminomethyl group whereby said cockroaches are attracted to said one or more compounds.

5,484,589

ANTI-VIRAL METHODS USING RNASE AND DNASE

Rudolf I. Salganik, Novosbirsk, Russian Federation, assignor to Rufeld, Inc., Santa Monica, Calif.

Continuation of Ser. No. 62,124, May 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 870,686, Apr. 20, 1992, abandoned. This application Mar. 17, 1995, Ser. No. 407,032

Int. Cl.[6] A61K *38/54*

U.S. Cl. 424—94.2 **2 Claims**

1. A method for treating a dog infected by a canine viral infection selected from the group consisting of parvovirus and parvomixovirus comprising administering to said infected dog a therapeutically effective amount of DNase and RNase.

5,484,590

EXPRESSION OF THE DEVELOPMENTAL I ANTIGEN BY A CLONED HUMAN CDNA ENCODING A MEMBER OF A β-1,6-N-ACETYLGLUCOSAMINYLTRANSFERASE GENE FAMILY

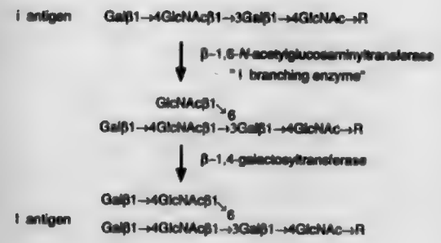
Minoru Fukuda, San Diego, Calif., and Marti F. A. Bierhuizen, Schiedam, Netherlands, assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Filed Sep. 9, 1993, Ser. No. 118,906

Int. Cl.[6] C12N *9/10;15/54;* **A61K** *38/45*

U.S. Cl. 424—94.5 **2 Claims**

1. A purified human IGnT protein having the sequence shown in FIG. 6 (SEQ ID NO: 14).



5,484,591

METHOD FOR TREATING GRAM NEGATIVE BACTERIAL INFECTIONS IN HUMANS

Lowell S. Young, San Francisco, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 154,142, Nov. 18, 1993, abandoned, which is a continuation of Ser. No. 798,031, Nov. 20, 1991, abandoned, which is a continuation of Ser. No. 306,712, Feb. 3, 1989, abandoned, which is a continuation of Ser. No. 855,878, Apr. 24, 1986, Pat. No. 4,918,163, which is a continuation-in-part of Ser. No. 781,242, Sep. 27, 1985, Pat. No. 4,777,136. This application Jul. 1, 1994, Ser. No. 277,934

The portion of the term of this patent subsequent to Apr. 17, 2007, has been disclaimed.

Int. Cl.[6] A61K *39/40;48/00;* **C07K** *16/12;* **C12N** *15/12*

U.S. Cl. 424—150.1 **1 Claim**

1. A method for therapeutically treating a human having a gram negative bacterial infection, comprising administering to the human a therapeutically effective amount of a monoclonal antibody produced by the hybridoma cell line ATCC Accession No. HB9081 (the "HB9081 antibody") or a monoclonal antibody of the IgM isotype which binds to an epitope recognized by the HB9081 antibody and further wherein the monoclonal antibody is administered in conjunction with antibiotic therapy for gram negative bacterial infections.

5,484,592

PEPTIDE, IMMUNOGENIC COMPOSITION AND VACCINE OR MEDICINAL PREPARATION: A METHOD OF IMMUNISING A MAMMAL AGAINST LHRH, AND A METHOD OF IMPROVING THE MEAT QUALITY OF PIGS

Robert H. Meloen, and Cornelis J. G. Wensing, both of Lelystad, Netherlands, assignors to Stitching Centraal Diergeneeskundig Instituut, Netherlands

Continuation of Ser. No. 761,849, Sep. 17, 1991, abandoned. This application Nov. 8, 1993, Ser. No. 149,001

Claims priority, application Netherlands, Mar. 23, 1989, 8900726

Int. Cl.[6] A61K *39/385;38/09;* **C07K** *7/23*

U.S. Cl. 424—185.1 **10 Claims**

1. An immunogenic conjugate comprising at least one peptide of the formula p-Glu-His-Trp[1]-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-Gln-His-Trp[2]-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-Cys, with the amino terminal amino acid residue to the left and the carboxy terminal amino acid residue to the right, wherein Trp[1] and Trp[2] are either Trp or N-formyl-Trp, coupled to a carrier protein.

5,484,593

DIET COMPOSITION COMPRISING GYMNEMA INODRUM AND A METHOD FOR SUPPRESSING THE ABSORPTION OF SACCHARIDES

Kazuo Iwasaki, Ota-ku, Tokyo; Chiaki Yamashita, Mitaka-shi, Tokyo; Shahram Mesri, Edogawa-ku, Tokyo, and Yoshio Iwasaki, Ota-Ku, Tokyo, all of, Japan

Filed May 28, 1991, Ser. No. 705,974

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 **5 Claims**

1. A diet composition for suppressing the absorption of saccharides comprising a sugar in humans and animals having intestines, comprising an extract of Gymnema inodrum obtained by subjecting leaves of *Gymnema inodrum* to extraction with water or an alcohol, the extract being included in an amount sufficient to suppress absorption of said saccharides in a human or animal having intestines.

5,484,594

PROCESS FOR PREPARING GRAPESEED EXTRACTS ENRICHED IN PROCYANIDOL OLIGOMERS

Enrico Frangi; Marco Bertani; Giuseppe Mustich, and Gianfranco Tuccini, all of Milan, Italy, assignors to Tecnofarmaci S.p.A., Pomezia, and Indena S.p.A., Milan, both of, Italy

Continuation-in-part of Ser. No. 371,591, Jun. 26, 1989, abandoned. This application Sep. 23, 1992, Ser. No. 949,733

Claims priority, application Italy, Jun. 28, 1988, 21134/88

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 **8 Claims**

1. A process for the preparation of an extract enriched in procyanidol oligomers from *Vitis vinifera* grapeseeds, said extract containing less than 1.5% by weight of flavanolic monomers, less than 1% by weight of (+)-catechin and between 2 and 7 procyanidol units which comprises the steps of:

a) extracting said *Vitis vinifera* grapeseeds with an aqueous acetone or aqueous methanol solution until exhaustion of catechin derivatives to obtain an aqueous acetone or aqueous methanol solution;

b) concentrating said aqueous acetone or aqueous methanol solution from step a) under vacuum to remove the acetone or methanol to obtain a precipitate containing fatty and tannic polymeric residues and a first aqueous solution;

c) filtering said precipitate from the first aqueous solution from step b) to remove said precipitate containing the fatty and tannic polymeric residues from said first aqueous solution;

d) subjecting said first aqueous solution from step c) to ultrafiltration on membranes of cut-off 100,000 to give a first permeate;

e) subjecting said first permeate from step d) to ultrafiltration to remove most of the flavanolic monomers on membranes of cut-off 3,000 to 600 to obtain a second permeate;

f) exhaustively extracting said second permeate from step e) with ethyl acetate to obtain an ethyl acetate solution containing said procyanidol oligomers;

g) concentrating and precipitating said oligomers from the ethyl acetate solution of step f) with a chlorinated hydrocarbon selected from the group consisting of chloroform, methylene chloride, and dichloroethane; and

h) recovering said extract enriched in procyanidol oligomers.

5,484,595

PROCESS FOR PREPARATION OF DIBENZOCYCLOOCTADIENE TYPE LIGNAN

Yukinobu Ikeya; Hirotoshi Kanatani; Kaoru Nakajima, and Hiroshi Mitsuhashi, all of Ibaraki, Japan, assignors to Tsumura & Co., Tokyo, Japan

PCT No. PCT/JP89/00889, § 371 Date Apr. 6, 1990, § 102(e) Date Apr. 6, 1990, PCT Pub. No. WO90/01487, PCT Pub. Date Feb. 22, 1990

PCT Filed Aug. 8, 1989, Ser. No. 477,875

Claims priority, application Japan, Aug. 9, 1988, 63-197242

Int. Cl.[6] A61K *35/78;31/70;* **A23L** *1/28*

U.S. Cl. 424—195.1 **10 Claims**

1. A process for the preparation of a dibenzocyclooctadiene type lignan, which comprises extracting a plant containing a dibenzocyclooctadiene type lignan with a low polar solvent selected from the group consisting of petroleum ether, n-hexane, n-heptane, benzene, toluene and cyclohexane, subjecting the resulting extract to at least one partition extraction with a water-insoluble low polar solvent selected from the group consisting of petroleum ether, n-hexane, n-heptane, benzene, toluene and cyclohexane, and a water-soluble high polar solvent selected from the group consisting of methanol and ethanol, and recovering the dibenzocyclooctadiene type lignan from the layer of the water-soluble high polar solvent.

5,484,596

ACTIVE SPECIFIC IMMUNOTHERAPY

Michael G. Hanna, Jr., Frederick, Md.; Herbert C. Hoover, Jr., Hingham, Mass., and Leona C. Peters, Frederick, Md., assignors to Akzo N.V., Arnhem, Netherlands

Continuation of Ser. No. 937,460, Aug. 28, 1992, abandoned, which is a continuation of Ser. No. 639,486, Jan. 10, 1991, abandoned, which is a continuation of Ser. No. 426,479, Oct. 23, 1989, abandoned, which is a continuation of Ser. No. 930,597, Nov. 12, 1986, abandoned, which is a division of Ser. No. 697,878, Jan. 31, 1985, Pat. No. 4,828,991, which is a continuation-in-part of Ser. No. 575,533, Jan. 31, 1984, abandoned. This application Nov. 1, 1993, Ser. No. 122,257

Int. Cl.[6] A61K *39/00;39/395*

U.S. Cl. 424—277.1 **9 Claims**

1. A method of cancer therapy for treating a human patient with a resectable, solid carcinoma tumor to inhibit recurrence or formation of metastases, comprising surgically removing solid tumor tissue from a human cancer patient and preparing a viable autologous tumor cell vaccine by treating the tumor tissue to obtain viable tumor cells by the method of digesting tumor tissue with collagenase to free tumor cells, whereby said cells remain viable and intact, irradiating the tumor cells to be viable but non-tumorigenic, preparing a vaccine comprising about 10^7 viable but non-tumorigenic tumor cells per dose and injecting at least three doses of the vaccine intradermally into the human patient from whom the tumor tissue had been removed after the patient's immune system has recovered from surgery, wherein at least the first two of the at least three doses comprise about 10^7 BCG cells as adjuvant and the last dose is free of adjuvant, and wherein at the time of injection cell viability is at least 70% when measured by trypan blue exclusion testing.

5,484,597

CLEAR HYDROALCHOLIC COSMETIC MICROEMULSIONS

Craig S. Slavtcheff, Cheshire, and Stephen R. Barrow, Trumbull, both of Conn., assignors to Chesebrough-Pond's USA Co., Greenwich, Conn.

Filed Jul. 30, 1993, Ser. No. 99,879

Int. Cl.[6] A61K *7/46;7/00*

U.S. Cl. 424—401 **7 Claims**

1. Cosmetic microemulsion compositions which are clear and storage stable comprising:

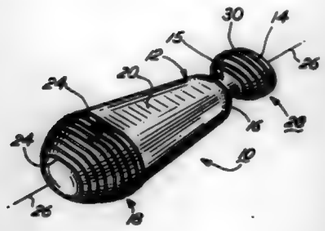
(i) from about 1 to about 99% of water;
(ii) from about 15 to about 70% of ethanol;
(iii) from about 0.1 to about 3% of skin nutritive oil selected from the group consisting of vitamin oils, C_{10}–C_{60} terpenes and mixtures thereof;
(iv) from about 1 to about 10% of castor oil ethoxylated with about 40 to about 55 moles of ethylene oxide per mole of castor oil; and
(v) from about 0.1 to about 2.0% of a propoxylated mono- or di-hydric alkanol selected from the group consisting of PPG-10 cetyl ether and PPG-10 butanediol.

5,484,598

SOFT GELATIN MEDICAMENT CAPSULES WITH GRIPPING CONSTRUCTION

Gregory A. Schurig, Clearwater; Frank S. S. Morton, Seminole, and Norman S. Stroud, Safety Harbor, all of Fla., assignors to R.P. Scherer Corporation, Troy, Mich.

Continuation of Ser. No. 164,629, Dec. 9, 1993, Pat. No. 5,380,534, which is a continuation of Ser. No. 931,593, Aug. 18, 1992, abandoned. This application Sep. 27, 1994, Ser. No. 313,423
Int. Cl.[6] A61K *6/00;7/00*
U.S. Cl. 424—401 **6 Claims**



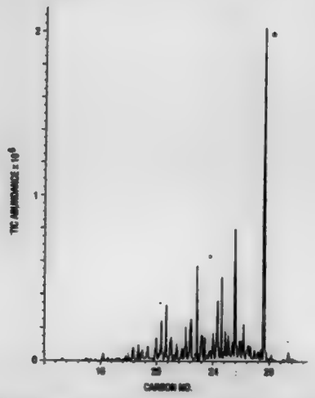
1. An integral soft gelatin capsule applicator for containing a medicament in an unopened state and for expelling said medicament in an opened state, said integral capsule defining a longitudinal axis, comprising:
(a) a hollow flexible bulb portion extending substantially along said longitudinal axis including a first bulb end having an external bulb surface and a second tapered end, said first bulb end having a knurled texture extending substantially continuously about said external bulb surface, said knurled texture including outwardly extending projections to provide a frictional gripping surface for said first bulb end, said second tapered end defining a medicament expulsion port substantially remote from said first bulb end; and
(b) a tab portion closing said medicament expulsion port in said unopened state and removable from said hollow flexible bulb portion by application of a twisting action substantially transverse to said longitudinal axis to provide said open state;
(c) said knurled texture substantially securing the user's fingers to grip said hollow flexible bulb portion without slippage permitting compressive forces to be applied to said hollow flexible bulb portion substantially perpendicular to said longitudinal axis to expel substantially all of said medicament from said capsule;
(d) said knurled texture of said first bulb end and said remoteness of said medicament expulsion port from said knurled texture cooperating to provide secure gripping of said first bulb end during normal compression thereof to expel said medicament through said medicament expulsion port and directing said medicament in a predetermined direction substantially away from said knurled texture, whereby said medicament is effectively and hygienically applied and spillage of said medicament onto said first bulb end is substantially avoided.

5,484,599

CONTROL OF INSECT PESTS

Jay A. Yoder, Pineville, La.; Richard J. Pollack, and Andrew Spielman, both of Needham, Mass., assignors to The President and Fellows of Harvard College, Cambridge, Mass.

Filed Nov. 30, 1993, Ser. No. 160,050
Int. Cl.[6] A01N *25/00;31/02*
U.S. Cl. 424—405 **6 Claims**



1. A method for killing fire ants comprising contacting a surface with a composition comprising a thin film of farnesol at an insecticidal concentration of about 60%.

5,484,600

INSECTICIDAL COMPOSITE TIMED RELEASED PARTICLE

Robert D. Sjogren, St. Paul, Minn., assignor to Merdian, L.L.C., Minneapolis, Minn.

Filed Jan. 20, 1995, Ser. No. 375,859
Int. Cl.[6] A01N *25/00*
U.S. Cl. 424—405 **46 Claims**

1. A controlled release pest control composite particle adapted for broadcast application, said composite comprising:
(a) about 70 to 95 wt % of a particle having a density greater than water;
(b) about 0.5 to 12.5 wt % of a floatation agent having a density less than water at the temperature of a use location;
(c) an effective pest controlling amount of a pesticide; and
(d) about 0.5 to 5.0 wt % of a water soluble adhesive;
wherein the composite particle has a density greater than about 1.0 g/ml and after application, and in contact with water, said adhesive softens causing the composite to disassemble releasing the floatation agent and the pesticide to the surface where the pesticide acts to control a pest population.

5,484,601

FLOWABLE DEMINERALIZED BONE POWDER COMPOSITION AND ITS USE IN BONE REPAIR

Robert K. O'Leary, Spring Lake, N.J., and Patrick A. McBrayer, Yardley, Pa., assignors to Osteotech, Inc., Shrewsbury, N.J.

Continuation of Ser. No. 410,596, Sep. 21, 1989, Pat. No. 5,073,373. This application Oct. 18, 1991, Ser. No. 779,401
Int. Cl.[6] A61K *35/32*
U.S. Cl. 424—422 **13 Claims**

1. A flowable composition for application to a bone defect site to promote new bone growth at the site which comprises a new bone growth-inducing amount of demineralized osteogenic bone powder in a biocompatible liquid polyhydroxy compound and/or ester thereof as a carrier for the bone powder,

wherein the liquid polyhydroxy compound and/or ester thereof is selected from the group consisting of glycerol monoesters and diesters of glycerol derived from low molecular weight carboxylic acids, ethylene glycol, diethylene glycol, triethylene glycol, 1,2-propanediol. trimethylolethane, trimethyolpropane, pentaerythritol, sorbitol, esters of any of the foregoing polyhydroxy compounds and mixtures thereof.

5,484,602

METHODS AND COMPOSITIONS FOR NONINVASIVE DOSE-TO-EFFECT ADMINISTRATION OF DRUGS WITH CARDIOVASCULAR OR RENAL VASCULAR ACTIVITIES

Theodore H. Stanley, Salt Lake City, and Brian Hague, West Valley City, both of Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Continuation of Ser. No. 209,113, Mar. 9, 1994, abandoned, which is a continuation of Ser. No. 90,485, Jul. 12, 1993, abandoned, which is a continuation of Ser. No. 732,723, Jul. 18, 1991, abandoned, which is a continuation of Ser. No. 421,068, Oct. 13, 1989, abandoned, which is a division of Ser. No. 60,046, Jun. 8, 1987, Pat. No. 4,885,173, which is a continuation-in-part of Ser. No. 729,301, May 1, 1985, Pat. No. 4,671,953. This application Jan. 20, 1995, Ser. No. 376,642
Int. Cl.[6] A61K *9/68*
U.S. Cl. 424—440 **26 Claims**

1. A composition for use in inducing a predetermined systemic modification of cardiovascular functions in a patient, said composition comprising:
lipophilic drug means for inducing a predetermined systemic modification of cardiovascular functions in the patient that can be observed before overdosage in the patient occurs;
carbohydrate releasing means, the releasing means uniformly incorporating said drug means, for simultaneously releasing said drug means over a period of time as the releasing means is dissolved while being sucked and held passively in the mouth of the patient for substantially complete administration via absorption through mucosal tissues of the mouth, pharynx, and esophagus in a dose-to-effect manner such that systemic modification of cardiovascular functions is achieved and maintained; and
a stick secured to the releasing means, for permitting convenient insertion of the releasing means into the mouth of the patient, and for quantitatively and conveniently permitting insertion and removal of the releasing means in response to the observed effect of the drug means on the patient in order to maintain a desired effect over a prolonged period of time in response to susceptibility and needs of an individual patient, the stick remaining after the releasing means has completely dissolved.

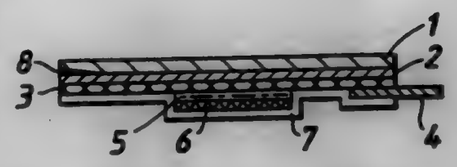
5,484,603

PERCUTANEOUS ANAESTHESIA

Paul Holden, York, and Barry M. Sandbank, Chester, both of, United Kingdom, assignors to Smith & Nephew plc, United Kingdom

PCT No. PCT/GB92/00518, § 371 Date Nov. 12, 1993, § 102(e) Date Nov. 12, 1993, PCT Pub. No. WO92/16202, PCT Pub. Date Oct. 1, 1992
PCT Filed Mar. 20, 1992, Ser. No. 119,070
Claims priority, application United Kingdom, Mar. 21, 1991, 9105977
Int. Cl.[6] A61F *13/00*
U.S. Cl. 424—447 **15 Claims**

1. A percutaneous anaesthetic delivery system comprising a skin conformable backing layer, an amethocaine-bearing material comprising at least 10% by weight of amethocaine and a layer having little or no tendency to absorb amethocaine intermediate the backing layer and the layer of amethocaine bearing material; wherein the amethocaine bearing material comprises a film, net or fibrous mat and wherein the amethocaine in the amethocaine bearing layer is present in the surface of said layer which is adapted to be in direct contact with the skin during use.

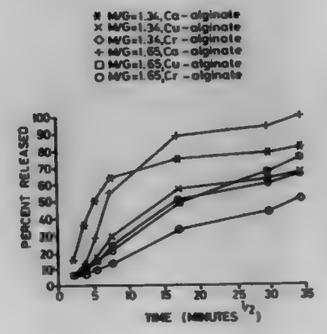


5,484,604

CROSS-LINKED ALGINATE TRANSDERMAL MEDICINE DELIVERY DEVICES

Montague C. Solomon, and Biljana Oraceska, both of London, England, assignors to Chatfield Pharmaceuticals Limited, Kramer Mews, England

Continuation of Ser. No. 88,406, Jul. 7, 1993, abandoned, which is a continuation of Ser. No. 732,670, Sep. 19, 1991, abandoned. This application Dec. 29, 1994, Ser. No. 366,406
Claims priority, application United Kingdom, Jul. 21, 1991, 9116056
Int. Cl.[6] A61K *9/70;31/465*
U.S. Cl. 424—449 **3 Claims**



1. A process for preparing a transdermal drug delivery device comprising:
(A) preparing a polymer matrix by homogenizing about 7 weight % sodium alginate with about 3.5 weight % glycerol for about 5 minutes, mixing with about 0.5 weight % nicotine in about 89 weight % distilled water, casting the mixture over a backing material and drying overnight, and spraying with an about 5 weight % solution of calcium ions to cross-link; and
(B) preparing a control release membrane by homogenizing about 3.1 weight % of sodium alginate with about 3.6 weight % of glycerol for about 5 minutes, mixing with about 93.3 weight % of distilled water, casting the mixture over a backing material and drying overnight, and spraying with an about 5 weight % solution of calcium ions to cross-link; and
(C) assembling the device by cutting a circle of the polymer matrix and a circle of the control release membrane and assembling them in sequence on a piece of backing material.

5,484,605

AGENT FOR TREATING CHRONICALLY INFLAMMATORY INTESTIONAL DISEASES

Ekkehard Scheiffele; Gerhard Gerber; Werner Siems, and Andreas Werner, all of Berlin, Germany, assignors to Henning Berlin GmbH Chemie-und Pharmawerk, Berlin, Germany

Continuation of Ser. No. 13,214, Feb. 1, 1993, abandoned, which is a continuation of Ser. No. 688,959, May 24, 1991, abandoned. This application Dec. 15, 1993, Ser. No. 166,894

Claims priority, application Germany, Nov. 25, 1988, 38 39 839.7

Int. Cl.[6] A61K *9/28;9/48*

U.S. Cl. 424—451 14 Claims

1. A pharmaceutical composition useful for the treatment of a chronic inflammatory intestinal disease comprising an effective amount of oxypurinol, an alkali, alkaline earth, or ammonium salt of oxypurinol, or a mixture thereof, together with (a) a material which effects release of the oxypurinol or its salt only in the mid to lower region of the small intestine, in the form of an enteric coated tablet or capsule, or (b) which is in the form of clysters.

5,484,606

PROCESS FOR REDUCING THE PRECIPITATION OF DIFFICULTY SOLUBLE PHARMACEUTICAL ACTIVES

Dadi J. Dhabhar, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 24, 1994, Ser. No. 185,652

Int. Cl.[6] A61K *9/48;9/10;31/79*

U.S. Cl. 424—455 20 Claims

1. A process to reduce precipitation of difficulty soluble pharmaceutical actives in combination with an aqueous phase in a concentrated, supersaturated form, comprising the steps of:

a) combining and mixing until dissolved from about 1% to about 40% of at least one difficultly soluble pharmaceutical active in a solution comprising:

i) from about 20% to about 70% of a polyethylene glycol;

ii) from about 1% to about 20% of a polyvinylpyrrolidine; and

iii) from about 1% to about 10% of a propylene glycol

wherein said solution is heated to a temperature of from about 70° C. to about 120° C. to dissolve said active;

b) removing the solution of step a) from the heat; and

c) combining and mixing until uniform the solution from step a) with from about 1% to about 50% of an aqueous phase having from about 0.5% to about 20% of an additional pharmaceutical active.

5,484,607

EXTENDED RELEASE CLONIDINE FORMULATION

H. Joseph Horacek, P.O. Box 470144, Charlotte, N.C. 28247

Filed Oct. 13, 1993, Ser. No. 136,309

Int. Cl.[6] A61K *9/64;9/62;9/40*

U.S. Cl. 424—460 6 Claims

1. An oral pharmaceutical dosage unit formulation for the extended release of clonidine to effect central alpha-adrenergic stimulation over a prolonged period upon administration thereof, wherein the oral dosage unit is a gelatin capsule containing a homogenous mixture, the homogenous mixture comprising:

a. a therapeutically effective amount of clonidine;

b. from about 30 to about 70 percent by weight of a cellulose ether, wherein the cellulose ether is selected from the group consisting of ethyl cellulose, methyl cellulose, hydroxypropyl cellulose, hydroxyethyl cellulose, sodium carboxymethyl cellulose, hydroxypropyl methylcellulose having a hydroxypropoxyl substitution of from about 7 to about 12 weight percent and a methoxyl substitution of from about to about 30 weight percent and having a number average molecular weight of about 86,000 and a 2% aqueous solution viscosity of about 4000 cps hydroxypropyl methylcellulose having a hydroxypropoxyl substitution of from about 7 to about 12 weight percent, and a methoxyl substitution of from about 19 to about 24 weight percent and having a number average molecular weight of about 246,000 and a 2% aqueous solution viscosity of about 100,000 cps and mixtures thereof; and from about 30 to about 70 percent by weight of therapeutically inert, pharmaceutically acceptable adjunct materials, wherein the adjunct material is selected from the group consisting of cornstarch, lactulose and dextrose.

5,484,608

SUSTAINED-RELEASE DRUG DELIVERY SYSTEM

Edward M. Rudnic, No. Potomac, Md.; John A. McCarty, Biscayne Park, Fla., and George W. Belenduik, Potomac, Md., assignors to Pharmavene, Inc., Rockville, Md.

Filed Mar. 28, 1994, Ser. No. 218,757

Int. Cl.[6] A61K *9/22;9/24;9/26*

U.S. Cl. 424—468 10 Claims

1. A sustained-release pharmaceutical composition comprising a very soluble pharmaceutical agent in a pharmaceutical carrier comprising a hydrophilic polymer selected from the group consisting of acrylic acid polymers and polymers of derivatives thereof dispersed in a hydrophobic matrix.

5,484,609

THERAPEUTIC COMPOSITIONS AND METHODS

Thomas S. Y. Ko, South Belgrave, Australia, assignor to Enzacor Properties Limited, St. Heller, Channel Islands

Filed Jan. 21, 1994, Ser. No. 185,061

Claims priority, application Australia, Jul. 24, 1991, PK7398

Int. Cl.[6] A61K *9/26;38/00;* A01N *37/18*

U.S. Cl. 424—470 38 Claims

1. A composition comprising:

(i) granules comprising a biologically active material in association with a week base, the granules being partially coated with a delayed release material substantially impermeable at pH below about 6.0 and soluble in intestinal joice;

(ii) an acidifying agent having a pH between about 1.5 to about 6 when in solution; and

(iii) a gel forming agent.

5,484,610

PH AND TEMPERATURE SENSITIVE TERPOLYMERS FOR ORAL DRUG DELIVERY

You H. Bae, Salt Lake City, Utah, assignor to MacroMed, Inc., Salt Lake City, Utah

Filed Jan. 2, 1991, Ser. No. 636,747

Int. Cl.[6] A61K *9/14;9/32;9/58;47/32;* C08F *220/06;220/52*

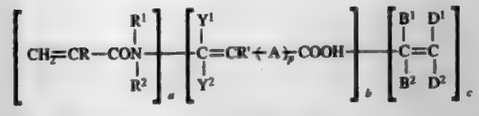
U.S. Cl. 424—487 17 Claims



1. An oral bioactive agent containing polymer composition sensitive to pH and temperature for passing a bioactive agent though the stomach of a warm blooded animal in a protected form and releasing said bioactive agent to the intestinal tract of said animal comprising:

(a) between about 0.1 to 50 percent by weight of a bioactive agent loaded onto;

(b) between about 50 to 99.9 percent by weight of a pH and temperature sensitive terpolymer having the formula:



where a is a numeral of between about 35 to 99, b is a numeral of between about 1 to 30 and c is a numeral of between about 0.5 and 30 wherein a, b and c total 100 and are representative of percent by weight of each monomer component in the terpolymer; R is a member selected from the group consisting of hydrogen and methyl; R^1 is a member selected from the group consisting of lower alkyl and lower alkoxyalkyl; R^2 is a member selected from the group consisting of hydrogen, lower alkyl and lower alkoxyalkyl with the proviso that R^1 and R^2 can combine as an alkylene $-(CH_2)_n-$ chain to form a N-cyclic structure; n is an integer of 4 to 6; R' is a member selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, aryl, substituted aryl, lower alkoxy, aryloxy, hydroxy, carboxyalkyl, amino, substituted amino, amido and substituted amido; A is a member selected from the group consisting of lower alkylene, lower alkenylene, phenylene and substituted derivatives thereof; p is an integer of 0 to 3; Y^1 is a member selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, aryl, carboxyalkyl, hydroxyalkyl, hydroxy and chloro; Y^2 is a member selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, carboxy, carboxyalkyl, carboxyalkenyl, carboxyalkenylaryl, hydroxy, hydroxyalkyl, aroyl, carbamoyl, N- and N,N- alkyl, alkenyl or aryl substituted carbamoyl, alkyl carbamoyl, 5-norborneyl and chloro; B^1 and B^2 are each members selected from the group consisting of hydrogen, halo, aryl, alkenyl and alkyl; D^1 is a member selected from the group consisting of hydrogen, lower alkyl, lower alkenyl and halo and D^2 is a member selected from the group consisting of a lower alkyl carboxylate, aryl, cyano and N-carbazole, with the proviso that the term lower references a carbon grouping containing not more than 8 carbon atoms; and

wherein said bioactive agent is combined with said terpolymer in solution at a temperature below the lower critical solution temperature of said terpolymer followed by the raising of the temperature of said combined terpolymer/bioactive agent solution to above the lower critical solution temperature of said terpolymer by means of introducing said terpolymer/bioactive agent solution into a bath solution causing said terpolymer/bioactive agent solution to precipitate into particles which are then separated from said bath solution and dried.

5,484,611

METHOD OF PRODUCING A FATTY ACID

Raymond C. Noble, Ayr, Scotland, and Massimo Cocchi, Bologna, Italy, assignors to The Scottish Agricultural College, Ayr, Scotland

Continuation-in-part of Ser. No. 914,114, Jul. 15, 1992, abandoned. This application Aug. 13, 1993, Ser. No. 106,297

Int. Cl.[6] A61K *35/12*

U.S. Cl. 424—570 11 Claims

1. A method of producing docosahexaenoic acid linked with phospholipid, the method comprising extracting from the brains of hatched chickens, a mixture of docosahexaenoic acid-linked phospholipids, purifying from said mixture of docosahexenoic acid-linked phospholipids the fractions of phosphatidyl choline, phosphatidyl serine and phosphatidyl inositol, and combining said fractions together.

5,484,612

METHOD OF TREATING A MAMMAL HAVING A SOLID TUMOR SUSCEPTIBLE TO TREATMENT WITH CISPLATIN

J. Martin Brown, Redwood City, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Sep. 22, 1993, Ser. No. 125,609

Int. Cl.[6] A61K *33/24;31/53*

U.S. Cl. 424—649 5 Claims

1. A method of treating a mammal having a solid tumor susceptible to treatment with cisplatin, said mammal in need of such treatment, the method comprising:

(a) administering to said mammal an effective amount of 3-amino-1,2,4-benzotriazine 1,4-dioxide; and

(b) administering to said mammal an effective amount of cisplatin about 0.5 to about five hours after administration of said 3-amino-1,2,4-benzotriazine 1,4-dioxide.

5,484,613

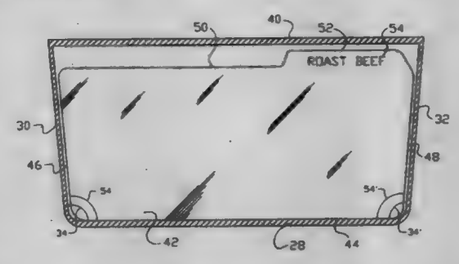
DEVICE FOR PREPARING SANDWICH MEAT

A. William Fisher, Jr., 67 Park St., Tenafly, N.J. 07670

Filed Mar. 26, 1993, Ser. No. 37,238

Int. Cl.[6] H21D *10/02*

U.S. Cl. 426—124 7 Claims



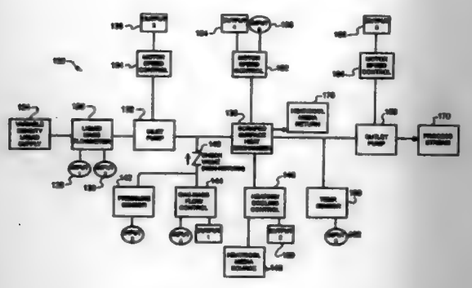
1. A plate and container arrangement to be used as an aid in the preparation of sandwich meat comprising: a plurality of plate members each having a front and back surface, a top, a bottom edge, a left edge and a right edge, the left and right edges extending upwardly from said bottom edge toward said top said right and left edges defining a first acute angle with the apex of said first angle being below said bottom edge, a container having a length and having opposing side walls, a front wall, a rear wall, and a bottom, said side walls defining a second acute angle being substantially similar to said first acute angle the apex of said second angle being below said container bottom, said plate members being positionable inside said container substantially perpendicular to said side walls said plate members being continuously adjustable along the length of said container, the plates defining storage spaces having a width defined as the distance between one of the container side wall and a plate, or two plates, the width being continuously adjustable from substantially no distance to substantially the length of the container less the thickness of the plates said plate members being supported substantially upright in a self locking manner by said container side walls, and said plate members being positionable between groups of meat packages the groups of meat packets being defined as a long pile of meat used to make a certain sandwich substantially encased in a separator sheet the meat packets being placed on edge within the container, said plate members having a tab member extending above said top such that said tab members can be viewed from above the meat packets said tab being disposed to receive indicia labels.

5,484,614

METHOD FOR ADJUSTING THE DENSITY OF A LIQUID

Lyle W. Clem, Algonquin, Ill., assignor to Accurate Metering Systems, Inc., Schaumburg, Ill.

Division of Ser. No. 268,634, Jun. 30, 1994. This application May 17, 1995, Ser. No. 443,578
Int. Cl.[6] A23L *1/00*
U.S. Cl. 426—231 10 Claims



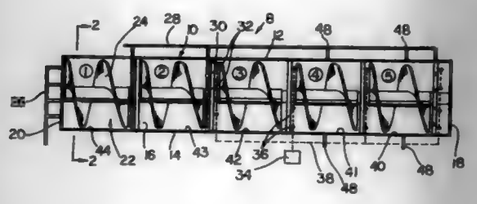
1. A process for forming a product having a desired density from at least two streams, comprising:
a) forming a first stream of a first desired density;
b) forming a second stream of a second desired density;
c) determining a ratio for the first stream in relation to the second stream;
d) mixing the first stream with the second stream at the ratio to form a mixture;
e) forming the mixture into a product having a desired density, the density for the product being determined by a combination of the first desired density, the second desired density, and the ratio; and
f) recovering the product.

5,484,615

APPARATUS AND METHOD FOR MICROBIOLOGICAL DECONTAMINATION OF POULTRY

Zheko V. Kounev, Goshen, Ind., assignor to Maple Leaf Farms, Inc., Milford, Ind.

Filed Apr. 30, 1993, Ser. No. 54,306
Int. Cl.[6] A22C *21/00*; A23B *4/00*
U.S. Cl. 426—238 13 Claims



12. A method of decontaminating poultry comprising the steps of:
a) introducing poultry into a tank having an inlet and an outlet;
b) introducing disinfectant solution into said tank;
c) transporting said poultry from said inlet to said outlet through said solution; and
d) directing ultrasonic waves at said poultry as it is transported through said tank.

5,484,616

PROCESS FOR PREPARING SHELF-STABLE, INTERMEDIATE-MOISTURE POTATOES

Dominic J. Vellucci, Jr.; Charles R. Mason, both of Yonkers; Stuart A. Cochran, Tarrytown, all of N.Y.; Edward C. Coleman, New Fairfield, Conn., and Dalip K. Nayyar, Washingtonville, N.Y., assignors to Kraft Foods, Inc., Northfield, Ill.

Filed Jan. 20, 1995, Ser. No. 376,592
Int. Cl.[6] A23L *1/216;1/217*
U.S. Cl. 426—242 19 Claims

1. A method for preparing shelf-stable, intermediate-moisture potatoes suitable for reconstitution comprising:
(a) preparing pieces of raw potatoes;
(b) blanching the raw potato pieces in an infusion solution containing glycerol and sodium chloride to infuse glycerol and sodium chloride into said potato pieces;
(c) draining and cooling the infused potato pieces; and
(d) drying the infused potato pieces, the resultant infused and dried potato pieces having a water activity of below 0.85.

5,484,617

PROCESS FOR PREPARING GOLDEN YELLOW POTATO PIECES AND PRODUCT THEREOF

Linda E. Tiffany, Ontario, Oreg., assignor to Ore-Ida Foods, Inc., Ontario, Oreg.

Continuation of Ser. No. 164,709, Dec. 10, 1993, abandoned. This application Jan. 17, 1995, Ser. No. 373,458
Int. Cl.[6] A23L *1/216*
U.S. Cl. 426—250 17 Claims

1. A method for preparing potato products, consisting essentially of:
a) optionally peeling potatoes;
b) cutting or shaping said potatoes into pieces of desired shape; and
c) passing said potato pieces through an aqueous solution of food grade color wherein said food grade color is selected from the group consisting of annatto and blends of annatto, to thereby provide potato pieces having a light golden yellow color upon emerging from said color solution.

5,484,618

PROCESS OF PREPARING A BAKED PIZZA

Richard L. Barz, Castle Rock, and Ann V. Durkin, Littleton, both of Colo., assignors to Leprino Foods Company, Denver, Colo.

Division of Ser. No. 130,420, Oct. 1, 1993, Pat. No. 5,380,543, which is a continuation of Ser. No. 835,347, Feb. 14, 1992, abandoned. This application Oct. 6, 1994, Ser. No. 319,009
Int. Cl.[6] A23C *19/086*
U.S. Cl. 426—304 12 Claims

1. The process of preparing a baked pizza comprising the steps of
a) spreading on a pizza crust tomato sauce and a cheese composition comprising a mixture of natural mozzarella cheese and a minor amount of starch, wherein the cheese is comminuted and the starch is present as a coating on the cheese particles in an amount within the range of about 0.0005 to 0.01%, based on the weight of the cheese, and
b) baking said combination of crust, sauce, and starch-coated cheese in an oven until the cheese is fully melted and the crust is uniformly cooked.

5,484,619

METHOD FOR CURING FISH AND MEAT BY EXTRA-LOW TEMPERATURE SMOKING

Kanemitsu Yamaoka, 108, Hirabari 4-chome, Tenpaku-ku, Nagoya-shi, Aichi; Tetsuo Adachi, 38-32, Hayamiya 3-chome, Nerima-ku, Tokyo, and Shizuyuki Ohta, 21-8, Ikuta 8-chome, Tama-ku, Kawasaki-shi, Kanagawa, all of, Japan

Filed Mar. 23, 1994, Ser. No. 216,306
Claims priority, application Japan, Apr. 6, 1993, 5-103502
Int. Cl.[6] A23B *4/044*; A23L *1/31;1/35*
U.S. Cl. 426—315 2 Claims

1. A method for curing raw tuna meat by extra-low temperature smoking comprising the steps of:
burning a smoking material at 250° to 400° C. and passing the produced smoke through a filter to remove mainly tar therefrom;
cooling the smoke passed through the filter in a cooling unit to between 0° and 5° C. while retaining ingredients exerting highly preservative and sterilizing effects; and
smoking the tuna meat at extra-low temperatures by exposure to the smoke cooled to between 0° and 5° C.

5,484,620

METHOD OF MANUFACTURING STABILIZING AND/OR FILTERING AIDS FOR USE IN THE PROCESSING OF LIQUIDS, ESPECIALLY BEVERAGES

Dietmar Oechsle, Schwäbisch Gmünd; Wolfgang Baur, Waldstetten, and Ludger Gottkehaskamp, Göggingen, all of, Germany, assignors to Schenk-Filterbau Gesellschaft mit beschränkter Haftung, Waldstetten, Germany

Continuation of Ser. No. 956,890, Oct. 14, 1992, abandoned. This application Oct. 14, 1994, Ser. No. 323,529
Claims priority, application Germany, Dec. 22, 1990, 40 41 478.7; Aug. 2, 1991, 41 25 594.1
Int. Cl.[6] B29B *9/08*; C12H *1/044;1/052*
U.S. Cl. 426—422 27 Claims

1. A method of manufacturing stabilizing and/or filtering aids that adsorb polyphenols, for use in the processing of beverage-type liquids, using a mixture of various materials, at least one of which is in the form of granular particles selected from the group consisting of fine to very fine particles, said method including the steps of:
compressing said mixture;
heating said compressed mixture to agglomerate said mixture by heating said mixture to near the melting point of a meltable material of said mixture to melt said meltable material;
fixing said agglomerated mixture via a sintering-type process;
subjecting said fixated agglomerate to a grinding processes or a screening process to provide a granular stabilizing and/or filtering aid, wherein a granule size is selected in conformity with an intended application.

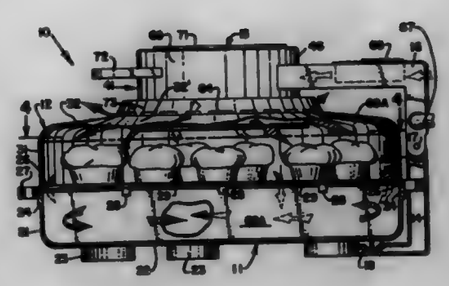
5,484,621

METHOD FOR RAPIDLY COOKING FOOD

Chad Erickson, Plymouth; David Dornbush, Prior Lake, and John Finn, Minneapolis, all of Minn., assignors to American Harvest, Inc., Chaska, Minn.

Continuation of Ser. No. 13,709, Feb. 4, 1993, Pat. No. 5,403,607, which is a division of Ser. No. 902,531, Jun. 22, 1992, abandoned, which is a continuation of Ser. No. 325,157, Mar. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 14,997, Feb. 17, 1987, Pat. No. 4,817,589. This application Sep. 29, 1994, Ser. No. 315,296
Int. Cl.[6] A23L *1/00*
U.S. Cl. 426—523 7 Claims

1. A method of rapidly cooking food, comprising the steps of:
(a) providing a cooking unit, said cooking unit including:
(i) a cooking chamber made up of an upper enclosure member and a lower enclosure member;



(ii) air accelerating means for accelerating air within said cooking chamber;
(iii) heating means located within said cooking chamber for heating air in the cooking chamber; and
(iv) an interconnecting member which connects together said upper and lower enclosure members, said interconnecting member comprising an upper support member removably attachable to said upper enclosure, a lower support member removably attachable to said lower enclosure member, and a hinge for removably connecting together the upper and lower support members;
(b) attaching the upper support member to the upper enclosure;
(c) attaching the lower support member to the lower enclosure member;
(d) connecting the upper support member to the lower support member;
(e) pivoting said upper enclosure member upwardly about said hinge so as to expose the interior of said cooking chamber;
(f) placing food to be cooked within said cooking chamber;
(g) pivoting said upper enclosure member downwardly about said hinge so as to close said cooking chamber; and
(h) cooking food in said cooking chamber by heating and accelerating air in said cooking chamber.

5,484,622

LOW FAT FOOD PRODUCT

Jeffrey A. Caden, 10045 Secretariat La., NE., Bainbridge Island, Wash. 98110, and Mark Wolke, 245 Wildwood Dr., Issaquah, Wash. 98027

Continuation of Ser. No. 105,395, Aug. 12, 1993, Pat. No. 5,422,132. This application Mar. 15, 1995, Ser. No. 404,506
Int. Cl.[6] A21D *10/00*
U.S. Cl. 426—555 9 Claims

1. A starch-prune premix for use in making a flour-based food product, the premix comprising in combination:
A. amylopectin starch
B. amylose starch; and
C. prune; the starches and prune being mixed together to form the premix whereby a user may add flour and other components in order to make the flour-based food product.

5,484,623

DIETARY SYSTEM HIGH IN OIL INTAKE FOR THE TREATMENT OF OBESITY AND FOR THE LOWERING OF SATURATED FATS

Linsey McLean, 4267 S. State Rd., Davison, Mich. 48423

Filed Jan. 10, 1994, Ser. No. 179,188
Int. Cl.[6] A23L *1/302;1/304*; A23D *9/00*
U.S. Cl. 426—601 23 Claims

1. A dietary system for the stimulation of lipolysis that shifts the dieter's food utilization pathway from one of glucose storage to one of glucose utilization, said diet including a protein component and a carbohydrate component and at least one glucagon pathway-enhancing component, said at least one glucagon pathway-enhancing component comprising an oil containing fatty acids,

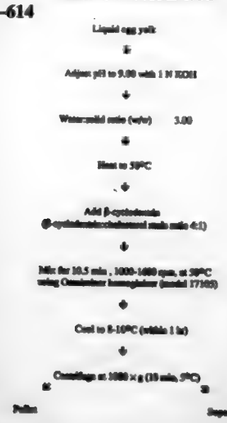
said oil being administered in an amount of at least 20 ml per day and at given time intervals prior to the fall of blood sugar levels such that relatively stable levels of insulin in the bloodstream are maintained.

5,484,624

METHOD FOR REDUCTION OF CHOLESTEROL IN EGG MATERIALS

Aziz C. Awad, Westland, and Denise M. Smith, DeWitt, both of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Filed Mar. 31, 1995, Ser. No. 414,800
Int. Cl.[6] A23L *1/32*
U.S. Cl. 426—614 **17 Claims**



1. In a method for removing cholesterol and esters thereof contained in an egg material selected from the group consisting of a whole egg and an egg yolk containing granules having a size by diluting the egg material with water, adjusting the pH of the egg material to provide an alkaline pH and adding a cyclodextrin to the egg material to precipitate a clathrate of the cyclodextrin with the cholesterol which is removed, adjusting the pH to a natural pH of the egg material and then separating removing the water from the egg material, the improvement which comprises:

(a) adjusting the pH of the egg material to an alkaline pH between about 7.5 and 12 with an alkali metal hydroxide selected from the group consisting of potassium hydroxide and sodium hydroxide with stirring to provide an alkaline aqueous egg mixture;

(b) heating the alkaline aqueous egg mixture to a temperature between about 40° and 60° C. with a cyclodextrin in an amount between about 3 and 5 moles per mole of the cholesterol in the egg material to form the clathrate of the cyclodextrin and the cholesterol with mixing which reduces the size of the granules without producing a foam;

(c) cooling the aqueous egg mixture to precipitate the clathrate from the aqueous egg material; and

(d) separating the precipitated clathrate from the aqueous egg mixture to remove the cholesterol after adjusting the pH to the natural pH.

5,484,625

METHOD FOR PREPARING HAMBURGER PATTIES

William O. Giles, Sr., 8142 Wynlakes Blvd., Montgomery, Ala. 36117

Filed Mar. 4, 1994, Ser. No. 205,748
Int. Cl.[6] A23L *1/317*
U.S. Cl. 426—646 **10 Claims**

1. A method for preparing a hamburger pattie in a centralized fast food franchise so as to achieve a minimal growth rate in the population of bacteria present in the hamburger pattie while reducing the amount of smoke and oil generated from cooking the hamburger pattie at a remote retail outlet, the method comprising the steps of:

cooking the hamburger pattie in a central kitchen, without the addition of flavoring, so that it reaches an internal temperature that is sufficiently high to reduce the population of viable bacteria to a level that is safe for human consumption;

immersing the hamburger pattie in a first flavoring solution comprising salt, vegetable protein, corn syrup solids, granulated sugar, beef flavoring, flavor enhancer, corn sugar dextrose, and hydrogenated oil;

freezing the hamburger pattie;

shipping the hamburger pattie to a remote retail outlet; and

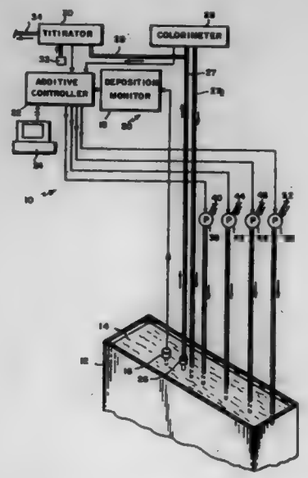
immersing the hamburger pattie at the retail outlet in a second heated flavoring solution comprising salt, vegetable protein, corn syrup solids, granulated sugar, beef flavoring, flavor enhancer, corn sugar dextrose, and hydrogenated oil.

5,484,626

METHODS AND APPARATUS FOR MAINTAINING ELECTROLESS PLATING SOLUTIONS

Donald E. Storjohann, Northboro, and Sven J. Wiberg, Wilmington, both of Mass., assignors to Shipley Company L.L.C., Marlborough, Mass.

Filed Apr. 6, 1992, Ser. No. 863,806
Int. Cl.[6] B05D *7/00*
U.S. Cl. 427—8 **13 Claims**



1. A process for maintaining the plating rate of an electroless plating solution essentially constant, said process comprising the steps of:

providing an electroless plating solution and operating said plating solution at a desired plating rate,

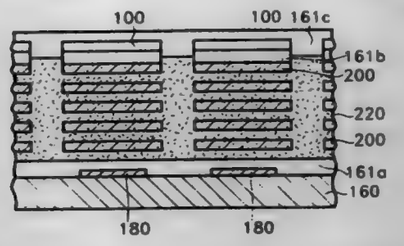
monitoring the plating rate of said plating solution by means of plating metal from said plating solution onto the quartz crystal element of a quartz crystal microbalance, the quartz crystal microbalance providing an input representing the plating rate to a computer, and supplying an output from the computer to maintain the plating rate at a desired essentially constant value by controlling the addition of at least one plating solution component to the plating solution.

5,484,627

METHOD FOR MANUFACTURING LIQUID CRYSTAL DISPLAY DEVICE

In-sik Jang, and Nobuyuki Yamamura, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation-in-part of Ser. No. 58,712, May 10, 1993. This application Aug. 24, 1993, Ser. No. 111,063
Claims priority, application Rep. of Korea, Aug. 24, 1992, 15193/92
Int. Cl.[6] B05D *5/12*
U.S. Cl. 427—58 **13 Claims**



1. A method of manufacturing a multi-layer portion of a liquid crystal display device into which a liquid crystal is deposited, said multi-layered portion formed over a substrate containing an electrode, over which is disposed a protective layer, comprising the steps of:

depositing a sublimation material layer on said protective layer;

depositing an insulation layer over said sublimation material layer;

alternatingly repeating said sublimation material layer depositing step and said insulation layer depositing step to thereby obtain a layered structure containing a plurality of sublimation material layers and a plurality of insulation layers;

forming a plurality of holes in said layered structure;

depositing an insulating material into said plurality of holes to form a plurality of supports;

forming a plurality of liquid crystal inlet holes in said layered structure where said supports are not positioned; and

sublimating said plurality of sublimation material layers with heat to form spaces between said plurality of insulation layers into which a liquid crystal is deposited.

5,484,628

PREPARATION OF ACICULAR COBALT-CONTAINING MAGNETIC IRON OXIDE

Ekkehard Schwab, Neustadt; Ronald J. Veitch, Maxdorf; Reinhard Körner, Frankenthal; Emil Pfannebecker, Schifferstadt, and Bernd Höppner, Neustadt, all of, Germany, assignors to BASF Magnetics GmbH, Mannheim, Germany

Filed Aug. 16, 1994, Ser. No. 291,559
Claims priority, application Germany, Aug. 18, 1993, 43 27 758.6
Int. Cl.[6] B05D *7/00*
U.S. Cl. 427—215 **3 Claims**

1. A process for the preparation of acicular magnetic iron oxide having a core/shell structure, consisting of a core of iron oxide and a ferrite shell containing cobalt (II) and iron(II) ions, which process comprises: in a first stage, depositing an iron(II) and cobalt hydroxide precipitate under an inert gas atmosphere on a suspension of acicular magnetic iron oxide by precipitation of iron(II) and cobalt(II) ions under alkaline conditions, and then in a second stage, depositing an iron(II) and cobalt hydroxide precipitate on the gamma-iron oxide treated in the first stage, by adding a further solution containing iron(II) and cobalt(II) ions to the suspension, under alkaline conditions, while passing a gaseous oxidizing medium into the suspension, and,

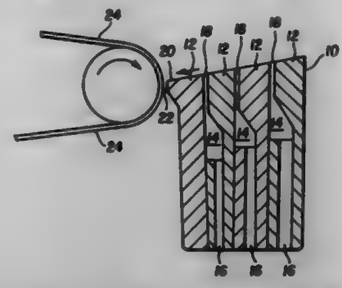
in a third stage, converting the shell into a ferrite structure under an inert gas atmosphere, wherein surface activation of iron(II) and cobalt(II) ions under alkaline conditions is carried out in both the first stage and the second stage and the amount of cobalt is divided between process stages 1 and 2.

5,484,629

COATING APPARATUS AND METHOD

Syamal K. Ghosh, Rochester; Roy O. Hopkins, Spencerport; Kenneth G. Budinski, Rochester, and Mark S. Kohler, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 27, 1993, Ser. No. 68,468
Int. Cl.[6] C23C *16/22*; B05D *1/26;1/30*
U.S. Cl. 427—255 **11 Claims**



1. A method of preparing a photographic coating apparatus useful in coating a streak-free radiation-sensitive emulsion coating on a photographic support, comprising the steps of:

preparing a ceramic coating hopper comprising a hopper bar having a ceramic surface consisting essentially of silicon carbide and zirconia contacted by coating thereon; applying an initial, non-polishing surface finish treatment to the coating surface; and polishing the coating surface, whereby the roughness of the coating surface is sufficiently decreased to prevent the formation of streaks in the emulsion coating on the support wherein the initial surface finish treatment comprises an overcoat layer formed by chemical vapor-deposition.

5,484,630

CONTAINER FOR STATUETTE

Barry S. McCall, and F. Elizabeth Wall, both of 11768 S. Harrell's Ferry Rd., Ste. D, Baton Rouge, La. 70816

Filed Jan. 30, 1995, Ser. No. 380,287
Int. Cl.[6] G09F *19/00*
U.S. Cl. 428—11 **8 Claims**



1. A container for a statuette, comprising:

(a) a transparent hollow member;

(b) a base having a central, uniformly-flat upper surface which is the highest portion of the base, which defines a horizontal plane, which extends upward into the interior of the hollow member, which has a surface area equal to at least about one-fourth of the cross-sectional area of the hollow member across the plane defined by the flat upper surface of the base, and which is attachable to and detachable from the transparent hollow member; and

(c) means for attaching the statuette upright to the flat upper surface of the base, said means including floral wire, thereby providing a completely unobstructed view of the entire statuette from all directions.

5,484,631

PRESS-THROUGH FOIL FOR PRESS-THROUGH PACKAGING

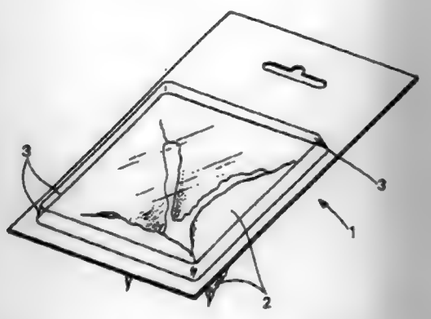
Manfred Hoh, Reute, Germany, assignor to Vereinigte Kunststoffwerke GmbH, Staufen, Germany

Filed May 19, 1994, Ser. No. 245,998

Claims priority, application Germany, May 25, 1993, 43 17 326.8

Int. Cl.[6] B32B *27/28;* **B65D** *75/36;71/00*

U.S. Cl. 428—2 **12 Claims**



1. A press-through foil (2) for press-through packaging (1) in which the press-through foil (2) seals the packaged product, but can be torn open or broken open by means of pressing the packaged product through the foil, said foil comprising a material which is a mixture of plastics that form at least two phases in the melt and in the foil formed therefrom, the plastic mixture comprising a first polymer selected from the group consisting of polypropylene, polyethylene, and ethylene vinylacetate, and a second polymer selected from the group consisting of polymethylmethacrylate, polyacrylonitrile, acrylonitrile-butadiene-styrene block copolymer, styrene-acrylonitrile block copolymer, and polyvinyl chloride.

5,484,632

NON-ORIENTED, HEAT-SEALING POLYESTER FILM

James W. Mercer, Jr., Kingsport; Emily T. Bell, Jonesborough, and Wayne K. Shih, Kingsport, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Oct. 7, 1993, Ser. No. 133,550

Int. Cl.[6] B32B *27/36;27/06;* **C08G** *63/183;63/199*

U.S. Cl. 428—35.7 **13 Claims**

1. A non-oriented layered film comprising

a) a first amorphous crystallizable polyester layer consisting essentially of polyethylene terephthalate having a melting point greater than about 238° C. and a heat of fusion of greater than about 9 cal/g as measured by a differential scanning calorimeter using a scan rate of about 20° C./min, and

b) a second amorphous, heat-sealing polyester layer consisting essentially of repeat units from terephthalic acid, about 85–93 mol % ethylene glycol and about 15–7 mol % cyclohexanedimethanol, said second polyester having a heat of fusion of greater than about 0.5 cal/g as measured by a differential scanning calorimeter using a scan rate of about 20° C./min, the total thickness of said second polyester layer being less than about 50% of the total thickness of said film.

5,484,633

HEAT-SEALABLE, ORIENTED, MULTILAYER POLYOLEFIN FILM, PROCESS FOR THE PRODUCTION THEREOF, AND THE USE THEREOF

Ursula Murschall, Nierstein; Herbert Peiffer, Mainz, and Gunter Schloegl, Kelkheim, all of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Feb. 17, 1994, Ser. No. 197,827

Claims priority, application Germany, Feb. 27, 1993, 43 06 154.0

Int. Cl.[6] B32B *27/32;* **B65D** *65/40*

U.S. Cl. 428—35.7 **18 Claims**

1. An oriented, multilayer polyolefin film comprising a base layer essentially comprising polypropylene, and at least one heat-sealable outer layer, wherein the heat-sealable outer layer contains from about 0.1 to 0.5% by weight of SiO_2, based on the weight of the outer layer, said SiO_2 having been subjected to organic after-treatment coating and having a mean particle diameter from about 2 to 6 μm, and wherein the ratio between the mean particle diameter and the outer layer thickness is in the range from about 3 to 11.

5,484,634

CONNECTION ELEMENT MADE FROM A COMPOSITE MATERIAL WITH CARBON FIBRES

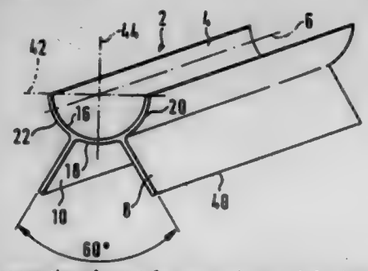
Rainer Schutze, Braunschweig, Germany, assignor to Deutsche Forschungsanstalt fur Luft- und Raumfahrt e.V., Cologne, Germany

Filed Sep. 14, 1993, Ser. No. 121,187

Claims priority, application Germany, Sep. 17, 1992, 42 31 067.9

Int. Cl.[6] B29D *22/00*

U.S. Cl. 428—36.1 **13 Claims**



1. A connection element for connecting a reinforcing rod to a main rod wherein the reinforcing rod lies at an angle to the axis of the main rod said connecting element comprising an arcuate body (4) having a central axis (6) and an inner surface with a radius substantially equal to an outer radius of said main rod, said arcuate body extending in its cross-section over an arc of less than 360 degrees, said connection element further comprising an integrally formed joint plate (8) projecting radially outwardly from an outer surface of said arcuate body in a plane containing the axis of said arcuate body, said joint plate (8) being formed by two layers of a fabric (18, 20) wherein fibers of the fabric layers cross at an angle of substantially ±45 degrees, said fabric layers extending from said joint plate onto said arcuate body to form said outer surface of said arcuate body.

5,484,635

MULTIPURPOSE DRIP CATCHER

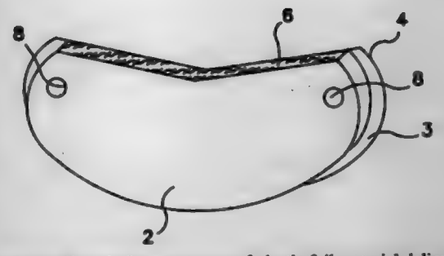
Carl E. Andersen, Løvfaldsvej 20 B, Skærbæk, DK-8600 Silkeborg, and Ole Kramer, Tornevangsvej 34 F, DK-3460 Birkerød, both of, Denmark

Filed Jan. 27, 1994, Ser. No. 186,916

Int. Cl.[6] B67D *1/16*

U.S. Cl. 428—40 **6 Claims**

1. A drip catcher comprising



a first wall made from water-proof plastic foil material delimited by an outer contour,

a second wall made from water-proof plastic foil material delimited by an outer contour,

and a filling of hydrophilic aqueous liquid absorbing material,

said first and said second walls being joined at portions of their respective outer contours so as to form an essentially liquid-impermeable envelope with an opening define by the unjoined portions of the respective outer contours of said first and second walls,

said envelope containing said filling of hydrophilic material,

said first wall comprising an at least partially transparent area, and said drip catcher comprising a filling of indicator material arranged in said envelope adjacent to said at least partially transparent area for developing a visible indication upon reaction with liquid, and

said indicator material exhibiting hydrophilicity to a lower degree than said filling or hydrophilic material so that said indicator material wall only absorb liquid once the filling of hydrophilic material has become saturated.

5,484,636

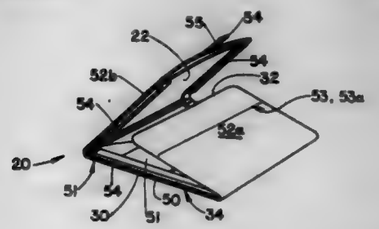
SANITARY NAPKIN WRAPPER AND ADHESIVE TAB CONSTRUCTION FOR THE SAME

Charles J. Berg, Jr., Cincinnati; Delmar R. Muckenfuhs, Middletown; William P. Maxam, Jr., Cincinnati; Alan E. Byrd, Hamilton, all of Ohio, and John A. Chang, Paris, France, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 97,100, Jul. 26, 1993, abandoned, which is a continuation of Ser. No. 795,932, Nov. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 533,614, Jun. 5, 1990, abandoned. This application Jun. 3, 1994, Ser. No. 253,834

Int. Cl.[6] A61F *13/15;13/56*

U.S. Cl. 428—40 **5 Claims**



1. An individually packaged sanitary napkin comprising:

a sanitary napkin having a body-facing side, a garment-facing side, two longitudinal side margins and two lateral side margins, said sanitary napkin comprising:

a liquid pervious topsheet;

a liquid impervious backsheet at least partially peripherally joined to said topsheet, said backsheet having opposed inwardly and outwardly oriented faces;

an adhesive patch on said outwardly oriented face of said backsheet;

an absorbent core positioned between said topsheet and said backsheet;

a releasable wrapper releasably affixed to the adhesive patch on said outwardly oriented face of said backsheet, said wrapper being folded with said sanitary napkin about at least two spaced apart transverse axes so that said wrapper defines a package body and a package flap; a folded disposal pouch is attached at one end of said releasable wrapper for use in disposing a used sanitary napkin; and

a tape fastening system for releasably securing said package flap to said package body in a folded arrangement, said tape fastening system comprising:

a tape having a first end, a second end, an inner surface facing toward said package flap, and an outer surface facing away from said package flap, said tape comprising:

a first portion at the first end of said tape, said first portion comprising a first adhesive disposed on said inner surface for permanently affixing at least part of said first portion to said package flap;

a second portion at the second end of said tape, said second portion having a fastening member disposed thereon, said fastening member having an inner surface facing toward said package body and an outer surface, said inner surface of said fastening member having at least a portion of its surface area covered with a second adhesive; and

a complementary landing member having an inner surface comprising a third adhesive that may be permanently affixed to said package body, and an outer releasable surface to which the inner surface of said fastening member is releasably affixed, said coating of releasable surface comprising a release material, said outer releasable surface being of such a size and shape that said releasable surface will underlie the entire portion of the surface area that is occupied by the second adhesive on the inner surface of the fastening member when said fastening system is closed, wherein

said second adhesive on the inner surface of said fastening member would be sufficiently strong to form a permanent bond with said material comprising said package body in the absence of said landing member.

5,484,637

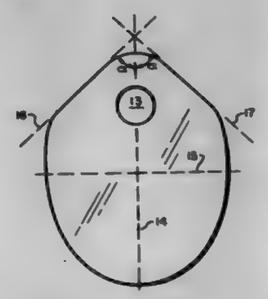
TEMPERED GLASS ARTIST PALETTES

Michael Paragon, 852 17th St., Suite 6, Santa Monica, Calif. 90403, and Barbara Ragagli, 8600 Tuscany Ave., #304, Playa Del Rey, Calif. 90293

Filed Sep. 28, 1994, Ser. No. 314,342

Int. Cl.[6] B44D *3/02*

U.S. Cl. 428—66.6 **8 Claims**



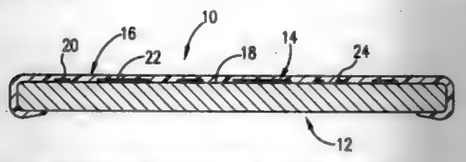
1. A rigid palette comprising a flat sheet of translucent glass for mixing paints or inks of different colors on a front surface thereof and means for providing diffused light through a back surface thereof to illuminate said paints or inks mixed on a front surface thereof said sheet further including a thumb hole near an edge thereof for an artist to support said palette on one arm while standing or sitting to paint with the other arm.

5,484,638

TABLE TOP ADVERTISING DISPLAY

William M. Crabtree, P.O. Box 1013, Sedalia, Mo. 65301

Continuation of Ser. No. 168,511, Dec. 16, 1993, abandoned, which is a continuation of Ser. No. 817,728, Jun. 17, 1992, abandoned. This application Feb. 15, 1995, Ser. No. 389,551
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—67 1 Claim



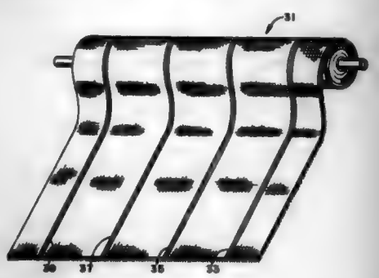
1. An advertising display consisting essentially of:
a table top having an uppermost wooden surface, an opposed lowermost surface, and side margins connecting said uppermost and lowermost surfaces, said table top presenting a thickness;
indicia permanently printed directly onto said uppermost wooden surface;
a clear sealant coating applied over said indicia for sealing said indicia; and
a clear protective epoxy coating applied over said sealant coating, said indicia and said uppermost wooden surface, said clear protective epoxy coating forming a smooth finish over said table top uppermost wooden surface, said clear protective epoxy coating being applied so that it entirely envelops said table top uppermost wooden surface and side margins and wraps around a portion of said table top lowermost surface, Said clear protective epoxy coating presenting a thickness less than the thickness of said table top.

5,484,639

CARPET AND CARPET BACKING WITH DIRECTIONAL GUIDE

Kenneth Woodall, and Jeffery Segars, both of Cartersville, Ga., assignors to Shaw Industires, Inc., Dalton, Ga.

Filed Apr. 15, 1993, Ser. No. 47,741
Int. Cl.[6] B32B *3/02*
U.S. Cl. 428—95 21 Claims



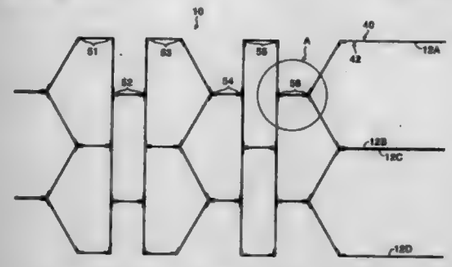
1. A carpet comprising:
a face portion
a fabric backing with an exposed surface visible from the back side of the carpet, and with an edge running the length of the carpet; and
a plurality of linear patterns visible from the exposed surface running parallel to each other and parallel to the edge and running the length of the carpet, each of said linear patterns comprising at least a first and second linear sub-pattern running the length of the pattern, with the first and second subpatterns being visually distinct from one another, the first sub-pattern in each linear pattern being disposed closer to the edge than the second sub-pattern in that linear pattern, each of the linear patterns being asymmetrical about a center line passing between the first and second linear subpatterns;
whereby a guide for orienting the carpet with respect to machine direction is provided, even if the carpet is cut on a line between any two linear patterns.

5,484,640

HONEYCOMB STRUCTURE HAVING STIFFENING RIBS AND METHOD AND APPARATUS FOR MAKING SAME

Stephen J. Mullen, Beverly, and Stanley F. Kench, III, Amesbury, both of Mass., assignors to Eldim, Inc., Woburn, Mass.

Filed Feb. 16, 1994, Ser. No. 197,397
Int. Cl.[6] B32B *7/00;* A01J *21/00;* B31F *1/20*
U.S. Cl. 428—119 24 Claims



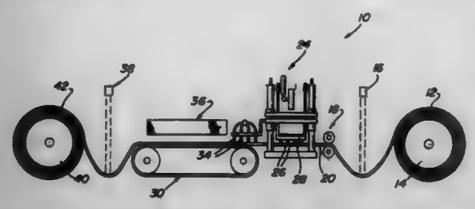
1. A corrugated strip comprising major flat sections which extend between longitudinal edges of the strip and which are joined along lateral edges by intermediate sections extending between the major flat sections, the the adjoining lateral edges of the major flat sections and the intermediate sections defining ridges of the corrugated strip; and
stiffening ribs protruding from the corrugated strip along at least one of the ridges formed by the adjoining lateral edges of the major flat and intermediate sections, the stiffening ribs being oriented substantially perpendicularly to the lateral edges and serving to lock the angle of the ridge.

5,484,641

PROCESS FOR FIXING PLASTIC REINFORCING PINS INTO NON-WOVEN FILAMENTARY MATERIAL AND PRODUCT PRODUCED BY THE PROCESS

Martin J. Rotter, 115 Lismore Ave., Glenside, Pa. 19038

Filed Nov. 1, 1993, Ser. No. 145,931
Int. Cl.[6] D04H *1/58;1/66*
U.S. Cl. 428—139 4 Claims



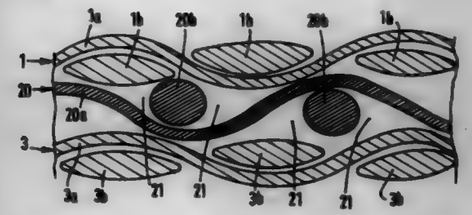
1. A method of fixing plastic reinforcing pins into non-woven filamentary open-mesh material comprising the steps of:
a. providing an elongated open-mesh web of randomly-aligned synthetic fibers bonded together at their intersections by a binder, said web having a length dimension beginning at a front edge and terminating at a back edge, and having an essentially constant thickness dimension;
b. creating a repeating pattern of generally cylindrical holes through the thickness dimension of the web by:
(i) passing the web from front edge to back edge through a hole-punching mechanism having a plurality of heated punch heads of generally cylindrical cross section arranged in said pattern,
(ii) maintaining the temperature of the punch heads above the melting point of the synthetic fibers and the binder,
(iii) periodically operating said punching mechanism to push the heads through the web, to sever the fibers in contact therewith and to form melted residue, such that ends of the severed fibers are left in the vicinity of each hole and the melted residue adheres to the fiber ends near each hole;
c. conveying the elongated web from the punching mechanism over a supporting belt such that the belt provides a closed bottom for each hole;
d. injecting a liquid polymer into the holes;
e. allowing the liquid polymer to flow around the severed ends of the fibers to embed said ends into the polymer and allowing the liquid polymer to set wherein the melted residue, which is adhered to the fiber ends, maintains the liquid polymer in the hole as it sets.

5,484,642

TEXTILE MATERIAL USEFUL FOR PRODUCING COMPOSITE LAMINATED ARTICLES BY INJECTION MOLDING

Bruno Bompard, Lyon; Jean Aucagne, La Tour Du Pin, and Bernard Lapresle, Lyon, all of, France, assignors to Brochier S.A., Decines Charpieu, France

Continuation of Ser. No. 408,460, Sep. 15, 1989, abandoned, which is a continuation of Ser. No. 117,093, Nov. 5, 1987, abandoned. This application Oct. 23, 1992, Ser. No. 965,519
Claims priority, application France, Nov. 5, 1986, 8615425
Int. Cl.[6] B32B *3/00;7/00;* D02G *3/00*
U.S. Cl. 428—166 13 Claims



1. Textile reinforcing material including a stack of layers of textile reinforcements, at least one of said layers comprising a fabric comprising substantially flat multifilament threads and substantially round threads forming ducts in said at least one layer, wherein
(1) said substantially round threads have been formed from substantially flat multifilament threads helically wrapped in nonadjoining turns with an additional thread, and
(2) said substantially round threads are uniformly distributed in said at least one layer.

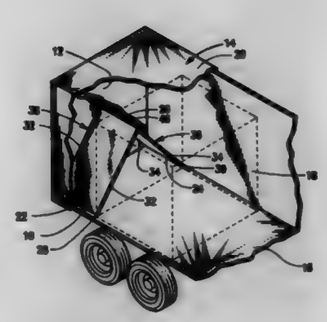
5,484,643

SPACE FILLING UNIT AND METHOD OF USE THEREFOR

Frederick M. Wise, P.O. Box 849, Arvada, Colo. 80001; Ray Sainz, 3224 Bryant St., Denver, Colo. 80211, and Carl F. DeWitt, 9340 Raleigh Ct., Westminster, Colo. 80030

Continuation-in-part of Ser. No. 118,990, Sep. 9, 1993, Pat. No. 5,418,038. This application Apr. 26, 1994, Ser. No. 233,117
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—192 25 Claims

1. A space filling unit adapted to be interposed between an upright support wall of a cargo container that has a floor and cargo placed on the floor in the cargo container to inhibit movement of the cargo toward the upright support wall when transporting the cargo container, comprising:
a first panel member and a second panel member connected to said first panel member along a longitudinally extending vertex, each of said first and second panel members fabricated from a cardboard material having a plurality of corrugations extending parallel with said vertex, said first and second panel members each having a base edge disposed opposite said vertex and sized and adapted to be positioned on and supported by the floor of the cargo container, said first panel member having oppositely-disposed parallel first side edges and said second panel member having oppositely-disposed parallel second side edges, associated ones of said first side edges and said second side edges forming a first end and a second end operative to abut respective ones of the upright support wall and the cargo to inhibit movement of the cargo towards the upright support wall when transporting the cargo container.

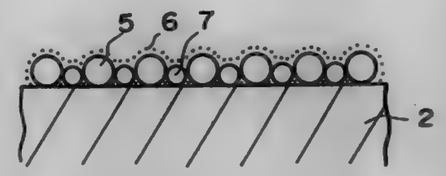


5,484,644

COMPOSITE THERMAL TRANSFER SHEET

Hirokatsu Imamura, and Koichi Nakamura, both of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Division of Ser. No. 584,246, Sep. 18, 1990, Pat. No. 5,264,279. This application Jul. 14, 1993, Ser. No. 91,646
Claims priority, application Japan, Sep. 19, 1989, 1-240747; Dec. 29, 1989, 1-152877; Dec. 29, 1989, 1-342971; Dec. 29, 1989, 1-342973; Jan. 31, 1990, 2-19323; Aug. 10, 1990, 2-212510
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—195 7 Claims



1. A composite thermal transfer sheet comprising a thermal transfer sheet comprising a substrate film and a heat-fusible ink layer disposed one surface side thereof; a transfer-receiving material; and a temporary adhesive layer capable of peelably bonding the heat-fusible ink layer of the thermal transfer sheet to the transfer-receiving material, wherein the temporary adhesive layer bonds the transfer sheet to the transfer-receiving material and said temporary adhesive layer comprises a wax and an adhesive resin having a glass transition temperature ranging from –90° C. to –60° C.

5,484,645

COMPOSITE NONWOVEN FABRIC AND ARTICLES PRODUCED THEREFROM

Deborah K. Lickfield, Easley; Mark H. S. Berman, Simpsonville; Robert F. Hyslop, Simpsonville; Andrew R. Oleszczuk, Simpsonville, all of S.C.; Scott L. Gessner, Encinitas, Calif., and Jared A. Austin, Greer, S.C., assignors to Fiberweb North America, Inc., Simpsonville, S.C.

Continuation-in-part of Ser. No. 896,323, Jun. 10, 1992, Pat. No. 5,415,925, and a continuation-in-part of Ser. No. 93,796, Jul. 19, 1993. This application Dec. 8, 1993, Ser. No. 163,433

Int. Cl.[6] B32B *27/14*

U.S. Cl. 428—198 17 Claims



1. A gamma radiation sterilizable composite nonwoven fabric comprising:

first and second spunbonded nonwoven webs formed of continuous multiconstituent filaments, said first and second spunbonded nonwoven webs defining opposite outer surfaces of the composite nonwoven fabric, the multiconstituent filaments of said first and second webs including a lower melting gamma radiation stable polyethylene polymer constituent and a higher melting gamma radiation stable polymer constituent, the lower melting gamma radiation stable polyethylene constituent being present over a substantial portion of the surface of the filament and the higher melting polymer constituent being in a substantially continuous form along the length of the filaments;

a third nonwoven web sandwiched between said first and second spunbonded nonwoven webs, said third nonwoven web comprising at least one hydrophobic microporous layer formed from a gamma radiation stable polyethylene polymer; and

a multiplicity of discrete point bonds throughout said composite fabric bonding said first, second and third webs together to form the composite nonwoven fabric, said discrete point bonds comprising areas where the polyethylene constituent of said multiconstituent filaments and the polyethylene polymer of said third nonwoven web are fused together.

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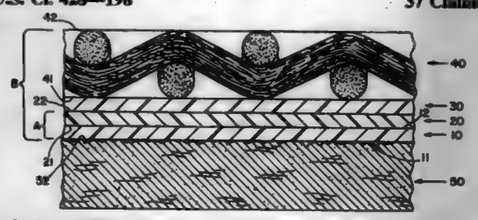
ARTIFICIAL LEATHER COMPOSITE MATERIAL AND METHOD FOR PRODUCING SAME

Allan Mann, Cambridge, Mass., assignor to Mann Industries, Inc., Framingham, Mass.

Filed Oct. 5, 1994, Ser. No. 318,144

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—198 37 Claims



1. An artificial leather sub-composite material comprising a facing layer film composed of a thermoplastic material and having facing and backing surfaces, said facing surface having a simulated leather grain texture thermally embossed thereinto by means of an embossing surface impressed thereinto at elevated temperature sufficient to permit said thermal embossing and, in addition, simultaneous thermoplastic bonding of said facing layer to the barrier layer defined hereinafter, said backing surface of said facing layer thus being thermoplastically bonded to the facing surface of a barrier layer having a facing surface and a backing surface, said barrier layer having sufficient strength under the conditions of said simultaneous thermal embossing of said facing layer and said thermoplastic bonding of said facing layer to said barrier layer to prevent cutting through of said barrier layer by said embossing surface.

5,484,647

CONNECTING MEMBER OF A CIRCUIT SUBSTRATE AND METHOD OF MANUFACTURING MULTILAYER CIRCUIT SUBSTRATES BY USING THE SAME

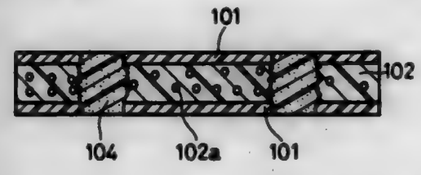
Seiichi Nakatani, Hirakata; Akihito Hatakeyama, Suita; Kouji Kawakita, Jouyou; Hiroshi Sogou, Nishinomiya; Tatsuo Ogawa, Amagasaki, and Tamao Kojima, Suita, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 20, 1994, Ser. No. 308,982

Claims priority, application Japan, Sep. 21, 1993, 5-234519; Sep. 29, 1993, 5-242450

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—209 9 Claims



1. A connecting member of a circuit substrate comprising an organic porous base material provided with tackfree films on both sides, wherein said connecting member of a circuit substrate has through-holes, and said through-holes are filled with conductive resin compound up to the outer surface of said tackfree films, wherein said through-holes filled with the conductive resin compound have a diameter of 50 μm to 1 mm and said through-holes filled with the conductive resin compound have a pitch of 50 μm or more.

5,484,648

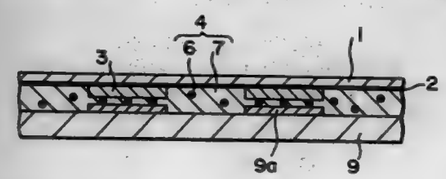
HEAT-SEALABLE CONNECTOR AND METHOD FOR THE PREPARATION THEREOF

Satoshi Odashima, and Kazuyoshi Yoshida, both of Saitama, Japan, assignors to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1993, Ser. No. 105,731

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—209 13 Claims



1. A heat-sealable connector which comprises, as an integral body:

(a) a substrate;

(b) a layer of a solvent-absorptive material formed on at least a part of the surface of the substrate, said solvent-absorptive material being capable for absorbing an organic solvent contained in a subsequently applied electroconductive paste;

(c) lines of an electroconductive paste aligned substantially in parallel to each other or the layer of the solvent-absorptive material; and

(d) a layer of a heat-sealable, anisotropically electroconductive adhesive formed on the lines of the electroconductive paste.

5,484,649

PROCESS FOR FOAMING FLAME RETARDANT POLYSTYRENE AND POLYSTYRENE SHAPED ARTICLES

Hub A. G. Vonken, Weert, and Jan op den Buysch, Budel-Dorplein, both of, Netherlands, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 243,824, May 17, 1994. This application Jun. 6, 1995, Ser. No. 467,053

Claims priority, application Germany, Jun. 5, 1993, 43 18 743.9

Int. Cl.[6] B32B *3/26*

U.S. Cl. 428—220 4 Claims

1. A shaped article of extruded styrene polymer foam into which a blowing agent gas which comprises propane, butane or a mixture thereof is injected and which contains flameproofing agent, wherein the shaped article has a thickness of from about 1 to 10 mm, a width of from about 50 to 320 cm, a foam density of from about 30 to 70 g/l and said blowing agent content of up to about 3% by weight.

5,484,650

HOLLOW FIBER IDENTIFICATION

Ismael A. Hernandez, Winterville, N.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 204,054, Mar. 2, 1994, abandoned, which is a continuation-in-part of Ser. No. 17,546, Feb. 16, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 459,189

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—221 4 Claims



1. Fiberfill filling material comprising resilient crimped hollow filling fibers that are of a synthetic polymer, wherein each of said hollow filling fibers has a single continuous void throughout its fiber length, and a void content of up to 30%, and wherein said fiberfill filling material is identified by all or a predetermined proportion of said fibers having a hollow cross-section that shows characteristic polymer material that protrudes into the single continuous void from an inside surface of the single continuous void, said hollow cross-section having a degree of irregularity (as defined herein) of less than 5%.

5,484,651

FLUORINE-CONTAINING POLYOLEFIN NON-WOVEN FABRIC AND METHOD OF MANUFACTURING THE SAME

Koshi Sasaki, Kawasaki; Hidehiko Ohara, Yokohama, and Naoshi Imaki, Atsugi, all of, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Jun. 2, 1994, Ser. No. 253,277

Claims priority, application Japan, Jun. 2, 1993, 5-131967; Jun. 26, 1993, 5-267219

Int. Cl.[6] B32B *33/00*; D06M *11/09*; H01M *2/16*

U.S. Cl. 428—224 10 Claims

1. A fluorine-containing polyolefin non-woven fabric having a loss in weight of the non-woven fabric after being immersed in a 30%-potassium hydride solution at 100° for 1 hour of 1.4% by weight or less, wherein the numbers of carbon (C), oxygen (O), and fluorine (F) atoms in a surface elemental composition satisfies the formulae:

$$.6 \geq F/C \geq 0.01 \quad (1),$$

and

$$100 \geq (10 \times O - F)/C \geq .4 \quad (2),$$

the surface elemental composition being measured by the electron spectroscopy for chemical analysis (ESCA), said fabric having been prepared by exposing the fabric to an atmosphere comprising a mixed gas of F_2 and O_2 whose volumetric ratio (F_2/O_2) is 0.2 or lower.

5,484,652

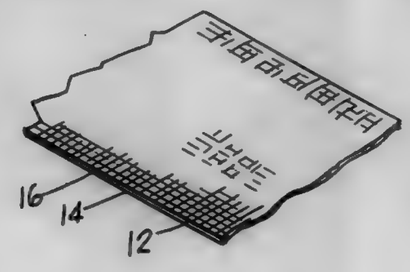
NON-WOVEN MAT SURFACE PLY FOR WOVEN FABRIC

Louis M. Strunk, Colwich, Kans.; Anthony Bosch, El Toro, and Ted Kruhmin, San Clemente, both of Calif., assignors to Beech Aircraft Corp., Wichita, Kans., and BP Chemicals (HITCO), Inc., Gardena, Calif.

Division of Ser. No. 896,184, Jun. 10, 1992, Pat. No. 5,340,520. This application Mar. 22, 1994, Ser. No. 216,462

Int. Cl.[6] B32B *7/00*

U.S. Cl. 428—251 4 Claims



1. An article of manufacture comprising,

a sheet of resin impregnated material comprising continuous fibers,

a sheet of material comprising a randomly oriented discontinuous fiber mat combined with the sheet of resin impregnated material in face to face relation.

5,484,653

FIRE RESISTANT MAT

Thomas D. Kennedy, Gresham; Michael O. Malarkey, Scappoose, both of Oreg., and Larry R. Graves, Puyallup, Wash., assignors to Herbert Malarkey Roofing Company, Portland, Oreg.

Continuation of Ser. No. 905,116, Jun. 26, 1992, Pat. No. 5,308,692. This application Apr. 6, 1994, Ser. No. 224,139

Int. Cl.[6] B32B *27/00*

U.S. Cl. 428—290 **22 Claims**

1. A non-woven fibrous mat having enhanced fire resistance and having a class A (0 to 25 FSI) rating under NFPA 101, comprising:

a non-woven blend of fibers including at least mineral fibers and glass fibers in a mat, the mineral fibers comprising between fifty percent (50%) and ninety-five percent (95%) by weight of the blend, and

a stable, fire resistant thermosetting binder, the binder comprising a mixture of

(a) a fire retardant halogenated carboxylated latex and;

(b) a modified aldehyde condensation polymer resin that is prepared from reacting urea, an aldehyde and a modifying agent selected from the group consisting of aqueous ammonia, anhydrous ammonia, a primary polyamine and combinations thereof during the condensation reaction, wherein the weight ratio of the latex to the resin is at least 1:1 on a non-volatile weight basis.

5,484,654

PACKAGING MATERIAL AND METHOD OF MAKING A PACKAGING MATERIAL

Walter B. Mueller, Inman, S.C., assignor to W.R. Grace & Co., Duncan, S.C.

Filed Mar. 12, 1993, Ser. No. 30,750

Int. Cl.[6] B32B *1/08;27/08;31/00*

U.S. Cl. 428—332 **12 Claims**



7. A laminate, comprising:

a first film containing a polymethylpentene polymer; and

a second film containing, in order, a first layer of ethylene vinyl acetate copolymer, an intermediate adhesive layer, a layer of copolyester, a second intermediate adhesive layer, a layer of a lower density alpha-olefin copolymer, a second layer of ethylene vinyl acetate copolymer, a second layer of a lower density alpha-olefin copolymer, and an outer layer of an alpha-olefin copolymer, wherein said first layer of ethylene vinyl acetate copolymer is bonded directly to said polymethylpentene polymer by corona treatment.

5,484,655

ALUMINUM NITRIDE-COATED SILICON CARBIDE FIBER

Sai-Kwing Lau, East Amherst, and Carl H. McMurtry, Youngstown, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 852,589, Mar. 17, 1993, Pat. No. 5,296,311. This application Nov. 4, 1993, Ser. No. 150,649

Int. Cl.[6] B32B *18/00*

U.S. Cl. 428—367 **3 Claims**

1. A reinforcement comprising silicon carbide fiber coated contiguously with between about 1 and about 15 microns of aluminum nitride, which is thermally stable at 1420° C.



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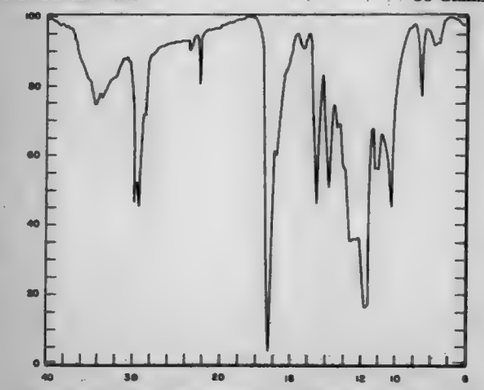
CHEMICAL TREATMENT FOR FIBERS AND REINFORCEMENT FOR POLYMER MATRICES RESULTING IN GOOD SOLVENT RESISTANCE

Robert G. Swisher; Peter C. Gan, both of Pittsburgh, and James W. Kasunic, Sarver, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 215,190, Jul. 5, 1988, abandoned. This application Jan. 22, 1993, Ser. No. 7,407

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—378 **38 Claims**



1. Chemical treating composition for application to reinforcing materials for polymers to form a thin film on the reinforcing materials to enhance reinforcing properties in the reinforced polymers, comprising:

a. at least one crosslinkable polyurethane film forming polymer in an effective film forming amount,

b. at least one organofunctional silane coupling agent or its hydrolysis products in an effective coupling agent amount,

c. a copolymer of at least one addition polymerizable acrylic monomer and at least one monomer that is addition polymerizable and matrix-resin-miscible and polar matrix-resin-reactable, wherein the copolymer is present in an effective film forming amount for solvent resistance and wherein the acrylic monomer is selected from the group consisting of alkyl acrylics, alkyl acrylates, alkyl methacrylates, hydroxyalkyl acrylates, hydroxyalkyl methacrylates and mixtures thereof and the polar matrix resin-reactable monomer is selected from the group consisting of epoxy-containing monomers and nitrile-containing monomers;

d. crosslinking agent for the polyurethane in an effective amount to produce reduced-swellable dried residue of the chemical treating composition compared to an uncrosslinked residue as a thin film on a substantial portion of the reinforcing material;

e. at least one antioxidant selected from the group consisting of: (i) low temperature antioxidants selected from the group consisting of: halogenated hydroxyl ammonium compounds, hydrosulfites, bisulfites, phosphorus acid, phosphites and phosphite-containing reducing agent selected from the group consisting of ammonium hypophosphite, sodium hypophosphite, potassium hypophosphite and mixtures thereof in an effective antioxidant amount and (ii) antioxidant effective at higher temperatures selected from the group consisting of alkali metal phenyl phosphonates, alkaline earth metal phenyl phosphonates, thioethers, polymers of thioethers and mixtures thereof in an effective antioxidant amount and (iii) combinations of one or more low temperature antioxidants and high temperature antioxidants; and

f. a carrier in an effective application amount for treating the reinforcement with the chemical treating composition.

5,484,657

GLAZING PANE AND METHOD FOR ITS PRODUCTION

Franz Kramling, Aachen, Germany; Herve Charrue, Rueil Malmaison, France; Frederic Weber, Compiegne, France; Bernard Letempa, and Claude Didelot, both of Thourotte, France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Division of Ser. No. 920,285, Nov. 9, 1992, Pat. No. 5,397,647. This application Nov. 16, 1994, Ser. No. 341,928

Claims priority, application France, Jun. 11, 1991, 91 07091

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—426 **7 Claims**

1. Process for the production of a pane comprising at least one sheet of glass of a thickness of from 1.5 to 4 mm, the sheet having a central region in which the surface compressive stress is from 40 to 100 MPa, a marginal region having an edge stress of from 50 to 100 MPa and an intermediate region, disposed between the central region and the marginal region, having an anisotropic thickness stress which, averaged throughout the thickness of the glass sheet, corresponds to a tensile stress of less than 10 MPa, the process comprising the steps of:

successively reheating thermally hardened glass panes in a reheating furnace by moving the glass panes along a plane trajectory in the heating furnace;

successively moving the glass panes exiting the heating furnace along a curved longitudinal trajectory which is tangential to the plane trajectory;

successively passing the glass sheets between blowing chests which blow cold or tepid gas to the glass sheets, wherein the glass sheets follow a downwardly tilting trajectory while passing between the blowing chests; and

dispatching the curved and cooled glass sheets to an assembly station in batches corresponding to a production period not exceeding 15 minutes.

5,484,658

SILICON THIN FILM MEMBER

Hisanori Ihara, and Hidetoshi Nozaki, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 899,916, Jun. 17, 1992, Pat. No. 5,378,541. This application Nov. 29, 1994, Ser. No. 350,144

Claims priority, application Japan, Jun. 20, 1991, 3-148852; Nov. 29, 1991, 3-317084

The portion of the term of this patent subsequent to Jan. 3, 2012, has been disclaimed.

Int. Cl.[6] B32B *17/06*

U.S. Cl. 428—428 **6 Claims**



1. A silicon thin film member containing semiconductor device comprising:

a support layer containing hydrogen, and a CVD film containing silicon and hydrogen supported on said supporting layer,

wherein said CVD film has a distribution of hydrogen density in which the hydrogen content of said CVD film layer has a maximum value in a position 20 nm or less away from an interface between said CVD film and said supporting layer, and the maximum value is larger than the hydrogen content of said supporting layer,

and where the maximum value of the hydrogen content in said CVD film is at least 1×10^{22} atoms/cm^3.

5,484,659

Patent Not Issued For This Number

5,484,660

PACKAGING LAMINATE WITH EXCELLENT SEALING AND BARRIER PROPERTIES AND ALSO PACKAGING CONTAINER MANUFACTURED FROM THE PACKAGING LAMINATE

Åke Rosén, Helsingborg, Sweden, assignor to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Division of Ser. No. 875,834, Apr. 28, 1992. This application Apr. 2, 1993, Ser. No. 42,396

Claims priority, application Sweden, May 3, 1991, 9101331

The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.

Int. Cl.[5] B32B *27/08*

U.S. Cl. 428—516 **18 Claims**



1. A flexible packaging laminate comprising:

a skeletal layer having an inner side and an outer side, said skeletal layer comprising a mixture of plastic and filler wherein the amount of filler in the skeletal layer is in the range of 50 to 80% by weight of the skeletal layer, and

a barrier layer bonded to the inner side of the skeletal layer, said barrier layer comprising a mixture of plastic of the same composition as the plastic in the skeletal layer, plastic of a different composition from the plastic in the skeletal layer with said different type of plastic providing oxygen impermeability to the barrier layer, and an electrically conductive material in fine particle form; wherein the packaging laminate is capable of being sealed by inductive heating or dielectric sealing due to the presence of the electrically conductive material.

5,484,661

MAGNETIC RECORDING MEDIUM HAVING A POLYVINYL ALKYL BINDER RESIN

Hiroshi Hashimoto; Masaki Satake; Yuichiro Murayama, and Tsutomu Okita, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

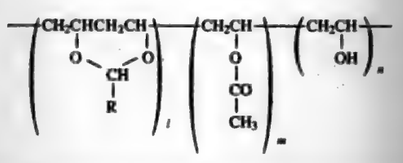
Filed Jan. 11, 1994, Ser. No. 179,942

Claims priority, application Japan, Jan. 12, 1993, 5-003423

Int. Cl.[6] G11B *5/00*

U.S. Cl. 428—522 **2 Claims**

1. A magnetic recording medium having a magnetic layer containing a ferromagnetic powder and a binder, which is formed on at least one surface of a non-magnetic support, wherein said binder contains a polyvinyl alkylal resin having a polymerization degree of 200 to 600 and modified by a sultone to attach an $-O(CH_2)_xSO_3Na$ group directly to the main chain of the polyvinyl alkylal resin where x is an integer of 3 or 4 and having the following structure, which is obtained by alkylalization of a polyvinyl alcohol with an aldehyde:



wherein l is not less than 50 mol %; n is not more than 35 mol %; m is 50% mol % or less; and R is an alkyl group.

5,484,662

SOLID LUBRICANT AND HARDENABLE STEEL COATING SYSTEM

V. Durga N. Rao, Bloomfield Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 88,014, Jul. 6, 1993, Pat. No. 5,332,422. This application May 6, 1994, Ser. No. 239,069

Int. Cl.[6] B22F *7/04*

U.S. Cl. 428—553 **7 Claims**

1. A solid lubricant coating system, comprising:

(a) a light metal-based substrate; and

(b) grains of agglomerated particles thermally adhered to said substrate, said grains consisting of (i) solid lubricants selected from the group consisting of graphite, MoS_2, BN, LiF, CaF_2, NaF, and WS_2, and (ii) air-hardenable metal particles fused together as a network.

5,484,663

ARTICLE HAVING A COATING SIMULATING BRASS

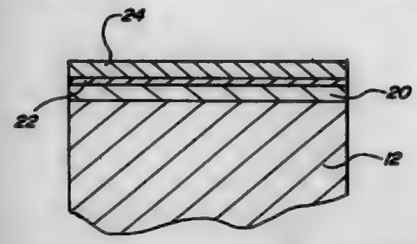
Stephen R. Moysan, III, Douglasville, and Rolin W. Sugg, Reading, both of Pa., assignors to Baldwin Hardware Corporation, Reading, Pa.

Filed Nov. 30, 1994, Ser. No. 346,669

The portion of the term of this patent subsequent to May 9, 2012, has been disclaimed.

Int. Cl.[6] B32B *15/04*; C25D *3/56*

U.S. Cl. 428—627 **20 Claims**



1. An article comprising a metallic substrate having disposed on at least a portion of its surface a multi-layer coating simulating brass comprising:

metallic layer comprised of substantially amorphous nickel-tungsten-boron alloy containing at least about 0.05 weight percent boron;

layer comprised of zirconium or titanium; and

a top layer comprised of zirconium compound or titanium compound.

5,484,664

HETERO-EPITAXIALLY GROWN COMPOUND SEMICONDUCTOR SUBSTRATE

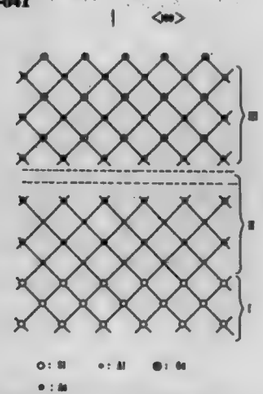
Kuninori Kitahara, Zama; Nobuyuki Ohtsuka, Atsugi, and Masashi Ozeki, Yokohama, all of, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 864,552, Apr. 7, 1992, Pat. No. 5,300,186, which is a division of Ser. No. 342,785, Apr. 25, 1989, Pat. No. 5,130,269. This application Jan. 21, 1994, Ser. No. 184,438

Claims priority, application Japan, Apr. 27, 1988, 63-105836; Jan. 20, 1988, 63-264618

Int. Cl.[6] H01L *27/12*

U.S. Cl. 428—641 **4 Claims**



1. A semiconductor structure comprising:

a silicon substrate;

a single crystal buffer layer of a compound containing a group III element and a group V element and selected from the group consisting of aluminum arsenide, aluminum nitride and aluminum phosphide, on the silicon substrate; wherein the group III element and the group V element are stacked in alternate monoatomic layers on the silicon substrate; and

a gallium arsenide single crystal layer on the buffer layer.

5,484,665

ROTARY SEAL MEMBER AND METHOD FOR MAKING

Jogender Singh, Westchester; Jerry D. Schell, and William R. Young, both of Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Apr. 15, 1991, Ser. No. 685,110

Int. Cl.[6] B52B *15/00*; F01D *11/00*; B63H *1/26*

U.S. Cl. 428—661 **6 Claims**

1. A member of a rotary seal for use at temperatures from 500° F. to 1400° F., consisting essentially of:

a titanium alloy substrate having a tip portion;

a single layer having a thickness of at least about 0.002 inches metallurgically bonded on one side to the substrate tip portion by laser cladding, the single layer forming the surface of the member, the substrate and the layer each having an elastic modulus matched to the other, and the single layer having a solid solubility with the substrate so that brittle intermetallics are not formed at the interface with the substrate, wherein

the single layer is based on an element selected from the group consisting of Nb, V, Hf, Zr, Au, Ag and Cu; and

abrasive particles entrapped in the single layer, the abrasive particles being adapted to inhibit chemical reaction with the single layer.

5,484,666

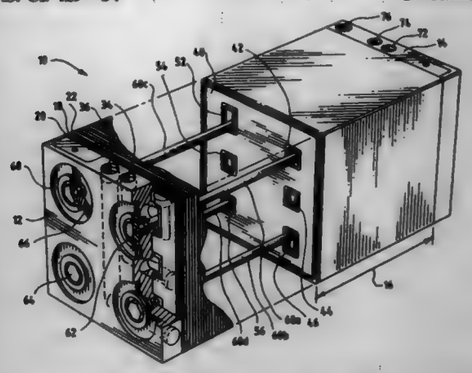
ELECTROCHEMICAL FUEL CELL STACK WITH COMPRESSION MECHANISM EXTENDING THROUGH INTERIOR MANIFOLD HEADERS

Peter Gibb, Coquitlam; Henry H. Voss, West Vancouver; Wolfgang Schlosser, Burnaby, and Eric G. Pow, Vancouver, all of, Canada, assignors to Ballard Power Systems Inc., North Vancouver, Canada

Filed Sep. 20, 1994, Ser. No. 309,124

Int. Cl.[6] H01M *8/04*

U.S. Cl. 429—34 **27 Claims**



1. An electrochemical fuel cell stack for producing electrical energy and reaction product from a fluid fuel stream and a fluid oxidant stream, said stack comprising:

(a) a first end plate;

(b) a second end plate;

(c) at least one fuel cell assembly interposed between said first and second end plates, said at least one fuel cell assembly comprising a membrane electrode assembly having a catalytically active region and further having at least one opening formed therein extending through said catalytically active region;

(d) a compression assembly comprising at least one restraining member extending within said at least one opening, fastening means disposed at opposite ends of said at least one restraining member, and compressive means interposed between at least one of said fastening means and at least one of said first and second end plates;

whereby said fastening means and said compressive means urge said first end plate toward said second end plate, thereby applying compressive force to said at least one fuel cell assembly.

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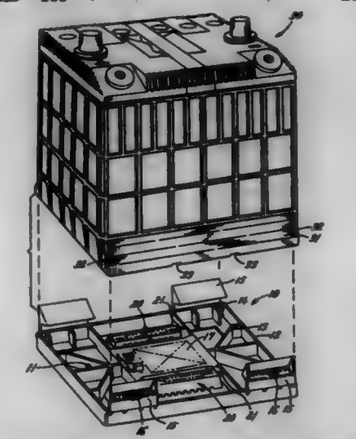
SPACERS FOR LEAD-ACID BATTERIES

Richard M. Sahli, Cottage Grove, and Deborah S. Baumgartner, Prior Lake, both of Minn., assignors to GNB Battery Technologies Inc., Mendota Heights, Minn.

Filed Sep. 7, 1993, Ser. No. 116,879

Int. Cl.[6] H01M *2/10*; B60R *16/04*

U.S. Cl. 429—100 **20 Claims**



1. A multi-functional spacer capable of adapting an electric storage battery having a generally solid-rectangular configuration with a top, a bottom, two end, and two sidewalls defining length, width, and height dimensions of the battery to the dimensional requirements of a battery mounting device for a first vehicle in which the height requirement is greater than the height of the battery and also capable of adapting the battery to the dimensional requirements of a battery mounting device for a second vehicle in which the length or width requirements are greater than the length and width of the battery, which spacer comprises:

a body portion removably attachable to the bottom of the battery and one or more auxiliary spacer members removably attached to the body portion and, when detached from the body portion, the auxiliary spacer members being attachable to a side or end wall of the battery;

the body portion defining a top surface adapted to receive the battery and a bottom surface adapted to be received by a battery mounting device;

the distance between the top and bottom surfaces of the body portion being coordinated such that when the body portion is attached to the battery the combined height of the body portion and battery is generally equivalent to the height requirement of a battery mounting device of a first vehicle having a height requirement greater than the height of the battery;

the width of the auxiliary spacer members being coordinated such that when one or more of the auxiliary spacer members are attached to a side or end wall of the battery, the combined width or length of the auxiliary spacer members and the battery is generally equivalent to, respectively, the width or length requirement of a battery mounting device of a second vehicle having a width or length requirement greater than the width and length of the battery;

whereby the body portion and members may be selectively attached to the battery to selectively accommodate the battery within a battery mounting device for a first vehicle having a height requirement greater than the height of the battery or

within a battery mounting device for a second vehicle having a width and length requirement greater than the width and length of the battery.

5,484,668

UNIVERSALLY ADAPTABLE BATTERY CHARGER CONNECTOR AND METHOD OF USING SAME

Donald A. Kutz, Del Mar, and Philip J. DeSantis, San Diego, both of Calif., assignors to H.M. Electronics, Inc., San Diego, Calif.

Filed Jul. 27, 1992, Ser. No. 919,880
Int. Cl.[6] H01M 2/30;10/44; H01R 11/18
U.S. Cl. 291—121 **18 Claims**

1. A universally adaptable battery charger connector for coupling electrically a battery charger outlet to at least one terminal disposed within a terminal well of any one of different types and kinds of rechargeable battery devices, comprising:

one-piece deformable contact means for engaging mechanically and electrically the terminal;

said deformable means including a stationary base electrode having a free end for coupling electrically to the battery charger outlet;

said deformable contact means further including a movable electrode cantilevered relative to the base electrode for moving toward and away from the base electrode to extend into the terminal well associated with the terminal and to engage the terminal mechanically and electrically;

said movable electrode having a free end to enable movement toward and away from said base electrode and being normally biased away from said base electrode and being deformable toward said base electrode when mechanically engaged with the terminal;

said movable electrode having a V-shaped portion disposed intermediate the ends of said movable electrode having an apex of sufficient height to enable the apex to enter said terminal well and to engage electrically the terminal;

said deformable contact means further including a reversely-bent U-shaped electrode integrally connected between an opposite end of said base electrode and an opposite end of said movable electrode for enabling said V-shaped portion to move towards and away from the base electrode;

attachment means connected mechanically to said deformable means to facilitate mechanical engagement between the terminal and said V-shaped portion for helping to supply electrical current to the battery device terminal; and

securing means for mounting removably on the battery device to be charged to help maintain mechanical contact between the terminal and said contact means;

whereby, the contact means can be positioned relative to the terminal independent of the size and shape of the battery device and of the configuration of the terminal.

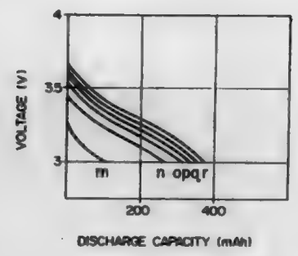
5,484,669

NONAQUEOUS ELECTROLYTE SECONDARY BATTERIES

Hiromi Okuno, Osaka; Hizuru Koshina, Neyagawa, and Katsuaki Hasegawa, Yokkaichi, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, and Mitsubishi Petrochemical Company Limited, Tokyo, both of, Japan

Continuation-in-part of Ser. No. 872,992, Apr. 24, 1992, abandoned. This application Sep. 20, 1994, Ser. No. 309,332
Claims priority, application Japan, Dec. 27, 1991, 3-346012
Int. Cl.[6] H01M 6/16
U.S. Cl. 429—194 **19 Claims**

1. A nonaqueous electrolyte secondary battery which comprises an anode comprising a carbon material capable of doping and



undoping lithium ions, a nonaqueous electrolyte comprising a solute and a solvent, and a cathode comprising a lithium-containing oxide, said solvent being a mixed solvent comprising an aliphatic carboxylate represented by the formula RCOOR' wherein R represents an alkyl group of three or more carbon atoms and R' represents an alkyl group of one or two carbon atoms, a cyclic carbonate and a non-cyclic carbonate, said cyclic carbonate being one of ethylene carbonate and propylene carbonate.

5,484,670

LITHIUM ION CONDUCTING IONIC ELECTROLYTES

C. Austen Angell, Mesa; Kang Xu, Tempe, both of Ariz., and Changle Liu, Tulsa, Okla., assignors to Arizona Board of Regents, a body corporate of the state of Arizona, acting for Arizona State University, Tempe, Ariz.

Continuation-in-part of Ser. No. 901,669, Jun. 22, 1992. This application Jun. 20, 1994, Ser. No. 262,158
Int. Cl.[6] H01M 6/14;6/18
U.S. Cl. 429—199 **11 Claims**

1. A lithium ion conductive electrolyte with high conductivity comprising a solution containing a lithium salt selected from the group consisting of perchlorate, chlorate, nitrate, acetate, tetrafluoroborate, thiohalodialuminate, trifluoromethane sulfonate, haloaluminate, halodialuminate, 1-fluoro-1-chloro-2,2-difluoro-2 chloroethane sulfonate, perfluoromethane sulfonimide, or mixtures thereof and a small proportion of an anionic polymer lithium salt sufficient to stabilize said solution against crystallization, said solution being prepared by fusion or aqueous dissolution and thereafter cooled and/or dried, to yield an ionic liquid at 100° C. or lower.

5,484,671

MASK FOR MANUFACTURING SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURE THEREOF

Yoshihiko Okamoto, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 87,074, Jul. 7, 1993, Pat. No. 5,358,807, and a continuation of Ser. No. 51,552, Apr. 23, 1993, Pat. No. 5,306,585, Ser. No. 51,351, Apr. 23, 1993, Pat. No. 5,350,649, and Ser. No. 51,238, Apr. 23, 1993, Pat. No. 5,352,550, said Ser. No. 87,074is a continuation of Ser. No. 730,221, Jul. 15, 1991, abandoned, which is a continuation of Ser. No. 437,268, Nov. 16, 1989, Pat. No. 5,045,417. This application Aug. 11, 1994, Ser. No. 288,905
Claims priority, application Japan, Nov. 22, 1988, 63-295350; Jan. 2, 1989, 1-257226
The portion of the term of this patent subsequent to Sep. 3, 2008, has been disclaimed.
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—5 **47 Claims**

1. A method of manufacturing a mask comprising:

a) a process of preparing a glass substrate having main and back surfaces;

b) a process of forming a metal layer over said entire main surface;

c) a process of coating a resist on the upper surface of said metal layer along a desired circuit pattern;

d) a process of etching said metal layer to form said circuit pattern and forming a transmission region where said glass substrate is exposed and a light shield region comprising a metal layer; and

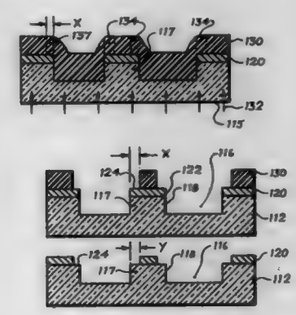
e) a process of determining a region where a phase shifting means is formed by magnifying said circuit pattern and forming said phase shifting means in a part of said transmission region.

5,484,672

METHOD OF MAKING A RIM-TYPE PHASE-SHIFT MASK

Stanislav P. Bajuk, Madison, Wis.; David S. O'Grady, Jericho, Vt., and Edward T. Smith, Somerville, Mass., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 975,766, Nov. 13, 1992, abandoned. This application Jan. 25, 1995, Ser. No. 378,767
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—5 **16 Claims**



1. A method of forming a rim-type phase-shift mask designed for use in a phase-shift lithography process, the method comprising the steps of:

(a) providing a substrate having opposing first and second surfaces, said substrate being made from a material through which electromagnetic radiation of a predetermined frequency range may be transmitted, said first surface being at least partially covered with a first layer of material that substantially blocks the transmission therethrough of electromagnetic radiation of said predetermined frequency range;

(b) forming a plurality of openings extending through said first layer so as to expose underlying portions of said substrate;

(c) depositing a layer of resist on said first layer; and

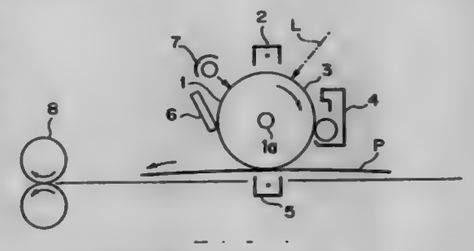
(d) exposing said second surface of said substrate to electromagnetic radiation having a frequency range in said predetermined frequency range for a period of time sufficient to permit said electromagnetic radiation to propagate through said substrate and activate those portions of said layer of resist on said first layer extending from peripheral edges of said first layer inwardly a distance of at least about 0.05 micron, as measured along an axis extending parallel to said first surface of said substrate.

5,484,673

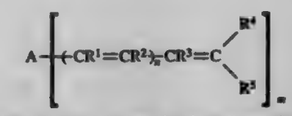
ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER

Toshihiro Kikuchi, Yokohama; Akio Maruyama, Kawasaki; Noriko Ohtani; Shin Nagahara, both of Tokyo; Hisami Tanaka, Yokohama; Teigo Sakakibara, Tokyo, and Takakazu Tanaka, Machida, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 93,135, Jul. 19, 1993, abandoned, which is a continuation of Ser. No. 727,521, Jul. 9, 1991, abandoned. This application Feb. 23, 1995, Ser. No. 393,838
Claims priority, application Japan, Jul. 10, 1990, 2-180577; Jul. 10, 1990, 2-180578; Jul. 10, 1990, 2-180579; Jul. 11, 1990, 2-181627; Jul. 11, 1990, 2-181628; Jul. 11, 1990, 2-181629; Jul. 11, 1990, 2-181630; Jul. 12, 1990, 2-182687; Jul. 12, 1990, 2-182688; Jul. 12, 1990, 2-182689; Jul. 13, 1990, 2-184185; Jul. 13, 1990, 2-184186; Jul. 13, 1990, 2-184187; Jul. 25, 1990, 2-195053; Sep. 10, 1990, 2-236998; Jan. 11, 1990, 2-273584
Int. Cl.[6] G03G 15/02
U.S. Cl. 430—58 **7 Claims**



1. An electrophotographic photosensitive member comprising an electroconductive support and a photosensitive layer on said electroconductive support, said photosensitive layer containing a charge-generating substance and a charge-transporting substance with electron-transporting ability, said charge-transporting substance represented by formula (1)



(1)

wherein A is an aromatic ring group derived from an aromatic compound having a reduction potential of −1.05 V or more; each of R^1, R^2, R^3, R^4 and R^5 is a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aralkyl group, or a substituted or unsubstituted aromatic ring group, and R^1, R^2, R^3, R^4 and R^5 may be different or identical, provided that R^4 and R^5 are not hydrogen atoms at the same time; n is an integer of 0 or 1; and m is an integer of 1 or 2.

5,484,674

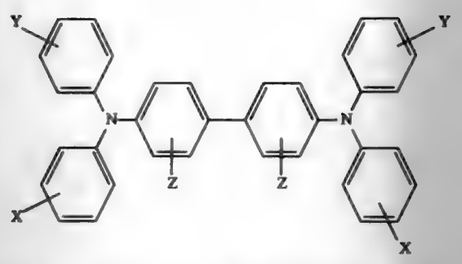
BENZIMIDAZOLE PERYLENE IMAGING MEMBERS AND PROCESSES THEREOF

Ah-Mee Hor, Mississauga; Charles G. Allen, Waterdown, and Paul J. Gerroir, Oakville, all of, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 31, 1994, Ser. No. 331,464
Int. Cl.[6] G03G 5/06;5/047
U.S. Cl. 430—59 **4 Claims**

1. An imaging member comprised of a supporting substrate, a photogenerator layer comprised of the cis and trans isomers of benzimidazole perylene, and wherein said isomers are obtained by the milling thereof with cyclohexane, and a charge transport layer.

3. An imaging member in accordance with claim 1 wherein the charge transport layer is comprised of aryl amine molecules of the formula



wherein X is selected from the group consisting of alkyl and halogen, and wherein the aryl amine is dispersed in a highly insulating and transparent organic resinous binder.

5,484,675

TONER COMPOSITIONS WITH HALOSILANATED PIGMENTS

Carl P. Tripp, Burlington; Richard P. N. Veregin, Mississauga; Michael F. Cunningham, Georgetown; Thomas E. Enright, Whitby, and Maria V. McDougall, Burlington, all of, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 19, 1994, Ser. No. 308,175

Int. Cl.[6] G03G *9/09*

U.S. Cl. 430—106 **29 Claims**

27. A toner comprised of resin and a halosilane polymer coated pigment selected from the group consisting of carbon black, cyan, magenta, yellow and mixtures thereof and wherein said halosilane polymer is free of any reaction with said pigment.

5,484,676

DEVELOPER FOR ELECTROPHOTOGRAPHY AND METHOD FOR ELECTROPHOTOGRAPHIC DEVELOPMENT USING THE SAME

Yoshiaki Takasu, Shizuoka, Japan, assignor to Tomoegawa Paper Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 977,844, Nov. 17, 1992, abandoned. This application Nov. 10, 1994, Ser. No. 347,248

Claims priority, application Japan, Nov. 27, 1991, 3-335931

Int. Cl.[6] G03G *9/083*

U.S. Cl. 430—106.6 **7 Claims**

1. A developer for electrophotography comprising a resin-coated magnetic carrier, and a magnetic toner which incorporates a binder resin and a magnetic powder having a saturation magnetization (Ms), residual magnetization (Mr) and coercive force (Hc) satisfying the following relationships in the case when an outer magnetic field of 5000 oersted is exerted on the magnetic powder:

$Ms/Mr \geqq 20$

$Hc \geqq 100$ oersted.

5,484,677

MICROCAPSULE AND MICROCAPSULE TONER

Yoshihiro Inaba, Minami-ashigara, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1992, Ser. No. 974,114

Claims priority, application Japan, Nov. 15, 1991, 3-328276

Int. Cl.[6] G03G *9/093;1/72;* B01J *13/16;13/18*

U.S. Cl. 430—110 **14 Claims**

1. A microcapsule comprising a core material and an outer shell, said outer shell containing a vinyl polymer and a polymer comprising at least two monomers copolymerizable with each other on the surface of said core material, wherein said vinyl polymer is vinyl polymer fine particles and said outer shell is a shell comprising said polymer and said vinyl polymer.

7. A microcapsule toner comprising a core material, an outer shell and a colorant, said outer shell containing a vinyl polymer and a polymer comprising at least two monomers copolymerizable with each other on the surface of said core material, wherein said vinyl polymer is vinyl polymer fine particles.

5,484,678

TONER COMPOSITIONS WITH CHARGE ADDITIVE MIXTURE

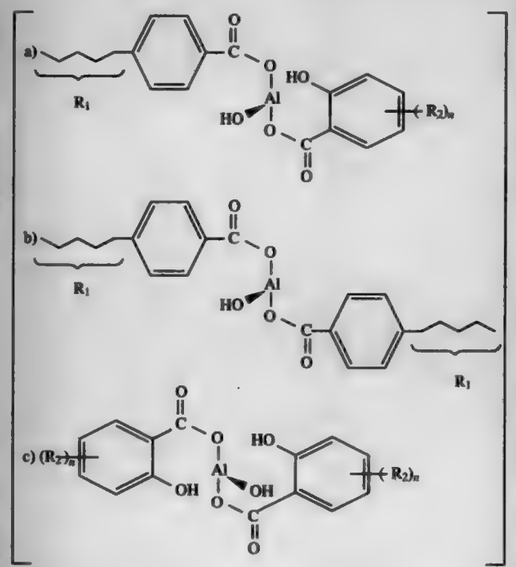
Thomas R. Pickering, Webster; Denise R. Bayley, Fairport, and Roger N. Ciccarelli, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 1, 1994, Ser. No. 347,670

Int. Cl.[6] G03G *9/097*

U.S. Cl. 430—110 **33 Claims**

1. A toner composition comprised of resin, pigment and a charge additive mixture of components of the formulas



wherein R_1 is an alkoxy group, R_2 is an alkyl group, and n is an integer of 1 to 3.

5,484,679

LIQUID DEVELOPER COMPOSITIONS WITH MULTIPLE BLOCK COPOLYMERS

John W. Spiewak, Webster, and James R. Larson, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 22, 1994, Ser. No. 231,086

Int. Cl.[6] G03G *9/135;9/13*

U.S. Cl. 430—115 **15 Claims**

2. A negatively charged liquid developer comprised of a nonpolar liquid, thermoplastic resin particles, a charge director comprised of a triblock polymer of the formula ABA wherein the A block is an ammonium containing segment wherein the A blocks have a number average molecular weight range of from about 200 to about 120,000 and the B block has a number average molecular weight range of from about 2,000 to 190,000.

5,484,680

MAGNETIC BRUSH DEVELOPING METHOD

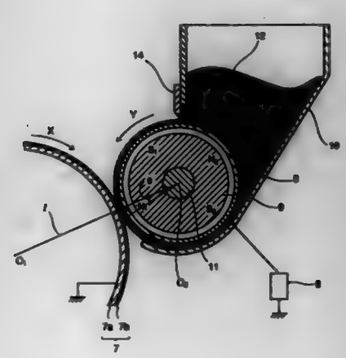
Ryuji Goto, Fukaya, and Koji Noguchi, Saitama, both of, Japan, assignors to Hitachi Metals, Ltd.

Continuation of Ser. No. 79,453, Jun. 21, 1993, abandoned, which is a continuation of Ser. No. 662,190, Feb. 28, 1991, abandoned. This application Feb. 17, 1995, Ser. No. 390,168

Claims priority, application Japan, Feb. 28, 1990, 2-48823; Sep. 20, 1990, 2-251015

Int. Cl.[6] G03G *13/09*

U.S. Cl. 430—122 **4 Claims**



1. A magnetic brush developing method comprising: providing a developing means comprising a non-magnetic sleeve and a permanent magnet member stationary inside said non-magnetic sleeve at a position opposing an image-bearing member having an electrostatic latent image on the surface and forming a development gap therewith, thereby forming a developing region, said permanent magnet member having a developing magnetic pole in said developing region, and said developing magnetic pole providing a magnetic flux density of 700–1200 Gauss on the surface of said non-magnetic sleeve;

selecting a developer comprising magnetic toner consisting of a binder resin and magnetic powder and capable of being charged at a particular polarity, and a magnetic carrier having a conductivity corresponding to an electric resistivity of 10^5–$10^{10}\Omega$-cm and a particle size distribution within the range of 20–105 μm, said magnetic toner containing 10–50 wt % of said magnetic powder, and said developer containing 10–90 wt % of said magnetic toner;

causing the developer to be magnetically attracted onto a surface of said non-magnetic sleeve to form a magnetic brush; and

rotating said non-magnetic sleeve to convey said magnetic brush to said developing region for bringing a tip portion of said magnetic brush into sliding contact with said image bearing member in said developing region, thereby developing said electrostatic latent image with said magnetic toner, wherein

(a) said non-magnetic sleeve is rotated in the same direction as said image-bearing member in said developing region at a ratio of a surface moving velocity (V_1) of said non-magnetic sleeve to a surface moving velocity (V_2) of said image-bearing member (V_1/V_2)=1.5–5.0,

(b) the center of the developing magnetic pole of said permanent magnet member is deviated by 2°–12° toward the downstream side from a line connecting the closest points of said non-magnetic sleeve and said image-bearing member,

(c) the development gap between said non-magnetic sleeve and said image-bearing member is set to be 0.2–0.6 mm, and

(d) said image-bearing member has a negatively charged organic photosensitive surface layer having a surface potential of −400 to −700 V.

5,484,681

CONDUCTIVE COMPOSITE PARTICLES AND PROCESSES FOR THE PREPARATION THEREOF

Michael F. Cunningham, Georgetown; Hadi K. Mahabadi, Toronto, both of, Canada; Thomas W. Smith, Penfield, and John A. Creatura, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 31, 1994, Ser. No. 331,469

Int. Cl.[6] G03G *9/113*

U.S. Cl. 430—137 **5 Claims**

1. A process for the preparation of carrier particles which carrier particles consist of a core and a coating thereover, and wherein said coating is prepared by mixing at least one monomer with a polymerization initiator, a crosslinking component, and a chain transfer component; adding thereto an AB type block copolymer; effecting bulk polymerization until from about 10 to about 50 weight percent of the monomer has been polymerized; terminating polymerization by cooling the partially polymerized monomer; adding thereto from about 1 to about 50 weight percent of a conductive filler, or conductive fillers, followed by mixing thereof; dispersing the aforementioned mixture of conductive filler or fillers, and partially polymerized product in water containing a stabilizing component to obtain a suspension of particles with an average diameter of from about 0.05 to about 1 micron in water; polymerizing the resulting suspension by heating; subsequently optionally washing and drying the polymer product; and subsequently mixing and heating said core and said polymer product wherein said polymer product forms a coating on said core, and wherein said polymer possesses an average particle diameter in the range of about 0.05 to about 1 micron.

5,484,682

LIGHT-SENSITIVE BISTRIHALOMETHYL-S-TRIAZINE COMPOUND AND PHOTOPOLYMERIZABLE COMPOSITION CONTAINING SAME

Ken Iwakura; Yuichi Wakata; Hirotaka Matsumoto, and Mikio Totsuka, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

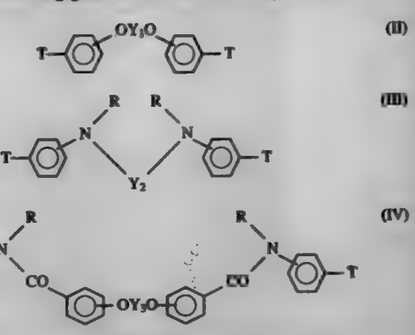
Division of Ser. No. 850,810, Mar. 13, 1992, Pat. No. 5,362,874. This application Aug. 2, 1994, Ser. No. 284,244

Claims priority, application Japan, Mar. 15, 1991, 3-051454; Dec. 24, 1991, 3-340891

Int. Cl.[6] G03C *1/72;* C08F *2/46*

U.S. Cl. 430—138 **9 Claims**

1. A photopolymerizable composition, comprising an ethylenically unsaturated compound and a light-sensitive bistrihalomethyl-s-triazine photopolymerization initiator compound represented by one of the following general formulas (II) through (IV):



wherein T represents a (4,6-bistrihalomethyl-s-triazine-2-yl) group; Y_1 represents $—C_nH_{2n}—$ in which n represents an integer of 2 to 20, $—C_mH_{2m}COO(CH_2)_nOCOC_mH_{2m}—$ in which m represents an integer of 1 to 4, and n represents an integer of 2 to 20, or $—CO(CH_2)_nCO—$ in which n represents an integer of 0 to 20; Y_2 represents $—C_nH_{2n}—$ in which n represents an integer of 2 to 20,

—$CO(CH_2)_nCO$— in which n represents an integer of 0 to 20, or —$CO(C_6H_4)CO$—; Y_3 represents —C_nH_{2n}— in which n represents an integer of 2 to 20, —$CO(CH_2)_nCO$— in which n represents an integer of 0 to 20, or —$CO(C_6H_4)CO$—; and R represents a hydrogen atom, a C_{1-10} alkyl group, or a C_{2-10} acyl group.

5,484,683

DYE FIXING ELEMENT WITH HYDRAZINE

Jiro Tsukahara; Takanori Hioki, and Koki Nakamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 13,098, Feb. 3, 1993, abandoned. This application May 6, 1994, Ser. No. 238,792

Claims priority, application Japan, Feb. 6, 1992, 4-54125

The portion of the term of this patent subsequent to May 31, 2011, has been disclaimed.

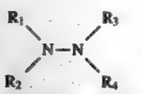
Int. Cl.[6] G03C *8/26;8/40;8/56*

U.S. Cl. 430—203 **9 Claims**

9. A method of forming an image which comprises the steps of

(1) providing a silver halide light-sensitive element capable of releasing an anionic azo dye;

(2) providing a dye fixing element comprising a hydrazine derivative represented by the following Formula (I):



(I)

wherein R_1, R_2, R_3 and R_4 each independently represents a substituted or unsubstituted alkyl, cycloalkyl, alkenyl, or aralkyl group, provided that at least one of R_1, R_2, R_3 and R_4 has a substituent selected from the group consisting of a carboxylic acid, a salt of a carboxylic acid, a sulfonic acid, and a salt of a sulfonic acid; wherein R_1, R_2, R_3 and R_4 may be combined with each other to form a ring, provided that this ring is a non-aromatic heterocyclic ring and the atoms constituting the ring, other than the nitrogens of Formula (I) which are part of the ring, are carbon atoms;

(3) imagewise exposing and developing the light-sensitive element to form a dye image; and

(4) transferring the image to the dye fixing element to fix the image in the dye fixing element.

5,484,684

PHOTOCHEMICAL OR MECHANICAL PRODUCTION OF FLEXIBLE PRINTING PLATES

Thomas Telser, Weinheim; Heinz-Ulrich Werther, Wachenheim, and Manfred Zuerger, Sinsheim, all of, Germany, assignors to BASF Lacke & Farben, Muenster, Germany

Continuation of Ser. No. 238,932, May 6, 1994, abandoned, which is a division of Ser. No. 170,986, Dec. 21, 1993, abandoned, which is a continuation of Ser. No. 14,170, Feb. 5, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 419,951

Claims priority, application Germany, Feb. 7, 1992, 42 03 698.9

Int. Cl.[6] G03C *11/12*

U.S. Cl. 430—253 **1 Claim**

1. A process for lacquering products printed by the offset method comprising transferring lacquer to the products with a dimensionally stable printing plate, which printing plate consists essentially of a dimensionally stable substrate and a photosensitive recording layer on the substrate, which printing plate is prepared by the process which comprises (1) uniformly exposing the photosensitive recording layer to light to produce a uniformly exposed recording layer, (2) imagewise cutting the uniformly exposed recording layer to produce nonprinting parts and printing parts of the recording layer, and (3) mechanically peeling the nonprinting parts of the recording layer away from the substrate leaving a substrate and printing parts of the recording layer on the substrate wherein the recording layer is from about 200 to 8,000 micrometer thick and the hardness of the exposed recording layer, determined on a 6 mm sample, is more than 20, and less than 80 Shore A.

5,484,685

NAPHTHALOCYANINE DERIVATIVES, PRODUCTION THEREOF, OPTICAL RECORDING MEDIUM USING THE SAME, AND PRODUCTION THEREOF

Seiji Tai, Palo Alto, Calif.; Nobuyuki Hayashi, Hitachi, Japan; Koichi Kamijima, Hitachi, Japan; Mitsuo Katayose, Hitachi, Japan; Takayuki Akimoto, Hitachi, Japan; Shigeru Hayashida, Hitachi, Japan; Hideo Hagiwara, Hitachi, Japan; Susumu Era, Ichihara, Japan; Setsuo Kobayashi, Hitachi, Japan, and Akio Mukoh, Mito, Japan, assignors to Hitachi, Ltd., and Hitachi Chemical Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 425,405, Oct. 23, 1989, abandoned. This application May 30, 1991, Ser. No. 708,839

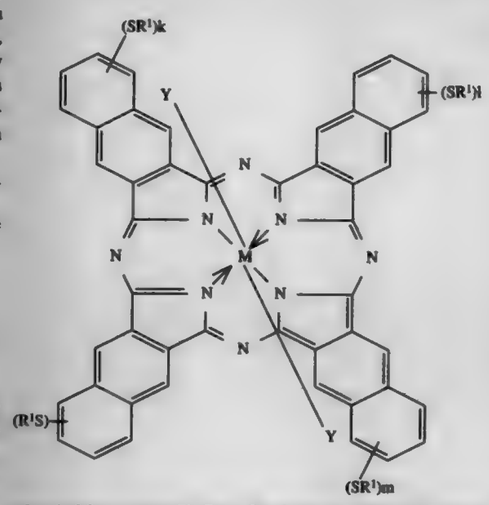
Claims priority, application Japan, Jan. 25, 1988, 63-269114; Dec. 9, 1988, 63-312589

The portion of the term of this patent subsequent to Jul. 23, 2008, has been disclaimed.

Int. Cl.[6] G03C *1/72;* G11B *7/24;* C09B *47/00*

U.S. Cl. 540—452 **25 Claims**

1. A naphthalocyanine derivative represented by the formula:



(I)

wherein M represents Si, Ge or Sn; the two symbols Y, identical or different, each represents group R^2O or group $R^3R^4R^5SiO$; k, l, m and n each represents zero or an integer of 1 to 4, provided that (k+l+m+n) is 1 or greater; R^1 is a cycloalkyl group, an alkyl group having a cycloalkyl group as a substituent, a straight chain alkyl group or a branched-chain alkyl group, provided that R^1 in number of (k+l+m+n) may be identical or different from one another; and R^2, R^3, R^4 and R^5, identical or different from one another, each represents a cycloalkyl group, an alkyl group having a cycloalkyl group as substituent, an alkoxyl group, a straight chain alkyl group, a branched chain alkyl group or an alkenyl group; provided that the formula must have at least one cycloalkyl group or alkyl group having a cycloalkyl group as substituent.

5,484,686

OPTICAL RECORDING MEDIA AND INFORMATION RECORDING AND REPRODUCING UNITS

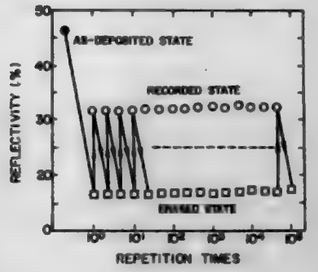
Yoshihito Maeda, Mito; Isao Ikuta, Iwaki; Hisashi Andoh; Masaichi Nagai, both of Hitachi; Yoshimi Katoh, Takahagi; Yoshio Sato, Hitachi; Nobuyoshi Tsuboi, Ibaraki, and Hiroyuki Minemura, Hitachi, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 917,664, Jul. 20, 1992, abandoned, which is a continuation of Ser. No. 366,873, Jun. 15, 1989, abandoned. This application Mar. 4, 1994, Ser. No. 205,768

Claims priority, application Japan, Jun. 24, 1988, 63-154743

Int. Cl.[6] G03C *1/72*

U.S. Cl. 430—270.13 **5 Claims**



1. An optical recording medium using an amorphous-crystalline phase change for recording and erasing of information, the medium comprising a substrate, a recording film, a dielectric film and a metal reflection film, the recording film comprising a composition of $In_xSb_yTe_z$ defined by a triangular area in a ternary diagram bounded by the points x, y, z of 22, 33, 45; 20, 37, 43; and 32, 40, 28 (in atomic %) and

wherein the reflectivity of the recording film at the amorphous state is larger than that at the crystalline state at a wavelength of laser employed for recording and erasing.

5,484,687

POLYSILPHENYLENESILOXANE, PRODUCTION PROCESS THEREOF, AND RESIST MATERIAL AND SEMICONDUCTOR DEVICE FORMED THEREOF

Keiji Watanabe, Isehara; Akira Oikawa, Machida; Shun-ichi Fukuyama, Yamato; Masaaki Yamagami, Kawasaki, and Takahisa Namiki, Atsugi, all of, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 614,338, Nov. 15, 1990, Pat. No. 5,240,813. This application Jul. 29, 1993, Ser. No. 98,877

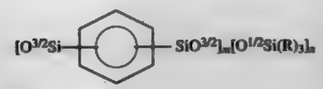
Claims priority, application Japan, Nov. 15, 1989, 1-295096; Mar. 9, 1990, 2-56423

Int. Cl.[6] G03F *7/26;* G03C *5/16*

U.S. Cl. 430—296 **14 Claims**

10. A process for the production of semiconductor devices, which comprises the steps of:

applying a resist material onto a material to be selectively etched, the resist material comprising polysilphenylenesiloxance of the following structural formula (I):



(I)

in which

R may be the same or different, and each represents a hydrogen atom or a monovalent hydrocarbon group, and

m and n each represents a positive integer; the polysilphenylenesiloxane having a three-dimensional mesh structure of a silphenylenesiloxance core surrounded by triorganosilyl groups, and a weight-average molecular weight of 1,000 to 5,000,000, exposure radiation to obtain a desired latent image pattern;

developing the pattern-wise exposed resist coating to selectively remove unexposed resist coating and to obtain a resist pattern; and

dry etching the underlying material while using the resist pattern of the resist material as a mask means.

5,484,688

PROCESS FOR THE PATTERNED METALLISATION OF STRUCTURED PRINTED CIRCUIT BOARDS

Klaus Horn, Hofheim; Jürgen Lingnau, Mainz; Gerald Schütze, Hofheim, and Werner Hinter, Wiesbaden, all of, Germany, assignors to Morton International, Inc., Chicago, Ill.

Filed May 13, 1994, Ser. No. 242,759

Int. Cl.[6] B05D *1/32;3/00*

U.S. Cl. 430—311 **9 Claims**

1. A process for patterned metallization of structured printed circuit boards comprising copper tracks in which a fully structured printed circuit board is covered with a solder stop mask but leaving solder contact locations open, the solder stop mask is thermally hardened and metal is deposited from an aqueous bath at the exposed solder contact locations, characterized in that, prior to the metal deposition, the solder mask is heated under such conditions that complete hardening does not yet occur, the surface of the copper tracks is not oxidized, and that, after the metal deposition, the mask is heated sufficiently long to a sufficiently high temperature that the mask is completely hardened throughout.

5,484,689

OPTICAL RECORDING MATERIAL COMPRISING A BIS-DITHIOBENZILNICKEL COMPLEX

Toshiyuki Takano, and Toshimi Satake, both of Tokyo, Japan, assignors to Nippon Paper Industries Co., Ltd., Tokyo, Japan

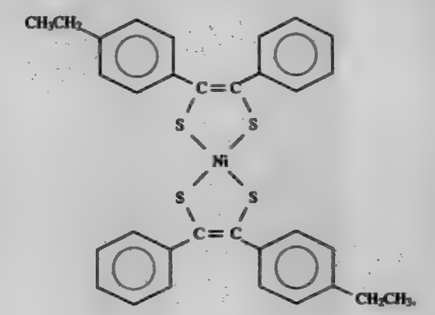
Division of Ser. No. 40,452, Apr. 1, 1993, abandoned. This application Dec. 22, 1993, Ser. No. 171,857

Claims priority, application Japan, Apr. 2, 1992, 4-080646

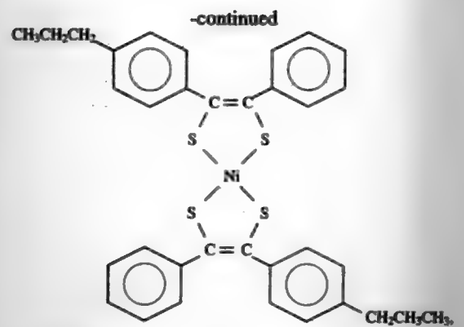
Int. Cl.[6] G03C *1/735*

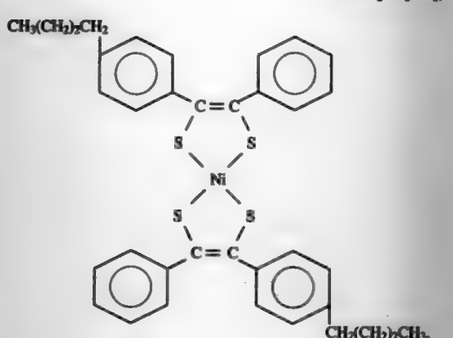
U.S. Cl. 430—341 **9 Claims**

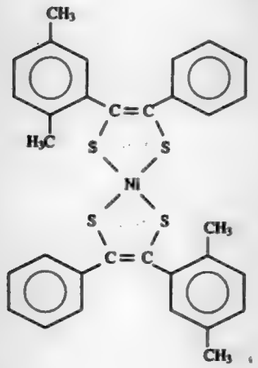
1. An optical recording material having, on a substrate, a recording layer comprising (a) an electron-donating colorless dye, (b) an electron-accepting acid compound which will react with said dye under heating to develop a color, and (c) a near-infrared absorbing material selected from the group consisting of the following bis-dithiobenzilnickel complexes capable of converting infrared light to heat:

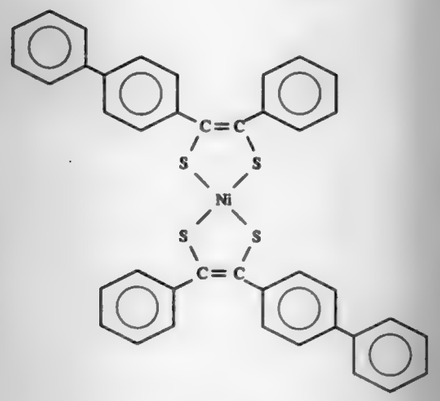


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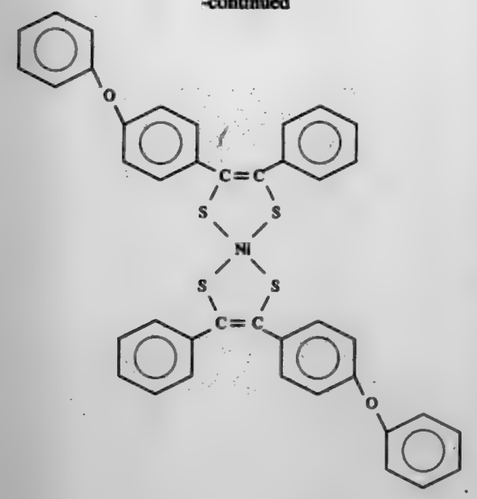






and

-continued



5,484,690

SILVER HALIDE PHOTOGRAPHIIC MATKRIAL

Takahiro Goto, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 101,818, Aug. 4, 1993, abandoned, which is a continuation of Ser. No. 757,764, Sep. 11, 1991, abandoned. This application Jun. 13, 1994, Ser. No. 259,127
Claims priority, application Japan, Sep. 13, 1990, 2-242985
Int. Cl.[6] G03C *1/09;5/29*
U.S. Cl. 430—435 25 Claims

1. A method for forming a silver image in a black and white photographic material, comprising:

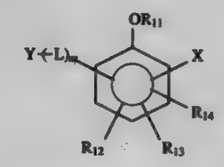
imagewise exposing a silver halide black and white photographic material comprising a support having thereon one or more hydrophilic colloid layers,

wherein at least one hydrophilic colloid layer is a silver halide emulsion layer comprising silver halide grains with a silver chloride content of at least 90 mol %, and

wherein at least one hydrophilic colloid layer comprises a silver halide emulsion layer comprising

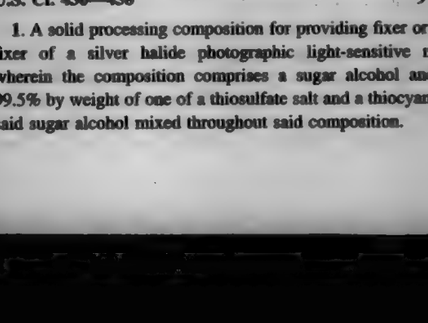
(A) a compound represented by formula (I); and

(B) at least one compound selected from compounds represented by formulae (A), (B) and (C):



(I)

wherein X represents OR_{11} or $N(R_{15})R_{16}$; R_{11} represents a hydrogen atom or a group which can become a hydrogen atom by hydrolysis; R_{12}, R_{13} and R_{14} each represents a hydrogen atom or a substituent group selected from the group consisting of a halogen atom, an alkyl group, an aryl group, an alkyl group, an aryloxy group, an alkylthio, an arylthio group, an acyl group, an acylamino group, a nitro group, a cyano group, an oxycarbonyl group, a carboxy group, a sulfo group, a ureido group, a sulfonamido group, a sulfamoyl, a carbamoyl group, an acyloxy group, an amino group, a carbonic ester, a sulfonyl group, a sulfinyl group, a hydroxyl group and $-(L)_m-Y$ where L, Y and m are defined below; R_{12}, R_{13} and R_{14} may be the same or different, and when any two of R_{12}, R_{13} and R_{14} have been substituted on neighboring carbon atoms in the benzene ring, they may link to form a carbocyclic or heterocyclic 5-membered to 7-membered ring, wherein the ring may be saturated or unsaturated; R_{15} and R_{16} each represents a hydrogen atom, an alkyl group, an aryl group, an alkylsulfonyl group, an arylsulfonyl group, an alkylcarbonyl group, an arylcarbonyl group or a carbamoyl group; R_{15} and R_{16} may be identical or different and may link to form a nitrogen-containing heterocyclic ring; Y represents a group promoting adsorption onto the silver halide; L represents a divalent linking group and m represents 0 or 1;



(A)

(B)

(C)

wherein Z represents an alkyl group having 1 to 18 carbon atoms, an aryl group having 6 to 18 carbon atoms or a heterocyclic group; Y represents an aromatic ring having 6 to 18 carbon atoms or atoms necessary to form a heterocyclic ring; M represents a metal atom or an organic cation; and n represents an integer of 2 to 10; and

processing said photographic material with a black and white developer containing a dihydroxybenzene developing agent,

wherein the silver halide grains are core/shell silver halide grains having rhodium atoms located in both the core and the shell, the rhodium atoms being present in the core in an amount greater than in the shell.

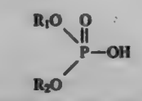
5,484,692

SILVER HALIDE PHOTOGRAPHIC MATERIAL AND IMAGE FORMING METHOD USING THE SAME

Akio Mitsui, and Hiroo Takizawa, both of Minami Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 24, 1994, Ser. No. 295,107
Claims priority, application Japan, Sep. 8, 1993, 5-223156
Int. Cl.[6] G03C *1/46*
U.S. Cl. 430—505 13 Claims

1. A silver halide photographic material comprising a support having provided thereon at least one light-sensitive silver halide emulsion layer, wherein at least one layer on said support contains a photographically useful reagent dispersed in at least one compound represented by formula (1):



(1)

said compound of formula (1) being liquid at 25° C.; wherein R_1 and R_2 each independently represents a hydrogen atom, an unsubstituted unsaturated straight-chain aliphatic group, or an unsubstituted branched alkyl group; provided that both R_1 and R_2 are not hydrogen atoms at the same time and that the sum of the carbon atoms in R_1 and R_2 is at least 18.

5,484,693

PHOTOGRAPHIC ELEMENTS COMPRISING ANTISTATIC FILM BASES

Alberto Valsecchi, Vado Ligure, Italy, and Omar Farooq, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 7, 1993, Ser. No. 116,515
Claims priority, application Italy, Sep. 25, 1992, MI92A2208
Int. Cl.[6] G03C *1/85*
U.S. Cl. 430—529 7 Claims

1. A photographic film comprising an antistatic film base comprising a polymeric substrate having on at least one surface of said substrate an antistatic layer comprising the reaction product of (a) a water-soluble electrically conductive polymer having carboxylic groups and (b) an organic crosslinking agent comprising at least two epoxide groups, wherein said conductive polymer is a copolymer of a water-soluble salt of styrene sulfonic acid and maleic acid, said conductive polymer having a weight average molecular weight of 100,000 to 350,000, and said conductive polymer has a molar ratio of water-soluble salt of styrene sulfonic acid to maleic acid of at least 2:1 up to 9:1, said film base having a silver halide emulsion layer adhered to at least one side of said film base.

5,484,691

SOLID PROCESSING COMPOSITION FOR SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Kenji Ishida, and Takashi Deguchi, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Aug. 15, 1994, Ser. No. 290,130
Claims priority, application Japan, Aug. 23, 1993, 5-207980; Jul. 19, 1994, 6-167167
Int. Cl.[6] G03C *5/38*
U.S. Cl. 430—458 9 Claims

1. A solid processing composition for providing fixer or bleach-fixer of a silver halide photographic light-sensitive material, wherein the composition comprises a sugar alcohol and 10 to 99.5% by weight of one of a thiosulfate salt and a thiocyanate salt, said sugar alcohol mixed throughout said composition.

5,484,694

IMAGING ELEMENT COMPRISING AN ELECTRICALLY-CONDUCTIVE LAYER CONTAINING ANTIMONY-DOPED TIN OXIDE PARTICLES

Mark Leiental, Rochester; Paul A. Christian; Ibrahim M. Shalhoub, both of Pittsford, and Thomas N. Blanton, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 21, 1994, Ser. No. 342,959
Int. Cl.[6] G03C *1/85;* C01G *19/02*
U.S. Cl. 430—530 18 Claims

1. An imaging element for use in an image-forming process; said imaging element comprising a support, an image-forming layer, and an electrically-conductive layer; said electrically-conductive layer comprising a dispersion in a film-forming binder of electronically-conductive particles of antimony-doped tin oxide having an antimony dopant level of greater than 8 atom percent, an x-ray crystallite size of less than 100 Angstroms and an average

equivalent circular diameter of less than 15 nanometers but no less than the X-ray crystallite size; the volume fraction of said particles being from about 20 to about 80% of the volume of said electrically-conductive layer.

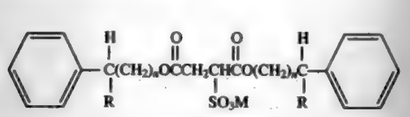
5,484,695

SURFACTANTS AND HYDROPHILIC COLLOID COMPOSITIONS AND MATERIALS CONTAINING THEM

Alan R. Pitt, Sandridge; Julian C. Caesar, Stratford; Danuta Gibson, Garston; Trevor J. Wear, South Harrow; David J. Young, Chorleywood, all of, Great Britain, and Scott A. King, Penfield, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 18, 1994, Ser. No. 198,729
Int. Cl.[6] G03C *1/08*
U.S. Cl. 430—546 **12 Claims**

1. A multilayer photographic material comprising a support bearing a plurality of hydrophilic colloid layers including at least one light-sensitive silver halide emulsion layer wherein at least one of the underlying hydrophilic colloid layers of the material contains hydrophobic particles dispersed therein with the aid of a surfactant having the structure



I

wherein

R is H or methyl provided that when each n=1, each R is methyl;
M is a cation; and,
n is an integer from 1 to 6.

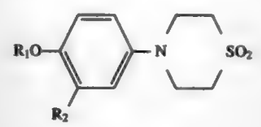
5,484,696

PHOTOGRAPHIC ELEMENTS CONTAINING 2-EQUIVALENT PYRAZOLONE MAGENTA DYE FORMING COUPLERS AND FADE REDUCING COMPOUNDS

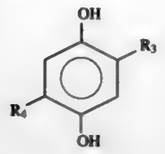
Rakesh Jain, Penfield; William R. Schleigh, Rochester, and Robert C. Stewart, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 22, 1994, Ser. No. 362,635
Int. Cl.[6] G03C *7/392;7/38*
U.S. Cl. 430—551 **11 Claims**

1. A silver halide photographic element comprising a light sensitive silver halide containing layer, which layer also contains a 2-equivalent pyrazolone magenta coupler, a compound of formula (S) below, and a hydroquinone compound of formula (R) below:



(S)



(R)

wherein:

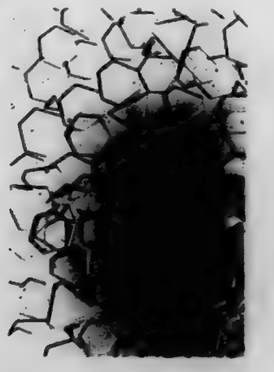
R_1 is an alkyl group; and R_2, R_3 and R_4 are independently an alkyl group or H.

5,484,697

METHOD FOR OBTAINING MONODISPERSE TABULAR GRAINS

Andre G. E. Mignot, Brie Comte Robert, and Pierre H. Jezequel, Saint-Desert, both of, France, assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/FR92/00417, § 371 Date Nov. 12, 1993, § 102(e) Date Nov. 12, 1993, PCT Pub. No. WO92/21061, PCT Pub. Date Nov. 26, 1992
PCT Filed May 11, 1992, Ser. No. 142,282
Claims priority, application France, May 14, 1991, 91 05985
Int. Cl.[6] G03C *1/015;1/035*
U.S. Cl. 430—569 **7 Claims**



1. A method for preparing a photographic emulsion containing gelatin and tabular silver halide grains having a number of tabular silver halide grains with respect to the total number of silver halide grains more than 60% and a coefficient of variation of the diameter less than 15% characterized in that:

(a) twinned silver halide seeds are precipitated from halide and silver nitrate solutions, fed into a precipitation medium, under laminar flow conditions determined by a Reynolds number less than 2100, the silver nitrate solution having a concentration ranging from 0.04 to 0.3M, and the seeds being received in a receiving medium;

(b) the seeds are ripened by stopping adding the halide and silver nitrate solutions, under strong stirring, during 1 to 90 mn, and at a VAg more than 0 mV;

(c) the seeds are grown by a double jet technique under strong stirring, at a VAg more than +10 mV.

5,484,698

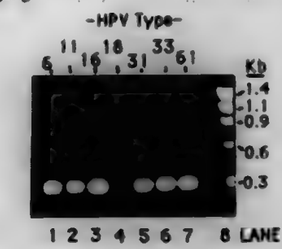
Patent Not Issued For This Number

5,484,699

NUCLEOTIDE SEQUENCES USEFUL AS TYPE SPECIFIC PROBES, PCR PRIMERS AND LCR PROBES FOR THE AMPLIFICATION AND DETECTION OF HUMAN PAPILLOMA VIRUS, AND RELATED KITS AND METHODS

Stanley R. Bouma, Mundelein, Ill.; Jeffrey L. Joseph, Cherry Hill, N.J.; Ronald L. Marshall, Zion, and Thomas G. Laffler, Libertyville, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 965,665, Oct. 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 589,948, Sep. 28, 1990, abandoned, and a continuation-in-part of Ser. No. 590,105, Sep. 28, 1990, abandoned, and a continuation-in-part of Ser. No. 590,253, Sep. 28, 1990, abandoned. This application Sep. 30, 1994, Ser. No. 316,293
Int. Cl.[6] C12Q *1/70; C07H 21/02;21/04*
U.S. Cl. 435—5 **2 Claims**



1. A type-specific oligonucleotide for determining the presence of human papilloma virus type 16, having a sequence selected from the group consisting of:

SEQ ID No.			
13	AGGGCGCCAT	GAGACTGAAA	CAC,
20	ATGACAAATC	TTGATACTGC	ATCCA,
27	CCATCTGTAC	CCTCTACATC	TTTAT,
34	GTCTACTGCA	AATTTAGCCA	GTTCA,
39	AAGTTGTAAG	CACGGATGAA	TATGT,
60	ACATATTCAT	CCGTGCTTAC	AACT,
61	TGCACGCACA	AACATATATT	ATCA,
62	ATGATAATAT	ATGTTTGTGC	GTGCA,
67	ATTTATACAT	TAAAGGCTCT	GGGTC,
68	GACCCAGAGC	CTTTAATGTA	TAAA,
69	TACTGCAAAT	TTAGCCAGTT	CAAA,
70	ATTTGAACTG	GCTAAATTTG	CAGTA,
77	AGGCTCTGGG	TCTACTGCAA	ATTT,
78	AAATTTGCAG	TAGACCCAGA	GCCT,
81	GCTGCAAACA	ACTATACATG	ATATAA,
82	TTATATCATG	TATAGTTGTT	TGCAGC,
83	TATTAGAATG	TGTGTACTGC	AAGCA,
84	TGCTTGCAGT	ACACACATTC	TAATA,
93	GTATGGAACA	ACATTAGAAC	AGCA,
94	TGCTGTTCTA	ATGTTGTTCC	ATAC,
95	ATACAACAAA	CCGTTGTGTG	ATTT and
96	AAATCACACA	ACGGTTTGTT	GTAT;

and their complements.

5,484,700

METHOD FOR ASSAYING NUCLEIC ACIDS USING NAPHTHOL DERIVATIVE PHOSPHATE

Satoshi Fujita; Naoto Kagiyama, and Masayoshi Momiyama, all of Sapporo, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 13, 1991, Ser. No. 806,189
Claims priority, application Japan, Dec. 21, 1990, 2-413201
Int. Cl.[6] C12Q *1/68;1/42*
U.S. Cl. 435—6 **7 Claims**

1. A method for detecting a nucleic acid in a sample, comprising:

a) contacting phosphatase with said sample, such that the nucleic acid to be detected in said sample binds to said phosphatase to form a modified phosphatase;

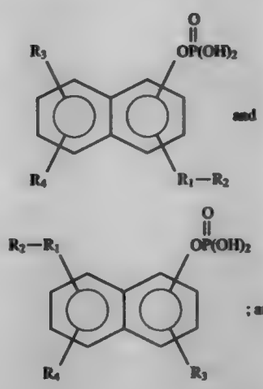
b) contacting said modified phosphatase with a naphthol derivative phosphate to form a fluorescent reaction product;

c) irradiating said fluorescent reaction product of said contacting step (b) with light, said light capable of eliciting fluorescence from said fluorescent reaction product; and

d) detecting elicited fluorescence to detect said nucleic acid;

wherein:

said naphthol derivative phosphate has a formula selected from the group consisting of

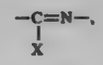


and

; and

wherein:

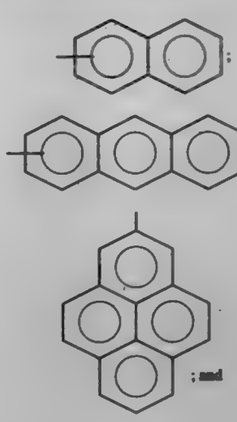
R_1 is selected from the group consisting of amide, vinyl, C_1 to C_3 alkyl, ester, and



wherein X is alkoxide or phenoxide;

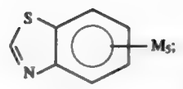
R_2 is selected from the group consisting of aryl, condensing aromatic, thio-aryl, alkyl, alkoxide, and phenoxide;

when R_2 is condensing aromatic, said condensing aromatic is selected from the group consisting of

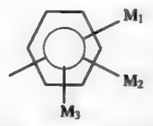


; and

when R_2 is thioaryl, said thioaryl has the formula



wherein M_5 is selected from the group consisting of hydrogen, C_1 to C_2 alkyl, alkoxide, cyano and aminoacetyl; and
when R_2 is aryl, said aryl is represented by the formula



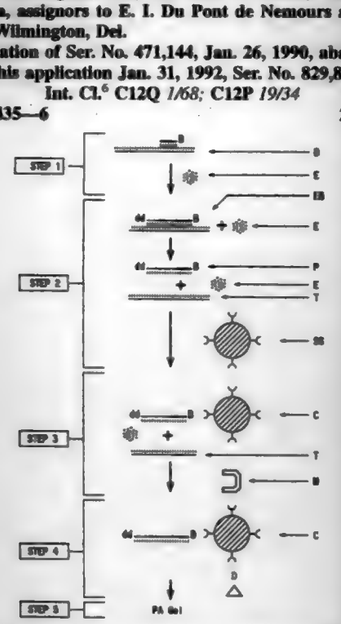
wherein M_1, M_2, and M_3 are independently selected from the group consisting of hydrogen, halogen, C_1 to C_3 alkyl, alkoxide, phenoxide, aminoacetyl, benzyl, aminophenyl, and cyano; and
R_3 and R_4 are independently selected from the group consisting of hydrogen, halogen, alkyl, alkoxide, phenoxide, aminoacetyl, cyano, and ester.

5,484,701

METHOD FOR SEQUENCING DNA USING BIOTIN-STREPAVIDIN CONJUGATES TO FACILITATE THE PURIFICATION OF PRIMER EXTENSION PRODUCTS

Anthony J. Cocuzza; Frank W. Hobbs, Jr.; Robert J. Zagursky, all of Wilmington, Del., and Neil A. Straus, North York, Canada, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 471,144, Jan. 26, 1990, abandoned. This application Jan. 31, 1992, Ser. No. 829,857
Int. Cl.[6] C12Q *1/68*; C12P *19/34*
U.S. Cl. 435—6 **29 Claims**



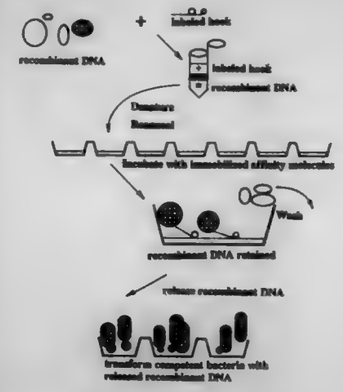
1. In an improved method for sequencing DNA wherein the following steps are conventional:
(a) extending a primer by means of a template-directed primer extension reaction; and
(b) analyzing the primer extension products by means of gel electrophoresis, the improvement comprising:
(i) extending a biotinylated primer by means of a template-directed primer extension reaction to produce biotinylated primer extension products;
(ii) complexing the biotin of said biotinylated primer extension products of step (i) with a biotin-binding protein immobilized on a solid support, said complexing performed either before or after separating the template from the biotinylated primer extension products of step (i);
(iii) separating physically the complexed biotinylated primer extension products of step (ii) from the liquid phase of the primer extension reaction;
(iv) treating the complex of step (iii) with formamide compatible with gel-electrophoresis to dissociate the biotin of said biotinylated primer extension products from the immobilized biotin-binding protein;
(v) analyzing the biotinylated primer extension products of step (iv) by means of gel electrophoresis; and
(vi) sequencing the DNA of the primer extension products obtained.

5,484,702

METHOD FOR PRESELECTING RECOMBINANT CLONES CONTAINING A SPECIFIC NUCLEIC ACID SEQUENCE AND SUBSEQUENT TRANSFORMATION WITH PRESELECTED CLONES

Linda B. Ludwig, East Aurora, N.Y., assignor to Research Foundation of the State University at Buffalo of New York, Amherst, N.Y.

Filed Jan. 27, 1994, Ser. No. 189,155
Int. Cl.[6] C07H *21/04*; C12P *19/34*; C12Q *1/48;1/70*
U.S. Cl. 435—6 **21 Claims**



1. A method for preselecting a gene or nucleic acid sequence of interest from other DNA, wherein a portion of the nucleic acid sequence of the gene or nucleic acid sequence of interest is known, comprising the steps of:
(a) immobilizing affinity molecules to a solid support matrix, wherein the affinity molecules are specific for a hapten label or target molecule label;
(b) hybridizing DNA to be preselected with an oligonucleotide hook complementary to the known portion of the sequence of interest under denaturing and subsequent annealing conditions, said oligonucleotide hook having incorporated hapten label or target molecule label;
(c) contacting the DNA of step (b) with the immobilized affinity molecules under conditions which promote the specific binding between the affinity molecules and the hapten label or target molecule label of the oligonucleotide hook for which it has binding specificity;
(d) washing the support matrix to remove unbound DNA; and
(e) liberating any bound DNA from the solid support matrix by enzymatic digestion of a component selected from the group consisting of the labeled oligonucleotide hook, and the immobilized affinity molecule;
wherein liberated DNA represents the preselected gene or nucleic acid sequence of interest.

5,484,703

ASSAY USING RECOMBINANT HISTIDYL-TRNA SYNTHETASE

Nina Raben, Rockville; Ralph Nichols, Columbia, both of Md.; Paul Plotz, Washington, D.C., and Richard Leff, Charleston, S.C., assignors to United States of America, Washington, D.C.

Filed Apr. 22, 1993, Ser. No. 52,404
Int. Cl.[6] G01N *33/564*
U.S. Cl. 435—7.4 **10 Claims**

1. A method for determining the presence of an autoimmune disease in a mammal comprising:
isolating a sample of body fluid from a mammal, said body fluid containing antibodies;
contacting said isolated body fluid with recombinant Histidyl tRNA synthetase produced by expression of a mammalian Histidyl tRNA synthetase transfected into host insect cells, said recombinant Histidyl tRNA synthetase being substantially free of endogenous mammalian Histidyl tRNA synthetase immunoreactivity produced by said cells; and
detecting the presence or abeence of binding of said antibodies to said recombinant Histidyl tRNA synthetase, wherein detectable binding of said antibodies to said recombinant Histidyl tRNA synthetase indicates the presence of an autoimmune disease in said mammal.

5,484,704

MONOCLONAL ANTIBODY FOR DIAGNOSTIC USE IN OVARIAN CANCER

Bonita S. Dunbar, Houston, Tex., assignor to Baylor College of Medicine, Houston, Tex.

Continuation of Ser. No. 975,093, Nov. 12, 1992, abandoned. This application Oct. 19, 1994, Ser. No. 326,053
Int. Cl.[6] G01N *33/574;33/53*
U.S. Cl. 435—7.23 **2 Claims**

1. A method of screening tissue for the presence of ovarian cancer cells comprising the steps of:
contacting tissue suspected of containing ovarian cancer cells with the antibody PS1, secreted by hybridoma cells having ATCC accession number HB9566; and
detecting an antigen-antibody reaction correlated with the presence of ovarian cancer cells.

5,484,705

METHOD FOR QUANTIFYING LIPOPOLYSACCHARIDE BINDING PROTEIN

Mark L. White, Sonoma; Stephen F. Carroll, Walnut Creek, and Jeremy K. Ma, San Ramon, all of Calif., assignors to XOMA Corporation, Berkeley, Calif.

Filed Jan. 24, 1994, Ser. No. 186,811
Int. Cl.[6] G01N *33/566;33/569*; C12Q *1/00*
U.S. Cl. 435—7.32 **2 Claims**

1. A method for screening for gram-negative bacterial endotoxin involvement in an acute phase response in humans comprising:
(a) contacting a blood sample from a subject exhibiting an acute phase response with a specific binding partner for lipopolysaccharide binding protein,
(b) determining the level of lipopolysaccharide binding protein in said blood sample, and
(c) comparing the level of lipopolysaccharide binding protein determined in step (b) to levels of lipopolysaccharide binding protein in blood circulation in normal subjects, elevated levels of lipopolysaccharide binding protein being indicative of an acute phase response involving gram-negative bacterial endotoxin.

5,484,706

IMMUNOASSAY FOR ANALYTES IN SAMPLES USING ALKYLATING AGENTS

Jon E. Petersen, Minnetonka, and Jeffrey W. Steffens, Chanhassen, both of Minn., assignors to Pasteur Sanofi Diagnostics, Marnes-la-Coquette, France

Filed May 19, 1993, Ser. No. 65,019
Int. Cl.[6] G01N *33/571;33/569*
U.S. Cl. 435—7.36 **14 Claims**

14. An improved immunoassay for assaying for a lipopolysaccharide antigen within a patient sample containing antibodies that interfere with analyte detection, the analyte being antigenic comprising the following steps:
a) after alkaline detergent extraction of the sample to release the lipopolysaccharide antigen contacting the sample with an alkylating agent capable of alkylating groups on the anti-analyte antibodies at a pH not less than 7.0 to modify the antibodies to render them incapable of interfering with analyte detection, the alkylating agent being one which does not effect the antigenicity of the lipopolysaccharide antigen;
b) inactivating the alkylating agent, and then
c) performing an immunoassay on the sample to assay the lipopolysaccharide antigen in the presence of the modified antibody.

5,484,707

ASSAY FOR FREE SECRETORY COMPONENT AND METHODS FOR MONITORING ORGAN REJECTION

Randall M. Goldblum, Dickinson, and Srinivasan Rajaraman, Galveston, both of Tex., assignors to The Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 736,448, Jul. 26, 1991, Pat. No. 5,340,721. This application Dec. 28, 1993, Ser. No. 174,670
The portion of the term of this patent subsequent to Aug. 23, 2011, has been disclaimed.
Int. Cl.[6] G01N *33/543;33/566*
U.S. Cl. 435—7.92 **17 Claims**

1. A method for inhibiting a kidney transplant rejection in an animal with a kidney transplant comprising:
obtaining a urine sample from the animal at periodic intervals after the kidney is transplanted;
measuring FSC concentrations in each urine sample of the animal to provide FSC test concentrations;
determining an FSC control urine concentration;
identifying an elevated FSC test concentration in a test sample having an FSC concentration greater than the FSC control urine concentration as determined by an immunological method;
employing said elevated FSC test, concentration as an aid in identifying an animal undergoing a kidney rejection episode; and
treating the animal undergoing a kidney rejection episode with a regimen of immunosuppressive agents to inhibit kidney rejection in the animal.

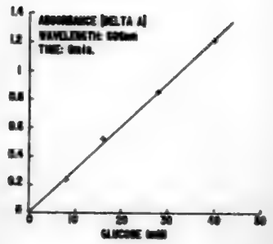
5,484,708

METHOD FOR THE COLORIMETRIC DETERMINATION OF AN ANALYTE WITH A PQQ-DEPENDENT DEHYDROGENASE

Joachim Hoenes, Zwingenberg, and Volker Unkrig, Ladenburg, both of, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Apr. 8, 1994, Ser. No. 224,869
Claims priority, application Germany, Apr. 8, 1993, 43 11 464.4
Int. Cl.[6] C12Q *1/54;1/00*; C12P *17/18*; G01N *33/48*
U.S. Cl. 435—14 **32 Claims**

1. A method for the colorimetric determination of an analyte, comprising,



enzymatically oxidizing an analyte with an oxidoreductase in the presence of a direct electron acceptor, wherein said direct electron acceptor is an electron-rich aromatic nitroso compound,

wherein the electron-rich aromatic nitroso compound is reduced enzymatically in the presence of a pyrrolo-quinoline quinone (PQQ)-dependent dehydrogenase to an imino compound with concomitant oxidation of the analyte without further enzymatic reduction to an aromatic amine,

reacting said imino compound with a non-oxidative chromogenic detection reagent, and

measuring any color formation.

5,484,709

IMMUNOASSAY METHOD FOR DETECTING AN IMMUNOLOGICALLY NON-REMARKABLE COMPOUND, ITS COMPONENTS AND A KIT FOR USE IN PERFORMING THE SAME

Stephen B. Friedman, Chapel Hill; Randy L. Allen, Apex, and Thomas N. Stewart, Durham, all of N.C., assignors to Ensys, Inc., Research Triangle Park, N.C.

Filed Sep. 10, 1993, Ser. No. 118,675

Int. Cl.[6] G01N *33/577*; C07K *16/44*

U.S. Cl. 435—7.93 **39 Claims**

21. An immunoassay for determining the presence of an immunologically non-remarkable compound in an aqueous sample, comprising:

(i) extracting said aqueous sample with a 1st extraction solvent to obtain a 1st extraction solvent solution;

(ii) submitting said 1st extraction solvent solution to a derivatization reaction using a nitrating agent, to obtain a derivatized solution;

(iii) extracting said derivatized solution with a 2nd extraction solvent to obtain an assay sample;

(iv) combining (iva) a monoclonal antibody with specific reactivity towards an immunologically remarkable compound prepared by reaction of said immunologically non-remarkable compound with said derivatizing agent, with (ivb) a mixture of (ivbi) the assay sample and (ivbii) a reporter molecule reagent which is cross reactive with said monoclonal antibody, wherein said reporter molecule reagent is susceptible to producing a detectable signal, to form an assay mixture;

(v) incubating said assay mixture to allow competitive monoclonal antibody binding between said immunologically remarkable compound, if present, in the assay sample, and said reporter molecule reagent;

(vi) causing production of said signal and correlating said signal to the amount of reporter molecule reagent bound to said monoclonal antibody to obtain a measure of the amount of said immunologically remarkable compound in said assay sample, which correlates to the amount of said immunologically non-remarkable compound in said sample,

wherein said immunologically non-remarkable compound is benzene and said immunologically remarkable compound is nitrobenzene.

5,484,710

METHOD OF DOWN-REGULATING A GENE LINKED TO A P-53 RESPONSIVE ELEMENT

John C. Reed, Carlsbad; Toshiyuki Miyashita, San Diego; Masayoshi Harigai, San Diego, and Motoi Hanada, San Diego, all of Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Filed Jan. 14, 1994, Ser. No. 182,619

Int. Cl.[6] C12P *21/00*; C12N *15/09*

U.S. Cl. 435—69.1 **1 Claim**

1. A method of down-regulating the expression of a gene, comprising operatively linking a p53-responsive element having the sequence shown in FIG. 1 (SEQ ID NO: 1) or an active fragment thereof to said gene and expressing said gene.

5,484,711

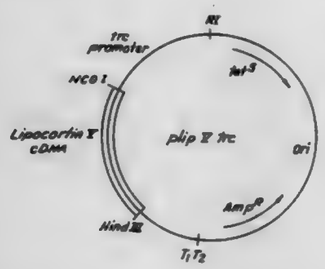
DNA SEQUENCES, RECOMBINANT DNA MOLECULES AND PROCESSES FOR PRODUCING LIPOCORTINS III, IV, V & VI

Barbara P. Wallner, Cambridge; R. Blake Pepinsky, Watertown, and Jeffrey L. Browning, Cambridge, all of Mass., assignors to Biogen, Inc., Cambridge, Mass.

Division of Ser. No. 668,744, Mar. 13, 1991, Pat. No. 5,298,489, which is a continuation of Ser. No. 160,866, Feb. 26, 1988, abandoned. This application Dec. 3, 1993, Ser. No. 162,641

Int. Cl.[6] C12N *15/15;15/63;15/70;15/81*

U.S. Cl. 435—69.2 **8 Claims**



1. A recombinant DNA molecule comprising a DNA sequence coding for lipocortin III selected from the group consisting of:

(a) the DNA sequence of λHLipo III-5 coding for lipocortin III,

(b) DNA sequences which hybridize to the complement of the DNA sequence of (a) in 2X SET at 68° C. and which code on expression for lipocortin III, and

(c) DNA sequences which are degenerate to any of the DNA sequences of (a) or (b).

5,484,712

METHOD FOR PRODUCING ACLACINOMYCINS A, B, Y USING STREPOMYCES LAVENDOFOLIAE DHKS

Won T. Cho, Cheongju; Wan S. Kim, Seoul; Myung K. Kim, Seoul; Jin K. Park, Seoul; Hak R. Kim, Seoul; Sang K. Rhee, Seoul, all of, Rep. of Korea; A. G. Domracheva, Moscow, Russian Federation; T. B. Panichkina, Moscow, Russian Federation; L. A. Saburova, Moscow, Russian Federation; L. M. Nobikova, Moscow, Russian Federation, and Y. E. Bartochevichi, Moscow, Russian Federation, assignors to Dongkook Pharmaceutical Co. Ltd., and Ki Beom Ki Beom Kwon, both of Seoul, Rep. of Korea

Division of Ser. No. 192,165, Feb. 4, 1994, Pat. No. 5,468,637. This application Jan. 6, 1995, Ser. No. 369,375

Claims priority, application Rep. of Korea, Sep. 3, 1993, 93-17589

Int. Cl.[6] C07H *17/04;15/244*; C12N *1/20*; C12P *19/56*

U.S. Cl. 435—78 **6 Claims**

1. A method for producing aclacinomycine A, B and Y, comprising

growing a pure cell culture of *S. lavendosoliae* DKRS having the ATCC Accession No. KCTC 0092BP in an expression medium at a temperature of about 28° to 30° C. and a pH of about 6.8 to 7.5 under aerobic conditions;

allowing the formation of aclacinomycins A, B and Y in the cell and the medium; and

separating the aclacinomycine from the medium and the cells.

5,484,713

Patent Not Issued For This Number

5,484,714

METHOD OF PRODUCING TREHALOSE BY MICROORGANISMS WHICH CAN PRODUCE TREMALOSE WITH SUCROSE OR MALTOSE AS MAIN CARBON SOURCE

Takayasu Tsuchida; Yutaka Murakami; Yoshitaka Nishimoto, and Takuya Kotani, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Dec. 11, 1992, Ser. No. 989,385

Claims priority, application Japan, Dec. 11, 1991, 3-327494; Feb. 13, 1992, 4-026841

Int. Cl.[6] C12P *19/12*; C12N *1/12;1/20*

U.S. Cl. 435—100 **5 Claims**

1. A method of producing trehalose comprising: culturing in a nutrient medium comprising sucrose or maltose as a main carbon source for a time and under conditions to produce trehalose, a microorganism belonging to the genus Brevibacterium or Corynebacterium, or a species selected from the group consisting of *Arthrobacter citreus*, *Arthrobacter sulfreus* and *Microbacterium ammoniaphilum*, said microorganism having an ability to produce trehalose in a nutrient medium containing sucrose or maltose as the main carbon source, and recovering said trehalose.

5,484,715

METHOD FOR PREPARING AN ANTITUMOR DEXTRAN USING A DEXTRAN SYNTHETASE FROM *LACTOBACILLUS CONFUSUS*

Hisao Kado, and Yasukazu Nakakita, both of Yaizu, Japan, assignors to Sapporo Breweries Limited, Tokyo, Japan

Division of Ser. No. 212,295, Mar. 11, 1994, Pat. No. 5,424,201, which is a continuation of Ser. No. 699,259, May 13, 1991, abandoned. This application Jan. 6, 1995, Ser. No. 369,884

Claims priority, application Japan, May 31, 1990, 2-139906

Int. Cl.[6] C12P *19/08;19/04*; C08B *37/02*

U.S. Cl. 435—103 **18 Claims**

1. A method for preparing an antitumor dextran which comprises

(a) contacting sucrose with an antitumor dextran synthetase isolated from a culture broth produced by culturing a microorganism belonging to *Lactobacillus confusus* selected from the group consisting of 40-1 strain (FERM BP-2865), 40-3 strain (FERM BP-2866), 77-1 strain (FERM BP-2867), 78-1 strain (FERM BP-2868), 80-1 strain (FERM BP-2869) and mutants thereof which produce said antitumor dextran, whereby said dextran is produced, said dextran having the following properties:

(1) Form: said dextran is a white powder having no taste and no smell;

(2) Solubility: said dextran is soluble in water, formamide and dimethylsulfoxide, but insoluble in alcohols, acetone, hexane, chloroform and carbon tetrachloride;

(3) pH of Aqueous Solution: the aqueous solution is neutral or weakly acidic;

(4) Constituent Saccharide: said dextran is comprised solely of glucose;

(5) Elementary analysis values: said dextran comprises 43 to 45% of C and 6.0 to 6.3% of H;

(6) Structure: said dextran is an α-glucan comprised mainly of linear α-1,6 glucoside linkages;

(7) Proteins: said dextran contains no protein as determined by the Lowry's method;

(8) Molecular weight: said dextran does not permeate through a dialysis membrane and has a molecular weight which is higher than 10,000 daltons;

(9) Color Reaction: said dextran is positive to anthrone sulfuric acid reaction and phenol sulfuric acid reaction, but negative to biuret reaction, the Lowry-Folin reaction, the Elson-Morgan reaction and the idione reaction;

(10) Melting Point: said dextran has no definite melting point;

(11) Ultraviolet Absorption Spectrum: said dextran has no characteristic ultraviolet absorption;

(12) Infrared Absorption Spectrum: said dextran shows a characteristic absorption of α-glucan;

(13) ^{13}C-NMR Spectrum: said dextran shows a characteristic spectrum of α-1,6-glucan;

(14) said dextran possesses antitumor activities, and

(b) collecting said dextran from the culture broth.

5,484,716

PROCESS FOR PRODUCING L-TRYPTOPHAN BY A CORYNEBACTERIUM STRAIN HAVING DECREASED PHOSPHOENOLPYRUVATE CARBOXYLASE ACTIVITY

Ryoichi Katsumata, Machida, and Kuniki Kino, Hofu, both of, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 625,699, Dec. 12, 1990, abandoned, which is a continuation of Ser. No. 317,589, Mar. 1, 1989, abandoned. This application Oct. 4, 1993, Ser. No. 130,995

Claims priority, application Japan, Mar. 4, 1988, 63-51358; Sep. 27, 1988, 63-241688

Int. Cl.[6] C12P *13/22*

U.S. Cl. 435—108 **1 Claim**

1. A process for producing L-tryptophan, which comprises culturing in a medium a mutant strain having decreased phosphoenolpyruvate carboxylase activity compared to the parent strain

thereof, and recovering L-tryptophan accumulated in the culture broth therefrom; said mutant strain being *Corynebacterium glutamicum* BPS-13(FERM BP-1777).

5,484,717

ANTIBIOTIC 31F508α_1, 31F508α_2, 31F508β_1, 31F508β_2

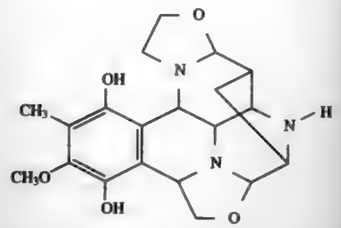
Joseph A. Zaccardi, New Windsor, N.Y., assignor to American Cyanamid Company, Wayne, N.J.

Division of Ser. No. 150,639, Nov. 10, 1993, Pat. No. 5,426,108. This application May 1, 1995, Ser. No. 432,344

Int. Cl.[6] C12P *17/18*

U.S. Cl. 435—119 **16 Claims**

1. A process for producing antibiotic 31F508α_1 which has the structure



the process comprising aerobically fermenting the organism *Streptomyces viridodiastaticus* subsp. "littus". or mutants thereof in a liquid medium containing assimilable sources of carbon, nitrogen and inorganic salts, until substantial antibiotic activity is imparted to said medium and then recovering the antibiotic therefrom.

5,484,718

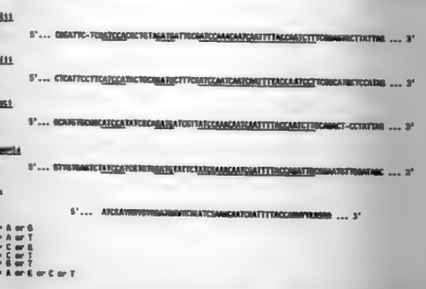
NODULATION GENE PROMOTER

Peter R. Schofield, San Francisco, Calif.; John M. Watson, Holder, Australia; Kieran F. Scott, Page, Australia; Barry G. Rolfe, Curtin, Australia; Michael A. Djordjevic, Aranda, Australia; Peter L. Kuempel, and Roger W. Innes, both of Boulder, Colo., assignors to Mycogen Plant Science, Inc., San Diego, Calif.

Filed Jun. 17, 1986, Ser. No. 875,300

Int. Cl.[6] C12N *15/31;15/32;15/74*

U.S. Cl. 435—172.3 **24 Claims**



1. A method for selectively expressing a gene comprising a legume exudate-inducible promoter and a foreign structural gene under the control of said promoter which comprises the steps of:

(a) placing said foreign structural gene under the control of said legume exudate-inducible promoter, thereby forming a legume exudate-inducible gene, and inserting said legume exudate-inducible gene into a recombinant DNA molecule comprising a nodD gene of a strain of Rhizobium;

(b) introducing said recombinant DNA molecule comprising said legume exudate-inducible gene and said nodD gene into a bacterial strain in which said promoter is active and said nodD gene is expressed;

(c) combining said bacterial strain containing said legume exudate-inducible gene with an amount of a nodulation gene inducing composition effective for induction of a legume exudate-inducible gene, said composition comprising a nodulation gene inducing factor; and

(d) assaying said bacteria strain for expression of said foreign structural gene under the control of said legume exudate-inducible promoter,

wherein said legume exudate-inducible promoter comprises a nucleotide sequence having the consensus sequence 5', . . . ATCCAYNNYGYRGATGNWYKYKATC-SAAWCAATCRATTTTACCARWYYKNSRR . . . 3'

where N is A or G or T or C
Y is C or T
R is A or G
W is A or T
K is G or T and
S is C or G.

5,484,719

VACCINES PRODUCED AND ADMINISTERED THROUGH EDIBLE PLANTS

Dominic M.-K. Lam, The Woodlands, and Charles J. Arntzen, College Station, both of Tex., assignors to Edible Vaccines, Inc., Conroe, Tex.

Continuation of Ser. No. 750,049, Aug. 26, 1991, abandoned. This application Nov. 23, 1993, Ser. No. 156,508

Int. Cl.[6] C12N *15/00;15/36;15/82;* A01H *5/00*

U.S. Cl. 435—172.3 **14 Claims**

5. A method for constructing a transgenic tobacco plant cell comprising:

constructing a plasmid vector by operably linking a DNA sequence, said sequence encoding a hepatitis B viral surface antigen protein, to a plant-functional promoter capable of directing the synthesis of said protein in said tobacco plant; and

transforming a tobacco plant cell with said plasmid vector.

5,484,720

METHODS FOR CALCIUM PHOSPHATE TRANSFECTION

Florian M. Wurm, Redwood City, and Martin Jordan, San Bruno, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Filed Sep. 8, 1994, Ser. No. 303,245

Int. Cl.[6] C12N *15/64*

U.S. Cl. 435—172.3 **20 Claims**

1. A method for introducing a desired nucleic acid into a eukaryotic host cell, comprising

(a) admixing Ca^{2+}, PO_4^{3-} and the desired nucleic acid to form a precipitation mixture;

(b) incubating the precipitation mixture to form particles comprising calcium phosphate and the desired nucleic acid, and allowing the particles to grow to an average length of up to about 300 nm;

(c) performing a step selected from the group consisting of: (1) diluting the precipitation mixture and simultaneously admixing the precipitation mixture with a eukaryotic host cell lacking a cell wall to form a transfection mixture with an initial Ca^{2+} concentration that is at least ten fold lower than the initial Ca^{2+} concentration of the precipitation mixture in step (a) and wherein the particles are capable of further growth; and (2) diluting the precipitation mixture to form a diluted precipitation mixture, and thereafter admixing the diluted precipitation mixture with a eukaryotic host cell lacking a cell wall to form a transfection mixture with an initial Ca^{2+} concentration that is at least ten fold lower than the initial Ca^{2+} concentration of the precipitation mixture in step (a) and wherein the particles are capable of further growth; and

(d) incubating the transfection mixture to allow the eukaryotic host cell to take up the particles to form a transfected cell.

5,484,721

PROCESS AND APPARATUS FOR FORMING SOLID PARTICLES BY CROSS-LINKING DROPS OF A CROSS-LINKABLE MATERIAL WITH A FREE-FALLING STREAM OF CROSS-LINKING AGENT

Patrick Ors; Dominique Hennequin, both of Epernay, and Alain Meybeck, Courbevoie, all of, France, assignors to LVMH Recherche, Colombes Cedex, France

PCT No. PCT/FR91/00819, § 371 Date Apr. 19, 1993, § 102(e) Date Apr. 19, 1993, PCT Pub. No. WO92/06779, PCT Pub. Date Apr. 30, 1992

PCT Filed Oct. 18, 1991, Ser. No. 39,286

Claims priority, application France, Jan. 19, 1990, 90 13802

Int. Cl.[6] C12N *11/00;11/10;* C12M *1/00;1/40*

U.S. Cl. 435—174 **28 Claims**

1. A process for manufacturing solid, unagglomerated particles of materials hardened by cross-linking, which comprises:

(a) providing an ionically cross-linkable material initially in a liquid-form;

(b) providing an ionic cross-linking agent capable of continuous flow;

(c) producing a flowing stream of the ionic cross-linking agent, wherein said stream falls freely by gravity in the form of a cascade having a top and a bottom without contacting any surface during said free-fall;

(d) generating drops of the ionically cross-linkable material and directing the drops into contact with the cascade of the ionic cross-linking agent during its free fall;

(e) contacting the drops of the ionically cross-linkable material with the free-falling cascade of the ionic cross-linking agent for a period of time effective to cross-link and harden the outer layers of said drops, thereby forming said particles; and

(f) separating said particles from the flowing stream of the ionic cross-linking agent at about the bottom of the cascade, after hardening of the outer layers thereof.

5,484,722

BIOPOLYMER AND EFFECTOR SUBSTANCE CONJUGATES, PROCESS FOR THE PREPARATION THEREOF AND THEIR USE

Heinz-Jürgen Friesen, and Peter Hermentin, both of Marburg, Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

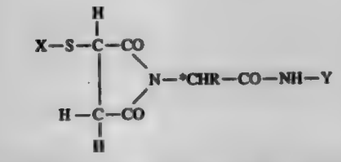
Division of Ser. No. 549,102, Jul. 6, 1990, Pat. No. 5,321,142. This application Feb. 24, 1994, Ser. No. 201,209

Claims priority, application Germany, Jul. 10, 1989, 39 22 608.5

Int. Cl.[6] C12N *9/96;* C07K *16/00*

U.S. Cl. 435—188 **4 Claims**

1. A conjugate of the formula I



(I)

in which *C is an asymmetric carbon atom and R is the side chain of a natural amino acid, methionine sulfone or cysteic acid, X is the radical of the thiol coupling component of a protein and Y is the radical of the amino coupling component of a protein.

5,484,723

FLAVIN REDUCTASE GENE FROM *VIBRIO FISCHERI*

Shuhei Zenno, Yokohamashi, and Kaoru Saigo, Tokyo, both of, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jun. 28, 1994, Ser. No. 266,570

Claims priority, application Japan, Jun. 28, 1993, 5-181850

Int. Cl.[6] C12N *9/02*

U.S. Cl. 435—189 **8 Claims**

1. A flavin reductase gene having the nucleotide sequence of SEQ ID NO:1, wherein the sequence is displayed in numbered triplets of capital letters, which numbers proceed sequentially from left to right and from the 5' terminus to the 3' terminus; the sequence of capital letters represent the purine and pyrimidine bases of the nucleotide sequence, as follows:

A is adenine; G is guanine; C is cytosine; T is thymine;

R is A or G; Y is T or C; N is A, T, C, or G; H is A, C, or T; and M is A or C;

wherein triplet number 237 thereof is TAA or TAG or TGA; and wherein further: for triplets numbered 13, 21, 22, 36, 63, 85, 92, 111, 112, 126, 140, 150, 156, 186, 196, and 228, if the 3' nucleotide of a triplet is A or G, then the 5' nucleotide of said triplet is T or C, or if the 3' nucleotide of a triplet is T or C, then the 5' nucleotide of said triplet is C; and if the 5' nucleotide of a triplet is C, then the 3' nucleotide of said triplet is A, T, C, or G, or if the 5' nucleotide of a triplet is T, then the 3' nucleotide of said triplet is A or G;

for triplets numbered 19, 46, 56, 103, 108, 123, 145, 206, and 214, if the 3' nucleotide of a triplet is T or C, then the 5' nucleotide of said triplet is A or C, or if the 3' nucleotide of a triplet is T or C, then the 5' nucleotide of said triplet is C; and if the 5' nucleotide of a triplet is G, then the 3' nucleotide of said triplet is A, T, C, or G, or if the 5' nucleotide of a triplet is A, then the 3' nucleotide of said triplet is A or G.

5,484,724

DNA ENCODING GLS1

Mohamed El-Sherbeini, Westfield, and Joseph A. Clemas, Metuchen, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 26, 1994, Ser. No. 249,420

Int. Cl.[6] C12N *9/10;9/96;1/14;* C12P *21/06*

U.S. Cl. 435—193 **6 Claims**

1. Isolated DNA encoding glucan synthase subunit in yeast which is GLS 1.

5,484,725

NORBORNANE TYPE ESTER HYDROLASE FROM *ACETOBACTER PASTEURIANUS*

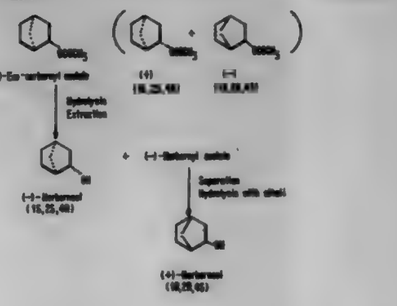
Bunji Kageyama, Ibaraki; Masanori Nakae, Toyonaka, and Shigeo Yagi, Takatsuki, all of, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Apr. 22, 1994, Ser. No. 232,519

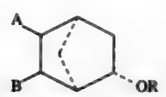
Claims priority, application Japan, Apr. 22, 1993, 5-096286

Int. Cl.[6] C12N *9/18;9/16*

U.S. Cl. 435—197 **5 Claims**



1. An isolated or purified norbornane type ester hydrolase derived from a bacterium of the species *Acetobacter pasteurianus* that enantioselectively hydrolyzes a (±)-exo-norbornane type ester represented by Formula I:



(I)

wherein R is acyl, and A and B are hydrogens, respectively, or where A and B are absent, resulting in a carbon-carbon double bond between the carbons to which A and B are attached in Formula I;

the norbornane type ester hydrolase having an optimal pH of approximately 8 and a stable pH range of approximately 6 to 8.

5,484,726

ANTIBODIES SPECIFIC FOR HUMAN STROMELYSIN-3 AND A METHOD FOR DETECTION OF STROMELYSIN-3

Paul Basset; Jean-Pierre Bellocq, both of Strasbourg, and Pierre Chambon, Bleasheim, all of, France, assignors to Bristol-Myers Squibb Company, Princeton, N.J.; Institute National de la Sante et de la Recherche Medicale; Centre National de la Recherche Scientifique, both of Paris Cedex, France, and Université Louis Pasteur, Strasbourg Cedex, France

Continuation-in-part of Ser. No. 794,393, Nov. 21, 1991, Pat. No. 5,236,844. This application Jan. 7, 1993, Ser. No. 1,711

Claims priority, application United Kingdom, Nov. 21, 1990, 9025326

Int. Cl.[6] C12Q *1/25;* **C07K** *16/40;16/30*

U.S. Cl. 435—7.4 **6 Claims**

1. A method for detecting human stromelysin-3 which comprises the steps of

a. contacting a sample or preparation thereof with an antibody or antibody fragment which selectively binds stromelysin-3, and

b. detecting whether said antibody or said antibody fragment is bound by said sample and thereby detecting stromelysin-3.

5,484,727

CLONED GENE ENCODING ACYLCOENZYME A: CHOLESTEROL ACYLTRANSFERASE (ACAT)

Tu-Yuan Chang, and Catherine C. Y. Chang, both of Hanover, N.H., assignors to Trustees of Dartmouth College, Hanover, N.H.

Continuation-in-part of Ser. No. 959,950, Oct. 14, 1992, abandoned. This application Sep. 10, 1993, Ser. No. 121,057

Int. Cl.[6] C12N *9/10;15/54;15/85;* **C12Q** *1/48*

U.S. Cl. 435—252.3 **2 Claims**



1. A non-human cell which either lacks or has deficient levels of endogenous acyl coenzyme A:cholesterol acyltransferase activity, said cell being transformed with an isolated nucleic acid molecule encoding endogenous human acyl coenzyme A:cholestrol acyltransferase such that the cell produces an excess of cholesterol esters causing the formation of detectable, cytoplasmic lipid droplets, wherein the cells is a 14e cell.

5,484,728

PARATHION HYDROLASE ANALOGS AND METHODS FOR PRODUCTION AND PURIFICATION

Cuneyt M. Serdar, Newbury Park, and Douglas Murdock, Thousand Oaks, both of Calif., assignors to Amgen Inc., Thousand Oaks, Calif.

Continuation of Ser. No. 898,973, Jun. 15, 1992, abandoned, which is a division of Ser. No. 312,503, Feb. 17, 1989, which is a continuation-in-part of Ser. No. 237,255, Aug. 26, 1988, abandoned. This application Nov. 1, 1994, Ser. No. 333,892

Int. Cl.[6] C12N *15/55;15/63;1/21;9/16*

U.S. Cl. 435—252.3 **13 Claims**

1. A purified and isolated DNA molecule consisting of a nucleotide sequence which encodes only amino acids 30–365 of FIG. 6.

5,484,729

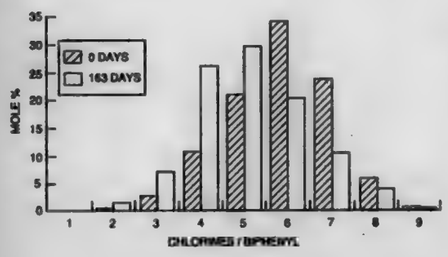
MICROBIAL DECHLORINATION OF POLYCHLORINATED BIPHENYL COMPOUNDS

Kim A. DeWeerd, Rexford, and Donna L. Bedard, Loudonville, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 73,400, Jun. 7, 1993, abandoned. This application Jan. 20, 1995, Ser. No. 376,485

Int. Cl.[6] B09B *3/00;* **C12N** *1/38;* **C02F** *3/00*

U.S. Cl. 435—262.5 **5 Claims**



1. A method for accelerating anaerobic microbial dechlorinmation of more highly chlorinated PCBs in aqueous sediment which contains anaerobic microorganisms capable of dechlorinating PCBs, which comprises the steps of:

(1) prescreening for the presence of anaerobic microorganisms capable of dechlorinating PCBs by

(a) adding to a portion of the sediment containing PCBs a halogen-substituted acid or acid derivative selected from the group consisting of halogen-substituted benzoic acid, halogen-substituted salicylic acid, and lower alkyl esters thereof having 1 to 5 carbons in the alkyl moiety;

(b) allowing the resulting admixture to incubate under anaerobic conditions at a temperature between about 5° C. and about 55° C. for a period of about 20 days; and

(c) measuring the remaining amount of highly chlorinated PCBs; and substantial decrease in the concentration of more highly chlorinated PCBs

(2) adding to and admixing with the balance of the sediment an effective amount of at least one halogen-substituted compound selected from the group consisting of halogen-substituted benzoic acid, halogen-substituted salicylic acid, and halogen-substituted esters of said acids having 1 to 5 carbons in the ester group, and incubating the sediment under conditions sufficient to effect dechlorination of said more highly chlorinated PCBs.

5,484,730

METHOD OF DEGRADING TRINITROTOLUENE

Richard L. Tyndall, Clinton, and Arpad Vass, Oak Ridge, both of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Division of Ser. No. 168,603, Dec. 16, 1993, Pat. No. 5,449,618, which is a continuation-in-part of Ser. No. 11,841, Feb. 1, 1993, Pat. No. 5,314,821, which is a continuation of Ser. No. 693,998, Apr. 26, 1991, abandoned. This application Feb. 21, 1995, Ser. No. 391,995

Int. Cl.[6] C12N *1/20;* **C12S** *9/00;* **B09C** *1/02*

U.S. Cl. 435—264 **1 Claim**

1. A method of eluting trinitrotoluene from trinitrotoluene contaminated soil comprising the steps of:

a. autoclaving a bacterium selected from the group consisting of American Type Culture Collection Deposit Number 75529 and a mutant of said bacterium possessing all the identifying characteristics of said bacterium, to derive a dispersant solution therefrom;

b. loading trinitrotoluene contaminated soil into a column; and,

c. eluting said column with said dispersant solution in amounts and under conditions suitable to elute said trinitrotoluene from said trinitrotoluene contaminated soil.

5,484,731

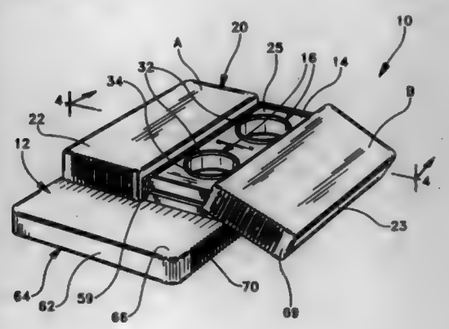
MULTIWELL IN-VITRO FERTILIZATION PLATE

Timothy A. Stevens, Madison, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed May 26, 1993, Ser. No. 67,640

Int. Cl.[6] C12M *1/20*

U.S. Cl. 435—305.3 **17 Claims**



1. A plate assembly useful for in vitro fertilization procedures comprising:

a base having a top surface divided into top surface portions and a sidewall, said top surface having a plurality of open wells therein, said wells having an inside surface for receiving ova to be cultured into embryos, said wells having substantially flat transparent closed bottoms for facilitating microscopic examination therethrough; and

a removable lid for covering said top surface and at least a portion of said sidewall of said base, said lid being divided into sections, wherein each section of said lid is separately slidably movable between a closed position wherein said each lid section covers said each top surface portion and an open position uncovering said each top surface portion.

5,484,732

TRANSCRIPTION FACTOR FOR REGULATION OF THE DEVELOPMENT OF SKIN AND HAIR

Michael G. Rosenfeld, San Diego, and Begi Anderson, La Jolla, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Mar. 22, 1993, Ser. No. 35,392

Int. Cl.[6] C12N *15/11;15/12;15/63;* **C07K** *14/00*

U.S. Cl. 435—320.1 **28 Claims**

3. An isolated and substantially pure DNA molecule having a nucleotide sequence encoding a polypeptide possessing at least one biological activity, said biological activity comprising inhibition of binding of DNA having the octamer site 5'-ATGCAAAT-3' therein by mammalian transcription factors which can bind to said octamer site, wherein said encoded polypeptide has the amino acid sequence of SEQ ID No. 2.

5,484,733

METHOD FOR DIAGNOSING RHEUMATISM

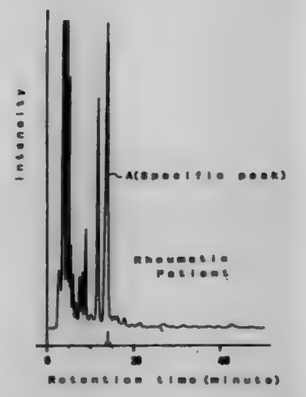
Hu Wenzhi, Nagoya, Japan, assignor to Seichi Inoue, Japan

Filed Aug. 19, 1993, Ser. No. 108,289

Claims priority, application Japan, Apr. 5, 1993, 5-103626

Int. Cl.[6] G01N *30/02*

U.S. Cl. 436—161 **6 Claims**



1. A method for aiding in diagnosing rheumatism in an individual suspected of having rheumatism, which method comprises:

(a) subjecting each of a first urine sample from said individual and at least one second urine sample from a non-rheumatic patient to liquid chromatography to separate each of said samples into its component parts employing a (i) negative/positive charged micellar stationary phase comprising a support carrier and a zwitterionic layer formed by directly or indirectly coating a compound selected from the group consisting of 3-[(3-Cholamidepropyl)dimethyl ammonio]-1-propanesulfonate and 3[(3-Cholamidepropyl)dimethyl ammonio]-2-hydroxy-1-propane-sulfonate on the surface of the support carrier and (ii) a mobile phase comprising an aqueous solution of a phosphate buffer;

(b) detecting the resulting separated components in each of said samples;

(c) determining a first concentration of specific component detected in said first urine sample and a second concentration of said specific component detected in said second urine sample, which specific component is peak A of FIG. 3;

(d) comparing said first concentration with said second concentration; and

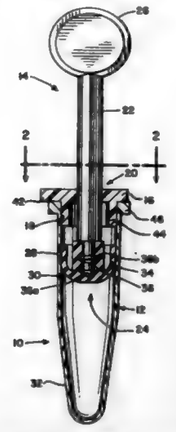
(e) using the comparison of said first and said second concentrations to aid in diagnosing rheumatism in said individual.

5,484,734

REACTION VESSEL FOR PREVENTING EVAPORATION AND A METHOD THEREOF

Shiro Kimura, 7-15, 1-Chome, Sakuramachi, Koganei-shi, Tokyo, Japan, assignor to Tore Seimitsu Industries, Ltd., Hokkaido; Shiro Kimura, and Hideki Munekuni, both of Tokyo, all of, Japan

Continuation-in-part of Ser. No. 90,657, Jul. 13, 1993, abandoned. This application Aug. 2, 1994, Ser. No. 284,802
Claims priority, application Japan, Mar. 9, 1993, 5-47804
Int. Cl.[6] G01N *1/00;* B01L *3/00*
U.S. Cl. 436—176 14 Claims



8. A method of preventing evaporation of a fluid within a reaction vessel, comprising the steps of:

introducing a fluid through an open end of a vessel body and into a volume defined by said vessel body, said vessel body having an open end, a closed end and a wall that defines an inner passage that converges from said open end towards said closed end so that fluid contained within said vessel body displaces volume within said inner passage from said closed end to a height within the vessel body that is lower than that of the open end and that is at a position wherein said inner passage converges; and

preventing evaporation of fluid within the vessel body by operatively moving a piston rod to move a deformable piston head from said open end where said piston head is in a relaxed, undeformed condition to a relative position that is at the height of the fluid within said inner passage where said piston head is in a deformed condition, said piston head being free of through-going apertures, the piston head deforming in shape as said piston head moves to the relative position because of convergence of said inner passage so that said deformable piston head sealingly engages with the wall at the height of the fluid.

5,484,735

IMMUNOASSAY OF GLYCOSYLATED PROTEINS EMPLOYING ANTIBODY DIRECTED TO REDUCTIVELY GLYCOSYLATED N-TERMINAL AMINO ACIDS

Lyman E. Davis, Chicago, and Byron E. Anderson, Morton Grove, both of Ill., assignors to Northwestern University, Evanston, Ill.

Continuation-in-part of Ser. No. 68,525, May 27, 1993, abandoned, which is a continuation of Ser. No. 397,781, Aug. 23, 1989, abandoned. This application Nov. 12, 1993, Ser. No. 151,073
Int. Cl.[6] G01N *33/53;33/542*
U.S. Cl. 436—548 30 Claims

8. An immunoassay for a protein that is non-enzymatically glycosylated on the alpha amino group of its N-terminal amino acid, the immunoassay comprising:

providing a sample containing the glycosylated protein;

reacting the glycosylated protein with a reducing agent so that the sugar residue on the N-terminal amino acid is reduced;

contacting the reduced glycosylated protein with an antibody which specifically binds Glc-ol-X wherein X is the N-terminal amino acid of the glycosylated protein, except that X cannot be lysine, and Glc-ol is the reduced form of the sugar attached to X on the glycosylated protein; and

detecting or quantitating the reduced glycosylated protein bound to the antibody.

5,484,736

PROCESS FOR PRODUCING LARGE GRAIN CADMIUM TELLURIDE

Falah S. Hasoon, Arvada, and Art J. Nelson, Longmont, both of Colo., assignors to Midwest Research Institute, Kansas City, Mo.

Filed Sep. 19, 1994, Ser. No. 308,362
Int. Cl.[6] H01L *31/18*
U.S. Cl. 437—4 8 Claims

1. A process for producing a cadmium telluride polycrystalline film having cadmium telluride grain sizes greater than about 20 μm, the process comprising:

a) providing a substrate upon which cadmium telluride can be deposited;

b) placing the substrate within a vacuum chamber containing a cadmium telluride effusion cell;

c) depositing a cadmium telluride polycrystalline film on the substrate through the steps of:

(1) evacuating the vacuum chamber to a pressure of at least 10^{-6} torr.;

(2) heating the effusion cell to a cell temperature whereat the cell releases stoichiometric amounts of cadmium telluride usable as a molecular beam source for growth of cadmium telluride grains on the substrate;

(3) heating the substrate to a substrate temperature whereat a stoichiometric film of cadmium telluride can be deposited; and

(4) releasing cadmium telluride from the effusion cell and depositing said cadmium telluride as a film on the substrate to thereby produce a cadmium telluride deposited-substrate; and

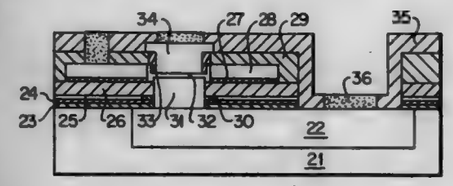
d) heating the cadmium telluride deposited-substrate in an inert gas atmosphere for a sufficient period of time at an annealing temperature whereat cadmium telluride grains on the deposited-substrate grow to sizes greater than about 20 μm.

5,484,737

METHOD FOR FABRICATING BIPOLAR TRANSISTOR

Byung-Ryul Ryun; Tae-Hyeon Han; Soo-Min Lee; Deok-Ho Cho; Seong-Hearn Lee, and Jin-Young Kang, all of Daejeon, Rep. of Korea, assignors to Electronics & Telecommunications Research Institute, Daejeon, and Korea Telecommunication Authority, Seoul, both of, Rep. of Korea

Filed Dec. 13, 1994, Ser. No. 357,244
Int. Cl.[6] H01L *21/8222*
U.S. Cl. 437—31 12 Claims



1. A method for fabricating a bipolar transistor comprising the steps of:

forming a conductive buried collector region in a silicon substrate by using ion-implantation of an impurity and thermal-annealing;

sequentially forming a first silicon oxide layer, a first nitride layer, a first polysilicon layer, an oxide layer, a second nitride layer and a second polysilicon layer doped with an impurity;

selectively removing the second nitride and second polysilicon layers to form a pattern;

sequentially forming a second silicon oxide layer, a third nitride layer and a third silicon oxide layer thereon;

forming a patterned photoresist layer thereon to define active and inactive regions and removing those layers above said oxide layer on the active region to form an opening;

forming a side wall on both sides of the opening;

forming a collector on a surface portion of the buried collector region up to a lower surface of the second polysilicon layer;

removing the side wall and the third nitride layer to expose a side surface of the second polysilicon layer;

selectively forming a base on an upper surface of the collector including a side surface of the second polysilicon layer;

forming a first side wall oxide layer on both sides of the base and the second silicon oxide to define an emitter region;

forming an emitter on the base; and

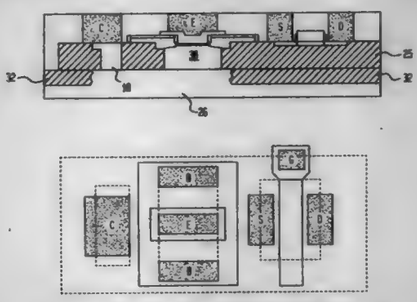
forming electrodes thereon.

5,484,738

METHOD OF FORMING SILICON ON OXIDE SEMICONDUCTOR DEVICE STRUCTURE FOR BICMOS INTEGRATED CIRCUITS

Shao-Fu S. Chu, Poughkeepsie; Chang-Ming Hsieh; Louis L. C. Hsu, both of Fishkill; Kyong-Min Kim, Hopewell Junction, and Shaw-Ning Mei, Wappingers Falls, all of N.Y., assignors to International business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 242,992, May 16, 1994, abandoned, which is a continuation of Ser. No. 900,828, Jun. 17, 1992, abandoned. This application Mar. 1, 1995, Ser. No. 396,985
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—33 4 Claims



1. A method of fabricating a silicon-on-oxide integrated circuit structure with bipolar and MOS device regions in said structure, comprising the steps:

forming a plurality of isolation trenches in a semiconductor wafer extending from one surface of said wafer into said wafer, certain ones of said isolation trenches extending to a first depth in said wafer and certain others of said isolation trenches extending into said wafer to a second depth in said wafer that is less than said first depth;

forming a silicon layer on said one surface after said isolation trenches have been formed;

forming a reach-through region for bipolar collector contact;

forming sub-collector and interconnect regions in said silicon layer;

bonding said silicon layer to an oxide layer formed on the surface of a wafer substrate;

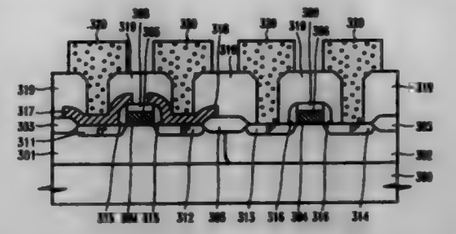
planarizing the other surface of said semiconductor wafer so that said isolation trenches that extend to said first depth extend to said planarized surface and there is a gap between said isolation trenches that extend to said second depth and said planarized surface.

5,484,739

METHOD FOR MANUFACTURING A CMOS SEMICONDUCTOR DEVICE

Yong-hee Lee, Seoul; Young-woo Seo, and Jung-kyun Shin, both of Kyungki, all of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 8, 1994, Ser. No. 352,248
Claims priority, application Rep. of Korea, Dec. 17, 1993, 93-28221
Int. Cl.[6] H01L *21/8238;21/8244*
U.S. Cl. 437—34 10 Claims



1. A method of manufacturing a semiconductor device including at least one first conductivity-type area and at least one second conductivity-type area, said method comprising the steps of:

forming an insulating layer on a semiconductor substrate in which portions for forming said first and second conductivity-type areas are defined;

forming a first mask pattern for exposing the portion for forming said first conductivity-type area and covering the portion for forming said second conductivity-type area;

anisotropically etching said insulating layer formed on the exposed portion according to the geometric characteristics of said semiconductor substrate;

removing said first mask pattern;

forming a first material layer for forming a connection pad layer on the overall surface of the resultant structure;

implanting a first conductivity-type impurity by using said insulating layer remaining under said first material layer as an impurity implantation preventing mask;

patterning said first material layer and forming said connection pad layer on said first conductivity-type area;

forming a second mask pattern for exposing the portion for forming said second conductivity-type area and blocking the portion for forming said first conductivity-type area; and

implanting a second conductivity-type impurity by using said second mask pattern as an impurity implantation preventing mask.

5,484,740

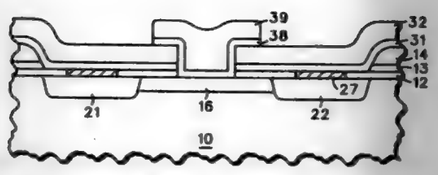
METHOD OF MANUFACTURING A III-V SEMICONDUCTOR GATE STRUCTURE

Jaeshin Cho, Gilbert, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 6, 1994, Ser. No. 254,206
Int. Cl.[6] H01L *21/338*
U.S. Cl. 437—40 19 Claims

1. A method of forming a gate structure of a semiconductor device, comprising the steps of:

providing a semiconductor material having a channel region, a source region, and a drain region formed therein and having a first silicon nitride layer over the channel region, wherein the first silicon nitride layer is substantially free of moisture and hydrogen;



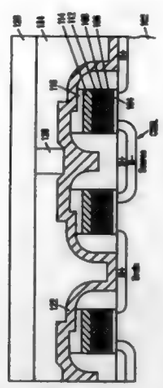
forming a first dielectric layer comprised of aluminum containing material over the first silicon nitride layer;
forming a second dielectric layer comprised of silicon and oxygen over the first dielectric layer;
removing a portion of the second dielectric layer and the first dielectric layer to form an opening over a portion of the channel region and to form an exposed portion of the first silicon nitride layer, wherein the opening of the second dielectric layer and the first dielectric layer have sidewalls;
removing the exposed portion of the first silicon nitride layer to form an opening to the semiconductor material; and
forming a gate layer on the semiconductor material in the opening to the semiconductor material and extending over a portion of the second dielectric layer.

5,484,741

METHOD OF MAKING INCREASED-DENSITY FLASH EPROM THAT REQUIRES LESS AREA TO FORM THE METAL BIT LINE-TO-DRAIN CONTACTS

Albert Bergemont, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 168,756, Dec. 16, 1993, Pat. No. 5,416,349. This application May 11, 1995, Ser. No. 439,306
Int. Cl.[6] H01L *21/8247*
U.S. Cl. 437—43 **10 Claims**



1. A method of fabricating the array of a high-density flash electrically programmable read-only-memory (EEPROM), the method comprising the steps of:
providing a semiconductor substrate of P-type conductivity;
forming a plurality of spaced-apart field oxide regions on the semiconductor substrate;
forming a plurality of first implanted channel regions in the semiconductor substrate so that a pair of first implanted channel regions are formed between each pair of horizontally-adjacent field oxide regions, and so that each first implanted channel region adjoins both of the adjacent field oxide regions, each implanted channel region having a first side and a second side;
forming a layer of first gate dielectric material on the semiconductor substrate;
forming a layer of first conductive material over the layer of first gate dielectric material;
forming a layer of intermediate dielectric material over the layer of first conductive material;
etching the layer of intermediate dielectric material and the layer of first conductive material to define a plurality of strips of dielectric/conductive material;
forming a layer of second conductive material over the strips of dielectric/conductive material, the field oxide regions, and the semiconductor substrate;
forming a layer of third conductive material over the layer of second conductive material;
forming a layer of first insulation material over the layer of third conductive material;
etching the layer of first insulation material, the layer of third conductive material, and the layer of second conductive material to form a plurality of word lines;
etching the layer of intermediate dielectric material and the layer of first conductive material to form a plurality of floating gate memory cells;
forming a plurality of N+ buried drain regions in the semiconductor substrate so that each drain region adjoins the first side of each pair of implanted channel regions;
forming a plurality of common source bit lines in the semiconductor substrate so that the second side of each implanted channel region formed in one row of implanted channel regions and the second side of each implanted channel region formed in an adjacent row of implanted channel regions are adjoined by one common source bit line;
forming a plurality of strips of second insulation material so that each strip of second insulation material is formed over one common source bit line;
forming a plurality of strips of spacer material so that each strip of spacer material covers a portion of each drain region and each horizontally-adjacent field oxide region in each row of drain regions, and adjoins one word line, the underlying stacked gate structures, and the overlying layer of first insulation material;
forming a plurality of intermediate interconnect strips over the strips of second insulation material, the strips of spacer material, the layers of first insulation, and the drain regions so that each intermediate interconnect strip interconnects each drain region in one column of drain regions;
forming a layer of third insulation material having a plurality of metal bit line openings formed therethrough over the strips of second insulation material, the strips of spacer material, the layers of first insulation material, the semiconductor substrate, and the plurality of intermediate interconnect strips so that each intermediate interconnect strip is periodically exposed by a metal bit line opening; and
forming a plurality of metal bit lines over the layer of third insulation material and the exposed portion of each intermediate interconnect strip so that each metal bit line interconnects the exposed portions of one intermediate interconnect strip.

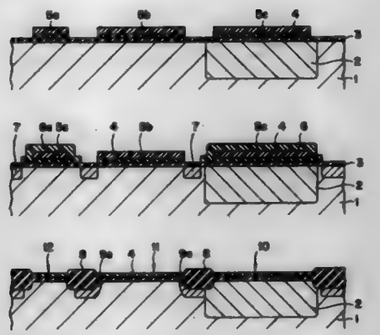
5,484,742

PROCESS FOR PREPARING A SEMICONDUCTOR DEVICE WITH A NARROW-CHANNEL MOS TRANSISTOR

Takahiko Urai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 957,861
Claims priority, application Japan, Jan. 8, 1991, 3-260215
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—44 **5 Claims**

1. A process for preparing a semiconductor device with a narrow-channel MOS transistor and a normal channel MOS transistor, said narrow-channel MOS transistor having a channel region narrower than a channel region of said normal-channel MOS transistor, comprising the steps of:
forming an oxidation resistant masking film on a semiconductor region of the surface of a semiconductor substrate;
forming a masking film for field-forming selectively on said oxidation resistant masking film;



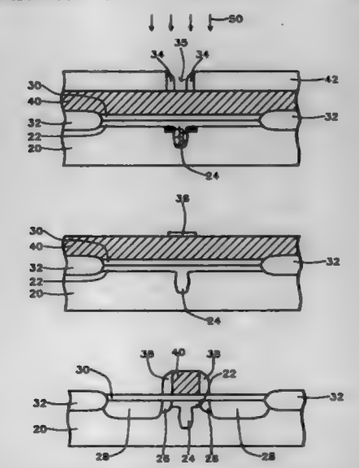
removing said oxidation resistant masking film selectively using said masking film for field-forming as a mask;
forming selectively a masking film for ion implantation, said masking film for implantation being larger, at least in a region in which the narrow-channel MOS transistor is to be formed, than an overlap region between said masking film for field-forming and a portion of said semiconductor region and completely covering up said overlap region;
implanting impurity ions having the same conduction-type with that of said semiconductor region into the region of the surface of the semiconductor substrate other than the regions covered by both said masking film for field-forming and said masking film for ion implantation by self-align method;
removing said masking film for field-forming and said masking film for ion implantation; and
forming field oxide layers selectively by heat-treating self-aligned with said oxidation resistant masking film to partition element forming regions.

5,484,743

SELF-ALIGNED ANTI-PUNCHTHROUGH IMPLANTATION PROCESS

Joe Ko, and Chen-Chiu Hsue, both of Hsin-chu, Taiwan, Prov. of China, assignors to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Filed Feb. 27, 1995, Ser. No. 394,587
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—44 **17 Claims**



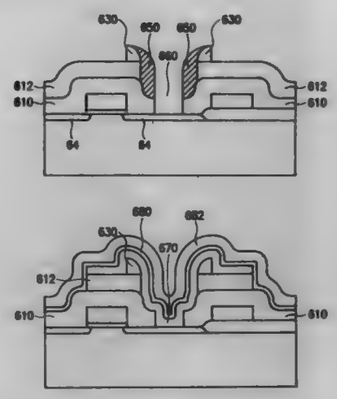
1. A method for forming a local anti-punchthrough region, comprising the steps of:
providing a silicon substrate having a threshold voltage adjustment concentration formed by ion implantation;
forming a gate oxide layer on the surface of said silicon substrate;
forming a polysilicon layer on the surface of said gate oxide layer;
forming a nitride layer on the surface of said polysilicon layer;
etching a gate electrode opening with sidewalls in said nitride layer;
forming a first oxide spacer on said sidewalls of said gate electrode opening;
forming said local anti-punchthrough region in said silicon substrate directly below said gate electrode opening by means of ion implantation through said gate electrode openiag having said first oxide spacer on said sidewalls of said gate electrode opening;
removing said first oxide spacer;
forming a layer of polyoxide on that part of the polysilicon layer directly below said gate electrode opening;
etching away said nitride layer;
forming a polysilicon gate electrode with sidewalls by etching away that part of said polysilicon layer not covered by said layer of polyoxide using said layer of polyoxide as a mask;
forming a second oxide spacer on said sidewalls of said polysilicon gate electrode;
forming a light doped drain source/drain region in said silicon substrate directly below said second oxide spacer; and
forming a main source/drain region in said silicon substrate.

5,484,744

METHOD FOR FABRICATING A STACKED CAPACITOR FOR DYNAMIC RANDOM ACCESS MEMORY CELL

Gary Hong, Hsinchu, Taiwan, Prov. of China, assignor to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Filed Apr. 14, 1995, Ser. No. 422,291
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—52 **9 Claims**



1. A method of fabricating a capacitor for dynamic random access memory cell, comprising the steps of:
(a) providing a semiconductor substrate having a transistor device formed thereon, said transistor device comprising a gate electrode and source/drain regions;
(b) sequentially forming a first insulating layer, a second insulating layer, and a barrier layer on said semiconductor substrate;
(c) etching a portion of said barrier layer to form a first contact opening over one of said source/drain regions;
(d) forming a first sidewall spacer on a sidewall of said first contact opening of said barrier layer;
(e) forming a second contact opening by etching said second insulating layer using said barrier layer and said first sidewall spacer as a mask;

(f) forming a second sidewall spacer on a sidewall of said second contact opening of said second insulating layer;
(g) removing said barrier layer and forming a third contact opening by etching said first insulating layer using said first sidewall spacer, said second sidewall spacer, and said second insulating layer as a mask;
(h) removing said second sidewall spacer;
(i) forming a first electrode plate overlying exposed surfaces of said first sidewall spacer, said second insulating layer, said first insulating layer, and said semiconductor substrate, wherein said first electrode plate is connected to one of said source/drain regions through said third contact opening;
(j) forming a dielectric layer on said first electrode plate; and
k) forming a second electrode plate on said dielectric layer to complete the capacitor fabrication.

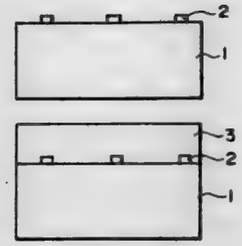
5,484,745
METHOD FOR FORMING A SEMICONDUCTOR SENSOR
Sean S. Cahill, Menlo Park, Calif., assignor to Yazaki Meter Co., Ltd., Tokyo, Japan
Filed Oct. 26, 1993, Ser. No. 141,055
Int. Cl.[6] H01L *27/20*
U.S. Cl. 437—63 **7 Claims**



1. A method for forming at least one corrugation member, comprising the step of:
forming a semiconductor material layer onto a surface of a substrate, said semiconductor material layer including a first surface facing the substrate and a second, opposite surface;
depositing a first masking material layer on a portion of said second surface of the semiconductor material layer so as to provide a masked portion and an unmasked portion thereon;
etching the unmasked portion of said semiconductor material layer to form a cavity therein and expose a portion of said substrate surface;
removing the first masking material layer from said masked portion of the semiconductor material layer;
depositing a second masking material layer onto the second surface and onto a portion of said exposed portion of said substrate;
etching an unmasked portion of the exposed portion of said substrate to form at least one recessed surface therein; and
depositing an etch stop material on said second masking material and on said recessed surface to form the corrugation member.

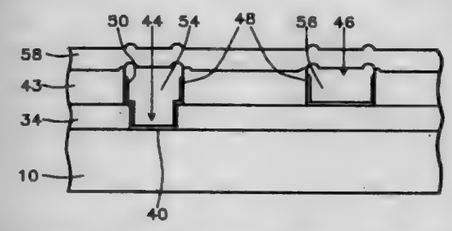
5,484,746
PROCESS FOR FORMING SEMICONDUCTOR THIN FILM
Takeshi Ichikawa, Sendai, and Takao Yonehara, Atsugi, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 963,268, Oct. 19, 1992, abandoned, which is a continuation of Ser. No. 799,887, Dec. 2, 1991, abandoned, which is a continuation of Ser. No. 576,840, Sep. 4, 1990, abandoned. This application Jul. 5, 1994, Ser. No. 270,309
Claims priority, application Japan, Sep. 7, 1989, 1-233940
Int. Cl.[6] H01L *21/203*
U.S. Cl. 437—83 **7 Claims**

1. A process for forming a semiconductor thin film on a substrate comprising sequentially the steps of:
(i) arranging seed crystals on said substrate surface;



(ii) mounting said substrate on which said seed crystals on a susceptor opposed to a target and provided in a chamber and supplying to said susceptor a high frequency energy having a frequency of 100 MHz to 3 GHz and supplying to the target holder a high frequency of 1 MHz to 1 GHz to generate ions between said substrate and said target holder;
(iii) irradiating the generated ions to thereby remove surface adherents on said substrate, wherein the irradiated ions have a lower energy than the sputtering threshold value of the substrate;
(iv) depositing an amorphous semiconductor film on said substrate from which said surface adherents have been continuously removed;
(v) performing heat treatment on said amorphous semiconductor film; and
(vi) growing crystals by solid phase growth with said seed crystals as the origination points to form the semiconductor thin film.

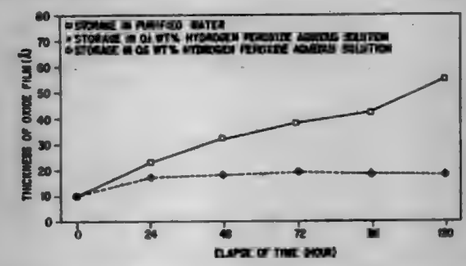
5,484,747
SELECTIVE METAL WIRING AND PLUG PROCESS
Sun-Chieh Chien, Hsin-Chu, China, assignor to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China
Filed May 25, 1995, Ser. No. 450,418
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—190 **16 Claims**



1. A method of forming an electrical plug contact and a metal line pattern for a multi-layer semiconductor circuit, the method comprising the steps of:
forming a first dielectric layer on a substrate;
etching a contact hole through said first dielectric layer, said contact hole defined by substantially vertical sidewalls of said first dielectric layer and a bottom contact surface;
forming a patterned photoresist layer on a portion of said first dielectric layer and in said contact hole, said patterned photoresist layer in said contact hole at least partial overlying said first dielectric layer;
selectively forming a second dielectric layer overlying said first dielectric layer using said patterned photoresist layer as a mask;
removing said patterned photoresist layer thereby forming first openings in said second dielectric layer which define a metal line pattern and a contact, said first openings at least partially overlying said contact hole; said second dielectric layer having substantially vertical sidewalls that define said first openings;

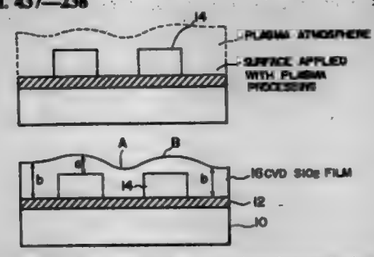
depositing a nucleation layer on said second dielectric layer, said sidewalls of said contact hole, said sidewalls of said first opening, and said bottom contact surface;
forming a planarizing layer on said substrate surface which fills said contact hole, and at least partially fills said first openings thereby masking portions of said nucleation layer and leaving unmasked portions of said nucleation layer;
etching said unmasked portions of said nucleation layer;
removing said planarizing layer; and
selectively depositing a metal on said nucleation layer to substantially fill said contact hole and said first openings thereby forming a plug contact to said bottom contact surface and a metal line pattern.

5,484,748
METHOD FOR STORAGE OF SILICON WAFER
Kuniyoshi Suzuki, and Toshiaki Takaku, both of Fukushima, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan
Filed Feb. 23, 1995, Ser. No. 393,424
Claims priority, application Japan, Mar. 25, 1994, 6-079601
Int. Cl.[6] H01L *21/302*
U.S. Cl. 437—225 **6 Claims**



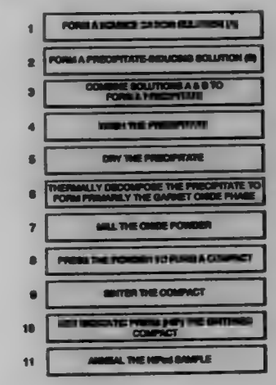
1. A method for the storage of silicon wafers, which is characterized by causing silicon wafers which have undergone a treatment with such a chemical liquid as an acid or an alkali solution to be immediately immersed, either directly or after being washed with water, in an aqueous hydrogen peroxide solution, and storing said silicon wafers therein until the next component process.

5,484,749
MANUFACTURING METHOD OF SEMICONDUCTOR DEVICE
Kazuo Maeda; Noboru Tokumasu, and Yuko Nishimoto, all of Tokyo, Japan, assignors to Alcan-Tech Co., Inc.; Semiconductor Process Laboratory Co., Ltd., and Canon Sales Co., Inc., all of, Japan
Continuation of Ser. No. 37,472, Mar. 25, 1993, abandoned, which is a continuation of Ser. No. 742,256, Aug. 8, 1991, abandoned. This application Apr. 4, 1995, Ser. No. 416,488
Claims priority, application Japan, Aug. 10, 1990, 2-213343
Int. Cl.[6] H01L *21/02*
U.S. Cl. 437—238 **9 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:
(a) providing a substrate having a surface, a portion of said surface being an exposed portion of a layer of hydrophilic thermally oxidized silicon;
(b) contacting the substrate surface with a high frequency nitrogen plasma at 150° to 400° C. to convert the exposed portion of said layer of hydrophilic thermally oxidized silicon from hydrophilic SiO_2 to hydrophobic SiO_2; and
(c) reacting a gaseous mixture containing an organic silane and ozone to deposit an insulating film having a smooth surface over the substrate surface by CVD.

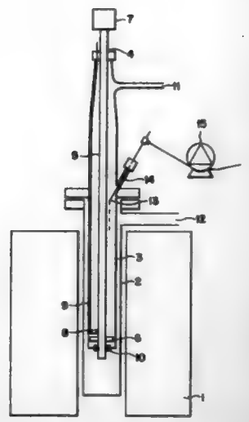
5,484,750
TRANSPARENT POLYCRYSTALLINE GARNETS
Charles D. Greskovich; William P. Minnear, both of Schenectady; Chester R. O'Clair, Latham, all of N.Y.; Erdogan O. Gurmen, Shorewood, and Robert J. Riedner, Waukesha, both of Wis., assignors to General Electric Company, Schenectady, N.Y.
Continuation of Ser. No. 547,806, Jun. 29, 1990, abandoned. This application Aug. 10, 1994, Ser. No. 288,660
The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.
Int. Cl.[6] C04B *35/50;35/115;35/44*
U.S. Cl. 501—86 **3 Claims**



1. A transparent polycrystalline body in non-powdered form comprising:
between 0.554 and 0.625 mole fraction gallium oxide;
between 0.375 and 0.442 mole fraction gadolinium oxide;
between 0.001 and 0.004 mole fraction of chromium oxide wherein the chromium is present in a 3+ oxidation state;
said body having a density of at least 99.9% of theoretical density; and
the individual grains of said polycrystalline body having cubic garnet crystal structures.

5,484,751
METAL/METALLOID NITRIDE/CARBIDE CERAMIC POWDERS PREPARED BY FLASH PYROLYSIS
Christian Colombier, Ermont; Jean-Pierre Disson, Lyons, and Jean-Pierre Cuer, Crapeaune, all of, France, assignors to Elf Atochem S.A., Puteaux, France
Filed Mar. 21, 1994, Ser. No. 215,253
Claims priority, application France, Mar. 23, 1993, 93 03305
Int. Cl.[6] C01B *31/30;21/06*
U.S. Cl. 501—87 **18 Claims**

1. A process for the preparation of an amorphous or crystalline carbide and/or nitride powder of a metal and/or metalloid, comprising flash pyrolyzing coarse drops having a diameter greater than 10 μm of a precursor compound convertible into such nitride



and/or carbide, at an elevated temperature and for such period of time as to convert said precursor compound into said amorphous or crystalline powder.

5,484,752
CERAMIC COMPOSITE MATERIAL

Yoshiharu Waku; Hideki Ohtsubo, and Yasuhiko Kohtoku, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Nov. 8, 1994, Ser. No. 335,919
Claims priority, application Japan, Nov. 12, 1993, 5-317242; Nov. 12, 1993, 5-317243; Jul. 15, 1994, 6-193470; Jul. 15, 1994, 6-193471
Int. Cl.[6] C04B *35/10*
U.S. Cl. 501—127 **7 Claims**



1. A ceramic composite material consisting essentially of 20 to 80% by volume of polycrystal α-Al_2O_3 and 80 to 20% by volume of polycrystal $Y_3Al_5O_{12}$ without a colony and having a three point bending strength at 1500° C. in air of at least 600 MPa and/or a compression creep strength at 1600° C. in air of at least 500 MPa.

5,484,753
DIELECTRIC CERAMIC COMPOSITIONS

Hiroshi Kagata, Neyagawa; Junichi Kato, Osaka; Tatsuya Inoue, Takatsuki; Ichiro Kameyama, Takatsuki, and Keiji Nishimoto, Takatsuki, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 10, 1995, Ser. No. 386,459
Claims priority, application Japan, Mar. 8, 1994, 6-037049
Int. Cl.[6] C04B *35/46*
U.S. Cl. 501—136 **8 Claims**

1. A dielectric ceramic composition comprising as a first component, a composition represented by the formula,

$$Ca\{(Mg_{1/3}Nb_{2/3})_{1-x}Ti_x\}O_3$$

wherein $0 \leqq x \leqq 0.50$, and further comprising a second component which comprises at least one element selected from the group consisting of SiO_2 and B_2O_3, wherein the first component is present in an amount of from 40 to 98 wt %, and the second component is present in an amount of from 2 to 60 wt %.

5,484,754
PROCESS FOR TREATING A CATALYTIC COMPONENT, RESULTANT COMPONENT, AND POLYMERIZATION OF ETHYLENE USING SUCH COMPONENT

Roger Spitz, St Symphorien D'Ozon; Maryse Patin, Villeurbanne, and Jean Malinge, Orthez, all of, France, assignors to Elf Atochem, S. A., France

Filed Jan. 21, 1993, Ser. No. 6,619
Claims priority, application France, Jan. 27, 1992, 92 00819
The portion of the term of this patent subsequent to Aug. 8, 2012, has been disclaimed.
Int. Cl.[6] C08F *4/654*
U.S. Cl. 502—169 **7 Claims**

1. A process for preparing a catalytic component useful for the polymerization of ethylene to form a polymer having a broad distribution of molecular weight and containing at least by weight of polymer chains with a molecular weight lower than 10,000, comprising forming said component by combining a support comprising $MgCl_2$.MgO and a chlorinated derivative of titanium in its form III and/or IV, followed by a reduction treatment using a compound capable of reducing the degree of oxidation of the titanium for a time sufficient to reduce the degree of oxidation of at least 50% by weight of the titanium by at least one unit and then subjecting the reduced product to treatment with a chlorinated transition metal compound.

5,484,755
PROCESS FOR PREPARING A DISPERSED GROUP VIB METAL SULFIDE CATALYST

Jaime Lopez, 872 Dover Cir., Benicia, Calif. 94510

Continuation of Ser. No. 741,855, Aug. 6, 1991, abandoned, which is a continuation of Ser. No. 548,157, Jul. 5, 1990, Pat. No. 5,164,075, which is a continuation-in-part of Ser. No. 388,790, Sep. 5, 1989, Pat. No. 4,970,190, Ser. No. 252,839, Sep. 30, 1988, abandoned, and Ser. No. 275,235, Nov. 22, 1988, abandoned, which is a continuation-in-part of Ser. No. 767,822, Aug. 21, 1985, abandoned, which is a continuation-in-part of Ser. No. 527,414, Aug. 29, 1983, Pat. No. 4,557,821, said Ser. No. 388,790is a continuation-in-part of Ser. No. 527,414, Aug. 29, 0, said Ser. No. 252,839is a continuation-in-part of Ser. No. 941,456, Dec. 15, 1986, Pat. No. 4,857,496, which is a continuation-in-part of Ser. No. 767,767, Aug. 21, 1985, abandoned, which is a continuation-in-part of Ser. No. 527,414, Aug. 21, 0. This application Aug. 22, 1994, Ser. No. 294,182
The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.
Int. Cl.[6] B01J *27/051*
U.S. Cl. 502—219 **2 Claims**

1. A process for preparing a dispersed Group VIB metal sulfide catalyst for hydrocarbon oil hydroprocessing comprising:
(a) treating a Group VIB metal oxide with aqueous ammonia to form a Group VIB metal compound aqueous mixture;
(b) sulfiding said aqueous mixture of said Group VIB metal compound, with a gas containing hydrogen sulfide to a dosage greater than about 8 SCF of hydrogen sulfide per pound of Group VIB metal, to form a slurry; and
(c) mixing said slurry with feed oil and a hydrogen-containing gas at a temperature from about 150° F. to 750° F. and a pressure from about 500 psi to 5000 psi.

5,484,756
HYDRODESULFURIZATION CATALYST AND PREPARATION THEREOF

Kazuro Isomae, Hiratsuka, Japan, assignor to Nikki-Universal Co., Ltd., and Petroleum Energy Center, both of Tokyo, Japan

Filed May 17, 1993, Ser. No. 61,242
Claims priority, application Japan, May 15, 1992, 4-123762; May 15, 1992, 4-123766; May 15, 1992, 4-123771
Int. Cl.[6] B01J *23/10;23/28*
U.S. Cl. 502—314 **11 Claims**

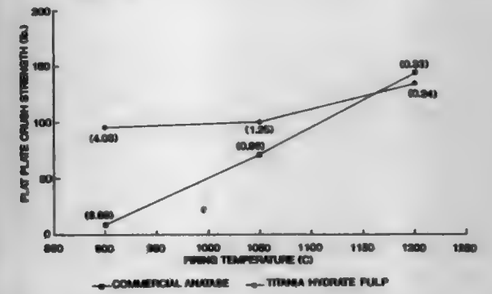
1. A catalyst for the hydrodesulfurization of hydrocarbons, comprising an effective amount of molybdenum, an effective amount of cobalt, an effective amount of a rare earth metal component selected from the group consisting of dysprosium, erbium and holmium, and a stable amount of phosphorus oxide supported on a refractory inorganic oxide carrier, said molybdenum and cobalt being present as sulfides and/or oxides thereof.

5. A method of preparing a catalyst for the hydrodesulfurization of hydrocarbons, comprising the steps of:
(1) adding, in any order,
(a) a solution of a phosphorus salt in an amount sufficient to provide a phosphorus content of from 1 to 10% by weight,
(b) a solution of a salt of molybdenum in an amount sufficient to provide a molybdenum content of from 4 to 30% by weight,
(c) a solution of a salt of cobalt in an amount sufficient to provide a cobalt content of from 1 to 10% by weight and
(d) a solution of a rare earth metal salt selected from the group consisting of a dysprosium salt, an erbium salt and a holmium salt in an amount sufficient to provide a rare earth metal content of from 0.05 to 5% by weight, each calculated as an element based on the total weight of the supported catalyst, to a refractory inorganic oxide carrier to prepare an extrudable dough;
(2) kneading and extruding the resulting dough; and
(3) drying and calcining the resultant in an oxidation atmosphere at a temperature in the range of 200°–650° C. for 1–24 hours to prepare a catalyst comprising from 1 to 10% by weight of a phosphorus oxide, from 4 to 30% by weight of molybdenum, from 1 to 10% by weight of cobalt and from 0.05 to 5% by weight of the rare earth metal, each calculated as an element based on the total weight of the supported catalyst, wherein said molybdenum and cobalt and said rare earth metal are present as oxides thereof.

5,484,757
TITANIA-BASED CATALYST CARRIERS

Thomas Szymanski, Hudson; Steven A. Rolando, Silver Lake; David M. Gough, Tallmadge, and Gerald S. Bennett, Cuyahoga Falls, all of Ohio, assignors to Norton Chemical Process Products Corp., Stow, Ohio

Filed Jun. 2, 1994, Ser. No. 252,806
Int. Cl.[6] B01J *21/06;32/00*
U.S. Cl. 502—439 **12 Claims**



1. A process for making a titania-based catalyst carrier which comprises:
a) forming a mixture of titania hydrate pulp having a surface area of at least 150 m^2/gm and a loss-on-ignition of from about 15–40% by wt., with from about 1 to about 8% by weight, based on the equivalent titania weight, of an acid;
b) shaping the mixture in a desired ceramic shape; and thereafter
c) firing the shaped mixture to form a product with a surface area of less than 200 m^2/gm.

5,484,758
THERMALLY-SENSITIVE RECORD MATERIAL

Thomas S. Wald, Lincoln, England, assignor to The Wiggins Teape Group Limited, England

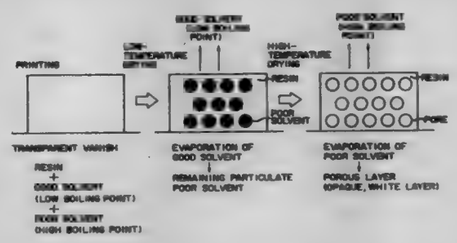
Filed Sep. 29, 1994, Ser. No. 314,709
Claims priority, application United Kingdom, Jan. 2, 1993, 9320341
Int. Cl.[6] B41M *5/30*
U.S. Cl. 503—214 **3 Claims**

1. Thermally-sensitive record material comprising a support and a thermally-sensitive composition coated on the support, the thermally-sensitive composition including as image forming components an electron donating chromogenic material and complementary electron accepting coreactant material effective to develop the color of the chromogenic material when heat is applied to the composition, said image forming components being dispersed in a thermographically acceptable binder formulation, characterized in that the binder formulation comprises a major proportion of an amide ammonium salt of a substantially non-esterified styrene/maleic anhydride copolymer and a minor proportion of polyvinyl alcohol.

5,484,759
IMAGE-RECEIVING SHEET

Kenichiro Suto; Mikio Asajima, and Koichi Higaki, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Filed Jun. 7, 1994, Ser. No. 257,689
Claims priority, application Japan, Jun. 8, 1993, 5-163267; Sep. 24, 1993, 5-258842; Sep. 24, 1993, 5-258843; Feb. 9, 1994, 4-036609
Int. Cl.[6] B41M *5/035;5/38*
U.S. Cl. 503—227 **5 Claims**



1. An image-receiving sheet comprising:
a substrate sheet having an upper surface and a lower surface;
an image-receiving layer formed above said upper surface of said substrate sheet; and
a detection mark formed above said image-receiving layer or below said lower surface of said substrate sheet, said detection mark comprising an opaque porous resin layer that becomes transparent upon heating, said opaque porous resin layer being formed by coating a resin varnish on said image-receiving sheet and drying the resultant coating, said resin varnish comprising a resin, a first solvent and a second solvent, wherein said first solvent has a lower boiling point than that of said second solvent and said resin is more soluble in said first solvent than in said second solvent.

5,484,760

HERBICIDE ANTIDOTES AS SAFENERS FOR REDUCING PHYTOTOXICITY RESULTING FROM SYNERGISTIC INTERACTION BETWEEN HERBICIDES AND OTHER PESTICIDES

Brett H. Bussler, St. Louis Park, Minn.; Harrison R. Hakes, Ballwin, and David J. Mayonado, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 636,360, Dec. 31, 1990, abandoned. This application Dec. 20, 1991, Ser. No. 808,590

Int. Cl.[6] A01N *25/32*

U.S. Cl. 504—103 **25 Claims**

1. Herbicidal composition comprising

(a) a herbicidally-effective amount of at least one herbicidal compound selected from the group consisting of sulfonylurea, imidazolinone, and azolopyrimidine sulfonamide herbicides which in the absence of component (c) interacts with a biocide to induce negative synergism;

(b) an effective amount of an orthophosphate insecticide to control target insect pests and

(c) an amount of at least one antidotal compound sufficient to reduce or eliminate said negative synergism.

5,484,761

5-METHOXY PYRIDINYLOXYPRIDAZINES, HERBICIDAL COMPOSITIONS AND USE THEREOF

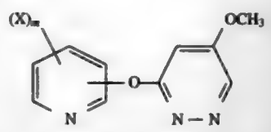
Michael S. South, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 11, 1994, Ser. No. 320,488

Int. Cl.[6] A01V *43/58*

U.S. Cl. 504—238 **31 Claims**

1. A compound having the chemical structure



wherein X is CF_3, OCF_2H, SCF_2H, OCH_2CF_3, $OCH_2CF_2CF_2H$, or $OCH(CH_3)CF_3$ and m is an integer of 1, 2 or 3.

5,484,762

ARYLOXY-N-(SUBSTITUTED PHENYL) BENZOTRIAZOLE HERBICIDAL AGENTS

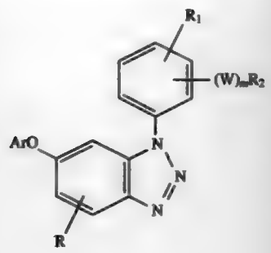
Michael E. Condon, Lawrenceville; Alvin D. Crews, Jr., Voorhees, and Mark C. Manfredi, Hamilton, all of N.J., assignors to American Cyanamid Company, Wayne, N.J.

Filed Feb. 10, 1995, Ser. No. 386,975

Int. Cl.[6] A01N *43/647*; C07D *401/12;249/20*

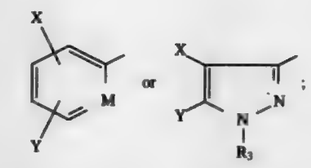
U.S. Cl. 504—261 **19 Claims**

1. A compound having the structural formula



wherein

Ar is



M is N or CZ

X, Y and Z are each independently hydrogen, halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, cyano, nitro or $S(O)_pR_4$ with the proviso that X, Y and Z cannot simultaneously be nitro;

R is hydrogen, halogen, nitro, cyano, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy or $S(O)_qR_5$;

p and q are each independently an integer of 0, 1 or 2;

R_4 and R_5 are each independently C_1–C_4alkyl optionally substituted with one or more halogen atoms;

R_3 is C_1–C_4alkyl;

R_1 is hydrogen, halogen, C_1–C_4alkyl or C_1–C_4haloalkyl;

W is O, S or NR_6;

R_6 is hydrogen or C_1–C_4alkyl;

m is an integer of 0 or 1;

R_2 is V or R_7V;

R_7 is C_1–C_5alkylene optionally substituted with one or more halogen, C_1–C_4alkyl, C_1–C_4haloalkyl or C_3–C_6cycloalkyl groups;

V is cyano, $C(O)R_8$, $C(Q)R_9$, $CH_2OC(O)R_{10}$, CH_2OR_9, $CH(OR_{11})_2$, $N(R_9)SO_2R_{12}$ or C_2–C_6alkenyl substituted with one CO_2R_{10} group;

R_8 is OH, OR_{13}, $NR_{14}R_{15}$ or $N(R_9)SO_2R_{12}$;

Q is O, $NOC(R_{16}R_{17})CO_2R_{11}$ or NOR_{10};

R_9 is hydrogen or C_1–C_4alkyl optionally substituted with C_1–C_4alkoxy;

R_{10} is hydrogen, C_1–C_4alkyl, benzyl or phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups;

R_{11} is C_1–C_4alkyl, $—(CH_2)_3—$ or $—(CH_2)_4—$;

R_{12} is C_1–C_4alkyl, C_1–C_4haloalkyl or phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups;

R_{13} is

C_1–C_6alkyl optionally substituted with C_1–C_4 alkoxy, C_1–C_4alkylthio, halogen, hydroxy, C_3–C_6cycloalkyl, furyl or phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups,

C_3–C_6alkenyl optionally substituted with C_1–C_4alkoxy, halogen, C_3–C_6cycloalkyl or phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups,

C_3–C_6alkynyl optionally substituted with C_1–C_4alkoxy or halogen,

C_3–C_6cycloalkyl,

$N{=}C(R_{16}R_{17})$,

$C(R_{16}R_{17})CO_2R_9$ or

an alkali metal, alkaline earth metal, manganese, copper, zinc, cobalt, silver, nickel, ammonium or organic ammonium cation;

R_{14} and R_{15} are each independently hydrogen, C_1–C_4alkyl or phenyl optionally substituted with one or more halogen, cyano, nitro, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy groups; and

R_{16} and R_{17} are each independently hydrogen or C_1–C_4alkyl.

5,484,763

SUBSTITUTED BENZISOXAZOLE AND BENZISOTHIAZOLE HERBICIDAL AGENTS

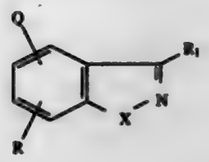
Peter J. Wepple, Mercer, N.J., assignor to American Cyanamid Company, Wayne, N.J.

Filed Feb. 10, 1995, Ser. No. 387,143

Int. Cl.[6] A01N *43/80*; C07D *417/02*

U.S. Cl. 504—269 **28 Claims**

1. A compound having the structural formula



wherein

R is hydrogen, halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy;

R_1 is halogen, X_1R_2 or R_2;

X is S; X_1 is O or S;

R_2 is hydrogen,

C_1–C_6alkyl optionally substituted with one to three halogen atoms, one to three C_1–C_4alkoxy groups, one to three C_1–C_4alkylthio groups, one cyano group, one COR_7 group, one CO_2R_6 group, one $CONR_5R_6$ group or one phenyl group optionally substituted with one to three halogen atoms, one to three C_1–C_4alkyl groups, one to three C_1–C_4alkoxy groups, one C_3–C_6cycloalkyl group, one C_1–C_4haloalkyl group, one C_1–C_4alkylthio group, one cyano group, one nitro group, one COR_7 group, one CO_2R_6 group or one OR_9 group,

C_3–C_7cycloalkyl optionally substituted with one to three halogen atoms, one to three C_1–C_4alkoxy groups, one to three C_1–C_4alkylthio groups, one cyano group, one COR_7 group, one CO_2R_6 group, one $CONR_5R_6$ group or one phenyl group optionally substituted with one to three halogen atoms, one to three C_1–C_4alkyl groups, one to three C_1–C_4alkoxy groups, one C_3–C_6cycloalkyl group, one C_1–C_4haloalkyl group, one C_1–C_4alkylthio group, one cyano group, one nitro group, one COR_7 group, one CO_2R_6 group or one OR_9 group,

C_2–C_6alkenyl optionally substituted with one to three halogen atoms, one to three C_1–C_4alkoxy groups, one to three C_1–C_4alkylthio groups, one cyano group, one COR_7 group, one CO_2R_6 group, one $CONR_5R_6$ group or one phenyl group optionally substituted with one to three halogen atoms, one to three C_1–C_4alkyl groups, one to three C_1–C_4alkoxy groups, one C_3–C_6cycloalkyl group, one C_1–C_4haloalkyl group, one C_1–C_4alkylthio group, one cyano group, one nitro group, one COR_7 group, one CO_2R_6 group or one OR_9 group,

C_4–C_7cycloalkenyl optionally substituted with one to three halogen atoms, one to three C_1–C_4alkoxy groups, one to three C_1–C_4alkylthio groups, one cyano group, one COR_7 group, one CO_2R_6 group, one $CONR_5R_6$ group or one phenyl group optionally substituted with one to three halogen atoms, one to three C_1–C_4alkyl groups, one to three C_1–C_4alkoxy groups, one C_3–C_6cycloalkyl group, one C_1–C_4haloalkyl group, one C_1–C_4alkylthio group, one cyano group, one nitro group, one COR_7 group, one CO_2R_6 group or one OR_9 group,

C_2–C_6alkynyl optionally substituted with one to three halogen atoms, one to three C_1–C_4alkoxy groups, one to three C_1–C_4alkylthio groups, one cyano group, one COR_7 group, one CO_2R_6 group, one $CONR_5R_6$ group or one phenyl group optionally substituted with one to three halogen atoms, one to three C_1–C_4alkyl groups, one to three C_1–C_4alkoxy groups, one C_3–C_6cycloalkyl group, one C_1–C_4haloalkyl group, one C_1–C_4alkylthio group, one cyano group, one nitro group, one COR_7 group, one CO_2R_6 group or one OR_9 group, or

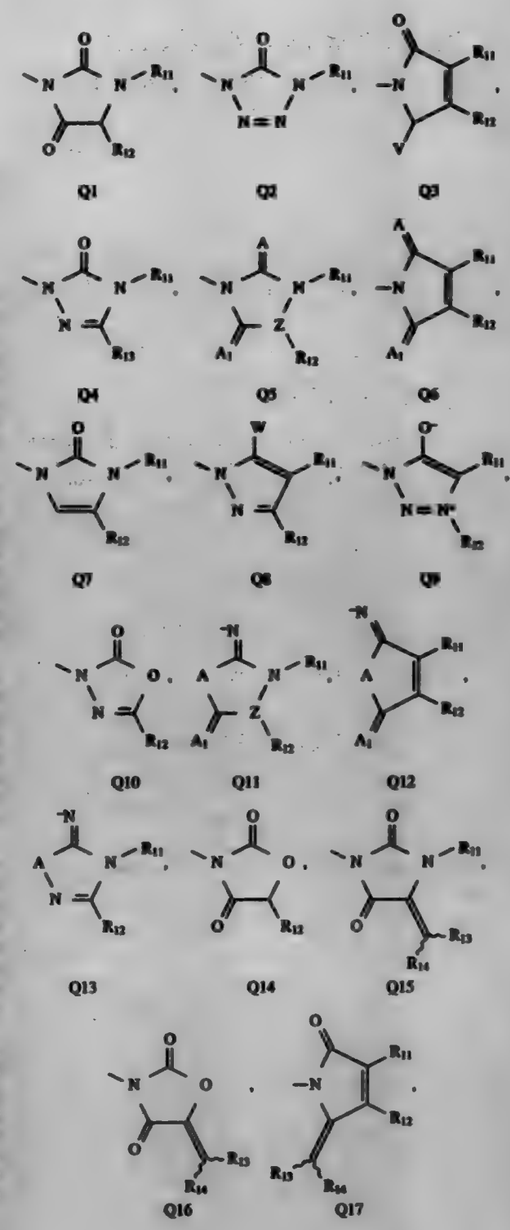
phenyl optionally substituted with one to three halogen atoms, one to three C_1–C_4alkyl groups, one to three C_1–C_4alkoxy groups, one C_3–C_6cycloalkyl group, one C_1–C_4haloalkyl group, one C_1–C_4alkylthio group, one cyano group, one nitro group, one COR_7 group, one CO_2R_6 group or one OR_9 group;

R_3, R_5, R_6 and R_7 are each independently hydrogen, C_1–C_4alkyl, C_2–C_4alkenyl, C_2–C_4alkynyl, benzyl or phenyl;

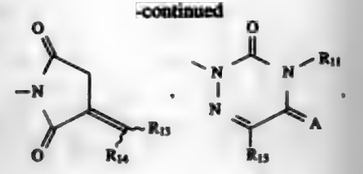
R_9 is C_1–C_4alkyl substituted with one CO_2R_{10} group;

R_4, R_8 and R_{10} are each independently hydrogen, C_1–C_4alkyl, C_2–C_4alkenyl, C_2–C_4alkynyl, benzyl, phenyl or an alkali metal, alkaline earth metal, manganese, copper, zinc, cobalt, silver or nickel cation;

Q is selected from

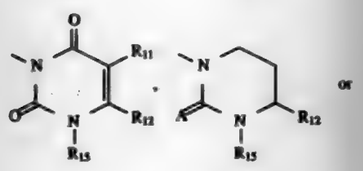


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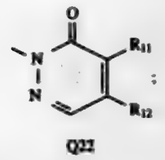
Q18

Q19



Q20

Q21



Q22

R_{11} and R_{12} are each independently hydrogen,

C_1–C_6alkyl optionally substituted with one or more halogen atoms, or

C_3–C_6cycloalkyl optionally substituted with one or more halogen atoms, and

when R_{11} and R_{12} are taken together with the atoms to which they are attached, they represent a four- to seven-membered saturated or unsaturated ring optionally interrupted by O, S or N, and optionally substituted with one to three methyl groups or one or more halogen atoms;

R_{13}, R_{14} and R_{15} are each independently hydrogen or C_1–C_3alkyl;

A and A_1 are each independently O or S;

V is hydroxy, halogen, C_1–C_3alkoxy or C_1–C_3alkylthio;

W is halogen or C_1–C_3alkyl; and

Z is N or CH.

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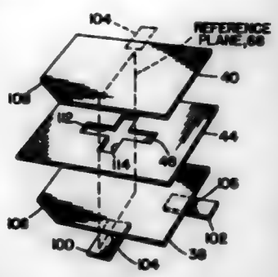
PLURAL-MODE STACKED RESONATOR FILTER INCLUDING SUPERCONDUCTIVE MATERIAL RESONATORS

Slawomir J. Fiedziuszko, Palo Alto, and John A. Curtis, Sunnyvale, both of Calif., assignors to Space Systems/Loral, Inc., Palo Alto, Calif.

Filed Nov. 13, 1992, Ser. No. 975,803

Int. Cl.[6] H01P *1/201;* H01B *12/06*

U.S. Cl. 505—210 36 Claims



11. A filter for an electromagnetic signal comprising:

a set of resonators spaced apart from each other and disposed about a common axis, each of said resonators extending parallel to each other and transversely of said axis;

a set of electrically conductive sheets interposed between successive ones of said resonators and spaced apart from said resonators, said electrically conductive sheets being parallel to each other, there being at least two resonators in said set of resonators, there being at least one sheet in said set of sheets, each of said sheets having a corresponding iris, the irises in respective ones of said sheets being operative for coupling said electromagnetic signal between neighboring ones of said resonators; and

coupling means disposed adjacent to at least one resonator of said set of resonators for coupling said electromagnetic signal to said filter;

wherein said coupling means includes a coupling element positioned for coupling the electromagnetic signal to a point on said at least one resonator, said point being distant from said axis, said coupling element exciting in said at least one resonator a first mode of electromagnetic oscillation in a reference plane defined by said axis and a line between the axis and said point;

said at least one resonator is comprised of superconductor material and comprises a perturbation distant from said plane for inducing a second mode of electromagnetic oscillation perpendicular to said plane; and

a spacing between two neighboring resonators of said set of resonators is less than approximately one-quarter wavelength of the electromagnetic signal to avoid generation of spurious modes.

5,484,765

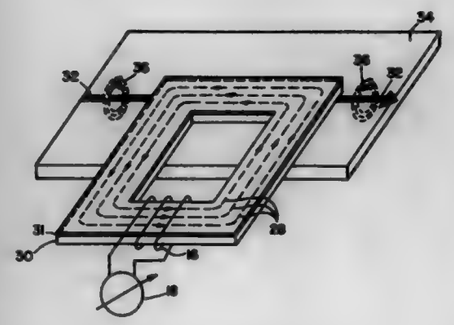
FERRITE/SUPERCONDUCTOR MICROWAVE DEVICE

Gerald F. Dionne, Winchester, and Daniel E. Oates, Belmont, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 4, 1994, Ser. No. 192,174

Int. Cl.[6] H01P *1/19*

U.S. Cl. 505—210 7 Claims



1. An electromagnetic device comprising:

a) a superconductor for conducting an electromagnetic signal applied thereto, said signal having an electromagnetic field; and

b) a magnetic structure having a magnetization; said magnetization producing a magnetic flux which is substantially confined within said magnetic structure so that said magnetic flux does not substantially permeate said superconductor; said magnetic structure being in sufficient proximity to said superconductor such that said electromagnetic field of said electromagnetic signal permeates said magnetic structure and interacts with said magnetization to produce frequency dependent effects upon said electromagnetic signal.

5,484,766

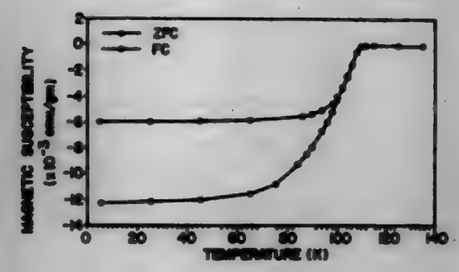
PREPARATION OF BI-PB-SR-CA-CU-O (2223) SUPERCONDUCTORS

Dinesh O. Shah, Gainesville, Fla.; Pramod Kumar, Flemmoor, Ill., and Vinod K. Pillai, Gainesville, Fla., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Feb. 14, 1994, Ser. No. 195,504

Int. Cl.[6] C01F *11/00;* C01G *29/00;21/00;3/00*

U.S. Cl. 505—441 9 Claims



1. A method of preparing a metal oxide Bi-Pb-Sc-Ca-Cu superconductor composition comprising the steps of:

a) forming a uniform mixture of metal elements Bi, Pb, Sr, Ca and Cu as cations in a solvent, said metal elements being in a stoichiometric proportion suitable for producing said metal oxide superconductor composition;

b) forming a first microemulsion having an aqueous discontinuous phase and comprising said metal cations, a surfactant, a water-immiscible hydrocarbon liquid and aqueous liquid;

c) mixing said first microemulsion with a second microemulsion having a discontinuous aqueous phase, said second microemulsion comprising a precipitating agent, said surfactant, said hydrocarbon liquid and said aqueous liquid to form a nanosized particulate precipitate;

d) separating said precipitate from the mixture of step (c) and drying said precipitate to form a powder;

e) calcining and compressing said powder;

f) sintering said compressed powder to form said superconductor composition.

5,484,767

SUBSTANTIALLY PURE STEROIDOGENESIS INDUCING PROTEIN AND USES THEREOF

Shafiq A. Khan, Charles H. Best Institute, 112 College Street, Toronto, Ontario, Canada

Filed May 30, 1991, Ser. No. 709,873

Int. Cl.[6] A01N *37/18;* A61K *38/00;* C07K *5/00;17/00*

U.S. Cl. 514—2 9 Claims

1. Substantially pure steroidogenesis inducing protein (SIP) characterized by a molecular weight of 60 kd as determined by SDS-PAGE, and an isoelectric point of from 4.7 to 4.9, wherein said SIP stimulates production of sex cells and adrenal cells via a mechanism which does not involve cAMP.

5,484,768

TREATMENT OF MALE INFERTILITY BY ADMINISTRATION OF A MUELLERIAN INHIBITING SUBSTANCE AND SURGERY AND/OR HORMONAL TREATMENT

Patricia K. Donahoe, Weston, Mass., and John M. Hutson, East Malvern, Australia, assignors to The University of Melbourne, Parkville, Australia

PCT No. PCT/US91/04886, § 371 Date Mar. 8, 1993, § 102(e) Date Mar. 8, 1993, PCT Pub. No. WO92/00752, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 9, 1991, Ser. No. 968,387

Claims priority, application Australia, Jul. 10, 1990, 189390

Int. Cl.[6] A61K 38/22

U.S. Cl. 514—2 29 Claims

1. A method for the treatment of infertility associated with undescended testes in a male mammal which results from non-maturation of testicular germ cells, comprising

(a) administering postnatally to a male mammal in need of said treatment a testicular germ cell maturing effective amount of at least one Muellerian inhibiting substance (MIS), optionally in association with a pharmaceutically acceptable carrier or excipient, and

(b) performing surgical or hormonal treatment of said animal to effect testis descent.

5,484,769

Patent Not Issued For This Number

5,484,770

PEPTIDE COMPOUNDS WHICH INHIBIT THE PROLIFERATION OF EPIDERMAL OR EPITHELIAL STEM CELLS

Ole D. Laerum, Sandvika, Norway, assignor to Halvard Nycomed Bjerrg AS, Oslo, Norway

PCT No. PCT/EP90/01071, § 371 Date Apr. 8, 1991, § 102(e) Date Apr. 8, 1991, PCT Pub. No. WO90/02753, PCT Pub. Date Mar. 22, 1990

PCT Filed Sep. 13, 1989, Ser. No. 671,757

Claims priority, application United Kingdom, Sep. 16, 1988, 8821785

Int. Cl.[6] A61K *38/00;* C07K *5/00;7/00;17/00*

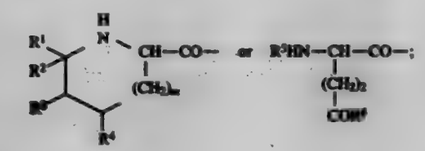
U.S. Cl. 514—17 12 Claims

1. A method of inhibiting proliferation of epidermal or epithelial stem cells in a human or animal subject which comprises administering to the human or animal subject an effective amount of a compound of formula (I):

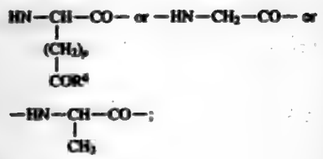
$$R^a\text{-}R^b\text{-}R^c\text{-}R^d\text{-}(R^e)_n\text{-}W \qquad (I)$$

wherein:

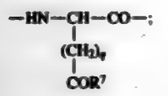
R^a represents



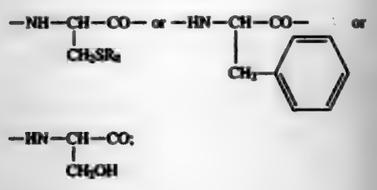
R^b represents



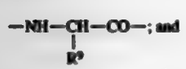
R^c represents



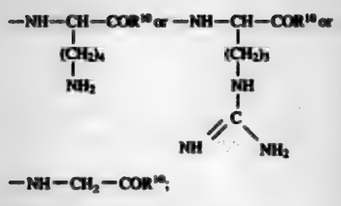
R^d represents



R^e represents



R^f represents



wherein:

n and m independently represent 0 or 1;

p and q independent represent 1 or 2;

R^1 and R^2 are both hydrogen atoms or together represent an oxo group;

R^3 and R^4 are both hydrogen atoms or together represent a carbon—carbon bond;

R^5 is hydrogen or an acyl group;

R^6 and R^7 independently represent a hydroxy group or an amino group;

R^8 represents hydrogen; a C_{2-6}alkyl group; a C_{7-20}aralkyl group, which may carry one or more hydroxy, amino or methoxy substituents; or a metabolically labile S-protecting group;

R^9 represents hydrogen or a methyl group;

R^{10} represents a hydroxy or amino group, the residue of the amino acid glutamine or a peptide having an N-terminal glutamine unit;

and wherein, apart from alanine, which may be in the D or L form, and glycine, all the said amino acid residues are in the L-form,

with the proviso that when R^d represents serine and n is zero, R^f is lysine or arginine, or an amide thereof.

5,484,771

ANTIHERPES PEPTIDE DERIVATIVES HAVING A 1,4-DIOXO-C, N-TERMINUS

Pierre L. Beaulieu, Montréal; Robert Déziel, Ville Mont-Royal, and Neil Moss, Laval, all of, Canada, assignors to Bio-Mega/Boehringer Ingelheim Research Inc., Quebec, Canada

Continuation of Ser. No. 994,214, Dec. 18, 1992, abandoned, which is a continuation of Ser. No. 711,232, Jun. 6, 1991, abandoned. This application Mar. 29, 1994, Ser. No. 219,680

Int. Cl.[5] A61K *38/06*

U.S. Cl. 514—18 8 Claims

1. A peptide of formula I

$$R^1NH—C(O)—Q—C(O)—NR^2—CH[CH_2C(O)—Y]—C(O)—NH—CH[CR^3(R^4)COOH]—C(W)—NH—CHR^5—Z \quad I$$

wherein R^1 is 1-ethylpropyl, 1-methylethyl or cyclohexyl; R^2 is hydrogen or methyl; R^3 and R^4 each independently is hydrogen, methyl, ethyl or propyl, or R^3 and R^4 together with the carbon atom to which they are attached form a lower cycloalkyl; R^5 is 2-methylpropyl or 2,2-dimethylpropyl; Q is 1,2-ethanediyl, 2,2-dimethyl-1,2-ethanediyl, 2(S)-(1,1 -dimethylethy)-1,2 -ethanediyl, 2(S)-(1 -methylethyl)-1,2-ethanediyl, cis-1,2-cyclohexanediyl, cis-1,2-ethenediyl or 1,2-phenylene; W is oxo; Y is 1-methylheptyloxy, pyrrolidino, 3,3,5-trimethylhexahydroazepino, heptyl, or cyclopentyl; and Z is hydrogen, COOH or CH2OH; the proviso that when Z is hydrogen then R^3 is hydrogen, methyl or ethyl and R^4 is methyl or ethyl, or R^3 and R^4 together with the carbon atom to which they are attached form a lower cycloalkyl; or a therapeutically acceptable salt thereof.

5,484,772

ANTITHROMBOTIC AGENTS

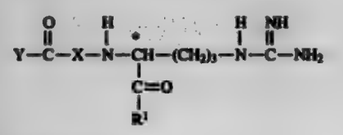
Daniel J. Salt; Robert T. Shuman, both of Greenwood; Gerald F. Smith, and Michael R. Wiley, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 206,558, Mar. 4, 1994, abandoned. This application Oct. 5, 1994, Ser. No. 318,325

Int. Cl.[5] A61K *38/00;* C07K *5/00;7/00;17/00*

U.S. Cl. 514—18 55 Claims

1. A compound having the formula



I

where

R^1 is hydrogen;

X is prolinyl or azetidinyl-2-carbonyl;

Y is a group



where Z is hydroxy, C_1–C_4 alkoxy or —NHR^2;

R^2 is hydrogen, C_1–C_6 alkyl, cyclopentyl, cyclohexyl, a group



or —$S(O)_n$—R^5

where R^5 is C_1–C_4 alkyl, C_1–C_2 perfluoroalkyl, C_1–C_4 alkoxy, (C_1–C_4 alkoxy)C_1–C_4 alkyl, cyclopentyl, cyclohexyl, amino, mono (C_1–C_4)alkylamino, di(C_1– C_4)alkylamino, unsubstituted or substituted aryl, where aryl is phenyl or naphthyl, a 5 or 6 member unsubstituted or substituted heterocyclic ring, having one or two heteroatoms which are the same or different and which are selected from sulfur, oxygen and nitrogen, or a 9 or 10 membered unsubstituted or substituted fused bicyclic heterocyclic group having one or two heteroatoms which are the same or different and which are selected from sulfur, oxygen and nitrogen;

n is 1 or 2;

R^3 is C_1–C_4 alkyl, unsubstituted or subatituted phenyl or unsubstituted or substituted benzyl;

Z^1 is a bond or —CH_2—;

R^4 is C_1–C_6 alkyl, C_1–C_4 alkoxy, cyclopentyl, cyclohexyl, unsubstituted or substituted aryl where aryl is phenyl or naphthyl, a 5 or 6 membered unsubstituted or substituted heterocyclic ring, having one or two heteroatoms which are the same or different and which are selected from sulfur, oxygen and nitrogen, or a 9 or 10 membered unsubstituted or substituted bicyclic heterocyclic group having one or two heteroatoms which are the same or different and which are selected from sulfur, oxygen and nitrogen;

when Z is —NHR^2, it can be taken together with R^3 to afford an azetidinyl group, a 5 or 6 membered unsubstituted or substituted saturated nitrogen containing heterocyclic ring or a 9 or 10 membered unsubstituted or substituted fused bicyclic nitrogen containing heterocyclic group;

R^3 and R^4 can be taken together to afford a cyclopentyl, cyclohexyl or a 9 or 10 membered unsubstituted or substituted hydrocarbyl group; and pharmaceutically acceptable salts and solvates thereof;

provided that when (a-i) R^3 is methyl or ethyl; Z^1 is a bond; R^4 is cyclopentyl, cyclohexyl, unsubstituted or substituted aryl where aryl is phenyl or naphthyl or R^4 is thienyl or furyl; and x is prolinyl or azetidinyl-2-carbonyl; or

(a-ii) R^4—Z^1— taken together form methyl or ethyl; R^3 is unsubstituted or substituted phenyl; and X is prolinyl or azetidinyl-2-carbonyl; or when

(b-i) R^3 is methyl or ethyl; Z^1 is —(CH_2)—; R^4 is unsubstituted or substituted phenyl; and X is azetidinyl-2-carbonyl; or

(b-ii) R^4—Z^1— taken together form methyl or ethyl; R^3 is unsubstituted or substituted benzyl; and x is azetidinyl-2-carbonyl; or further when

(c) R^3 and R^4 are taken together to afford a cyciopentyl or cyclohexyl; and X is prolinyl;

then Z is not hydroxy, C_1–C_4 alkoxy or NHR^2 in which R^2 is hydrogen, C_1–C_6 alkyl or a group



in which R^5 is C_1–C_4 alkyl, C_1–C_2 perfluoroalkyl or C_1–C_4 alkoxy.

5,484,774

2, N^6-DISUBSTITUTED ADENOSINES, TRI-O-ESTER DERIVATIVES AND THEIR PHARMACEUTICAL COMPOSITIONS TO TREAT ISCHEMIAS

Jesper Lau, Farum; Lars J. S. Knutsen, Vedbæk; Malcolm Sheardown, Smørum, and Anker J. Hansen, Charlottenlund, all of, Denmark, assignors to Novo Nordisk A/S, Bagsværd, Denmark

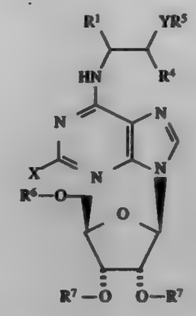
Filed Dec. 17, 1993, Ser. No. 169,897

Claims priority, application Denmark, Dec. 23, 1992, 1552/92

Int. Cl.[6] A61K *31/70;* C07H *19/167*

U.S. Cl. 514—46 23 Claims

1. A compound of formula I



(I)

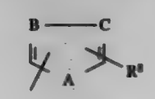
wherein

X is halogen, trifluoromethyl, C_{1-6}-alkoxy, C_{1-6}-alkylthio or cyano;

R^1 is H, straight or branched C_{1-6}-alkyl or trifluoromethyl; R^4 is H or straight or branched C_{1-6}-alkyl; or R^1 and R^4 together form a cyclobutyl, cyclopentyl or cyclohexyl ring;

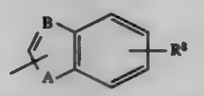
Y is O, S, SO_2, N—H or N-alkyl;

R^5 is a group of formula XI or XII:



(XI)

or



(XII)

wherein A is NH, O or S; B is CH or N; C is CH or N; and the group is substituted with R^8 which is H, phenyl, C_{1-6}-alkyl, trifluoromethyl, amino, hydroxy, C_{1-6}-alkoxy, cyano or halogen;

R^6 is hydrogen, benzoyl or C_{1-6}-alkanoyl and

R^7 is hydrogen, benzoyl or C_{1-6}-alkanoyl; or

a pharmaceutically acceptable salt thereof.

23. A pharmaceutical composition comprising a compound according to claim 1 or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier.

25. A method of treating myocardial ischemia, comprising administering to a person in need of such treatment an effective amount of a compound of claim 1.

27. A method of treating cerebral ischemia, comprising administering to a person in need of such treatment an effective amount of a compound of claim 1.

5,484,773

TREATMENT OF ANTIBIOTIC ASSOCIATED DIARRHEA

Louis D. Heerze, and Glen D. Armstrong, both of Edmonton, Canada, assignors to Alberta Research Council, Edmonton, Canada

Filed Feb. 14, 1994, Ser. No. 195,009

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—23 14 Claims

1. A method to treat diarrhea mediated by toxin A in a subject, which method comprises administering to a subject in need of such treatment an effective amount of a composition comprising an oligosaccharide sequence covalently attached to a pharmaceutically acceptable solid, inert support through a non-peptidyl compatible linker arm, wherein said oligosaccharide sequence binds toxin A, and wherein said composition is capable of being eliminated from the gastrointestinal tract.

5,484,775

SEMISYNTHETIC GANGLIOSIDE ANALOGUES

Francesco Delia Valle, Padova, and Aurelio Romeo, Rome, both of, Italy, assignors to FIDIA S.p.A., Abano Terme, Italy

Continuation of Ser. No. 558,012, Jul. 26, 1990, abandoned.
This application Jul. 26, 1993, Ser. No. 96,853
Claims priority, application Italy, Jul. 27, 1989, 48246/89
Int. Cl.[6] A61K *31/715; C07H 5/04*
U.S. Cl. 514—54 6 Claims

3. A method of inhibiting glutamate-induced neurotoxicity, which comprises administering an effective amount of a pharmaceutical composition comprising N,N'-diacetyl-N,N' -di-lyso GM_1, together with a pharmaceutically acceptable excipient, to a patient in need thereof.

5,484,776

PROCESS FOR THE PRODUCTION OF STABLE LIQUID FORM OF BETA-BLOCKER-CONTAINING MEDICAMENTS WITH CONTROLLED RELEASE OF THE ACTIVE CONSTITUENT FOR ORAL ADMINISTRATION

Istvan Racz, and Sylvia Marton, both of Budapest, Hungary, assignors to Synepos Aktiengesellschaft, Vaduz, Liechtenstein

Filed Oct. 14, 1993, Ser. No. 135,992
Int. Cl.[6] A61K *9/08;31/40;47/26;31/135*
U.S. Cl. 514—54 25 Claims

1. A process for the production of a stable pharmaceutical for oral administration that provides controlled released of a β-adrenergic blocker active component, which comprises reacting 1 to 20 parts by weight of the β-adrenergic blocker in 100 parts of water with 0.001 to 10 parts of a polysaccharide to obtain a mixture, and adjusting the pH of the mixture to between pH 2 and 4.5 with a buffer.

5,484,777

PANCREATIC CHOLESTEROL ESTERASE INHIBITOR

Louis G. Lange, III, 38 Kingsbury Pl., St. Louis, Mo. 63112, and Curtis A. Spilburg, 2230 Willow Ridge La., Chesterfield, Mo. 63017

Continuation of Ser. No. 928,510, Aug. 11, 1992, abandoned, which is a continuation of Ser. No. 718,280, Jun. 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 340,868, Apr. 20, 1989, Pat. No. 5,017,565. This application Dec. 15, 1993, Ser. No. 167,725
Int. Cl.[6] A61K *31/72*
U.S. Cl. 514—54 1 Claim

1. An ingestible food product comprising a foodstuff and a therapeutic amount of an essentially non-absorbable synthetic 3-sulfated polysaccharide having an IC_{50} of 0.02 nM or less and a molecular weight of at least 500 kDa, wherein the ingestible food product is baked.

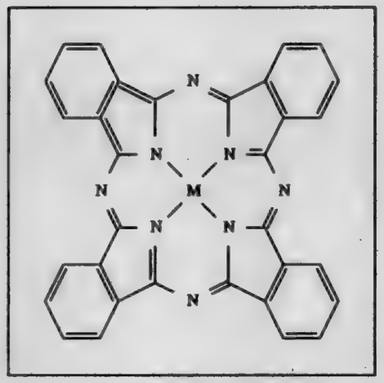
5,484,778

PHTHALOCYANINE PHOTOSENSITIZERS FOR PHOTODYNAMIC THERAPY AND METHODS FOR THEIR USE

Malcolm E. Kenney, Cleveland Heights; Nancy L. Oleinick, University Heights, both of Ohio; Boris D. Ritter, Wauwatosa, Wis., and Ying-Syi Li, Cleveland Heights, Ohio, assignors to University Hospitals of Cleveland, Cleveland, Ohio

Continuation-in-part of Ser. No. 980,494, Nov. 23, 1992, abandoned, which is a continuation of Ser. No. 554,290, Jul. 17, 1990, Pat. No. 5,166,197. This application Sep. 2, 1993, Ser. No. 116,259
The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.
Int. Cl.[6] C09B *47/04;47/08;* A61K *31/555;31/685*
U.S. Cl. 514—63 35 Claims

1. A phthalocyanine compound having the following formula:



wherein M is $(G)_aY$ $[(OSi(CH_3)_2(CH_2)_bN_c(R')_d(R'')_e)_fX_g]_p$ wherein:

Y is selected from the group consisting of Si, Al, Ga, Ge, and Sn;

R' is selected from the group consisting of H, CH_2, CH_3, C_2H_5, C_4H_9, C_4H_8NH, $C_4H_8NCH_3$, C_4H_8S, C_4H_8O, C_4H_8Se, CH_2CH_3, $(CH_2)_3(CH_3)$, $OC(O)CH_3$, CS, CO, CSe, OH, $C_4H_8N(CH_2)_3CH_3$, $(CH_2)_3N(CH_3)_2$, $C(O)C_{27}H_{30}N_2O$, $(CH_2)_nN((CH_2)_o(CH_3))_2$, and an alkyl group having from 1 to 12 carbon atoms;

R" is selected from the group consisting of H, SO_2CH_3, $(CH_2)_2N(CH_3)_2$, $(CH_2)_{11}CH_3$, $C(S)NHC_6H_{11}O_5$, $(CH_2)_nN((CH_2)_o(CH_3))_2$, and an alkyl group having from 1 to 12 carbon atoms;

G is selected from the group consisting of OH, CH_3, and $(CH_3)_3C(CH_3)_2$ SiO;

X is selected from the group consisting of: I; F; Cl; and Br;

a=0 where Y is Al or Ga, or 1 where Y is Si, Ge, or Sn;

b=an integer from 2 to 12;

c=0 or 1;

d=0, 1, 2 or 3;

e=0, 1, or 2;

f=1 or 2;

g=0 or 1;

n=an integer from 1 to 12;

o=an integer from 1 to 11; and

p=1 or 2;

where M is not $AlOSi(CH_3)_2(CH_2)_3N(CH_3)_2$; $AlOSi(CH_3)_2(CH_2)_3N(CH_3)_3^+$ I^-; $CH_3SiOSi(CH_3)_2(CH_2)_3N(CH_3)_2$; $HOSiOSi(CH_3)_2(CH_2)_3N(CH_3)$ 2; $HOSiOSi(CH_3)_2(CH_2)_3N(CH_3)_3^+I^-$; $Si[OSi(CH_3)_2(CH_2)_3N(CH_3)_3^+I^-]_2$; or $Si[OSi(CH_3)_2(CH_2)_3N(CH_3)_2]_2$.

27. A method for treating fibrosarcomas squamous cell carcinoma, and skin tumors comprising the steps of administering, to a patient an effective amount of the phthalocyanine of claim 1, and applying light of sufficient wave length and intensity to the fibrosarcoma, squamous cell carcinoma or skin tumor to activate said phthalocyanine, wherein said activated phthalocyanine exerts a cyotoxic effect on said fibrosarcoma, squamous cell carcinoma or skin tumor.

5,484,779

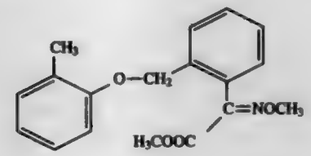
FUNGICIDAL COMPOSITIONS

Hubert Sauter, Mannheim; Klaus Scheiberger, Goesnheim; Reinhold Saur, Boehl-Iggelheim; Gisela Lorenz, Neustadt, and Eberhard Ammermann, Heppenheim, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 188,012, Jan. 28, 1994, Pat. No. 5,399,579, which is a division of Ser. No. 87,317, Jul. 8, 1993, Pat. No. 5,317,027, which is a division of Ser. No. 943,677, Sep. 11, 1992, Pat. No. 5,260,326. This application Oct. 6, 1994, Ser. No. 319,027
Claims priority, application Germany, Sep. 12, 1991, 41 30 298.2
Int. Cl.[6] A01N *37/12;37/44;43/64;55/00*
U.S. Cl. 514—63 12 Claims

1. A fungicidal composition comprising a synergistically fungicidally effective amount of a mixture of:

a) methyl α-methoximino-2-((2-methylphenoxy)-methyl)-phenylacetate



and

b) an azole active ingredient selected from the group consisting of hexaconazole, cyproconazole, difenoconazole, propiconazole, flusilazole, and slats thereof, wherein compounds a) and b) are present in a weight ratio of 10:1 to 1:10.

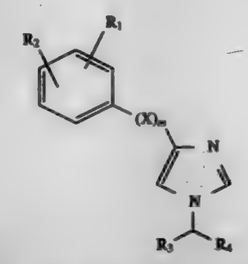
5,484,780

ANGIOTENSIN II ANTAGONISTS

Donald B. Boyd, Greenwood; Kenneth L. Hauser, Greencastle; Sherryl L. Lifer, Indianapolis; Winston S. Marshall, Bargersville; Alan D. Palkowitz; William Pfeifer, both of Indianapolis; Jon K. Reel, Carmel; Richard L. Simon, Greenwood; Mitchell I. Steinberg, Indianapolis; Kumiko Takeuchi, Indianapolis; K. Jeff Thrasher, Indianapolis, and Celia A. Whitesitt, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 49,917, Apr. 20, 1993, Pat. No. 5,401,851, which is a continuation-in-part of Ser. No. 892,867, Jun. 3, 1992, abandoned. This application Dec. 14, 1994, Ser. No. 355,778
Int. Cl.[6] C07F *9/02;* C07D *231/10*
U.S. Cl. 514—94 83 Claims

1. A compound of the formula



(I)

wherein:

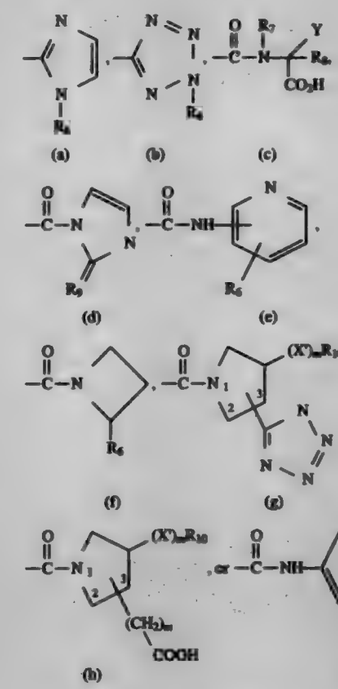
R_1 is CO_2H, SO_3H, PO_3H_2, $CONHSO_2R_5$ or 5-tetrazolyl;

R_2 is H, —OH, —$OCOCH_3$, halo, C_1–C_4 alkyl, amino, acetamido, or C_1–C_4 alkoxy;

X i s —$(CH_2)_m$NHCO—, —$(CH_2)_m$CONH—, —O—, —NH—, —CH_2—, —$(CH_2)_m$CO—, or —CO (CH_2) m—;

R_3 is C_4–C_9 straight chain alkyl, C_4–C_9 straight chain trifluoroalkyl, C_4–C_9 straight chain alkenyl, or C_4–C_9 straight chain trifluoroalkenyl;

R_4 is —CONH (C_1–C_4 alkyl), —CONH (C_1–C_4 trifluoroalkyl), —CONH(hydroxy-C_1–C_4 alkyl),



(a) (b) (c) (d) (e) (f) (g) (h) (i)

R_5 is phenyl, C_1–C_4 alkyl substituted phenyl, C_1–C_3 alkyl, or C_1–C_5 trifluoroalkyl;

R_6 is $(CH_2)_pR_1$, or C_1–C_4 alkyl;

R_7 is H or CH_3;

R_8 is H or —$(CH_2)_qR_{12}$;

R_9 is O or S;

R_{10} is H, —$(CH_2)_pR_1$, C_1–C_7 alkyl, C_1–C_7 trifluoroalkyl, halo, substituted or unsubstituted phenyl, 3-pyridyl, 2-pyrimidyl, furanyl, oxazolyl, isoxazolyl, a substituted or unsubstituted fused bicyclic, a substituted or unsubstituted fused tricyclic, or when m is 0, 4,4-ethylenedioxy;

R_{11} is H, OH, C_1–C_4 alkoxy, CO_2H, SO_3H, PO_3H_2, $CONHSO_2R_5$, or tetrazolyl;

R_{12} is OH, NH_2, or CO_2H;

Y is a R group of a naturally occurring amino acid;
X' is —O—, —$(CH_2)_p$—, or —S—;
m is independently 0 or 1;
p is independently 0, 1, 2, 3 or 4; and
q is 1, 2, 3, or 4;
providing that when R_4 is (g) or (h), and R_{10} is not H, the carboxy of (h) or tetrazolyl of (g) is in position 2; and when R_4 is (g) or (h), m is 0, and R_{10} is H, the carboxy of (g) or tetrazolyl of (h) is in position 2 or 3; or a pharmaceutically acceptable salt or solvate thereof.

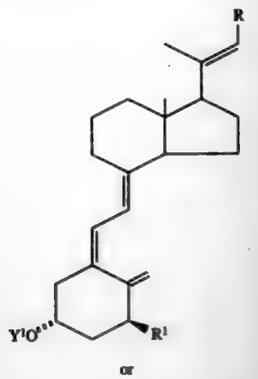
5,484,781

(E)-20(22)-DEHYDROVITAMIN D COMPOUNDS

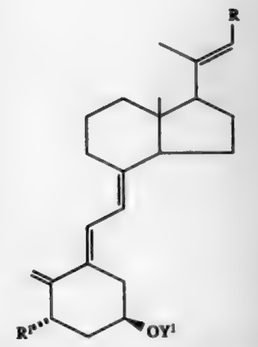
Hector F. DeLuca, Deerfield, Wis., and Rafal R. Sicinski, Warsaw, Poland, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 147,663, Nov. 3, 1993. This application May 16, 1995, Ser. No. 442,463
Int. Cl.[6] A61K *31/59*; C07C *401/00*
U.S. Cl. 514—167 **3 Claims**

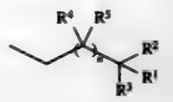
1. A method of treating psoriasis which comprises administering to a patient an effective amount of a compound having the formula



or



where Y^1 is hydrogen or a hydroxy-protecting group, R^1 represents hydrogen, hydroxy or protected hydroxy, and where R is hydrogen, aryl, alkyl, hydroxyalkyl or fluoroalkyl group, or R may represent the following side chain fragment:



wherein R^1 is as defined above, R^2 and R^3 are each selected from the group consisting of alkyl, hydroxyalkyl and fluoroalkyl, or, when taken together represent the group $—(CH_2)_m—$ where m is an integer having a value of from 2 to 5, R^4 is selected from the group consisting of hydrogen, hydroxy, fluorine, O-acyl, alkyl, hydroxyalkyl and fluoroalkyl, R^5 is selected from the group consisting of hydrogen, fluorine, alkyl, hydroxyalkyl and fluoroalkyl, and wherein n is an integer having a value of from 1 to 5.

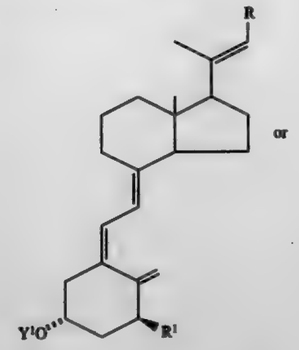
5,484,782

(E)-20(22)-DEHYDROVITAMIN D COMPOUNDS

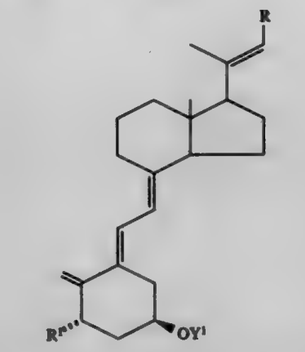
Hector F. DeLuca, Deerfield, Wis., and Rafal R. Sicinski, Warsaw, Poland, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 147,663, Nov. 3, 1993. This application May 16, 1995, Ser. No. 442,473
Int. Cl.[6] C07C *401/00*; A61K *31/59*
U.S. Cl. 514—167 **4 Claims**

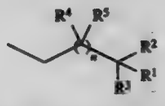
1. A compound having the formula



or



where Y^1 is hydrogen or a hydroxy-protecting group, R^1 represents hydrogen, hydroxy or protected hydroxy, and where R is hydrogen, aryl, alkyl, hydroxyalkyl or fluoroalkyl group, or R may represent the following side chain fragment:



wherein R^1 is as defined above, R^2 and R^3 are each selected from the group consisting of alkyl, hydroxyalkyl and fluoroalkyl, or, when taken together represent the group $—(CH_2)_m—$ where m is an integer having a value of from 2 to 5, R^4 is selected from the group consisting of hydrogen, hydroxy, fluorine, O-acyl, alkyl, hydroxyalkyl and fluoroalkyl, R^5 is selected from the group consisting of hydrogen, fluorine, alkyl, hydroxyalkyl and fluoroalkyl, and wherein n is an integer having a value of from 1 to 5.

5,484,783

HYPOCHOLESTEROLEMIC, ANTIATHEROSCLEROTIC AND HYPOTRIGLYCERIDEMIC MERCAPTOACETYLAMIDE AND BENZAZAPINE DERIVATIVES

Gary A. Flynn; John F. French, and Richard C. Dage, all of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Mar. 24, 1994, Ser. No. 217,781
Int. Cl.[6] A61K *31/55;31/535*
U.S. Cl. 514—214 **10 Claims**

1. A method of lowering total serum cholesterol in a patient in need thereof comprising administering to said patient a therapeutically effective hypocholesterolemic amount of a compound of the Formula

wherein

A_1 and A_2 are each independently hydrogen or $—COOR_4$ wherein R_4 is hydrogen; $—CH_2O—C(O)C(CH_3)_3$; a C_1–C_6 alkyl; an Ar—Y— group wherein Ar is aryl and Y is a C_0–C_4 alkyl; or diphenylmethyl; with the proviso that where A_1 is hydrogen, A_2 is $—COOR_4$, and where A_1 is $—COOR_4$, A_2 is hydrogen;

B_1 and B_2 are each independently hydrogen; hydroxy; $—OR_5$ wherein R_5 is a C_1–C_4 alkyl or an Ar—Y— group; or, where B_1 and B_2 are attached to adjacent carbon atoms, B_1 and B_2 can be taken together with said adjacent carbons to form a benzene ring or methylenedioxy;

R_2 is hydrogen, C_1–C_8 alkyl, $—CH_2OCH_2CH_2OCH_3$ or an Ar—Y— group;

R_3 is hydrogen, acetyl, $—CH_2O—C(O)C(CH_3)_3$ or benzoyl; and

n is an integer 0 or 1.

5,484,784

Patent Not Issued For This Number

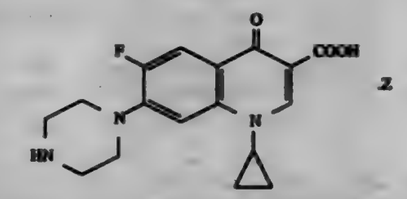
5,484,785

SALTS OF A QUINOLONE-CARBOXYLIC ACID

Kyu J. Yoon, Seoul; Jo H. Kim, Kyunggi; Kyung E. Choi, Seoul; Dal H. Kim, Kyunggi, and Ki H. Lee, Seoul, all of, Rep. of Korea, assignors to Choll Foods & Chemicals, Inc., Seoul, Rep. of Korea

PCT No. PCT/KR93/00086, § 371 Date Aug. 26, 1994, § 102(e) Date Aug. 26, 1994, PCT Pub. No. WO93/16068, PCT Pub. Date Jul. 22, 1993
PCT Filed Jan. 21, 1993, Ser. No. 256,725
Claims priority, application Rep. of Korea, Jan. 21, 1992, 92-794
Int. Cl.[6] A61K *31/495*; C07D *401/10*
U.S. Cl. 514—254 **3 Claims**

1. A compound of the formula:



(I)

wherein, Z is 5-oxoestrahydrofuran-2-carboxylic acid or 2-hydroxyglutaric acid.

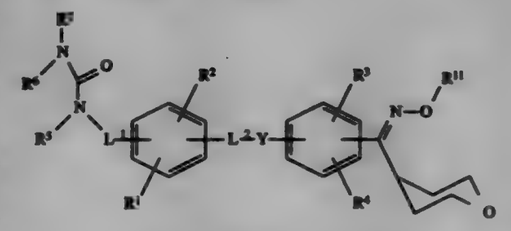
5,484,786

PYRAN-4-YLMETHYL SUBSTITUTED ARYLALKYLARYL-, ARYLALKENYLARYL-, AND ARYLALKYNYLARYLUREA INHIBITORS OF 5-LIPOXYGENASE

Joseph F. Dellaria, Lindenhurst; Anwer Basha, Lake Forest; Lawrence A. Black, Vernon Hills; Linda J. Chenevert, Arlington Heights, and Wendy Lee, Chicago, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Aug. 24, 1993, Ser. No. 111,898
Int. Cl.[6] A61K *31/35;31/495*; C07D *315/00;239/04*
U.S. Cl. 514—256 **5 Claims**

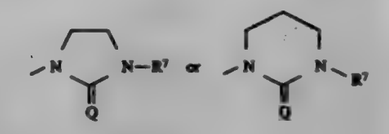
1. A compound having the structure



or a pharmaceutically acceptable salt thereof wherein

R^5 and R^6 are independently selected from hydrogen and alkyl of one to four carbon atoms, provided that when L^1 is a valence bond, R^5 is alkyl of one to four carbon atoms, or

R^5 and R^6, together with the nitrogen atoms to which they are attached, define a radical of the formulae



Q is oxygen or sulfur,

R^7 is selected from the group consisting of hydrogen, and alkyl of one to four carbon atoms;
L^1 is a valence bond or is selected from alkylene of one to three carbon atoms, propenylene, and propynylene;
R^1, R^2, R^3, and R^4 are independently selected from the group consisting of hydrogen, alkyl of one to four carbon atoms, alkoxy of one to four carbon atoms, haloalkyl, and halogen;
L^2 is a valence bond or is selected from alkylene of one to three carbon atoms, propenylene, and propynylene;
Y is oxygen, and
R^{11} is hydrogen or alkyl of one to four carbon atoms.

5,484,787

HETEROCYCLICACETONITRILES AND FUNGICIDAL USE

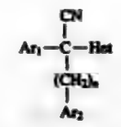
Steven H. Shaber, Horsham; Edward M. Stupecs, Center Valley, and Charles H. Reynolds, Lansdale, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 152,555, Nov. 15, 1993, Pat. No. 5,397,793, and a continuation of Ser. No. 491,782, Mar. 12, 1990, abandoned. This application Nov. 28, 1994, Ser. No. 345,147

Int. Cl.[6] A01N *43/54*; *C07D 239/02*

U.S. Cl. 514—256 **12 Claims**

1. A compound of the formula:



wherein Ar_1 is selected from an optionally substituted C_6 to C_{10} aryl group with up to three substituents independently selected from the group consisting of halogen, nitro, cyano, $(C_1–C_{12})$ alkyl, $(C_1–C_{12})$ haloalkyl, $(C_3–C_8)$ cycloalkyl, $(C_5–C_8)$ cycloalkenyl, $(C_2–C_{12})$ alkenyl, $(C_2–C_{12})$ alkynyl, $(C_1–C_{12})$ alkoxy, $(C_1–C_{12})$ haloalkoxy, $(C_1–C_{12})$ alkylthio, $(C_1–C_{12})$ alkylsulfinyl, $(C_1–C_{12})$ alkylsulfonyl, phenyl, phenoxy, phen$(C_1–C_{12})$alkyl, phen$(C_2–C_{12})$alkenyl, phen$(C_2–C_{12})$alkynyl and $(C_5–C_8)$cycloalkyl $(C_1–C_4)$alkyl; Ar_2 is an optionally substituted $(C_6–C_{10})$ aryl group wherein the substituents are independently selected from the substituents enumerated above for Ar_1; or Ar_2 may be thiophenyl or furanyl; Het is a pyrimidyl ring; n is the integer 2 or 3; or the agronomically acceptable enatiomorph, acid addition salt or metal complex thereof.

5,484,788

BUSPIRONE AS A SYSTEMIC IMMUNOSUPPRESSANT

Richard J. Sharpe, Gloucester; Kenneth A. Arndt, Newton Centre; Stephen L. Gaill, Winchester; Peter C. Meltzer, Lexington; Raj K. Razdan, Belmont, and Howard P. Sard, Arlington, all of Mass., assignors to Beth Israel Hospital Association, Boston, Mass.

Filed Mar. 26, 1993, Ser. No. 37,271

Int. Cl.[6] A61K *31/505*

U.S. Cl. 514—275 **10 Claims**

1. A method for treating a mammal in need of immunosuppression, comprising systemicaly administering to the mammal an effective amount of buspirone or its pharmaceutically acceptable salt, other than a quaternary salt, in a pharmaceutically-acceptable diluent or carrier.

5,484,789

CALCIUM CHANNEL BLOCKERS TO IMPROVE PRESERVATION OF ORGANS STORED FOR TRANSPLANTATION

Ronald G. Thurman, and John J. Lemasters, both of Chapel Hill, N.C., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Filed Oct. 31, 1989, Ser. No. 429,288

Int. Cl.[6] A61K *31/435*

U.S. Cl. 514—277 **11 Claims**

1. A composition for the temporary cold storage of living tissue for subsequent use as a transplant comprising aneffective amount of a calcium channel blocker sufficient to reduce tissue injury during storage, wherein said calcium channel blocker is a dihydropyridine derivative.

5,484,790

CARBAMATES OF RAPAMYCIN

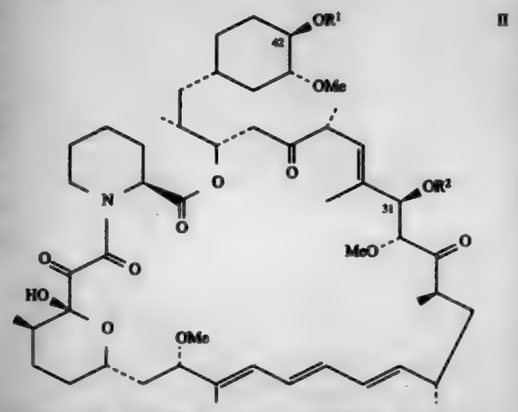
Amedeo A. Failli, Princeton Junction, N.J.; Oleg I. Bleyman, Holland, Pa.; Wenling Kao, Paoli, Pa., and Magid A. Abou-Gharbia, Glen Mills, Pa., assignors to American Home Products Corporation, Madison, N.J.

Division of Ser. No. 284,765, Aug. 2, 1994, which is a continuation-in-part of Ser. No. 160,984, Dec. 1, 1993, abandoned, which is a division of Ser. No. 54,655, Apr. 23, 1993, Pat. No. 5,302,584, which is a continuation-in-part of Ser. No. 968,597, Oct. 15, 1992, abandoned. This application May 24, 1995, Ser. No. 448,812

Int. Cl.[6] A61K *31/395*; *C07D 498/16*

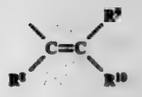
U.S. Cl. 514—291 **1 Claim**

1. A method of treating transplantation rejection or graft vs. host disease in a mammal in need thereof, which comprises administering to said mammal an antirejection effective amount or a compound of the structure



II

wherein R^1 and R^2 are each, independently, hydrogen, or —CONH—O—$(CR^3R^4)_n$—Z;
R^3 and R^4 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, cycloalkyl of 3–8 carbon atoms, —CF_3, or F;
Z is hydrogen, alkyl of 1–6 carbon atoms, —OR^5, —SR^5, —NR^5R^6, —CN, —CF_3, —OAr, —Ar, or R^7;
R^5 and R^6 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, aryialkyl of 4–10 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthioalkyl of 2–12 carbon atoms, alkylaminoalkyl of 2–12 carbon atoms, dialkylaminoalkyl of 3–12 carbon atoms, cycloalkyl of 3–8 carbon atoms, or Ar;
R^7 is



or —C≡C—R^{11};
R^8, R^9, R^{10}, and R^{11} are each, independently, hydrogen, alkyl of 1–6 carbon atoms, halogen, or phenyl, wherein the phenyl group may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1–6 carbon atoms, arylalkyl of 7–10 carbon atoms, alkoxy of 1–6 carbon atoms, cyano, halo, hydroxy, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, trifluoroalkoxy of 2–7 carbon atoms, amino, dialkylamino of 1–6 carbon atoms per alkyl group, dialkylaminoalkyl of 3–12 carbon atoms, hydroxyalkyl of 1–6 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthio of 1–6 carbon atoms, —SO_3H, —PO_3H, and —CO_2H;
Ar is an aryl radical that may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1–6 carbon atoms, arylalkyl of 7–10 carbon atoms, alkoxy of 1–6 carbon atoms, cyano, halo, hydroxy, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, trifluoroalkoxy of 2–7 carbon atoms, amino, dialkylamino of 1–6 carbon atoms per alkyl group, dialkylaminoalkyl of 3–12 carbon atoms, hydroxyalkyl of 1–6 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthio of 1–6 carbon atoms, —SO_3H, —PO_3H, and —CO_2H; and
m=1–6;
with the proviso that R^1 and R^2 are both not hydrogen, or a pharmaceutically acceptable salt thereof.

5,484,791

CARBAMATES OF RAPAMYCIN

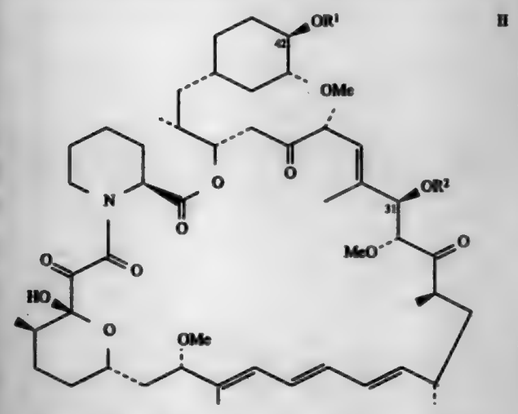
Amedeo A. Failli, Princeton Junction, N.J.; Oleg I. Bleyman, Holland, Pa.; Wenling Kao, Paoli, Pa., and Magid A. Abou-Gharbia, Glen Mills, Pa., assignors to American Home Products Corporation

Division of Ser. No. 284,765, Aug. 2, 1994, which is a continuation of Ser. No. 160,984, Dec. 1, 1993, abandoned, which is a division of Ser. No. 54,655, Apr. 23, 1993, Pat. No. 5,302,584, which is a continuation of Ser. No. 968,597, Oct. 13, 1992, abandoned. This application May 24, 1995, Ser. No. 449,443

Int. Cl.[6] A61K *31/395*; *C07D 498/16*

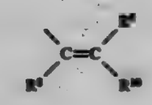
U.S. Cl. 514—291 **1 Claim**

1. A method of treating pulmonary inflammation in a mammal in need thereof, which comprises administering to said mammal an antiinflammatory effective amount of a compound of the structure



II

wherein
R^1 and R^2 are each, independently, hydrogen, or —CONH—O—$(CR^3R^4)_n$—Z;
R^3 and R^4 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, cycloalkyl of 3–8 carbon atoms, —CF_3, or F;
Z is hydrogen, alkyl of 1–6 carbon atoms, —OR^5, —SR^5, —NR^5R^6, —CN, —CF_3, —OAr, —Ar, or R^7;
R^5 and R^6 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, arylalkyl of 4–10 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthioalkyl of 2–12 carbon atoms, alkylaminoalkyl of 2–12 carbon atoms, dialkylaminoalkyl of 3–12 carbon atoms, cycloalkyl of 3–8 carbon atoms, or Ar;
R^7 is



or —C≡C—R^{11};
R^8, R^9, R^{10}, and R^{11} are each, independently, hydrogen, alkyl of 1–6 carbon atoms, halogen, or phenyl, wherein the phenyl group may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1–6 carbon atoms, arylalkyl of 7–10 carbon atoms, alkoxy of 1–6 carbon atoms, cyano, halo, hydroxy, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, trifluoroalkoxy of 2–7 carbon atoms, amino, dialkylamino of 1–6 carbon atoms per alkyl group, dialkylaminoalkyl of 3–12 carbon atoms, hydroxyalkyl of 1–6 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthio of 1–6 carbon atoms, —SO_3H, —PO_3H, and —CO_2H;
Ar is an aryl radical that may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1–6 carbon atoms, arylalkyl of 7–10 carbon atoms, alkoxy of 1–6 carbon atoms, cyano, halo, hydroxy, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, trifluoroalkoxy of 2–7 carbon atoms, amino, dialkylamino of 1–6 carbon atoms per alkyl group, dialkylaminoalkyl of 3–12 carbon atoms, hydroxyalkyl of 1–6 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthio of 1–6 carbon atoms, —SO_3H, —PO_3H, and —CO_2H; and
m=1–6;
with the proviso that R^1 and R^2 are both not hydrogen, or a pharmaceutically acceptable salt thereof.

5,484,792

1,8-(2H,5H)-ACRIDINEDIONE THERAPEUTIC AGENTS

Cyrus J. Ohnmacht; Robert J. Harris, and Diane A. Trainor, all of Wilmington, Del., assignors to Imperial Chemical Industries, plc, London, England

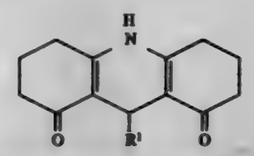
Division of Ser. No. 963,863, Oct. 20, 1992, Pat. No. 5,340,819. This application Feb. 8, 1994, Ser. No. 193,346

Claims priority, application United Kingdom, Jun. 21, 1991, 9122385; Jun. 25, 1992, 9213548

Int. Cl.[5] A61K *31/425*

U.S. Cl. 514—297 **3 Claims**

1. A compound of formula I as follows,



I

or a pharmaceutically acceptable salt thereof, wherein:
R^1 is 1,2,3,4-tetrahydro-6-naphthyl, 1-naphthyl or 2-quinolyl; 2- or 3-thienyl or furyl substituted at the 4- and/or 5-position(s) by a substituent or substituents independently selected from nitro, cyano, halo, (1–4C)alkyl, (1–3C)alkylsulphonyl and 2-thienyl, provided that a 3-thienyl or furyl group may only be substituted at the 5-position.

5,484,793

COMPOUNDS DERIVED FROM 6-AZAINDOLES AS LIGANDS OF THE BENZODIAZEPINE RECEPTOR AND MEDICAMENTS CONTAINING THEM

Robert H. Dodd; Pierre Potier, both of Paris; Xavier Dulay, Versailles; Jean Rossier, and Lia P. De Carvalho, both of Paris, all of, France, assignors to Centre National de la Recherche Scientifique (CNRS), Paris, France

PCT No. PCT/FR92/00480, § 371 Date Nov. 29, 1993, § 102(e) Date Nov. 29, 1993, PCT Pub. No. WO/9221680, PCT Pub. Date Dec. 10, 1992

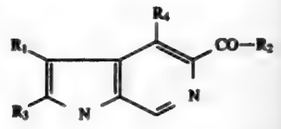
PCT Filed May 29, 1992, Ser. No. 142,489

Claims priority, application France, May 29, 1991, 91 06453

Int. Cl.[6] C07D *471/04;471/06;* A61K *31/44*

U.S. Cl. 514—300 14 Claims

1. A 6-azaindole compound of the formula:



in which:

R_1 represents the hydrogen atom or a group R_5—O—CH_2— in which R_5 corresponds to an alkyl radical or to a group of formula Ar—Z,

in which:

Z is a divalent alkyl or alkenyl radical having from 1 to 5 atoms,

Ar is an optionally substituted phenyl radical,

R_2 is an alkoxy, cycloalkoxy, aryloxy, aralkoxy, N-alkyl-substituted amino, N-cycloalkyl-substituted amino or N-phenyl-substituted amino radical, wherein the aromatic rings are optionally substituted,

R_3 and R_4 independently represent an hydrogen atom or an alkyl radical,

with the exception of the compound where R_1, R_3 and R_4 are an hydrogen atom and R_2 is the N-(2-carboxyphenyl)amino radical, or its pharmacologically acceptable salt.

5,484,794

METHOD FOR TREATING ANXIETY

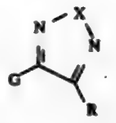
Neil C. Bodick, Indianapolis; Franklin P. Bymaster, Brownsburg; Walter W. Offen, Indianapolis, and Harlan E. Shannon, Carmel, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 9, 1994, Ser. No. 336,589

Int. Cl.[6] A01N *43/90;* A61K *31/44;* C07D *453/02*

U.S. Cl. 514—305 1 Claim

1. A method for treating anxiety in humans comprising administering to a human in need thereof, an antianxiety dose of a compound of Formula I



I

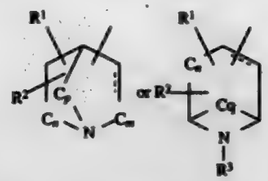
wherein

X is oxygen or sulphur;

R is hydrogen, amino, halogen, —CHO, —NO_2, —OR^4, —SR^4, —SOR^4, —SO_2R^4, C_{3-7}-cycloalkyl, C_{4-8}-(cycloalkylalkyl), -Z-C_{3-7}-cycloalkyl, and -Z-C_{4-8}-(cycloalkylalkyl) wherein R^4 is straight or branched C_{1-15}-alkyl, straight or branched C_{2-15}-alkenyl, straight or branched C_{2-15}-alkynyl, each of which is optionally substituted with one or more halogens, —CF_3, —CN, phenyl or phenoxy wherein phenyl or phenoxy is optionally substituted with halogen, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, —OCF_3, —$CONH_2$ or —$CSNH_2$; or

R is phenyl or benzyloxycarbonyl, each of which is optionally substituted with halogen, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, —OCF_3, —$CONH_2$ or —$CSNH_2$; or R is —OR^5Y, —SR^5Y, —OR^5ZY, —SR^5ZY, —O—R^4—Z—

R^5 or —S—R^4—Z—R^5 wherein Z is oxygen or sulphur, R^5 is straight or branched C_{1-15}-alkynyl, and Y is a 5 or 6 membered heterocyclic group containing one to four N, O or S atom(s) or a combination thereof, which heterocyclic group is optionally substituted at carbon or nitrogen atom(s) with straight or branched C_{1-6}-alkyl, phenyl or benzyl, or which heterocyclic group is optionally fused with a phenyl group; and G is selected from one of the following azabicyclic rings



wherein the thiadiazole or oxadiazole ring can be attached at any carbon atom of the azabicyclic ring; R^1 and R^2 may be present at any position, including the point of attachment of the thiadiazole or oxadiazole ring, and independently are hydrogen, straight or branched C_{1-5}-alkyl, straight or branched C_{2-5} alkenyl, straight or branched C_{2-5}-alkynyl, straight or branched C_{1-10}-alkoxy, straight or branched C_{1-5}-alkyl substituted with —OH, OR^4, halogen, —NH_2 or carboxy; R^3 is H, straight or branched C_{1-5}-alkyl, straight or branched C_{2-5}-alkenyl or straight or branched C_{2-5}-alkynyl; n is 0, 1 or 2; m is 0, 1 or 2; p is 0, 1 or 2; q is 1 or 2; and —is a single or double bond; or

a pharmaceutically acceptable salt thereof.

5,484,795

NAPHTHYL COMPOUNDS, INTERMEDIATES, PROCESSES, COMPOSITIONS, AND METHOD OF INHIBITING RESTENOSIS

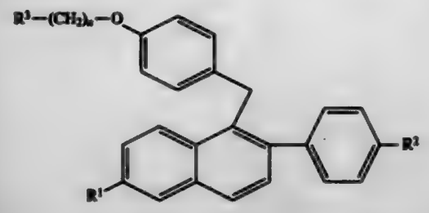
Henry U. Bryant, Indianapolis; George J. Cullinan, Trafalgar; Jeffrey A. Dodge, Indianapolis; Kennan J. Fahey, Indianapolis; Charles D. Jones, Indianapolis; Charles W. Lugar, McCordsville, and Brian S. Muehl, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 309,525, Sep. 20, 1994. This application Apr. 21, 1995, Ser. No. 426,542

Int. Cl.[6] C07D *211/06;211/20;* A61K *31/445;31/40*

U.S. Cl. 514—319 1 Claim

1. A method for inhibiting restenosis comprising administering to a human in need of such treatment an effective amount of a compound of formula I



I

wherein

R^1 is —H, —OH, —O(C_1–C_4 alkyl), —$OCOC_6H_5$, —OCO(C_1–C_6 alkyl), or —OSO_2(C_4–C_6 alkyl);

R^2 is —H, —OH, —O(C_1–C_4 alkyl, —$OCOC_6H_5$, —OCO(C_1–C_6 alkyl), or —OSO_2(C_4–C_6 alkyl);

n is 2 or 3; and

R^3 is 1-piperidinyl, 1-pyrrolidinyl, methyl-1-pyrrolidinyl, dimethyl-1-pyrrolidinyl, 4-morpholino, dimethylamino, diethylamino, or 1-hexamethyleneimino; or a pharmaceutically acceptable salt thereof.

5,484,796

NAPHTHYL COMPOUNDS, INTERMEDIATES, PROCESSES, COMPOSITIONS, AND METHOD OF INHIBITING AORTAL SMOOTH MUSCLE CELL PROLIFERATION

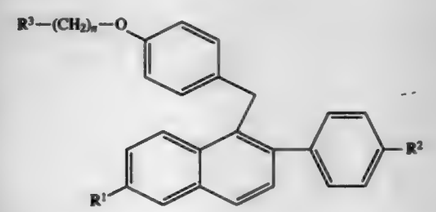
Henry U. Bryant, Indianapolis; George J. Cullinan, Trafalgar; Jeffrey A. Dodge, Indianapolis; Kennan J. Fahey, Indianapolis; Charles D. Jones, Indianapolis; Charles W. Lugar, McCordsville, and Brian S. Muehl, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 309,525, Sep. 20, 1994. This application Apr. 21, 1995, Ser. No. 426,770

Int. Cl.[6] A61K *31/445;* C07D *211/06;211/20*

U.S. Cl. 514—319 1 Claim

1. A method for inhibiting aortal smooth muscle cell proliferation comprising administering to a human in need of such treatment an effective amount of a compound of



I

wherein

R^1 is —H, —OH, —O(C_1–C_4 alkyl), —OCO($_1$–C_6 alkyl), or —OSO_2(C_4–C_6 alkyl);

R^2 is —H, —OH, —O(C_1–C_4 alkyl, —$OCOC_6H_5$, —OCO(C_1–C_6 alkyl, or —OSO_2(C_4–C_6 alkyl);

n is 2 or 3; and

R^3 is 1-piperidinyl, 1-pyrrolidinyl, methyl-1-pyrrolidinyl, dimethyl-1-pyrrolidinyl, 4-moropholino, dimethlyamino, diethylamino, or 1-hexamethyleneimino; or a pharmaceutically acceptable salt thereof.

5,484,797

NAPHTHLY COMPOUNDS, INTERMEDIATES, PROCESSES, COMPOSITIONS, AND METHOD FOR INHIBITING ENDOMETROSIS

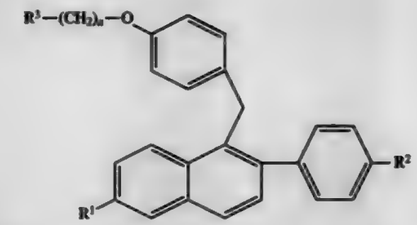
Henry U. Bryant, Indianapolis; George J. Cullinan, Trafalgar; Jeffrey A. Dodge, Indianapolis; Kennan J. Fahey, Indianapolis; Charles D. Jones, Indianapolis; Charles W. Lugar, McCordsville, and Brian S. Muehl, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 309,525, Sep. 20, 1994. This application Apr. 21, 1995, Ser. No. 428,924

Int. Cl.[6] A61K *31/445;* C07D *211/06;211/20*

U.S. Cl. 514—319 1 Claim

1. A method for inhibiting endometriosis comprising administering to a woman in need of such treatment an effective amount of a compound of formula I



I

wherein

R^1 is —H, —OH, —O(C_1–C_4 alkyl), —O—CO—(C_1–C_6 alkyl), —O— CO—Ar in which Ar is optionally substituted phenyl, or —O—SO_2—(C_4–C_6 alkyl);

R^2 is —H, —OH, —O(C_1–C_4 alkyl), —O—CO—(C_1–C_6 alkyl), —O— CO—Ar in which Ar is optionally substituted phenyl, —O—SO_2—(C_4–C_6 alkyl), chloro or bromo;

R^3 is —H or —OH;

n is 2 or 3;

R^3 and R^4 each are independently C_1–C_4 alkyl, or combine to form 1-piperidinyl, 1-pyrrolidinyl, methyl-1-pyrrolidinyl, dimethyl-1-pyrrolidinyl, 4-morpholino, or 1-hexamethyleneimino;

or a pharmaceutically acceptable salt thereof.

5,484,798

BENZOTHIOPENE COMPOUNDS, COMPOSITIONS, AND METHOD OF INHIBITING RESTENOSIS

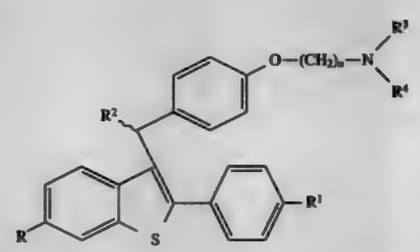
Henry U. Bryant, Indianapolis; George J. Cullinan, Trafalgar; Jeffrey A. Dodge, Indianapolis; Kennan J. Fahey, Indianapolis, and Charles D. Jones, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 309,301, Sep. 20, 1994. This application Apr. 19, 1995, Ser. No. 424,989

Int. Cl.[6] A61K *31/445;31/40;* C07D *409/12*

U.S. Cl. 514—324 1 Claim

1. A method for inhibiting restenosis comprising administering to a human in need of such treatment an effective amount of a compound of formula I



I

wherein

R is —H, —OH, —O(C_1–C_4 alkyl), —O—CO—(C_1–C_6 alkyl), —O— CO—Ar in which Ar is optionally substituted phenyl, or —O—SO_2—(C_4–C_6 alkyl);

R^1 is —H, —OH, —O(C_1–C_4 alkyl), —O—CO—(C_1–C_6 alkyl), —O— CO—Ar in which Ar is optionally substituted phenyl, —O—SO_2—(C_4–C_6 alkyl), chloro or bromo;

R^2 is —H or —OH;

n is 2 or 3;

R^3 and R^4 each are independently C_1–C_4 alkyl, or combine to form 1-piperidinyl, 1-pyrrolidinyl, methyl-1-pyrrolidinyl, dimethyl-1-pyrrolidinyl, 4-morpholino, or 1-hexamethyleneimino;

or a pharmaceutically acceptable salt thereof.

5,484,799

ANTIFUNGAL DORRIGOCIN DERIVATIVES

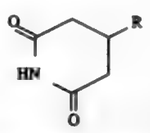
Jill E. Hochlowski, Green Oaks; Marianna Jackson, Waukegan, both of Ill.; Sunil K. Kadam, Kenosha, Wis.; James P. Karwowski, Mundelein, and James B. McAlpine, Libertyville, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 9, 1993, Ser. No. 164,234

Int. Cl.[6] A61K *31/44;31/45;* **C07D** *211/40;211/76*

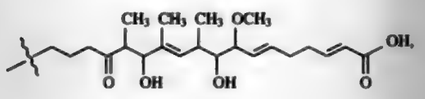
U.S. Cl. 514—345 **5 Claims**

1. A compound having the formula



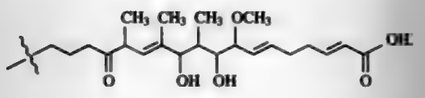
(I)

or a pharmaceutically acceptable salt, ester, amide or pro-drug thereof, wherein R is selected from the group consisting of



(Ia)

and



(Ib)

5,484,800

LIPID-BASED LIQUID MEDICINAL COMPOSITION

Robert G. Blank, Hammonton; Annabelle Mogavero, Marlton, and Alexander Seabrook, Sicklerville, all of N.J., assignors to American Home Products Corporation, Madison, N.J.

Filed Aug. 30, 1994, Ser. No. 300,013

Int. Cl.[6] A61K *31/34;31/425*

U.S. Cl. 514—365 **20 Claims**

1. An orally ingestible liquid composition for suspending therein at least one orally administrable pharmaceutically active compound consisting essentially of

(a) about 95 to about 99 parts by weight of at least one triglyceride or propylene glycol ester of a medium chain length alkanoic acid wherein said acid has between 8 and 10 carbon atoms in the chain or at least one acetylated monoglyceride of at least one medium chain length alkanoic acid having a hydroxyl value of 0– 15, an acetylation level of at least 95% and a melting point between about 4° and about 12° C., and

(b) about 1 to about 5 parts by weight of colloidal silicon dioxide to a total of between about 50 and about 90 parts by weight.

5,484,801

PHARMACEUTICAL COMPOSITION FOR INHIBITING HIV PROTEASE

Laman A. Al-Razzak, Libertyville; Kennan C. Marsh, Lake Forest; Lourdes P. Manning, Grayslake, and Dilip Kaul, Waukegan, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

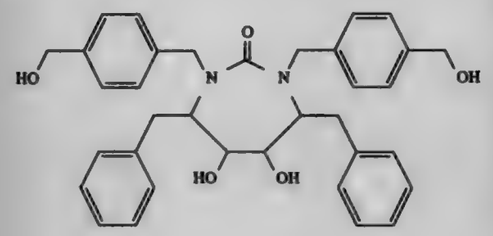
Continuation of Ser. No. 283,239, Jul. 29, 1994, abandoned, which is a continuation-in-part of Ser. No. 189,021, Jan. 28, 1994, abandoned. This application May 12, 1995, Ser. No. 440,277

Int. Cl.[6] C07D *277/30;* **A61K** *31/425;* **A01N** *43/78*

U.S. Cl. 514—365 **28 Claims**

1. A pharmaceutical composition comprising a solution of an HIV protease inhibiting compound in a pharmaceutically acceptable organic solvent comprising a mixture of (1) (a) a solvent selected from propylene glycol and polyethylene glycol or (b) a solvent selected from polyoxyethyleneglycerol triricinoleate, polyethylene glycol 40 hydrogenated castor oil, fractionated coconut oil, polyoxyethylene (20) sorbitan monooleate and 2-(2-ethoxyethoxy)ethanol or (c) a mixture thereof and (2) ethanol or propylene glycol wherein the HIV protease Inhibiting compound is selected from the group consisting of:

N-(2(R)-hydroxy-1(S)-Indanyl)-2(R)-phenylmethyl-4(S)-hydroxy-5-(1-(4-(3-pyridylmethyl)-2(S)-N'-(t-butylcarboxamido)-piperazinyl))-pentaneamide: N-tert-butyl-decahydro-2-(2(R)-hydroxy-4-phenyl-3(S)-((N-(2-quinolylcarbonyl)-L-asparaginyl)amino] butyl)-(4aS,8aS)-isoquinoline-3(S)-carboxamide; (1S-(1R*(R*),2S*))-N[1](3-((((1,1-dimethylethyl)amino)carbonyl)(2-methylpropyl)amino)-2hydroxy-1-(phenylmethyl)propyl)-2-((2-quinolinylcarbonyl)amino)-butanediamide; and



5,484,802

FUNGICIDAL ALPHA-(DIOXOIMIDAZOLIDINE)ACETANILIDE COMPOUNDS

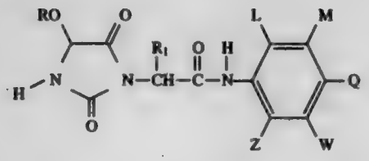
Bomi P. Patel, 1407 Orchard Way, Rosemont, Pa. 19010, and Jerome M. Lavanish, 293 Forrest Rd., Yardley, Pa. 19067

Filed Mar. 29, 1995, Ser. No. 412,671

Int. Cl.[6] A01N *43/50;* **C07D** *233/02*

U.S. Cl. 514—390 **20 Claims**

1. A compound having the formula



wherein

R is hydrogen, C_1–C_8alkyl, C_1–C_4haloalkyl or benzyl;

R_1 is hydrogen, C_1–C_8alkyl, C_3–C_6cycloalkyl, phenyl, benzyl or phenethyl;

L, M, Q, W and Z are each independently hydrogen, C_1–C_6 alkyl, C_1–C_4alkoxyalkyl, C_1–C_6haloalkyl, C_1–C_4 alkoxy, halogen, NO_2, CN, CO_2R_3, phenyl or phenoxy with the proviso that no more than 3 of L, M, Q, W and Z may be phenyl or phenoxy;

R_3 is C_1–C_4 alkyl; and

when R_1 is a substituent other than hydrogen, the optical isomers thereof.

5,484,803

TRANSCUTANEOUS IN VIVO ACTIVATION OF PHOTOSENSITIVE AGENTS IN BLOOD

Anna M. Richter, Vancouver, Canada, assignor to Quadra Logic Technologies Inc., Vancouver, Canada

Continuation of Ser. No. 948,113, Sep. 21, 1992, abandoned. This application Feb. 2, 1995, Ser. No. 384,440

Int. Cl.[6] A61K *31/41*

U.S. Cl. 514—410 **9 Claims**

1. A method to destroy or impair target cells in the bloodstream of an animal, which method comprises:

(a) administering to said animal a photosensitizing agent followed by

(b) irradiating at least a portion of said animal with light of a wavelength in the range of about 600 to 900 nm, wherein said irradiating is conducted transcutaneously;

and wherein the concentration of photosensitizing agent in the bloodstream of the animal, the post-injection time between said administering step (a) and said irradiating step (b), the intensity of the light, and the duration of said irradiating step (b) are such that the target cells in the bloodstream are selectively impaired or destroyed and skin photosensitivity is substantially avoided;

and wherein the post-injection time varies between about 30 minutes and three hours.

5,484,804

PERHYDROISOINDOLE DERIVATIVES AS ANTAGONISTS OF SUBSTANCE P

Daniel Achard, Thiais; Serge Grisoni, Choisy-le-Roi; Jean-Luc Malleron, Marcoussis; Jean-Francois Peyronel, Palaiseau, and Michel Tabart, Paris, all of, France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PTC/FR93/00352, § 371 Date Oct. 11, 1994, § 102(e) Date Oct. 11, 1994, PCT Pub. No. WO93/21155, PCT Pub. Date Oct. 28, 1993

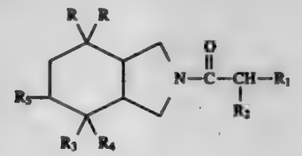
PCT Filed Apr. 8, 1993, Ser. No. 313,121

Claims priority, application France, Apr. 10, 1992, 9204390

Int. Cl.[6] A61K *31/40;* **C07D** *401/06*

U.S. Cl. 514—414 **5 Claims**

1. A perhydroisoindole derivative of formula:



in which

the symbols R are identical and represent phenyl radicals which are optionally substituted by a halogen atom or by a methyl radical in position 2 or 3,

the symbol R_1 represents a phenyl radical which is optionally substituted by: (1) one or more halogen atoms, (2) hydroxyl; (3) an alkyl radical, which optionally is substituted by halogen atoms or amino, alkylamino or dialkylamino radicals; (4) an alkyloxy or (5) alkylthio radical, which optionally is substituted by hydroxyl radicals, amino radicals, alkylamino radicals or dialkylamino radicals which optionally are substituted by phenyl, hydroxyl, amino, or dialkylamino radicals, the alkyl parts of which, with the nitrogen atom to which they are attached, form a heterocycle having 5 to 6 chain members which may contain another heteroatom selected from oxygen, sulphur or nitrogen and optionally substituted by an alkyl, hydroxyl or hydroxyalkyl radical; or the phenyl radical is substituted by amino radicals, alkylamino radicals or dialkylamino radicals, the alkyl parts of which, with the nitrogen atom to which they are attached, optionally form a heterocycle as defined above, or R_1 is selected from a cyclohexadienyl radical, naphthyl radical, indenyl radical or mono- or polycyclic, saturated or unsaturated, heterocyclyl radical containing 5 to 9 carbon atoms and one or more heteroatoms selected from oxygen, nitrogen or sulphur, which is optionally substituted by a halogen atom or by an alkyl or alkyloxy radical,

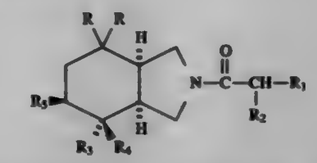
the symbol R_2 represents hydrogen, halogen, hydroxyl, alkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, alkyloxy, alkylthio, acyloxy, carboxyl, alkyloxycarbonyl, dialkylaminoalkyloxy-carbonyl, benzyloxycarbonyl, amino or acylamino,

the symbol R_3 represents a phenyl radical which is optionally substituted in position 2 by an alkyl or alkyloxy radical containing 1 or 2 carbon atoms and

the symbol R_4 represents a fluorine atom or a hydroxyl radical,

the symbol R_5 represents a hydrogen atom, hydroxyl radical or forms a bond with R_4 provided that R_4 is not fluorine when R_5 is hydroxy,

said radicals being in the racemic form, in its stereoisomer forms having the structure:



in its (R) or (S) forms on the —CHR_1R_2 chain, or in the form of the mixture of several of these forms, and its salts, where these exist.

5,484,805

HETEROCYCLENE DERIVATIVES

Thomas G. C. Bird, Witry-Les-Reims, France, assignor to Imperial Chemical Industries PLC, London, England, and ICI Pharma, Cergy Cedex, France

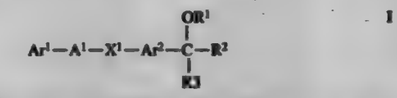
Division of Ser. No. 26,019, Mar. 4, 1993, Pat. No. 5,359,063, which is a division of Ser. No. 717,505, Jun. 19, 1991, Pat. No. 5,217,978. This application Jul. 8, 1994, Ser. No. 271,912

Claims priority, application France, Jun. 21, 1990, 90 401758; Jan. 15, 1991, 91 400077

Int. Cl.[6] A61K *31/40;* **C07D** *207/36;207/42*

U.S. Cl. 514—422 **6 Claims**

1. A heterocyclene compound of the formula I



(I)

wherein Ar^1 is phenyl or naphthyl optionally having up to five substituents selected from amino, halogeno, hydroxy, cyano, oxo, thioxo, (1–4C) alkyl, (1–4C) alkoxy, (1–4C) alkylthio, (1–4C) alkylsulphinyl, (1–4C) alkylsulphonyl, (1–4C) alkylamino, di-[(1–4C)alkyl]amino, (2–4C)alkanoyl, fluoro-(1–4C)alkyl, cyano-(1–4C)alkyl, phenyl, benzoyl and phenyl-(1–4C)alkyl, and wherein said phenyl, benzoyl or phenyl-(1–4C)alkyl substituent optionally has a substituent selected from halogeno, (1–4C)alkyl and (1–4C)alkoxy;

wherein A^1 is a direct link to X^1 or is (1–3C)alkylene;

wherein X^1 is oxy, thio, sulphinyl, sulphonyl or imino;

Ar^2 is a 5-membered heterocyclene moiety having one heteroatom selected from nitrogen, oxygen and sulphur, optionally having one substituent selected from halogeno, (1–4C)alkyl and (1–4C)alkoxy;

wherein R^1 is (1–4C)alkyl, (3–4C)alkenyl or (3–4C)alkynyl; and

wherein R^2 and R^3 together form a group of the formula $—A^2—X^2—A^3—$ which, together with the carbon atom to which A^2 and A^3 are attached, defines a ring having 5 to 7 ring atoms, wherein A^2 and A^3, which are the same or different, each is (1–3C)alkylene and X^2 is oxy, thio, sulphinyl or sulphonyl, and which ring optionally has one, two or three substituents, which are the same or different, selected from hydroxy, (1–4C)alkyl and (1–4C)alkoxy;

or a pharmaceutically-acceptable salt thereof.

5,484,806

PHOSPHOLIPASE A_2 INHIBITORS

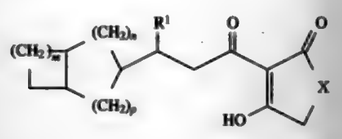
Dominic Mobilio, Franklin Park, N.J., assignor to American Home Products Corporation, Madison, N.J.

Division of Ser. No. 313,978, Sep. 28, 1994, Pat. No. 5,428,058. This application May 8, 1995, Ser. No. 439,061

Int. Cl.[6] A61K *31/395*; C07D *207/22*

U.S. Cl. 514—423 **4 Claims**

1. A compound having the formula



wherein

R^1 is hydrogen, alkyl of 1–10 carbon atoms, cycloalkyl of 1–10 carbon atoms, arylalkyl of 4–10 carbon atoms, $—(CH_2)_rCH═CH_2$, $—(CH_2)_sOY$, $—(CH_2)_tCH(OZ)CH_3$, or Ar;

X is NR^2;

Y and Z are each, independently, hydrogen, alkyl of 1–6 carbon atoms, or $—COR^3$;

R^2 and R^3 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, or arylalkyl of 4–10 carbon atoms;

Ar is an aryl radical that may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1–6 carbon atoms, arylalkyl of 7–10 carbon atoms, alkoxy of 1–6 carbon atoms, cyano, halo, hydroxy, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, trifluoroalkoxy of 2–7 carbon atoms, amino, dialkylamino of 1–6 carbon atoms per alkyl group, dialkylaminoalkyl of 1–6 carbon atoms per alkyl group, hydroxyalkyl of 1–6 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthio of 1–6 carbon atoms, $—SO_3H$, $—PO_3H$, and $—CO_2H$;

m=1–5;

n=0–1;

p=1–9;

r=0–6;

s=2–6; and

t=0–6

or a pharmaceutically acceptable salt thereof.

5,484,907

HALOALKYLTHIO, -SULFINYL AND -SULFONYL ARYLPYRROLE INSECTICIDAL AND ACARICIDAL AGENTS

Keith D. Barnes, 227 Canterbury Ct., Newtown, Pa. 18940; Victor M. Kamhi, 2154 Whitehorse-Hamilton Square Rd., Hamilton Square, N.J. 08690, and Robert E. Diehl, 1949 Berrel Ct., Yardley, Pa. 19067

Division of Ser. No. 135,508, Oct. 12, 1993, which is a division of Ser. No. 803,289, Dec. 4, 1991, Pat. No. 5,306,827. This application May 5, 1995, Ser. No. 435,905

Int. Cl.[6] A01N *43/36*

U.S. Cl. 514—424 **11 Claims**

1. A method for controlling insects and acarina which comprises contacting said insects and acarina, their breeding grounds, food supply or habitat with an insecticidally or acaricidally effective amount of a compound having the structural formula



wherein

W is $S(O)_nCF_2R_1$;

R_1 is H, F, Cl, Br, CF_2H, CCl_2H, CClFH, CF_3 or CCl_3;

n is an integer of 0, 1 or 2;

X is phenyl substituted with one to three halogen, C_1–C_3 alkyl, C_1–C_3 alkoxy, C_1–C_3 alkylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, CN, NO_2, CF_3, R_2CF_2B, R_3CO or NR_4R_5 groups;

B is $S(O)_n$ or 0;

R_2 is H, F, CF_2H, CClFH or CF_3;

R_3 is H or C_1–C_3 alkyl, C_1–C_3 alkoxy or NR_4R_5;

R_4 is H or C_1–C_3 alkyl;

R_5 is H or C_1–C_3 alkyl or R_6CO;

R_6 is H or C_1–C_3 alkyl;

Y is H, halogen, CF_3, CN, NO_2, $S(O)_nCF_2R_1$ or phenyl substituted with one to three halogen, C_1–C_3 alkyl, C_1–C_3 alkoxy, C_1–C_3 alkylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, CN, NO_2, CF_3, R_2CF_2B, R_3CO or NR_4R_5 groups;

Z is H, halogen or CF_3;

R is H,

or C_1–C_6 alkyl optionally substituted with one to three halogen atoms,

one cyano,

one or two C_1–C_4 alkoxy groups optionally substituted with one to three halogen atoms, or

one phenylcarbonyloxy group optionally substituted with one to three halogen atoms, one to three C_1–C_4 alkyl groups or one to three C_1–C_4 alkoxy groups;

R_8 is hydrogen or C_1–C_4 alkyl;

R_9 is C_1–C_6 alkyl optionally substituted with one to three halogen atoms;

provided that when R is H or C_1–C_6 alkyl, X is attached to a carbon atom adjacent to the pyrrole ring nitrogen atom; and when Y is substituted phenyl, X and Y cannot be attached to the pyrrole ring at positions two and three.

5,484,808

METHODS OF INHIBITING CELL-CELL ADHESION

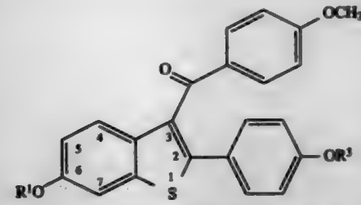
Brian W. Grinnell, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 9, 1995, Ser. No. 385,934

Int. Cl.[6] A61K *31/38*

U.S. Cl. 514—443 **3 Claims**

1. A method of inhibiting cell-cell adhesion comprising administering to a human in need thereof an effective amount of a compound having the formula



(I)

wherein R^1 and R^3 are independently hydrogen,



wherein Ar is optionally substituted phenyl;

R^2 is selected from the group consisting of pyrrolidine, hexamethyleneimino, and piperidino; or a pharmaceutically acceptable salt of solvate thereof.

5,484,809

PRODRUGS FOR ORAL ADMINISTRATION CONTAINING TAXOL OR SUBSTITUTED TAXOL COVALENTLY BOUND TO A PHOSPHOLIPID

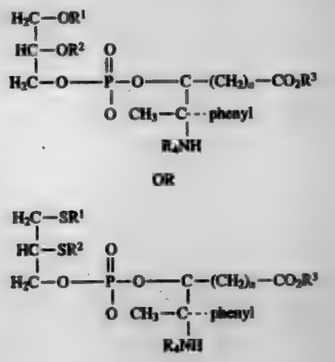
Karl Y. Hostetler, Del Mar, and Nagarajan C. Sridhar, Simi Valley, both of Calif., assignors to Vestar, Inc., San Dimas, Calif.

Division of Ser. No. 991,166, Dec. 16, 1992, Pat. No. 5,411,947, which is a continuation-in-part of Ser. No. 440,898, Nov. 22, 1989, Pat. No. 5,194,654, and a continuation-in-part of Ser. No. 373,088, Jun. 28, 1989, Pat. No. 5,223,263, and a continuation-in-part of Ser. No. 932,231, Aug. 19, 1992, abandoned. This application Dec. 14, 1994, Ser. No. 355,510

Int. Cl.[6] A01N *43/02*;*43/04*; C07D *307/00*;*305/00*

U.S. Cl. 514—449 **6 Claims**

1. An antineoplastic prodrug, comprising taxol, or a substituted taxol, covalently bound to a phospholipid compound, wherein said prodrug has the formula:



OR

5,484,810

TISSUE PROTECTIVE TOCOPHEROL ANALOGS

J. Martin Grisar, Wissembourg; Margaret A. Petty, Strasbourg, both of, France, and Frank Bolkenius, Kehl, Germany, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

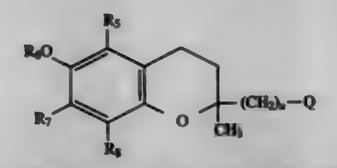
Continuation of Ser. No. 260,496, Jun. 15, 1994, abandoned, which is a continuation of Ser. No. 988,634, Dec. 10, 1992, abandoned. This application Feb. 28, 1995, Ser. No. 396,352

Claims priority, application European Pat. Off., Jan. 2, 1992, 92400006

Int. Cl.[6] A61K *31/35*;*31/38*; C07D *311/58*;*409/04*

U.S. Cl. 514—456 **16 Claims**

1. A compound of the formula



I

the (R) or (S) enantiomer or racemic mixture thereof, or the pharmaceutically acceptable salt thereof wherein

Q is $S^{\oplus}R_1R_2.X^{\ominus}$,

X is a halide or $OS(O)_2R_3$, with R_3 being C_{1-6} alkyl, CF_3, aryl or aralkyl,

R_1 is C_{1-6} alkyl, phenyl, benzyl or phenethyl,

R_2 is C_{1-6} alkyl, or R_1 and R_2 are a C_{4-} to C_6 alkylene which, together with the sulfur atom to which they are attached, form a 5-, 6- or 7-membered ring,

R_5 is H or C_{1-6} alkyl,

R_6 is H or $—C(O)R$, R being H or C_{1-9} alkyl,

R_7 is H or C_{1-6} alkyl,

R_8 is H or C_{1-6} alkyl and n is an integer of 1 to 6.

5,484,811

USE OF ETHYNYL ALANINE AMINO DIOL COMPOUNDS FOR TREATMENT OF OPHTHALMIC DISORDERS

Gunnar J. Hanson, Skokie, and John S. Burns, Winnetka, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

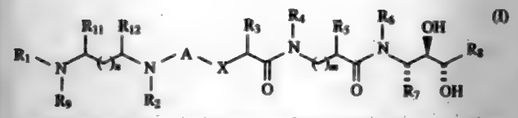
PCT No. PCT/US92/08842, § 371 Date Feb. 28, 1994, § 102(e) Date Feb. 28, 1994, PCT Pub. No. WO93/09087, PCT Pub. Date May 13, 1993

Continuation-in-part of Ser. No. 783,955, Oct. 29, 1991, Pat. No. 5,227,401. This PCT application Oct. 22, 1992, Ser. No. 199,211

Int. Cl.[6] A61K *31/27*

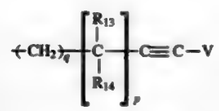
U.S. Cl. 514—489 **12 Claims**

1. A therapeutic method for treating an ophthalmic disorder, said method comprising administering to a subject susceptible to or afflicted with such disorder a therapeutically-effective amount of an active compound of Formula I:



(I)

wherein A is selected from methylene, CO, SO and SO_2; wherein X is selected from oxygen atom, methylene and $>NR_{10}$ with R_{10} selected from hydrido alkyl and benzyl; wherein each of R_1 and R_9 is a group independently selected from hydrido, alkyl, cycloalkyl, alkoxyacyl, haloalkyl, alkoxycarbonyl, benzyloxycarbonyl, lower-alkanoyl, haloalkylacyl, phenyl, benzyl, naphthyl, and naphthylmethyl, any one of which groups having a substitutable position may be optionally substituted with one or more radicals selected from alkyl, alkoxy, alkenyl, alkynyl, halo, haloalkyl, cyano and phenyl, and wherein the nitrogen atom to which R_1 and R_9 are attached may be combined with oxygen to form an N-oxide; wherein R_2 is selected from hydrido, alkyl, dialkylaminoalkyl, alkylacylaminoalkyl, benzyl and cycloalkyl; wherein R_3 is selected from alkyl, cycloalkylalkyl, acylaminoalkyl, phenylalkyl, naphthylmethyl, aryl, heterocyclicalkyl and heterocycliccycloalkyl, wherein the cyclic portion of any of said phenylalkyl, naphthylmethyl, aryl, heterocyclicalkyl and heterocycliccycloalkyl groups may be substituted by one or more radicals selected from halo, hydroxy, alkoxy and alkyl; wherein each of R_4 and R_6 is independently selected from hydrido, alkyl, benzyl and cycloalkyl; wherein R_5 is selected from



wherein V is selected from hydrido, alkyl, cycloalkyl, haloalkyl, benzyl and phenyl; wherein each of R_{13} and R_{14} is a radical independently selected from hydrido, alkyl, alkenyl, alkynyl, cycloalkyl, phenyl, heterocyclic, heterocyclicalkyl and heterocycliccycloalkyl; wherein R_7 is selected from substituted or unsubstituted alkyl, cycloalkyl, phenyl, cycloalkylalkyl and phenylalkyl, any one of which may be substituted with one or more groups selected from alkyl, hydroxy, alkoxy, halo, haloalkyl, alkenyl, alkynyl and cyano; wherein R_8 is selected from hydrido, alkyl, haloalkyl, alkylcycloalkyl, cycloalkyl, cycloalkylalkyl, hydroxyalkyl, alkenyl, alkylcycloalkenyl and alkoxycarbonyl; wherein each of R_{11} and R_{12} is independently selected from hydrido, alkyl, haloalkyl, dialkylamino and phenyl; and wherein m is zero or one; wherein n is a number selected from zero through five; wherein p is a number selected from zero through five; and wherein q is a number selected from zero through five; or a pharmaceutically-acceptable salt thereof.

5,484,812

PROPARGYL GLYCINE AMINO USE OF PROPARGYL DIOL COMPOUNDS FOR TREATMENT OF OPHTHALMIC DISORDERS

Gunnar J. Hanson, Skokie, and John S. Baran, Winnetka, both of Ill., assignors to G.D. Searle & Co., Chicago, Ill.

PCT No. PCT/US92/08840, § 371 Date Feb. 28, 1994, § 102(e) Date Feb. 28, 1994

Continuation-in-part of Ser. No. 784,272, Oct. 29, 1991, Pat. No. 5,223,535. This PCT application Oct. 22, 1992, Ser. No. 199,237

Int. Cl.[6] A61K *31/27*

U.S. Cl. 514—489 **12 Claims**

1. A therapeutic method for treating an ophthalmic disorder, said method comprising administering to a subject susceptible to or afflicted with such disorder a therapeutically-effective amount of an active compound of Formula I:

(I)

wherein A is selected from methylene, CO, SO and SO_2; wherein X is selected from oxygen atom, methylene and



with R_{10} selected from hydrido, alkyl and benzyl; wherein each of R_1 and R_9 is a group independently selected from hydrido, alkyl, cycloalkyl, alkoxyacyl, haloalkyl, alkoxycarbonyl, benzyloxycarbonyl, loweralkanoyl, haloalkylacyl, phenyl, benzyl, naphthyl, and naphthylmethyl, any one of which groups having a substitutable position may be optionally substituted with one or more radicals selected from alkyl, alkoxy, alkenyl, alkynyl, halo, haloalkyl, cyano and phenyl, and wherein the nitrogen atom to which R_1 and R_9 are attached may be combined with oxygen to form an N-oxide; wherein R_2 is selected from hydrido, alkyl, dialkylaminoalkyl, alkylacylaminoalkyl, benzyl and cycloalkyl; wherein R_3 is selected from alkyl, cycloalkylalkyl, acylaminoalkyl, phenylalkyl, naphthylmethyl, aryl, heterocyclicalkyl and heterocycliccycloalkyl, wherein the cyclic portion of any of said phenylalkyl, naphthylmethyl, aryl, heterocyclicalkyl and heterocycliccycloalkyl groups may be substituted by one or more radicals selected from halo, hydroxy, alkoxy and alkyl; wherein each of R_4 and R_6 is independently selected from hydrido, alkyl, benzyl and cycloalkyl; wherein each of R_5 and R_8 is independently selected from



wherein V is selected from hydrido, alkyl, cycloalkyl, haloalkyl, benzyl and phenyl; wherein each of R_{13} and R_{14} is a radical independently selected from hydrido, alkyl, alkenyl, alkynyl, cycloalbyl, phenyl, heterocyclic, heterocyclicalkyl and heterocycliccycloalkyl; wherein R_7 is selected from substituted or unsubstituted alkyl, cycloalkyl, phenyl, cycloalkylalkyl and phenylalkyl, any one of which may be substituted with one or more groups selected from alkyl, hydroxy, alkoxy, halo, haloalkyl, alkenyl, alkynyl and cyano; wherein each of R_{11} and R_{12} is independently selected from hydrido, alkyl, haloalkyl, dialkylamino and phenyl; and wherein m is zero or one; wherein n is a number selected from zero through five; wherein p is a number selected from zero through five; and wherein q is a number selected from zero through five; or a pharmaceutically-acceptable salt thereof.

5,484,813

Patent Not Issued For This Number

5,484,814

NMDA ANTAGONISTS

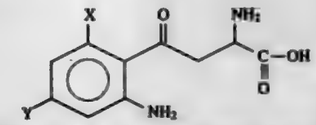
Michael G. Palfreyman, Cincinnati; Ian Alexander McDonald, Loveland; Francesco G. Salituro, Fairfield, all of Ohio, and Robert Schwarcz, Baltimore, Md., assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 57,195, May 3, 1993, abandoned, which is a continuation of Ser. No. 827,188, Feb. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 662,670, Feb. 28, 1991, abandoned. This application Dec. 10, 1993, Ser. No. 165,144

Int. Cl.[6] C07C *229/40*; A61K *31/195*

U.S. Cl. 514—564 **11 Claims**

3. A method for antagonizing the effects of excitatory amino acids upon the NMDA receptor complex comprising administering to a patient in need thereof, an antagonistic amount of a compound of the formula:



(Ib)

or a pharmaceutically acceptable salt thereof, in which X and Y are each independently represented by Cl, Br, F, CH_3 or CH_2CH_3.

5,484,815

PROCESS FOR PREPARATION OF EXPANDED THERMOPLASTIC MICROSPHERES

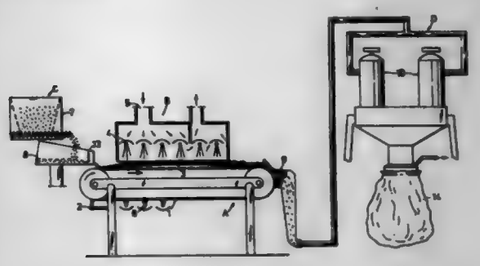
Jörgen Petersen, Sundsvall, and Lars-Olov Svedberg, Kvissleby, both of, Sweden, assignors to Casco Nobel AB, Stockholm, Sweden

Continuation of Ser. No. 665,929, Mar. 5, 1991, abandoned, which is a continuation of Ser. No. 369,773, Jun. 22, 1989, abandoned. This application Mar. 28, 1994, Ser. No. 218,232

Claims priority, application Sweden, Jun. 23, 1988, 8802367; Feb. 16, 1989, 8900541

Int. Cl.[6] C08J *9/22*

U.S. Cl. 521—56 **12 Claims**



1. A method of producing expanded thermoplastic microspheres comprising:

(a) modifying the surface characteristics of unexpanded microspheres having a particle size within the range of from 3 to 100 μm, said modifying comprising drying said unexpanded microspheres under agitation to a dry solids content exceeding 98.8% by weight to provide dried unexpanded microspheres having modified surface characteristics sufficient to avoid agglomeration of expanded microspheres;

(b) isolating said dried unexpanded microspheres; and

(c) heating said dried unexpanded microspheres in a step separate from the drying step in (a) to produce free-flowing, expanded thermoplastic microspheres having a content of agglomerate of less than about 1% by weight as determined by wet screening on a 100 μm screen.

5,484,816

EXTERNAL SKIN TREATMENT COMPOSITION

Takashi Yanagida, and Chihiko Sakamoto, both of Yokohama, Japan, assignors to Shiseido Company, Ltd., Tokyo, Japan

PCT No. PCT/JP93/00969, § 371 Date Mar. 10, 1994, § 102(e) Date Mar. 10, 1994, PCT Pub. No. WO94/01074, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 13, 1993, Ser. No. 284,286

Claims priority, application Japan, Jul. 13, 1992, 4-227725; Jul. 13, 1992, 4-227727; Jul. 13, 1992, 4-227728; Jul. 13, 1992, 4-227729; Jul. 13, 1992, 4-227730; Jul. 13, 1992, 4-227731; Jul. 13, 1992, 4-227732; Jul. 13, 1992, 4-227733; Jul. 13, 1992, 4-227734; Jul. 13, 1992, 4-227735; Jul. 13, 1992, 4-227736; Jul. 13, 1992, 4-227737; Jul. 13, 1992, 4-227738; Jul. 13, 1992, 4-227739

Int. Cl.[6] A61K *7/00*; *7/40*; *7/48*

U.S. Cl. 514—725 **12 Claims**

1. An external skin treatment composition comprising (I) vitamin A and (II) at least one stabilizer selected from the group consisting of (1) chelating agents and polysaccharides, (2) oil components having an iodine value of 70 or more, (3) polyethylene glycols and/or polypropylene glycols, (4) hydroxy carboxylates, (5) neutral amino acids, (6) at least one compound selected from the group consisting of basic amino acids and salts thereof, (7) at least one compound selected from the group consisting of acidic amino acids and salts thereof, (8) at least one polar oil selected from the group consisting of pentaerythritol fatty acid esters and trimethylolpropane fatty acid esters, and (9) at least one water-swellable clay mineral.

5,484,817

POLYOXYALKYLENE POLYETHER MONOOL, POLYURETHANE FOAM ADDITIVE

Jimmy L. Patterson, New Boston, Mich., assignor to BASF Corporation, Mt. Olive, N.J.

Division of Ser. No. 427,016, Apr. 24, 1995, Pat. No. 5,464,562. This application Aug. 3, 1995, Ser. No. 510,959

Int. Cl.[6] C08G *18/34*

U.S. Cl. 521—116 **17 Claims**

1. A method of making a rigid closed cell polyisocyanate based foam comprising reacting an organic aromatic polyisocyanate and a polyol composition in the presence of a C_4-C_7 aliphatic or cycloaliphatic hydrocarbon blowing agent, said polyol composition comprising:

a) a compound having polyester linkages;

b) a polyoxyalkylene polyether monool initiated with a C_8-C_{24} fatty hydrocarbon having one alkylene oxide active hydrogen atom.

5,484,818

ORGANIC AEROGELS

Rik De Vos, Rotselaar, and Guy L. J. G. Biesmans, Everberg, both of, Belgium, assignors to Imperial Chemical Industries PLC, United Kingdom

Continuation-in-part of Ser. No. 129,297, Sep. 29, 1993, abandoned. This application Jul. 22, 1994, Ser. No. 279,364

Claims priority, application United Kingdom, Jul. 22, 1993, 9315198; Sep. 21, 1993, 9319451

Int. Cl.[6] C08G *18/00*

U.S. Cl. 521—123 **18 Claims**

1. Polyisocyanate based organic aerogel having pore sizes of less than or equal to 100 nm, wherein said aerogel is selected from the group consisting of polyurethane aerogels, polyurea aerogels, polyisocyanurate aerogels, polyisocyanurate/polyurethane aerogels, polyallophanate aerogels, polybidentate aerogels and polybiuret aerogels.



5,484,819
PROCESS FOR PREPARING POLYAMINES FOR LIGHTER COLOR POLYSOCYANATE BASED FOAM
Jeffrey S. Bolton; Ramon Kalyanaraman, both of Wheeling; Steven L. Schilling, Glen Dale, all of W. Va., and Clarence D. Blue, Dormagen, Germany, assignors to Bayer Corporation, Pittsburgh, Pa.
Division of Ser. No. 805,407, Dec. 10, 1991, Pat. No. 5,386,059. This application Oct. 13, 1994, Ser. No. 322,815
Int. Cl.[6] C08G *18/70*
U.S. Cl. 521—155 2 Claims

1. A process for preparing a light colored foam comprising reacting

(a) a polyisocyanate which has been produced by

(1) phosgenating a polyamine which polyamine has been produced by

(A) reacting (i) aniline with (ii) formaldehyde. in the presence of (iii) an acid catalyst,

(B) neutralizing the reaction product of (A) with a base, and

(C) acidifying the product of (B)

with

(b) an isocyanate reactive compound in the presence of

(c) a blowing agent.

5,484,820
POLYURETHANE FOAM FOR PACKAGING APPLICATIONS
Henri L. S. A. Mispreuve; Simon Waddington, both of Prangins, and Ulrich Tribelhorn, Ebikon, all of, Switzerland, assignors to The Dow Chemical Company, Midland, Mich.
Filed Aug. 5, 1994, Ser. No. 286,293
Int. Cl.[6] C08G *18/06;18/08*
U.S. Cl. 521—174 12 Claims

1. A process for preparing a cellular polyurethane polymer having an open or interconnecting cellular structure, an overall density of from about 20 to about 40 kg/m^3 and, based on a thickness of 75 mm, a G-value of about 75 or less at a static stress greater than or equal to about 0.4 psi (2.75 kPa), which comprises reacting a polyisocyanate with a polyether polyol composition in the presence of water, wherein:

(a) the polyether polyol composition, based on total parts by weight of (i) and (ii) present, comprises:

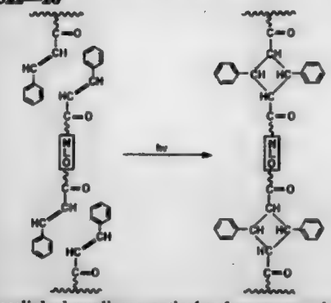
(i) from about 25 to about 65 percent of a polyether polyol that has an average of from about 2 to about 4 hydroxyl groups/molecule and an equivalent weight of from about 150 to about 500; and

(ii) from about 35 to about 75 percent, of a polyether polyol that has an average of from about 2 to about 6 hydroxyl groups/molecule, an equivalent weight of from about 600 to about 3,000, and an oxyethylene content of at least 50 weight percent;

(b) the water is present in an amount of from about 1 to about 8 parts per 100 parts by weight of the polyether polyol composition;

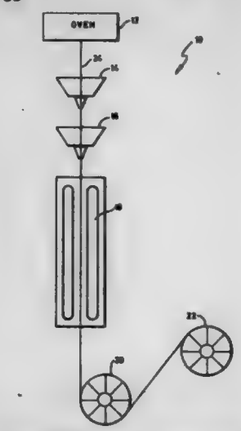
(c) the polyisocyanate, being present in an amount sufficient to provide an isocyanate reaction index of from about 50 to about 150, has an average isocyanate-functionality of from about 2.3 to about 3.5 and comprises methylene diphenylisocyanate and at least 40 weight percent polymethylene polyphenyl-isocyanate.

5,484,821
PHOTOCROSSLINKED SECOND ORDER NONLINEAR OPTICAL POLYMERS
Braja K. Mandal, Lowell; Sukant K. Tripathy, Acton; Jan-Chan Huang, and Jayant Kumar, both of Lowell, all of Mass., assignors to University of Lowell, Lowell, Mass.
Continuation of Ser. No. 881,428, May 12, 1992, abandoned, which is a division of Ser. No. 573,253, Aug. 24, 1990, Pat. No. 5,112,881. This application Feb. 7, 1994, Ser. No. 192,785
Int. Cl.[6] C08J *3/28*
U.S. Cl. 522—26 11 Claims



1. A crosslinked nonlinear optical polymer comprising a linear host polymer and a nonlinear optical crosslinking agent.

5,484,822
PROCESS AND COMPOSITION FOR CLADDING OPTIC FIBERS
Richard A. Minns, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Jun. 24, 1991, Ser. No. 720,233
Int. Cl.[6] C08F *2/46*
U.S. Cl. 522—35 11 Claims

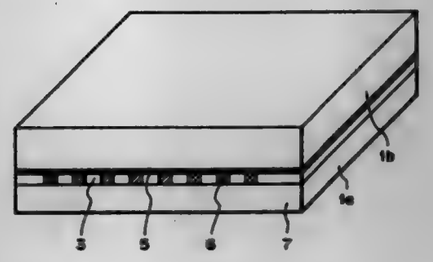


1. A photopolymerizable composition capable of being polymerized upon exposure to ultraviolet light, the composition comprising:

a copolymer having pendant photoinitiating groups, this copolymer having repeating units from a photoinitiator monomer having both a photoinitiating group and an ethylenically unsaturated group, and repeating units from a fluorosubstituted monomer having an ethylenically unsaturated group; and

a fluorosubstituted diacrylate.

5,484,823
PHOTOPOLYMERIZABLE ADHESIVE FOR PREVENTING PEELING AND SEPARATION AT A JOINT SECTION BETWEEN FIRST AND SECOND MEMBERS OF AN INK JET PRINTING HEAD AND A METHOD OF USING THE SAME
Hiromichi Noguchi, Atsugi; Naohito Asai, Yokohama, and Yuko Suga, Tokyo, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 20,453, Feb. 22, 1993, abandoned, which is a continuation of Ser. No. 627,304, Dec. 14, 1990, abandoned. This application Aug. 29, 1994, Ser. No. 296,182
Claims priority, application Japan, Dec. 14, 1989, 1-322751
Int. Cl.[6] C08F *2/50;220/26;220/34;* G01D *15/16*
U.S. Cl. 522—92 6 Claims



1. A photopolymerizable adhesive comprising:

(A) an acrylic resin having groups represented by at least one of the formulae: —COOH, —OH and —NHCH$_2$OR (wherein R represents a hydrogen atom or an alkyl group having 1–4 carbon atoms), a number average molecular weight of 3,000 to 200,000 and a glass transition temperature of at least 70° C.;

(B) a photopolymerizable oligomer mixture containing at least one member selected from the group consisting of (i) (a+c), (ii) (b+c) or (iii) (a+b+c) where a is an acrylate or a methacrylate of a novolak epoxy resin, b is an acrylate or a methacrylate of a bisphenol epoxy resin and c is a urethane acrylate of an aromatic divalent alcohol or a cycloaliphatic divalent alcohol, said urethane acrylate having at least four urethane bonds per molecule of urethane acrylate;

and

(C) a photoinitiator capable of discharging radicals by the action of activation energy rays.

5,484,824
THERMOPLASTIC POLYPROPYLENE RESIN COMPOSITION
Hiroomi Abe, Chiba; Takeshi Fujii, Sodegaura; Masashi Yamamoto, Nihama; Takeyoshi Nishio, Okazaki, and Takeo Nozawa, Toyota, all of, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan
Continuation of Ser. No. 92,449, Jul. 14, 1993, abandoned. This application May 23, 1995, Ser. No. 448,186
Claims priority, application Japan, Jul. 15, 1992, 4-188041
Int. Cl.[6] C08K *3/36;* C08L *23/16;23/08;53/00*
U.S. Cl. 523—436 4 Claims

1. A thermoplastic resin composition consisting essentially of:

100 parts by weight of a resin composition (D) comprising:

not less than 50% by weight of a crystalline polypropylene component (A),

10 to 25% by weight of an ethylene-butene-1-copolymer rubber (B), and

10 to 25% by weight of an ethylene-propylene copolymer rubber (C);

0.1 to 5.0 parts by weight of a modified polypropylene (E);

0.005 to 5 parts by weight of a saturated polyester resin (F); and

0.1 to 5.0 parts by weight of an epoxy group-containing copolymer (G),

said crystalline polypropylene component (A) being selected from the group consisting of:

(i) the product of a polymerization of propylene in the first step and a random copolymerization of propylene and ethylene in the second step, each of which have been polymerized in the presence of a Ziegler-Natta catalyst by sequentially passing propylene monomer, and then propylene/ethylene monomers over the catalyst consisting of:

30 to 90% by weight of propylene homopolymer portions as the first segment which have a molecular weight distribution of 5 or less as determined by gel permeation chromatography and an intrinsic viscosity of 0.85 to 0.95 dl/g as determined at 135° C. using tetralin as a solvent, and 10 to 70% by weight of propylene-ethylene random copolymer portions as the second segment (A') which have a calculated viscosity parameter $[\eta]_{cp}$ of 4.5 to 5.5 dl/g as defined below,

$$[\eta]_{cp}=[\eta]_T/X-(1/X-1)[\eta]_P$$

wherein

$[\eta]_P$: the intrinsic viscosity (dl/g) of the crystalline propylene homopolymer portion as determined at 135° C. using tetralin as a solvent

$[\eta]_T$: the intrinsic viscosity (dl/g) of the whole block copolymer as determined at 135° C. using tetralin as a solvent

$$X=1-(\Delta Hf)_T/(\Delta Hf)_P$$

wherein

$(\Delta Hf)_T$: the quantity of fusion (cal/g) of the whole block copolymer,

$(\Delta Hf)_P$: the quantity of fusion (cal/g) of the crystalline propylene homopolymer portion,

and a weight ratio of the propylene units to the ethylene units of 75:25 to 60:40, and

(ii) mixtures of the product of a polymerization of propylene in the first step and a random copolymerization of propylene and ethylene in the second step, each of which have been polymerized in the presence of Ziegler-Natta catalyst by sequentially passing propylene monomer, and then propylene/ethylene monomers over the catalyst consisting of:

30 to 90% by weight of propylene homopolymer portions as the first segment which have a molecular weight distribution of 5 or less as determined by gel permeation chromatography and an intrinsic viscosity of 0.85 to 0.95 dl/g as determined at 135° C. using tetralin as a solvent,

and 10 to 70% by weight of propylene-ethylene random copolymer portions as the second segment (A') which have a calculated viscosity parameter $[\eta]_{EP}$ of 4.5 to 5.5 dl/g as defined above, and a weight ratio of the propylene units to the ethylene units of 75:25 to 60:40, and

a crystalline propylene homopolymer having a molecular weight distribution of 5 or less as determined by gel permeation chromatography and an intrinsic viscosity of 0.85 to 0.95 dl/g as determined at 135° C. using tetraline as a solvent, and in said component (A), the second segment (A') being contained in an amount of 3.3% by weight or more and less than 25% by weight based on the resin composition (D),

said ethylene-butene-1 copolymer rubber (B) having a molecular weight distribution of 2.7 or less as determined by gel permeation chromatography, a content of butene-1 unit of from 15 to 20% by weight, an intrinsic viscosity of from 1.1 to 2.1 dl/g as determined at 70° C. using xylene as a solvent, and a Mooney viscosity at 100° C., ML_{1+4} 100, of from 7 to 90,

said ethylene-propylene copolymer rubber (C) having a molecular weight distribution of 2.7 or less as determined by gel permeation chromatography, a content of propylene unit of from 20 to 30% by weight, an intrinsic viscosity of from 1.8 to 2.2 dl/g as determined at 70° C. using xylene as a solvent, and a Mooney viscosity at 100° C., ML_{1+4} 100, of from 35 to 100,

said resin composition (D) satisfying the following mathematical expressions (1) to (5):

$$A+B+C=100 \quad (1)$$

$$B+C\leq 30 \quad (2)$$

$$.3\leq(A'+B+C)/100<0.55 \quad (3)$$

$$.1\leq A'/(A'+B+C) \quad (4)$$

$$.4\leq B/(B+C)\leq .6 \quad (5)$$

wherein A, B and C are the weight percentages of the crystalline polypropylene component (A), the ethylene-butene-1 copolymer rubber (B) and the ethylene-propylene copolymer rubber (C) in the resin composition (D), respectively; and A' is the weight percentage, based on the resin composition (D), of the second segment of the crystalline polypropylene component (A),

said modified polypropylene (E) being obtained by graft copolymerizing, onto a polypropylene, monomers consisting of 0.01 to 10 parts by weight of an unsaturated aromatic monomer and 0.01 to 10 parts by weight of either an unsaturated carboxylic acid or a derivative thereof per 100 parts by weight of the polypropylene,

said epoxy group-containing copolymer (G) being selected from the group consisting of:

(i) a copolymer of 99.9% to 50% by weight of an ethylenically unsaturated compound selected from the group consisting of:

(a) ethylene,
(b) vinyl acetate,
(c) methyl acrylate,
(d) ethyl acrylate,
(e) methyl methacrylate,
(f) vinyl chloride,
(g) vinylidene chloride, and
(h) isobutyl vinyl ether,

and 0.1% to 50% by weight of at least one unsaturated epoxy compound selected from the group consisting of:

(a) glycidyl acrylate,
(b) glycidyl methacrylate,
(c) glycidyl itaconate,
(d) allyl glycidyl ether,
(e) 2-methylallyl glycidyl ether, and
(f) styrene p-glycidyl ether, and

(ii) a terpolymer of 99.9% to 50% by weight of ethylene and at least one ethylenically unsaturated compound selected from the group consisting of (a) vinyl acetate and (b) methyl acrylate, and 0.1% to 50% by weight of at least one unsaturated epoxy compound as defined above,

the mixture of the crystalline polypropylene component (A), the ethylene-butene-1 copolymer rubber (B), the ethylene-propylene copolymer rubber (C), the modified polypropylene (E), the saturated polyester resin (F) and the epoxy group-containing copolymer (G) having a melt flow rate, determined at 230° C. under a load of 2.16 kg using an orifice having a diameter of 2.095 mm and a length of 8.000 mm, of from 15 to 25 g/10 min. and a flexural modulus at 23° C. of from 3,000 to 25,000 kg/cm^2.

5,484,825

DISPERSIBLE ARTICLES

Richard J. Dick, Columbus; Nancy J. Fulton, Powell; James P. Pfau, Columbus, all of Ohio; Philip E. Bailey, and John D. Boston, both of Bristol, Tenn., assignors to Battelle Memorial Institute, Columbus, Ohio

Continuation of Ser. No. 808,571, Dec. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 645,423, Jan. 25, 1991, abandoned. This application Sep. 14, 1993, Ser. No. 122,753

Int. Cl.[5] C09D 7/00

U.S. Cl. 524—35 11 Claims

1. A method for disposing of an article comprising the steps of:

(a) forming said article of an aqueous base-dispersible binder consisting essentially of the dried film of an acrylic polymer aqueous emulsion, and a water-resistant reinforcement dispersed in said binder; and

(b) exposing said article to aqueous base to disperse said article in said base.

5,484,826

FREE-FLOWING, QUICK-DISSOLVING LACQUER BINDER GRANULES

Burkhard Krumdorf, Walsrode; Erhard Lüttmann, Bomlitz, and Lutz Hoppe, Walsrode, all of, Germany, assignors to Wolff Walsrode Aktiengesellschaft, Walsrode, Germany

Continuation of Ser. No. 48,102, Apr. 15, 1993, abandoned. This application Nov. 28, 1994, Ser. No. 345,279

Claims priority, application Germany, Apr. 28, 1992, 42 13 878.7

Int. Cl.[5] C09D 7/14;101/08;101/18

U.S. Cl. 524—35 3 Claims

1. A process for the production of free-flowing quick-dissolving cellulose-nitrate granules, comprising the steps of:

a) Forming an emulsion of a lacquer resin, plasticizer or mixture thereof in water;

b) Mixing said emulsion with an aqueous suspension of cellulose nitrate, said suspension having a pH of 2.5 to 3.5;

c) Separating the suspended matter from said mixture; and

d) Drying said separated, suspended matter and forming granules thereof.

5,484,827

UV-STABILIZER CONCENTRATES BASED ON TPU, A PROCESS FOR THEIR PRODUCTION AND UTILIZATION

Frank Prissok; Friedhelm Lohrich, both of Leuforde; Gerhard Lehr, Schwegenheim; Aleksander Glisiks, Osnabrück, and Douglas J. Harrop, Hilde, all of, Germany, assignors to BASF Elastogran GmbH, Germany

Continuation of Ser. No. 42,960, Apr. 5, 1993. This application Sep. 30, 1994, Ser. No. 315,732

Claims priority, application Germany, Apr. 4, 1992, 42 11 355.0

Int. Cl.[6] C08K 5/34

U.S. Cl. 524—86 9 Claims

1. A UV-stabilizer concentrate, consisting of, relative to the total weight,

A) 40 to 80 weight-% of at least one thermoplastic polyurethane

B) 10 to 30 weight-% 1,3,5-tri-glycidyl-isocyanurate and

C) 10 to 30 weight-% 2-(2-hydroxy-3,5,-di-tert-amyl-phenyl)-2H-benzotriazole and/or 1,6-hexane-di-yl-bis-(3-(3-benzotriazole-N-yl)-4-hydroxy-5-tert-butyl)-phenyl-propanoate.

5,484,828

COLOR-STABLE POLYCARBONATE COMPOSITION AND ARTICLES MOLDED THEREFROM

Kevin F. Dunny, Bethel Park; Winfried G. Paul, and Sivaram Krishnan, both of Pittsburgh, Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

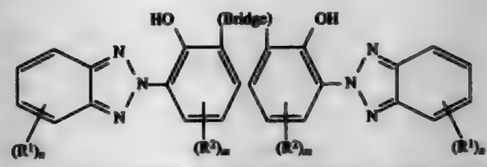
Filed Nov. 18, 1994, Ser. No. 341,793

Int. Cl.[6] C08K 5/34

U.S. Cl. 524—91 10 Claims

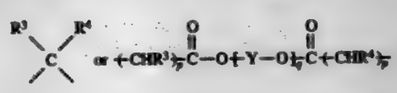
1. A thermoplastic molding composition free from organic phosphorus compounds, comprising polycarbonate resin and

(i) about 1.0 to 30 percent of a bis-benzotrizole conforming structurally to

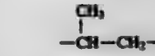


(3)

wherein R^1 and R^2 independent of each other are a hydrogen or a halogen atom, a C_1–C_{12} alkoxy, C_7–C_{18} arylalkoxy or a C_1–C_{10} alkyl, cycloalkyl, arylalkyl or an aryl radical and (Bridge) is either



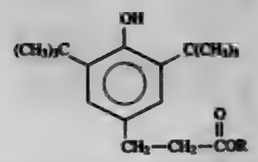
where p is 0 to 3, q is 1 to 10, Y denotes any of —CH_2—CH_2—,



-$(CH_2)_3$-, -$(CH_2)_5$-, -$(CH_2)_6$-

R^3 and R^4 independent of each other are a hydrogen atom, a C_1–C_{10} alkyl, cycloalkyl, arylalkyl or an aryl radical, and

(ii) about 0.1 to 5.0 percent of a stabilizer conforming to



(1)

wherein R is a linear or branched C_{1-24}-alkyl radical, said percent, both occurrences, being in relation to the weight of said composition.

5,484,829

ISOCYANATE REACTIVE BLENDS AND INTERNAL MOULD RELEASE COMPOSITIONS

Herbert R. Gillis, Sterling Heights, Mich., assignor to Imperial Chemical Industries, PLC, London, England

Division of Ser. No. 117,641, Sep. 8, 1993, Pat. No. 5,384,351, which is a continuation of Ser. No. 768,191, Sep. 16, 1991, abandoned. This application Oct. 11, 1994, Ser. No. 320,655

Claims priority, application United Kingdom, Jan. 3, 1990, 9021524

Int. Cl.[6] C08K 5/04;5/34; C08M 105/08

U.S. Cl. 524—92 6 Claims

1. An internal mould release composition comprising:

(a) a mould release composition comprising:

i) a metal salt of an carboxylic acid having 10–24 carbon atoms, said metal being selected from Groups IA, IB, IIA and IIB of the Periodic Table or chromium, molybdenum, iron, cobalt, nickel, aluminum, tin, lead, bismuth, antimony, and zinc, and

ii) a polysiloxane polymer having organic groups which are reactive with isocyanate organic groups, and

(b) a compatibilising amount sufficient to provide improved stability of the metallic salt mold release agent and improved control over reactivity of the isocyanate reactive ingredients of an amidine or imidate compound of formula (1)



(1)

wherein X represents O, S or NR^1 and wherein each of R^1 to R^4 represents H or, independently or together, an organic radical, selected from:

i) alkyl radicals,

ii) cyclo alkyl radicals,

iii) aralkyl radicals or aryl radicals, or

iv) polymeric chains containing hetero atoms, wherein the polymeric chains are selected from polyether chains, polyester chains, polycarbonate chains or polyacetal chains.

5,484,830

HALOGEN-FREE, FLAME-RESISTANT POLYMERIC COMPOSITIONS

Horst Staendeke, Lohmar, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jan. 26, 1994, Ser. No. 187,690

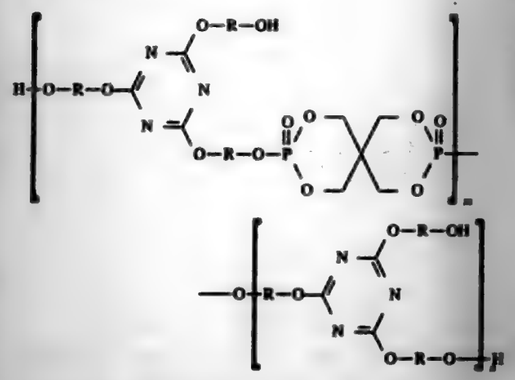
Claims priority, application Germany, Feb. 9, 1993, 43 03 453.8

Int. Cl.[6] C08K 5/3477;5/529; C09K 21/10;21/12

U.S. Cl. 524—101 4 Claims

1. A halogen-free, flame-retardant polymeric composition containing a thermoplastic polymer and, 15 to 40% by weight of an intumescence flame-retardant system, which flame-retardant system comprises ammonium polyphosphate and an organophosphorus nitrogen compound in a ratio by weight between (2:1) to (1:2),

wherein the organophosphorus nitrogen compound is a phosphoric acid polyester of the formula



in which R is selected from the group consisting of methylene, ethylene and propylene and m is 1 to 10 and n is 1 to 6.

5,484,831

POLYPHENYLENE ETHER RESIN COMPOSITION

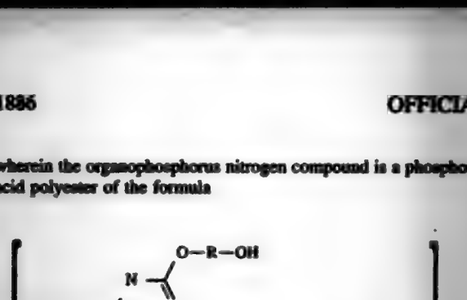
Hideyuki Higashimura; Yoshitaka Ohbe; Akihiko Okuda; Kazutoshi Ohashi, all of Tsukuba; Ryuhei Matsui, and Shigeki Kriyama, both of Yokkaichi, all of, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, and Mitsubishi Chemical Corporation, Tokyo, both of, Japan

Filed Feb. 3, 1995, Ser. No. 383,179

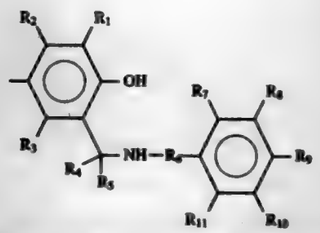
Claims priority, application Japan, Feb. 3, 1994, 6-011664; Apr. 13, 1994, 6-074887

Int. Cl.[6] C08K 5/17

U.S. Cl. 524—257 4 Claims

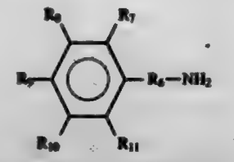


1. A resin composition comprising 100 parts by weight of a polyphenylene ether which has, on the average, 0.01 to 10 terminal structures of the formula (1):



(1)

wherein R_1 to R_5 represent independently each other a hydrogen atom, a halogen atom, a C_1–C_{20} alkyl group, a substituted C_1–C_{20} alkyl group, a C_2–C_{20} alkenyl group, a substituted C_2–C_{20} alkenyl group, a C_2–C_{20} alkynyl group, a substituted C_2–C_{20} alkynyl group, a C_6–C_{20} aryl group or a substituted C_6–C_{20} aryl group, R_6 is a C_1–C_6 alkylene group or a substituted C_1–C_6 alkylene group, and R_7 to R_{11} represent independently each other a hydrogen atom, a halogen atom, a C_1–C_6 alkyl group, a C_1–C_6 alkoxy group, a phenyl group, a phenoxy group, a nitro group or a cyano group per 100 phenylene ether units, and has a number average polymerization degree of from 10 to 10,000, and 0.01 to 1 part by weight of a primary aliphatic monoamine having an aromatic substituent of the formula (2):



(2)

wherein R_6 to R_{11} are the same as defined above.

5,484,832

MODIFIED POLYURETHANE INCLUDING SILICA AND METHOD OF MANUFACTURE THEREOF

Thomas M. Garrett, Pittsburg, Kans., and Indulis Grunins, Corona, Calif., assignors to MCP Industries, Inc., Corona, Calif.

Filed Dec. 14, 1993, Ser. No. 167,544

Int. Cl.[6] C08J 5/24; C08K 5/54;3/36

U.S. Cl. 524—261 33 Claims

1. A method of manufacturing a modified polyurethane composition incorporating silica and having relatively good dynamic properties comprising:

(a) mixing and reacting particulate silica with a linking component having a silica reactive group and an organo reactive group to form a first reaction product;

(b) thereafter mixing and reacting said first reaction product with an isocyanate and a polyol to form the modified polyurethane incorporating the silica into the polymer of the modified polyurethane.

5,484,833

DERIVATIVES OF NON-STEROIDAL ANTI-INFLAMMATORY, ANALGESIC AND/OR ANTIPYRETIC SUBSTANCES, THEIR USE AND PHARMACEUTICAL FORMULATIONS CONTAINING THEM

Ezio Bombardelli, Milan, Italy, assignor to Indena S.p.A., Italy

Filed Jul. 30, 1992, Ser. No. 922,636

Claims priority, application United Kingdom, Jun. 11, 1992, 9212456

Int. Cl.[6] A61K 9/70

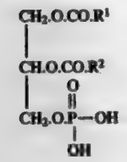
U.S. Cl. 424—449 11 Claims

1. A salt of a non-steroidal anti-inflammatory, analgesic and/or antipyretic substance (NSA) and a phosphatidic acid, said salt having the formula

[NSA]$_n$[PA],

wherein

NSA represents a cation derived from said non-steroidal, anti-inflammatory, analgesic and/or antipyretic substance; PA represents a phosphatidic acid or a mixture of different phosphatidic acids, each of said phosphatidic acid or phosphatidic acids having the formula



wherein R_1 and R_2, which may be the same or different, each represents a C_n alkyl group, a C_n alkenyl group, or a C_n alkadienyl group wherein n is an integer from 10 to 24; and x and y are in a stoichiometric ratio of 1:1.

5,484,834

LIQUID SLURRY OF BENTONITE

Daniel K. Chung, Burlington, Canada, assignor to Nalco Canada Inc., Burlington, Canada

Filed Nov. 4, 1993, Ser. No. 148,069

Int. Cl.[6] C08K 3/34; C04B 41/68

U.S. Cl. 524—446 9 Claims

1. A liquid slurry of bentonite which comprises: a bentonite present in an amount of between about 15 to about 35% by weight, water present in an amount between about 25 to about 75% by weight, a polyacrylate present in an amount of between about 10 to about 30% by weight, and a sodium salt of silicic acid which is present in an amount of between about 0.1 to about 10% by weight.

5,484,835

HEAT-RESISTANT, PROPYLENE RESIN-BASED MOLDING MATERIALS AND MOLDED PRODUCTS OBTAINED THEREFROM

Yoshihiro Sobajima; Satoru Kinoshita, and Masahide Hamaura, all of Yokkaichi, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed May 31, 1994, Ser. No. 251,359

Claims priority, application Japan, May 31, 1993, 5-129092

Int. Cl.[6] C08K 7/14;3/40

U.S. Cl. 524—494 7 Claims

1. A heat resistant, propylene resin-based molding material, comprising the following components (A) and (B):

component (A): 3 to 97% by weight of a resin-impregnated glass fiber bundle comprising:

constituent (a^1): 20 to 80 parts by weight of glass fibers having a length of at least 3 mm and an average diameter of 20 μm or less, and

constituent (a^2): 80 to 20 parts by weight of a crystalline propylene polymer at least partly modified with an unsaturated carboxylic acid or a derivative thereof, the MFR of the modified polymer being 50 g/10 min or more,

said resin-impregnated glass fiber bundle being prepared by a method comprising the steps of impregnating continuous glass fibers with the modified crystalline propylene polymer while said glass fibers are being drawn and cutting the resin-impregnated glass fibers into a predetermined length

in which the glass fibers are present in the constituent (a^2) in such a state that they are arranged almost in parallel with one another; and

component (B): 97 to 3% by weight of a crystalline propylene polymer having an MFR of 50 g/10 min or more.

5,484,836

RUBBER COMPOSITION FOR TIRE TREAD

Yasuaki Kikuchi; Tetsuo Ochiai; Takashi Shirokawa, and Hajime Fujii, all of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Japan

Filed Sep. 7, 1994, Ser. No. 301,569

Claims priority, application Japan, Sep. 8, 1993, 5-223493

Int. Cl.[6] C08K 3/00

U.S. Cl. 524—495 4 Claims

1. A rubber composition for a tire tread comprising (i) 100 parts by weight of a diene based rubber containing at least one styrene-butadiene copolymer rubber having a glass transition temperature of –60° C. to –20° C. and (ii) 20 to 75 parts by weight of carbon black having CTAB of 85 to 110 m^2/g, C-DBP of more than 105 ml/100 g, N_2SA/IA of more than 1.10, Tint of more than 105, ΔDst of 60 to 80 nm, and CTAB of less than 230–5.8 (dn) wherein, dn is an average particle size (nm) measured by an electron microscope.

5,484,837

BLACK MASTERBATCH

Haiang-Peng Kung, Ta-Yuan Hsien; Yao-Tsung Chang, Hsin-Chu; Cherng-Jyh Lee, Hsin-Chu; Rong-Shian Pan, Hsin-Chu, and Chin-Hui Huang, Ping-Tung, all of, Taiwan, Prov. of China, assignors to Far Eastern Textile, Ltd., Taipei, Taiwan, Prov. of China

Filed Oct. 25, 1994, Ser. No. 328,365

Int. Cl.[6] C08K 3/00

U.S. Cl. 524—495 16 Claims



1. A black masterbatch for a polyester polymer, consisting of:

(a) 25–99.7% by weight of a first polyester polymer;

(b) 0.1–40% by weight of carbon black;

(c) 0.1–20% by weight of a second polyester polymer, said second polyester polymer acting as a dispersing agent for said carbon black to decrease agglomeration of said carbon black; and,

(d) 0.1–15% by weight of EVA acting as a dispersing assisting agent for said carbon black.

5,484,838

THERMOPLASTIC COMPOSITIONS WITH MODIFIED ELECTRICAL CONDUCTIVITY

Jeffrey H. Helms, Plymouth, Mich.; Edmund J. Blais, Windsor, Canada, and Mo-Fung Cheung, Farmington Hills, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 22, 1994, Ser. No. 362,040

Int. Cl.[6] C08K 3/04; C08L 23/06;23/08

U.S. Cl. 524—496 10 Claims

1. A molded thermoplastic article, having a modified electrical conductivity, adapted for electrostatic painting, said article being comprised of a composition comprising:

(a) a polymer blend of at least two polymers comprising:

(i) a crystalline polymer having a melting point above about 110° C., and

(ii) an amorphous or semi-crystalline polymer having a Tg above about –80° C. and a percent crystallinity between 0 and 20 percent, said crystalline polymer comprising at least

about 35 weight percent of said polymer blend and being a continuous phase within said polymer blend; and

(b) electrically conductive carbon black (i) comprising between about 2 and about 7.0 weight percent of the total weight of said composition and (ii) at least a portion of said carbon black being dispersed within said crystalline polymer,

wherein the internal electrical conductivity of said article measured at an applied field of 1 volt is between about 10^{-5} S/cm and 10^{-12} S/cm, and the steady surface conductivity at 100 volts applied electric field is greater than about 10^{-18} S/cm.

5,484,839

FLAME RETARDANT BROMINATED STYRENE GRAFT LATEX COMPOSITIONS

Jin-liang Wang, and Nicolai A. Favstritsky, both of Lafayette, Ind., assignors to Great Lakes Chemical Corp., West Lafayette, Ind.

Continuation of Ser. No. 977,910, Nov. 18, 1992, abandoned. This application May 18, 1994, Ser. No. 245,831

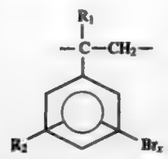
Int. Cl.[6] C08L *51/00*

U.S. Cl. 524—533 **23 Claims**

1. An improved, flame retardant graft latex composition which comprises:

a graft latex copolymer having the formula:

wherein n is >1, L is a natural or synthetic latex, and each S is a grafted-on side chain comprising a brominated monomeric unit of the formula:



wherein x=1 to 4, R_1 is H or CH_3, and R_2 is H or a C_{1-4} lower alkyl group, said graft latex copolymer including at least about 1% bromine by weight of the graft latex copolymer.

5,484,840

TEXTILE SIZES CONTAINING ULTRAFINE-SIZED AQUEOUS POLYMERIC DISPERSIONS

Jesse A. Binkley, 3770 Jim Owens Rd., NW., Kennesaw, Ga. 30144

Filed Dec. 21, 1993, Ser. No. 170,565

Int. Cl.[6] C08J *3/05*; C08L *33/08;33/10;33/26*

U.S. Cl. 524—501 **4 Claims**

1. A textile sizing composition comprising two aqueous-based dispersions containing between about 15 and about 50 percent by weight solids wherein said solids comprise one or more polymers derived from one or more ethylenically unsaturated monomers selected from the group consisting of (meth)acrylic based acids and esters, acrylonitrile, styrene, divinylbenzene, vinyl acetate, ethylenically unsaturated carboxylic acids, butadiene, acrylamide, methacrylamide, vinylidene chloride, vinyl chloride and mixtures thereof, said solids having an average particle size of less than 100 nanometers and wherein the glass transition temperature of the polymer of the first dispersion is less than −25° C. and the glass transition temperature of the polymer of the second dispersion is greater than −10° C.

5,484,841

METHOD FOR PRODUCTION OF AQUEOUS DISPERSION OF LONG-CHAIN ALKYL GRAFT POLYMER AND AQUEOUS RELEASE AGENT

Kazuo Kodama, Yokohama; Toru Tsuda, Tokyo, and Kazutomo Takahashi, Yokohama, all of, Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 908,447, Jun. 30, 1992, abandoned, which is a continuation of Ser. No. 553,562, Jul. 18, 1990, abandoned. This application Oct. 13, 1994, Ser. No. 322,366

Claims priority, application Japan, Jul. 19, 1989, 1-184483; Jul. 19, 1989, 1-184484

Int. Cl.[6] C08J *3/00*; C08K *3/20*; C08L *39/00;75/00*

U.S. Cl. 524—589 **7 Claims**

1. A method for the production of an aqueous dispersion of a long-chain alkyl graft polymer, which method comprises:

preparing a mixture from an aqueous solution of a polyamine, a long-chain alkyl monovalent isocyanate and a cationic surfactant, said polyamine being selected from the group consisting of polyalkylene imines, polyalkylene polyamines, polyvinylamines and polyallylamines, the ratio of addition of said alkyl monovalent isocyanate being in the range of 0.5 to 1.0 mol equivalent, based on 1 mol of the amino group in said polyamine, said cationic surfactant being selected from the group consisting of stearyl amine acetate and stearyl trimethyl ammonium chloride and being in an amount of 5–70% by weight based on the weight of the alkyl monovalent isocyanate; and

stirring the resultant mixture using a homogenizer to cause reaction of said reactants in the state of emulsion or suspension in water said alkyl monovalent isocyanate and its reaction product being thoroughly pulverized.

5,484,842

UV-STABLE, WATER-BORNE POLYESTER COMPOSITIONS

Ronald J. Lewarchik, Sleepy Hollow; Marc L. Smith, Crystal Lake, and Michael R. Sestrick, Woodstock, all of Ill., assignors to Morton International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 124,983, Sep. 21, 1993, abandoned. This application May 23, 1994, Ser. No. 247,799

Int. Cl.[6] C08J *3/03*; C08F *22/00*; C08G *63/00*

U.S. Cl. 524—600 **12 Claims**

1. An aqueous dispersion or solution of a polyester,

said polyester formed of monomers comprising

A) between about 30 and about 60 mole percent polycarboxylic acids, at least about 80 mole percent of said carboxylic acids comprising cyclohexanedicarboxylic acids,

B) between about 35 and about 70 mole percent polyols, at least about 95 mole percent of the polyol comprising diols, and between about 40 and about 100 mole percent of the polyol content comprising cycloaliphatic diols, and

C) between about 5 and about 25 mole percent of dimethylol propionic acid;

the molar ratio of (B+C)/A being between about 1.01 and about 1.30, whereby the polyester is hydroxyl-terminated,

said polyester having a hydroxyl number between about 20 and about 150, and

said polyester having an acid number between about 30 and about 100,

said polyester having a weight average molecular weight of between about 1000 and about 20,000, and

said polyester having its acidic moieties neutralized to at least about 40% with base,

said dispersion or solution containing no more than about 10 wt % organic solvent relative to the weight of said polyester.

5,484,843

THICKENING WATER-IN-OIL DISPERSIONS, THEIR PREPARATION PROCESS AND THEIR USE IN TEXTILE PRINTING

Paul Mallo, Chatou; Isabelle Fletier, Choisy le Roi, both of, France, and Ulrich Karsunky, Hunfelden, Germany, assignors to Societe Francaise Hoechst, Puteaux, France

Filed Sep. 29, 1994, Ser. No. 314,708

Claims priority, application France, Sep. 29, 1993, 93 11590

Int. Cl.[6] C08K *5/09*; C08L *1/10*

U.S. Cl. 524—804 **20 Claims**

1. Self-reversible, stable, water-in-oil dispersion, miscible with water, constituted by an oil phase, an aqueous phase and at least two emulsifying agents of which at least one is of water-in-oil type, and at least one is of oil-in-water type, characterized in that it contains 20 to 50% by weight of a mixture constituted by a hydrosoluble anionic polymer belonging to the group of carboxymethylcelluloses, designated C, and by a cross-linked, synthetic anionic polymer, insoluble in water but water-swellable, designated P, based on acrylic acid, designated AA, partially salified with an alkali metal, designated M, optionally copolymerized with 2-acrylamido 2-methyl propanesulphonate of the alkali metal M, designated AMPSM, cross-linked with a diethylenic carboxylic acid and in which the molar ratio of the salified acid functions to the total number of free and salified acid functions is between about 0.6 and about 0.9, the ratio by weight C/P+C being between 0.01 and 0.4.

5,484,844

VINYL CHLORIDE RESIN ELASTOMER COMPOSITION

Masaharu Oshima, and Masaji Yamamori, both of Nagoya, Japan, assignors to Mitsubishi Chemical MKV Company, Tokyo, Japan

Filed Apr. 1, 1993, Ser. No. 40,199

Claims priority, application Japan, Apr. 14, 1992, 4-094495

Int. Cl.[6] C08J *3/00*

U.S. Cl. 524—521 **14 Claims**

1. A vinyl chloride resin elastomer composition comprising:

100 parts of a resin mixture comprising from 50 to 95 parts by weight based on the weight of said resin mixture of a vinyl chloride resin and from 5 to 50 parts by weight based on the weight of said resin mixture of a chlorinated polyethylene;

from 20 to 400 parts by weight based on the weight of said resin mixture of an acrylonitrile-butadiene rubber containing a tetrahydrofuran-insoluble crosslinking component; and

from 10 to 300 parts by weight based on the weight of said resin mixture of a plasticizer.

5,484,845

POLYACETAL COMPOSITIONS HAVING SURFACE GLOSS REDUCING EFFECTIVE AMOUNTS OF CORE-SHELL POLYMERS

Ichiro Sasaki, Osaka; Takao Terasoka, Hyogo; Junji Ohshima, Osaka; Toru Katsumata, and Koichi Sato, both of Shizuoka, all of, Japan, assignors to Polyplastics Co., Ltd., and Takeda Chemical Indus., Ltd., both of, Japan

Continuation of Ser. No. 813,271, Dec. 24, 1991, abandoned. This application Oct. 20, 1994, Ser. No. 326,355

Claims priority, application Japan, Dec. 28, 1990, 2-409267

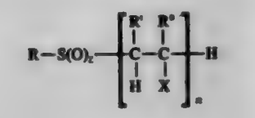
Int. Cl.[6] C08L *59/02*

U.S. Cl. 525—64 **5 Claims**

1. A moldable polyacetal resin composition exhibiting low surface gloss characteristics comprising a melt blend of a polyacetal base resin and a surface gloss reducing agent, wherein said surface gloss reducing agent is a core-shell polymer comprised of:

a core consisting essentially of a rubbery polymer, and

an outer shell consisting essentially of a glassy vinyl copolymer having at least one oxygenic polar group such that the oxygenic polar groups are dispersed uniformly on the outer shell surface, and wherein said oxygenic polar group of said glassy vinyl copolymer is at least one selected from the group consisting of hydroxyl or glycidyl groups, said core-shell polymer being the azo-initiated emulsion polymerization reaction product in the presence of a nonionic surfactant or an oligomeric surfactant having a weight-average molecular weight of between about 200 to 5000 which is defined by the following formula:



wherein,

R is an alkyl group of 5 to 20 carbon atoms;

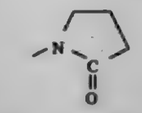
z is 0, 1 or 2;

n is a positive integer;

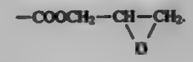
R', which may be the same or different, is —H, —CH_3, —C_2H_5, or —COOH;

R", which may be the same or different, is —H, —CH_3, —C_2H_5, —COOH or —CH_2COOH;

X, which may be the same or different is —COOH, —$CONH_2$, —OCH_3, —OC_2H_5, —CH_2OH, —$COOC_2H_4OH$, —$COOC_2H_6OH$,



—$CONHCH_2OH$, —$CONHCH_3$, —$CONHC_2H_5$, —$CONHC_3H_7$, —$COOHCH_3$, —$COOC_2H_5$, —CN, —$OCOCH_3$, —$OCOC_2H_5$, or



5,484,846

POWDER MIXTURES FOR MATT POLYCARBONATE MOLDING COMPOUNDS

Dieter Wittmann, Cologne; Jochen Schoops, Krefeld; Horst Beicher, Tönisvorst; Karl-Erwin Piejko, Bergisch Gladbach, and Kurt Weirauch, Bergisch Gladbach, all of, Germany, assignors to Bayer AG, Leverkusen, Germany

Continuation of Ser. No. 111,862, Aug. 26, 1993, abandoned. This application Nov. 30, 1994, Ser. No. 349,451

Claims priority, application Germany, Sep. 4, 1992, 42 29 642.0

Int. Cl.[6] C08L *69/00*

U.S. Cl. 525—67 **16 Claims**

1. Thermoplastic molding compounds containing

A. 10 to 99 parts by weight polycarbonate or polyester carbonate

B. 0 to 90 parts by weight of a rubber-free resin compatible or partly compatible with component A.,

C. 0 to 90 parts by weight of a rubber-modified resin compatible or partly compatible with component A.,

D. 0.5 to 10 parts by weight, based on 100 parts by weight of A+B+C, of an ungrafted rubber component having a glass transition temperature below 0° C. which is incompatible with component A and which is a rubber consisting of butadiene,

characterized in that component D is used in the form of a powder mixture D* produced from

1 to 50 parts by weight of an ungrafted particulate rubber component having a glass transition temperature below 0° C. and an average particle diameter d_{50} of 0.05 to 5 μm in latex form and which is a rubber consisting of butadiene, and

b. 50 to 99 parts by weight of component B, component C or a mixture of components B and C in latex form, the components mentioned under a. and b. initially being mixed with one another as latices and then being worked up together to form a powder mixture D* and the total content of the quantities of rubber component D introduced into molding compounds through D*, based on 100 parts by weight A+B+C, having to be between 0.5 and 10 parts by weight and the total content of B, C or a mixture of B and C, including quantities introduced into the molding compounds through D*, not exceeding 90 parts by weight, based on 100 parts by weight A+B+C.

5,484,847

MOISTURE-CURABLE MELT-PROCESSIBLE ETHYLENE GRAFT COPOLYMERS

George W. Prejean, Orange, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 252,292, Jun. 1, 1994, Pat. No. 5,389,728. This application Jan. 26, 1995, Ser. No. 378,429

Int. Cl.[6] C08F 8/00

U.S. Cl. 525—102 6 Claims

1. A melt-processible, moisture-curable graft copolymer composition, comprising the reaction product of

(A) a direct copolymer from monomers comprising:

(i) ethylene;

(ii) either (a) from 8 to 40 wt. %, based on the direct copolymer, of vinyl acetate, or (b) from 8 to less than 15 wt. % based on the direct copolymer of an alkyl acrylate or alkyl methacrylate wherein the alkyl group has from 1 to 3 carbon atoms; and

(iii) from 1 to 10 wt. %, based on the direct copolymer, of a glycidyl containing monomer selected from the group consisting of glycidyl acrylate, glycidyl methacrylate and glycidyl vinyl ether, and

(B) from 15 to 150 percent of the stoichiometric amount with respect to the glycidyl moiety in the direct copolymer, of N-tert-butylaminopropyl trimethoxysilane, based on its amine functionality, the resulting graft copolymer having a melt index of from 1 to 1500.

5,484,848

PROCESS FOR THE PRODUCTION OF A COMPOSITE ARTICLE OF A POLYAMIDE AND AN ELASTOMER

Hans Jadamus, Marl; Friedrich G. Schmidt, and Horst Heuer, both of Haltern, all of, Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Apr. 5, 1994, Ser. No. 222,968

Claims priority, application Germany, Jun. 9, 1993, 43 19 142.8

Int. Cl.[6] C08L 77/02;77/04;77/06;77/10

U.S. Cl. 525—105 8 Claims

1. A process for the production of a composite article of at least two component pieces, firmly bonded to one another comprising: vulcanizing

a) a molding of a rubber composition comprising

I. 100 parts by weight of a rubber, wherein the rubber does not contain carboxyl groups,

II. 0 to 300 parts by weight of fillers,

III. 0 to 150 parts by weight of plasticizer,

IV. 1 to 10 parts by weight of peroxide vulcanization agent,

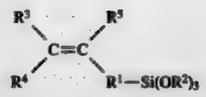
V. 0 to 4 parts by weight of vulcanization activators and

VI. 1 to 10 parts by weight of a silane; and

b) a molding of a polyamide composition which comprises at least 30% by weight of polyamide,

wherein said vulcanization is performed while said rubber composition is in contact with said polyamide composition; and

wherein said silane is of the formula



wherein R^1 is a divalent radical or a direct bond;

the R^2 groups are each independently hydrogen, substituted or unsubstituted C_{1-20} alkyl, substituted or unsubstituted C_{3-20} cycloalkyl or substituted or unsubstituted C_{6-20} aryl, wherein said substituents are C_{1-8} alkoxy;

R^3, R^4 and R^5 are each independently hydrogen, C_{1-20} alkyl, C_{3-20} cycloalkyl or C_{6-20} aryl or a $COOR^2$ group.

5,484,849

AIR CURING POLYMER COMPOSITION

Daniel A. Bors, Warminster; Alvin C. Lavole, Lansdale, and William D. Emmons, Huntingdon Valley, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 114,117, Aug. 30, 1993, abandoned, which is a continuation of Ser. No. 241,031, Mar. 19, 1993, abandoned, which is a continuation of Ser. No. 632,302, Dec. 21, 1990, abandoned. This application Dec. 30, 1994, Ser. No. 367,482

Int. Cl.[6] C08L 67/08

U.S. Cl. 525—167.5 17 Claims

1. A self-crosslinking film-forming composition consisting essentially of a vinyl polymer containing pendant acetoacetate functionality and a polyunsaturated aerobic radical source which generates a free radical flux on exposure of the composition to oxygen, wherein said aerobic radical source is selected from the group consisting of drying oils, drying oil fatty acids, alkyd resins containing drying oils and simple esters of drying oil fatty acids, provided that said composition contains substantially no conventional polymerization initiator.

5,484,850

COPOLYMERS CROSSLINKABLE BY A FREE RADICAL METHOD

Fritz E. Kempter, Mannheim; Wolfgang Reich, Rodach; Ulrich Jäger, Harthausen, and Eckhard Korona, Neustadt, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Oct. 28, 1994, Ser. No. 330,678

Claims priority, application Germany, Nov. 3, 1993, 43 37 481.6

Int. Cl.[6] C08F 269/00;265/00

U.S. Cl. 525—286 9 Claims

1. A copolymer crosslinkable by a free radical method and having a number average molecular weight of from 1500 to 6000 and a molecular weight distribution corresponding to a polydispersity of from 1 to 4.0, prepared by reaction of:

A) a copolymer (A) which is composed of

a1) from 50 to 85 mol % of a monomer (a1) containing the methacryloyl group;

a2) from 15 to 50 mol % of another monomer (a2) capable of undergoing free-radical polymerization; and

a3) from 5 to 50 mol % of the total amount of the monomers (a1) and (a2) being monomers (a3) which carry functional groups selected from the group consisting of hydroxyl, carboxyamido, amino, carbonyl, isocyanate, carboxyl and epoxy, said functional groups being capable of undergoing a condensation or addition reaction,

said polymer obtained by free radical mass or solution polymerization at a temperature from 140° to 210° C. and with an average residence time of from 2 to 90 minutes with

B) an olefinically unsaturated monomer (B) which carries a functional group which is complementary to the functional groups of monomers (a3).

5,484,851

POLYVINYL-POLYOXYALKYLENE BLOCK COPOLYMERS

Jürgen Feck, Düsseldorf, Germany, assignor to Th. Goldschmidt AG, Essen, Germany

Division of Ser. No. 961,310, Oct. 15, 1992, abandoned. This application Dec. 22, 1993, Ser. No. 172,678

Claims priority, application Germany, Jan. 23, 1991, 41 34 967.9

Int. Cl.[6] C08F 69/34;12/08

U.S. Cl. 525—333.5 6 Claims

1. A process of making a mixed block copolymer of the A-B type, wherein block A is formed by polymerization of compounds having vinyl groups and wherein block B is a polyoxyalkylene block, comprising the steps of polymerizing monomers having vinyl groups in presence of sufficient amount of an initiator and a chain-length regulator which, in addition to a mercapto group, comprises a functional group having at least one active hydrogen, said polymerization being carried out at a temperature of about between 60° C. to 150° C. by a free radical mechanism to obtain a modified polymer; and subjecting the said modified polymer to an addition reaction with an alkylene oxide at a temperature of about between 20° to 180° C., said addition reaction being carried out optionally in the presence of an addition inducing catalyst until the desired molecular weight of block B is reached.

5,484,852

ACTIVATED AND CONJUGATED POLYSTYRENE SUBSTRATE

Brian Clark, Redwood City, Calif., assignor to Applied Immune Sciences, Inc., Menlo Park, Calif.

Division of Ser. No. 51,917, May 19, 1987, Pat. No. 5,241,012. This application Nov. 2, 1992, Ser. No. 970,383

Int. Cl.[6] C08F 8/30

U.S. Cl. 525—333.6 4 Claims

1. An article comprising a surface functionalized polyaryl addition polymer having at least about 5% of the aryl groups to a depth of 100 Å, as determined by ESCA, substituted with a polar group, with the remaining aryl groups at a depth of >100 Å substantially unsubstituted with said polar groups wherein said polar groups are substituted exclusively on the aryl residues.

5,484,853

CRYOGENIC ADHESIVES MADE FROM EOPXY TERMINATED URETHANES

Der-Shyang Chen, Miao-Li Hsiao; Hung-Cheng Hsia, Tso-Yuan Hsiao; Chen-Chi M. Ma, Hsinchu, and Wang-Nang Wang, Tso-Yuan, all of, Taiwan, Prov. of China, assignors to China Technical Consultants, Inc., Taipei, Taiwan, Prov. of China

Filed Jul. 28, 1993, Ser. No. 98,798

Int. Cl.[6] C08F 283/04

U.S. Cl. 525—454 3 Claims

1. A two-part cryogenic adhesive composition comprising:

a urethane resin composition part comprising:

from about 60 to about 80% by weight of a modified polyurethane prepolymer having an epoxy group at each of its respective ends, wherein said modified polyurethane prepolymer has a weight average molecular weight of from about 1000 to about 3000 daltons; and

from about 20 to about 40% by weight of a modified urethane compound having substantially no free ether cyanate groups and having at least two epoxy groups per molecule with a molecular weight of less than about 500 daltons; and

a hardener part comprising a polyamine having primary or secondary amine groups.

5,484,854

MODIFIED PHENOLIC RESIN, EPOXY RESIN AND CURING AGENT MOLDING MATERIAL

Masahiro Tsumura; Mamo Tashima; Hiroaki Miyaoka; Haruhiko Takeda, and Tomoaki Fujii, all of Kanaya, Japan, assignors to Kashima Oil Co., Ltd., Tokyo, Japan

Division of Ser. No. 190,895, Feb. 3, 1994, Pat. No. 5,433,548. This application Apr. 6, 1995, Ser. No. 417,779

Claims priority, application Japan, Feb. 8, 1993, 5-020446; Jun. 18, 1993, 5-178914; Jun. 28, 1993, 5-178483

Int. Cl.[6] C08L 61/10;63/02;63/04

U.S. Cl. 525—486 13 Claims

1. A molding material based on a modified phenolic resin, comprising the modified phenolic resin (A), an epoxy resin (B) and a curing agent (C), said modified phenolic resin (A) being a modified phenolic resin containing substantially no acid and being prepared by:

heating under agitation a mixture comprising a petroleum heavy oil or petroleum pitch and a formaldehyde polymer in a ratio of the number of moles, in terms of formaldehyde, of the formaldehyde polymer to that of the petroleum heavy oil or pitch of 1:1 to 15:1 in the presence of an acid catalyst,

gradually adding a phenol to the mixture while heating under agitation until a ratio of the number of moles of the phenol to that of the petroleum heavy oil or pitch is 0.5:1 to 5:1 to thereby effect a polycondensation of the petroleum heavy oil or pitch, the formaldehyde polymer and the phenol, to obtain a crude modified phenolic resin, and

subjecting said crude modified phenolic resin to purification treatments, performed in optional sequence, of:

(i) treating said crude modified phenolic resin with a solvent selected from the group consisting of aliphatic and alicyclic hydrocarbons of up to 10 carbon atoms sufficiently to remove solvent-soluble components including unreacted components and to precipitate a modified phenolic resin, and

(ii) extracting said crude modified phenolic resin with an aromatic hydrocarbon solvent capable of dissolving most of said modified phenolic resin but in which said catalyst has a solubility of 0.1 or less, and removing catalyst residue.

5,484,855

POLYMER SCALE PREVENTIVE PROCESS

Toshihide Shinohara, Urayasu, and Mikio Watanabe, Kamisu, both of, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 13, 1994, Ser. No. 181,091

Claims priority, application Japan, Jan. 13, 1993, 5-020664

Int. Cl.[6] C08F 2/00

U.S. Cl. 526—62 15 Claims

1. A process for producing a polymer of a monomer having an ethylenically unsaturated double bond, which comprises polymerizing the monomer in a polymerization vessel having a coating on its inner wall surfaces, whereby polymer scale is prevented from being deposited,

wherein said coating has been formed by applying an alkaline solution comprising:

(A) a condensation product of (A-1) an aromatic compound having at least two amino groups with (A-2) an aromatic tetracarboxylic acid anhydride, and

(B) at least one member selected from the group consisting of (B-1) a water-soluble polymeric compound and (B-2) an inorganic colloid, followed by drying.

5,484,856
PROCESS TO PREVENT SCALE ADHESION USING THE CONDENSATION PRODUCT OF AROMATIC AMINE AND AROMATIC TETRACARBOXYLIC ACID ANHYDRIDE

Toshihide Shimizu, Urayasu, and Mikio Watanabe, Kamisu, both of, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 31,989, Mar. 16, 1993, abandoned. This application Jun. 16, 1994, Ser. No. 261,297
Claims priority, application Japan, Mar. 16, 1992, 4-058288
Int. Cl.[6] C08F 2/02;2/04;2/22;2/34
U.S. Cl. 526—62 13 Claims

1. A process of producing a polymer of an ethylenically unsaturated double bond, which comprises polymerizing the monomer in a polymerization vessel having a polymer scale preventive coating on its inner wall surfaces, wherein said coating has been formed by applying an alkaline solution containing a condensation product of (A) an aromatic amine compound having at least two amino groups and (B) an aromatic tetracarboxylic acid anhydride, followed by drying.

5,484,857
SINGLE-STAGE PROCESS FOR THE PREPARATION OF POLYISOBUTYLENE CARBOXYLIC ACIDS

Richard Welder, Leverkusen; Thomas Scholl, Bergisch Gladbach; Burkhard Köhler, Krefeld, and Bernhard Jansen, Cologne, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 17, 1995, Ser. No. 372,928
Claims priority, application Germany, Jan. 26, 1994, 44 02 183.7
Int. Cl.[6] C08F 8/06
U.S. Cl. 525—388 5 Claims

1. A process for preparing polyisobutylene carboxylic acids with number average molecular weights of from 300 to 20,000 and having a content of carboxylic acid groups between 0.5 and 5 moles, based on 1 mole of polyisobutylene carboxylic acid, comprising reacting a high molecular weight isobutylene diene copolymer which contains from 0.3 to 15 mole % of diene per mole of isobutylene monomer, and which is optionally crosslinked or branched, with 0.3 to 50 mole % of ozone and in the presence of a solvent suitable for the polyisobutylene carboxylic acid which is formed.

5,484,858
POLYMER MIXTURE WHICH COMPRISES A POLYPHENYLENE ETHER AND A POLYAMIDE

Hendrikus J. E. Smits, Roosendaal; Roelof van der Meer, Halsteren, both of, Netherlands, and Adelbert H. L. Groothuis, Evansville, Ind., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 436,583, Nov. 15, 1989, Pat. No. 5,357,003. This application Oct. 18, 1994, Ser. No. 325,658
Claims priority, application Netherlands, Nov. 16, 1988, 8802819; Jul. 25, 1989, 8901916
Int. Cl.[6] C08L 71/12;77/06;83/04
U.S. Cl. 525—393 15 Claims

1. A polymer mixture comprising a polyphenylene ether, a polyamide, a polysiloxane compound and an agent to improve the compatibility of the polyphenylene ether and the polyamide, wherein the polysiloxane comprises one or more groups which are capable of reacting with a carboxyl group, an amine group, or both a carboxyl group and an amine group.

5,484,859
Patent Not Issued For This Number

5,484,860
PROCESS FOR THE PREPARATION OF COPOLYMERS OF POLYASPARTIC ACIDS

Louis L. Wood, Rockville, and Gary J. Calton, Elkridge, both of Md., assignors to Bayer AG, Leverkusen, Germany

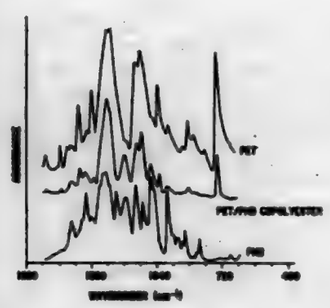
Division of Ser. No. 994,922, Dec. 22, 1992, Pat. No. 5,408,020. This application Apr. 13, 1995, Ser. No. 421,619
Int. Cl.[6] C08G 69/10;73/10
U.S. Cl. 525—432 5 Claims

1. A process for the preparation of copolymers of polyaspartic acid comprising reacting maleic acid, a polycarboxylic acid, ammonia and a polyamine, at a temperature of 120°–350° C., and converting the resultant polymer into a salt by adding a hydroxide.

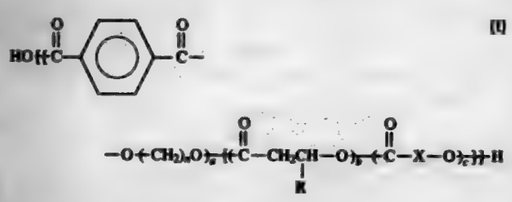
5,484,861
BIODEGRADABLE COPOLYESTER AND METHOD FOR PREPARING THE SAME

Dae W. Ihm, Seoul; Myung S. Lee; Hae S. Jun, both of Suwon; Chang S. Lee, Anyang; Jung Sung G., and Seong I. Woo, both of Seoul, all of, Rep. of Korea, assignors to Cheil Synthetics Inc., Kyungsan, and Korea Advanced Institute of Science & Technology, Taejon, both of, Rep. of Korea

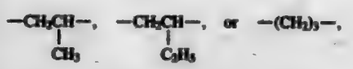
Filed Jan. 20, 1995, Ser. No. 375,947
Int. Cl.[6] C08F 20/00
U.S. Cl. 525—450 7 Claims



1. A copolyester having a combination structure consisting of one or more repeating unit of alkyleneterephthalate and one or more repeating unit of hydroxyalkanoate, represented by the following general formula I:


[I]

wherein n is an integer not more than 10,
R is $-CH_3$ or $-C_2H_5$,
X is,



and
a, b and c are independently a natural number.

5,484,862
LIQUID PHASE POWDER BED SYNDIOTACTIC VINYLAROMATIC POLYMERIZATION

Jonathan H. Siddall, and Daniel A. Beaudoin, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 10, 1995, Ser. No. 402,297
Int. Cl.[6] C08F 2/02;12/08
U.S. Cl. 526—88 5 Claims

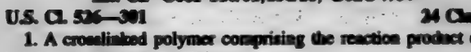
1. A liquid phase, powder bed polymerization process for preparing syndiotactic polymers of vinylaromatic monomers comprising:
A) continuously introducing one or more vinylaromatic monomers and one or more catalyst systems to a horizontally disposed, continuously agitated, cylindrically shaped reactor containing a particulated solid, the contents of which are maintained in an agitated state at a Froude Number in the range from 0.1 to 10, and
B) continuously removing polymerized product therefrom.

5,484,863
POLYMERIC OPHTHALMIC LENS PREPARED FROM UNSATURATED POLYOXYETHYLENE MONOMERS

Frank F. Molock, Orange Park; Ivan M. Nunez, Jacksonville, and James D. Ford, Orange Park, all of Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Continuation-in-part of Ser. No. 29,220, Mar. 10, 1993, abandoned. This application Nov. 22, 1993, Ser. No. 156,135
Int. Cl.[6] C08F 226/02;236/20; G02C 7/04
U.S. Cl. 526—301 24 Claims

1. A crosslinked polymer comprising the reaction product of a monomer mixture comprising:
(A) a monounsaturated polyoxyethylene monomer of the formula:


(I)

wherein:
R represents an alkyl group having from 1 to 20 carbon atoms;
n represents a number having a value such that the monounsaturated polyoxyethylene monomer has a molecular weight of from about 500 to about 5500;
X represents imido (—NH—);
m is 1; and
R^1 represents the residue after removal of the isocyanato group of an organic monoisocyanate that contains a polymerizable olefinic group;
(B) a diunsaturated polyoxyethylene monomer of the formula:


(II)

wherein
n is a number having a value so that the diunsaturated polyoxyethylene monomer has a molecular weight within the range of from about 2000 to about 11,000, and X, m and R^1 are as defined above in connection with the monounsaturated polyoxyethylene monomer;
(C) a diunsaturated polyoxyethylene monomer selected from the group consisting of:
(i) a monomer of Formula (II) wherein n is a number having a value so that the diunsaturated polyoxyethylene monomer has a molecular weight within the range of from about 300 to about 1700, and X, m and R^1 are as defined above in connection with the monounsaturated polyoxyethylene monomer;
(ii) a monomer of the formula:


(III)

-continued



wherein R^1 m and X are as defined above, and p+q are selected so that the monomer represented by Formula (III) has a molecular weight within the range of from about 500 to 1900; and
(iii) mixtures of monomers of Formulas (II) and (III), having the molecular weights defined in this paragraph (C); and
(D) a hydrophilic monomer selected from the group consisting of hydroxyethyl methacrylate, methacrylic acid, N,N-dimethylacrylamide, N-vinyl pyrrolidone, glycerol monomethacrylate, itaconic acid, and mixtures thereof.

5,484,864
URETHANE ADHESIVE COMPOSITIONS

Douglas A. Uelzer, Belle Mead, and Ilhanyl C. Broderick, Old Bridge, both of N.J., assignors to CasChem, Inc., Bayonne, N.J.

Continuation of Ser. No. 187,426, Jan. 26, 1994, Pat. No. 5,426,166. This application Jan. 31, 1995, Ser. No. 381,709
Int. Cl.[6] C08F 26/02
U.S. Cl. 526—301 39 Claims

1. An adhesive comprising an isocyanate-terminated urethane prepolymer capped with a (meth)acrylate and at least one reactive diluent selected from the group consisting of N-vinyl amides and carboxylic acid esters.

5,484,865
COPOLYMERS OF AMPHOLYTIC ION PAIRS CONTAINING VINYLIC TERTIARY AMINE

Iqbal Ahmed, and Henry L. Hsieh, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 78,342, Jun. 21, 1993, Pat. No. 5,350,642, and Ser. No. 886,218, May 20, 1992, Pat. No. 5,254,649. This application Jan. 27, 1994, Ser. No. 186,958
Int. Cl.[6] C08F 8/12
U.S. Cl. 525—329.4 8 Claims

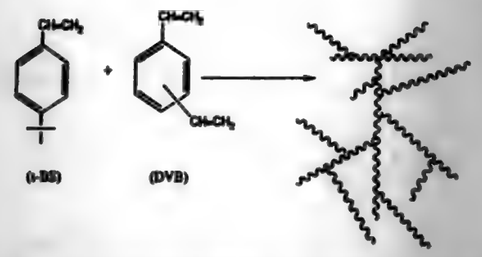
1. A composition comprising a partially hydrolyzed polymer selected from the group consisting of copolymers of 2-methacryloyloxyethyldimethylammonium acrylate ion pair and an alkali salt of acrylic acid; terpolymers of 2-methacryloyloxyethyldimethylammonium acrylate ion pair, acrylamide, and an alkali salt of acrylic acid; copolymers of 2-methacryloyloxyethyldimethylammonium methacrylate ion pair and an alkali salt of acrylic acid; and terpolymers of 2-methacryloyloxyethyldimethylammonium methacrylate ion pair, acrylamide, and an alkali salt of acrylic acid; and combinations of any two or more thereof.

5,484,866
CONCENTRATES OF A HIGHLY BRANCHED POLYMER AND FUNCTIONAL FLUIDS PREPARED THEREFROM

Frederick C. Loveless, and Wan-Li Liu, both of Yardley, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 9, 1993, Ser. No. 149,449
Int. Cl.[6] C08F 236/00;212/06
U.S. Cl. 526—340 33 Claims

1. A process for the preparing a polymer concentrate which is a relatively concentrated solution in a base stock oil of a highly branched polymer containing segments of p-tert-butylstyrene (t-BS), comprising polymerizing in the presence of a free radical polymerization initiator, a monoethylenically unsaturated (monofunctional) monomer including t-BS and about 0.01 to 0.5 mol %



based on the total monofunctional monomer utilized, of a multiethylenically unsaturated (multifunctional) cross-linking agent dissolved in said base stock oil.

5,484,847

PROCESS FOR PREPARATION OF POLYHEDRAL OLIGOMERIC SILSESQUIOXANES AND SYSTHESIS OF POLYMERS CONTAINING POLYHEDRAL OLIGOMERIC SILSESQUIOXANE GROUP SEGMENTS

Joseph D. Lichtenhan, Palmdale; Jeffrey W. Gilman, Lancaster, and Frank J. Feher, Costa Mesa, all of Calif., assignors to The University of Dayton; The Regents of the University of California, and The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 105,148, Aug. 12, 1993, Pat. No. 5,412,053. This application Jun. 1, 1994, Ser. No. 252,226
Int. Cl.[6] C08G 77/06
U.S. Cl. 528—9 20 Claims

1. A process for making a reactive silsesquioxane oligomer comprising the steps of:

a) providing a trifunctional polyhedral oligomeric silsesquioxane of the formula $Si_7R_7O_9(OA)_3$, where OA is —OH, —$OSb(CH_3)_4$, —$OSn(CH_3)_3$, or —OTl, and R is an alkyl, alkenyl, aryl, or alkoxy group; and

b) corner capping said trifunctional polyhedral silsesquioxane by reacting said trifunctional polyhedral silsesquioxane with a compound of the formula M–Z to form a polyhedral oligomeric silsesquioxane having the formula $Si_7R_7O_{12}M(Z)$, where M is a silane, siloxane or organometallic group and Z is a reactive group selected from the group consisting of chloride, bromide or iodide, and wherein said process further includes the step of adding silver perchlorate to a solution of said polyhedral oligomeric silsesquioxane in aqueous acetone to convert said reactive group Z to an alcohol.

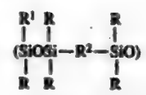
5,484,868

ORGANIC SILICON ALTERNATING COPOLYMER AND ITS MANUFACTURING METHOD

Hideki Kobayashi, Chiba, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1995, Ser. No. 378,415
Claims priority, application Japan, Jan. 27, 1994, 6-024777
Int. Cl.[6] C08G 77/08
U.S. Cl. 528—15 18 Claims

1. An organic silicon alternating copolymer comprising repeat units having the formula



wherein R represents a monovalent hydrocarbon group having 1 to 10 carbon atoms and containing no aliphatic unsaturation, R^1 represents a fluorine atom-containing monovalent organic group having 4 to 10 carbon atoms and containing at least two groups of the formula $-CF_2-$, R^2 represents an alkylene group having 2 to 10 carbon atoms and said copolymer has a degree of polymerization of 1 to 10,000.

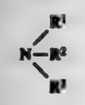
5,484,869

FORMED ORGANOSILOXANE AMINE COPOLYCONDENSATES, METHOD OF THEIR PREPARATION AND USE

Peter Panster, Rodenbach, and Stefan Wieland, Offenbach, both of, Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Continuation of Ser. No. 856,486, Jul. 24, 1990, abandoned.
This application Apr. 21, 1995, Ser. No. 427,719
Claims priority, application Germany, Jul. 31, 1989, 39 25 399.7
Int. Cl.[6] C08G 77/08
U.S. Cl. 528—18 39 Claims

1. Macroscopic spherical particles comprising organosiloxane copolycondensate consisting of units of the formula



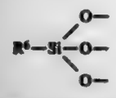
(I)

and of units of the formula



(II)

wherein R^1 to R^5 are identical or different and signify a group of the general formula

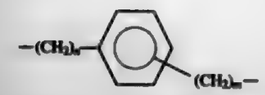


(III)

wherein R^6 is bound directly to the nitrogen atom or the double-bonded X group and represents a linear or branched alkylene group with 1 to 10 C atoms, a cycloalkylene group with to 8 C atoms or a unit of the general formula

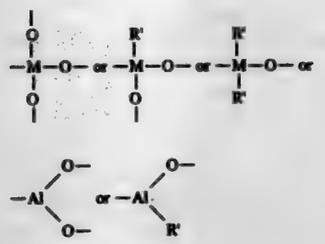


or



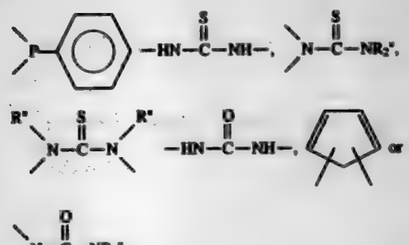
in which n is a number from 1 to 6 and indicates the number of methylene groups bound to nitrogen or in the X position and m is a number from 0 to 6,

wherein the free valences of the oxygen atoms bound to the silicon atom are saturated as in silica skeletons by silicon atoms of further groups of formula (III) and/or via the metal atoms in one or more of the cross-linking bridge-type cross-links



(IV)

M is a silicon, titanium or zirconium atom and R' is a linear or branched alkyl group with 1 to 5 C atoms or a phenyl group and the ratio of silicon atoms from the groups of the formula (III) to the metal atoms in the bridge-type cross-links (IV) is 1:0 to 1:20 and X=>N—H, >N—CH_3, >N—C_2H_5, —S—, —S_2—, —S_3—, —S_4—,



wherein R" is H or is a linear or branched alkyl group with 1 to 5 C atoms or a group $(CH_2)_n$—NR_2''',
wherein n signifies a number from 1 to 6 and R''' is H or is a linear or branched alkyl group with 1 to 5 C atoms, said particles having a diameter of 0.01 to 3.0 mm, a specific surface of up to 1000 m^2/g, a specific pore volume of up to 6.0 ml/g as well as a bulk density of 50 to 1000 g/l.

5,484,870

POLYUREA COMPOSITION SUITABLE FOR A GOLF BALL COVER

Shenshen Wu, Dartmouth, Mass., assignor to Acushnet Company, Fairhaven, Mass.

Filed Jun. 28, 1993, Ser. No. 83,807
Int. Cl.[6] C08G 18/32;77/26
U.S. Cl. 528—28 9 Claims

1. A polyurea composition suitable for molding golf ball covers comprising the reaction product of an organic compound having at least two isocyanate functional groups and an amine curing agent selected from the group of polymethylene-di-p-aminobenzoates, polydimethylsiloxane-bis(4-aminobenzoate), polytetramethyleneetherglycol-di-p-aminobenzoate, and polypropylene-glycol-di-p-aminobenzoate, wherein the equivalent weight ratio of amine functional groups to isocyanate functional groups is about 2.97.

5,484,871

ORGANOPOLYSILOXANES CONTAINING HYDROPHILLIC GROUPS

Michael Stepp, Burghausen, Germany, assignor to Wacker-Chemie GmbH, Munich, Germany

Filed Sep. 1, 1994, Ser. No. 299,982
Claims priority, application Germany, Sep. 10, 1993, 43 30 735.3
Int. Cl.[6] C08G 77/12
U.S. Cl. 528—31 7 Claims

1. An organopolysiloxane comprising at least one unit (A) of the formula

$$(R^2O)_m SiHR_{2-m}O_{1/2} \quad (I)$$

and at least one unit (B) selected from the group consisting of $ER_2SiO_{1/2}$, $ERSiO_{2/2}$ and $ESiO_{3/2}$, in which

R is a monovalent SiC-bonded optionally substituted hydrocarbon radical having 1 to 12 carbon atoms,

R^2 is a monovalent optionally substituted hydrocarbon radical,

m is 1 or 2, and

E is a radical of the formula

$$—R^1_n[OY]_xR^2 \quad (II)$$

in which

R^1 is an alkylene radical having 1 to 6 carbon atoms,

n is 0 or 1,

Y is alkylene groups having 1 to 4 carbon atoms,

R^2 is an alkoxy radical having 1 to 6 carbon atoms or an oxycarbonylalkyl radical having 1 to 6 carbon atoms, and

x is an integer from 1 to 200.

5,484,872

CYCLIC SULFIDE COMPOUND, POLYMERIZABLE COMPOSITIONS FOR OPTICAL PRODUCTS AND OPTICAL PRODUCTS FORMED THEREOF

Hiroyuki Kawaki, Amagasaki; Tetsuyuki Saika, Saitta, and Masafumi Mikami, Kurume, all of, Japan, assignors to Daiso Co., Ltd., Osaka, Japan

Division of Ser. No. 35,598, Mar. 23, 1993, Pat. No. 5,446,173.
This application Mar. 14, 1995, Ser. No. 403,648
Claims priority, application Japan, Mar. 24, 1992, 4-065525
Int. Cl.[6] C08G 18/28; C07D 327/04
U.S. Cl. 528—73 16 Claims

1. A polymerizable composition for manufacturing optical products comprising the compound (A) represented by the general formula (I)

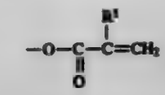


(I)

where R^1 represents —CH_2—CH_2—, —CH_2—CH_2CH_2—, —CH_2O—CH_2, —CH_2—O—, or —CH_2—S—;
a compound (B) represented by a general formula (II):

$$(X^1\frac{}{}_{n_1}—R^2\frac{}{}X^2)_{n_2} \quad (II)$$

where X^1 and X^2 may be identical or different and represent —N=C=O, —N—C=S,



wherein R^3 designates —H or —CH_3 or



wherein R^4 denotes —H or —CH_3, n^1 and n^2 may be identical or different and represent integers of 1–5; R^2 designates an organic residue with number of carbon atoms 2–25, respectively and, optionally, a compound (C) represented by a general formula (III):



(III)

wherein Y^1 and Y^2 may be mutually identical or different and denote —SH or —OH, m^1 and m^2 may be mutually identical or different and designate integers of 1–5; R^6 designates an organic residue with number of carbon atoms 2–25, respectively, the compound (C) excluding the compound (A).

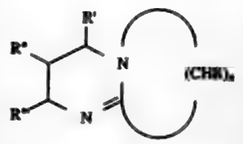
5,484,873

TRIETHYLENEDIAMINE AND BICYCLIC AMIDINE BASED CATALYSTS AND USE IN THERMOSETTABLE COMPOITIONS

John R. Johnson, Danville, Ind., assignor to Reilly Industries, Indianapolis, Ind.

Continuation of Ser. No. 35,943, Mar. 23, 1993, abandoned. This application Sep. 14, 1994, Ser. No. 305,737
Int. Cl.[6] C08G 59/68;65/10
U.S. Cl. 528—91 8 Claims

1. A thermosettable composition, comprising a curable resin containing epoxy functionality and a catalytic amount of a monoboron trifluoride complex with a bicyclic amidine compound having the formula:



wherein n is a number ranging from 3 to about 7 nd R, R', R'' and R''', which may be the same or which may differ from one another, are H or alkyl.

5,484,874

POLYCARBONATE RESIN COMPOSITIONS

Kenichi Ishiwa, Shimotsuga, and Hideyuki Itoi, Utsunomiya, both of, Japan, assignors to GE Plastics, Japan, Ltd., Tokyo, Japan

Filed Mar. 19, 1993, Ser. No. 33,938
Int. Cl.[6] C08G 64/00
U.S. Cl. 528—196 10 Claims

1. A polycarbonate resin composition comprising:

A) 100 parts by weight of a polycarbonate having an intrinsic viscosity, as measured at 20 C. in methylene chloride, of from 0.30 to 0.65 dL/g and

B) 0.001–5 parts by weight of an ester of an aliphatic carboxylic acid and an alcohol,

in which the polycarbonate is a product of melt polymerization of an aromatic dihydroxy compound with a carbonate diester.

5,484,875

COPOLYMERIC POLYCARBONATE PRODUCTION METHOD

Takeshi Sakashita; Tomoaki Shimada; Kotaro Kishimura, all of Iwakuni, and Shuichi Uchimura, Otake, all of, Japan, assignors to GE Plastics Japan, Tokyo, Japan

Division of Ser. No. 212,877, Mar. 14, 1994, Pat. No. 5,418,315, which is a division of Ser. No. 903,318, Jun. 24, 1992, Pat. No. 5,324,809. This application May 19, 1995, Ser. No. 444,783
Claims priority, application Japan, Jun. 28, 1991, 3-159145
Int. Cl.[6] C08G 63/02;64/00
U.S. Cl. 528—198 7 Claims

1. A method for preparing copolymeric polycarbonates comprising melt polycondensing a mixture of an aromatic dihydroxy compound containing an amount of 2–90 mol % of hydroquinone or substituted hydroquinones and a diester carbonate in the presence of a catalyst containing an alkali metal compound or an alkaline earth metal compound in an amount of 1×10^{-6} to 5×10^{-6} mole per mole of the total amount of the aromatic dihydroxy compound, then adding an acidic compound[B] to the melt polycondensation product [A].

5,484,876

PRODUCTION PROCESS FOR AROMATIC THIOETHER KETONE/THIOETHER SULFONE COPOLYMERS

Yukichiro Kawakami, and Zenya Shiki, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Division of Ser. No. 3,034, Jan. 12, 1993, Pat. No. 5,369,191. This application Jul. 29, 1994, Ser. No. 282,583
Claims priority, application Japan, Jan. 23, 1992, 4-34251; Mar. 26, 1992, 4-101692; Jan. 23, 1992, 4-307908
Int. Cl.[6] C08G 75/14; C08L 81/04
U.S. Cl. 528—226 6 Claims

1. A process for the production of an aromatic thioether ketone/thioether sulfone copolymer, which comprises reacting an alkali metal sulfide with dihalogenated aromatic compounds including a 4,4'-dihalobenzophenone and a 4,4'-dihalodiphenylsulfone in an organic amide solvent containing water under the following conditions (1)–(3):

(1) the molar ratio of the amount of the charged 4,4'-dihalobenzophenone to the amount of the charged 4,4'-dihalodiphenylsulfone being 98:2–65:35,

(2) the ratio of the amount of the charged dihalogenated aromatic compounds to the amount of the charged alkali metal sulfide being 0.95–1.2 (mol/mol),

(3) the reaction being conducted by at least the following two steps:

in the first step, the alkali metal sulfide and the dihalogenated aromatic compounds being subjected to a polymerization reaction in a temperature range of 60°–260° C. for 0.5–30 hours in the water-containing organic amide solvent in which the ratio of the water content to the amount of the charged organic amide solvent is controlled within a range of 1–20 (mol/kg), and

in the second step, the ratio of the water content to the amount of the charged organic amide solvent being controlled within a range of 1–20 (mol/kg), and the polymerization reaction mixture being held for 0.1–10 hours in a temperature range of 265°–320° C.

5,484,877

Patent Not Issued For This Number

5,484,878

PROCESS FOR PREPARING POLYSUCCINIMIDES FROM ASPARTIC ACID

Yi H. Paik, Princeton, N.J.; Ethan S. Simon, Ambler, and Graham Swift, Blue Bell, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 911,866, Jul. 10, 1992, Pat. No. 5,380,817. This application Aug. 25, 1994, Ser. No. 296,337
Int. Cl.[6] C08G 69/10
U.S. Cl. 528—328 13 Claims

1. A process for preparing polysuccinimides comprising:

a) forming a polymerization mixture of poly(alkylene glycol), aspartic acid and, optionally, one or more other amino acids;

b) heating the mixture to an elevated temperature of from about 120° C. to about 300° C.;

c) maintaining the mixture at the elevated temperature to form polysuccinimides; and

d) hydrolyzing the polysuccinimides to form the corresponding poly(amino acid).

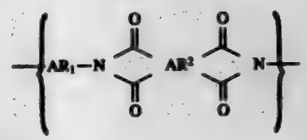
5,484,879

POLYIMIDES CONTAINING FLUORINE

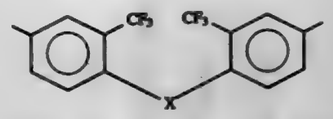
Robert A. Buchanan; Jeffrey S. Stults, both of Grand Island, and Ronald F. Spohn, Gottsville, all of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Dec. 17, 1990, Ser. No. 628,790
Int. Cl.[5] C08G 73/10;69/26
U.S. Cl. 528—353 30 Claims

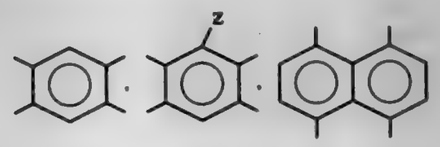
1. A polyimide polymer consisting of the following recurring structure:



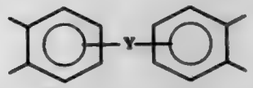
wherein AR_1 is



where X is O, S, SO, SO_2, CO, $C(CF_3)_2$, $C(CH_3)_2$, $Si(CH_3)_2$, or a single bond, wherein AR_2 is



where Z is Cl, NO_2, CF_3 or CN; or



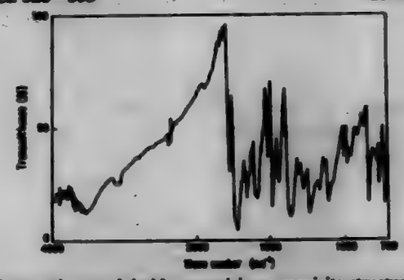
where Y is O, S, SO, SO_2, CO, $C(CF_3)_2$, $C(CH_3)_2$, $Si(CH_3)_2$ —O—Ar—O—, or a single bond, and where AR is an aromatic nucleus.

5,484,880

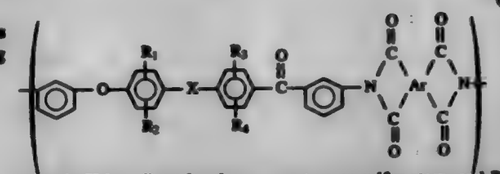
POLYIMIDE

Wataru Yamashita; Yuichi Ohwa; Shoji Tanai; Mitsunori Mukuno; Tsutomu Ishida, all of Kanagawa; Kaisaburo Yamaguchi, Chiba, and Akihiro Yamaguchi, Kanagawa, all of, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Dec. 13, 1994, Ser. No. 354,986
Claims priority, application Japan, Dec. 21, 1993, 5-321986; Mar. 7, 1994, 6-035524
Int. Cl.[6] C08G 77/10;69/26; C07C 225/22
U.S. Cl. 528—353 16 Claims



1. A amorphous polyimide comprising a requisite structural unit consisting of one or more recurring structural units represented by the formula (1):



(I)

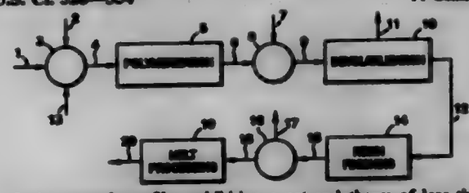
wherein X is a direct bond, oxygen atom or sulfur atom, and R_1, R_2, R_3 and R_4 are individually a hydrogen atom or methyl, and Ar is a tetravalent radical having 6 to 27 carbon atoms and being selected from the group consisting of a monoaromatic radical, condensed polyaromatic radical and noncondensed polyaromatic radical having aromatic radicals connected to each other with a direct bond or a bridge member.

5,484,881

MELT-STABLE AMORPHOUS LACTIDE POLYMER FILM AND PROCESS FOR MANUFACTURING THEREOF

Patrick R. Gruber; Sh. Paul; Jeffrey J. Kolstad, Wayzata; Christopher M. Ryan, Dayton; Eric S. Hall, Crystal, and Robin S. Eichen Conn, Minneapolis, all of Minn., assignors to Cargill, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 955,698, Oct. 2, 1992, Pat. No. 5,338,822. This application Aug. 23, 1993, Ser. No. 110,434
Int. Cl.[6] C08G 63/08; B32B 9/04;27/36
U.S. Cl. 528—354 44 Claims



1. An amorphous film exhibiting a net endotherm of less than about 10 joules per gram of poly(lactide) polymer, said film comprising a melt stable, lactide polymer composition, said composition comprising:

i) a plurality of poly(lactide) polymer chains, said polymer chains being reaction products of polymerizing a lactide mixture comprising greater than about 1 percent by weight meso-lactide, with the remaining lactide being selected from the group consisting of L-lactide, D-lactide and mixtures thereof, said plurality having a number average molecular weight of from about 10,000 to about 300,000;

ii) residual lactide in a concentration of less than about 2 percent by weight; and

iii) water, if present at all, present in a concentration of less than about 2000 parts per million.

5,484,882

PROCESS FOR THE CONTINUOUS PRODUCTION OF BIODEGRADABLE POLYESTER POLYMER

Mario Takeda, and Yasutoshi Kakizawa, both of Chiba, Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Jul. 8, 1994, Ser. No. 272,191
Claims priority, application Japan, Jul. 12, 1993, 5-171517
Int. Cl.[6] C08G *63/08;* C08F *6/00*
U.S. Cl. 528—361 **17 Claims**

1. A process for the continuous production of a biodegradable polyester polymer, which comprises

continuously supplying polymerizable components consisting essentially of intermolecularly cyclized esters of hydroxycarboxylic acid and one or more lactone into a continuous reaction apparatus equipped with a static mixer wherein the polymerizable components are subjected to ring-opening polymerization at a temperature of 125° to 270° C., and

continuously withdrawing the reaction product from the end of the polymerization line in the continuous reaction apparatus,

wherein said polymerizable components are supplied in the form of a melt or a solution in a solvent prepared in an atmosphere of an inert gas, and said static mixer comprises mixing elements fixed in a pipe through which a solution flow is axially and crosswise split, diverted or inverted so that the solution is stirred, said mixing elements being free of mobile portions.

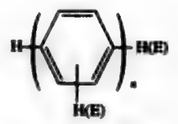
5,484,883

LITHIUM/HMPA-PROMOTED SYNTHESIS OF POLY(PHENYLENES)

James M. Tour, and Eric B. Stephens, both of Columbia, S.C., assignors to University of South Carolina, Columbia, S.C.

Division of Ser. No. 987,353, Dec. 7, 1992, Pat. No. 5,338,823, which is a division of Ser. No. 543,673, Jun. 25, 1990, Pat. No. 5,169,929. This application Aug. 16, 1994, Ser. No. 291,114
Int. Cl.[6] C08G *79/00*
U.S. Cl. 528—397 **1 Claim**

1. A poly(phenylene) composition substantially free of material insoluble in tetrahydrofuran comprising a backbone of the general formula



wherein E is CO_2H, I, Br, Cl, RC(OH)H, or RC(OH)R^1; and wherein R and R^1, which may be the same or different, are alkyl, alkenyl, alkynyl, aryl, alkoxy, or amide wherein the poly(phenylene) has a molecular weight of 1500–2700 as measured by gel permeation chromatography and wherein the insoluble material contained therein is less than about 5%.

5,484,884

HIGH MOLECULAR WEIGHT POLYANILINE FILMS

Alan G. MacDiarmid, Drexel Hill; Elliot Scherr, and Xun Tang, both of Philadelphia, all of Pa., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Division of Ser. No. 117,582, Sep. 7, 1993, Pat. No. 5,312,686, which is a division of Ser. No. 950,414, Sep. 23, 1992, Pat. No. 5,298,472, which is a division of Ser. No. 768,352, Sep. 30, 1991, Pat. No. 5,177,187, which is a continuation of Ser. No. 306,448, Feb. 3, 1989, abandoned. This application Mar. 4, 1994, Ser. No. 206,544
Int. Cl.[6] C08G *73/00;* H01B *1/00*
U.S. Cl. 528—422 **7 Claims**

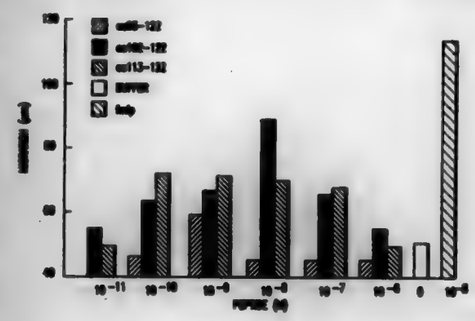
1. A film consisting essentially of polyaniline having a molecular weight of at least about 300,000 as determined by gel permeation chromatography.

5,484,885

CHEMOTACTIC, ANTIBIOTIC AND LIPOPOLYSACCHARIDE-BINDING PEPTIDE FRAGMENTS OF CAP37

Heloise A. Pereira, and John K. Spitznagel, both of Decatur, Ga., assignors to Emory University, Atlanta, Ga.

Continuation-in-part of Ser. No. 543,151, Jun. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 375,739, Jul. 5, 1989, abandoned. This application Mar. 19, 1992, Ser. No. 855,417
Int. Cl.[6] C07K *7/06;14/435;14/52*
U.S. Cl. 530—326 **2 Claims**



1. A peptide consisting of the amino acid sequence as defined in the Sequence Listing by SEQ ID NO:2.

5,484,886

HUMAN NEUROKININ-1 RECEPTOR

Tung M. Fong, Somerset, and Catherine D. Strader, Verona, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 691,197, Apr. 25, 1991, abandoned. This application Sep. 7, 1993, Ser. No. 117,968
Int. Cl.[6] C12N *15/12;* C07K *14/435;14/71*
U.S. Cl. 530—350 **1 Claim**

1. A recombinant protein having the amino acid sequence SEQ ID NO:26 of the human neurokinin-1 receptor.

5,484,887

HOMOGENEOUS INTERLEUKIN 1

Shirley R. Kronheim; Carl J. March; Paul J. Conlon, III, and Thomas P. Hopp, all of Seattle, Wash., assignors to Immunex Corporation, Seattle, Wash.

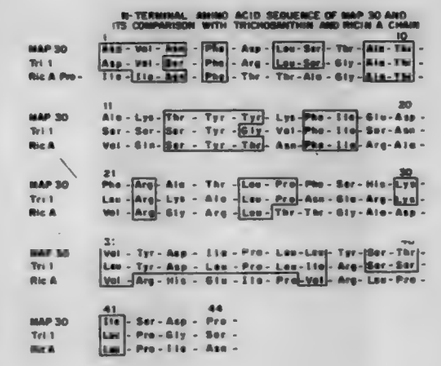
Continuation-in-part of Ser. No. 635,006, Jul. 27, 1984, abandoned, which is a continuation-in-part of Ser. No. 622,201, Jun. 19, 1984, abandoned. This application Nov. 30, 1984, Ser. No. 676,533
Int. Cl.[6] C07K *14/545;1/00*
U.S. Cl. 530—351 **12 Claims**

1. A process for purifying a mature interleukin-1B from a crude solution of interleukin-1 free of serum proteins, comprising the steps of:

(A) exposing the crude solution of interleukin-1 to a red triazinyl dye-ligand bound to a support matrix;

(B) washing unbound components of the crude solution from the support matrix; and

(C) eluting a mature interleukin-1B from the dye-ligand.



5,484,888

GELATIN PRODUCTION

David Holzer, 545 W. 37th St., Miami Beach, Fla. 33140

Filed Mar. 8, 1994, Ser. No. 208,002
Int. Cl.[6] C07K *14/435;1/14;* A23J *3/06*
U.S. Cl. 530—355 **18 Claims**

1. A method of producing gelatin from fish skins, wherein said fish skins are from a kosher species of fish having fins and scales, said method comprising the steps of:

a. soaking the fish skins in an alkaline hydroxide solution suspension for a period of time of between three to sixty days; wherein, with soaking times in excess of ten days, said alkaline hydroxide solution suspension comprises, during soaking times in excess of ten days, a minimum concentration of alkaline hydroxide/liter of water/kg of fish skins, at least sufficient to retard putrefaction of the fish skins during a time of soaking in excess of ten days;

b. removing excess alkaline hydroxide solution suspension from said fish skins, while maintaining said fish skins in an alkaline state; and extracting gelatin from said alkaline fish skins.

5,484,889

PLANT PROTEIN USEFUL FOR TREATING TUMORS AND HIV INFECTION

Sylvia Lee-Huang, New York, N.Y.; Philip L. Huang, Boston, Mass.; Peter L. Nara, Frederick, Md.; Hao-Chia Chen, Potomac, Md.; Hsiang-fu Kung, Middletown, Md.; Peter Huang; Henry L Huang, both of New York, N.Y., and Paul L. Huang, Boston, Mass., assignors to New York University, New York, N.Y.; American Biosciences, Inc., Boston, Mass., and The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 48,066, Apr. 19, 1993, abandoned, which is a continuation of Ser. No. 594,156, Oct. 9, 1990, abandoned. This application Jul. 21, 1994, Ser. No. 277,283
Int. Cl.[6] C07K *14/415*
U.S. Cl. 530—379 **1 Claim**

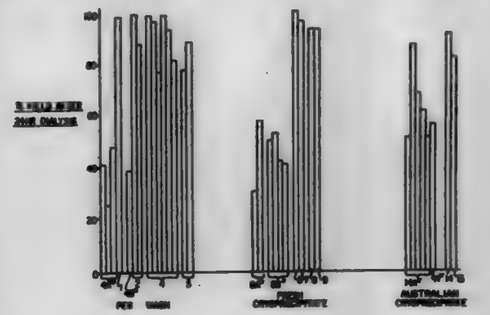
1. A purified protein comprising a MAP 30 protein obtainable from the fruit or the seed of the plant *Momordica charantia*, said MAP 30 protein having a molecular weight of about 30 kD on sodium dodecyl sulfate polyacrylamide gel electrophoresis and including the amino acia sequence: Asp-Val-Asn-Phe-Asp-Leu-Ser-Thr-Ala-Thr-Ala-Lys-Thr-Tyr-Thr-Lys -Phe-Ile-Glu-Asp-Phe-Arg-Ala-Thr-Leu-Pro-Phe-Ser-His-Lys-Val -Tyr-Asp-Ile-Pro-Leu-Leu-Tyr-Ser-Thr-Ile-Ser-Asp-Pro, SEQ ID NO:1, said protein having anti-HIV activity in vitro in p24 expression or reverse transcriptase assays.

5,484,890

ANTIHEMOPHILIC FACTOR STABILIZATION

Alan J. Johnson, 127 W. 12th St., New York, N.Y. 10011, and Anne J. Fulton, 515 Avon Dr., East Windsor, N.J. 08520

Continuation of Ser. No. 790,390, Nov. 12, 1991, Pat. No. 5,278,289. This application Oct. 15, 1993, Ser. No. 138,481
The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.
Int. Cl.[6] C07K *1/18;14/755*
U.S. Cl. 530—383 **4 Claims**



1. A method of recovering, from a biological sample, an antihemophilic factor protein containing fraction having increased antihemophilic factor protein stability;

said sample comprising (a) an antihemophilic factor protein, (b) at least one destabilizing protease impurity, and (c) at least one proprotease impurity; and

said fraction having at least 17 units of antihemophilic factor protein/mg of total protein;

said method comprising:

contacting said sample with an amount of a protease removing agent effective to remove a destabilizing amount of said protease impurity and an amount of proprotease removing agent effective to remove a destabilizing amount of said proprotease impurity;

said proprotease removing agent comprising an anion exchange resin in an amount ranging from 70 mg total loading protein/ml anion exchange resin to 750 mg total loading protein/ml anion exchange resin.

5,484,891
SELECTIN LIGANDS

Laurence A. Lasky, Sausalito, Calif.; Yasuyuki Imai, Tokyo, Japan; Steven D. Rosen, San Francisco, and Mark S. Singer, Berkeley, both of Calif., assignors to Genentech, Inc., South San Francisco, and The Regents of the University of California, Berkeley, both of Calif.

Division of Ser. No. 834,902, Feb. 13, 1992, Pat. No. 5,304,640, which is a continuation-in-part of Ser. No. 695,905, May 6, 1991, Pat. No. 5,318,890. This application Feb. 18, 1993, Ser. No. 18,994

Int. Cl.[6] C07K *13/00;15/14*

U.S. Cl. 530—387.3 9 Claims



1. A purified polypeptide comprising an amino acid sequence encoded by a nucleic acid able to hybridize under low stringency conditions to the complement of a nucleotide sequence encoding the protein having the amino acid sequence shown in FIG. 4 (SEQ. ID. No.:2), capable of binding a native L-selectin.

5,484,892
MONOCLONAL ANTIBODIES THAT BLOCK LIGAND BINDING TO THE CD22 RECEPTOR IN MATURE B CELLS

Thomas F. Tedder, S. Natick, and Pablo Engel, Boston, both of Mass., assignors to Dana-Farber Cancer Institute, Inc., Boston, Mass.

Filed May 21, 1993, Ser. No. 66,309

Int. Cl.[6] A61K *39/395;* C07K *16/18;16/28;* C12N *5/12*

U.S. Cl. 530—388.73 5 Claims

1. A monoclonal antibody produced by a hybridoma cell line selected from the group consisting of HB22-7 (ATCC No. HB 11347), HB22-22 (ATCC No. HB 11348) and HB22-23 (ATCC No. HB11349); or a monoclonal antibody that binds to the same antigenic determinant as a monoclonal antibody produced by a hybridoma cell line selected from the group consisting of HB22-7 (ATCC No. HB 11347), HB22-22 (ATCC No. HB 11348) and HB22-23 (ATCC No. HB11349); or an Fab, $F(ab')_2$, or Fv fragment or conjugate of a monoclonal antibody produced by a hybridoma cell line selected from the group consisting of HB22-7 (ATCC No. HB 11347), HB22-22 (ATCC No. HB 11348) and HB22-23 (ATCC No. HB 11349).

5,484,893
TRI-AZA MACROCYCLES AND METAL COMPLEXES THEREOF

David Parker, Durham, and Thomas A. Millican, Maidenhead, both of, United Kingdom, assignors to Celltech Limited, Berkshire, United Kingdom

Division of Ser. No. 784,601, Oct. 22, 1991, Pat. No. 5,247,075, which is a continuation of Ser. No. 363,683, Jun. 19, 1989, abandoned. This application Jun. 21, 1993, Ser. No. 78,650

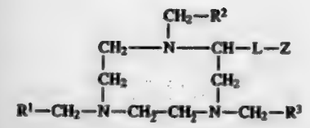
Claims priority, application United Kingdom, Aug. 12, 1987, 8719041

Int. Cl.[6] C07K *16/00;* A61K *39/395;47/22;47/16*

U.S. Cl. 530—391.5 10 Claims

1. A member selected from the group consisting of

(i) a conjugate of an antibody and at least one macrocyclic group of the formula:



wherein

each of R^1, R^2, and R^3 is —COOH, —SO_3H, or —PO_3H_2; Z' is the residue of a antibody reactive group and through which said antibody is bound; and L is an optionally substituted hydrocarbyl chain which optionally includes one or more members selected from the group consisting of —O—, —S—, —$N(R^5)$—, —$CON(R^5)$—, —$N(R^5)CO$—, a cycloaliphatic ring, an aromatic ring, and a pyridine ring, in which R^5 is hydrogen or alkyl of 1 to 6 carbon atoms;

(ii) a complex of said conjugate with a di- or tripositive metal having a coordination number of from 2 to 6; and

(iii) a pharmaceutically acceptable salt of said conjugate or said salt.

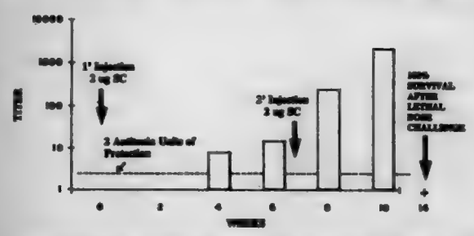
5,484,894
MACROMOLECULAR MICROPARTICLES AND METHOD OF PRODUCTION

James E. Woiszwillo, Milford, Mass., assignor to Middlesex Sciences, Inc., Norwood, Mass.

Continuation-in-part of Ser. No. 28,237, Mar. 9, 1993. This application Mar. 4, 1994, Ser. No. 206,456

Int. Cl.[6] C07K *17/02;1/00;* C08H *1/02;* G01N *33/544*

U.S. Cl. 530—410 18 Claims



1. A method for making microparticles comprising the steps of:

a) combining a solution containing a macromolecule with a solution containing both polyvinylpyrrolidone and polyethylene glycol to produce a reaction solution;

b) incubating the reaction solution at a predetermined temperature greater than room temperature for a sufficient amount of time to form microparticles; and

c) separating the microparticles from the reaction solution.

5,484,895
GRAFT COPOLYMERS OF VASCULAR PLANTS, METHOD OF MAKING SAME AND USES THEREFORE

John J. Meister, 31675 Westbedy Dr., Beverly Hills, Mich. 48025-3744, and Meng-Jiu Chen, 17418 Warrington, Detroit, Mich. 48221

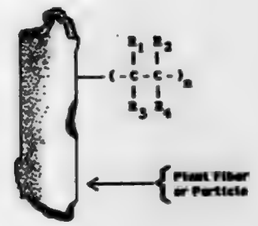
Continuation-in-part of Ser. No. 601,442, Oct. 22, 1990, abandoned, which is a continuation-in-part of Ser. No. 286,534, Dec. 19, 1988, Pat. No. 4,940,764, and Ser. No. 479,839, Feb. 14, 1990, Pat. No. 5,138,007, which is a continuation-in-part of Ser. No. 286,344, Dec. 19, 1988, Pat. No. 4,931,527. This application Apr. 8, 1993, Ser. No. 44,944

The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.

Int. Cl.[6] C07G *1/00;* C08L *97/00*

U.S. Cl. 530—500 19 Claims

1. A composition, comprising:



a) a first component containing a vascular plant or constituent thereof having at least 0.01 weight percent lignin, a cellulose content of 0 to 99.9 weight percent, a hemicellulose content of 0 to 90 weight percent, and a combined starch, lipid, crystal, silica bodies, silica stigmata, protein bodies, and mucilage content of 0 to 60 weight percent;

b) a second component containing at least one thermoplastic having randomly repeating units R-formed by the polymerization of at least one selected from the group consisting of 1-chloroethene; 1,1,2,2-tetrafluoroethene; 1-phenylethene; 1-(4-bromophenyl)ethene; 1-(4-chlorophenyl)ethene; 1,n-diethenylbenzene, where n=2, 3, or 4; 1,3-butadiene; 2-methyl-1,3-butadiene; 2-propene nitrile; 1,1-dichloroethene; 1,2-dichloroethene; 1-methyl-1-phenylethene; 2-chloro-1,3-butadiene; 2-oxo-3-oxypent-4-ene; 2-oxy-3-oxopent-4-ene; 4-methyl-2-oxy-3-oxopent- 4-ene; propene; and ethene; and

c) a grafted layer which constitutes at least 10 percent of the area of contact between the first and second components wherein said grafted layer consists of a backbone of a vascular plant or constituent thereof grafted to a thermoplastic sidechain, said backbone of a vascular plant or constituent thereof having at least 0.01 weight percent lignin, a cellulose content of 0 to 99.9 weight percent, a hemicellulose content of 0 to 90 weight percent, and a combined starch, lipid, crystal, silica bodies, silica stigmata, protein bodies, and mucilage content of 0 to 60 weight percent; said at least one thermoplastic sidechain having randomly repeating units R- formed by the polymerization of at least one selected from the group consisting of 1-chloroethene; 1,1,2,2-tetrafluoroethene; 1-phenylethene; 1-(4-bromophenyl)ethene; 1-(4-chlorophenyl)ethene; 1,n-diethenylbenzene, where n=2, 3, or 4; 1,3-butadiene; 2-methyl-1,3-butadiene; 2-propene nitrile; 1,1-dichloroethene; 1,2-dichloroethene; 1-methyl-1-phenylethene; 2-chloro-1,3-butadiene; 2-oxo-3-oxypent-4-ene; 2-oxy-3-oxopent-4-ene; 4-methyl-2-oxy-3-oxopent- 4-ene; propene; and ethene; such that the number of sidechains grafted to the vascular plant or constituent thereof varies from 1 to 500 and the number of repeat units in each sidechain varies from 1 to 500,000.

5,484,896
ESTERIFIED HIGH LIGNIN CONTENT CELLULOSIC FIBERS

Shahrokh A. Naieni; Carlisle M. Herron, both of Cincinnati, Ohio, and Thomas R. Hanser, Taylor Mill, Ky., assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Mar. 24, 1994, Ser. No. 217,465

Int. Cl.[6] C07G *1/00;* C08L *97/00;97/02;* A61F *13/15*

U.S. Cl. 530—504 12 Claims

1. An absorbent structure comprising individualized esterified high lignin content cellulosic fibers containing from about 0.5 to 8% by weight, on a citric acid basis applied on a dry fiber basis, of reacted C_2–C_9 polycarboxylic acid and having a water retention value ranging from about 65 to 125, a dry resiliency defined by a 5K density ranging from about 0.08 to 0.22 gm/cc, a wet resiliency defined by a wet compressibility ranging from about 6.0 to 11.0 cc/gm and a drip capacity ranging from about 7.0 to 16.0 g/g.

5,484,897
ORGANOMETALLIC COMPLEXES OF LANTHANIDES AND THEIR USE IN THE POLYMERIZATION OF UNSATURATED MONOMERS

Fabio Garbassi; Paolo Biagini, both of Novara; Piero Andreussi, Milan, and Gabriele Lugli, San Donato Milan, all of, Italy, assignors to Enichem Elastomeri S.r.l., Milan, Italy

Filed Jul. 27, 1994, Ser. No. 281,221

Claims priority, application Italy, Aug. 6, 1993, MI93A1793

Int. Cl.[6] C07F *5/00;* B01J *23/00*

U.S. Cl. 534—15 10 Claims

1. Organometallic complexes of lanthanides, which can be represented by the general formula:

$$Me(OR)_3{}^*(Me_2R^1R^2R^3)_x;$$

wherein:

Me represents a metal with atomic number 21, or an atomic number between 57 and 71,

OR is an alkoxylic group wherein R represents a linear, branched or cyclo-aliphatic alkyl radical containing from 1 to 10 carbon atoms,

Me_1 represents a metal of the group IIIA, whereas

R^1, R^2, R^3 , can be independently H, or a linear, branched or cyclo-aliphatic alkyl radical containing from 1 to 10 carbon atoms and

x is an integer which is 3 or 4.

5,484,898
FIBRE-REACTIVE DISAZO DYES WHICH CONTAIN THREE TRIAZINE GROUPS

Rolf Deitz, Basle, and Athanasios Tzikas, Pratteln, both of, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

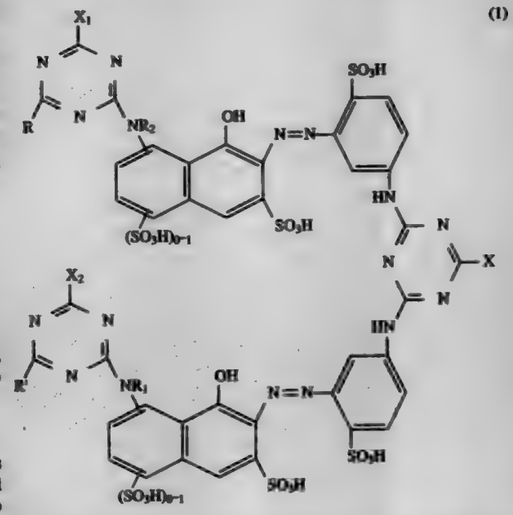
Filed May 10, 1994, Ser. No. 241,217

Claims priority, application Switzerland, May 14, 1993, 1453/93

Int. Cl.[6] C09B *62/09;* D06P *1/382;3/66*

U.S. Cl. 534—612 13 Claims

1. A compound of the formula



wherein

X, X_1 and X_2 are each independently of one another fluoro, chloro, bromo, hydroxy, 3-carboxypyrdin-1-yl or 3-carbamoylpyridin-1-yl,

R_1 and R_2 are each independently of the other hydrogen, C_1–C_4alkyl or C_1–C_4alkyl which is substituted by halogen,

hydroxy, cyano, C_1–C_4alkoxy, C_1–C_4alkoxycarbonyl, carboxyl, sulfo or sulfato, and

R and R' are each independently of the other amino, N-mono- or N,N-di-C_1–C_4alkylamino each of which is unsubstituted or substituted in the alkyl moiety by hydroxy, carboxy, sulfo, sulfato or C_1–C_4alkoxy; cyclohexylamino; phenylamino or phenylamino which is substituted in the phenyl moiety by C_1–C_4alkyl, C_1–C_4alkoxy, carboxy, sulfo or halogen; N-C_1–C_4alkyl-N-phenylamino which is unsubstituted or substituted in the phenyl moiety by C_1–C_4alkyl, C_1–C_4alkoxy, carboxy, sulfo or halogen, and is unsubstituted or substituted in the alkyl moiety by hydroxy, C_1–C_4alkoxy, sulfo or sulfato, C_1–C_4alkoxy, phenoxy, C_1–C_4 alkylthio, N-C_1–C_4alkylpiperazino or morpholino.

5,484,899

FIBER-REACTIVE TRIAZINYL DYES HAVING A MONOAZO MOIETY WITH A 2,4-DIAMINOBENZENE SULFONIC ACID COUPLING COMPONENT AND A SECOND CHROMOPHORE

Rolf Deitz, Basle, and Athanasios Tzikas, Prattein, both of, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed May 3, 1994, Ser. No. 237,478

Claims priority, application Switzerland, May 6, 1993, 1391/93

Int. Cl.[6] C09B *62/006;62/08;62/507;* **D06P** *1/38*

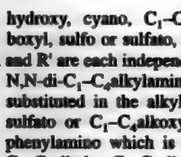
U.S. Cl. 534—618 **17 Claims**

1. A compound of the formula



(1)

in which D is a radical of the formula



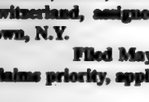
(2)

D_1 is the radical of a monoazo, polyazo, metal complex azo, anthraquinone, triphendioxazine, phthalocyanine or formazan chromophore,

X is fluorine, chlorine, hydroxyl, amino, N-mono- or N,N-di-C_1—C_4alkylamino which are unsubstituted or substituted in the alkyl part by hydroxyl, phenylamino which is unsubstituted or substituted in the phenyl part by methyl, ethyl, methoxy, ethoxy, carboxyl, sulfo, chlorine or by a radical of the formula (5a) or (5b) mentioned below, methoxy, ethoxy, iso-propoxy, methylthio, ethylthio or morpholino

R and R_1 independently of one another are each hydrogen or C_1—C_4alkyl which is unsubstituted or substituted by halogen, hydroxyl, cyano, C_1—C_4alkoxy, C_1—C_4alkoxycarbonyl, carboxyl, sulfo or sulfato and

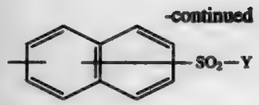
Z is a radical of the formula



(3a)

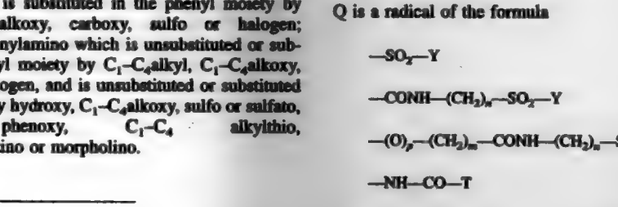
or of the formula

-continued



(3b)

Q is a radical of the formula



(5a),

(5b),

(5c) or

(5d)

Y is vinyl, β-bromo- or β-chloroethyl, β-acetoxyethyl, β-benzoyloxyethyl, β-phosphatoethyl, β-sulfatoethyl or β-thiosulfatoethyl,

T is α,β-halopropionyl or β-haloacryloyl,

n and m independently of one another are an integer from 1 to 6,

p is the number 0 or 1,

and the phenyl ring A is unsubstituted or further substituted by C_1—C_4alkyl, C_1—C_4alkoxy, halogen, carboxyl or sulfo.

5,484,900

1:2 CHROMIUM COMPLEX DYESTUFFS

Winfried Mennicke, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

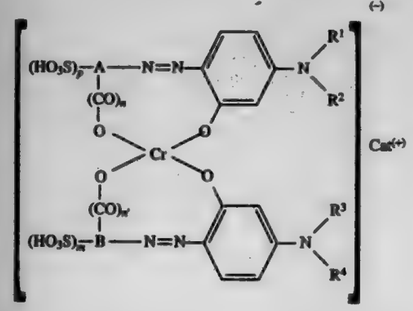
Filed Feb. 25, 1994, Ser. No. 201,592

Claims priority, application Germany, Mar. 4, 1993, 43 06 715.8

Int. Cl.[6] C09B *45/16;67/22;* **D06P** *3/32;3/06*

U.S. Cl. 534—696 **3 Claims**

1. A 1:2 chromium complex dyestuff of the formula (I)



(I)

in which

A and B, independently of one another, represent the radical of a benzene or naphthalene ring each of which is further substituted or unsubstituted, the complexing group being in each case in the o position relative to the azo group, and

R^1, R^2, R^3 and R^4 represent ethyl,

n, n', p and m, independently of one another, are 0 or 1, the sum of p and m being 1 or 2, and

$Cat^{(+)}$ represents a cation.

5,484,901

ISOINDOLINEAZO PIGMENTS

Michael Krupp, Altrip, and Georg Henning, Ludwigshafen, both of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

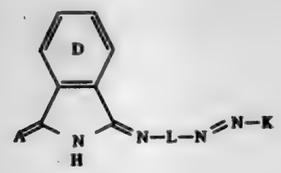
Filed Mar. 22, 1995, Ser. No. 408,387

Claims priority, application Germany, Mar. 23, 1994, 44 09 902.9

Int. Cl.[6] C09B *29/036;29/33;29/36;* **D06P** *5/00*

U.S. Cl. 534—741 **3 Claims**

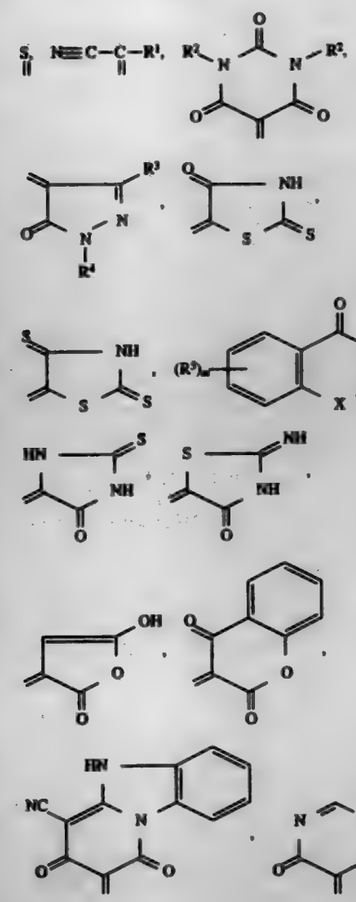
1. Isoindolineazo pigment of the general formula I



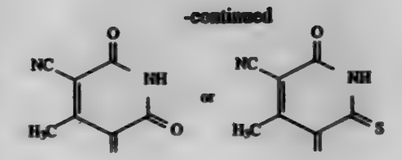
I

where:

A is a radical of the formula



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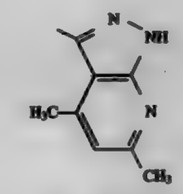


where

R^1 is

cyano;

carbamoyl with or without substitution by

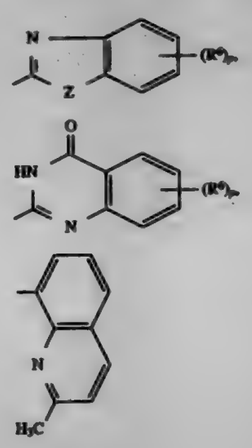


or 3,3,5,5-tetramethyl-4-piperidyl, by C_1–C_{18}-alkyl C_1–C_{10}-alkoxycarbonyl, benzyl, phenyl or naphthyl, which substituents may in turn be substituted by halogen, cyano, nitro, sulfo, C_1–C_{10}-alkyl, C_1–C_{10}-alkoxy, C_1–C_{10}-alkylcarbonyl, C_1–C_{10}-alkoxycarbonyl, mono(C_1–C_{10}-alkyl)amino, di(C_1–C_{10}-alkyl)amino, formylamino, C_2–C_{10}-alkanoylamino, benzoylamino, aminosulfonyl, mono- or di(C_1–C_{10}-alkyl)aminosulfonyl, phenylazo, 3,3,5,5-tetramethyl-4-piperidyl, phthalimidyl, carbamoyl, which can be C_1–C_{10}-alkyl-monosubstituted or -disubstituted, and/or by trifluoromethyl;

C_1–C_{10}-alkylcarbonyl, benzoyl, C_1–C_{10}-alkoxycarbonyl, phenoxycarbonyl or benzyloxycarbonyl, wherein benzoyl, phenoxy and benzyloxy may be substituted by halogen, nitro, sulfo, C_1–C_{10}-alkyl, formylamino, C_2–C_{10}-alkanoylamino and/or phthalimidyl; phenyl, which may be substituted by halogen, cyano, nitro, sulfo and/or trifluoromethyl;

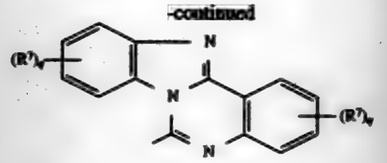
carbazoyl or ureidocarbonyl, whose terminal nitrogen atoms may be substituted once or twice by C_1–C_{10}-alkyl or benzyl which can carry the abovementioned substituents;

a heterocyclic radical of the formula



or

-continued



where

Z is —O—, —S— or —NH—,

R^6 is halogen, nitro, sulfo, C_1–C_6-alkyl or C_1–C_6-alkoxy,

R^7 is halogen,

p is from 0 to 2, and

q is from 1 to 4;

R^2 is independently in each appearance hydrogen, C_1–C_{10}-alkyl, phenyl or naphthyl, which may each be substituted by halogen, nitro, sulfo, C_1–C_{10}-alkyl and/or C_1–C_{10}-alkoxy;

R^3 is C_1–C_{10}-alkyl, amino, benzoylamino, carboxyl, carbamoyl or C_1–C_{10}-alkoxycarbonyl;

R^4 is hydrogen or phenyl which may carry up to two of the following substituents: halogen, nitro, sulfo, carboxyl, carbamoyl, C_1–C_{10}-alkyl, C_1–C_{10}alkoxy or C_1–C_{10}-alkoxycarbonyl;

R^5 is halogen or nitro;

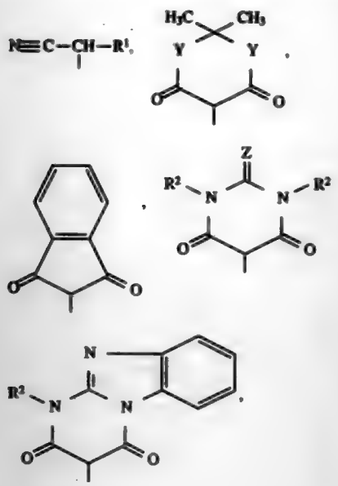
X is —O— or —NR^8—

where R^8 is hydrogen or C_1–C_{10}-alkyl;

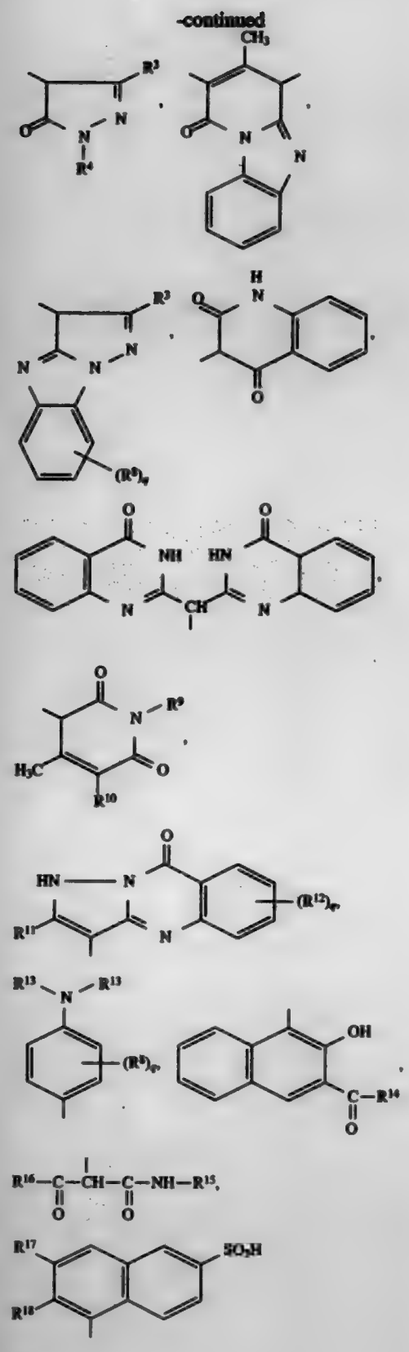
m is from 0 to 4;

L is 1,4-phenylene, 1,3-phenylene or 1,5-naphthylene, which may each carry the following substituents: halogen, nitro, carboxyl, sulfo, sulfonamido, which may be C_1–C_{10}-alkyl-monosubstituted or -disubstituted, C_1–C_{10}-alkyl, C_1–C_{10}-alkoxy, C_1–C_{10}-alkylcarbonyl, C_1–C_{10}-alkoxycarbonyl, formylamino, C_2–C_{16}-alkanoylamino and/or carbamoyl which may be C_1–C_{10}-alkyl-monosubstituted or disubstituted;

K is the radical of a coupling component of the formula



-continued



or



where

R^9 is hydrogen, halogen, nitro, sulfo, C_1–C_{10}-alkyl, C_1–C_{10}-alkoxy, C_1–C_{10}-alkoxycarbonyl and/or carbamoyl which may be C_1–C_{10}-alkyl-monosubstituted or -disubstituted;

R^{10} is C_1–C_{10}-alkyl, which may be substituted by amino or mono- or di(C_1–C_{10}-alkyl)amino;

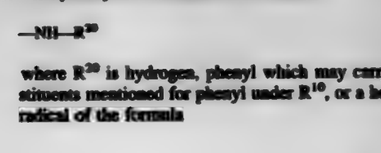
R^{10} is hydrogen, halogen, cyano, sulfo, C_1–C_{10}-alkylcarbonyl, C_1–C_{10}-alkoxycarbonyl or carbamoyl which may be C_1–C_{10}-alkyl-monosubstituted or -disubstituted;

R^{11} is methyl or phenyl which may carry the following substituents: halogen, hydroxyl, nitro, sulfo, C_1–C_{10}-alkyl, C_1–C_{10}-alkoxy, C_1–C_{10}-alkylcarbonyl, C_1–C_{10}-alkoxycarbonyl, formylamino, C_2–C_{16}-alkanoylamino, carboxyl, carbamoyl which may be C_1–C_{10}-alkyl-monosubstituted or disubstituted, mono- or di(C_1–C_{10}-alkyl) or -(phenyl)aminosulfonyl and/or C_1–C_{10}-alkoxy- or phenoxy-sulfonyl;

R^{12} is hydrogen, halogen, hydroxyl, sulfo, C_1–C_{10}-alkyl, C_1–C_{10}-alkoxy, C_1–C_{10}-alkylcarbonyl, carbamoyl which may be C_1–C_{10}-alkyl-monosubstituted or -disubstituted, and/or mono(C_1–C_{10}-alkyl)- or -(phenyl)aminosulfonyl;

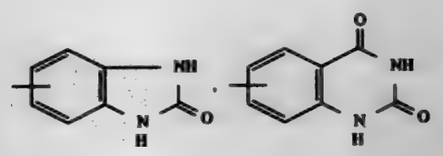
R^{13} is identical or different radicals: hydrogen, C_1–C_{10}-alkyl or C_1–C_{10}-alkylcarbonyl;

R^{14} is hydroxyl or a radical of the formula

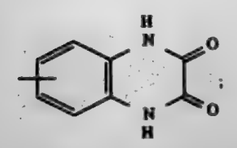


—NH—R^{20}

where R^{20} is hydrogen, phenyl which may carry the substituents mentioned for phenyl under R^{10}, or a heterocyclic radical of the formula



or



R^{15} is phenyl or naphthyl which may each carry the substituents mentioned for phenyl under R^{10}, or one of the heterocyclic radicals R^{20} mentioned under R^{14};

R^{16} is methyl or a radical of the formula —NH—R^{15};

R^{17} is hydrogen or sulfo;

R^{18} is hydrogen or hydroxyl;

R^{19} is halogen;

Y is —O— or —CH_2—;

Z is =O or =S;

the benzene ring D may be substituted by halogen, nitro, carboxyl, carbamoyl, C_1–C_{10}-alkyl and/or C_1–C_{10}-alkoxy;

and the pigments may be present in the azo or the hydrazo form or in the form of an equilibrium mixture between these two forms and the lakable groups present may be laked.

5,484,902

ORGANOPHOSPHOROUS SACCHARIDE NICKEL CATALYST

Albert L. Casalnuovo, and Thaliyil V. Rajanbabu, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 941,583, Oct. 15, 1992, Pat. No. 5,312,957, which is a division of Ser. No. 798,322, Nov. 12, 1991, Pat. No. 5,175,335. This application Feb. 25, 1994, Ser. No. 201,947

Int. Cl.[6] C07H 11/00;11/04; C07F 15/04

U.S. Cl. 536—18.4 15 Claims

1. A catalyst composition comprising a source of zero-valent nickel and a chiral, nonracemic, bidentate organophosphorus ligand of the formula

$$(R^1)_2—P—O—R^3—O—P—(R^1)_2$$

wherein each R^1 is independently a C_1 to C_{20} hydrocarbyl, alkoxy or aryloxy, each optionally substituted with one or more alkyl, cycloalkyl, alkoxyl, aralkyl, aryl, halogen, ether, ester, carboxy or amide groups; and R^3 is a C_4 to C_{40} dideoxycarbohydrate, optionally substituted with one or more hydrocarbyl, halogen, ether, ester, alcohol, amide or ketone groups.

5,484,923

PROCESS FOR THE PRODUCTION OF POLYSACCHARIDE CARBONATES

Klaus Sauerbrunn, Walsrode; Hans-Josef Buysch, and Alexander Klausener, both of Krefeld, all of, Germany, assignors to Wolff Walsrode Aktiengesellschaft, Walsrode, Germany

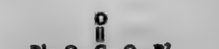
Filed Sep. 8, 1992, Ser. No. 941,405

Claims priority, application Germany, Sep. 17, 1991, 41 30 997.7

Int. Cl.[6] C07H 1/00;13/02; C08B 31/00;37/00

U.S. Cl. 536—18.6 3 Claims

1. A process for the production of a polysaccharide carbonate, where a polysaccharide is transesterified with a carbonic acid ester of the formula



(I)

is which

R^1 and R^2 each independently represents C_{1-12} alkyl, allyl, methallyl, benzyl, phenyl or cresyl, or together form a ring of 5 to 12 ring members,

in a heterogeneous phase reaction at a temperature of 40° to 160° C. for a time of from 1 to 30 hours.

5,484,964

NUCLEIC ACID MATRICES

Thor W. Nilsen, Glen Mills, Pa., and Wolf Pranky, Fairlawn, N.J., assignors to Polyprobe, Inc., Media, Pa.

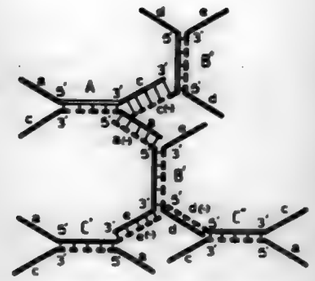
Division of Ser. No. 963,107, Oct. 19, 1992, which is a division of Ser. No. 906,222, Sep. 10, 1986, Pat. No. 5,175,270. This application Jan. 21, 1993, Ser. No. 80,385

The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.

Int. Cl.[6] C12Q 1/68; C07H 21/00;21/02;21/04

U.S. Cl. 536—23.1 22 Claims

1. A polynucleotide matrix having a plurality of single-stranded hybridization arms, said matrix being comprised of a plurality of matrix polynucleotide monomers bonded together by hybridization bonding to form an initial matrix which is then optionally cross-linked so that the matrix is bonded via intramolecular base pairing or intermolecular base pairing and covalent cross-links; each monomer, prior to being so bonded to other monomers, having at least three single-stranded hybridization regions; in said initial



5-Mmer

matrix each monomer is hybridization bonded to at least one other monomer at least one such region and when hybridization bonded to more than one such region of the same monomer, there is an intermediate region where the two monomers are not bonded; wherein each monomer, prior to hybridization bonding to other monomer(s), has a linear double stranded waist region having a first end and a second end, said waist region bonded by hybridization bonding, either fully along its length or including single-stranded portions intermediate the ends, said first end terminating with two single-stranded hybridization regions and said second end terminating with one or two single-stranded hybridization region(s), each from a strand of the waist region; and, the plurality of monomers present does not exceed saturation of the matrix.

5,484,985

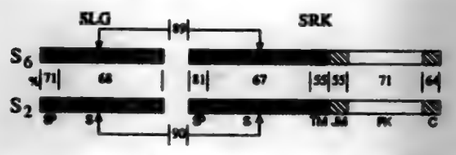
RECEPTOR PROTEIN KINASE GENE ENCODED AT THE SELF-INCOMPATIBILITY LOCUS

June B. Nasrallah; Mikhail E. Nasrallah, both of Ithaca, and Joshua Stein, Cortland, all of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Jun. 19, 1991, Ser. No. 717,331

Int. Cl.[6] C07H *21/04*; C12N *15/29*;*9/12*

U.S. Cl. 536—23.6 **14 Claims**



1. An isolated DNA fragment from the genus Brassica, which DNA fragment encodes an S receptor kinase and has a nucleotide sequence as follows:

-continued

1	ATG AAA GGT GCA CGA AAC ATC TAT CAC CAT TCT TAC ATG
40	TCC TTT TTG CTC GTC TTC GTT GTC ATG ATT CTA ATT CAT
79	CCT GCC CTT TCG ATC TAT ATC AAC ACT TTG TCG TCT ACA
118	GAA TCT CTT ACA ATC TCA AGC AAC AAA ACA CTT GTA TCT
157	CCC GGT AGT ATC TTC GAG GTC GGC TTC TTC AGA ACC AAT
196	TCT CGT TGG TAT CTC GGG ATG TGG TAC AAG AAA GTG TCC
235	GAC AGA ACC TAT GTA TGG GTT GCC AAC AGA GAT AAC CCA
274	CTC TCC AAT GCC ATT GGA ACC CTC AAA ATC TCA GGC AAT
313	AAT CTT GTC CTC CTT GAT CAC TCC AAT AAA CCT GTT TGG
352	TGG ACG AAT CTT ACT AGA GGA AAT GAG AGA TCT CCG GTG
391	GTG GCT GAG CTT CTC GCT AAC GGA AAC TTC GTG ATG CGA
430	GAC TCC AGT AAC AAC GAC GCA AGT GAA TAC TTG TGG CAA
469	AGT TTC GAT TAC CCT ACG GAT ACT TTG CTT CCA GAG ATG
508	AAA CTG GGT TAC AAC CTC AAA ACA GGG TTG AAC AGG TTC
547	CTT ACA TCA TGG AGA AGT TCA GAT GAT CCA TCA AGC GGG
586	AAT TTC TCG TAC AAG CTC GAA ACC CAA AGT CCT CCT GAG
625	TTT TAT CTA TCG CGG GAG AAC TTT CCA ATG CAT CGG AGT
664	GGT CCA TGG AAT GGA ATC CGA TTT AGT GGC ATA CCA GAG
703	GAC CAA AAG CTG AGT TAC ATG GTG TAC AAT TTC ATA GAG
742	AAT AAT GAA GAG GTC GCT TAT ACA TTC CGA ATG ACC AAC
781	AAC AGC TTC TAC TCG AGA TTG ACA CTA ATT TCC GAA GGG
820	TAT TTT CAG CGA CTG ACG TGG TAT CCG TCA ATA AGG ATA
859	TGG AAC AGG TTC TGG TCT TCT CCA GTG GAC CCC CAG TGT
898	GAT ACT TAC ATA ATG TGT GGA CCT TAC GCT TAC TGT GAC
937	GTG AAC ACA TCA CCG GTT TGT AAC TGT ATC CAA GGG TTC
976	AAT CCC CGG AAT ATA CAG CAG TGG GAT CAG AGA GTC TGG
1015	GCA GGT GGG TGT ATA AGG AGG ACG CAG CTT AGC TGC AGT
1054	GGA GAT GGT TTT ACC AGG ATG AAG AAG ATG AAG TTG CCA
1093	GAA ACT ACG ATG GCG ACT GTC GAC CGT AGT ATT GGT GTG
1132	AAA GAA TGT AAG AAG AGG TGC ATT AGC GAT TGT AAT TGT
1171	ACC GCT TTT GCA AAT GCA GAT ATC CGG AAT GGT GGG TCG
1210	GGT TGT GTG ATT TGG ACC GAA CGC CTT GAG GAT ATC CGG
1249	AAT TAC GCT ACT GAC GCT ATT GAC GGT CAA GAT CTT TAT
1288	GTC AGA TTG GCT GCA GCT GAT ATC GCT AAG AAG AGA AAC

-continued

1327	GCG AGT GGG AAA ATT ATA AGT TTG ACT GTT GGT GTT AGT
1366	GTT CTG CTT CTG CTG ATC ATG TTC TGC CTC TGG AAA AGA
1405	AAA CAA AAG CGA GCA AAA GCA AGT GCA ATA TCC ATT GCA
1444	AAT ACA CAG AGA AAC CAA AAC TTG CCT ATG AAC GAG ATG
1493	GTA CTA TCA AGC AAG AGA GAG TTT TCT GGA GAG TAC AAA
1522	TTT GAG GAA CTG GAA CTT CCA TTG ATA GAG ATG GAA ACT
1561	GTT GTC AAA GCC ACC GAA AAT TTC TCC AGC TGT AAC AAA
1600	CTC GGA CAA GGT GGT TTT GGT ATT GTT TAC AAG GGA AGA
1639	TTA CTT GAC GGG AAA GAA ATT GCA GTA AAA AGG CTA TCA
1678	AAG ACG TCA GTT CAA GGG ACT GAT GAG TTT ATG AAT GAG
1717	GTG ACA CTA ATT GCG AGG CTT CAG CAT ATA AAC CTT GTT
1756	CAA GTT CTT GGC TGT TGC ATT GAA GGA GAT GAG AAG ATG
1795	TTG ATA TAT GAG TAT TTG GAA AAT TTA AGC CTT GAT TCT
1834	TAT CTC TTT GGT AAA ACC CGA AGG TCT AAG CTA AAT TGG
1883	AAT GAG AGA TTC GAC ATT ACC AAT GGT GTT GCT CGA GGG
1912	CTT TTA TAT CTT CAT CAA GAC TCA CGG TTT AGG ATA ATC
1951	CAC AGA GAT TTG AAA GTA AGT AAC ATT TTG CTT GAC AAA
1990	AAT ATG ATC CCA AAG ATC TCG GAT TTT GGG ATG GCC AGG
2029	ATA TTT GAA AGG GAC GAA ACG GAA GCT AAC ACA ATG AAG
2068	GTG GTC GGA ACA TAC GGC TAC ATG TCC CCG GAA TAC GCA
2107	ATG TAT GGG ATA TTC TCG GAA AAA TCA GAT GTT TTC AGT
2146	TTT GGA GTC ATA GTT CTT GAA ATT GTT AGT GGA AAG AAG
2185	AAC AGA GGA TTC TAC AAC TTG GAC TAC GAA AAC GAT CTC
2224	CTA AGC TAT GTA TGG AGT CGT TGG AAG GAA GGA AGA GCG
2273	CTA GAA ATC GTA GAT CCC GTC ATC GTA GAT TCA CTG TCA
2302	TCA CAG CCA TCA ATA TTT CAA CCA CAA GAA GTC CTA AAA
2341	TGT ATT CAA ATT GGT CTC TTG TGT GTT CAA GAA CTT GCA
2380	GAG CAC AGA CCA GCG ATG TCG TCT GTG GTT TGG ATG TTT
2419	GGA AGT GAA GCA ACA GAG ATT CCT CAG CCT AAA CCG CCA
2458	GGT TAT TGC GTC AGA AGA AGT CCT TAT GAA CTT GAT CCT
2497	TCA TCA AGT TGG CAA TGT GAC GAA AAT GAA TCC TGG ACG
2536	GTG AAC CAG TAC ACC TGC TCA GTC ATT GAT GCC CGG

5,484,986

DNA CLONE ENCODING AN ETHYLENE-FORMING ENZYME, CONSTRUCTS, PLANT CELLS AND PLANTS BASED THEREON

Colin R. Bird; John A. Ray, both of Bracknell, and Wolfgang W. Schuch, Crowthorne, all of, England, assignees to Zeneca Limited, London, England

PCT No. PCT/GB91/02272, § 371 Date Aug. 2, 1993, § 102(e) Date Aug. 2, 1993, PCT Pub. No. WO92/11371, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 19, 1991, Ser. No. 78,175

Claims priority, application United Kingdom, Dec. 28, 1990, 9027616

Int. Cl.[6] C07H *21/04*; C12N *15/29;15/82*; A01H *5/00*

U.S. Cl. 536—23.6 **5 Claims**

1. A DNA clone comprising a DNA fragment that encodes ethylene-forming enzyme, said DNA fragment having the sequence of SEQ ID NO:1 found in clone M13-1.

5,484,987

NUCLEOTIDES CODING FOR THE EXTRACELLULAR MEMBRANE-BOUND SEGMENT OF IGA

Tse W. Chang, and Nancy T. Chang, both of Houston, Tex., assignees to Tanox Biosystems, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 95,868, Jul. 20, 1993, Pat. No. 5,362,643, which is a continuation of Ser. No. 760,765, Sep. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 455,088, Dec. 22, 1989, Pat. No. 5,089,683, which is a continuation-in-part of Ser. No. 369,479, Jun. 21, 1989, Pat. No. 5,079,344. This application Oct. 22, 1993, Ser. No. 140,721

Int. Cl.[6] C07H *21/04;21/02;21/00*

U.S. Cl. 536—23.53 **5 Claims**

1. An oligonucleotide which codes for the peptide shown in SEQ ID NO:1.

5,484,988

OLIGONUCLEOTIDES CONTAINING 5-PROPYNYL PYRIMIDINES

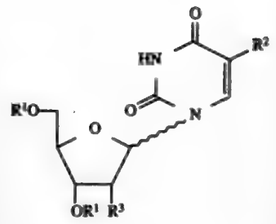
Brian Froehler, Belmont, and Robert J. Jones, Daly City, both of Calif., assignees to Gilead Sciences, Inc., Foster City, Calif.

Filed Nov. 26, 1991, Ser. No. 799,824

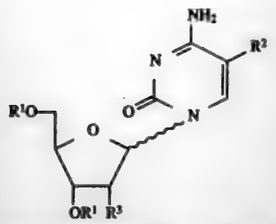
Int. Cl.[6] C07H *21/00;21/04*

U.S. Cl. 536—24.31 **18 Claims**

1. A nucleoside analog having the general structural formula:



or



wherein in each of formula 4 and formula 5 one R^1 is a protecting group and the other is an activated group for oligonucleotide synthesis or is a solid support;

R^2 is selected from the group consisting of propynyl, 3-buten-1-ynyl, 3-methyl-1-butynyl, 3,3-dimethyl- 1-butynyl, propenyl, phenyl, o-pyridinyl, m-pyridinyl and p-pyridinyl; and

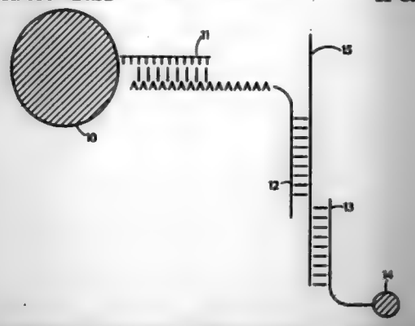
R^3 is selected from the group consisting of H, OH, F, OCH_3, OC_2H_5, OC_3H_7, SCH_3, SC_2H_5, SC_3H_7, OC_3H_5, and SC_3H_5.

5,484,909

NUCLEIC ACID PROBES FOR THE DETECTION OF BACTERIA OF THE GENERA PEDIOCOCCUS AND LACTOBACILLUS AND METHODS FOR THE DETECTION OF THE BACTERIAL AGENTS CAUSING SPOILAGE OF BEER

Raymond M. Nietupski, Millbury; Benjamin B. Stone, Hollliston, and William G. Weisburg, Milford, all of Mass., assignors to Amoco Corporation, Naperville, Ill.

Filed Sep. 10, 1993, Ser. No. 121,053
Int. Cl.[6] C07H *21/04*
U.S. Cl. 536—24.32 11 Claims



1. An isolated nucleic acid probe identical to or identical to a fully complementary sequence of any one of probes 2858 (SEQ ID NO:1), 2861 (SEQ ID NO:2), 2867 (SEQ ID NO:3), 2876 (SEQ ID NO:4), 2877 (SEQ ID NO:5), 2868 (SEQ ID NO:6), 2869 (SEQ ID NO:7), 2880 (SEQ ID NO:8), 2891 (SEQ ID NO:9), 2892 (SEQ ID NO:10), 2895 (SEQ ID NO:11), 2899 (SEQ ID NO:12), 2904 (SEQ ID NO:13), 2896 (SEQ ID NO:14), 2873 (SEQ ID NO:15), 2881 (SEQ ID NO:16), 2887 (SEQ ID NO:17), 2875 (SEQ ID NO:18), 2901 (SEQ ID NO:19), 2854 (SEQ ID NO:20), 2879 (SEQ ID NO:21), or 2902 (SEQ ID NO:22).

5,484,910

(4) **Patent Not Issued For This Number**

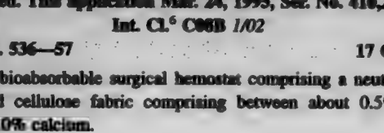
5,484,911

NUCLEOSIDE 5'-DIPHOSPHATE CONJUGATES OF ETHER LIPIDS

(5) Chung I. Hong; Charles R. West, both of East Amherst, N.Y., and Chung K. Chu, Athens, Ga., assignors to Health Research, Inc., Buffalo, N.Y., and University of Georgia Research Foundation, Inc., Athens, Ga.

Filed Apr. 1, 1993, Ser. No. 41,725
Int. Cl.[6] C07H *21/04*
U.S. Cl. 536—26.22 13 Claims

1. A compound having the formula:



wherein:

R_1 is selected from the group consisting of alkyls and alkenyls containing from 8 to 22 carbon atoms;

A is selected from the group consisting of O and S atoms;

R_2 is selected from the group consisting of alkyls, hetero atom containing alkyls, and alkenyls containing from 8 to 22 carbon atoms; and the

Nucleoside is an antiviral nucleoside selected from the group consisting of 2',3'-dideoxynucleosides, 3'-azido-2',3'-dideoxynucleosides, and 2',3'-didehydro- 2',3'-dideoxynucleosides.

5,484,912

Patent Not Issued For This Number

5,484,913

CALCIUM-MODIFIED OXIDIZED CELLULOSE HEMOSTAT

Reginald L. Stilwell; Elaine J. Whitmore, both of Arlington, Tex., and Lowell G. Saferstein, Edison, N.J., assignors to Johnson & Johnson Medical, Inc., Arlington, Tex.

Continuation-in-part of Ser. No. 173,325, Dec. 23, 1993, abandoned. This application Mar. 24, 1995, Ser. No. 410,246
Int. Cl.[6] C08B *1/02*
U.S. Cl. 536—57 17 Claims

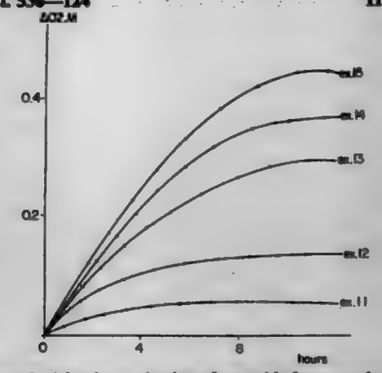
1. A bioabsorbable surgical hemostat comprising a neutralized oxidized cellulose fabric comprising between about 0.5% and about 4.0% calcium.

5,484,914

PROCESS FOR THE PRODUCTION OF OXYACIDS FROM CARBOHYDRATES

Irina P. Skibida; Andrei M. Sakharov, and Alekse] M. Sakharov, all of Mosca, U.S.S.R., assignors to Cerestar Holding B.V., Netherlands

Continuation of Ser. No. 865,899, Apr. 9, 1992, abandoned. This application May 24, 1994, Ser. No. 249,044
Claims priority, application European Pat. Off., Dec. 23, 1991, 91122164
Int. Cl.[6] C07H *1/00;* C08B *31/18;33/08;37/02*
U.S. Cl. 536—124 11 Claims



1. A method for the production of oxyacids from a carbohydrate, said method comprising oxidizing said carbohydrate with an oxygen containing gas in an alkaline medium in the presence of a catalytic amount of a Cu ion, wherein the oxidation is carried out by homogeneous catalysis.

5,484,915

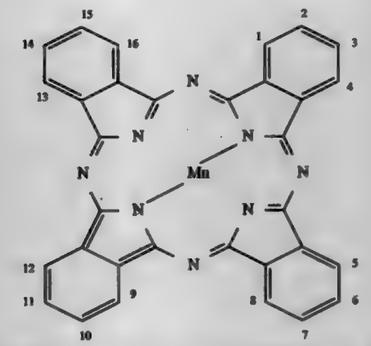
SULPHONATED MANGANESE PHTHALOCYANINES AND COMPOSITIONS THEREOF

Peter Gregory, Lancs; Stephen J. Reynolds, and Raymond L. White, both of Manchester, all of, United Kingdom, assignors to Zeneca Limited, London, England

Filed Jul. 6, 1994, Ser. No. 268,578
Claims priority, application United Kingdom, Jul. 9, 1993, 9314251
Int. Cl.[6] C09B *47/04;47/24*
U.S. Cl. 540—131 12 Claims

1. A sulphonated derivative of a substituted phthalocyanine in which at least one of the peripheral carbon atoms in the 1–16 positions of the phthalocyanine nucleus (MnPc) as shown in Formula (1):

Formula (1)



is linked via an oxygen atom or a sulphur atom to an organic radical selected from the group consisting of phenyl, naphthyl, phenylene, pyridyl, thiophenyl, furanyl, quinolinyl, thiazolyl, benzothiazolyl and pyrimidyl, the remaining peripheral carbon atoms being unsubstituted or substituted by any combination of atoms or groups selected from the group consisting of —H, —F, —Cl, —Br, —I, $—SO_3H$, $—SO_3Na$, $—SO_3K$, $—SO_3Li$ and SO_3NH_4.

5,484,916

PROCESS FOR THE PREPARATION OF ISOCYANATES CONTAINING URETDIONE GROUPS BY USING IMIDAZOLE GROUP CONTAINING POLYMERIC CATALYSTS

Bernd Bruchmann, Ludwigshafen; Roland Minges, Grosstadt, and Christian Schade, Ludwigshafen, all of, Germany, assignors to BASF Aktiengesellschaft, Germany

Filed May 10, 1993, Ser. No. 59,850
Claims priority, application Germany, Jun. 5, 1992, 42 18 540.8
Int. Cl.[6] C07D *229/00*
U.S. Cl. 540—202 6 Claims

1. A process for the preparation of polyisocyanates containing uretdione groups by dimerizing aromatic monomeric isocyanates in the presence of catalysts, wherein the catalysts employed comprise polymeric compounds to whose polymer chains imidazole groups are bonded terminally and/or laterally and which have been prepared by polymerizing alkenyl group-containing imidazoles, alone or together with vinyl monomers.

5,484,917

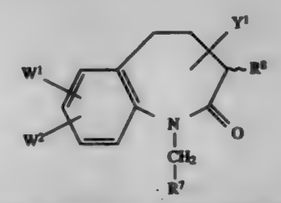
SUBSTITUTED TETRAHYDROBENZAZEPINONES

John A. Lowe, III, Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 825,677, Jan. 27, 1992, abandoned. This application Jun. 16, 1993, Ser. No. 78,125
Int. Cl.[6] C07D *223/16;* A61K *31/53*
U.S. Cl. 540—523 4 Claims

1. A compound of the formula

XVI



wherein R^7 is hydrogen phenyl, CO_2R^2, $SO_2NR^3R^6$ or $CONR^4R^5$, wherein said phenyl may optionally be substituted with one or two substituents independently selected from halo, $(C_1–C_6)$ alkyl, $(C_1–C_6)$ alkoxy, nitro, amino and trifluoromethyl, and wherein R^2, R^3, R^4, R^5 and R^6 are independently selected from hydrogen, $(C_3–C_{12})$ alkyl and fused, saturated carbocyclic systems containing two or three rings;

W^1 and W^2 are independently selected from halo, nitro, amino, $(C_1–C_6)$alkyl optionally substituted with from one to three fluorine atoms and $(C_1–C_6)$alkoxy optionally substituted with from one to three fluorine atoms;

Z^1 and Z^2 are independently selected from the group consisting of halo, $(C_1–C_6)$ alkyl, $(C_1–C_6)$ thioalkyl, $(C_1–C_6)$ alkoxy, trifluoromethyl, $(C_1–C_6)$ carboalkoxy, amino and nitro; and

Y^1 is phenyl, thienyl, pyridyl, furyl, pyrimidyl, $(C_3–C_8)$ straight or branched alkyl and $(C_5–C_8)$ cycloalkyl, wherein said phenyl, thienyl, pyridyl, furyl, and pyrimidyl may optionally be substituted with one or two substituents independently selected from halo (e.g., chloro, fluoro, bromo or iodo), $(C_1–C_6)$ alkyl, $(C_1–C_6)$ alkoxy, nitro, amino and trifluoromethyl, and wherein said cycloalkyl may optionally be substituted with one or two substituents independently selected from $(C_1–C_6)$ alkyl and R^8 is bromo, amino or azido.

5,484,918

PROCESS FOR THE PREPARATION OF AQUEOUS NICOTINALDEHYDE

Urs Siegrist, Elken, and Henry Szczepanski, Wallbach, both of, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

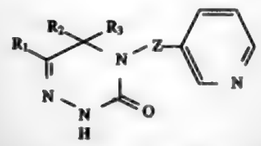
Filed Feb. 9, 1994, Ser. No. 194,191

Claims priority, application United Kingdom, Mar. 2, 1993, 9304191

Int. Cl.[6] C07D *253/06*

U.S. Cl. 544—182 **6 Claims**

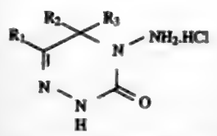
1. A process for the preparation of a compound of formula III



(III)

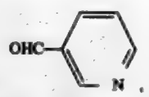
wherein R_1 is hydrogen, C_1–C_{12}alkyl, C_3–C_6 cycloalkyl, C_1–C_4alkoxy-C_1–C_6alkyl, C_1–C_2haloalkyl, phenyl, benzyl, phenethyl, phenpropyl, phenbutyl or phenpentyl, or a phenyl, benzyl, phenethyl, phenpropyl, phenbutyl or phenpentyl radical that is mono- or di-substituted by halogen, C_1–C_5alkyl, C_1–C_2haloalkyl, methoxy and/or ethoxy; R_2 is hydrogen, C_1–C_6alkyl or C_5–C_6cycloalkyl, or is phenyl that is unsubstituted or substituted by C_1–C_{12}alkyl, halogen or by C_1–C_{12}haloalkyl; or R_1 and R_2 together form a saturated or unsaturated 3- to 7-membered carbocycle; R_3 is hydrogen or C_1–C_6alkyl and Z is —N═CH— or —NH—CH_2—,

which process comprises reacting an aminotriazinone of formula IV



(IV)

wherein R_1, R_2 and R_3 have the meanings above with an aldehyde of formula V



(V)

and, if desired, converting the resulting pyridyl-methyleneamino-triazinone by selective reduction into pyridyl-methylamino-triazinone,

wherein the aldehyde of formula V is prepared by the catalytic reduction of 3-cyanopyridine under hydrogen in the presence of Raney-nickel, characterised in that

a) the Raney-nickel catalyst is present in an mount between 2 and 10 weight-% with respect to the cyanopyfidine,

b) the solvent is aqueous carboxylic acid,

c) the pH is between 3.5 and 7,

d) the temperature is less than or equal to 40 ° C.,

e) the hydrogen pressure is between 0.2 and 5 bar,

f) the amount of hydrogen taken up is up to 110% with respect to the cyanopyridine, and

g) the amount of water present is in excess with respect to the cyanopyridine.

5,484,919

MIGRATION-RESISTANT HALOMETHYL-1,3,5-TRIAZINE PHOTOINITIATOR

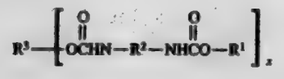
James A. Bonham, Grant Township, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Division of Ser. No. 752,775, Aug. 30, 1991, Pat. No. 5,298,361. This application Feb. 1, 1994, Ser. No. 189,927

Int. Cl.[6] C07D *251/24*

U.S. Cl. 544—193.1 **14 Claims**

1. A chromophore-substituted halomethyl-1,3,5-triazine photopolymerization initiator having the general formula



wherein:

R^1 represents a residue of a chromophore-substituted, halomethyl-1,3,5-triazine compound, wherein said chromophore is hydroxyl-substituted, said triazine compound having the formula R^1—OH,

R^2 represents a residue of a diisocyanate compound, said diisocyanate compound having the formula $R^2(NCO)_2$, having isocyanato groups, (NCO), of dissimilar reactivities, and

R^3 represents a residue of a hydroxyl-substituted compound, said hydroxyl-substituted compound having the formula $R^3(OH)_x$, where x represents an integer greater than or equal to 1, said compound $R^3(OH)_x$ being selected from the group consisting of aliphatic alcohols and aliphatic polyols having from 1 to 20 carbon atoms; aralkyl alcohols and aralkyl polyols having up to 3 aromatic rings in the aryl portion thereof, and from 1 to 10 carbon atoms in the alkyl portion thereof; alkyl alcohols and alkyl polyols derived from heteroaromatig or heterocyclic compounds having from 1 to 10 carbon atoms in the alkyl portion thereof.

5,484,920

THERAPEUTIC AGENT FOR PARKINSON'S DISEASE

Fumio Suzuki, Mishima; Junichi Shimada, Shizuoka; Nobuaki Koike, Shizuoka; Joji Nakamura, Shizuoka; Shizuo Shiozaki, Fuji; Shunji Ichikawa, Shizuoka; Akio Ishii, Shizuoka, and Hiromi Nonaka, Shizuoka, all of, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

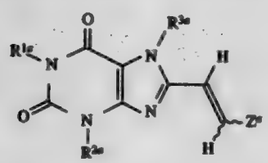
Continuation-in-part of Ser. No. 42,535, Apr. 5, 1993, abandoned. This application Oct. 7, 1993, Ser. No. 133,510

Claims priority, application Japan, Apr. 8, 1992, 4-87715; Sep. 25, 1992, 4-257834

Int. Cl.[6] C07D *473/06*; A61K *31/52*

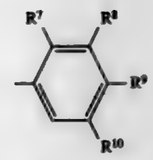
U.S. Cl. 544—268 **11 Claims**

1. A xanthine derivative of the formula (I-A):

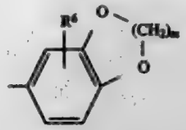


(I-A)

wherein R^{1a} and R^{2a} are independently methyl or ethyl; R^{3a} is hydrogen or lower alkyl; and Z^a is



wherein at least one of R^7, R^8, and R^9 is lower alkyl or lower alkoxy and the others represent hydrogen and R^{10} is hydrogen or lower alkyl; or



wherein R^6 is hydrogen, hydroxy, lower alkyl, lower alkoxy, halogen, nitro or amino, and m is an integer from 1 to 4, or a pharmaceutically acceptable salt thereof.

5,484,921

PROCESS FOR PREPARING BENZO[B]NAPHTHYRIDINES

Christophe Dauble; Jean-Jacques Legrand, both of Paris, France, and Clive Pemberton, Romford, Great Britain, assignors to Laboratoire Roger Bellon, Neuilly-sur-Seine, France

PCT No. PCT/FR92/00937, § 371 Date Apr. 8, 1994, § 102(e) Date Apr. 8, 1994, PCT Pub. No. WO93/07145, PCT Pub. Date Apr. 15, 1993

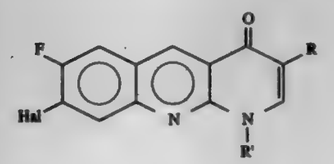
PCT Filed Oct. 8, 1992, Ser. No. 211,443

Claims priority, application France, Jan. 10, 1991, 91 12479

Int. Cl.[6] C07D *401/12;471/04;417/12*

U.S. Cl. 544—361 **2 Claims**

2. A benzonaphthyridine derivative of the formula:



in which R' selected from a hydrogen atom, alkyl, fluoroalkyl, carboxyalkyl, cycloalkyl having 3 to 6 carbon atoms, fluorophenyl, difluorophenyl, alkoxy or an alkylamino radical and Hal is a halogen atom and R is selected from a cyano, carbamoyl, alkylcarbamoyl, benzylcarbamoyl or hydroxyethylcarbamoyl radical or a dialkylaminoethylcarbamoyl or dialkylcarbamoyl radical in which the alkyl portions, with the nitrogen atom to which they are attached, can optionally form a 5- or 6-membered heterocycle optionally containing another hereto atom selected from oxygen, sulphur and nitrogen and optionally substituted on the nitrogen with an alkyl radical.

5,484,922

INTERNAL JUNCTION ORGANIC ELECTROLUMINHESCENT DEVICE WITH A NOVEL COMPOSITION

Christopher P. Moore, Harrow, England; Steven A. VanSlyke, and Henry J. Gysling, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 912,376, Jul. 13, 1992, abandoned. This application Feb. 14, 1994, Ser. No. 195,885

Int. Cl.[6] C07D *215/30*; H05B *33/26*; B32B *15/04*

U.S. Cl. 546—7 **1 Claim**

1. An aluminum chelate of the formula:

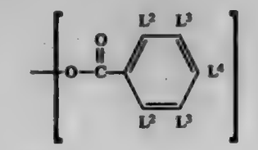
$$[(Q)_{3-n}Al]L_n$$

wherein

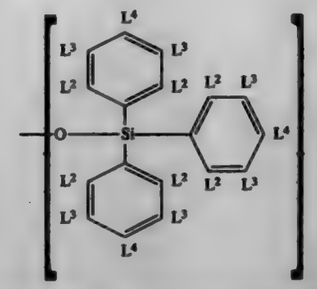
n is 1 or 2; and,

Q is a substituted 8-quinolinolato group in which the 2-position substituent is selected from the group consisting of hydrocarbon groups containing from 1 to 10 carbon atoms, amino, aryloxy and alkoxy groups;

L satisfies one of the following formula:



or



wherein L^2 to L^4 are substituents which collectively contain up to 18 carbon atoms, said substituents being individually selected for each L ligand from the group consisting of hydrogen, hydrocarbon groups containing from 1 to 12 carbon atoms, cyano, amino and halogen substituents.

5,484,923

PROCESS OF MAKING SPIROCYCLES AND ANALOGS THEREOF

Dongwei Cai, Edison; Richard Desmond, Bridgewater; Yao-Jun Shi, Edison; David M. Tschaen, Holmdel, and Thomas R. Verhoeven, Cranford, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 75,196, Jun. 10, 1993, abandoned. This application May 31, 1994, Ser. No. 250,972

Int. Cl.[6] C07D *451/10;451/107*

U.S. Cl. 546—17 **2 Claims**

1. A process for the production of spirocycles of Formula I wherein the process results an alcohol having an enantiomeric efficiency of 98% or higher

5,484,924

IMIDAZONAPHTHYRIDINE DERIVATIVES

Fumio Suzuki, Mishima; Takeshi Kuroda, Tokushima; Takashi Kawakita, Shizuoka; Shigeto Kitamura, Machida, and Haruhiko Manabe, Shizuoka, all of, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/01532, § 371 Date Aug. 31, 1994, § 102(e) Date Aug. 31, 1994, PCT Pub. No. WO93/11127, PCT Pub. Date Jun. 10, 1993

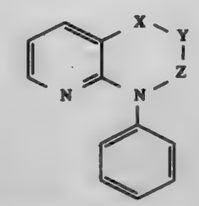
PCT Filed Nov. 24, 1992, Ser. No. 244,268

Claims priority, application Japan, Nov. 25, 1991, 3-309108

Int. Cl.[6] C07D *471/14*

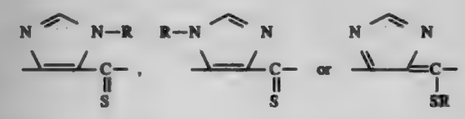
U.S. Cl. 546—82 1 Claim

1. An imidazonaphthyridine derivative represented by Formula (I):



(I)

wherein X-Y-Z represents



wherein R represents hydrogen, lower alkyl or $—CH_2R^1$ (where R^1 represents phenyl or pyridyl) and pharmaceutically acceptable salts thereof.

5,484,925

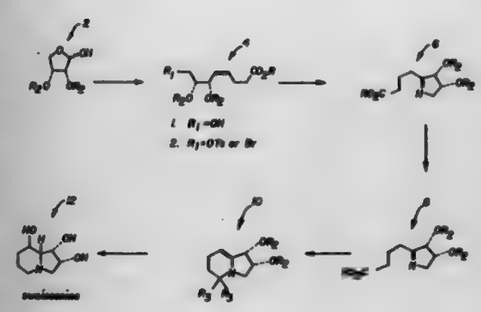
SYNTHESIS OF (–)-SWAINSONINE AND INTERMEDIATE COMPOUNDS EMPLOYED IN SUCH SYNTHESIS

Jin K. Cha, 1030 Grassland La., Nashville, Tenn. 37220, and Richard B. Bennett, III, 4102 Sir Buxton Pl., Greensboro, N.C. 27405

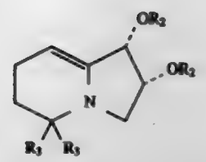
Division of Ser. No. 934,417, Aug. 24, 1992, Pat. No. 5,288,875, which is a division of Ser. No. 747,391, Aug. 14, 1991, Pat. No. 5,187,279, which is a continuation of Ser. No. 555,523, Jul. 27, 1990, abandoned. This application Apr. 29, 1993, Ser. No. 54,695

Int. Cl.[6] C07D *471/04;491/147;491/056;317/30*

U.S. Cl. 546—90 3 Claims



1. An enamide of the formula:



wherein each R_2 when taken independently represents alkoxymethyl of 2 to 8 carbon atoms or arylmethyl, and when taken together represents alkylene of 1 to 8 carbon atoms bridging the oxygen atoms to which they are bonded; and R_3 is a hydrogen atom, or the two R_3 groups combined form an oxygen atom.

5,484,926

HIV PROTEASE INHIBITORS

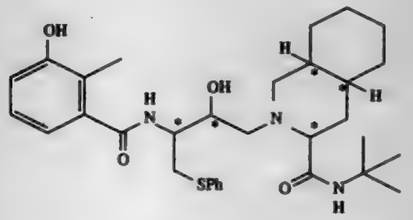
Bruce A. Dressman, Indianapolis; James E. Fritz, Greenwood, both of Ind.; Marlys Hammond, Pasadena, Calif.; William J. Hornback; Stephen W. Kaldor, both of Indianapolis, Ind.; Vincent J. Kalish, San Diego, Calif.; John E. Munroe, Indianapolis, Ind.; Siegfried H. Reich, San Diego; John H. Tatlock, Poway, both of Calif.; Timothy A. Shepherd, and Michael J. Rodriguez, both of Indianapolis, Ind., assignors to Agouron Pharmaceuticals, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 133,543, Oct. 7, 1993, abandoned, and a continuation-in-part of Ser. No. 133,696, Oct. 7, 1993, abandoned. This application Feb. 2, 1994, Ser. No. 190,764

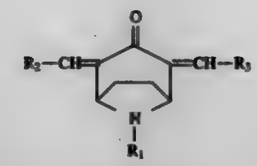
Int. Cl.[6] C07D *217/20;* A61K *31/47*

U.S. Cl. 546—114 8 Claims

1. A compound of the formula



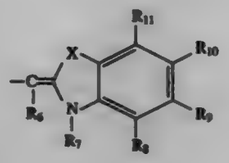
or a prodrug thereof or a pharmaceutically acceptable salt thereof.



wherein:

R_1 is (1) hydrogen, (2) substituted or unsubstituted alkyl of 1 to 8 carbon atoms, (3) CH_2═CHCO-, (4) CH_2═$C(CH_3)CO$-(5) $R_{15}CO$-, where R_{15} is a substituted or unsubstituted aryl of 5 to 10 atoms or a substituted or unsubstituted alkyl containing 1 to 8 carbon atoms; and

R_2 and R_3, alike or different, are:



wherein:

X is O, S, Se, NR_{12}, or $CR_{13}R_{14}$, where R_{12}, R_{13}, and R_{14} are each independently alkyl of 1 to 6 carbon atoms or substituted or unsubstituted phenyl;

R_6 is hydrogen or substituted or unsubstituted alkyl of 1 to 4 carbon atoms;

R_7 is (1) substituted or unsubstituted alkyl or cycloalkyl of 1 to 8 carbon atoms or (2) substituted or unsubstituted aryl of 5 to 10 atoms;

R_8, R_9, R_{10}, and R_{11} each are independently hydrogen, halogen, dialkylamino, substituted or unsubstituted alkyl or cycloalkyl of 1 to 6 carbon atoms, substituted or unsubstituted alkoxyl of 1 to 6 carbon atoms, substituted or unsubstituted thioalkoxyl of 1 to 6 carbon atoms, or substituted phenyl; or (R_8 and R_9), (R_9 and R_{10}), or (R_{10} and R_{11}) are joined in a substituted or unsubstituted aromatic ring of 5 to 10 atoms.

5,484,927

VISIBLE DYE PHOTOSENSITIZERS DERIVED FROM TROPINONE

William K. Smothers, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 46,913, Apr. 15, 1993, abandoned, which is a division of Ser. No. 867,492, Apr. 13, 1992, Pat. No. 5,236,808. This application Aug. 19, 1994, Ser. No. 292,199

Int. Cl.[6] C07D *451/02*

U.S. Cl. 546—126 6 Claims

1. A compound of structure:

5,484,928

2-(2-AMINOTHIAZOL-4-YL)-2-OXOACETIC ACID DERIVATIVES

Hubert Sturm, Landeck; Heinrich Thaler, Kirchbichl, and Werner Velt, Kufstein, all of, Austria, assignors to Biochemie Gesellschaft m.b.H., Tyrol, Austria

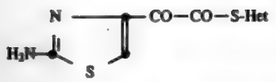
Continuation of Ser. No. 764,579, Sep. 24, 1991, abandoned, which is a continuation of Ser. No. 519,991, Apr. 24, 1990, abandoned, which is a continuation of Ser. No. 445,319, Nov. 29, 1989, abandoned, which is a continuation of Ser. No. 382,142, Jun. 23, 1989, abandoned, which is a continuation of Ser. No. 296,554, Jan. 4, 1989, abandoned, which is a continuation of Ser. No. 197,921, May 24, 1988, abandoned, which is a continuation of Ser. No. 52,678, May 13, 1987, abandoned, which is a continuation of Ser. No. 815,893, Dec. 10, 1985, abandoned. This application Apr. 30, 1993, Ser. No. 55,613

Claims priority, application Austria, Apr. 10, 1984, 1197/84; Apr. 10, 1984, 1198/84

Int. Cl.[6] C07D *277/40*

U.S. Cl. 546—280 2 Claims

1. A compound of formula IVe



IVa

where Het is 2-pyridyl or 2-benzothiazolyl.

5,484,929

CHLORINATION PROCESS

Joseph E. Toomey, Indianapolis, Ind., assignor to Reilly Industries, Indianapolis, Ind.

Filed Sep. 21, 1993, Ser. No. 124,807

The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.

Int. Cl.[6] C07D *213/127;213/57;213/61*

U.S. Cl. 546—286 **27 Claims**

1. A process for selectively chlorinating 3-cyanopyridine, comprising:

passing a vaporized reed stream including 3-cyanopyridine, chlorine and an inert gas into a first reaction zone having a hot spot controlled at a temperature of at about 350° C. to about 500° C., and subsequently through a second reaction zone at a temperature below about 340° C.

5,484,930

CHIRAL ETHYL [6-AMINO-4-[[12-(METHOXYMETHYLAMINO)-1-METHYL-2-OXOETHYL]AMINO]-5-NITRO-2-PYRIDYL]CARBAMATE

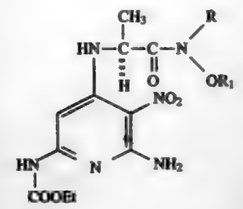
Om P. Goel, and Sham S. Nikam, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 836,624, Feb. 13, 1992. This application May 19, 1995, Ser. No. 444,972

Int. Cl.[6] C07D *213/75*

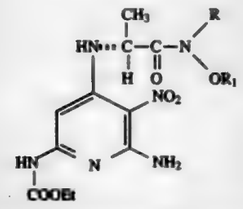
U.S. Cl. 546—308 **2 Claims**

1. A compound of the formula



I

or



II

wherein each of R and R_1 is a lower alkyl group having from 1 to 4 carbon atoms.

5,484,931

PROCESS FOR PREPARING FLUNIXIN AND INTERMEDIATES THEREOF

Henry J. Doran, Bray Co., and Donal J. Coveney, Dundrum, both of, Ireland, assignors to Schering Corporation, Kenilworth, N.J.

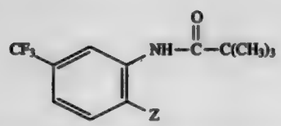
Continuation-in-part of Ser. No. 812,183, Dec. 20, 1991, abandoned. This application Jun. 15, 1994, Ser. No. 244,883

Int. Cl.[6] C07D *213/26;* C07C *233/07;209/00*

U.S. Cl. 546—310 **6 Claims**

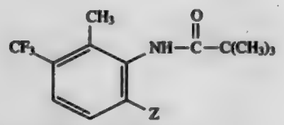
1. A process for preparing 2-methyl-3-trifluoromethylaniline (MTA) comprising:

a) methylating a compound of the formula (III):



(III)

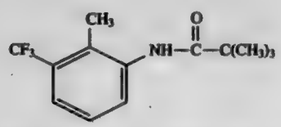
wherein Z is a halo blocking group to give compound (V):



(V)

wherein Z is defined as before;

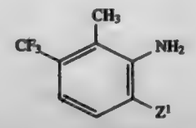
b) In a first alternative, for compounds of formula (V) wherein Z is a halo blocking group, contacting compound (V) with a reducing agent to give compound (VI):



(VI)

and hydrolyzing compound (VI) with acid to give 2-methyl-3-trifluoromethylaniline (MTA); or

In a second alternative, for compounds of formula (V) wherein Z is a halo blocking group, hydrolyzing compound (V) with acid to give compound (VII):



(VII)

wherein Z^1 is a halo blocking group; and contacting compound (VII) with a reducing agent to give MTA.

5,484,932

HALOGENATION PROCESSES IN ADVANTAGEOUS SOLVENTS, AND NOVEL BISTRIFLUOROMETHYL-POLYFLUOROALKOXYBENZENES

Albrecht Marhold, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

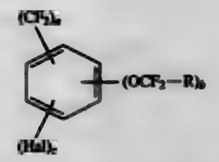
Continuation of Ser. No. 52,420, Apr. 15, 1993, abandoned. This application Jun. 2, 1994, Ser. No. 253,188

Claims priority, application Germany, Apr. 27, 1992, 42 13 850.7

Int. Cl.[6] C07D *213/26;* C07C *41/22;43/205*

U.S. Cl. 546—346 **5 Claims**

1. A process for the chlorination or bromination of a side-chain of an aromatic or heterocyclic compound which comprises reacting said compound with a chlorinating agent or a brominating agent in a solvent comprising one or more compounds of the formula I



(I)

in which

R represents fluorine, chlorine, CF_3, CF_2H, CF_2Cl, $CHFCF_3$, CF_2CF_3 or $CFClCF_3$,

Hal represents fluorine or chlorine,

a represents zero, 1, 2 or 3,

b represents zero, 1 or 2, and

c represents zero or, in the case Hal=fluorine, can also represent 1, 2 or 3, and, in the case Hal=chlorine, can also represent 1,

where a and b do not represent zero simultaneously and the sum a+b+C is at most 6 and wherein the solvent is not itself chlorinated or brominated in the process.

5,484,933

PROCESS FOR PRODUCTION OF FLUOROALKANE CARBOXAMIDE DERIVATIVES

Sumio Nishida, Takarazuka, and Yasuru Sanemitsu, Ashiya, both of, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

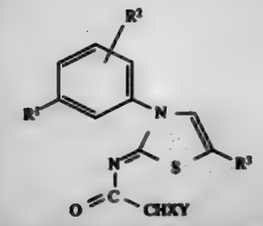
Filed Jul. 29, 1994, Ser. No. 282,562

Claims priority, application Japan, Jul. 29, 1993, 5-187966

Int. Cl.[6] C07D *277/18*

U.S. Cl. 548—195 **10 Claims**

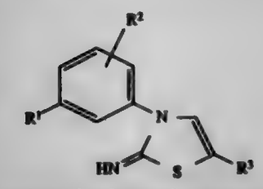
1. A process for the production of a fluoroalkanecarboxamide derivative of the formula (I):



(I)

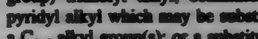
wherein R^1 is a halogen atom, an alkyl group substituted with at least one halogen atom or an alkoxyl group substituted with at least one halogen atom; R^2 is a hydrogen atom or a halogen atom; and R^3 is a methyl group, an ethyl group, a chlorine atom or a bromine atom; X and Y are the same or different and each of them represents a hydrogen atom, a chlorine atom, a fluorine atom or a trifluoromethyl group, with the proviso that X and Y do not simultaneously represent a hydrogen atom or a chlorine atom, which comprises the steps of:

(a) reacting an iminothiazoline compound of the formula (II):



(II)

wherein R^1, R^2 and R^3 are each as defined above, or a salt thereof with a fluoroolefin of the formula (III):



(III)

wherein X and Y are each as defined above, in the presence of 1 to 10 moles of a primary or secondary amine compound to 1 mole of the iminothiazoline compound of the formula (II); and

(b) reacting the resultant reaction mixture with water.

5,484,934

ISOTHIAZOLE DERIVATIVES, A PROCESS FOR PRODUCTION THEREOF AND USES THEREOF

Koichi Ikeda, Kawanishi; Shin'ichi Ueyama, Urawa; Katsutoshi Ikeda, and Chiaki Kato, both of Kawachinaga, all of, Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

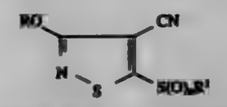
Filed Dec. 18, 1995, Ser. No. 574,053

Claims priority, application Japan, Dec. 30, 1992, 4-360826

Int. Cl.[6] C07D *275/02;409/12;401/12*

U.S. Cl. 548—213 **5 Claims**

1. An isothiazole derivative represented by the formula (I):



(I)

wherein R is a hydrogen atom; a C_{1-12} alkyl group; a C_{2-7} alkenyl group; a C_{2-7} alkynyl group; a C_{3-7} cycloalkyl group; a substituted alkyl group having as the substituent(s) 1 or 2 atoms or groups selected from the group consisting of halogen atoms but excluding perfluoro and perchloro, C_{1-6} alkoxy groups, cyano group, C_{2-7} alkoxycarbonyl groups, phenyl group, phenoxy group, phenoxyphenyl group, trialkylsilyl groups, C_{2-7} alkylcarbonyl groups, and groups represented by the formula —A—$N(R^2)_2$ (wherein R^2 is a C_{1-6} alkyl group or forms a C_{2-6} alkylene group by binding of two R^2's to each other, and A is a carbonyl group or a C_{2-6} alkylene group) triazolyl alkyl, benzimidazolyl alkyl, oxazolyl alkyl or pyridyl alkyl which may be substituted with a chlorine atom(s) or a C_{1-6} alkyl group(s); or a substituted C_{2-7} alkenyl group having a halogen atom or a phenyl group as the substituent, R^1 is a C_{1-12} alkyl group; a C_{1-4} haloalkyl group; a C_{2-7} alkenyl group; a C_{2-7} alkynyl group; a C_{3-7} cycloalkyl group; a heteroarylalkyl group; a substituted C_{1-6} alkyl group having as the substituent a group selected from the group consisting of phenyl group, substituted phenoxy groups having 1 or 2 halogen atoms as the substituent(s), and phenoxyphenyl group; or an aryl group, R^1 being an aryl group in the case of R being a hydrogen atom, and n is an integer of 1 or 2.

5,484,935

PHARMACEUTICAL COMPOUNDS

Peter T. Gallagher, Yateley; Terence A. Hicks, Fleet, and William M. Owton, Lightwater, all of, England, assignors to Lilly Industries Limited, Basingstoke, England

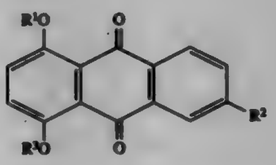
Filed Aug. 11, 1994, Ser. No. 289,045

Claims priority, application United Kingdom, Aug. 13, 1993, 9316911

Int. Cl.[6] C07D *257/04;* C07C *69/017;* A61K *31/22;31/18*

U.S. Cl. 548—253 **5 Claims**

1. A compound of the formula:



(I)

in which R^1 and R^3 are each C_{1-4} alkyl or C_{1-4} alkyl-carbonyl, and R^2 is carboxy, tetrazolyl, C_{1-4} alkyl-sulphonamido or $—CR^4R^5CO_2H$ where R^4 and R^5 are each hydrogen or C_{1-4} alkyl; provided that when R^1 and R^3 are both methyl and when R^1 and R^3 are both methylcarbonyl, R^2 is not carboxy; and pharmaceutically acceptable salts thereof.

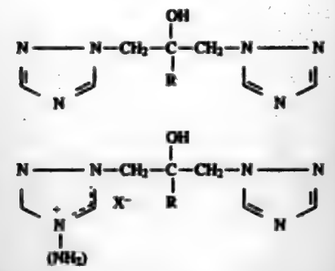
5,484,936

PROCESSES FOR THE PREPARATION OF 1,3-BIS(1,2,4-TRIAZOL-1-YL)-PROPAN-2-OL DERIVATIVES

Alexander Veinberg, Rehovot, and Alexander Sunderichin, Jerusalem, both of, Israel, assignors to Teva Pharmaceutical Industries Ltd., Jerusalem, Israel

Filed Mar. 24, 1994, Ser. No. 217,523
Claims priority, application Israel, Mar. 29, 1993, 105200
Int. Cl.[6] C07D 403/10; 403/02
U.S. Cl. 548—266.6 10 Claims

1. A regiospecific process for the preparation of 1,3-bis(1,2,4-triazol-1-yl)-propan-2-ol derivatives of the general formulas I and Ia:



I

Ia

wherein:

R is alkyl, cycloalkyl, aryl or aralkyl optionally substituted by one or more same or different halogen groups; and

X is the anion of a strong acid,

comprising reacting an oxirane acid salt of the general formula II:

II

wherein

R and X are as defined above; or reacting an oxirane of the general formula IF:

IF

wherein

R and X are as defined above, under acidic conditions, with 4H-4-amino-1,2,4-triazole of the formula III:

III

and optionally deaminating a compound of the formula Ia to form a compound of formula I.

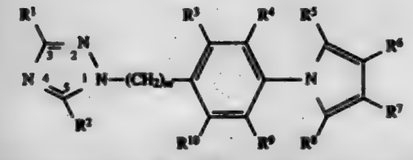
5,484,937

N-SUBSTITUTED N-(α-THIAZOLYL-TOLUYL)PYRROLE COMPOUNDS FOR TREATMENT OF CIRCULATORY DISORDERS

Philippe R. Bovy, St. Louis; David B. Reitz, Chesterfield, and Robert E. Manning, St. Louis, all of Mo., assignors to G.D. Searle & Co., Chicago, Ill.

Continuation of Ser. No. 924,768, Aug. 4, 1992, abandoned. This application Sep. 7, 1993, Ser. No. 117,269
Int. Cl.[6] C07D 403/10; A61K 31/41
U.S. Cl. 548—266.2 18 Claims

1. A compound of Formula I:



(I)

wherein m is one; wherein R^1 is selected from methyl, ethyl, n-propyl, isopropyl, n-butyl, sec-butyl, isobutyl, tert-butyl, n-pentyl, isopentyl, neopentyl, phenyl, benzyl, cyclohexyl, cyclohexylmethyl, cyclohexylethyl, n-hexyl, cyclohexanoyl, 1-oxo-2-cyclohexylethyl, benzoyl, 1-oxo-2-phenethyl, 1-oxoethyl, 1-oxopropyl, 1-oxobutyl, 1-oxopentyl, 2-butenyl, 3-butenyl, 2-butynyl, 3-butynyl and 2-hydroxybutyl selected from $CH_3CH_2CH{=}CH$, SC_2H_7, SC_4H_9,



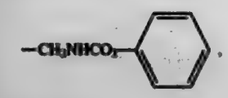
CH_2S,

amino, aminomethyl, aminoethyl, aminopropyl, CH_2OH, CH_2OCOCH_3, CH_2Cl, CH_2OCH_3, $CH_2OCH(CH_3)_2$, CHO, CH_2CO_2H, $CH(CH_3)CO_2H$, NO_2,



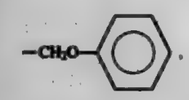
$CH_2OCOCH_2CH_2$—,

$—CO_2CH_3$, $—CONH_2$, $—CONHCH_3$, $CON(CH_3)_2$, $—CH_2NHCO_2C_2H_5$,



$—CH_2NHCO_2$—,

$—CH_2NHCO_2CH_3$, $—CH_2NHCO_2C_3H_7$, $—CH_2NHCO_2CH_2(CH_3)_2$, $—CH_2NHCO_2C_4H_9$, CH_2NHCO_2-adamantyl, $—CH_2NHCO_2$-(1-napthyl), $—CH_2NHCONHCH_3$, $—CH_2NHCONHC_2H_5$, $—CH_2NHCONHC_3H_7$, $—CH_2NHCONHC_4H_9$, $—CH_2NHCONHCH(CH_3)_2$, $—CH_2NHCONH$(1-napthyl), $—CH_2NHCONH$(1-adamantyl), $—CH_2CH_2CH_2CO_2H$, $—CH_2CH_2F$, $—CH_2OCONHCH_3$, $—CH_2OCSNHCH_3$, $—CH_2NHCSOC_2H_7$, $—CH_2CH_2CH_2F$, $—CH_2ONO_2$, $—CH_2SH$,



$—CH_2O$—,

CF_3, CH_2OH, Br, Cl, F, I, dimethoxymethyl, 1,1-dimethoxypropyl, is 1,1-dimethoxypentyl, hydroxyalkyl, 1 -oxo-2-phenylethyl, 1-oxo-2-cyclohexylethyl, 1,1-difluoro-2-phenylethyl, monofluoromethyl,

1,1-difluoro-2-cyclohexylethyl, 2-cyclohexylethyl, 1,1-difluoro-3-cyclohexylpropyl, 1,1-dimethoxybutyl, 1,1-difluoroethyl, 1,1-difluoropropyl, 1,1-difluorobutyl, 1,1-difluoropentyl, 2-phenylethyl, 1,1-difluoro-3-phenylpropyl, difluoromethyl, CO_2H, SH, PO_3H_2, SO_3H, $CONHNH_2$, $CONHNHSO_2CF_3$, and OH;

wherein R^2 is selected from methyl, ethyl, n-propyl, isopropyl, n-butyl, sec-butyl, isobutyl, tert-butyl, n-pentyl, isopentyl, neopentyl, phenyl, benzyl, phenethyl, cyclohexyl, cyclohexylmethyl, cyclohexylethyl, propylthio, butylthio, and hydroxyalkyl; wherein each of R^3 through R^{10} is independently selected from hydrido, halo, nitro, trifluoromethyl, hydroxy, alkoxy, cyano, carboxyl and methoxycarbonyl, with the proviso that at least one of R^5, R^6, R^7 and R^8 is an acidic group selected from CO_2H, SH, PO_3H_2, SO_3H, $CONHNH_2$, $CONHNHSO_2CF_3$ and OH; or a tautomer thereof or a pharmaceutically-acceptable salt thereof.

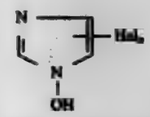
5,484,938

1-HYDROXYIMIDAZOLE COMPOUNDS

Ulf Bass, Donnersbolen, and Wolfgang Roether, Heidelberg-Ziegelhausen, both of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 586,947, Sep. 24, 1990, Pat. No. 5,112,985. This application Nov. 27, 1991, Ser. No. 800,865
Claims priority, application Germany, Sep. 29, 1989, 39 32 552.8
Int. Cl.[6] C07D 233/68; 233/56
U.S. Cl. 548—335.1 4 Claims

1. A 1-hydroxyimidazole of the formula



Ia

where Hal is halogen which can be identical or different and n is an integer of from 1 to 3, and the acid addition salts thereof.

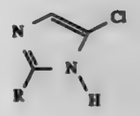
5,484,939

2-SUBSTITUTED 5-CHLORIMIDAZOLES

Gareth Griffiths, Visp; René Imwinkelried, Brig-Glis, and Jacques Gosteli, Basel, all of, Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

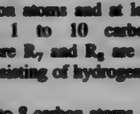
Continuation-in-part of Ser. No. 203,582, Mar. 1, 1994. This application Mar. 11, 1994, Ser. No. 208,956
Claims priority, application Switzerland, Mar. 12, 1993, 748/93
Int. Cl.[6] C07D 233/08
U.S. Cl. 548—343.1 2 Claims

1. A 2-substituted 5-chlorimidazole of the formula:



wherein R is 2-butenyl.

2. A 2-substituted 5-chlorimidazole of the formula:



wherein R is 3-butenyl.

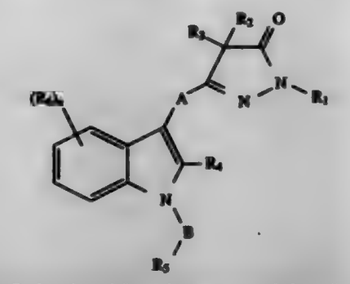
5,484,940

SUBSTITUTED 3-INDOLYL-5-PYRAZOLONE COMPOUNDS

Francine S. Grunig; Lawrence Y. Fang; Varghese John, and Eugene D. Thorsett, all of 800 Gateway Blvd., South San Francisco, Calif. 94080

Filed Nov. 28, 1994, Ser. No. 345,973
Int. Cl.[6] C07D 403/08; 403/14
U.S. Cl. 548—364.7 11 Claims

1. A compound of formula I:



I

wherein R_1 is selected from the group consisting of

hydrogen,

alkyl of from 1 to 10 carbon atoms optionally substituted with 1 to 4 substituents selected from the group consisting of halo, $—NR_7R_8$, $—NR_7C(O)R_8$ where R_7 and R_8 are independently selected from the group consisting of hydrogen and alkyl of from 1 to 10 carbon atoms, aryl of from 6 to 10 carbon atoms, aryl of from 6 to 10 carbon atoms substituted with from 1 to 3 substituents selected from the group consisting of halo, cyano, nitro, alkyl of from 1 to 10 carbon atoms, haloalkyl of from 1 to 10 carbon atoms and at least 1 halo substituent, alkoxy of from 1 to 10 carbon atoms, $—NR_7R_8$, $—NR_7C(O)R_8$ where R_7 and R_8 are independently selected from the group consisting of hydrogen and alkyl of from 1 to 10 carbon atoms,

cycloalkyl of from 3 to 8 carbon atoms,

aryl of from 6 to 10 carbon atoms optionally substituted with from 1 to 3 substituents selected from the group consisting of halo, nitro, cyano, alkyl of from 1 to 10 carbon atoms, haloalkyl of from 1 to 10 carbon atoms and at least 1 halo substituent, alkoxy of from 1 to 10 carbon atoms, $—NR_7R_8$, $—NR_7C(O)R_8$ where R_7 and R_8 are independently selected from the group consisting of hydrogen and alkyl of from 1 to 10 carbon atoms, and

heterocycles having from 2 to 8 carbon atoms and from 1 to 3 heteroatoms selected from the group consisting of oxygen, sulfur and nitrogen;

R_2 and R_3 are independently selected from the group consisting of hydrogen, alkyl of from 1 to 10 carbon atoms, and where R_2 and R_3 together define a substituent of the formula $=CR_{13}R_{14}$ where R_{13} and R_{14} are independently selected from the group consisting of hydrogen, alkyl of from 1 to 10 carbon atoms and phenyl;

R_4 is selected from the group consisting of hydrogen and alkyl of from 1 to 10 carbon atoms;

R_5 is selected from the group consisting of

hydrogen,

alkyl of from 1 to 10 carbon atoms optionally substituted with from 1 to 4 substituents selected from the group consisting of halo, $—NR_7R_8$, $—NR_7C(O)R_8$ where R_7 and R_8 are independently selected from the group consisting of hydrogen and alkyl of from 1 to 10 carbon atoms,

aryl of from 6 to 10 carbon atoms optionally substituted with from 1 to 3 substituents selected from the group consisting of halo, nitro, cyano, alkyl of from 1 to 10 carbon atoms, haloalkyl of from 1 to 10 carbon atoms and at least 1 halo substituent, alkoxy of from 1 to 10 carbon atoms, $—NR_7R_8$, $—NR_7C(O)R_8$ where R_7 and R_8 are independently selected from the group consisting of hydrogen and alkyl of from 1 to 10 carbon atoms,

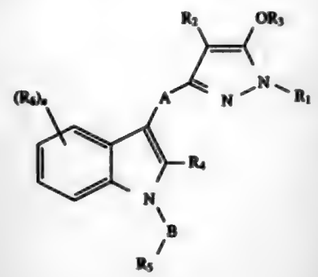
each R_6 is independently selected from the group consisting of halo, nitro, cyano, alkyl of from 1 to 10 carbon atoms, haloalkyl of from 1 to 10 carbon atoms and at least 1 halo substituent, alkoxy of from 1 to 10 carbon atoms, $—NR_7R_8$, $—NR_7C(O)R_8$ where R_7 and R_8 are independently selected from the group consisting of hydrogen and alkyl of from 1 to 10 carbon atoms;

n is an integer of from 0 to 3;

A is selected from the group consisting of $X—R_9—$ where X is selected from the group consisting of a bond, O and $S(O)_p$ where p is an integer of from 0 to 2 and R_9 is an alkylene group of from 1 to 6 carbon atoms; and

B is selected from the group consisting of a bond, an alkylene group of from 1 to 6 carbon atoms, $—R_{10}—Y—$ where R_{10} is selected from the group consisting of a bond and an alkylene group of 1 to 4 carbon atoms and Y is selected from the group consisting of —C(O)— and $—S(O)_q—$ where q is an integer of from 0 to 2, and —C(O)Z— where Z is selected from the group consisting of O, S, and $—NR_{11}$ where R_{11} is hydrogen or alkyl of from 1 to 10 carbon atoms;

with the proviso that when R_2 and/or R_3 is hydrogen, the compounds of formula I above can exist in the tautomeric form illustrated in formula II below:



II

5,484,941

PREPARATION OF 3(5)-METHYLPYRAZOLES

Ralf Kaestner; Stefan Rittinger; Peter Pucoder, all of Ludwigshafen, and Norbert Rieber, Mannheim, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP92/02514, § 371 Date May 6, 1994, § 102(e) Date May 6, 1994, PCT Pub. No. WO93/10098, PCT Pub. Date May 27, 1993

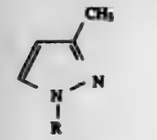
PCT Filed Nov. 3, 1992, Ser. No. 232,291

Claims priority, application Germany, Nov. 11, 1991, 41 37 011.2

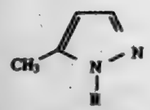
Int. Cl.[6] C07D *231/12*

U.S. Cl. 548—373.1 **9 Claims**

1. A process for the preparation of a methylpyazole of the formula Ia or Ib



(Ia)



(Ib)

in which R denotes hydrogen, a C_1–C_6-alkyl radical or an optionally substituted phenyl radical, from diacetylene and a hydrazine, comprising

(a) separating, by reversible absorption in a polar liquid, a diacetylene-containing partial stream from the cracked gas coming from an acetylene synthesis plant and diluting the partial stream with an inert gas,

(b) reacting this partial stream, without intermediate physical or chemical treatment, with a hydrazine of the formula II

$$RHN—NH_2 \quad \text{(II)},$$

in which R has the meaning stated above, at temperatures ranging from −40° to +150° C. under standard pressure.

5,484,942

THIOPYRANOPYRROLE DERIVATIVES

Daniel Achard, Thiais; Claude Mouton-nier, Les Ulis; Robinson; Jean-François Peyronel, Palaiseau; Michel Tabart, Paris, and Alain Truchon, Lyon, all of, France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR92/00432, § 371 Date Nov. 17, 1993, § 102(e) Date Nov. 17, 1993, PCT Pub. No. WO92/20686, PCT Pub. Date Nov. 26, 1992

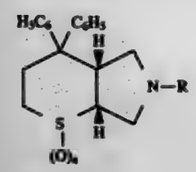
PCT Filed May 15, 1992, Ser. No. 146,144

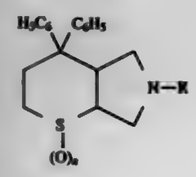
Claims priority, application France, May 17, 1991, 91 06038

Int. Cl.[6] C07D *495/04*

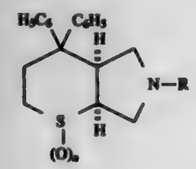
U.S. Cl. 548—453 **6 Claims**

1. Thiopyranopyrrole derivative comprising the formulas:





or



in which the symbol R represents a hydrogen atom, an allyl radical or a radical of the structure:

$$—CR_aR_bR_c$$

in which R_a and R_b are hydrogen atoms or phenyl radicals which are optionally substituted (by a halogen atom, an alkyl, alkoxy or nitro radical), and R_c is defined as R_a and R_b or represents an alkyl or alkoxyalkyl radical, at least one of R_a, R_b and R_c being a phenyl radical, and the symbol n represents an integer from 0 to 2, it being understood that the above-mentioned alkyl radicals contain 1 to 4 carbon atoms in a linear or branched chain, as well as its pharmaceutically acceptable salts when these exist and it being understood that said thiopyranopyrrole derivative includes the (4aR,7aR) form or of the (4aS,7aS) form in a pure state, or in the form of a mixture of the cis- (4aRS,7aRS) forms and when n=1, the axial or equatorial stereoisomers at the level of the S-oxide and the position-1 R and S derivatives and mixtures thereof.

5,484,943

PYRROLO[3,4-C]PYRROLES

John S. Zambounis, Marten; Zhimin Hao, Marly, and Abul Iqbal, Arcoscist, all of, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

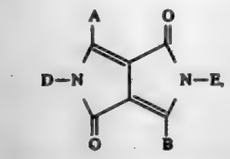
Filed Oct. 6, 1994, Ser. No. 319,406

Claims priority, application Switzerland, Jan. 13, 1993, 3079/93; Jan. 29, 1994, 2074/94; Jun. 29, 1994, 2075/94; Jun. 29, 1994, 2076/94

Int. Cl.[6] C07D *487/04;403/04*

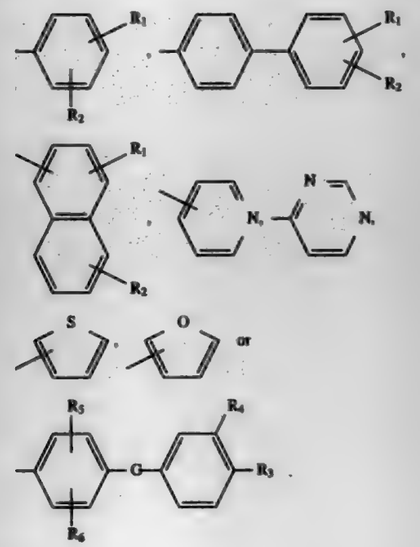
U.S. Cl. 548—453 **7 Claims**

1. A pyrrolo[3,4-c]pyrrole of formula



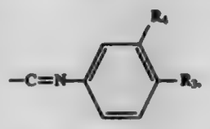
(I)

wherein A and B are each independently of the other a group of formula



wherein

R_1 and R_2 are each independently of the other hydrogen, halogen, C_1–C_{18}alkyl, C_1–C_{18}alkoxy, C_1–C_{18}alkylmercapto, C_1–C_{18}alkylamino, —CN, $—NO_2$, phenyl, trifluoromethyl, C_5–C_6cycloalkyl, —C=N—(C_1–C_{18}alkyl),

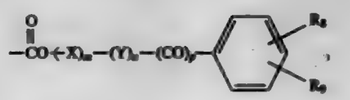


imidazolyl, pyrrazolyl, triazolyl, piperazinyl, pyrrolyl, oxazolyl, benzoxazolyl, benzothiazolyl, benzimidazolyl, morpholinyl, piperidinyl or pyrrolidinyl,

G is $—CH_2—$, $—CH(CH_3)—$, $—C(CH_3)_2—$, —CH=N—, —N=N—, —O—, —S—, —SO—, $—SO_2—$ or $—NR_7—$,

R_3 and R_4 are each independently of the other hydrogen, halogen, C_1–C_6alkyl, C_1–C_{18}alkoxy or —CN, R_5 and R_6 are each independently of the other hydrogen, halogen or C_1–C_6alkyl and R_7 is hydrogen or C_1–C_6alkyl,

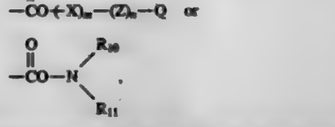
D and E are each independently of the other a group of formula



(II)



(III) or



(IV)

and D may also be hydrogen, and in formulae II, III and IV

m, n and p are each independently of one another 0 or 1,

X is C_1–C_{14}alkylene or C_2–C_6alkenylene,

Y is a group $—V—(CH_2)_q—$,

Z is a group $—V—(CH_2)_r—$,

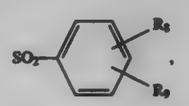
V is C_3–C_6cycloalkylene,

q is an integer from 1 to 6, and

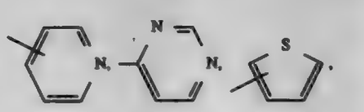
r is an integer from 0 to 6,

R_8 and R_9 are each independently of the other hydrogen, C_1–C_6alkyl, C_1–C_4alkoxy, halogen, CN, NO_2, unsubstituted phenyl or phenoxy or phenyl or phenoxy which are substituted by C_1–C_4alkyl, C_1–C_4alkoxy or halogen,

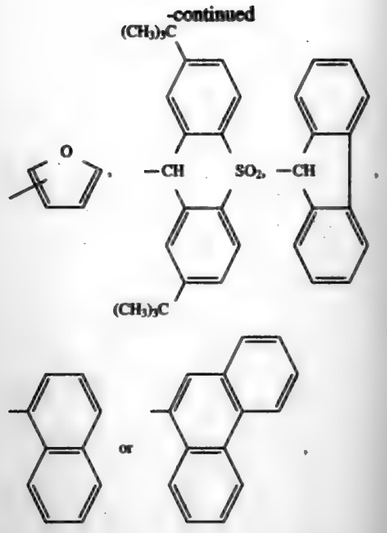
Q is hydrogen, CN, $Si(R_8)_3$, a group $C(R_{12})(R_{13})(R_{14})$, wherein R_{12}, R_{13} and R_{14} are halogen, a group



wherein R_8 and R_9 are as defined above, a group SO_2R_{15} or SR_{15}, wherein R_{15} is C_1–C_4alkyl, a group $CH(R_{16})_2$, wherein R_{16} is unsubstituted phenyl or phenyl which is substituted by C_1–C_6alkyl, C_1–C_6alkoxy or halogen, or a group of formula

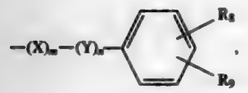


-continued



or

R_{10} and R_{11} are each independently of the other hydrogen, C_1–C_{18}alkyl a group



wherein X, Y, R_8, R_9, m and n are as defined above, or R_{10} and R_{11}, together with the linking nitrogen atom, form a pyrrolidinyl, piperidinyl or morpholinyl radical, with the proviso that, if D and/or E are a group of formula III, Q is hydrogen and n is 0, m must be 1 and X a C_2–C_{14}alkylene or C_2–C_8alkenylene group which is branched at the carbon atom attached to the oxygen atom.

5,484,944

CERTAIN FUSED PYYRROLECARBOXANILIDES AND THEIR USE AS GABA BRAIN RECEPTOR LIGANDS

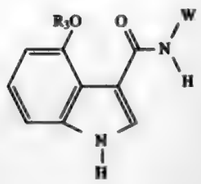
Pamela Alhaugh, Clinton, and Alan Hutchison, Madison, both of Conn., assignors to Neurogen Corporation, Branford, Conn.

Filed Oct. 27, 1993, Ser. No. 144,138

Int. Cl.[6] C07D *40/06;209/18;* A61K *31/47;31/41*

U.S. Cl. 546—171 **22 Claims**

1. A compound of the formula:



or the pharmaceutically acceptable non-toxic salts thereof wherein:

W is

6-quinolinyl or

phenyl optionally mono or disubstituted with halogen, cyano, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, amino, mono or dialkylamino where each alkyl is independently straight or branched chain lower alkyl having 1–6 carbon atoms, straight or branched chain lower alkoxy having 1–6 carbon atoms, or NR_1COR_2, COR_2, $CONR_1R_2$ or CO_2R_2 where R_1 and R_2 are the same or different and represent hydrogen or straight or branched chain lower alkyl having 1–6 carbon atoms; and

R_3 is

hydrogen, phenyl, straight or branched chain lower alkyl having 1–6 carbon atoms, or phenylalkyl where the alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms.

5,484,945

PREPARATION PROCESS OF POLYSUCCINIMIDE

Akinori Nagaiona; Hiroaki Tanustani; Masanobu Ajioka, and Akihiro Yamaguchi, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Aug. 10, 1994, Ser. No. 288,454

Claims priority, application Japan, Aug. 24, 1993, 5-209234

Int. Cl.[6] C07D *207/10*

U.S. Cl. 548—520 **12 Claims**

1. A preparation process of polysuccinimide by dehydrating condensation of aspartic acid in an organic solvent reaction mixture comprising conducting a condensation reaction of the aspartic acid while distilling water generated by the reaction and organic solvent from the reaction mixture and charging additional organic solvent containing a lower amount of water than contained in the distilled solvent and wherein said reaction forms a heterogeneous mixture during the condensation of the aspartic acid.

5,484,946

PROCESS FOR THE PREPARATION OF AMIDINO PHENYL PYRROLIDINE β-ALANINE UREA ANALOGS

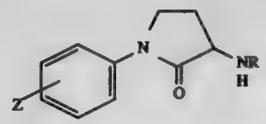
Norman A. Abood, Morton Grove; Daniel L. Flynn, Mundelein; Scott A. Laneman, Vernon Hills; Roger Nosal, Buffalo Grove, and Lori A. Schretzman, Gurnee, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 349,333, Dec. 5, 1994. This application Jun. 5, 1995, Ser. No. 463,657

Int. Cl.[6] C07D *207/273*

U.S. Cl. 548—543 **7 Claims**

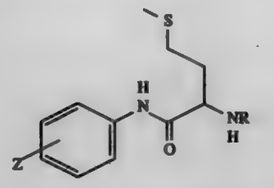
1. A process for the preparation of a lactam of the formula:



wherein R is a protecting group selected from the group consisting of t-butoxycarbonyl and carbobenzyloxy,

wherein Z is selected from the group consisting of —CN, $—CONH_2$ and CO_2alkyl comprising:

treating a methionine analog of the formula



with a compound selected from trimethylsulfonium halide and trimethylsulfoxonium halide, in the presence of a base in an aprotic solvent.

5,484,947

Patent Not Issued For This Number

5,484,948

BISMALEIMIDE COMPOUNDS

Keisuburo Yamaguchi, Chiba; Tatsuhiro Urakami; Yoshimitsu Tanabe, both of Yokohama; Midori Yamazaki, Hiratsuka; Shoji Tamai; Norimasa Yanaya, both of Yokohama; Masahiro Ohta, Ohmuta, and Akihiro Yamaguchi, Kamakura, all of, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

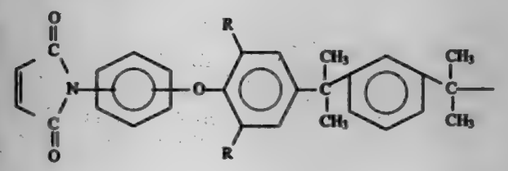
Division of Ser. No. 5,276, Jan. 19, 1993, Pat. No. 5,364,967, which is a division of Ser. No. 601,424, Oct. 23, 1990, Pat. No. 5,206,438. This application Aug. 2, 1994, Ser. No. 284,103

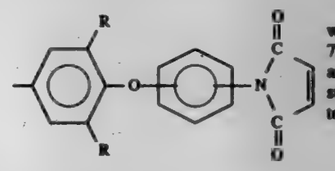
Claims priority, application Japan, Jan. 24, 1989, 1-275858; Mar. 6, 1990, 2-052779; May 11, 1990, 2-119679; May 24, 1990, 2-132711; Jul. 6, 1990, 2-177518; Jul. 19, 1990, 2-177517; Aug. 10, 1990, 2-210246

Int. Cl.[6] C07D *207/444*

U.S. Cl. 548—549 **4 Claims**

1. A bismaleimide compound having a structure represented by the formula below:





wherein the R groups may be the same or different and are selected from the group of H and CH_3.

5,484,949

METHOD FOR THE SYNTHESIS OF α β-UNSATURATED KETONES

Kelichi Tsukashima, Takaoka; Masashi Nakajima, deceased, late of Takaoka; Masayoshi Fujimaru, and Kenji Suzuki, both of Takaoka, all of, Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 11,047, Jan. 29, 1993, abandoned. This application Mar. 2, 1994, Ser. No. 204,920

Int. Cl.[6] C07D *307/16*

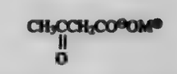
U.S. Cl. 549—13 **7 Claims**

1. A method for preparing α,β-unsaturated ketone which consists essentially of reacting a compound of the formula

R^1CHO

wherein R^1 is a heterocyclic group, or a substituted heterocyclic group, with the proviso that said compound cannot contain more than one α-hydrogen

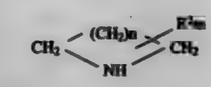
with an alkali metal salt of a formula



wherein $M^{\oplus}$ is an alkali metal ion; and, wherein the reaction is carried out in the presence of a catalytic amount of a compound selected from the group consisting of

(1) 3-azabicyclo (3,2,2) nonane,

(2) a cyclic secondary amine of the general formula (1)



(1)

wherein

n is 3, 4, or 5,

m is 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10, and,

R^2 is

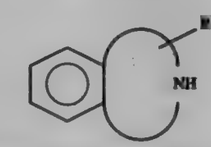
(a) an alkyl group having from 1–10 carbon atoms and of straight chain or with side chains,

(b) an alkyl group substituted by alicyclic groups or with phenyl groups,

(c) an alicyclic group optionally substituted by lower alkyl groups, or,

(d) a phenyl group optionally substituted by lower alkyl groups, with the proviso that the R^2 substitution position is at a carbon atom other than those adjacent to N; and,

(3) a cyclic secondary amine of the formula (2)



(2)

wherein l is 1, 2, 3, 4, 5, or 6, a ring with N is 6-membered, 7-membered, or 8-membered ring, the two adjacent positions of N are methylene, R^3 is a lower alkyl group with the proviso that its substitution position is at a carbon atom other than those adjacent to N, and,



is an alicyclic group or a phenyl group; and,

(4) a secondary amine of the formula (3)

$CH_3NHCH_2R^4$

wherein R^4 is

(a) an aliphatic group having 5–17 carbon atoms and of straight chain or with side chains,

(b) an alicyclic group optionally substituted by lower alkyl groups,

(c) a phenyl group optionally substituted by lower alkyl groups, or

(d) an alkyl group substituted by phenyl groups, in a solvent comprising a mixture of water and water insoluble organic solvent under conditions of controlled pH and controlled water content to yield a compound of the formula

$RCH{=}CHCCH_3$ (with O)

wherein R is a heterocyclic group, or a substituted heterocyclic group.

5,484,950

PROCESS FOR SELECTIVE MONOADDITION TO SILANES CONTAINING TWO SILICON-HYDROGEN BONDS AND PRODUCTS THEREOF

James V. Crivello, Clifton Park, N.Y., assignor to Polyset Company, Inc., Mechanicville, N.Y.

Filed Dec. 21, 1992, Ser. No. 993,689

Int. Cl.[6] C07D *303/02;* C07F *7/08;7/10;7/18*

U.S. Cl. 549—215 21 Claims

1. A compound of formula



wherein

R_2 and R_3, are independently alkyl, fluoroalkyl, aryl or alkoxy;

R^4 is $—CH{=}CHR^6$, $—CH_2CH_2R^6$,



R^6 is chosen from the group consisting of alkyl or aryl substituted with one or more substituents chosen from the group consisting of epoxides, alcohols, trialkyoxysilanes, trihalosilanes, nitriles, carboxylic acids, esters, acyl halides, anhydrides, amines, aldehydes, sulfonic acids, sulfones, sulfoxides, oxetanes, lactones and vinyl ethers, with the proviso that R^4 must contain a polymerizable epoxide, oxetane, acrylate ester, vinyl ether or olefin;

R^5 is a residue making up an epoxide-containing carbocycle of ring size 5 to 8; and

n is an integer from 1 to 100.

5,484,951

5-IODO-6-AMINO-8-NITROSO-1,2-BENZOPYRONES USEFUL AS CYTOSTATIC AND ANTIVIRAL AGENTS

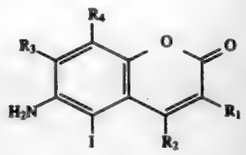
Ernest Kun, Mill Valley, and Jerome Mendeleyev, San Francisco, both of Calif., assignors to Octamer, Incorporated, Mill Valley, Calif.

Filed Oct. 19, 1990, Ser. No. 600,593

Int. Cl.[6] C07D *311/02*

U.S. Cl. 549—285 9 Claims

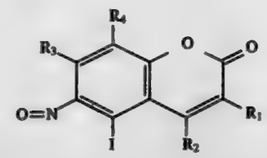
1. A compound having the chemical formula:



wherein

R_1, R_2, R_3, or R_4 are each independently selected from the group consisting of hydrogen, hydroxy, amino, (C_1–C_6) alkyl, (C_1–C_6) alkoxy, (C_5–C_7) cycloalkyl, halo and phenyl and pharmaceutically acceptable salts thereof, wherein at least three of the four R_1, R_2, R_3, or R_4 substituents are always hydrogen.

4. A compound having the chemical formula:



R_1, R_2, R_3, or R_4 are each independently selected from the group consisting of hydrogen, hydroxy, amino, (C_1–C_6) alkyl, (C_1–C_6) alkoxy, (C_5–C_7) cycloalkyl, halo and phenyl and pharmaceutically acceptable salts thereof, wherein at least three of the four R_1, R_2, R_3, or R_4 substituents are always hydrogen.

5,484,952

PROCESS FOR THE MANUFACTURE OF ALKYL KETENE DIMER

Timothy F. Nolan, New Castle, Del., and Brian M. Stubbs, Sidcup, England, assignors to Hercules Incorporated, Wilmington, Del.

Filed May 5, 1994, Ser. No. 238,293

Claims priority, application United Kingdom, May 10, 1993, 9309604

Int. Cl.[6] C07D *305/12*

U.S. Cl. 549—329 61 Claims

1. A process for the synthesis of an alkyl ketene dimer by the dehydrohalogenation reaction of a C_8–C_{32} aliphatic fatty acid halide with a ternary amine in a solvent wherein the tertiary amine hydrohalide is mechanically separated from the alkyl ketene dimer solvent solution and wherein the solvent comprises an oxygenated hydrocarbon solvent having a boiling point above 70° C. and Hansen polar and hydrogen bonding solubility values lying on or within a solubility parameter circle drawn on a parameter solubility map where the x-y axes are the Hansen polar and hydrogen bonding solubility parameter scales in $MPa^{1/2}$units, respectively, the circle radius being 3.5 $MPa^{1/2}$, and the center of the circle the center having 6.25 and 4 and its x, y coordinates, the oxygenated hydrocarbon solvent having x, y coordinates such that $x^2+y^2-12.5x-8y+55.0625 \leq 12.25$.

5,484,953

O-PHENYLENEDIAMINES CONTAINING FLUOROALKYL(ENE) GROUPS

Albrecht Marhold, Leverkusen; Bernd Baasner, Bergisch Gladbach, and Folker Lieb, Leverkusen, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

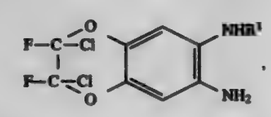
Division of Ser. No. 145,428, Oct. 29, 1993. This application Jun. 3, 1994, Ser. No. 253,466

Claims priority, application Germany, Nov. 6, 1992, 42 37 564.9

Int. Cl.[6] C07D *319/14;* C07C *209/36;211/52;233/43*

U.S. Cl. 549—362 1 Claim

1. o-Phenylenediamines containing a fluoroalkylene group of the formula (I)



(I)

in which

R^3 represents hydrogen, $COCH_3$ or $COCF_3$.

5,484,954

PROCESS FOR THE PREPARATION OF 6,7-DIACYL-7-DEACETYLFORSKOLIN DERIVATIVES

Tochiro Tatee, Tokyo; Akira Sidesawa, Osaka; Hiroteka Yamamoto, Yono; Yuh-ichiro Ichikawa, Tokyo, and Aya Narita, Agoo, all of, Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Japan

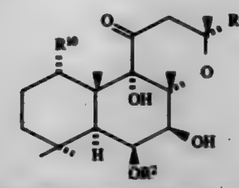
Division of Ser. No. 71,616, Jun. 4, 1993, Pat. No. 5,302,730, which is a continuation of Ser. No. 424,525, Dec. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 212,013, Jun. 27, 1988, abandoned. This application Jun. 19, 1994, Ser. No. 179,836

Claims priority, application Japan, Jun. 29, 1987, 62-159638; Jun. 29, 1987, 62-159639

Int. Cl.[6] C07D *311/92*

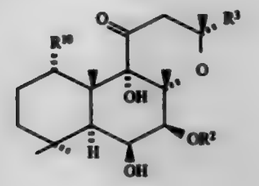
U.S. Cl. 549—389 1 Claim

1. A process for the preparation of a 6-acyl-7-deacetyl forskolin derivative represented by the general formula:



(1)

wherein R^{10} stands for a hydroxy group which may be esterified; R^2 stands for an acyl group and R^3 stands for an aliphatic group having 2 to 3 carbon atoms, which comprises heating, in the absence of a base, a 7-acyl-7-deacetylforskolin derivative represented by the general formula:



(2)

wherein R^{10}, R^2, and R^3 are as defined above.

5,484,955

TRI-HIGHER ALKYL TIN AZIDE AND ITS USE

Takashi Kato, Higashiosaka, and Yasushi Shida, Sakai, both of, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jan. 29, 1993, Ser. No. 83,697

Claims priority, application Japan, Jul. 6, 1992, 4-178484

Int. Cl.[6] C07D *257/04*

U.S. Cl. 552—4 1 Claim

1. A compound of the formula $(R)_3SnN_3$, wherein R is n-octyl.

5,484,956

FERTILE TRANSGENIC ZEA MAYS PLANT COMPRISING HETEROLOGOUS DNA ENCODING BACILLUS THURINGIENSIS ENDOTOXIN

Ronald C. Lundquist, Minnetonka, and David A. Walters, Bloomington, both of Minn., assignors to DeKalb Genetics Corporation, DeKalb, Ill.

Continuation-in-part of Ser. No. 467,583, Jan. 22, 1990, abandoned. This application Apr. 11, 1990, Ser. No. 508,045

Int. Cl.[6] A01H *4/00;* C12N *15/05*

U.S. Cl. 800—205 6 Claims

(2) 1. A fertile transgenic *Zea mays* plant of the R0 generation containing heterologous DNA encoding *Bacillus thuringiensis* endotoxin, wherein said DNA is expressed so that the plant exhibits resistance to an insect, wherein said expression is not present in said plant not containing said DNA, and wherein said DNA is transmitted through a complete normal sexual cycle of the R0 plant to the R1 generation, and wherein said DNA is introduced into said plant by microprojectile bombardment of *Zea mays* callus cells.

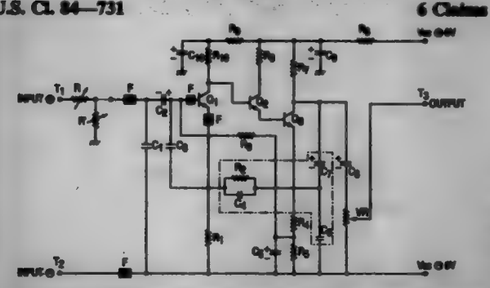
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5,484,957
AUTOMATIC ARRANGEMENT APPARATUS INCLUDING BACKING PART PRODUCTION
Eiichiro Aoki, Hamamatsu, and Kazunori Maruyama, Tano, both of, Japan, assignors to Yamaha Corporation, Japan
Filed Mar. 22, 1994, Ser. No. 215,790
Claims priority, application Japan, Mar. 23, 1993, 5-064349
Int. Cl.[6] G10H 1/38; 1/40
U.S. Cl. 84—635 4 Claims



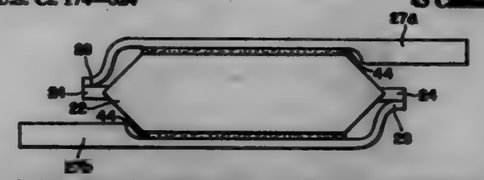
4. An automatic arrangement apparatus comprising:
first memory means for memorizing a rhythm pattern indicative only of tone generation timing in an original musical tune;
supply means for supplying tone pitch information in the original musical tune based on chord progression data;
second memory means for memorizing in sequence a plurality of informations each indicative of continuous tone pitch shorter than the rhythm pattern;
selection means for selecting a set of continuous tone pitch informations from the memorized informations; and
means arranged to be applied with the tone generation timing of the rhythm pattern, the tone pitch information and the selected set of continuous tone pitch informations respectively from said first memory means, said supply means and said second memory means for producing a performance information corresponding with the tone generation timing on a basis of the tone generation timing, the tone pitch information and the selected set of continuous tone pitch informations.

5,484,958
MUSICAL INSTRUMENT AND A METHOD OF APPLYING A LOW IMPEDANCE AMPLIFIER TO A MUSICAL INSTRUMENT
Hiroshi Ogawa, 6-2, Iwakura-muramatsu-cho, Sakyo-ku, Kyoto-shi, Kyoto 606, Japan
Division of Ser. No. 96,836, Jul. 26, 1993, abandoned, which is a continuation of Ser. No. 631,674, Dec. 20, 1990, abandoned. This application Sep. 22, 1994, Ser. No. 309,454
Int. Cl.[6] G10H 3/18
U.S. Cl. 84—731 6 Claims



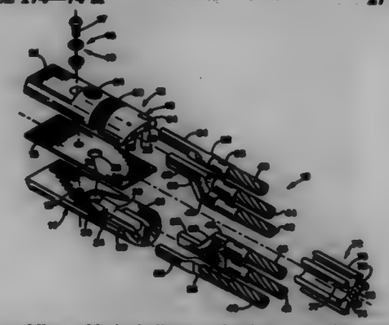
1. A method of applying a low impedance amplifier to a musical instrument, comprising electrically connecting lead wires to a structure made of an electrically conducting crystalline or non-crystalline substance having no band gap or a band gap of not higher than 0.008 eV which is a sound source of a musical instrument and has a low impedance matched to the low impedance amplifier; taking out through the lead wires a piezoelectric signal generated by the structure due to its own vibration in response to a music playing operation applied thereto; and amplifying the outputted generated signal by the low impedance amplifier which is supplied with the signal through the lead wires.

5,484,959
HIGH DENSITY LEAD-ON-PACKAGE FABRICATION METHOD AND APPARATUS
Carmen D. Burns, Austin, Tex., assignor to Sinitek Corporation, Austin, Tex.
Filed Dec. 11, 1992, Ser. No. 990,334
Int. Cl.[6] H01L 21/02
U.S. Cl. 174—524 43 Claims



1. A method of manufacturing a lead frame on an integrated circuit package of the type which includes plastic encapsulation material comprising the steps of:
mounting said lead frame comprised of a plurality of conductive elements formed in a substantially planar thermally conductive element to a major surface of said integrated circuit package, said package having a plurality of circuit conductors; and
connecting selected ones of said lead frame conductors to selected ones of said integrated circuit package circuit conductors.

5,484,960
WATER COOLED EXCELESS CABLE AND METHOD
Edwin F. Langhenry, Lakewood; Bruce Perin, Jr., Westlake, and James J. Kasper, Sheffield Village, all of Ohio, assignors to Watteredge-Unifier Inc., Avon Lake, Ohio
Filed Feb. 24, 1994, Ser. No. 201,351
Int. Cl.[6] H01B 7/34
U.S. Cl. 174—74 R 27 Claims



1. A welding cable including terminations comprising two alternate polarity semi-circular end members secured together with diameters abutting an electrical insulation therebetween, the axial inner face of said termination having at least two axially extending slots, one in each semi-circular end, each offset from each other along the abutting diameters, and respective electrical conductors having ends fitted and captured in the respective slots when said end members are secured together with the insulation therebetween.

22. A welding cable including terminations at each end and a plurality of alternate polarity individual twisted conductors extending between said terminations, and an axially extending soft and yieldable separator for said conductors including radial arms separating said conductors and extending from an enlarged flexible core, and stiffeners in said separator adjacent the terminations

whereby said cable has a higher degree of flexibility midway between the terminations than adjacent the terminations.

5,484,961

TERMINAL CRIMPING METHOD AND CRIMP TERMINAL USED THEREFOR

Akira Ioki; Eiji Fudou, and Masayuki Kawamura, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Mar. 8, 1994, Ser. No. 207,219
Claims priority, application Japan, Mar. 8, 1993, 5-046791
Int. Cl.[6] H01R *4/18;43/048*
U.S. Cl. 174—84 C 12 Claims



1. A terminal crimping method for crimping an opened barrel type crimp terminal on an end of an electric wire, wherein the opened barrel type crimp terminal has a body of semicircular cross section, which surrounds the end of the electric wire; and the crimp terminal further includes a pair of claws integrally extended from ends of a circular arc of the body and adapted to be crimped on the end of the electric wire, the terminal crimping method comprising the steps of:

placing a body of an opened barrel type crimp terminal containing an end of an electric wire on a stationary pressure receiving means;

providing a pair of claws on the body of the crimp terminal, wherein a first claw of the pair is a predetermined length longer than a second claw of the pair with respect to a direction extending toward a movable pressing means, such that the pair of claws is capable of crimping the crimp terminal with the end of the electric wire; and

displacing the pressing means toward the pressure receiving means to thereby bend the first claw above the second claw so that the first claw laps over the second claw.

7. An opened barrel type crimp terminal, comprising:

a body having a semicircular cross section which is adapted to surround an end of an electric wire, and a pair of claws integrally extending from ends of a circular arc of the body, wherein the claws are adapted to be crimped on the end of the electric wire, wherein:

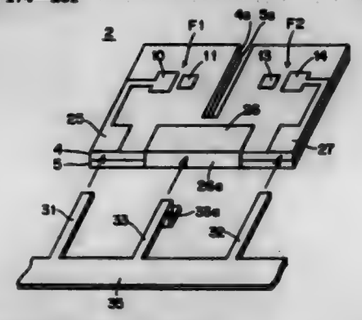
a first claw of the pair extends a predetermined length longer than a second claw of the pair.

5,484,962

ELECTRICAL DEVICE PROVIDED WITH THREE TERMINALS

Mamo Gamo, Nagaokakyo, Japan, assignor to Murata Mfg. Co., Ltd., Japan

Filed Jan. 3, 1994, Ser. No. 176,726
Claims priority, application Japan, Jan. 12, 1993, 5-003232
Int. Cl.[6] H05K *1/18*
U.S. Cl. 174—261 4 Claims



1. An electrical device comprising:

an element which has a specified electrical function, the element having a first side and second side, the first side being provided with an input leading electrode, an output leading electrode and a common leading electrode which is positioned between the input leading electrode and the output leading electrode;

an input terminal which is connected electrically with the input leading electrode by soldering;

an output terminal which is connected electrically with the output leading electrode by soldering; and

a common terminal which is connected electrically with the common leading electrode by soldering; and

at least one of the input terminal, the output terminal and the common terminal faces the first side of the element and at least one of the other terminals faces the second side of the element to hold the element in between, and the terminal which faces the second side and the leading electrode connected with that terminal are electrically connected by a solder bridge.

5,484,963

CERAMIC SUBSTRATE PROVIDED WITH METALLIZED LAYERS FOR CONNECTION WITH CHIP, CIRCUIT BOARD, OR THE LIKE

Junichi Washino, Nagoya, Japan, assignor to NGK Spark Plug Co., Ltd., Nagoya, Japan

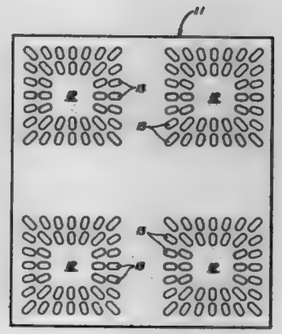
Filed Dec. 9, 1994, Ser. No. 352,875
Claims priority, application Japan, Dec. 10, 1993, 5-341685
Int. Cl.[6] H05K *1/11*
U.S. Cl. 174—261 18 Claims

1. A ceramic substrate and metallized pad assembly comprising:

a ceramic substrate having a planar side surface; and

a group of metallized pads for constituting connecting terminals, formed on said planar side surface of said ceramic substrate;

at least two or more of said metallized pads having an elongated shape and elongating in radial directions extending from a predetermined point on said planar side surface of said ceramic substrate.



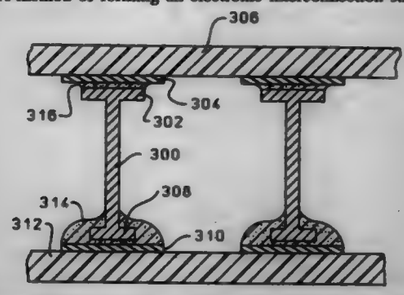
5,484,964

SURFACE MOUNTING PIN GRID ARRAYS

Peter F. Dawson, deceased, late of Portola Valley, Calif.; by Shirley B. Dawson, executor, 25 Tintern La., Portola Valley, Calif. 94028; Jacques Leibovitz, 1536 Larkspur Dr., San Jose, Calif. 95125, and Voddarahalli K. Nagesh, 20276 Pinntage Pwky., Cupertino, Calif. 95014

Filed Feb. 6, 1995, Ser. No. 384,186
Int. Cl.[6] H05K *1/14*
U.S. Cl. 174—261 9 Claims

1. A method of forming an electronic interconnection structure



between a substrate and a printed circuit board, the interconnection comprising at least one double headed interconnect pin, the double headed interconnect pin having a first head and a second head, the method comprising the steps of:

attaching the first head to a conductive pad on the substrate so that the interconnect pin extends substantially perpendicularly from the substrate; and

soldering the second head to a conductive pad on the printed circuit board such that the interconnect pin extends substantially perpendicularly from the printed circuit board.

5,484,965

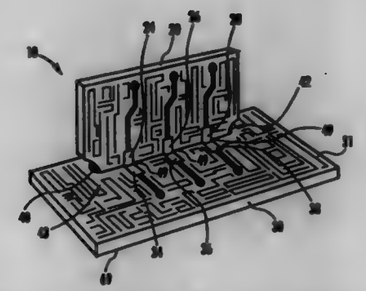
CIRCUIT BOARD ADAPTED TO RECEIVE A SINGLE IN-LINE PACKAGE MODULE

Gerard A. Woychik, Waukesha, Wis., assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Sep. 30, 1994, Ser. No. 316,667
Int. Cl.[6] H05K *1/14*
U.S. Cl. 174—262 25 Claims

1. A mother circuit board configured to support at least one module circuit board at a top surface of the mother circuit board, the module circuit board having a mounting edge provided with edge connectors, the mother circuit board comprising:

an aperture extending into the top surface of the mother circuit board and configured to receive the mounting edge of the module circuit board, the mother circuit board including conductive features proximate the aperture, the mother circuit board having at least one trace conductor located on the top



surface and coupled to at least one of the conductive features, the conductive features being arranged such that the conductive features are capable of electrical coupling to the edge connectors when the mounting edge of the module circuit board is received within the aperture.

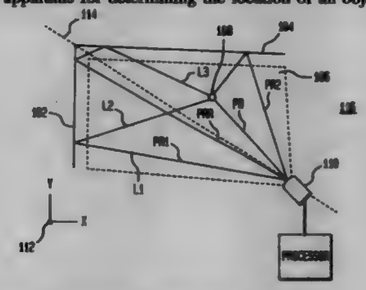
5,484,966

SENSING STYLUS POSITION USING SINGLE 1-D IMAGE SENSOR

Jakub Segen, Fair Haven, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Dec. 7, 1993, Ser. No. 163,419
Int. Cl.[6] G08C *21/00;* G01B *11/14*
U.S. Cl. 178—18 6 Claims

1. An apparatus for determining the location of an object in an



active area of a first plane, comprising:

first reflecting means, disposed substantially perpendicular to the first plane at a periphery of the active area, for receiving a first image of the object from the active area and for reflecting said first image back toward the active area substantially parallel to the first plane, said first reflecting means including a first polarization filter;

second reflecting means, disposed substantially perpendicular to the first plane at a periphery of the active area, for receiving a second image of the object from the active area and for reflecting said second image back toward the active area substantially parallel to the first plane, said second reflecting means disposed at a first angle which is less than one-hundred eighty degrees to said first reflecting means, said angle opening toward the active area, said second reflecting means including a second polarization filter; and

detecting means, disposed in the first plane at a periphery of the active area opposite said first and second reflecting means, for receiving said first image and said second image and for producing a signal indicating the position of said first and second images,

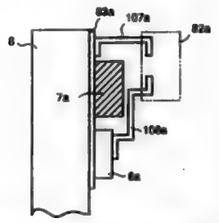
wherein a relative polarization angle between said first polarization filter and said second polarization filter is greater than zero degrees, for reducing the radiation intensity of a third image of the object, said third image being reflected off of said first reflecting means and said second reflecting means.

5,484,967

COORDINATE INPUT APPARATUS

Ryozo Yanagisawa, Matsudo; Atsushi Tanaka, Kawasaki; Yuichiro Yoshimura, Kamakura; Kiyoshi Kaneko, Yokohama; Katsuyuki Kobayashi, Yokohama, and Masaki Tokioka, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1993, Ser. No. 128,664
Claims priority, application Japan, Jan. 1, 1992, 4-263407
Int. Cl.[6] C08C *21/00*
U.S. Cl. 178—19 7 Claims



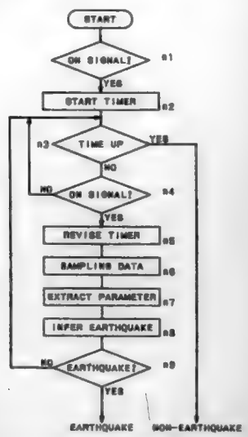
1. A coordinate input apparatus comprising:
a substantially rectangular vibration transmission plate provided with an input guarantee region where desired precision or resolution of a coordinate inputted from a vibration source is guaranteed;
vibration detection means arranged at least at three corner portions on said vibration transmission plate;
vibration suppression means which are arranged on a peripheral portion of said vibration transmission plate and along a path of a reflected wave of the vibration input in the input guarantee region to said detection means, except the corner portions where said detection means are arranged; and
means for calculating coordinate of a position where the vibration is input by said vibration source on the basis of the vibration detected by sid vibration detection means.

5,484,968

INTERFERENCE DEVICE FOR DISCRIMINATING A CERTAIN OSCILLATION

Takaji Nakamura, Yamaguchi, Japan, assignor to Omron Corporation, Kyoto, Japan

Filed Jun. 22, 1994, Ser. No. 264,201
Claims priority, application Japan, Jun. 30, 1993, 5-160604
Int. Cl.[6] G01V *1/16*
U.S. Cl. 181—122 20 Claims



1. An inference device for discriminating an earthquake, comprising

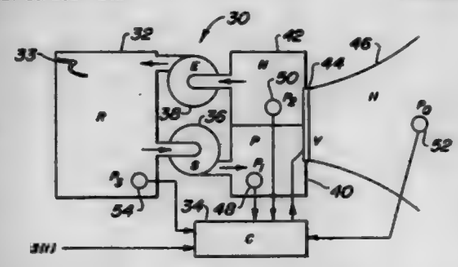
ON/OFF signal generating means for generating an ON/OFF signal corresponding to an oscillatory wave, wherein the ON/OFF signal is ON when an amplitude of the oscillatory wave differs from a threshold level in a first direction and is otherwise OFF,
characteristic parameter extracting means for extracting characteristic parameters including an ON period and an ON time sum total based on the generated ON/OFF signal, and
inference means for inferring for each ON period based on the extracted characteristic parameters whether or not said oscillatory wave is generated from an earthquake.

5,484,969

HIGH-VOLUME ACOUSTIC TRANSDUCER

Francis S. McKendree, Harrison City; Dexter V. Wright, Pittsburgh; Peter D. Hill, Monroeville, and Stanley S. Sattinger, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jul. 25, 1994, Ser. No. 280,642
Int. Cl.[6] H04R *23/00*
U.S. Cl. 181—142 31 Claims



1. A high-volume acoustic transducer, comprising:
(a) a positive plenum characterized by a positive pressure;
(b) a negative plenum characterized by a negative pressure less than said positive pressure;
(c) blower means coupled to said positive and negative plena for supplying a fluid to said positive plenum and withdrawing said fluid from said negative plenum, wherein said fluid comprises a member of a group consisting of: a gas, a mixture of gases, a mixture of combustion exhaust products, and air;
(d) an orifice plate containing a plurality of valves for controllably releasing said fluid from said positive plenum and accepting said fluid into said negative plenum, said valves comprise a member of a group consisting of large area-modulatinq valves and on/off valves; and
(e) a controller for controlling the operations of said valves in accordance with an electrical signal, wherein an acoustic signal generated by the high-volume transducer is analogous to said electrical signal, and wherein a fluid-to-fluid energy transfer takes place between said transducer and a surrounding environment.

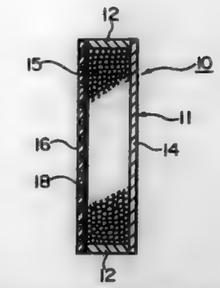
5,484,970

ACOUSTIC INSULATOR

Masami Suzuki; Mitsuhiro Akano, both of Odawara; Katsumi Sugimoto, and Hideyuki Kuroda, both of Tokyo, all of, Japan, assignors to Zeon Kasei Co., Ltd., Tokyo, and Fuji Photo Film Co., Ltd., Kanagawa, both of, Japan

Filed Jun. 3, 1994, Ser. No. 253,558
Claims priority, application Japan, Jun. 7, 1993, 5-136013
Int. Cl.[6] E04B *1/84*
U.S. Cl. 181—294 16 Claims

1. An acoustic insulator shaped into a sheet or a block compris



ing shreds of plastic coated with a magnetic material,
said insulator having a bulk specific gravity of 0.05 to 0.4 and a gas permeation resistance of 3 to 90 dyn.S/cm[4].

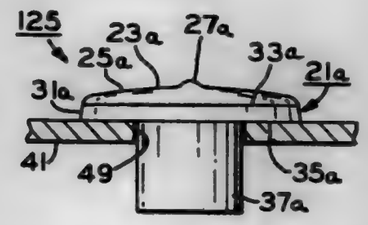
5,484,971

ELECTRICAL CONTACT HAVING A PRECIOUS METAL EXTRUSION EXTENDING FROM A CONTACT SURFACE

Raphael A. Gonzalez, Sterling, and Ronald W. Kelly, Morrison, both of Ill., assignors to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 475,916, Feb. 6, 1990, Pat. No. 5,020,217.
This application Apr. 1, 1991, Ser. No. 678,583
Int. Cl.[6] H01H *1/06*
U.S. Cl. 200—279 4 Claims

1. An electrical contact comprising:



a body having a centerline axis and formed at least in part of a precious metal with the precious metal defining a contact surface on said body;
a preselected generally circular area on said contact surface extending about the centerline axis and having a diameter of less than about 0.030 inches intersecting the centerline axis;
at least one projection of the precious metal projecting from within said area and extending about and centered on the centerline axis from said contact surface beyond the preselected circular area and formed by successive discrete extrusions of the precious metal into at least successive discrete initial and final configurations with the final configuration of the at least one projection having a height extending in a range of between about 0.002 inches and about 0.008 inches beyond the preselected circular area on said contact surface; and
a free end portion on the at least one projection spaced from the preselected circular area on said contact surface, said free end portion comprising at least in part a chordal section of a sphere having a spherical radius in a range between about 0.004 inches and about 0.010 inches.

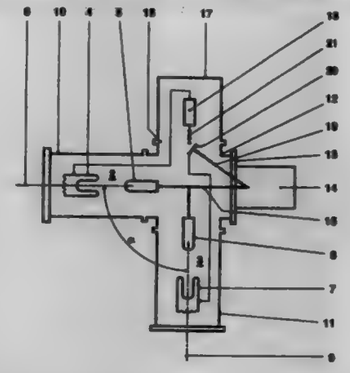
5,484,972

HIGH-VOLTAGE GAS SEALED SWITCHGEAR INCLUDING SERIES CONNECTED SWITCHES AND CLOSING RESISTOR

Piero Tecchio, Oberrrohrdorf, Switzerland, assignor to ABB Management AG, Baden, Switzerland

Filed Sep. 19, 1994, Ser. No. 307,427
Claims priority, application Germany, Jan. 29, 1993, 43 36 951.0
Int. Cl.[6] H01H *33/12;33/53;33/70*
U.S. Cl. 218—70 8 Claims

1. A high-voltage switching device for gas-insulated switchgear,



comprising:
a gas-filled metal housing which has a middle section, the middle section having a first and a second opening, the housing having tubular housing sections;
a conducting path which is disposed in the metal housing and has at least two series-connected switching points, the switching points having movable contact pieces;
a common drive for moving the contact pieces into and out of contact with fixed contact pieces in the metal housing, the common drive being mounted at the first opening of the middle section of the metal housing;
at least a part of the conducting path forming a right angle to define two legs, at least one of the at least two switching points being arranged, respectively, on each leg of the conducting path, the switching points being surrounded by the tubular housing sections;
a resistance housing attached to the metal housing at the second opening;
a closing resistor surrounded by the resistance housing, the closing resistor being operationally connected to the switching points during closure; and
auxiliary switching points for connecting and disconnecting the closing resistor.

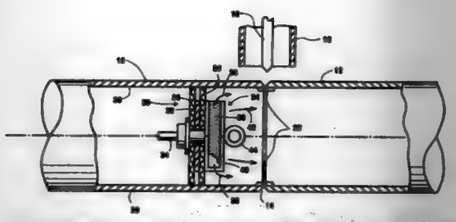
5,484,973

UNDERBEAD WELD SHIELD METHOD AND APPARATUS

Timothy E. Gittess, Danbury; Mark S. Nowotarski, Stamford, both of Conn., and Frank A. Digiacamo, Harrison, N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Oct. 20, 1994, Ser. No. 325,760
Int. Cl.[6] B23K *9/16*
U.S. Cl. 219—74 12 Claims

10. A process for welding a pair of conduit sections at a butt joint, said process comprising the steps of:
(a) providing a first inert gas around the butt joint to be welded;
(b) providing, through a single sealing means, said single sealing means placed on one side of said butt joint, a laminar flow of a second inert gas having a density substantially equal to air into an underbead region of said butt joint, transversely or



perpendicularly through a porous diffusing wall comprising pores having a diameter in the range of about 2 to about 100 microns; and

(c) directing a weld electrode along said butt joint to weld said conduit sections.

5,484,974

MAKING ELECTRIC-RESISTANCE-SOLDERED MULTILAYER TUBING

Carl H. Veltmer, Sundern, and Udo Mänken, Wuppertal, both of, Germany, assignors to Carl Froh Rohrenwerk GmbH & Co., Sundern, Germany

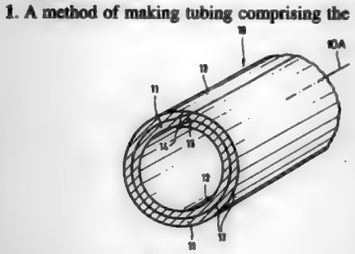
Filed Sep. 28, 1994, Ser. No. 315,215

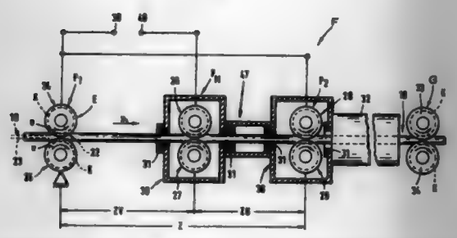
Claims priority, application Germany, Sep. 30, 1993, 43 33 036.3

Int. Cl.[6] B23K *1/00;1/14;1/16*

U.S. Cl. 219—85.22 **16 Claims**

1. A method of making tubing comprising the steps of:





advancing a flat metal strip in a travel direction along a path through a forming station and then through a soldering station and then through a cooling station;

forming the strip in the forming station into a multilayer tubular shape by pressing it at the forming station against a mandrel with a pair of forming rollers;

engaging the strip downstream of the forming station in the soldering station by a pair of contact rollers;

applying electrical current directly to the forming and contact rollers and therethrough to the strip and flowing the electrical current via the forming and contact rollers through the tubular strip between the forming and contact rollers to heat the strip in the soldering station and thereby fuse layers of the tubular strip together;

driving the forming rollers to rotate at a peripheral speed identical to a travel speed of the strip so that the forming rollers do not slip on the strip;

driving the contact rollers to rotate at a peripheral speed greater than that of the forming rollers and thereby maintain the strip under longitudinal tension between the forming rollers and the contact rollers with substantially no slippage between the contact rollers and the strip; and

cooling the soldered tubular strip in the cooling station.

5,484,975

SPOT WELDING APPARATUS

Makoto Itatsu, Tama, Japan, assignor to Nissan Motor Co. Ltd., Yokohama, Japan

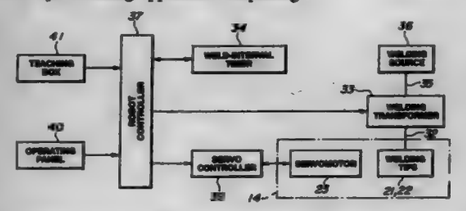
Filed Jul. 15, 1994, Ser. No. 272,988

Claims priority, application Japan, Jul. 22, 1993, 5-181710

Int. Cl.[6] B23K *11/10*

U.S. Cl. 219—86.7 **5 Claims**

1. A spot welding apparatus comprising:



a welding gun having a pair of opposing welding electrodes either one of which is movable towards the other to apply a pressure onto a work and away from the other to release the pressure;

a servomotor attached to said welding gun for adjusting the pressure applied to the work through movement of said movable welding electrode;

a servomotor controller for controlling an operation of said servomotor;

a welding current regulator for adjusting a value of welding current applied through the opposing electrodes to the work;

a weld-interval timer arranged for adjusting at least one weld time interval and weld timing for said welding current and said pressure both applied to the work; and

a spot welding controller electronically connected to said servomotor controller, said welding current regulator and said weld-interval timer, for simultaneously and arbitrarily adjusting the welding current, the pressure, the weld time interval and the weld timing, based on teaching data, during one cycle of spot welding at one specified welding point on the work.

5,484,976

FUSING METHODS AND APPARATUS FOR USE IN MAKING DYNAMO-ELECTRIC MACHINES

Federico Sbaichiero; Sabatino Luciani, and Alessandro Rossi, all of Florence, Italy, assignors to Axis USA, Inc., Tampa, Fla.

Filed Oct. 1, 1993, Ser. No. 130,307

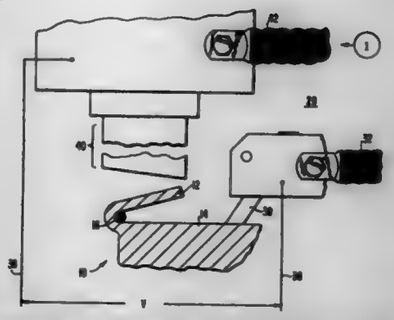
Int. Cl.[6] B23K *11/24*

U.S. Cl. 219—110 **11 Claims**

7. In a method for performing a fusing operation which includes fusing a first electrical conductor to a second electrical conductor by applying force and heat to at least one of said conductors, said force being applied by a fusing electrode, and said heat being generated by electrical power passing through an electrical circuit that includes at least a portion of said fusing electrode in series with at least a portion of said at least one of said conductors, the improvement comprising the steps of:

measuring the electrical resistance of said circuit during said fusing operation; and

controlling at least one parameter of said fusing operation based at least in part on the electrical resistance measured in said measuring step and a predetermined electrical delivery function to regulate said force and heat so that at least one of said conductors is softened, insulation on a portion of one of said conductors is vaporized, at least one of said conductors is



deformed to be in intimate contact with the other, and both of said conductors are bonded together, said heat being applied continuously while at least one of said conductors is softened, said insulation is vaporized, and at least one of said conductors is deformed and bonded.

5,484,977

METHOD OF MANUFACTURING AN ARTICLE BY SUPERPLASTIC FORMING AND DIFFUSION BONDING AND VACUUM CHAMBER FOR USE IN PROCESSING WORKPIECES FOR SUPERPLASTIC FORMING AND DIFFUSION BONDING

Joseph Douglas, Derby, England, assignor to Rolls-Royce, plc, United Kingdom

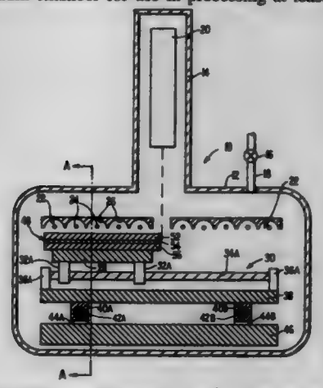
Division of Ser. No. 53,335, Apr. 28, 1993, Pat. No. 5,263,638, which is a continuation of Ser. No. 881,266, May 11, 1992, abandoned. This application Aug. 30, 1993, Ser. No. 112,984

Claims priority, application United Kingdom, Jun. 4, 1991, 9111954

Int. Cl.[6] B23K *15/00*

U.S. Cl. 219—121.13 **13 Claims**

1. A vacuum chamber for use in processing at least two metal



workpieces for diffusion bonding and superplastic forming, the workpieces having edges and being arranged in a stack with a stop off material applied to a mating surface between the workpieces, the stop off material including a volatile binder, said chamber, comprising pump means arranged to evacuate the vacuum chamber, an energy beam welding means disposed to direct a welding beam into said chamber along a path, heater means arranged to directly heat the stack of at least two metal workpieces placed in the vacuum chamber to evaporate the volatile binder from the stop off material applied to preselected areas of at least one of the mating surfaces of the metal workpieces, means arranged to cause relative movement between said path of said welding beam of the energy beam welding means and the stack of workpieces placed in the vacuum chamber to allow the edges of the at least two metal workpieces to be welded together.

5,484,978

DESTRUCTION OF HYDROCARBON MATERIALS

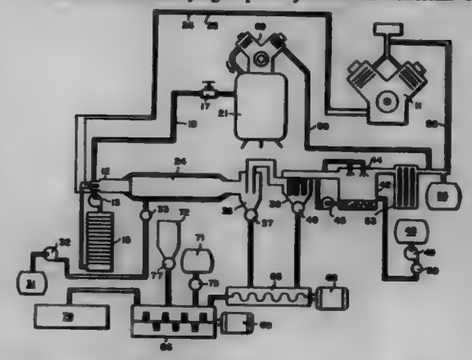
Goran J. Hedberg, Norwich, Vt., and Ellen E. Knights, Lyme, N.H., assignors to Energy Reclamation, Inc., Lyme, N.H.

Filed Mar. 11, 1994, Ser. No. 209,977

Int. Cl.[6] B23K *10/00*; C09C *1/48*; F23G *7/04*

U.S. Cl. 219—121.59 **11 Claims**

1. A method of destroying liquid hydrocarbon materials by



pyrolysis; said method comprising:

generating a plasma from an electric arc discharge in a flow of hydrogen gas devoid of oxygen;

injecting said liquid hydrocarbon material into said plasma thereby to pyrolytically decompose said hydrocarbon material and produce increased hydrogen gas and carbon particles in said gas flow;

separating said carbon particles from said gas flow; and

combining at least a portion of said increased hydrogen with atmospheric oxygen to generate electric current, said current being applied to generate said plasma.

5,484,979

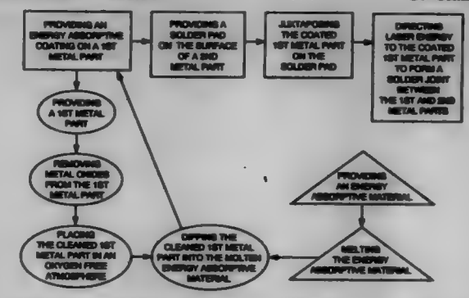
LASER SOLDERING PROCESS EMPLOYING AN ENERGY ABSORPTIVE COATING

Guilian Gao, Novi, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 22, 1993, Ser. No. 139,663

Int. Cl.[6] B23K *26/00*

U.S. Cl. 219—121.64 **20 Claims**



13. A process of laser soldering a metallic lead to an electronic device having at least one metallic surface onto which said metallic lead is to be soldered, comprising:

providing a metallic lead comprised of at least one metal selected from the group consisting of the Group IB and IVA metals, and at least one metallic surface of at least one metal selected from the group consisting of the Group VIIIB and IB metals;

providing a laser energy absorptive coating upon the metallic lead to form a coated metallic lead, wherein the coating protects against metal oxide formation on the lead and decreases reflectivity of the metallic lead;

applying a solder paste to said at least one metallic surface;

heating the solder paste to a temperature sufficient to melt the paste and allowing the melted paste to solidify, thereby forming a solder pad;

juxtaposing the coated metallic lead on the solder pad;

directing a sufficient quantity of laser energy to the coated metallic lead so that a solder joint results between said least one metallic surface and the metallic lead, wherein the laser energy is absorbed by the coating and transferred to the solder joint as heat energy, wherein the coating imbues improved wetting and flow to the solder pad and the solder joint is substantially devoid of corrosive residues and requires no post-solder cleaning.

5,484,980

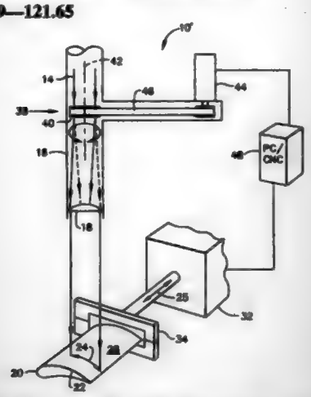
APPARATUS AND METHOD FOR SMOOTHING AND DENSIFYING A COATING ON A WORKPIECE

Vanon D. Pratt, Blanchester, Ohio; Eric J. Whitney, State College, Pa., and Wilbur D. Scheidt, Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Feb. 26, 1993, Ser. No. 23,453

Int. Cl.[6] B23K *26/08*

U.S. Cl. 219—121.65 **15 Claims**



1. An apparatus for smoothing and densifying a coating on a workpiece, comprising:

a laser for generating a laser beam;

a cylindrical lens for focusing said laser beam into a line of light on the coating surface;

means for moving said line of light and the workpiece relative to one another to cause said line of light to scan across the coating to remove rough portions and provide a smooth glaze surface; and

a beam spinner disposed in an optical path between said laser and said cylindrical lens for oscillating said line of light.

5,484,981

METHOD OF CUTTING A HOLLOW METALLIC MATERIAL

Yasushi Nakazawa; Katsuhiro Kitamura; Yasunori Oku, all of Utsunomiyashi, and Masatoshi Enomoto, Oyamashi, all of, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Osaka, Japan

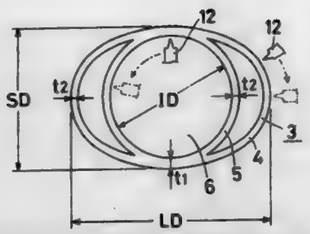
Filed Aug. 24, 1994, Ser. No. 293,339

Int. Cl.[6] B23K *26/08*

U.S. Cl. 219—121.72 **5 Claims**

1. A method of cutting a hollow elongated metallic material, the method comprising the steps of:

providing a hollow elongated metallic material having an inner peripheral wall and having an outer peripheral wall spaced from said inner peripheral wall in a radial direction therefrom and over a portion of said inner peripheral wall, such that the hollow elongated metallic material has at least partially a double-wall cross-section;



preparing a source for emitting from a laser head a laser beam of an energy level capable of cutting the material;

then initiating to irradiate the laser beam at least from the inside of the material onto an inner peripheral wall surface of the material; and

subsequently rotating the laser head along the inner wall surface in a circular direction so as to sever a slice from a remainder of the material; and

irradiating a second laser beam onto the outer peripheral wall surface, from the outside of the material.

5,484,982

BEAM AXIS ADJUSTING METHOD FOR A LASER ROBOT

Ryo Nihei, Fujiyoshida; Akihiro Terada, Yamanashi, and Hiroshi Takamatsu, Anan, all of, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

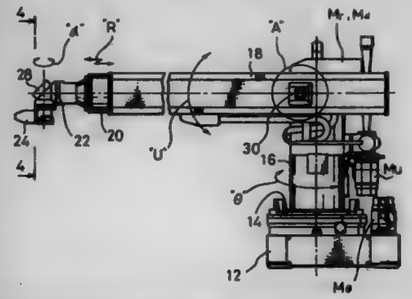
PCT No. PCT/JP93/00097, § 371 Date Sep. 23, 1993, § 102(e) Date Sep. 23, 1993, PCT Pub. No. WO93/14899, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 27, 1993, Ser. No. 119,162

Claims priority, application Japan, Jan. 31, 1992, 4-16375

Int. Cl.[6] B23K *26/02;26/04*

U.S. Cl. 219—121.79 **5 Claims**



1. A method of adjusting a beam axis of a laser robot, in which adjustment of the beam axis of a laser beam traveling along a pathway extending in a robot unit via reflecting mirror units is performed so as to be in coincidence with axes of motion of respective joints of said robot unit, comprising the steps of:

splitting a laser beam traveling along the pathway in said robot unit of said laser robot at at least one selected position of said robot unit, into a first laser beam traveling along the laser beam pathway and a second laser beam traveling toward an outside of said robot unit;

directing said second laser beam so as to be cast on a detachably attached target plate made of a semitransparent flat plate to form a light spot to be observed from backside of said detachably attached target plate;

moving each respective joint of said robot unit while inspecting a locus of a circular movement of said light spot on said detachably attached target plate; and

adjusting a position of at least one of said mirror units until said locus of said circular movement of said light spot contracts into an approximate point on said detachably attached target plate.

5,484,983

ELECTRIC HEATING ELEMENT IN KNITTED FABRIC

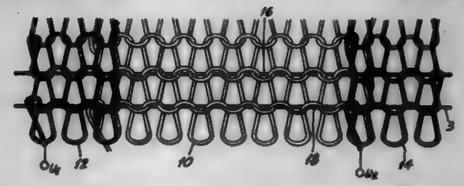
Friedrich Roell, Biberach, Germany, assignor to Tecnit-Techische Textilien Und Systeme GbmH, Germany

Continuation-in-part of Ser. No. 943,730, Sep. 11, 1992, abandoned. This application Mar. 21, 1994, Ser. No. 210,912

Claims priority, application Switzerland, Sep. 11, 1991, 02676/91

Int. Cl.[6] H05B *3/34;3/54*

U.S. Cl. 219—545 **27 Claims**



17. A method of making an electric heating element, the method comprising the steps of:

knitting a knitted mesh structure having first and second edge portions;

forming first and second conductive interlace mesh members from a plurality of electrically conductive, separated, current supply wires;

attaching the first conductive interlace mesh member to the first edge portion of the knitted mesh structure;

attaching the second conductive interlace mesh member to the second edge portion of the knitted mesh structure; and

attaching a plurality of resistance wires between the first and second conductive interlace mesh members so that the resistance wires extend from the first conductive interlace mesh member to the second interlace mesh member through the knitted mesh structure and so that each of the first and second conductive interlace mesh members form a plurality of electrical connections with each of the resistance wires so that current supply to at least some of the resistance wires continues even upon at least one of a breakage and inoperability of at least one of the conductive wires.

5,484,984

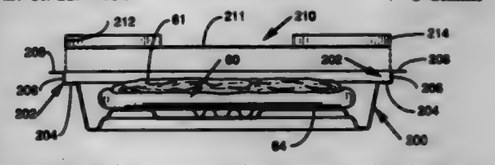
OVENABLE FOOD PACKAGE INCLUDING A BASE WITH DEPENDING LEG MEMBER AND A PLURALITY OF RAISED PORTIONS AND ASSOCIATED FOOD PACKAGES

Paul W. Gics, Sewickley Heights, Pa., assignor to Gics & Vermee, L.P., Sewickley Heights, Pa.

Filed Mar. 4, 1994, Ser. No. 206,564

Int. Cl.[6] H05B *6/80*

U.S. Cl. 219—734 **3 Claims**



1. A package for containing a food product, said package supporting said food product when said food product is placed into a food heating apparatus having a support surface, said package comprising:

a base;

a sidewall extending from said base, said sidewall having a stepped flange portion; and

lid means having at least one portion which is folded so that said lid is complementary to said stepped flange portion when said lid means is placed into contact with said stepped flange and such that when said lid means is removed from said package and is unfolded, said lid means can rest on a portion of said stepped flange portion to create a space between said lid means and said food product.

5,484,985

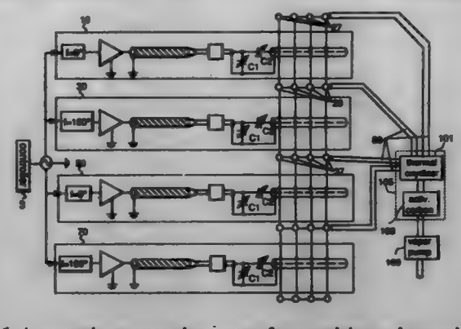
RADIOFREQUENCY GROUND HEATING SYSTEM FOR SOIL REMEDIATION

William A. Edelstein, Schenectady; Icko T. Iben, Scotia; Otward M. Mueller, Ballston Lake; Egidijus E. Urgiris, Schenectady, all of N.Y., and Peter B. Roemer, North Andover, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 16, 1994, Ser. No. 291,260

Int. Cl.[6] H05B *6/54;* E21B *36/04*

U.S. Cl. 219—772 **6 Claims**

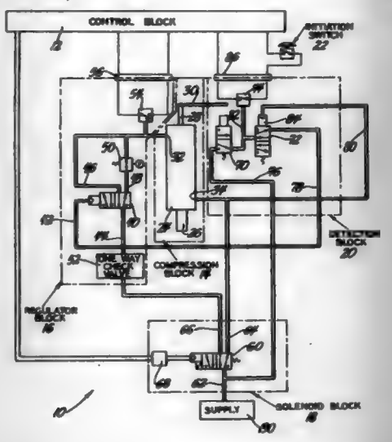


5,484,986

WELD FORCE LIMITER

George V. Fantazian, Farmington Hills, and Ronald J. Eisbrenner, Shelby Township, both of Mich., assignors to Savair Inc., St. Clair Shores, Mich.

Filed May 27, 1994, Ser. No. 249,943
Int. Cl.[6] B23K *11/10;37/02*
U.S. Cl. 219—86.41 19 Claims



1. A weld force limiting apparatus for providing a limited force for moving a first electrode into contact with a production part and a maximum force for welding, said apparatus comprising:

control means having a first interface, a second interface, and a third interface for controlling a transition between said limited force and said maximum force;

compression means having a first air input and an air return, for using pressurized air to move said first electrode into contact with said production part in either a low pressure mode or a high pressure mode responsive to pressure at said first air input;

regulator means having an output connected to said first air input of said compression means, a second air input, a first input pilot line, and a regulator interface connected to said second interface of said control means for receiving a signal from said control means, said regulator means providing either high pressure air or low pressure air to said compression means in response to said signal present at said first input pilot line;

solenoid means having an input air line connected to an air supply, a first output air line connected to said second air input of said regulator means, a second output air line connected to said air return of said compression means, a first output pilot line, and a solenoid interface connected to said first interface for providing a signal from said control means, said solenoid means adapted to divert air flow between said first and said second output air lines in response to said signal present at said solenoid interface; and

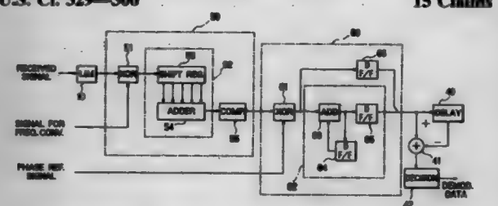
detection means having a third air input line connected to said air return of said compression means, a detection interface connected to said third interface for receiving a signal from said control means, a second output pilot line connected to said first input pilot line of said regulator means and a second input pilot line connected to said air supply, said detection means adapted to detect when said first electrode is within a predetermined distance of said production part and to signal said regulator means to provide said high pressure air to said first air input of said compression means.

5,484,987

DELAYED DETECTION TYPE DEMODULATOR

Toshiharu Kojima, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 218,621, Mar. 28, 1994, which is a division of Ser. No. 997,768, Dec. 24, 1992, Pat. No. 5,313,170. This application Aug. 4, 1994, Ser. No. 286,129
Claims priority, application Japan, Dec. 27, 1991, 3-347245
Int. Cl.[6] H04L *27/22*
U.S. Cl. 329—306 15 Claims



1. A differential detection demodulator for demodulating a 2-level quantized received signal, said differential detection demodulator comprising:

half-period detection means for generating, in response to said received signal, a half-period detection signal at each half-period of said received signal;

phase reference signal generation means for generating said phase reference signal in response to a clock having a frequency not less than twice said frequency of said received signal;

phase shift measurement means, coupled to said half-period detection means and phase reference signal generation means and including phase inversion correction means for correcting said phase reference signal for a phase inversion thereof at each alternate half-period of said received signal, said phase shift measurement means outputting a relative phase signal representing a relative phase of said received signal with respect to said phase reference signal at each half-period of said received signal, on the basis of said phase reference signal corrected by said phase inversion correction means and said half-period detection signal output from said half-period detection means;

a delay element coupled to said phase shift measurement means, for delaying said relative phase signal output from said phase shift measurement means by one symbol period of said received signal; and

a subtractor coupled to said phase shift determiner means and said delay element, for subtracting an output of said delay element from said relative phase signal.

5,484,988

CHECKWRITING POINT OF SALE SYSTEM

Robert R. Hills, St. Augustine, Fla., and Henry R. Nichols, McLean, Va., assignors to Resource Technology Services, Inc., Vienna, Va.

Continuation of Ser. No. 975,717, Nov. 13, 1992, abandoned. This application Jun. 9, 1994, Ser. No. 257,390
Int. Cl.[6] G06F *15/30*
U.S. Cl. 235—379 20 Claims



1. A checkwriting point of sale system comprising:

a point of sale terminal adapted to receive consumer bank account information from any bank check;

a central computer system;

first communications means integral to said point of sale terminal for electronically communicating with the central computer system;

memory means integral to said point of sale terminal for temporarily storing the consumer bank account information;

the central computer system having second communication means for receiving information from a plurality of said point of sale terminals;

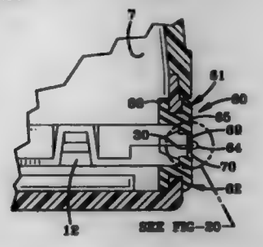
the central computer system second communication means enabling said central computer system to communicate with external databases for performing a consumer bank account status search and further enabling automated clearing house communication for transferring funds without using the bank check as a negotiable instrument.

5,484,989

CARD READING TERMINAL HAVING PROTECTIVE SHIELD FOR INPUT PORT THEREOF

Rajendra Kumar, Akron; Steven E. Brooks, Canton, and Michael J. Gallo, Twinsburg, all of Ohio, assignors to Khyber Technologies Corporation, Fairlawn, Ohio

Continuation-in-part of Ser. No. 835,760, Feb. 13, 1992, Pat. No. 5,265,591. This application Nov. 1, 1993, Ser. No. 146,713
Int. Cl.[6] G06K *7/00*
U.S. Cl. 235—435 16 Claims



1. An improved terminal of the type having card reading means incorporated therein accessible through an input port for detecting information stored on a preprogrammed card when said card is inserted through said input port and into communication with the card reading means, said improvement including:

shield means mounted on the terminal adjacent the input port having a resilient elastomeric flexible closure movable between open and closed positions for blocking the entrance of debris through said input port and into the card reading means when in the closed position, and for resiliently moving to the open position permitting the passage of a card therethrough when said card is inserted into said input port for communication with said card reading means;

said flexible closure includes a pair of opposing flexible flaps having an outermost free edge, said flaps extending over said input port, with one of the pair of opposing flaps overlapping and abutting at least a portion of the second of the pair of opposing flaps at said outermost edges when said flexible closure is in the closed position;

in which the different free edges of the flexible flaps are formed with respective complementary shaped inclined surfaces which surfaces abut when said flaps overlap, and

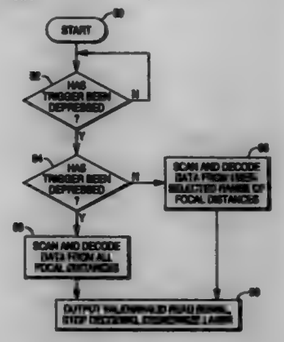
in which slots are formed in the shield means at ends of the flexible flaps.

5,484,990

MULTIPLE DEPTH OF FIELD LASER OPTICAL SCANNER

Joseph M. Lindacher, Duluth, and Stephen J. Ames, Lawrenceville, both of Ga., assignors to NCR Corporation Information Solutions Company, Dayton, Ohio

Filed Dec. 15, 1993, Ser. No. 168,102
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—467 38 Claims



15. A multiple depth of field optical scanner comprising:

a laser for producing a laser beam within a field of view;

a mirrored spinner for reflecting the laser beam to produce scan beams for illuminating an item having a bar code label, the mirrored spinner including a plurality of facets wherein each facet has a predetermined curvature and generates a scan beam having a predetermined focal point and wherein the curvature and focal point of each facet are different than the curvature and focal point of any other facet;

a detector for converting light reflected from the bar code label into first electrical signals based upon the intensity of the reflected light;

an amplifier circuit for amplifying the first electrical signals enough to produce second electrical signals having substantially equal amplitudes, including an angle sensor for sensing the orientation of the mirrored spinner and for generating a signal containing the orientation information for use by the microcontroller in controlling the amplifier circuit; and

a microcontroller coupled to the amplifier circuit for decoding bar code information from the second electrical signals.

26. A multiple depth of field optical scanner comprising:

a laser for producing a laser beam within a field of view;

a mirrored spinner for reflecting the laser beam to produce scan beams for illuminating an item having a bar code label, the mirrored spinner including a plurality of facets wherein each facet has a predetermined curvature and generates a scan beam having a predetermined focal point and wherein the curvature and focal point of each facet are different than the curvature and focal point of any other facet;

a detector for converting light reflected from the bar code label into first electrical signals based upon the intensity of the reflected light;

an amplifier circuit for amplifying the first electrical signals enough to produce second electrical signals having substantially equal amplitudes;

a microcontroller coupled to the amplifier circuit for decoding bar code information from the second electrical signals; and

a distance selection circuit for signaling the microcontroller to decode only said second electrical signals corresponding to a predetermined range of focal distances.

5,484,991

PORTABLE MODULAR WORK STATION INCLUDING PRINTER AND PORTABLE DATA COLLECTION TERMINAL

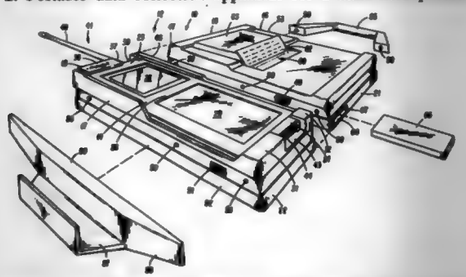
Richard A. Sherman, Toddville; Darald R. Schultz; Steven H. Salvay, both of Cedar Rapids; Robert B. Jaeger, Swisher; Patrick H. Davis, and George E. Hanson, both of Cedar Rapids, all of Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Division of Ser. No. 994,428, Dec. 21, 1992, Pat. No. 5,347,115, which is a continuation-in-part of Ser. No. 616,857, Nov. 21, 1990, Pat. No. 5,186,558, and a continuation-in-part of Ser. No. 759,740, Sep. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 634,246, Dec. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 463,748, Jan. 12, 1990, abandoned. This application Aug. 16, 1994, Ser. No. 291,305

Int. Cl.[6] G06K 7/10

U.S. Cl. 235—472 15 Claims

1. Portable data collection apparatus for a hand-held portable



data collection terminal, the portable data collection terminal including external data communication connector means, the data collection apparatus comprising:

a printer module of elongate and generally rectangular shape having oppositely disposed side walls and including a printer mechanism, a self contained power source for operating the printer mechanism, first data communication means for electrically communicating data to the printer, the first data communication means including a first data communication connector mounted in at least one of the side walls, and a paper tray for retaining internally of the printer module a supply of printer media for use by the printer mechanism;

a docking module of elongate and generally rectangular shape having oppositely disposed side walls, the docking module including a receiving cavity for receiving the portable data collection terminal and means for releasably retaining the data collection terminal within said cavity, the receiving cavity including internal communication connector means disposed to engage the external data communication connector means of the portable data collection terminal when the portable data collection terminal is releasably retained within the cavity, second data communication means, including at least one second data communication connector disposed in at least one of the side walls of the docking module, for communicating data between the internal communication connector means of the receiving cavity and the second data communication connector;

means for attaching the printer module and the docking module in parallel alignment with each other and with selected ones of the side walls of the printer module and docking module facing each other, the facing side walls of the printer module and the docking module containing the first and second communication connectors, respectively, the first and second communication connectors being in alignment with each other and in engagement with each other upon attachment of the printer module to the docking module, and

a carrying handle attached to the other of the oppositely disposed side walls of the printer module.

5,484,992

AUTOMATIC HAND-SUPPORTABLE LASER SCANNER WITH FLICKERING LASER SCANNING BEAM TO IMPROVE VISIBILITY THEREOF AND BEAM-SYMBOL ALIGNMENT DURING BAR CODE SYMBOL PRESENCE DETECTION

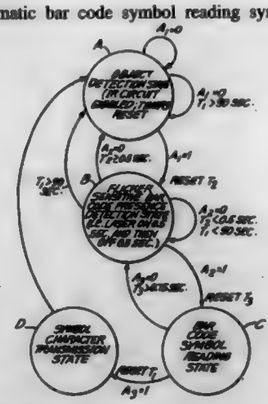
David M. Wilz, Sewell; George B. Rockstein, Audubon; Carl H. Knowles, Morristown, and Charles A. Naylor, Sewell, all of N.J., assignors to Metrologic Instruments, Inc., Blackwood, N.J.

Continuation of Ser. No. 960,733, Oct. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 898,919, Jun. 12, 1992, Pat. No. 5,340,973, which is a continuation-in-part of Ser. No. 761,123, Sep. 17, 1991, Pat. No. 5,340,971, which is a continuation-in-part of Ser. No. 583,421, Sep. 17, 1990, Pat. No. 5,260,553. This application Nov. 24, 1993, Ser. No. 278,109

Int. Cl.[6] G06K 7/10

U.S. Cl. 235—472 10 Claims

1. An automatic bar code symbol reading system having an



object detection mode of operation, a bar code symbol presence detection mode, and a bar code symbol reading mode of operation, said automatic bar code symbol reading system, comprising:

a hand-supportable housing having a light transmission aperture through which visible light can exit and enter said hand-supportable housing and which can be supported by the hand of a user of said system;

object detection means disposed in said hand-supportable housing for automatically detecting an object located within a portion of a scan field defined external to said hand-supportable housing;

laser beam source in said hand-supportable housing for producing a visible laser beam within said hand-supportable housing;

laser beam directing means in said hand-supportable housing, for directing said visible laser beam through said light transmission aperture and into a scan field defined external to said housing;

a scanning mechanism in said hand-supportable housing for repeatedly scanning said visible laser beam across said scan field and a bar code symbol on said detected object, said scanned visible laser beam flickering in said scan field at a rate in the range from about 0.5 Hz to about 16 Hz so as to improve the visual conspicuousness of said visible laser beam in said scan field during said bar code symbol detection mode, as said user visually aligns said scanned visible laser beam with the bar code symbol on said detected object;

light detection means in said hand-supportable housing, for detecting the intensity of laser light reflected off said bar code symbol as said visible laser beam is repeatedly scanned across said scan field and said bar code symbol, and for automatically producing scan data indicative of the detected intensity of said reflected laser light;

scan data processing means for processing produced scan data so as to detect and decode said bar code symbol on said detected object, and upon detecting and decoding said bar code symbol on said detected object, automatically producing symbol character data representative of said decoded bar code symbol; and

control means for controlling the operation of said laser beam source, said laser beam detection means, said scanning mechanism and said scan data processing means.

5,484,993

CARD READER MAINTENANCE SYSTEM

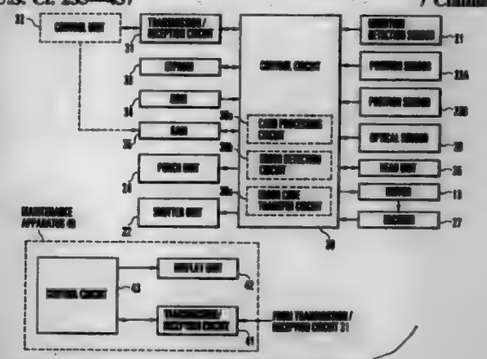
Yoshiaki Seto; Masayuki Miyauchi, and Takanobu Fujii, all of Tokyo, Japan, assignors to Tamura Electric Works, Ltd., Tokyo, Japan

Filed Sep. 21, 1994, Ser. No. 310,158

Claims priority, application Japan, Sep. 24, 1993, 5-258932

Int. Cl.[6] G06K 5/00

U.S. Cl. 235—437 7 Claims



1. A card reader maintenance system comprising:

a card reader comprising

a card convey path for conveying an inserted card,

drive means for driving said card convey path,

recording/reproducing means, arranged on said card convey path, for recording/reproducing data on/from said card,

card processing means for sequentially executing, in accordance with a predetermined procedure, a plurality of card processes including a card convey process for controlling said drive means to convey said card to a position of said recording/reproducing means, a data reproducing process for causing said recording/reproducing means to reproduce data recorded on said card, and a data recording process for causing said recording/reproducing means to record data on said card,

error detection means for detecting an error in each card process while said card processing means executes the plurality of card processes, and

storage means for storing, on the basis of a detection output from said error detection means, error information indicating a card process in which an error has occurred; and

a maintenance apparatus comprising display means for displaying the error information read out from said storage means during maintenance.

5,484,994

OPTICAL SCANNING HEAD WITH IMPROVED RESOLUTION

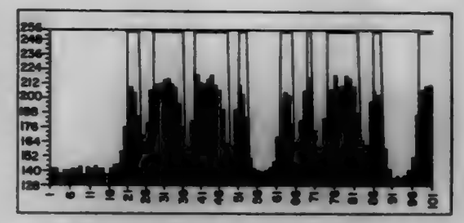
Alexander Roustaei, 1696 Via Inspirar, San Marcos, Calif. 92069

Filed Oct. 18, 1993, Ser. No. 137,426

Int. Cl.[6] G06K 7/10

U.S. Cl. 235—462 19 Claims

1. An optical scanning head for scanning and decoding a bar code symbol, said bar code symbol having a bar code axis parallel to a single bar within said bar code symbol, the optical scanning head comprising:



a printed circuit board having a front portion, a rear portion, a left side and a right side;

at least one LED disposed on each of said left side and said right side, said at least one LED oriented to emit light toward said front portion of said printed circuit board;

a diffuser disposed forward of said at least one LED;

a first focusing lens adjacent to said diffuser for focusing light from said LED to create a line of light at said bar code symbol from which at least a portion of said line of light is reflected, said first focusing lens having an entry side and an exit side;

a lens assembly for receiving at least a portion of the reflected light, the reflected light being directed along an optical path within said lens assembly, said lens assembly comprising:

a plurality of lenses disposed within said optical path for focusing reflected light;

a cat's eye aperture disposed within said optical path and having a first long axis and a first short axis, said first long axis being parallel to said bar code axis, said cat's eye aperture being disposed at a focus of said plurality of lenses;

a detector having a plurality of pixels disposed within said optical path behind said lens assembly for detecting the reflected light and generating an electrical signal representative of said bar code symbol therefrom; and

a signal processing means for converting said electrical signal into an output representative of said bar code symbol, said signal processing means including a waveshaping algorithm to reduce error at said output, said waveshaping algorithm comparing previous values of pixels and slope transitions of said previous pixel values.

5,484,995

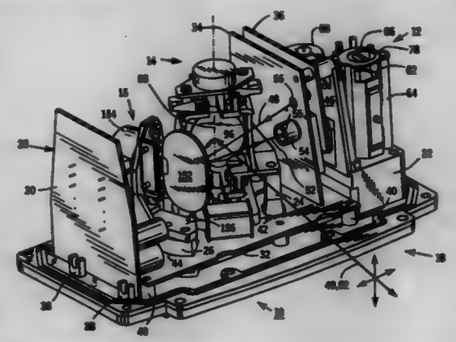
PULSE DRIVE CIRCUIT FOR BAR CODE READER RESONANT OSCILLATOR

Robert E. Scofield, Pewaukee; Richard J. Huhn, Franklin, and Richard D. Bechtel, Dousman, all of Wis., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Sep. 26, 1994, Ser. No. 312,203

Int. Cl.[6] G06K 7/10

U.S. Cl. 235—472 23 Claims



1. In an optical code reader of the type which includes a mirror

for scanning a light beam over a code, a mirror oscillating system comprising:

a frame;

a carrier configured to support the mirror;

a spring assembly fastened to the frame and the carrier to resiliently support the carrier for oscillation about a rotational axis;

an electromagnet supported by the frame and in magnetic communication with the carrier, the electromagnet including a winding energizeable to oscillate the carrier;

a transducer supported by the frame in magnetic communication with the carrier and configured to produce a periodic position signal representative of the rotational position of the carrier;

a phase-shifting circuit coupled to the transducer to shift the phase of the position signal to produce a timing signal;

a voltage supply having a predetermined voltage; and

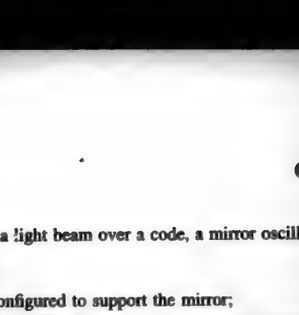
a switch coupled to the winding, the phase-shifting circuit and the voltage supply to apply a voltage substantially equal to the predetermined voltage to the winding in response to the timing signal.

5,484,996

BAR CODE DISABLING SYSTEM

Lynn E. Wood, 12313 Ottawa Ave., South, Shakopee, Minn. 55378

Filed Mar. 31, 1994, Ser. No. 220,822
Int. Cl.[6] G09F *3/10*
U.S. Cl. 235—487 **7 Claims**



1. A postal bar code disabling system comprising:

a. a label;

b. adhesive on one side of said label;

c. a bar code on another side of said label; and,

d. a polymer disabling strip engaged to the adhesive and of such a width as to disable the bar code whereby when said disabling strip is pulled between the edges of the bar code, the bar code is disabled so that an optical scan and sort process cannot be enabled whereby said strip is pulled substantially parallel to said bars thereby creating a gap.

5,484,997

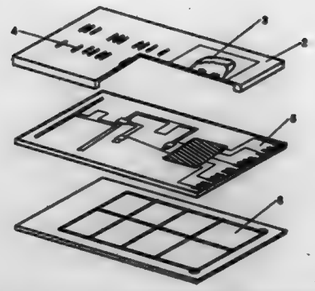
IDENTIFICATION CARD WITH RF DOWNLINK CAPABILITY

George W. Haynes, 101 Summit Blvd., Englewood, Colo. 80110

Continuation-in-part of Ser. No. 162,759, Dec. 7, 1993, abandoned. This application May 31, 1994, Ser. No. 251,637
Int. Cl.[6] G06K *16/06*; G07B *15/02*
U.S. Cl. 235—492 **2 Claims**

1. An IC card device comprising:

a) an array of photovoltaic cells covering one side of the IC card, that when illuminated with radiant energy provides power to the system and automatically activates the system to transmit an RF signal;



b) an externally programmable EEPROM to store data with associated electronics to cyclically read the EEPROM and generate a serial bit stream;

c) an RF interface consisting of a FET microstrip driven DRO coupled to a match dipole antenna wherein the serial bit stream is used to vary the FET gate bias and generate an FSK modulated signal that is transmitted via the dipole antenna;

d) and, the whole system is preprogrammed with relevant ID data and encapsulated onto a plastic card.

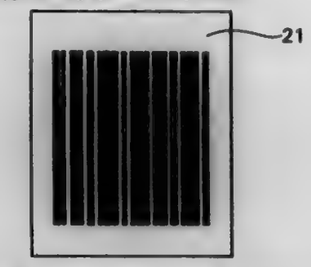
5,484,998

BAR-CODED CARD WITH CODING AND READING SYSTEM

Jan W. Bejnar; Theodore E. Liebman, both of Philadelphia, and Robert H. Levitt, Huntingdon Valley, all of Pa., assignors to Decora Industries, Inc., Philadelphia, Pa.

Filed Mar. 16, 1994, Ser. No. 213,635
Int. Cl.[6] G06K *19/06*
U.S. Cl. 235—494 **14 Claims**

1. A bar-type coding system, comprising:



a plurality of spaced vertical stripes printed on a contrasting field, such that they form a pattern appearing as a sequence of alternating dark and light stripes, said stripes being of only two possible widths, wide or narrow;

said pattern representing data coded according to a decoding method in which two successive light or two successive dark stripes being discrete pairs of different width and the comparison of two successive light or two successive dark stripes represents one possible binary signal if the sequence is wide/narrow and represents the other possible binary signal if the sequence is narrow/wide, wherein said pattern is divided into right-side and left-side segments, and said decoding method applied to the left-side segment being the opposite logic of the decoding method applied to the fight-side segment without altering the pattern coding.

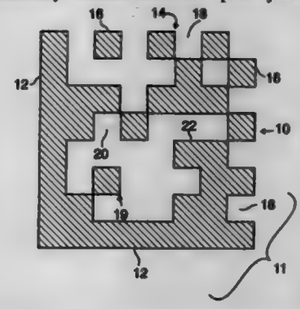
5,484,999

DYNAMICALLY VARIABLE MACHINE READABLE BINARY CODE AND METHOD FOR READING AND PRODUCING THEREOF

Dennis G. Priddy, Safety Harbor, and Robert S. Cymbalski, Clearwater, both of Fla., assignors to International Data Matrix, Inc., Clearwater, Fla.

Continuation of Ser. No. 907,769, Jun. 30, 1992, Pat. No. 5,329,107, which is a continuation of Ser. No. 627,080, Dec. 13, 1990, Pat. No. 5,126,542, which is a continuation of Ser. No. 513,362, Apr. 24, 1990, Pat. No. 5,053,609, which is a continuation of Ser. No. 190,205, May 5, 1988, Pat. No. 4,939,354. This application Jun. 23, 1994, Ser. No. 264,789
The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.
Int. Cl.[6] G06K *19/06;7/10*
U.S. Cl. 235—494 **14 Claims**

1. A dynamically variable machine optically readable binary



code comprising data in a plurality of data elements arranged in a two dimensional array having a perimeter and a density indicia indicating the density of data contained within the code, said code having a variable number of data elements, said density indicia indicating said density independently of the positioning of said data elements comprising data in the code.

5,485,000

FILING SYSTEM SCANNER AND BAR CODE WITH INDENTIFICATION MARKER BARS

Eric D. Schneider, Plymouth, Minn., assignor to Wild file, Inc., Plymouth, Minn.

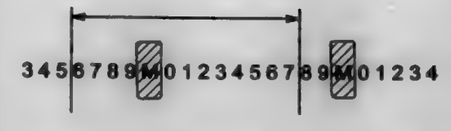
Division of Ser. No. 237,266, May 3, 1994, Pat. No. 5,455,410. This application Apr. 18, 1995, Ser. No. 423,901
Int. Cl.[6] G06K *19/06*
U.S. Cl. 235—494 **11 Claims**

1. Apparatus for locating a particular file contained in a file holder which contains a plurality of files, the apparatus comprising:

a machine-readable code mounted on each of said files;

guide means attached to each file holder;

a code-reading means for reading the codes on the files in a file holder, the code reading means being constructed and arranged such that as the code-reading means is directed along the guide means the machine-readable code for each file is read; and



indicator means for receiving the machine-readable codes for each file as they are read and indicating when the particular machine-readable code corresponding to the particular file is located;

wherein the code-reading means is constructed and arranged to read an area of a predetermined size running longitudinally along the top edge of the file and wherein the machine-readable code is comprised of a basic pattern of bars in which the code corresponding to a particular file is comprised of a predetermined width (T) filled with bars, each bar having a width corresponding to either a binary ONE or a binary ZERO, and where the machine-readable bar code includes at least a basic pattern as well as at least a partial basic pattern, each complete basic pattern being separated from each other by a MARK bar, the MARK bar having a width which is different than the width of the bar corresponding to either a ONE or a ZERO.

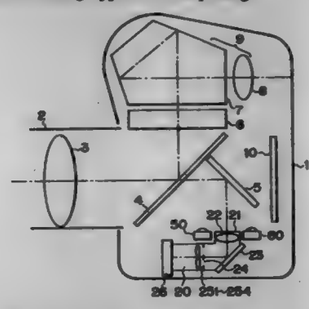
5,485,001

FOCUS DETECTING APPARATUS

Yosuke Kusaka, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Aug. 9, 1993, Ser. No. 103,513
Claims priority, application Japan, Aug. 18, 1992, 4-219090
Int. Cl.[6] G01J *1/20*; G01C *3/00*
U.S. Cl. 250—201.8 **7 Claims**

1. A focus detecting apparatus comprising:



a photo-taking optical system for forming an object image on a prospective focal plane;

a first focus detection module of the pupil division re-imaging type including a pair of re-imaging optical elements for forming at least one pair of images to detect the focus state of a focus detection area set on the center of said prospective focal plane, and a pair of light receiving element arrays for receiving said pair of images; and

a second focus detection module of the pupil division non-re-imaging type including a plurality of lenslets for detecting the focus state of a focus detection area set on the marginal portion of said prospective focal plane, and a pair of light receiving elements corresponding to said lenslets.

5,485,002

FOCUS DETECTING DEVICE HAVING LIGHT DISTRIBUTION DETECTION

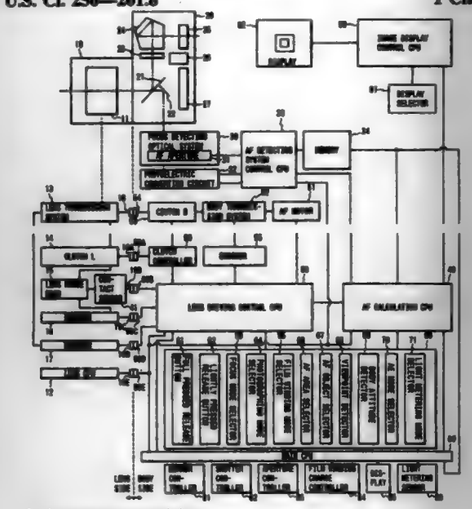
Yosuke Kusaka, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 311,896, Sep. 26, 1994, which is a continuation of Ser. No. 225,913, Apr. 11, 1994, abandoned, which is a continuation of Ser. No. 129,576, Sep. 30, 1993, abandoned, which is a continuation of Ser. No. 32,176, Mar. 15, 1993, abandoned, which is a continuation of Ser. No. 951,317, Sep. 25, 1992, abandoned, which is a continuation of Ser. No. 837,106, Feb. 18, 1992, abandoned, which is a continuation of Ser. No. 641,431, Jan. 15, 1991, abandoned. This application Jan. 18, 1995, Ser. No. 374,211

Claims priority, application Japan, Jan. 18, 1990, 2-11066

Int. Cl.[6] G01J *1/20*

U.S. Cl. 250—201.8 **1 Claim**



1. A camera comprising:

a phototaking optical system;

a focus detecting position selecting member provided operably on a camera body for selecting one of a plurality of focus detecting positions provided in an image field;

a focus detecting device having a focus detecting optical system and a focus calculating unit for detecting a focus condition of an image plane formed by said phototaking optical system in the focus detecting position selected by said focus detecting position selecting member;

a driving device having a driving source for driving said phototaking optical system;

a drive controller for drive-controlling said driving device based on said focus condition, said drive controller having the following two focus modes,

(1) a manual focus mode for manually focusing said phototaking optical system regardless of a focus condition,

(2) an auto focus mode for driving said phototaking optical system to a focus point with said drive device in accordance with a focus condition;

focus mode designating means for designating one of said focus modes to allow said drive controller to drive-control in a designated mode;

a finder having a finder image field for observing an image of an object formed by said phototaking optical system;

a display device having a display portion provided in said finder and a control portion controlling said display portion, said display portion displaying a focus condition detected by said focus detecting device superimposed on an image of an object in a position corresponding to the focus detecting position on said finder image field; and

a display controller for allowing said display device to operate in case the auto focus mode is designated by said focus mode designating means and inhibiting said display device from operating in case the manual focus mode is designated by said focus mode designating means.

5,485,003

FOCUS DETECTING DEVICE HAVING LIGHT DISTRIBUTION DETECTION

Yosuke Kusada, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

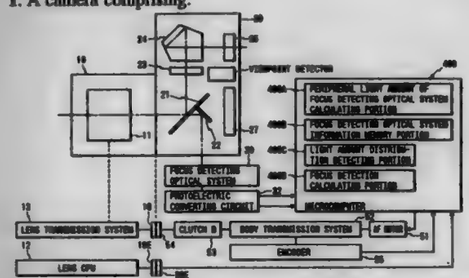
Division of Ser. No. 311,896, Sep. 26, 1994, which is a continuation of Ser. No. 225,913, Apr. 11, 1994, abandoned, which is a continuation of Ser. No. 129,576, Sep. 30, 1993, abandoned, which is a continuation of Ser. No. 32,176, Mar. 15, 1993, abandoned, which is a continuation of Ser. No. 951,317, Sep. 25, 1992, abandoned, which is a continuation of Ser. No. 837,106, Feb. 18, 1992, abandoned, which is a continuation of Ser. No. 641,431, Jan. 15, 1991, abandoned. This application Jan. 18, 1995, Ser. No. 374,218

Claims priority, application Japan, Jan. 18, 1990, 2-11066

Int. Cl.[6] G01J *1/20*

U.S. Cl. 250—201.8 **4 Claims**

1. A camera comprising:



a phototaking optical system for forming an image of an object in an image field provided in an prearranged focal plane;

a focus detecting position selector for selecting one of a plurality of focus detecting positions provided in the image field;

a focus detector for detecting a focus condition of an image plane formed by said phototaking optical system relative to the prearranged focal plane in a focus detecting position selected by said focus detecting position selector;

a finder having a finder image field for observing an image of an object formed by said phototaking optical system;

a display device for displaying a focus condition detected by said focus detector superimposed on an image of an object in a position corresponding to the focus detecting position on said finder image field;

an operating device for selecting whether to display the focus condition with said display device; and

a display controller for controlling an operation of said display device in accordance with the selection of said operating device.

5,485,004

PHOTOSENSOR DEVICE INCLUDING MEANS FOR DESIGNATING A PLURALITY OF PIXEL BLOCKS OF ANY DESIRED SIZE

Kenji Suzuki, Kawasaki; Mamoru Miyawaki, Tokyo; Akira Akashi, Yokohama, and Toshiki Nakayama, Atsugi, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

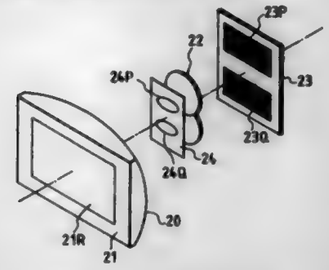
Continuation of Ser. No. 186,887, Jan. 26, 1994, abandoned, which is a continuation of Ser. No. 90,260, Jul. 13, 1993, abandoned, which is a division of Ser. No. 789,045, Nov. 7, 1991, Pat. No. 5,241,167. This application May 2, 1995, Ser. No. 432,726

Claims priority, application Japan, Nov. 7, 1990, 2-303398; Nov. 8, 1990, 2-304949

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—208.2 **39 Claims**

1. An image pickup apparatus comprising:



a two-dimensional image sensor for converting an optical image into an electrical signal;

optical means for impinging at least two different optical images on said image sensor;

designating means for variable designating areas within said two-dimensional image sensor, each of said areas receiving one of the at least two different optical images, respectively; and

processing means for processing said electrical signal from said two-dimensional image sensor.

5,485,005

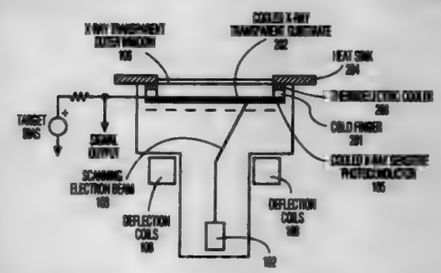
COOLED X-RAY SENSITIVE PHOTOCONDUCTOR

Richard S. Aikens, Tucson, Ariz., assignor to Xicon, Inc., Tucson, Ariz.

Filed Jun. 15, 1994, Ser. No. 260,119

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—214 VT **19 Claims**



1. Apparatus for reducing the ionic conductivity of photoconductive material deposited on one side of an X-ray transparent substrate of a high thermal conductivity material comprising at least one thermoelectric cooler positioned on the opposite side of said substrate from said deposited photoconductive material and in thermal contact therewith for cooling said substrate, and a heat sink for dissipating heat from said thermoelectric cooler.

5,485,006

PRODUCT DETECTION SYSTEM FOR SHOPPING CARTS

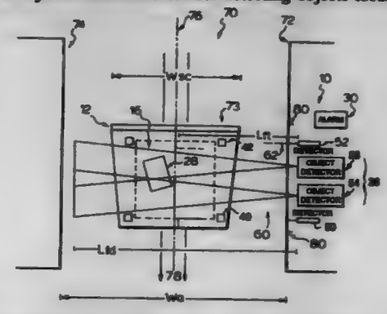
James F. Allen, Peterborough, and Paul Roesbaak, North York, both of, Canada, assignors to S.T.O.P. International (Brighton) Inc., Peterborough, Canada

Filed Jan. 28, 1994, Ser. No. 184,131

Int. Cl.[6] G08B *13/18*

U.S. Cl. 250—222.1 **32 Claims**

1. An object detection device for detecting objects located on a



storage section of a moving shopping cart comprising:

cart detection and identifying means comprising diffuse beam energy emitting and receiving signalling means located on one side of an aisle along which the cart passes, having a first said signalling means positioned to register the presence of a predetermined first cart portion; a second said signalling means located in spaced relation along the aisle from said first signalling means, to register the presence of a predetermined second cart position;

logic circuit means including a delay circuit receiving the output from said first and second signalling means, to discriminate the presence of a cart from other passing objects;

object detection means located between said first and said second signalling means, to detect an object on a storage section of said cart and connect in energized relation by said logic circuit means, for energization thereby upon the presence of a cart being established by said logic circuit means, whereby false actuation of said object detection means is substantially precluded.

5,485,007

OPTICAL FIBER QUADRANT DETECTOR HAVING A SENSOR HEAD WITH INTERMIXED RECEIVING AND TRANSMITTING OPTICAL FIBERS

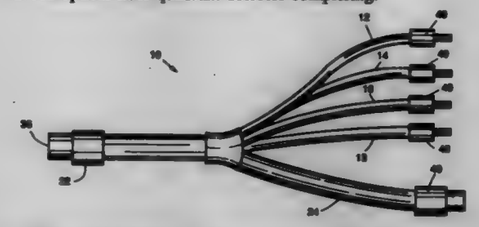
Joerg W. Hollmann, Midland, and Gabor Devenyi, West Pentang, both of, Canada, assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 15, 1993, Ser. No. 152,773

Int. Cl.[6] H01J *5/16*

U.S. Cl. 250—227.28 **14 Claims**

1. An optical fiber quadrant detector comprising:



a sensor head having a sensor end with a cross sectional area fully defined by first, second, third, and fourth quadrants;

first, second, third and fourth bundles of optical fibers, each said bundle terminating at one end thereof in a different quadrant of said sensor end; and

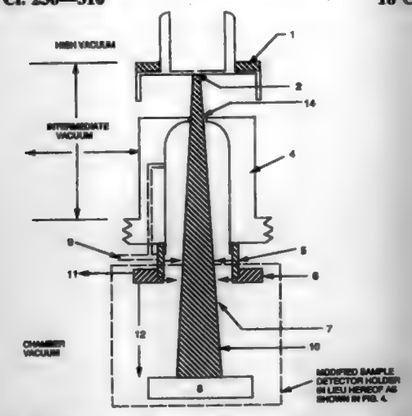
a fifth bundle of optical fibers terminating at one end thereof in the different quadrants of said sensor end, wherein the optical fibers of said fifth bundle are equally intermixed with the optical fibers of the other bundles and distributed over the entire cross sectional area.

5,485,008

LOW MAGNIFICATION GAS LIMITING APERTURE ASSEMBLY FOR ELECTRON MICROSCOPY DEVICES

Myron E. Taylor, Jr., Brookeville, Md., assignor to University of Maryland, College Park, College Park, Md.

Filed Jun. 23, 1994, Ser. No. 264,271
Int. Cl.[6] H01J *37/04;37/244*
U.S. Cl. 250—310 **18 Claims**



1. In an environmental scanning electron microscope (ESEM) with specimen chamber with means for evacuation of the specimen chamber comprising:

a conduit through which an electron beam passes, the conduit bound by a series of annular restrictions with apertures with means for sealing the annular restrictions thereby defining a series of pressure chambers through which the electron beam passes;

means for evacuating the series of pressure chambers; and

a bottom annular aperture carrier body, which is one of the pressure chambers, with a coaxial bottom aperture assembly with a bottom aperture that allows passage of the electron beam from the conduit to the specimen chamber;

wherein the improvement comprises at least three intermediate pressure limiting apertures in the bottom aperture carrier body, the bottom aperture including i) an upper sealed annular portion and ii) a substantially open annular portion in relation to the bottom annular aperture carrier body;

whereby lower magnification capability results with better signal-to-noise ratio of a specimen's detected signal.

5,485,009

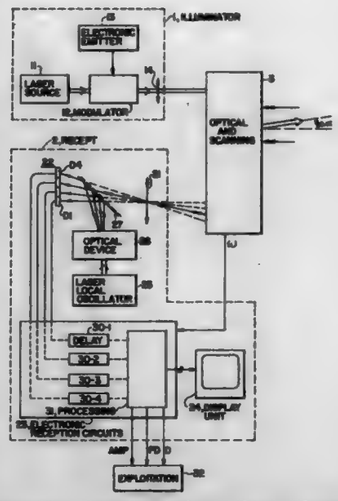
LASER IMAGING SYSTEM WITH A LINEAR DETECTOR ARRAY

Jean L. Meyzonnette, Jouy en Josas, and Bertrand Remy, Meudon la Foret, both of, France, assignors to Thomson - CSF, Paris, France

Filed Aug. 25, 1987, Ser. No. 92,776
Claims priority, application France, Sep. 16, 1986, 86 12939
Int. Cl.[6] G01C *3/08;* **G01B** *11/26;* **H04N** *3/12*
U.S. Cl. 356—5.09 **7 Claims**

1. A laser imaging system, comprising:

a laser illuminator to transmit a light beam along a pointing direction;



a receiver with a detecting device to detect, along the corresponding reception direction, the laser radiation returned by the illuminated objects;

a device for separation of channels and for scanning to direct the backscattered radiation toward said detecting device and to move in angular rotation said transmission beam so as to scan a predetermined field; and

a device for displaying the detected image corresponding to said field, wherein said detecting device includes a linear array of N juxtaposed elements oriented in the scanning direction and associated with a focusing lens so as to detect the objects in an overall distance interval comprising N successive elemental intervals, the rank of an element identifying a corresponding elemental interval;

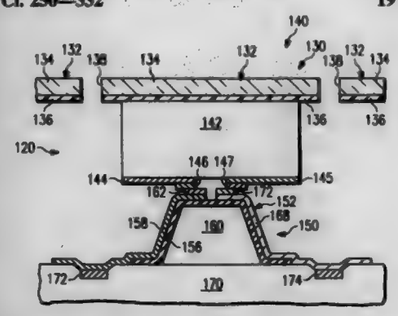
said receiver including an electronic circuit receiving the N detection channels and equipped with circuits for identification of distance through the rank of the detection channel, as well as compensation circuits for the time shift exhibited by the video signals as a function of said distance so as to bring the illuminated objects back to their angular location for the display of the observed field.

5,485,010

THERMAL ISOLATION STRUCTURE FOR HYBRID THERMAL IMAGING SYSTEM

Robert A. Owen, Rowlett, and Charles M. Hanson, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 13, 1994, Ser. No. 182,868
Int. Cl.[6] G01J *5/10*
U.S. Cl. 250—332 **19 Claims**



1. An infrared detector including a focal plane array and an integrated circuit substrate, comprising:

a plurality of openings extending through the focal plane array;

a plurality of thermal sensors for providing a sensor signal output representative of the amount of thermal radiation incident to the focal plane array;

an array of signal contact pads, disposed on the integrated circuit substrate, for receiving the sensor signal output from the respective thermal sensors;

a thermal isolation structure formed by a plurality of mesa-type structures each having a void space, and the mesa-type structures projecting from the integrated circuit substrate adjacent to each signal contact pad for mounting the focal plane array on the integrated circuit substrate;

a layer of reinforcing film formed in part from silicon dioxide for partially defining the void space associated with each mesa-type structure; and

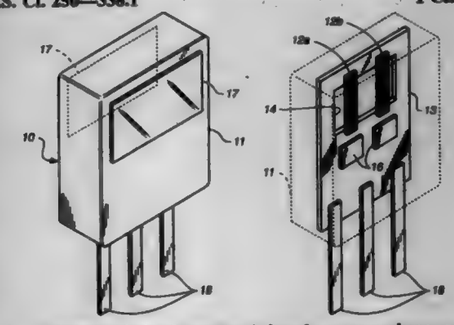
a mesa strip conductor disposed on a portion of the exterior of the layer of reinforcing film.

5,485,011

TWO-SIDED INTEGRATED-CIRCUIT PIR SENSOR PACKAGE

Wade P. Lee, Lafayette, and Donald R. Sandell, San Jose, both of Calif., assignors to Larry C. Y. Lee, Haywood, Calif.

Filed Jan. 28, 1994, Ser. No. 190,645
Int. Cl.[6] G01J *5/00;* **H01L** *27/02*
U.S. Cl. 250—338.1 **1 Claim**



1. An integrated-circuit passive infrared sensor package, comprising:

an integrated-circuit casing formed to define first and second viewing windows in opposite sides thereof for passing infrared radiation;

at least one infrared sensing element having a portion consisting of a single sheet of infrared sensitive material with front and rear surfaces responsive to incident infrared radiation; and

a member mounted within said casing and defining an aperture positioned within view of said first and second viewing windows;

wherein said at least one infrared sensing element is mounted across said aperture so as to expose said front and rear surfaces of said portion to radiation passing through said first and second viewing windows.

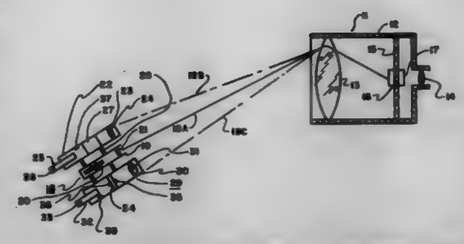
5,485,012

METHOD AND APPARATUS FOR BLIND OPTICAL AUGMENTATION

Wilbur Liebson, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 18, 1978, Ser. No. 926,976
Int. Cl.[6] G01J *5/00;* **G02F** *1/00;* **G02B** *23/00*
U.S. Cl. 250—339.06 **3 Claims**

2. In a viewing system including an image intensifier coupled to a thermal viewer each having an image plane associated with a different one of a pair of eyepieces spaced for binocular use by a single observer, the improvement comprising:



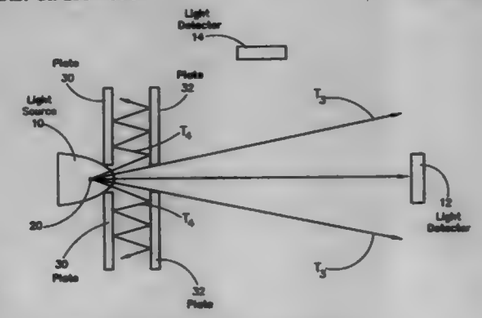
means coupled to both said intensifier and viewer to superimpose on said image planes substantially identical visible background patterns of lines which are repetitive both horizontally and vertically.

5,485,013

TURBIDITY SENSOR WITH A LIGHT APERTURE ARRANGEMENT OF TWO OPENINGS FORMED IN TWO PARALLEL PLATES

Brad L. Cummins, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 16, 1994, Ser. No. 261,371
Int. Cl.[6] G01N *15/06*
U.S. Cl. 250—574 **17 Claims**



1. A light detector arrangement, comprising:

a light source;

a first light detector disposed at a first location to receive light from said light source scattered along a second line at a preselected angle to a first line;

a first plate having a first aperture formed therethrough; and

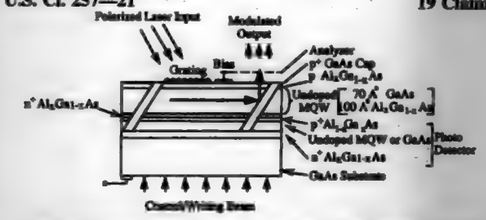
a second plate having a second aperture formed therethrough, said first and second plates being spaced apart from each other, said first and second apertures being aligned to define a light passage along said first line through said first and second plates through which a divergent and unfocused beam of light can pass from said light source, said first light source being disposed on a first side of said light passage, said light detector being disposed on a second side of said light passage with said first and second plates being disposed between said first light source and said light detector, said first and second plates preventing said divergent and unfocused beam of light from passing directly from said light source to said first Light detector, said first and second plates being spaced part by a first dimension, said light source being spaced part from a most proximate one of said first and second plates by a second dimension, said first and second dimensions defining an angle of divergence of said light in association with said light passage.

5,485,014

MULTIPLE QUANTUM WELL BIREFRINGENT SPATIAL LIGHT MODULATOR

Faquir Jain, Storrs, and Siu K. Cheung, Vernon, both of Conn., assignors to The University of Connecticut, Storrs, Conn.

Filed Dec. 30, 1993, Ser. No. 175,610
Int. Cl.[6] H01L 31/12;31/16
U.S. Cl. 257—21 19 Claims



1. A multiple quantum well birefringent spatial light modulator having top and bottom surfaces and comprising:

(a) a substrate;

(b) multiple quantum well layers thereon each having upper and lower surfaces, said multiple quantum well layers having cooperating pairs of spaced reflecting elements oriented at an angle of about 45° to said top surface and spaced along the length thereof to redirect the light impinging thereon outwardly of one of said surfaces of said modulator;

(c) contacts for applying a biasing electric field across said multiple quantum well layers; and

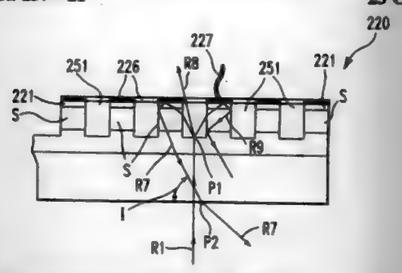
(d) means for varying the biasing electric field to produce birefringence in said multiple quantum well layers enhanced by the Stark effect and thereby to effect modulation of light exiting therefrom, said modulated light exiting said modulator at substantially a right angle to an exit surface.

5,485,015

QUANTUM GRID INFRARED PHOTODETECTOR

Kwong-Kit Choi, Tinton Falls, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 25, 1994, Ser. No. 297,344
Int. Cl.[6] H01L 31/0236;31/109
U.S. Cl. 257—21 23 Claims



23. An infrared photodetector comprising:

a transparent semiconductor substrate having a planar surface;

a quantum well infrared photodetector optically coupled to said substrate, said quantum well infrared photodetector having a stack of alternate planar barrier layers and planar well layers, said stack having a diffraction means formed therein such that the diffraction means has at least one cavity that extends through said stack, wherein said cavity diffracts incident infrared radiation into a continuum of radiation components directed toward said well layers; and

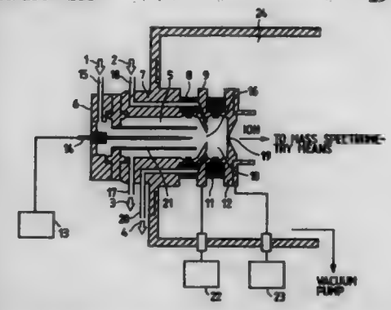
means to electrically bias the quantum well infrared photodetector.

5,485,016

ATMOSPHERIC PRESSURE IONIZATION MASS SPECTROMETER

Takashi Irie, Kokubunji; Yasuhiro Mitsui, Fuchuu; Kazuaki Mizokami, Kodaira, and Katsumi Kuriyama, Koganei, all of, Japan, assignors to Hitachi, Ltd., and Hitachi Tokyo Electronics Co., Ltd., both of Tokyo, Japan

Filed Apr. 25, 1994, Ser. No. 231,847
Claims priority, application Japan, Apr. 26, 1993, 5-099100
Int. Cl.[6] H01J 49/26
U.S. Cl. 250—288 29 Claims



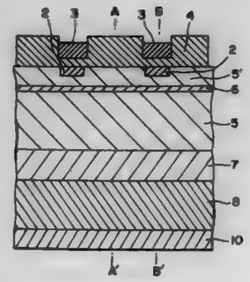
1. An atmospheric pressure ionization mass spectrometer comprising i) a first chamber which has an inlet for a first gas and means for ionizing the first gas introduced from the inlet and forming primary ions, ii) a second chamber at a pressure substantially equal to the atmospheric pressure which has an inlet for a second gas including a target substance to be analyzed, the second chamber being connected to said first chamber via a barrier having an opening through which the first gas containing said primary ions flows in, and having an electric field for transmitting ions, and iii) a third chamber which has an aperture, the third chamber being connected to said second chamber via a first electrode for forming said electric field, having mass analysis means, and being exhausted in a suitable vacuum for mass analysis, wherein said second gas introduced into said second chamber and said primary ions flowing into said second chamber are mixed in said second chamber, and the target substance to be analyzed is ionized by an ion-molecule reaction so as to form secondary ions, and said secondary ions are transmitted to said aperture by said electric field in said second chamber and flow into said third chamber, and said secondary ions are mass-analyzed by said mass analysis means.

5,485,017

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING SAME

Jun-ichi Nishizawa, Sendai, Japan, assignor to Zaidan Hojin Handotai Kenkyu Shinkokai, Miyagi, Japan

Filed May 11, 1994, Ser. No. 241,447
Claims priority, application Japan, May 12, 1993, 5-147128
Int. Cl.[6] H01L 29/06;21/265
U.S. Cl. 257—24 15 Claims



1. A semiconductor device comprising:

a semiconductor substrate:

a source region disposed on said semiconductor substrate;

a channel region disposed on said source region;

a drain region disposed On said channel region;

an insulating layer disposed on said drain region;

an electrode disposed on said insulating layer; and

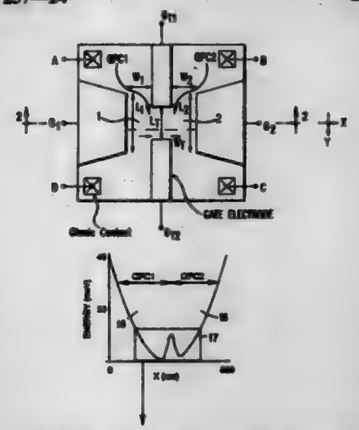
a very thin barrier layer disposed in said channel region between said source region and said drain region, said very thin barrier layer having a thickness and conductivity type which permits carrier movement therethrough by the tunnel effect, and having a potential developed therein which is controllable by an external voltage applied thereto to control the tunnel effect.

5,485,018

NANOFABRICATED DEVICE FOR MULTIPLE-STATE LOGIC OPERATION

Kensuke Ogawa, and Jeremy Allam, both of Cambridge, United Kingdom, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 27, 1994, Ser. No. 250,262
Claims priority, application United Kingdom, May 28, 1993, 9311111
Int. Cl.[6] H01L 29/06;31/0328;31/0336
U.S. Cl. 257—24 22 Claims



1. A nanofabricated multiple state electronic device comprising:

means for defining a quantum well configuration;

means for establishing a quantum mechanical charge carrier wavefunction defining multiple quantised stable energy levels in the quantum well configuration;

control means to assume different ones of said multiple quantised levels; and

output means responsive to said multiple levels for defining corresponding multiple logical output conditions.

5,485,019

SEMICONDUCTOR DEVICE AND METHOD FOR FORMING THE SAME

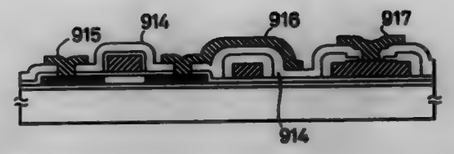
Shunpei Yamazaki, Tokyo; Akira Mase, Aichi; Masaaki Hiroki, Kanagawa; Yasuhiko Takemura, Kanagawa; Hongyong Zhang, Kanagawa, and Hideki Uochi, Kanagawa, all of, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Feb. 3, 1993, Ser. No. 14,455
Claims priority, application Japan, Feb. 5, 1992, 4-054322; Jan. 26, 1993, 5-029744
Int. Cl.[6] H01L 33/00;29/78
U.S. Cl. 257—57 16 Claims

1. A semiconductor device comprising:

a substrate;

a gate electrode of a transistor provided on said substrate;



a first wiring provided on said substrate in the same layer as said gate electrode; and

a second wiring provided in a layer different from said same layer,

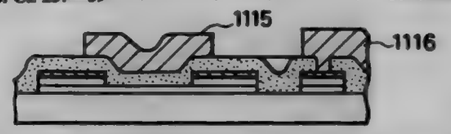
wherein said first wiring and said second wiring cross each other such that said second wiring completely crosses said first wiring, and said first wiring is provided with an oxide of a material of said first wiring on an upper or side surface of said first wiring, and said gate electrode is provided with an oxide of a material of said gate electrode on an upper or side surface of said gate electrode at a thickness different from that of said oxide of the material of said first wiring at the crossing.

5,485,020

SEMICONDUCTOR DEVICE INCLUDING A THIN FILM TRANSISTOR AND A WIRING PORTION HAVING THE SAME LAYERED STRUCTURE AS AND BEING INTEGRAL WITH A SOURCE REGION OR DRAIN REGION OF THE TRANSISTOR

Yutaka Hirai, Tokyo; Yoshiyuki Osada, Yokosuka; Takashi Nakagiri, Tokyo, and Katsunori Hatanaka, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 996,878, Dec. 23, 1992, abandoned, which is a continuation of Ser. No. 708,948, May 14, 1991, abandoned, which is a continuation of Ser. No. 287,637, Dec. 21, 1988, abandoned, which is a continuation of Ser. No. 139,895, Dec. 24, 1987, abandoned, which is a continuation of Ser. No. 4,268, Jan. 6, 1987, abandoned, which is a continuation of Ser. No. 589,463, Mar. 14, 1984, abandoned. This application Aug. 8, 1994, Ser. No. 286,989
Claims priority, application Japan, Mar. 15, 1983, 58-42816; Mar. 15, 1983, 58-42817; Mar. 15, 1983, 58-42818
Int. Cl.[6] H01L 29/04;31/20
U.S. Cl. 257—59 35 Claims



1. A semiconductor device comprising a thin film transistor and a plurality of wiring parts, said thin film transistor and said wiring parts each having a multilayer structure comprising a semiconductor layer and a contact layer formed on said semiconductor layer, said semiconductor layer and said contact layer of said wiring parts having the same multilayer structure as formed continuously with a source region or a drain region, and

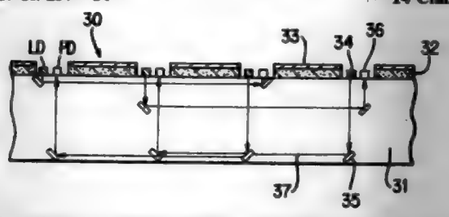
the semiconductor layer of said wiring parts and the semiconductor layer of said thin film transistor being electrically isolated from each other at least in a region other than said wiring parts.

5,485,021

SEMICONDUCTOR DEVICE WITH OPTICAL WAVEGUIDES TO ACHIEVE SIGNAL TRANSMISSION USING OPTICAL MEANS

Takao Abe, Annaka, Japan, assignor to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Jun. 10, 1994, Ser. No. 258,637
Claims priority, application Japan, Jun. 17, 1993, 5-171150
Int. Cl.[6] G02B *6/12;5/14*
U.S. Cl. 257—84 **14 Claims**



1. A silicon-on-insulator (SOI) semiconductor device having a structure where a plurality of silicon thin films are isolated from each other wherein:

at least one integrated circuit is formed in each of said thin film's;

said thin films are attached on a light conducting electrically insulating substrate which serves as a substrates for electronic and optical devices;

a light emitting device is located on said light conducting electrically insulating substrate and connected to interconnections of said integrated circuit formed in one of said semiconductor thin films;

a light detecting device is located on said light conducting electrically insulating substrate and connected to interconnections of said integrated circuit formed in an other one of said semiconductor thin films; and

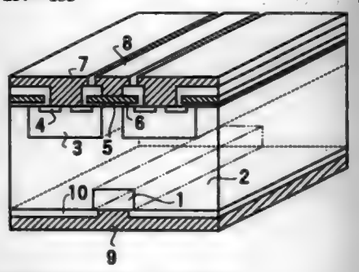
an optical path is formed in said light conducting electrically insulating substrate to connect said light emitting device with said light detecting device so as to optically transmit signals.

5,485,022

HIGH SWITCHING SPEED IGBT

Tadashi Matsuda, Himeji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 12, 1994, Ser. No. 273,758
Claims priority, application Japan, Jul. 12, 1993, 5-193877
Int. Cl.[6] H01L *29/74;31/111*
U.S. Cl. 257—133 **6 Claims**



1. A semiconductor device comprising:

(a) a first conductivity type base region having first and second main surfaces, the second main surface having a total surface area of A;

(b) a second conductivity type base region exposing onto said first main surface and formed in said first conductivity type base region;

(c) a first conductivity type emitter region formed within said second conductivity type base region and exposing onto a first main surface;

(d) a gate insulation film overlapping said emitter region and said first conductivity type base region on said first main surface and formed on an upper part of said second conductivity type base region;

(e) a gate electrode formed on said gate insulation film;

(f) an emitter electrode formed so as to overlap said emitter region and said second conductivity type base region in said first main surface and short-circuiting the emitter region with the second conductivity type base region;

(g) a second conductivity type collector region formed partially in a specific part on said second main surface of said first conductivity type base region and having a thickness of 3 to 10 μm; and

(h) a collector electrode connecting electrically only to a contact window part on said second conductivity type collector region,

wherein the impurity concentration of said collector region is 10^{12} to 10^{14} cm^{-2},

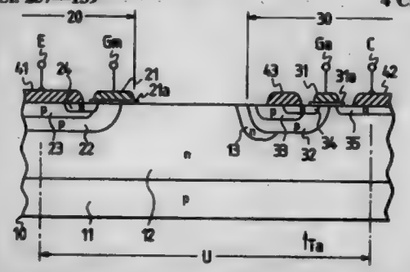
wherein the excessive injection of minority carriers from the collector region is suppressed.

5,485,023

INSULATED GATE BIPOLAR TRANSISTOR

Hitoshi Sumida, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Aug. 15, 1994, Ser. No. 290,121
Claims priority, application Japan, Aug. 18, 1993, 5-203509
Int. Cl.[6] H01L *29/74;31/111*
U.S. Cl. 257—139 **4 Claims**



1. A lateral structure insulated gate bipolar transistor with an emitter side portion and a collector side portion disposed apart from each other by a predetermined distance on the same surface side of a semiconductor region., the semiconductor region having a first conductivity type, comprising:

a main gate electrode located in the emitter side portion for controlling injection of majority carriers of the first conductivity type into the semiconductor region;

a collector layer of a second conductivity type diffused into the semiconductor region in the collector side portion;

a carrier extraction layer of the first conductivity type diffused into the semiconductor region in the collector side portion but not adjacent to the collector layer;

a field effect transistor portion, having an auxiliary gate electrode, interconnecting the collector layer and the carrier extraction layer; and

a collector terminal electrically connected to the carrier extraction layer,

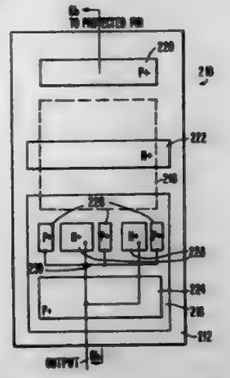
wherein while the field effect transistor portion is controlled by the auxiliary gate electrode, during an on state when the collector layer is connected to the carrier extraction layer, majority carriers of the second conductivity type are caused to flow from the semiconductor region to the carrier extraction layer and minority carriers are injected from the collector layer into the semiconductor layer, and during an off state when the collector layer is separated from the carrier extraction layer, the majority carriers are extracted from the semiconductor region into the carrier extraction layer and the minority carriers are extracted from the semiconductor region into the emitter side portion.

5,485,024

ELECTROSTATIC DISCHARGE CIRCUIT

Robert L. Reay, Mountain View, Calif., assignor to Linear Technology Corporation, Milpitas, Calif.

Filed Dec. 30, 1993, Ser. No. 175,991
Int. Cl.[6] H01L *29/74;31/111*
U.S. Cl. 257—173 **14 Claims**



1. In an integrated circuit, an electrostatic discharge (ESD) cell for discharging ESD potentials of at least a first polarity applied to a protected terminal of CMOS devices formed within the integrated circuit, the CMOS devices being formed within a substrate of a first conductivity type, the ESD cell comprising:

a well region of a second conductivity type formed within the substrate and defining a first resistor;

a base region of the first conductivity type formed within the well region, the base region defining a second resistor, the base of a first transistor and the collector of a second transistor;

a field region of the first conductivity type formed within the well region having an edge in contact with the base region, the field region defining a third resistor having a first end coupled to a first end of the second resistor and to the base of the first transistor;

a first region of the first conductivity type formed within the well region for providing an ohmic contact to the protected terminal and for providing, in combination with the well region, an emitter-base junction of the second transistor coupled to the protected terminal;

a second region of the second conductivity type formed within the well region and substantially in contact with the field region, the second region forming, in combination with the field region, a zener diode having a cathode coupled to the base of the second transistor and an anode coupled to a second end of the third resistor;

a third region of the second conductivity type formed within the base region, the third region defining an emitter of the first transistor, the emitter being coupled to a second end of the second resistor;

a fourth region of the first conductivity type formed within the base region, the fourth region being electrically shorted to the base region for providing an ohmic contact for an output terminal through which current associated with an ESD potential applied to the protected terminal is routed; and

an electrically conductive path coupling the third region and the fourth region,

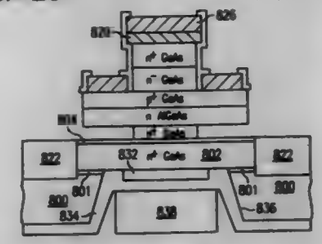
whereby, a potential of sufficient magnitude applied to the protected terminal induces a potential across the zener diode which, when greater than a breakdown voltage of the zener diode causes current to flow through the first, second and third resistors, the current causing potentials to appear across the first and second resistors which, when of sufficient magnitude, cause the second and first transistors respectively to turn on, thereby causing the ESD cell to transition from a high impedance state to a low impedance state to discharge the potential applied to the protected terminal with minimal power dissipation.

5,485,025

DEPLETED EXTRINSIC EMITTER OF COLLECTOR-UP HETEROJUNCTION BIPOLAR TRANSISTOR

Hin F. Chau, Plano, and Hua Q. Tserng, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 2, 1994, Ser. No. 349,343
Int. Cl.[6] H01L *29/06;29/161;29/205;23/02*
U.S. Cl. 257—198 **14 Claims**



1. A bipolar transistor, comprising:

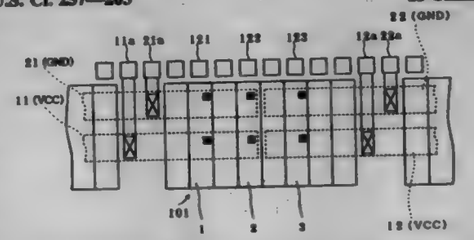
a collector layer over a base layer, said base layer over an emitter layer, and said emitter layer over an emitter cap layer, wherein said base and emitter layers extend beyond an edge of said emitter cap layer.

5,485,026

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING IMPROVED INTEGRATION AND DESIGN FLEXIBILITY

Toshiaki Hanibuchi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 227,391, Apr. 14, 1994, abandoned.
This application Apr. 6, 1995, Ser. No. 418,158
Claims priority, application Japan, May 17, 1993, 5-114796
Int. Cl.[6] H01L *27/10*
U.S. Cl. 257—203 **11 Claims**



1. A semiconductor integrated circuit device, comprising:

(a) a plurality of semiconductor regions which are arranged in a semiconductor substrate;

(b) a plurality of semiconductor integrated circuits which are formed in a first direction in rows in each of said semiconductor regions, said semiconductor integrated circuits receiving at least one common potential; and

(c) at least one power source line which is disposed above said plurality of semiconductor integrated circuits, said power source line having an end at a boundary between adjacent two semiconductor regions of said semiconductor regions, said power source line extending in said first direction;

wherein said plurality of semiconductor integrated circuits comprise a plurality of different types of logic blocks which output signals having different amplitudes and which are formed in a same row, said power source line is formed in said logic blocks, and said plurality of different types of logic blocks are formed by a plurality of cells.

5,485,027

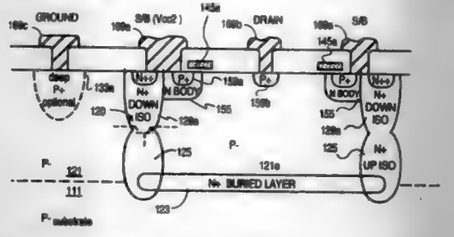
ISOLATED DMOS IC TECHNOLOGY

Richard K. Williams, Cupertino, and Richard A. Blanchard, Los Altos, both of Calif., assignors to Siliconix Incorporated, Santa Clara, Calif.

Division of Ser. No. 268,839, Nov. 8, 1988, Pat. No. 5,156,989. This application Jun. 24, 1992, Ser. No. 904,402

Int. Cl.[6] H01L *29/76;29/94;29/00*

U.S. Cl. 257—343 **3 Claims**



1. Integrated circuit apparatus comprising:

a lightly doped semiconductor substrate of a first conductivity type having a top surface;

a covering layer of lightly doped semiconductor material of the first conductivity type, having a top surface and overlying and being contiguous to the top surface of the substrate and defining an interface where the substrate and the covering layer meet;

a heavily doped buried layer of a second conductivity type adjacent to a portion of the substrate-covering layer interface;

an isolation region in the covering layer that is substantially annular in shape and extends substantially from the buried layer to the top surface of the covering layer, with the isolation region being heavily doped and of the second conductivity type, wherein the buried layer, the isolation region and the top surface of the covering layer define and bound an enclosed region of the covering layer that has a top surface and is electrically isolated from the substrate and from the remainder of the covering layer;

a body region of the second conductivity type and of substantially annular shape, positioned within said enclosed region of said covering layer adjacent said isolation region;

a first heavily doped region, of the first conductivity type and of substantially annular shape, positioned within the body region and spaced apart from said isolation region;

a second heavily doped region, of the first conductivity type, positioned within said enclosed region and spaced apart from the body region;

an oxide layer overlying said top surface of said covering layer;

a gate region of doped semiconductor material, positioned within the oxide layer, overlying a portion of the first heavily doped region of the first conductivity type and extending toward the second heavily doped region of the first conductivity type, the gate region being substantially annular in shape;

a third heavily doped region, of the first conductivity type, positioned within said covering layer outside said isolation region and said enclosed region;

a first electrode electrically coupled to said isolation region, to the body region and to the first heavily doped region of the first conductivity type;

a second electrode electrically coupled to the second heavily doped region of the first conductivity type;

a third electrode electrically coupled to the third heavily doped region of the first conductivity type; and

an electrical contact to the gate region.

5,485,028

SEMICONDUCTOR DEVICE HAVING A SINGLE CRYSTAL SEMICONDUCTOR LAYER FORMED ON AN INSULATING FILM

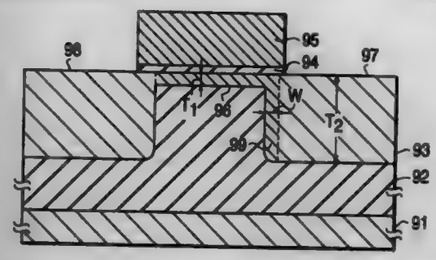
Minoru Takahashi, Yokohama; Makoto Yoshimi, Tokyo, and Naoyuki Shigyo, Yokohama, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 668,674, Mar. 7, 1991, abandoned, which is a continuation of Ser. No. 416,457, Oct. 3, 1989, abandoned. This application Mar. 29, 1993, Ser. No. 39,546

Claims priority, application Japan, Jan. 3, 1988, 63-249382; Feb. 14, 1989, 1-34406; Apr. 21, 1989, 1-100310

Int. Cl.[6] H01L *27/01;29/76;29/94*

U.S. Cl. 257—347 **4 Claims**



1. A semiconductor device having a single crystal semiconductor layer formed on an insulating film, comprising:

a drain region including a high-concentration-impurity-diffusion region provided at a predetermined interval in said single crystal semiconductor layer; and

a gate electrode formed on a channel region and interposed between a source region and said drain region through a gate insulating film formed between said gate electrode and said channel region and wherein,

a thickness of each of said source region and said drain region is more than a thickness T of said channel region,

an upper surface of said single crystal semiconductor layer facing said gate electrode is flat,

said thickness T of said channel region being so adjusted as to be not more than a maximum depletion distance allowed to complete depletion of said channel region,

said thickness T being obtained according to the relationship,

$$T \leq 2\ (\epsilon \phi F / (q\ N_{sub}))^{1/2}$$

where, N_{sub} is an impurity concentration (per cm^{-3}) of the channel region in said single crystal semiconductor layer, ϵ is a dielectric constant of said single crystal semiconductor layer, $\phi F(eV)$ is a difference between a Fermi energy level and an intrinsic energy level of said channel region, and q is an electric charge of an electron (Coulombs), and wherein

a region having a width W, extending from the channel region to the drain region, is set so as to be not more than the maximum depletion distance, and an impurity concentration substantially the same or larger than that of said channel region but less than that of said drain region is formed in a boundary portion between said channel region and said drain region, the width W being obtained according to the relationship,

$$0 < W \leq 2[\epsilon \phi F / (q\ N_{sub})]^{1/2}$$

where, N_{sub} is the impurity concentration (per cm^{-3}) of the channel region in said single crystal semiconductor layer, ϵ is the dielectric constant of said single crystal semiconductor layer, $\phi F(eV)$ is the difference between the Fermi energy level and the intrinsic energy level of said channel region, and q is the electric charge of an electron (Coulombs), and

the thickness of the region having the width W being more than the thickness of said channel region.

5,485,029

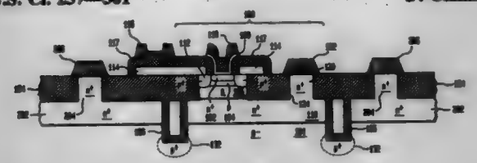
ON-CHIP GROUND PLANE FOR SEMICONDUCTOR DEVICES TO REDUCE PARASITIC SIGNAL PROPAGATION

Emmanuel F. Crabbé, Chappaqua; Keith A. Jenkins, Tarrytown, and Jeffrey L. Snare, Verbank, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1994, Ser. No. 268,350

Int. Cl.[6] H01L *29/72;27/04*

U.S. Cl. 257—501 **24 Claims**



1. A semiconductor chip comprising:

a substrate having a first conductivity type;

a low resistivity semiconductor region in a plurality of non-device regions of the chip having a second conductivity type opposite said first conductivity type;

reach-through low resistivity regions electrically connected to said low resistivity semiconductor region having said second conductivity type; and

a front-side contact electrically connected to said reach-through regions for electrically coupling said reach-through regions and said low resistivity semiconductor region to a ground potential to electrically ground said low resistivity semiconductor region,

wherein said low resistivity semiconductor region is formed concurrently with buried subcollector regions formed in device regions of the chip.

5,485,030

DIELECTRIC ELEMENT ISOLATED SEMICONDUCTOR DEVICE AND A METHOD OF MANUFACTURING THE SAME

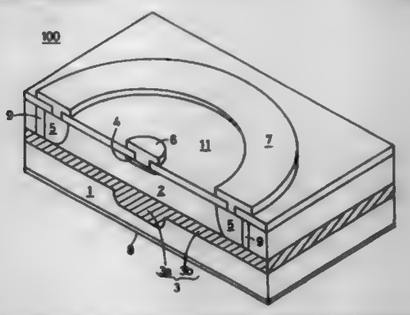
Tomohide Terashima, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 84,948, Jul. 2, 1993, abandoned. This application Jan. 11, 1995, Ser. No. 371,487

Claims priority, application Japan, Jan. 21, 1992, 4-282772; Nov. 24, 1992, 4-313257

Int. Cl.[6] H01L *27/04*

U.S. Cl. 257—506 **27 Claims**



1. A dielectric element isolated semiconductor device, comprising:

an electrode body;

a dielectric layer formed on said electrode body and including a first region and a second region, said first region having a first specific inductive capacity and a first thickness, said second region having a second specific inductive capacity and a second thickness;

a first semiconductor layer of a first conductivity type formed on said dielectric layer, said first semiconductor layer having a relatively high resistance;

a second semiconductor layer of the first conductivity type selectively formed in the top surface of, and directly above, said first semiconductor layer above said first region, said second semiconductor layer having a relatively low resistance;

a third semiconductor layer of a second conductivity type selectively formed in the top surface of said first semiconductor layer above said second region;

a first electrode electrically connected to said second semiconductor layer; and

a second electrode electrically connected to said third semiconductor layer, wherein a value obtainable by dividing said first thickness by said first specific inductive capacity is greater than a value obtainable by dividing said second thickness by said second specific inductive capacity.

5,485,031

ANTIFUSE STRUCTURE SUITABLE FOR VLSI APPLICATION

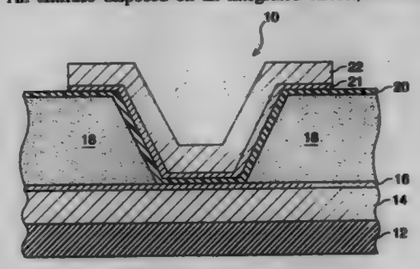
Guobiao Zhang, Elcerrito; Chenming Hu, Alamo, and Steve S. Chiang, Saratoga, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Filed Nov. 22, 1993, Ser. No. 156,612

Int. Cl.[6] H01L *29/00*

U.S. Cl. 257—530 **4 Claims**

1. An antifuse disposed on an integrated circuit, said antifuse



comprising:

a first conductive electrode having a first thickness and a substantially constant thermal conductivity throughout said first thickness;

a second conductive electrode having a second thickness and a substantially constant thermal conductivity throughout said second thickness;

an insulating antifuse layer located between said first conductive electrode and said second conductive electrode, said insulating antifuse layer comprising materials selected from the group consisting of SiO_x, for $0<x\leq 2$, Si_3N_Y (for $0<Y\leq 4$), SiO_XN_Y (for $0<X\leq 2$ and $0<Y\leq 4/3$) and Amorphous Silicon, said antifuse layer having a thickness much less than either said first thickness or said second thickness, and

a first barrier layer disposed between said first conductive electrode and said insulating antifuse layer,

wherein said first conductive electrode and said second conductive electrode consist substantially of electrically conductive materials with thermal conductivities below 0.4 W cm^{-1} K^{-1}.

5,485,032

ANTIFUSE ELEMENT WITH ELECTRICAL OR OPTICAL PROGRAMMING

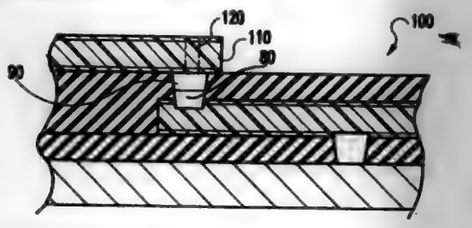
Dominic J. Schepis; Kris V. Srikrishnan, both of Wappingers Falls; Seshadri Subbanna, Hopewell Junction, and Manu J. Tejwani, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 182,259, Jan. 14, 1994, abandoned, which is a division of Ser. No. 996,767, Dec. 18, 1992, Pat. No. 5,314,840. This application Dec. 8, 1994, Ser. No. 355,206

Int. Cl.[6] H01L *29/00*

U.S. Cl. 257—530 **18 Claims**

2. An antifuse element comprising



at least two conductors, and

a programmable means for selectively alloying aluminum with germanium extending between said at least two conductors, said programmable means including

at least one body containing aluminum and a body containing germanium adjacent said at least one body of aluminum, at least one said body containing aluminum forming a source of aluminum for alloying with said body of germanium.

5,485,033

LATERAL TRANSISTOR HAVING A PARTICULAR EMITTER STRUCTURE

Pierre Leduc, Coleville-Montgomery, France, assignor to U.S. Philips Corporation, New York, N.Y.

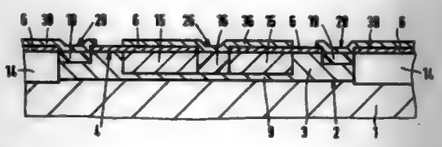
Continuation of Ser. No. 223,876, Apr. 19, 1994, abandoned. This application May 25, 1995, Ser. No. 450,428

Claims priority, application France, Apr. 7, 1993, 93 04137

Int. Cl.[6] H01L *29/70;29/735*

U.S. Cl. 257—578 **3 Claims**

1. A semiconductor device including a vertical transistor com-



prising:

a collector region (1) and an emitter region (15,16), each of a first conductivity type, the emitter region (15,16) adjoining a main surface (4) of the semiconductor device;

an intermediate base region (9) of a second conductivity tape;

an insulating layer (6) disposed on said main surface (4) of the semiconductor device;

at least one metal electrical emitter contact pad zone (26) delimited by an opening provided in said insulating layer (4) at a substantially centered location on the surface of the emitter region, for electrically contacting said emitter region (15,16) in said opening; wherein

the emitter (15,16) and base (9) regions have a total combined thickness of less than 2 μm;

the ratio of the surface area (Sox) of the emitter region situated below the insulating layer (6) and called a first partial region (15), to the surface area (Sm) of the emitter region situated below said emitter metal contact pad zone (26) and called a second partial emitter region (16) is between 2 and 100;

the first partial emitter region (15) below the insulating layer has a first level of conductivity of the first type obtained by a first doping level at least equal to or greater than 5×10^{18} atoms/cm^3 and a first thickness h1 less than or equal to the diffusion length of the minority carriers in said first partial region, such that said first partial region (15) is transparent to the minority carriers which are injected vertically; and

the second partial emitter region (16) is centered in the first partial emitter region below the emitter metal contact pad zone (26) and has a second level of conductivity of the first type obtained by a second doping level which is 2 to 10 times the doping level of said first partial emitter region and has a second thickness h2 substantially equal to said first thickness h1, such that said second partial region forms a screen against the minority carriers.

5,485,034

SEMICONDUCTOR DEVICE INCLUDING BIPOLAR TRANSISTOR HAVING SHALLOWED BASE

Takeo Maeda, Tokyo; Hiroshi Gojohbori, Yokohama, and Yoshitaka Tsunashima, Tokyo, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

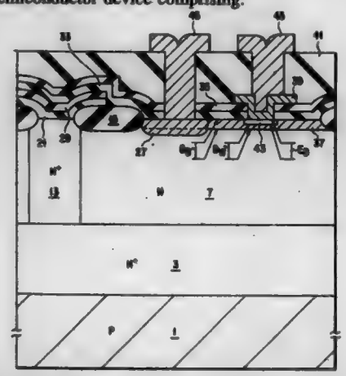
Continuation of Ser. No. 52,919, Apr. 27, 1993, Pat. No. 5,406,115. This application Nov. 18, 1994, Ser. No. 344,694

Claims priority, application Japan, Apr. 28, 1992, 4-109596

Int. Cl.[6] H01L *27/082;27/102;29/70;31/11*

U.S. Cl. 257—592 **5 Claims**

1. A semiconductor device comprising:



a semiconductor body of a first conductivity type having a bipolar transistor forming region and an insulated-gate FET forming region;

a first semiconductor region of a second conductivity type provided in a portion of said insulated-gate FET forming region;

a second semiconductor region of the second conductivity type provided in said bipolar transistor forming region, said second semiconductor region functioning as a first electrode layer of a bipolar transistor;

a first insulated-gate FET of the second conductivity type provided in another portion of said insulated-gate FET forming region;

a second insulated-gate FET of the first conductivity type provided in said first semiconductor region;

an impurity shielding layer means having a property of hardly permitting passage of impurities of the first conductivity type and respectively provided over said first and second insulated-gate FETs;

an impurity source film means provided on at least said second semiconductor region and said impurity shielding layer means, having an insulating property and containing impurities of the first conductivity type;

a third semiconductor region of the second conductivity type provided in said second semiconductor region being in contact with said impurity source film means, said third semiconductor region containing the same impurity as the impurity of the second conductivity type contained in said impurity source film means, and functioning as a base of said bipolar transistor; and

a fourth semiconductor region of the first conductivity type provided in said third semiconductor region and functioning as a second electrode layer of said bipolar transistor;

wherein said impurity shielding layer means is a laminated film formed of a first insulating film provided on said the main surface of said semiconductor body and a second insulating film provided on said first insulating film.

5,485,035

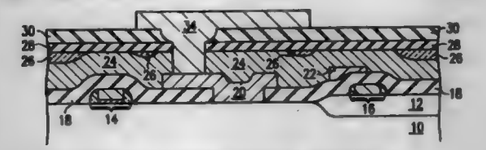
METHOD FOR PLANARIZATION OF AN INTEGRATED CIRCUIT

Yih-Shung Lin, Carrollton; Kuei-Wu Huang, Irving, and Lun-Theng Lu, Grand Prairie, all of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 861,876, Mar. 31, 1992, abandoned. This application Dec. 28, 1993, Ser. No. 174,430

Int. Cl.[6] H01L *23/48;29/46;29/54;29/62*

U.S. Cl. 257—637 **9 Claims**



1. A structure in an integrated circuit, comprising:

a first conductive layer defining an interconnect layer;

a first insulating layer overlying the integrated circuit, wherein an upper surface of the first insulating layer is non-planar and contains lower topographical regions;

a plurality of planarizing material regions on the first insulating layer, wherein the planarizing material regions fill in the lower topographical regions thereof to form a substantially planar upper surface, wherein no planarizing material regions lie above a selected portion of the first conductive layer;

a layer of insulating material overlying the first insulating layer and the planarizing material regions;

an opening through the layer of insulating material and the first insulating layer exposing the selected portion of the first conductive layer; and

a second conductive layer overlying portions of the layer of insulating material and extending into the opening to make electrical contact with the first conductive layer, wherein the layer of insulating material is a multi layer comprising:

a second insulating layer overlying the integrated circuit; and

a third insulating layer overlying the second insulating layer, wherein the third insulating layer is formed from a material which can be selectively etched over the second insulating layer.

5,485,036

LOCAL GROUND PLANE FOR HIGH FREQUENCY CIRCUITS

Richard LaRosa, S. Hempstead, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.

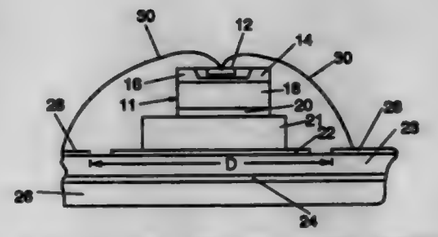
Filed Aug. 3, 1994, Ser. No. 285,571

Int. Cl.[6] H01L *39/02;23/12;23/14*

U.S. Cl. 257—691 **8 Claims**

1. An apparatus for a planar circuit, said planar circuit being defined as having a circuit surface, a plurality of electronic components attached to said circuit surface, and having a main ground plane separated therefrom said circuit surface by an insulating substrate, with said main ground plane serving as DC ground for said planar circuit, said apparatus comprising:

at least one of said plurality of electronic components of said planar circuit being an active device, said active device having a bias network, said bias network having a R.F. bypass capacitance, said active device having a potential oscillating frequency that is substantially greater than the operating frequency of said planar circuit, said active device and said bias network attached to said circuit surface;



a local R.F. ground plane, connected between said active device and said bias network of said active device, and positioned between said bias network of said active device and the main ground plane with said local ground plane having a predetermined surface geometry corresponding to said active device and said bias network wherein said active device has a low inductance path to said local ground plane thereby preventing parasitic oscillations in said planar circuit.

5,485,037

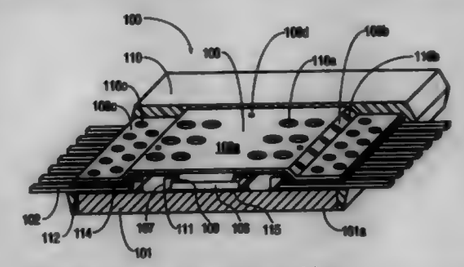
SEMICONDUCTOR DEVICE HAVING A THERMAL DISSIPATOR AND ELECTROMAGNETIC SHIELDING

Robert C. Marrs, Scottsdale, Ariz., assignor to Amkor Electronics, Inc., Chandler, Ariz.

Continuation of Ser. No. 48,888, Apr. 12, 1993, abandoned. This application Mar. 27, 1995, Ser. No. 410,381

Int. Cl.[6] H01L *23/02;39/02;* **H02B** *1/00;* **H02K** *5/00*

U.S. Cl. 257—712 **18 Claims**



1. An integrated circuit package, comprising:

a semiconductor die, the die having a first surface, electrically conductive circuitry on said first surface and a plurality of electrically conductive bond pads positioned at peripheral edges of the first surface;

a plurality of electrically conductive package leads for transmitting electrical signals to and from the integrated circuit, each package lead having a first surface and a second surface opposite the lead first surface, each of the leads having an inner portion spaced from and juxtaposed to respective ones of said bond pads;

a thermal induction plate including a first planar section extending in a band overlying the inner portions of the plurality of the package leads and having a band first surface positioned immediately adjacent to and electrically isolated from said inner portions of the first surface of the each of the package leads;

means for making electrical connection between selected package leads and selected juxtaposed bond pads on the die;

said thermal conduction plate having a second planar section and a first surface overlying and spaced from said die first surface, said bond pads and said means for making electrical connection;

a molded electrical insulative encapsulant encapsulating the semiconductor die, the inner portions of the package leads, the thermal induction plate and the means for making electrical connection to form an encapsulated package; and

wherein said thermal induction plate extends substantially coextensive with the encapsulated package and such that said thermal induction plate reduces electrical noise, crosstalk and radiated electromagnetic energy from said circuitry.

5,485,038

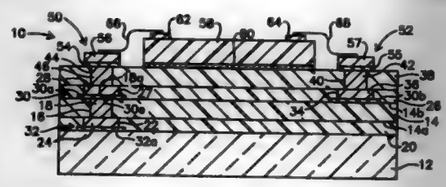
MICROELECTRONIC CIRCUIT SUBSTRATE STRUCTURE INCLUDING PHOTOIMAGEABLE EPOXY DIELECTRIC LAYERS

James J. Licari, Whittier, and Deborah J. Smith, Fountain Valley, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 91,583, Jul. 15, 1993, abandoned. This application Sep. 12, 1994, Ser. No. 305,492

Int. Cl.[6] H01L *23/48*

U.S. Cl. 257—758 **7 Claims**



1. A microelectronic substrate structure, comprising:

an electrically conductive substrate having a first patterned epoxy material containing metal ions formed thereon;

a first dielectric layer of a photoimageable epoxy material having first and second opposite surfaces and a first via hole;

a second dielectric layer adjacent to said electrically conductive substrate and said first surface of said first dielectric layer, said second dielectric layer having a first through hole that is aligned with said first patterned material and adjacent to and having a larger diameter than said first via hole;

a first electrical conductor electrolessly plated on said first patterned material in said first through hole of said second dielectric layer;

an electrically conductive via formed in said first via hole, extending through said first dielectric layer and interconnecting with said first electrical conductor;

a second patterned epoxy material containing metal ions on said second surface of said first dielectric layer aligned with said electrically conductive via; and

a second electrical conductor electrolessly plated on said second patterned material such that said first electrical conductor electrically interconnects with said second electrical conductor through said electrically conductive via and said first and said second patterned materials.

5,485,039

SEMICONDUCTORS SUBSTRATE HAVING WIRING CONDUCTORS AT A FIRST MAIN SURFACE ELECTRICALLY CONNECTED TO PLURAL PINS AT A SECOND MAIN SURFACE

Yuuji Fujita, Koganei, and Kenichi Mizuishi, Hachioji, both of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

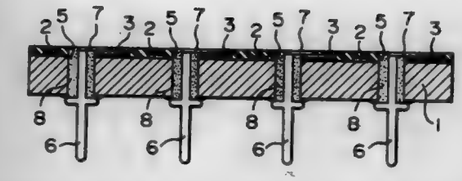
Filed Dec. 14, 1992, Ser. No. 990,029

Claims priority, application Japan, Dec. 27, 1991, 3-345833

Int. Cl.[6] H01L *23/48;29/44;29/52;29/60*

U.S. Cl. 257—774 **49 Claims**

1. A semiconductor device for holding wiring conductors, comprising:



a substrate made of a semiconductor material, having a plurality of through holes extending therethrough substantially perpendicularly to two main surfaces of said substrate;

a plurality of wiring conductors provided at a first one of said two main substrate surfaces;

electrically conductive material buried into each of said plurality of through holes, the electrically conductive material of each said through hole being electrically connected to at least one of said plurality of wiring conductors; and

a plurality of electrically conductive pins each provided at a second one of said two main substrate surfaces at a position of a corresponding one of said through holes, each pin being electrically connected to said material buried into one of said through holes corresponding to said pin and having a portion extending from said second main substrate surface to outside of said substrate.

5,485,040

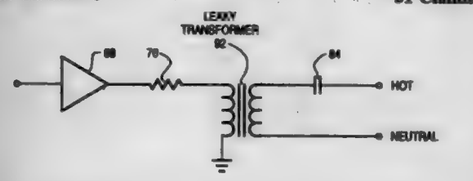
POWERLINE COUPLING NETWORK

Philip H. Sutterlin, San Jose, Calif., assignor to Echelon Corporation, Palo Alto, Calif.

Continuation of Ser. No. 698,618, May 10, 1991, abandoned. This application Jan. 6, 1994, Ser. No. 178,455

Int. Cl.[6] H04B *3/56*

U.S. Cl. 307—3 **31 Claims**



29. A circuit for coupling a communication signal to a power line, wherein the power line operates at a power distribution frequency, said circuit comprising:

a transformer having a leakage inductance;

a capacitor coupled in series between the transformer and the power line, wherein the capacitor has sufficient impedance to limit current drawn from the power line at the power distribution frequency, and wherein the capacitor has capacitive reactance, and

further wherein the leakage inductance is less than the inductance that fully cancels the capacitive reactance of the capacitor at frequencies used for communication and compensates for impedances attributed to devices coupled to the power line and building wiring and voltage divider effects of the power line.

5,485,041

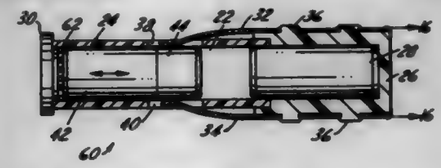
IMPACT SENSOR FOR VEHICLE SAFETY RESTRAINT SYSTEM

Jack B. Meister, 68 Chimney Ridge Rd., P.O. Box 216, Convent Station, N.J. 07961

Continuation-in-part of Ser. No. 950,315, Sep. 24, 1992, Pat. No. 5,430,334, which is a continuation-in-part of Ser. No. 615,074, Nov. 19, 1990, Pat. No. 5,177,370. This application Oct. 28, 1993, Ser. No. 142,045

Int. Cl.[6] H01H *35/14*

U.S. Cl. 307—10.1 **5 Claims**



1. An acceleration sensor that comprises:

a body of non-magnetic material having an internal cylindrical cavity and a pair of diametrically opposed openings that open radially into said cavity,

a permanent magnet mounted for sliding movement within said cavity axially of said cavity, said permanent magnet having a cylindrical geometry and a radially outwardly facing surface with a first portion of electrically conductive construction circumferentially entirely around said surface adjacent to one axial end of said magnet and a second portion composed of a layer of low-friction electrical insulating material that extends entirely circumferentially around said magnet surface adjacent to an opposing end of said magnet,

a pair of electrical contact leaves externally mounted on said body on diametrically opposed sides thereof, said contact leaves having respective cantilevered free ends that extend through said diametrically opposed openings into resilient sliding contact with diametrically opposed sides of said magnet surface, and

means magnetically urging said magnet toward one end of said cavity such that said contact leaf free ends are in external contact with one of said first and second surface portions of said magnet on diametrically opposed sides thereof, acceleration forces on said magnet moving said magnet axially toward an opposing end of said cavity bringing said contact leaf ends into external sliding contact with the other of said first and second portions such that motion of said magnet within said cavity results in a change in electrical conductance between said contact leaves, lengths of said magnet and said cavity being such that said contact leaves remain in sliding contact with said magnet surface at all times during motion of said magnet within said cavity, said layer of low-friction insulating material on said radially outwardly facing surface of said magnet functioning both to insulate said contact leaves from electrically conductive contact with said magnet surface and to reduce sliding friction of said magnet within said cavity.

5,485,042

MOTOR DRIVE UNIT WITH TORQUE CONTROL CIRCUIT

Phillip C. Burke, Temecula, Calif., assignor to Devices for Vascular Intervention, Inc., Redwood City, Calif.

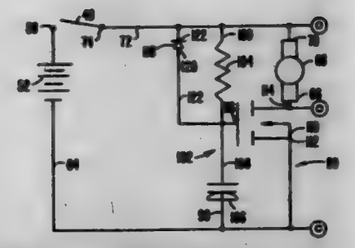
Division of Ser. No. 982,814, Nov. 30, 1992, Pat. No. 5,372,602. This application Oct. 6, 1994, Ser. No. 319,200

Int. Cl.[6] H02K *11/00;7/14;* **H02P** *7/06*

U.S. Cl. 310—47 **16 Claims**

1. A motor drive unit for use in conjunction with an atherectomy device, the atherectomy device having an elongated flexible body, a cutting blade near a distal end of the body, and a drive cable aligned with the body and coupled to the cutting blade, the motor drive unit comprising:

a direct current motor having a shaft coupled to the drive cable for rotating the cutting blade;



a power supply coupled to the motor;

a switch for selectively connecting the power supply to the motor; and

a torque control circuit connected to the power supply in parallel with the motor for controlling torque exerted by the motor when the switch is closed whereby direct current supplied by the power supply is divided between the torque control circuit and the motor, with the direct current supplied to the motor being continuously increased from zero to a start-up level, the start-up level being the minimum current sufficient to turn the cutting blade.

5,485,043

DISPLAY ELEMENT WITH AN ODD NUMBER OF DISPLAY SURFACES AND DISPLAY UNIT USING THE SAME

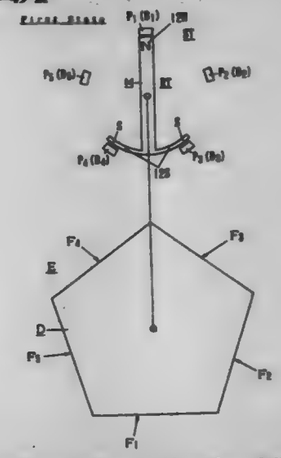
Yoshimasa Wakatake, 26-11, Kamiyoga 5-chome, Setagaya-ku, Tokyo, Japan, and Masayuki Wakatake, Flat B, 12/F., Park Towers 1, 1 king's Road, North Point, Hong Kong

Filed Jul. 18, 1994, Ser. No. 276,325

Claims priority, application Japan, Jul. 20, 1993, 5-200394

Int. Cl.[6] H02K *37/00*

U.S. Cl. 310—49 R **8 Claims**



1. A display element with an odd number of display surfaces, comprising:

a display surface member having three or more odd number of first through n-th display surfaces and a permanent magnet type motor mechanism having a rotor and a stator;

wherein said display surface member is mounted on said rotor of said permanent magnet type motor mechanism housed therein;

wherein said first through n-th display surfaces of said display surface member are disposed side by side at equiangular intervals around said rotor of said motor mechanism;

wherein said rotor of said permanent magnet type motor mechanism has an odd number n of first through n-th magnetic members each forming a magnetic pole at one free end and

first through n-th excitation windings wound on said first through n-th magnetic members, respectively;

wherein said magnetic poles of said first through n-th magnetic members are disposed side by side around the axis of said rotor of said permanent magnet type motor mechanism; and

wherein said rotor of said permanent magnet type motor mechanism has a magnet with first and second magnetic poles magnetized in opposite polarities;

characterized in that, letting one of said first through n-th magnetic members be identified as an i-th magnetic member, (A) said first magnetized pole of said magnet member is opposed to the magnetic pole of said i-th magnet and (B) said second magnetized pole of said magnet member is opposed to: (a) the magnetic poles of (i+(n−1)/2)th and (i+(n−1)/2+1)th magnetic members when i<(n+1)/2; (b) the magnetic poles of (i+(n−1)/2)th and (i−(n−1)/2)th magnetic members when i=(n+1)/2; and (c) the magnetic poles of (i−(n+1)/2)th and (i−(n+1)/2+1)th magnetic members when i>(n+1)/2.

5,485,044

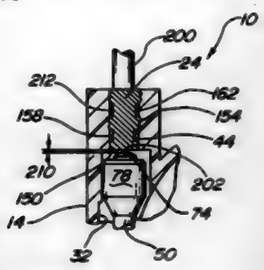
MOTOR WITH END PLAY INSERT

Jeffrey L. Mackay, LaSalle, Mich.; Paul J. Keutgens, Toledo, Ohio, and Eric A. Forsell, Sterling Heights, Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Sep. 30, 1993, Ser. No. 130,026

Int. Cl.[6] H02K *15/14*

U.S. Cl. 310—90 **38 Claims**



1. A motor comprising:

a housing having a bore defined by an inside surface extending longitudinally therewithin, a tunnel defined by an inner surface extending through an end of said housing and intersecting said bore proximate therewith;

a stator mounted internal to a predetermined longitudinal portion of said housing congruent with said bore therewithin;

an armature concentrically juxtapositioned with said bore of said housing thereof, said armature being rotatable in relation to said stator due to electromagnetic fields therebetween;

an armature shaft centrally extending through said armature and protruding from each end thereof, said armature shaft concentrically juxtapositioned within said bore of said housing such that said armature and said armature shaft are rotatably journalled therewithin, said armature shaft having a first end and a second end thereof with each having a bearing surface thereon; and

an insert having an outside surface bordered by an inboard end and an outboard end thereof, said insert being firmly affixed within said tunnel of said housing such that no supplemental retention of said insert is necessary, said outside surface of said insert being unthreaded thereabout, said bearing surface at said first end of said armature shaft being in rotatable contact with said inboard end of said insert thereagainst such that said armature shaft is maintained in a predetermined longitudinal position relative to said housing adjacent thereto.

5,485,045

ROTOR FOR PERMANENT MAGNET-EXCITED, HIGH-SPEED ELECTRIC MACHINES AND ELECTRIC MACHINE EQUIPPED WITH THIS ROTOR

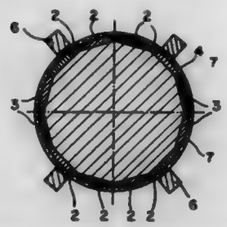
Wolf-Ruediger Canders; Joachim Heldt, and Norbert Zellmann, all of Osterode am Harz, Germany, assignors to Anton Piller GmbH & Co. KG, Osterode am Harz, Germany

Filed Dec. 18, 1992, Ser. No. 995,387

Claims priority, application Germany, Dec. 20, 1991, 41 42 461.1

Int. Cl.[6] H02K *21/12*

U.S. Cl. 310—156 **15 Claims**



1. Rotor for high-speed magnet excited electric machines comprising

a rotor shaft;

permanent magnets and fillers arranged between them,

said fillers being made of non-magnetic material,

said permanent magnets and said fillers being arranged circumferentially on a partial section of said rotor shaft;

said permanent magnets and said fillers extending in axial direction of said rotor shaft;

said permanent magnets and said fillers forming together a common circumferential surface, said circumferential surface being slightly conic when viewed in said axial direction of said rotor shaft;

a prestressed binding made of a high-strength material and surrounding said permanent magnets and said fillers on said circumferential surface, said binding being a prefabricated component made of fiber-reinforced plastic, said fiber-reinforced plastic having fibers being wound to form a sightly conical inner surface of said prefabricated component;

said binding being prestressed relative to said rotor shaft for forcing said permanent magnets and said fillers against said rotor shaft.

5,485,046

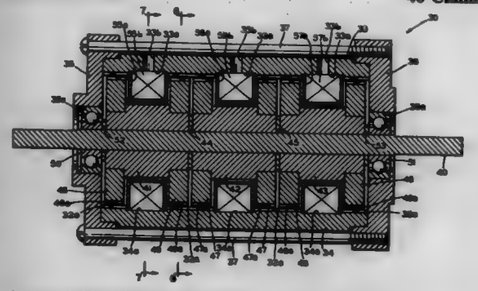
VARIABLE RELUCTANCE ELECTRIC MOTOR

Martin Kaplan, Avon, and Peter Senak, Jr., Bristol, both of Conn., assignors to Dana Corporation, Toledo, Ohio

Filed Feb. 20, 1992, Ser. No. 839,200

Int. Cl.[6] H02K *17/00*

U.S. Cl. 310—166 **40 Claims**



1. A variable reluctance electric motor comprising:

a hollow stator formed from a magnetically permeable material, said stator having a plurality of radially inwardly extending stator poles formed thereon;

a rotor assembly supported within said stator for rotation relative thereto, said rotor assembly including a pair of rotor packs formed from a magnetically permeable material and having a plurality of radially outwardly extending rotor poles formed thereon, said rotor poles being disposed radially inwardly of said stator poles, a magnetic reluctance being defined between said rotor poles and said stator poles, said magnetic reluctance varying between a minimum reluctance when said rotor poles are radially aligned with said stator poles and a maximum reluctance when said rotor poles are not radially aligned with said stator poles, said rotor assembly further including an electromagnetic coil disposed about said rotor assembly between said rotor packs; and

means for connecting said electromagnetic coil to a source of electrical current so as to generate a magnetic circuit, said magnetic circuit exerting a force on said rotor poles urging them to move toward said position of minimum magnetic reluctance so as to cause said rotor assembly to rotate relative to said stator.

5,485,047

RELUCTANCE-TYPE MOTOR AND A ROTOR FOR A RELUCTANCE-TYPE HIGH-SPEED MOTOR

Itsuki Bahn, Tokyo, Japan, assignor to Kabushikigaisha Sekogiken, Tokyo, Japan

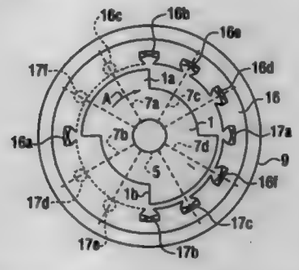
PCT No. PCT/JP93/00066, § 371 Date Sep. 22, 1993, § 102(e) Date Sep. 22, 1993, PCT Pub. No. WO93/15550, PCT Pub. Date Aug. 5, 1993

PCT Filed Jan. 27, 1992, Ser. No. 119,146

Claims priority, application Japan, Jan. 27, 1992, 4-051051; Feb. 27, 1992, 4-088422; Aug. 3, 1992, 4-247046; Nov. 16, 1992, 4-350058

Int. Cl.[6] H02K *17/02;1/24;3/28;* H02P *7/36*

U.S. Cl. 310—166 **9 Claims**



1. A high-speed motor in a three-phase half-wave reluctance type DC motor with a fixed armature and a magnetic rotor comprising:

two salient poles having the same width, disposed on an outer peripheral surface of the magnetic rotor and being mutually spaced at regular intervals of the same angle;

twelve slots disposed on an inner peripheral surface of the fixed armature at regular intervals;

a No.1-phase armature coil consisting of a coil associated with the No.1 and No.4 slots and another coil associated with the No.7 and No.10 slots, two coils of said No. 1-phase armature coil being connected in series or in parallel with each other;

a No.2-phase armature coil consisting of a coil associated with the No.3 and No.6 slots and another coil associated with the No.9 and No.12 slots, two coils of said No.2-phase armature coil being connected in series or in parallel with each other;

a No.3-phase armature coil consisting of a coil associated with the No.5 and No.8 slots and another coil associated with the No.11 and No.2 slots, two coils of said No.3-phase armature coil being connected in series or in parallel with each other;

a position detecting device for detecting rotational positions of said salient poles and generating No. 1-phase position detecting signals having 120-degree width and spaced each other at regular intervals of 240 degrees in term of electric angle. No.2-phase position detecting signals being delayed 120 degrees from said No. 1-phase position detecting signals, and No.3-phase position detecting signals being delayed 120 degrees from said No.2-phase position detecting signals;

only one switching element interposed between a negative terminal of a DC electric power source and each of said No. 1-, No.2- and No.3-phase armature coils;

only one first diode interposed at a positive voltage side of each armature coil in a forward direction;

a DC electric power source for supplying electric power to a serial joint unit consisting of said first diode, said armature coil, and said switching element;

a current supply control circuit for supplying current to said No. 1-, No.2- and No.3-phase armature coils by turning on corresponding switching elements connected to said No. 1-, No.2- and No.3-phase armature coils in response to said No. 1-, No.2- and No.3-phase position detecting signals by an amount of signal width of each position detecting signal, so as to obtain output torque;

a first electric circuit for transferring magnetic energy stored in the armature coil through a second diode into a small-capacitance capacitor from a connecting point of said switching element and said armature coil and holding it to quickly reduce exciting current of said armature coil when said switching element is turned off at a terminal end of said position detecting signal;

a second electric circuit for discharging electrostatic energy stored in said small-capacitance capacitor into the armature coil being next activated through the simultaneously activated semiconductor element from a connecting point of said first diode and said armature coil element to quickly build up exciting current at the time when said armature coil is activated in response to said position detecting signal after said magnetic rotor rotates a predetermined angle;

a detecting circuit obtaining a detection electric signal when exciting current of said armature coil exceeds a predetermined value; and

a chopper circuit for deactivating said armature coil in response to said detection electric signal and in turn activating said armature coil after a predetermined time has passed.

5,485,048

BRUSH DEVICE HAVING A PAIR OF U-SHAPED ATTACHING PIECES AND TAP ACCOMMODATING HOLES

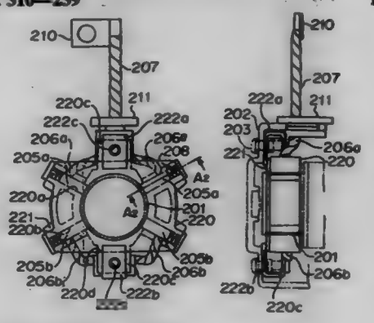
Akira Kuragaki, and Shigeru Shireyama, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 1,745, Jan. 7, 1993, Pat. No. 5,332,940. This application May 12, 1994, Ser. No. 241,996

Claims priority, application Japan, Jan. 31, 1992, 4-045891; Jan. 31, 1992, 4-045892; Jan. 31, 1992, 4-045893; Jan. 31, 1992, 4-045894

Int. Cl.[6] H02K *13/00*

U.S. Cl. 310—239 **1 Claim**



1. A brush device comprising:

a brush holding frame made of an insulation material provided with a plurality of brush accommodating portions, said brush accommodating portions being open at end portions in an axial direction and at inner peripheral portions in a radial direction, and a pair of protruded portions at opposing outer ends of said brush holding frame in the radial direction;

brushes accommodated in said brush accommodating portions along with brush springs, press-contacting a commutator of a direct current machine;

an insulation plate touching an end face of said brush holding frame in the axial direction, covering the open portions at said end portions of the brush accommodating portions;

a pair of U-shaped attaching pieces mounted on and pinching both end faces of said pair of protruded portions of the brush holding frame thereby fixing said insulation plate to said end face of the brush holding frame in the axial direction; and

tap accommodating holes previously provided for accommodating front ends of taps for machining tapped holes at positions of first straight portions of said U-shaped attaching pieces in correspondence to tapped holes of second straight portions of said U-shaped attaching pieces.

5,485,049

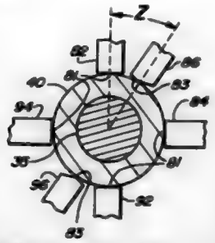
MULTI-SPEED MOTOR

Larry S. Shannon; David W. Welch, and Daniel P. Bexten, all of Columbus, Miss., assignors to United Technologies Motor Systems, Inc., Columbus, Miss.

Filed May 25, 1994, Ser. No. 248,777

Int. Cl.[6] H02K *13/00*

U.S. Cl. 310—248 **32 Claims**



1. A multi-speed direct current electric motor comprising:

at least two magnet poles disposed within a motor housing in cooperative relationship for establishing a magnetic field;

a rotor assembly having an armature winding disposed about an axially elongated armature shaft for rotation within the magnetic field established by said magnet poles and a commutator mounted on said armature shaft and electrically connected to said armature winding, said commutator providing a commutation contact surface;

a low speed brush disposed in interfacing relationship with said rotor assembly and having an end face interfacing with the commutation contact surface of said commutator;

a common ground brush disposed in interfacing relationship with said rotor assembly and having an end face interfacing with the commutation contact surface of said commutator, said low speed brush and said common ground brush operatively associated to cause the motor to rotate at a first relatively low speed when an electrical current is supplied to said low speed brush; and

a high speed brush disposed in interfacing relationship with said rotor assembly and in spaced relationship with and between said low speed brush and said common ground brush, said high speed brush and said common ground brush operatively associated to cause the motor to rotate at a second relatively high speed when an electrical current is supplied to said high speed brush, said high speed brush having an end face interfacing with the commutation contact surface of said commutator, the end face of said high speed brush having a first surface and a second surface intersecting at a line of intersection for contacting the commutation contact surface of said commutator, said line of intersection being displaced away from a central region of the end face of said high speed brush.

5,485,050

DEVICE FOR HOLDING THE ENDS OF THE TURNS OF A STATOR WINDING IN A DYNAMOELECTRIC MACHINE

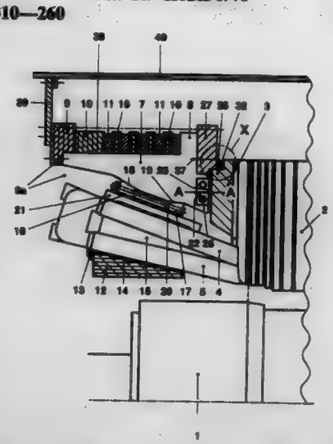
Hans Zimmermann, Mönchaltorf, Switzerland, assignor to ABB Management AG, Baden, Switzerland

Filed Feb. 14, 1995, Ser. No. 388,435

Claims priority, application Germany, Feb. 26, 1994, 44 06 400.4

Int. Cl.[6] H02K *3/46*

U.S. Cl. 310—260 **18 Claims**



1. A device for holding ends of turns of a stator winding in a dynamoelectric machine, comprising:

a rotor and a stator and a stator housing, which stator has a laminated core with a stator core end plate at an end of said stator core, a stator winding arranged in slot in the laminated core, said stator winding having bottom and top bars, said bars having ends which overlap the laminated core axially;

an inner ring which fits closely against the ends of the turns of the stator winding, which turns widen as an internal taper, and which has a multipart external support comprising rings and supporting brackets, which supporting brackets are attached to an end of the stator core end plate of the laminated core, wherein a first outer ring is provided which fits closely against an outside of free ends of the supporting brackets, wherein a second outer ring is provided which is supported at an inside circumference on a shoulder on the stator core end plate, wherein the second outer ring is attached to the supporting brackets and wherein clamping means are provided between inward-facing surfaces of the supporting brackets and the ends of the turns.

5,485,051

SURFACE ACOUSTIC WAVE DEVICE

Yoshiko Tera; Kouji Morishima, and Atsushi Sakai, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

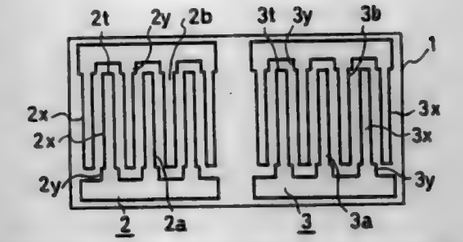
Continuation of Ser. No. 112,474, Aug. 27, 1993, Pat. No. 5,396,199. This application May 12, 1994, Ser. No. 241,995

Claims priority, application Japan, Sep. 2, 1992, 4-234535

Int. Cl.[6] H03H *9/145*

U.S. Cl. 310—313 B **1 Claim**

1. A surface acoustic wave device comprising a substrate for propagating a surface acoustic wave, and having input and output transducers disposed on the surface of said substrate, each said input and output transducer having a pair of opposite electrodes,



each opposite electrode having a plurality of electrode fingers, each pair of opposite electrodes having the plurality of electrode fingers extending toward and meshing with each other, characterized in that

all of said electrode fingers have root portions which are wider than other portions of said electrode fingers to prevent improper patterning of such root portions.

5,485,052

THREE ELECTRODE TYPE SAW LONGITUDINAL COUPLING FILTER

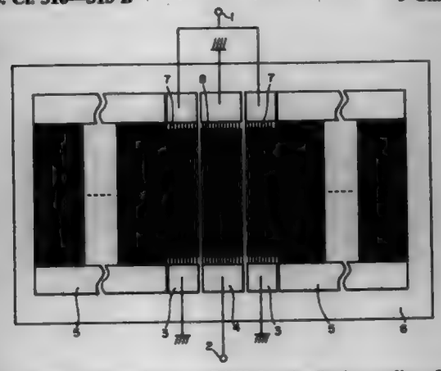
Shunichi Seki, Osaka; Kazuo Eda, Nara; Yutaka Taguchi, and Keiji Onishi, both of Settsu, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 60,982, May 14, 1993, abandoned. This application Dec. 29, 1994, Ser. No. 366,390

Claims priority, application Japan, May 14, 1992, 4-121607

Int. Cl.[6] H03H *9/64*; H01L *41/08*

U.S. Cl. 310—313 B **9 Claims**



1. A three electrode type SAW longitudinal coupling filter, comprising:

a piezoelectric substrate having an electro-mechanical coupling factor higher than 10%;

three sets of electrodes on said piezoelectric substrate, including sets of input electrodes and an output electrode, wherein each of said sets of electrodes comprises a plurality of electrode fingers that confront each other and are interdigitated; and

a pair of reflectors on said piezoelectric substrate disposed at respective opposite sides of said input electrodes and said output electrode;

wherein a ratio of the number of pairs of said electrode fingers of each said input electrode to the number of pairs of said electrode fingers of said output electrode is 0.70±0.07;

wherein there is a propagation path length dc between said input electrodes and said output electrode, a propagation path length dr between said reflectors and adjacent ones of said input electrodes and said output electrode, and dc and dr satisfy either $dc=(\alpha+m/2)\cdot L$ or $dr=(\beta+n/2)\cdot L$, where $\alpha=0.25\pm0.05$, $\beta=0+0.05$ (n=0), $\beta=0\pm0.05$ (n>0), and m, n=0, 1, 2, 3, . . . , and L is the periodicity of said electrode fingers of said input electrodes and said output electrode.

5,485,053

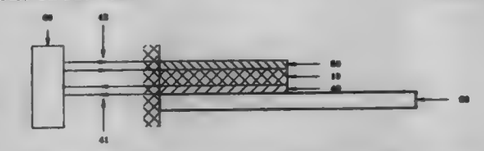
METHOD AND DEVICE FOR ACTIVE CONSTRAINED LAYER DAMPING FOR VIBRATION AND SOUND CONTROL

Amr M. Baz, 7811 Epsilon Dr., Rockville, Md. 20855

Filed Oct. 15, 1993, Ser. No. 136,210

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—326 **7 Claims**



1. A device for actively controlling the damping of vibration or sound from a flexible structure, comprising:

a. a sensor layer in contact with the structure for detecting the vibration or sound of said structure,

b. at least one vibration or sound damping layer, the vibration or sound damping layer in contact with the sensor layer and

c. an active constraining layer, the active constraining layer in contact with said at least one vibration or sound damping layer for actively controlling the damping of vibration or sound in response to the detection from said sensor layer; wherein said active constraining layer is capable of being activated by a controller.

5,485,054

DISPLAY TUBE HAVING A DEFLECTION COIL SUPPORT AND AN AUXILIARY DEFLECTION COIL SUPPORT

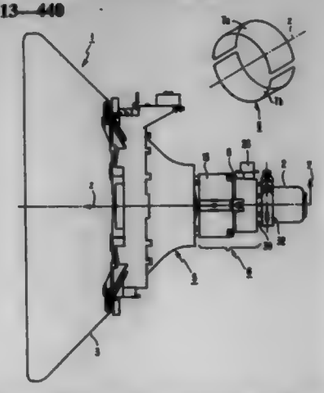
Johannus T. F. Van Kemenade, and Cornelis Kortekaas, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 28, 1993, Ser. No. 128,623

Claims priority, application European Pat. Off., Jan. 9, 1992, 92203105

Int. Cl.[6] H01J *29/70*

U.S. Cl. 313—440 **12 Claims**



1. A display tube having a longitudinal axis and comprising a display screen, an electron gun disposed in a neck portion of the tube for producing at least one electron beam, and electron beam deflection means arranged on the tube for deflecting the at least one electron beam, said electron beam deflection means including:

a. a first deflection coil support having an inner surface and an outer surface;

b. a line deflection coil system of the mussel type disposed adjacent the inner surface of the first deflection coil support;

c. a field deflection coil system disposed adjacent the outer surface of the first deflection coil support;

d. a second deflection coil support having a coil support surface which is disposed around a portion of the first deflection coil support that is located adjacent the neck portion of the tube; and

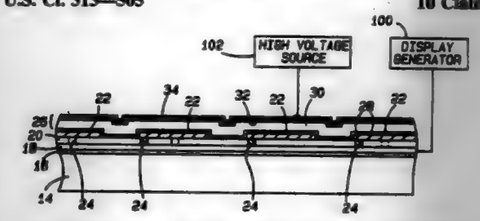
e. an auxiliary deflection coil system, comprising first and second auxiliary deflection coils, disposed adjacent said coil support surface of the second deflection coil support.

5,485,055

ACTIVE MATRIX ELECTROLUMINESCENT DISPLAY HAVING INCREASED BRIGHTNESS AND METHOD FOR MAKING THE DISPLAY

Thomas R. Keyser, Ellicot City, Md., assignor to AlliedSignal Inc., Morris Township, N.J.

Filed Jul. 11, 1994, Ser. No. 273,558
Int. Cl.[6] H01J 63/04
U.S. Cl. 313—505 **10 Claims**



1. An active matrix electroluminescent display comprising:

a substrate;

a first insulator layer provided on said substrate;

a plurality of electronic circuits formed on said first insulator layer;

a second insulator layer disposed on said plurality of electronic circuits;

an array of metal pixel electrodes disposed on said second insulator layer, each (metal) pixel electrode of said array of pixel electrodes having a uniformly texturized surface and being associated with a respective one electronic circuit of said plurality of electronic circuits;

means for connecting each pixel electrode of said array of pixel electrodes with an output of its associated electronic circuit;

an electroluminescent stack disposed on said plurality of pixel electrodes; and

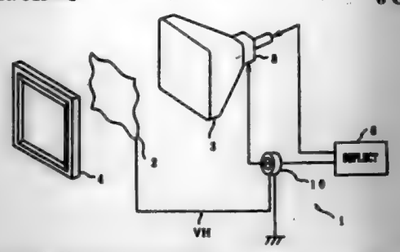
a transparent conductive layer disposed on said electroluminescent stack.

5,485,056

MONITORING DEVICE

Masahiko Sasaki, and Hideo Hatada, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 9, 1992, Ser. No. 988,176
Claims priority, application Japan, Dec. 14, 1991, 3-352116
Int. Cl.[6] G09G 1/04
U.S. Cl. 315—8 **6 Claims**



1. A monitoring device which displays an image by cathode ray tube, comprising:

an electric field forming electrode arranged to surround completely outer edges of a display area of a front face of said cathode ray tube for forming a compensating electric field;

compensation signal generating means for generating a leakage electric field compensation signal, including a magnetic coupling means for detecting a horizontal drive signal, the signal level of said leakage electric field compensation signal varies corresponding to a change in said horizontal drive signal and has a reversed phase relative thereto; and

compensation signal supplying means for supplying said leakage electric field compensation signal from said compensation signal generating means to said electric field forming electrode,

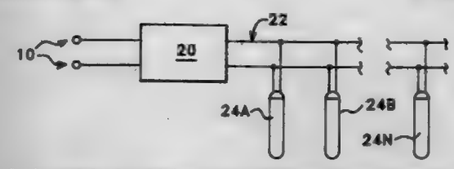
wherein leakage of an electric field from said cathode ray tube is canceled by the compensating electric field formed by said electric field forming electrode.

5,485,057

GAS DISCHARGE LAMP AND POWER DISTRIBUTION SYSTEM THEREFOR

Robert C. Smallwood, Rt. 2, Box 81, Leesburg, Va. 22075, and Michael P. Zarich, 1614 Judson Dr., Longmont, Colo. 80501

Filed Sep. 2, 1993, Ser. No. 116,150
Int. Cl.[6] H01J 7/44
U.S. Cl. 315—58 **11 Claims**



1. A module for driving a gas discharge lamp having heater elements contained within an envelope in response to electrical power from a source and wherein the envelope has at least one endcap comprising:

means for receiving power from the source and including prong type conductor pins extending from the envelope endcap,

an oscillator coupled to said receiving means for transforming said received power to an output signal at a frequency and voltage for causing the lamp to produce visible light through gas discharge within the lamp envelope,

an elongated circuit board mounting said oscillator within a volume having a cross-section configured substantially the same as the cross-section of the lamp envelope with said circuit board positioned within the lamp envelope, and

means attaching said board for forming an end of the lamp envelope with said oscillator output signal connected to the lamp heater elements.

5,485,058

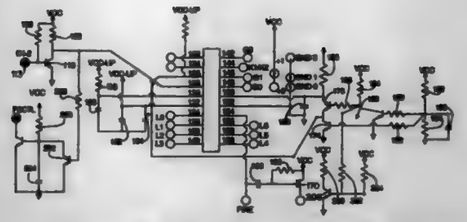
TOUCH DIMMER SYSTEM

Douglas R. Watson, Sanford, Conn.; Lev Bogorad, Roosevelt Island, N.Y.; Albert Lombardi, LaGrangeville, N.Y.; Benjamin Neiger, Floral Pk., N.Y.; Lester Rivera, Glendale, N.Y.; Joseph G. Justiniano, Bethpage, N.Y., and Zvi Aluma, Plainview, N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Continuation of Ser. No. 975,371, Nov. 12, 1992, Pat. No. 5,336,979. This application Aug. 5, 1994, Ser. No. 286,613
Int. Cl.[6] G05F 1/00
U.S. Cl. 315—194 **1 Claim**

1. A touch dimmer system comprising:

latching switch means comprising an input terminal, an output terminal, and a central terminal said control terminal being adapted to have applied to it a switching signal for causing said switch means to permit current from an AC line voltage source to flow through said latching switch means during a



sub-cycle of said AC line voltage, said current operating to brighten one or more lamps connected in series with said output terminal;

zero crossing circuit means for generating a zero crossing signal in response to zero crossing points of said AC line voltage source;

a microprocessor comprising a self-contained clock oscillator connected to said zero crossing circuit means to receive said signal therefrom, said micro-processor producing a triggering signal output based on its own operating clock oscillator frequency; key switch circuit means connected to said microprocessor, and said zero crossing signal;

output circuit means connected to said microprocessor to receive said triggering output signal therefrom and to thereupon generate said switching signal which is applied to said control terminal of said switching means;

power supply circuit means connected to said AC line current source and to said zero crossing circuit means, said power supply circuit means functioning to interrupt current flow through said latching switching means when voltage from said AC line voltage source reaches a certain level or when a predetermined time has elapsed since the most recent of said zero crossing points of said AC line voltage source; and

one or more respective dimmer key switches for setting various lamp brightness levels and for turning said one or more lamps on or off; and comprising

said key switch circuit means connected to said key switches and to said microprocessor for indicating the state of said respective dimmer key switches to said microprocessor

means connected to said power supply circuit means to monitor the value of said power supply voltage and provide a monitor signal to said microprocessor; said microprocessor evaluates said monitor signal to determine whether the power supply voltage is going up above a predetermined value or going down below said predetermined value, and provides a signal to said microprocessor to reset it when the power supply voltage is at said predetermined value;

said microprocessor Upon determining that said power supply voltage is falling initiates a halt mode to save the contents of the memory of said microprocessor; said microprocessor upon determining that the supply voltage is rising starts itself up and first checks the memory of said microprocessor to see if the memory contents was lost during its shut down.

5,485,059

LIGHTING CIRCUIT FOR VEHICULAR DISCHARGE LAMP

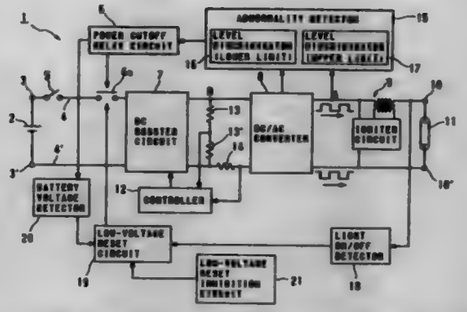
Masayasu Yamashita, and Atsushi Toda, both of Shimizu, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1993, Ser. No. 80,979
Claims priority, application Japan, Jul. 3, 1992, 4-199039
Int. Cl.[6] H05B 37/02
U.S. Cl. 315—307 **15 Claims**

1. A lighting circuit for a vehicular discharge lamp comprising:

DC/AC converting means for converting a DC voltage into an AC voltage before and supplying said AC voltage to a discharge lamp;

abnormality detecting means for detecting a level of a lamp voltage of said discharge lamp at a point between an AC



voltage output of said DC/AC converting means and said discharge lamp, and comparing said detected level with a level of a predetermined reference voltage to thereby discriminate an abnormal status of said discharge lamp and to thereby produce a signal indicating an abnormal status, and

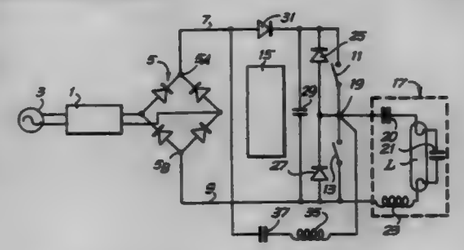
power cutoff means for cutting off power supply to said discharge lamp when receiving a signal indicating an abnormal status from said abnormality detecting means.

5,485,060

ELECTRONIC REACTOR FOR THE SUPPLY OF DISCHARGE LAMPS WITH AN OSCILLATOR CIRCUIT TO LIMIT THE CREST FACTOR AND TO CORRECT THE POWER FACTOR

Antonio Canova, Arezzo, Italy, assignor to Magnetek S.p.A., Siena, Italy

Filed Feb. 8, 1995, Ser. No. 386,810
Claims priority, application European Pat. Off., Feb. 11, 1994, 94830048
Int. Cl.[6] H05B 37/02
U.S. Cl. 315—209 R **10 Claims**



1. Electronic reactor, or ballast, for a discharge lamp (L), comprising:

a bridge rectifier (5) connected to an alternating voltage source (3);

a half-bridge with two controlled switching means (11, 13) made alternately conducting to connect the said lamp (L) and the said bridge rectifier (5);

a resonant load circuit (17) connected to the said half-bridge (11, 13) and including the said lamp (L); and

a smoothing capacitor (29) connected in parallel with the half-bridge (11, 13);

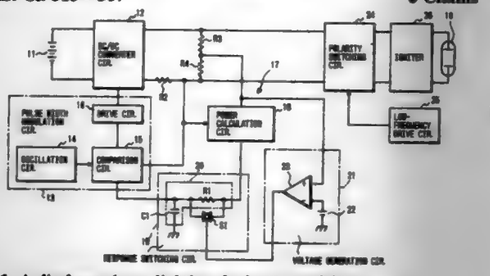
and wherein an auxiliary resonant circuit (33) is connected between the output (19) of the half-bridge (11,13) and the positive pole (5A) of the bridge rectifier (5).

5,485,061

DISCHARGE LAMP LIGHTING DEVICE CAPABLE OF PREVENTING A FLICKER DUE TO ARC MOVEMENT

Nobuo Ukita; Kenji Nakamura; Takashi Ohsawa, and Yasumasa Hanazaki, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1994, Ser. No. 225,985
Claims priority, application Japan, Apr. 12, 1993, 5-109958
Int. Cl.[6] H05B *41/14*
U.S. Cl. 315—307 6 Claims



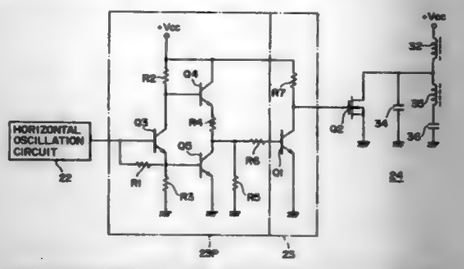
1. A discharge lamp lighting device comprising:
an inverter circuit for producing a proper electric power to be supplied to a discharge lamp;
a feedback control system for detecting a lamp voltage and a lamp current, or a lamp power of the discharge lamp, and for feedback-controlling the inverter circuit based on the detected at least one of the lamp voltage, lamp current and lamp power; and
a response switching circuit for switching a response speed of the feedback control system so that the response speed is high in a low luminous efficiency region, and is low in a high luminous efficiency region.

5,485,062

HORIZONTAL DEFLECTION CIRCUIT FOR A TELEVISION SET

Hiroshi Sahara, Kanagawa, and Isao Osawa, Miyagi, both of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 14, 1994, Ser. No. 181,067
Claims priority, application Japan, Jan. 18, 1993, 5-005929; Mar. 12, 1993, 5-052508; Mar. 12, 1993, 5-052516
Int. Cl.[6] G09G *1/04*; H01J *29/70*
U.S. Cl. 315—408 12 Claims



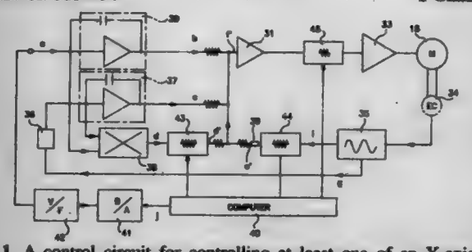
1. A horizontal deflection circuit having a horizontal deflection coil and a resonant capacitor, for a television receiver, said horizontal deflection circuit comprising:
a MOSFET connected at a source terminal to a ground and at a drain terminal to a first end of a primary coil and to a parallel circuit consisting solely of the resonant capacitor connected at a first end to the drain terminal and at a second end to the ground and the horizontal deflection coil connected at a first end to the drain terminal and at a second end to the ground; and
a driving circuit for supplying a current in one direction to the MOSFET in a part of each horizontal scanning period and for supplying a current in the other direction to the MOSFET in the rest of each horizontal scanning period so that a sawtooth current flows through the horizontal deflection coil.

5,485,063

MOTOR CONTROL CIRCUIT FOR A WIRE BONDING APPARATUS

Tooru Mochida; Yoshimitsu Terakado, and Hijiri Hayashi, all of Tokyo, Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Jul. 30, 1993, Ser. No. 99,623
Claims priority, application Japan, Aug. 4, 1992, 4-227974
Int. Cl.[6] H01L *21/60*
U.S. Cl. 318—34 1 Claim



1. A control circuit for controlling at least one of an X-axis, Y-axis and Z-axis motors of a wire bonding apparatus, said control circuit comprising:
a means for sensing a rotational speed of said motor and outputting a signal indicative of the sensed rotational speed;
a first variable gain feedback amplifier having its input coupled to said means for sensing and for amplifying said signal;
a comparator having first and second inputs with said signal coupled to one of said first and second inputs;
a second variable gain feedback amplifier coupled to the output of said comparator;
a first integrator coupled to said means for sensing and for integrating said signal;
a second integrator having an input and an output;
an amplifier to which the outputs of said first and second variable gain feedback amplifiers and said first and second integrators is applied;
a third variable gain feedback amplifier coupled to the output of said amplifier;
a motor driver means coupled to the output of said third variable gain feedback amplifier and for driving said motor; and
a computer means coupled to said first, second and third variable gain feedback amplifiers and said input of said second integrator and an other of said first and second inputs of said comparator for issuing rotational speed change signals to said motor and for issuing gain control signals to said first, second and third variable gain feedback amplifier such that a gain of said first, second and third variable gain feedback amplifier is high when rotational speed of said motor is high and is low when said rotational speed of said motor is low.

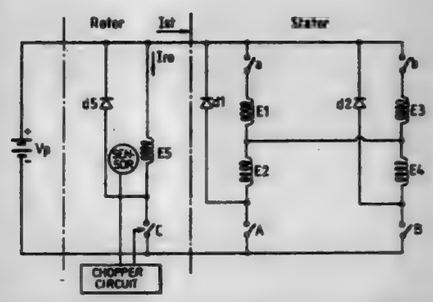
5,485,064

SELF-SYNCHRONOUS MOTOR AND ELECTRICAL TRACTION SYSTEM USING A SELF-SYNCHRONOUS MOTOR

Georges Arnaud, Orsay, and Claude Jacques, Chevreuse, both of, France, assignors to Auxilec, Chatou, France

Continuation-in-part of Ser. No. 961,373, Oct. 15, 1992. This application Apr. 19, 1993, Ser. No. 49,130
Claims priority, application France, Jan. 23, 1991, 91 13126
Int. Cl.[6] H02P *3/00*
U.S. Cl. 318—139 12 Claims

1. A self-synchronous electrical motor comprising a rotor, a stator formed by stator windings, at least one electronic switch connected to a stator winding and activated by a chopper circuit at high frequency to control a mean current in the stator winding, a sensor of angular position of the rotor to control the chopper circuit, wherein said electrical motor comprises a mechanical commutator device rotating with the rotor, to shunt the current given by a power supply source into the stator windings selected as a function of the position of the rotor, the mechanical commutator device being interposed in a series circuit formed by the power supply source, the stator windings and the at least one electronic switch.

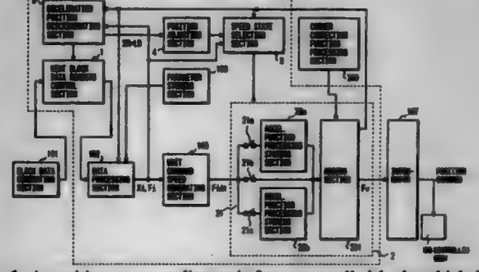


5,485,065

POSITION COMMANDING METHOD AND APPARATUS

Akira Kaneko; Norikazu Iguchi; Takahiro Hayashida; Torao Takeshita, and Yoshio Shinohara, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 1, 1994, Ser. No. 221,572
Claims priority, application Japan, Apr. 1, 1993, 5-075824
Int. Cl.[6] H02P *1/00*
U.S. Cl. 318—270 21 Claims



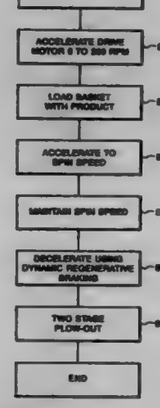
1. A position commanding unit for a controlled body which is responsive to input speed and position data comprising:
unit command speed generating means for generating a command speed per unit time in response to said speed data and position data;
acceleration/deceleration controlling means for providing, in response to said command speed, an output signal representing a rate of acceleration, rate of deceleration or constant speed, said acceleration/deceleration controlling means comprising:
function storing means for storing a plurality of acceleration functions and deceleration functions; and
switching means for selecting, in accordance with said command speed, one of the following:
one of said acceleration functions to cause said acceleration/deceleration controlling means to provide said output signal representing a rate of acceleration;
one of said deceleration functions to cause said acceleration/deceleration controlling means to provide said output signal representing a rate of deceleration; and
constant speed designation to cause said acceleration/deceleration controlling means to provide said output signal representing a constant speed;
a deceleration position discriminator, comprising;
means for computing a distance required to stop said controlled body when decelerated at said rate of deceleration represented by said output signal;
means for calculating, in accordance with said position data, a residual distance away from a position at which said controlled body is to stop; and
means for outputting a coincidence signal when said deceleration stop distance coincides with said residual distance; and
controlled body decelerating means for, in response to said coincidence signal, decelerating the controlled body at a rate corresponding to said rate of deceleration represented by said output signal.

5,485,066

VARIABLE SPEED CENTRIFUGAL DRIVE CONTROL FOR SUGAR REFINING MACHINES AND THE LIKE

Dwayne Zeigler, Savannah, Ga., assignor to Savannah Foods and Industries, Savannah, Ga.

Continuation-in-part of Ser. No. 228,499, Apr. 15, 1994, abandoned. This application Apr. 19, 1994, Ser. No. 231,221
Int. Cl.[6] H02P *5/00*
U.S. Cl. 318—375 18 Claims

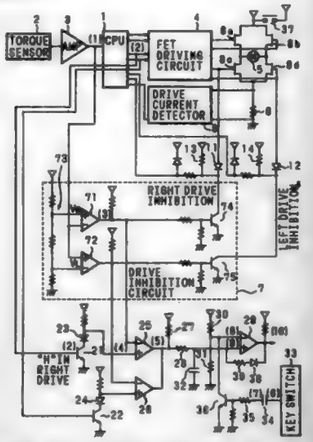


1. A centrifugal device comprising:
receiving means for receiving a load to be centrifuged;
a drive motor operatively connected to said receiving means for rotating said receiving means; and
controller means for supplying operative power to said drive motor to rotate said receiving means, said controller means including braking means for varying said operative power to said drive motor based on a rotational speed of said drive motor, thereby causing said drive motor to decelerate, said braking means comprising:
means for applying a first voltage ramp to said drive motor when said rotational speed of said drive motor is above a first level; and
means for applying a second voltage ramp to said drive motor when said rotational speed of said drive motor is between said first level and a second level.

5,485,067
ELECTRIC POWER STEERING APPARATUS

Mitsuhiko Nishimoto, Kashihara; Hirofumi Matsuoka, Kyoto, and Hiroki Amako, Kashiwara, all of, Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Jul. 1, 1994, Ser. No. 270,055
Claims priority, application Japan, Jul. 2, 1993, 5-191700; Jul. 5, 1993, 5-192026
Int. Cl.[6] G05B 5/00
U.S. Cl. 318—466 6 Claims



1. An electric power steering apparatus including an electric motor which provides an assisting steering force, comprising:

a processor to which a detected signal of steering torque and direction is inputted and which outputs a drive control signal of magnitude and direction for the electric motor on the basis of the detected steering torque;

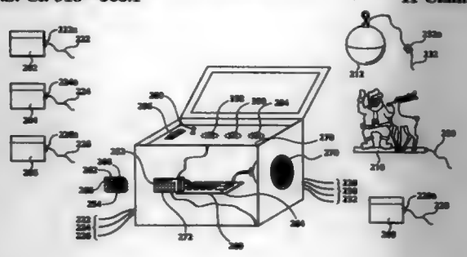
drive inhibition circuit means responsive to the detected steering torque direction which outputs a signal to stop the operation of the electric motor when the driving direction of the electric motor as directed by said processor and the direction of the detected steering torque are opposite to each other; and

said processor including comparing means responsive to said drive inhibition circuit output signal and the steering torque direction signal for detecting when said drive inhibition circuit output signal is correctly stopping operation of the electric motor in the condition when the driving direction of the electric motor and the direction of the detected steering torque are opposite to each other.

5,485,068
MULTIPLE PLUG-IN PROGRAMMABLE SENSORY DEVICE SYSTEM

Michael Vaught, Oscaleta Rd., South Salem, N.Y. 10590

Continuation-in-part of Ser. No. 31,266, Mar. 15, 1993, Pat. No. 5,345,153. This application Mar. 14, 1994, Ser. No. 209,309
Int. Cl.[6] H05B 39/04; F16M 11/00; A47G 35/00
U.S. Cl. 318—568.1 11 Claims



1. A multiple programmable sensory device system comprising:

a housing,

a circuit,

plug means mounted on said housing for temporarily connecting to said circuit a plurality of electrically Operated sensory effect devices having predetermined electrical requirements for operating said sensory effect devices for providing sensory effects, power supply means mounted on said housing and connected to said circuit, for providing electrical power for operating said sensory effect devices and said circuit,

a microprocessor module connected to said circuit for directing operation of said sensory effect devices in a sequence, and

an audio amplifier connected to said circuit for receiving preprogrammed sounds ordered by said microprocessor module,

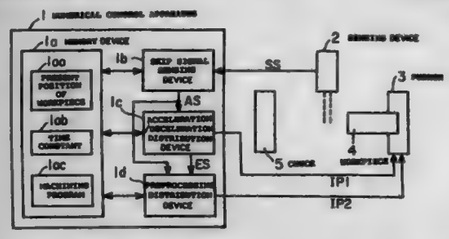
said microprocessor module being a first microprocessor module and comprising durable connector means adapted for temporarily connecting said microprocessor module to said circuit, and a cover over said first module for gripping by a user for connecting and disconnecting said module from said circuit without tools,

durable connector means on said housing for receiving said durable connector means on said first module, said durable connector means on said housing being electrically wired to said circuit for connecting of said first microprocessor module to said circuit.

5,485,069
NUMERICAL CONTROL APPARATUS

Toshiaki Otsuki, Minamitsuru; Kunihiko Murakami, Hino, and Yorikazu Fukui, Suginami, all of, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP94/00154, § 371 Date Oct. 13, 1994, § 102(e) Date Oct. 13, 1994, PCT Pub. No. WO94/19731, PCT Pub. Date Sep. 1, 1994
PCT Filed Feb. 2, 1994, Ser. No. 318,728
Claims priority, application Japan, Feb. 25, 1993, 5-035924
Int. Cl.[6] G05B 19/403; 19/18
U.S. Cl. 318—570 7 Claims



1. A numerical control apparatus for measuring a tool length and a workpiece by a skip function, comprising:

memory means for storing a time constant used when a feed speed of a workpiece is accelerated or decelerated and for storing a machining program;

skip signal sensing means for determining a present position of said workpiece in response to a skip signal output from a sensing device and for outputting a skip completion signal, said memory means storing said present position in a predetermined region;

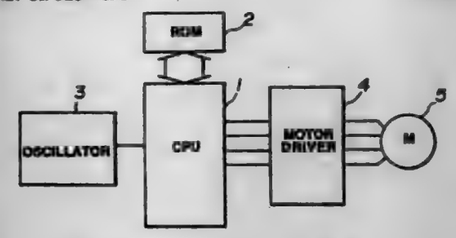
acceleration/deceleration distribution means for outputting a first interpolation pulse for accelerating or decelerating the feed speed of the workpiece based on said time constant and said present position in response to said skip completion signal and for outputting a distribution completion signal after said workpiece moves to an end position commanded in a present block of said machining program; and

preprocessing distribution means for determining an amount of movement of a next block of said machining program from the present position of said workpiece in response to said skip completion signal, for preprocessing the next block of said machining program and for outputting a second interpolation pulse for accelerating or decelerating the feed speed of the workpiece based on said preprocessing of the next block in response to said distribution completion signal.

5,485,070
STEPPING-MOTOR DRIVING SYSTEM

Hidekazu Tominaga, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1993, Ser. No. 120,343
Claims priority, application Japan, Sep. 29, 1992, 4-283669
Int. Cl.[6] H02P 8/00
U.S. Cl. 318—696 6 Claims



1. A stepping-motor driving system, comprising:

driving means, connected to a stepping motor, for driving the stepping motor by switching an exciting phase of coils thereof;

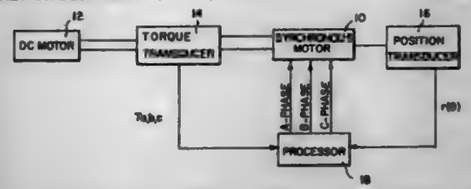
storage means for storing a table of an exciting-phase switching time of the stepping motor comprising absolute and differential exciting phase switching time data; and

control means for controlling said driving means, said control means comprising a counter and comparing means for comparing a count of said counter with a value based on differential exciting phase switching time data stored in said storage means, wherein said control means increments said counter until a count of the counter equals the value based on the differential exciting phase switching time data stored in said storage means in accordance with a comparison of said comprising means, wherein said control means causes said driving means to switch an exciting phase of the stepping motor in response to the incrementing of said counter to equal the value based on the differential exciting phase switching time data stored in said storage means.

5,485,071
METHOD AND APPARATUS FOR ESTABLISHING A REFERENCE CURRENT FOR USE IN OPERATING A SYNCHRONOUS MOTOR

Chao Bi; Kuan-Teck Chang, and Teck-Seng Low, all of Magnetics Technology Centre, National University of Singapore, 10 Kent Ridge Rd., Singapore 0511, Singapore

Continuation of Ser. No. 103,517, Aug. 9, 1993, abandoned. This application Feb. 23, 1995, Ser. No. 393,028
Int. Cl.[6] H02P 6/02
U.S. Cl. 318—700 7 Claims



1. A method of establishing a reference current for use in operating a synchronous motor, comprising the steps of:

(a) obtaining a torque-angle profile of the motor;

(b) obtaining an excitation component and a reluctance component of the torque-angle profile;

(c) establishing a phase current from the excitation component and the reluctance component of the torque-angle profile;

(d) establishing a delay angle of the phase current;

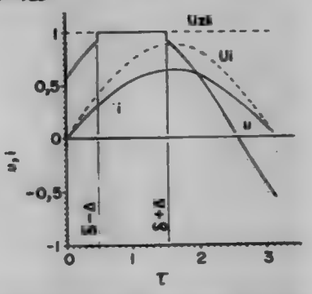
(e) establishing a reference torque from the delay angle, the phase current, and the excitation component and reluctance component of the torque-angle profile; and

(f) establishing a reference current from the reference torque.

5,485,072
PROCESS FOR OPERATING PERMANENTLY EXCITED SINGLE-PHASE ALTERNATING CURRENT MACHINES

Rudolf Fehringer, Vienna, Austria, assignor to J. M. Voith Gesellschaft M. B. H., Heidenheim, Germany

PCT No. PCT/AT92/00060, § 371 Date Nov. 3, 1993, § 102(e) Date Nov. 3, 1993, PCT Pub. No. WO92/20142, PCT Pub. Date Nov. 12, 1992
PCT Filed Apr. 28, 1992, Ser. No. 137,166
Claims priority, application Austria, Apr. 29, 1991, A892/91
Int. Cl.[6] H02P 6/08; 5/40
U.S. Cl. 318—723 4 Claims



1. Process for operating a permanently excited single-phase alternating current machine, the process comprising:

applying a terminal voltage (u) by means of a frequency converters, said terminal voltage (u) having sinusoidal components and regions between first and second switch-over times (δ–δ, δ+Δ), within which said terminal voltage (u) assumes the maximum value of an available voltage,

wherein the effective value of a phase current (i) of the alternating current machine can be minimized whilst the torque is at a maximum.

5,485,073
PERSONAL COMPUTER FOR PERFORMING CHARGE AND SWITCHING CONTROL OF DIFFERENT TYPES OF BATTERY PACKS

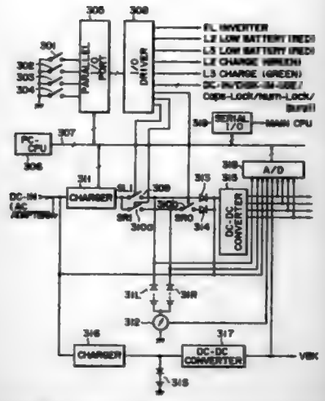
Masahiko Kasashima; Nobuyuki Nanno; Koulchirou Takeguchi; Kazuo Akashi; Yoshiaki Suzuki; Makoto Ando, and Yuji Yamanaka, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 633,358, Dec. 28, 1990, abandoned. This application Mar. 1, 1993, Ser. No. 26,219
Claims priority, application Japan, Dec. 28, 1989, 1-342415; Jun. 25, 1990, 2-166208; Jun. 25, 1990, 2-166209
Int. Cl.[6] H01M 10/46
U.S. Cl. 320—15 19 Claims

1. A portable computer system having a plurality of battery packs, each of said battery packs having one of a low current capacity and a high current capacity, said system comprising:

battery pack storage means for storing one of said plurality of battery packs;

determining means connected to the stored battery pack for determining if the stored battery pack is designated as a low current capacity pack or a high current capacity pack and for obtaining a determined designated current capacity based on the determination;



power detecting means connected to the stored battery pack and for detecting a power level output from the stored battery pack of a determined designated current capacity and for obtaining a detected power level based on the detection;

memory means connected to the means for determining and the power detecting means for storing characteristic data which is predetermined in accordance with current capacities and power levels of the stored battery pack of a determined designated current capacity;

reading means connected to the memory means, the determining means and the power detecting means for reading out the characteristic data corresponding to the determined designated current capacity and the detected power levels from the memory means as read out data; and

charging means connected to the reading means and the stored battery pack for charging the stored battery pack of determined designated current capacity in accordance with said read out data.

5,485,074

HIGH RATIO CURRENT MIRROR WITH ENHANCED POWER SUPPLY REJECTION RATIO

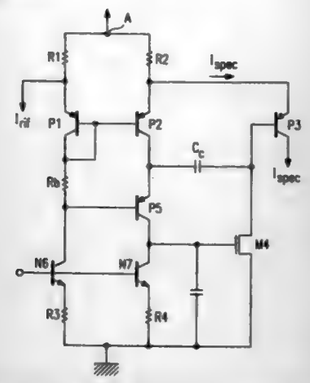
Luciano Tomasini, Monza (Milan), and Rinaldo Castello, Arcore, both of, Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Milan, Italy

Filed Aug. 26, 1993, Ser. No. 112,850

Claims priority, application European Pat. Off., Aug. 26, 1992, 92830453

Int. Cl.[6] G05F *3/16*

U.S. Cl. 323—315 **42 Claims**



23. An integrated current mirror circuit, comprising:

first and second transistors connected in a current-mirror configuration;

first and second resistors, respectively connected in series with said first and second transistors respectively, and having respective resistance values in a ratio corresponding to a desired proportion between output current and input current;

a current input connection between said first resistor and said first transistor, and a first current output connection between said second resistor and said second transistor, and a current output transistor connected to pass current from said first current output connection to a final current output connection;

an additional transistor cascoded with said second transistor;

a gain stage transistor connected to drive a control terminal of said current output transistor, and having a control terminal connected to be driven by said additional transistor;

a compensation capacitor connected from said control terminal of said current output transistor to a node between said second and said additional transistors; and

first and second load elements, each configured to pass a substantially constant current, said first load element being operatively connected in series with said first transistor and first resistor between first and second power supply voltages, and said second load element being operatively connected in series with said second transistor, second resistor, and said additional transistor between said first and second power supply voltages.

5,485,075

REACTIVE POWER COMPENSATING APPARATUS AND METHOD FOR REDUCING IN SWITCHING LOSS IN STEADY STATE OPERATION THEREOF

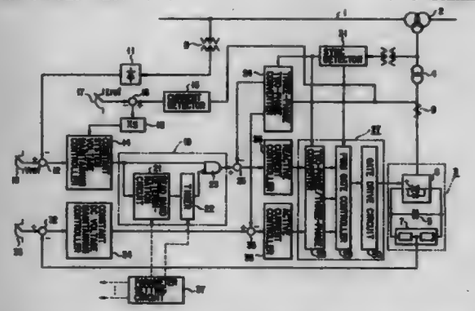
Takashi Mori, Tokyo, and Fumitoshi Ichikawa, Kawaguchi, both of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 30, 1994, Ser. No. 269,025

Claims priority, application Japan, Jul. 1, 1993, 5-189457

Int. Cl.[6] G05F *1/70;3/00*

U.S. Cl. 323—207 **9 Claims**



1. A self-commutated static vat compensator apparatus for stabilizing a power system, comprising:

a self-commutated converter connected to said power system, for receiving/supplying a power from/to said power system, said self-commutated converter including a DC capacitor, a DC voltage detector for detecting a DC voltage charged in the DC capacitor, and a self-turnoff switching device having a DC terminal connected to the DC capacitor, an AC terminal connected to said power system, and a control terminal to which a control pulse is applied;

voltage detection means for detecting a voltage of said power system;

current detection means for detecting a current flowing between said power system and said self-commutated converter;

system voltage control means for outputting a first target value signal of a reactive current in accordance with a difference between a voltage value of the voltage detected by said voltage detection means and a reference voltage value in order to conform the voltage of said power system to a present reference voltage corresponding to the reference voltage value;

reactive current control means connected to said system voltage control means, for outputting a second target value signal of the reactive current to be output from said self-commutated converter, in accordance with a difference between the first target value signal of the reactive current and a current value of the current detected by said current detection means;

loss reduction means for stopping the control pulse corresponding to the second target value of the reactive current supplied to the control terminal of the self-turnoff switching device when a reactive power output from said self-commutated converter is close to zero;

DC voltage control means for outputting a first target value signal of an active current in accordance with a difference between a DC voltage value of a reference DC voltage set for maintaining a DC voltage of said DC capacitor and a DC voltage value of the DC voltage detected by said DC voltage detector;

active current control means for outputting a second target value signal of the active current to be output from said self-commutated converter, in accordance with a difference between the first target value of the active current and the current value of the current detected by said current detection means; and

converter control means for receiving the second target value signal of reactive current input from said reactive current control means and the second target value signal of active current input from said active current control means, and applying the control pulse to the control terminal of the self-turnoff switching device of the self-commutated converter in response to the second target value signal of the reactive current and the second target value of the active current respectively.

5,485,076

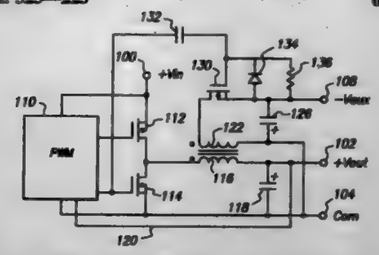
HIGH EFFICIENCY AUXILIARY SWITCHING POWER SUPPLIES

David S. Schoenwald, Los Gatos, and Charles O. Forge, Los Altos, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Aug. 16, 1994, Ser. No. 291,266

Int. Cl.[6] H02M *3/335*

U.S. Cl. 323—225 **6 Claims**



1. In a switching power supply for producing a first output having a controlling circuit controlling a first switch connected to a first end of a first transformer winding, and the first output connected to the second end of the first transformer winding, a secondary output comprising:

a second transformer winding inductively coupled to the first transformer winding,

a second switch connected to the second transformer winding,

drive coupling connected from the controlling circuit to the second switch for switching the second switch in synchrony with the first switch, and

a filter capacitor connected across the second switch and the second transformer winding for filtering; the secondary output.

5,485,077

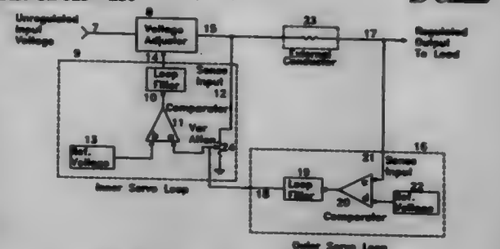
CONCENTRIC SERVO VOLTAGE REGULATOR UTILIZING AN INNER SERVO LOOP AND AN OUTER SERVO LOOP

Dean Werrbach, Burbank, Calif., assignor to Apex Systems, Ltd., Sun Valley, Calif.

Filed Aug. 9, 1993, Ser. No. 103,522

Int. Cl.[6] G05F *1/44*

U.S. Cl. 323—286 **29 Claims**



13. A concentric servo voltage regulator comprising:

a. voltage adjustor having an input for receiving an unregulated input voltage, an output for outputting a regulated output voltage to a load, and a control terminal for receiving a control signal;

b. an inner servo loop for providing said control signal to said voltage adjustor, the inner servo loop having an inner servo loop comparator and an inner servo loop filter, the inner servo loop comparator having a first input for receiving a first sense voltage that is a sample of said regulated output voltage, a second input for receiving a variable sense threshold, and an output, the inner servo loop comparator generating a logical high or low error signal at its output when the first sense voltage is higher or lower than the variable sense threshold, and the inner servo loop filter connected between the output of the inner servo loop comparator and said control terminal of said voltage adjustor; and

c. an outer servo loop for providing said variable sense threshold to said inner servo loop, the outer servo loop having an outer servo loop comparator and an outer servo loop filter, the outer servo loop comparator having a first input for receiving a second sense voltage that is a sample of an actual voltage on said load, a second input for receiving a reference voltage, and an output, the outer servo loop comparator generating a logical high or low error signal at its output when the second sense voltage is higher or lower than the reference voltage, and the outer servo loop filter connected between the output of the outer servo loop comparator and said second input of said inner servo loop comparator;

d. whereby said outer servo loop can sense the actual voltage on said load and provide said variable sense threshold to said inner servo loop, so that said control signal produced by said inner servo loop can cause said voltage adjustor to adjust and compensate any fluctuation in said output voltage, and thereby provide a desirable actual voltage on said load.

5,485,078

METHOD FOR ANALYZING A CIRCUIT BOARD WAVEFORM FOR FAULTS

Peter A. Likes, West Olive; Mark C. Jacobs, Holland, and Monte E. Van Nortwick, Hudsonville, all of Mich., assignors to Venturedyne, Ltd., Milwaukee, Wis.

Filed Mar. 23, 1994, Ser. No. 216,409

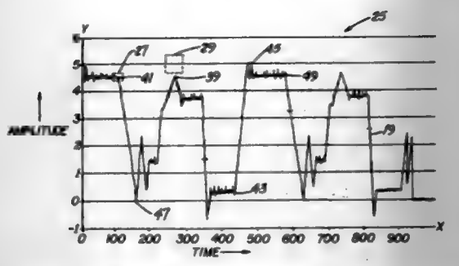
Int. Cl.[6] G01R *31/00*

U.S. Cl. 324—76.12 **10 Claims**

1. A method employed by a user of an apparatus for analyzing aberrations of a circuit board electrical waveform portrayed on a graph, the method including the steps of:

selecting a waveform to be analyzed;

establishing user-selected X and Y coordinates on the graph to define the boundary of an area; and



generating a fault signal if the selected waveform is in a predetermined position with respect to the area defined by the user.

5,485,079

MAGNETO-OPTICAL ELEMENT AND OPTICAL MAGNETIC FIELD SENSOR

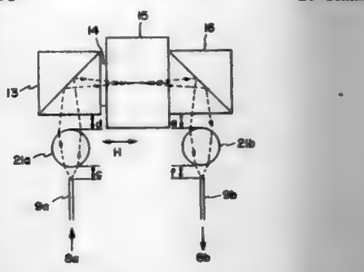
Nobuki Itoh, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed Mar. 18, 1994, Ser. No. 214,462

Claims priority, application Japan, Mar. 29, 1993, 5-069631; Jun. 1, 1993, 5-130817

Int. Cl.[6] G01R *31/00*

U.S. Cl. 324—96 **20 Claims**



1. An optical magnetic field sensor, comprising:

a first lens, a polarizer which receives input light from the first lens,

a magneto-optical element which receives light from the polarizer,

an analyzer which receives light from the magneto-optical element, wherein a transmission-polarization direction of the analyzer is different from a transmission-polarization direction of said polarizer, and

a second lens which receives light from the analyzer, wherein the first lens and the second lens form a light-converging optical system,

wherein the first lens, the polarizer, the magneto-optical element, the analyzer and the second lens are arranged in this order along at least a light propagating direction to detect a magnetic field to be measured, and to output an output light intensity corresponding to the measured magnetic field.

5,485,080

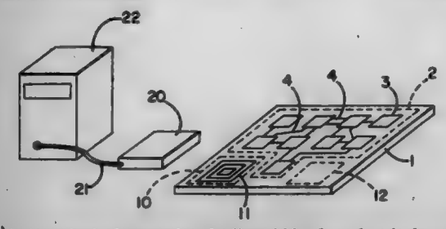
NON-CONTACT MEASUREMENT OF LINEWIDTHS OF CONDUCTORS IN SEMICONDUCTOR DEVICE STRUCTURES

Robert D. Larrabee, Derwood, and Jay F. Marchiando, Germantown, both of Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Sep. 8, 1993, Ser. No. 117,672

Int. Cl.[6] G01R *31/00;27/00*

U.S. Cl. 324—158.1 **17 Claims**



1. A method of measuring the linewidth of an electrical conductor on a semiconductor substrate comprising:

preparing mutually separated test and interconnection areas on a surface of a semiconductor substrate;

forming an electrical interconnection conductor on the surface of the substrate in the interconnection area having a linewidth and electrically interconnecting elements on the surface;

simultaneously with forming the interconnection conductor, forming in the test area a test structure having a plurality of mutually electrically isolated closed loops of the electrical conductor having the same linewidth as the interconnection conductor;

measuring the impedance of the test structure using a coil disposed opposite the test area, spaced from the surface, and inductively coupled to the test structure without contacting the test structure; and

correlating the measured impedance of the test structure with impedance measurements of geometrically identical structures of conductors having known linewidths to determine the linewidth of the test structure and, thereby, the linewidth of the interconnection conductor.

5,485,081

TEST POINT REDUCTION SYSTEM FOR A PRINTED CIRCUIT BOARD TEST SYSTEM

Robert E. Whitehead, Irving; Evan J. Evans, Alvord, and Stephen J. Foster, Garland, all of Tex., assignors to Electronic Packaging Co., Dallas, Tex.

Continuation-in-part of Ser. No. 605,925, Oct. 30, 1990, abandoned. This application May 14, 1992, Ser. No. 883,160

Int. Cl.[6] G06F *3/06*

U.S. Cl. 324—158.1 **8 Claims**

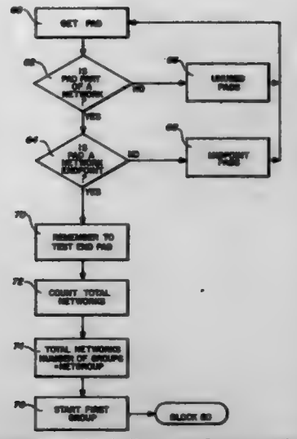
5. A method for testing a printed circuit board by reducing the number of points to be tested on a printed circuit board (**20**), the printed circuit board including a plurality of network traces (**24**), each network trace having end points (**24***a*, **24***b*) and a plurality of pads (**22**), the coordinates of the network traces, end points, and pads being digitally represented and stored in the form of coordinate data in a digital storage media (**60**, **80**, **86**), comprising the steps of:

providing a printed circuit board testing device having a test surface including a plurality of test points, and being arranged for contacting the printed circuit board when tested;

identifying (**82**, **84**, **86**) pad coordinate data and network trace coordinate data;

identifying (**62**, **64**) the end point coordinates of each network trace of the plurality of network traces by analyzing the stored coordinates data;

generating (**90**, **94**, **98**, **100**) coordinate data representing the coordinates of ones of the plurality of network traces located



within a predetermined distance of one another to form a plurality of groups of network traces;

generating (**130**, **132**, **136**, **138**, **140**) coordinate data representing a connection of the identified end points of network traces within each group of network traces to configure a continuous trace having one pair of end points for each group of network traces; and

actuating ones of the plurality of test points of the testing device in response to the coordinate data of the one pair of end points for each group of network traces for testing the printed circuit board.

5,485,082

METHOD OF CALIBRATING A THICKNESS MEASURING DEVICE AND DEVICE FOR MEASURING OR MONITORING THE THICKNESS OF LAYERS, TAPES, FOILS, AND THE LIKE

Karl Wisspeintner, and Roland Mandl, both of Ortenburg, Germany, assignors to Micro-Epsilon Messtechnik GmbH & Co. KG, Ortenburg, Germany

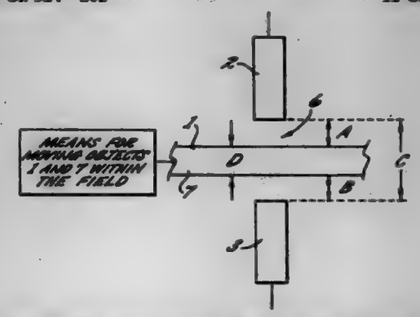
PCT No. PCT/DE91/00292, § 371 Date Dec. 10, 1992, § 102(e) Date Dec. 10, 1992, PCT Pub. No. WO91/15733, PCT Pub. Date Oct. 17, 1991

PCT Filed Apr. 5, 1990, Ser. No. 934,526

Claims priority, application Germany, Apr. 11, 1990, 40 11 717.0

Int. Cl.[6] G01R *35/00;* **G01B** *21/08;7/06;11/06*

U.S. Cl. 324—202 **12 Claims**



6. An apparatus for measuring the thickness of an object and which is characterized by the ability to be accurately calibrated to compensate for the non-linear behavior within the measuring range of the measuring sensors and also for the variable position of the object to be measured within the measuring field, and comprising

at least two non-contacting displacement measuring sensors (2, 3) forming a measuring field;

means for moving a reference object (7) with a predetermined known thickness (D_{ref}) within the measuring field (6) of the displacement measuring sensors (2, 3) and so that the distances (A, B) between the respective displacement measuring sensors (2, 3) and the reference object (7) at each of a plurality of relative positions of the reference object (7) toward and away from the sensors within the measuring field may be measured;

means for determining any measuring error of the apparatus based upon the distances (A, B) measured by the displacement measuring sensors (2, 3) and the known thickness of the reference object (7) at each of the relative positions toward and away from the sensors; and

means for storing in a data storage (8) any measuring error of the apparatus determined at each of the relative positions, and so as to permit the thickness measurement of an object which is moved through the measuring field and is susceptible to fluttering toward and away from the sensors, to be corrected for non-linearities of the displacement measuring sensors (2, 3) and for the variable position of the object based upon the stored measuring error for the respective relative position of the object.

5,485,083

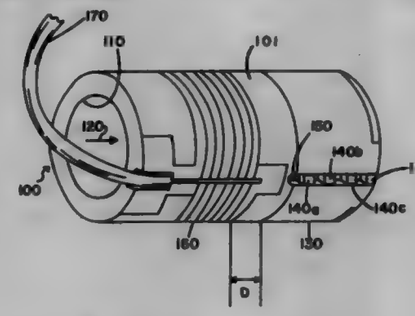
TRANSFORMER COUPLED IN-LINE METALLIC DEBRIS SENSOR

Gerald F. Pulice, Skillman, N.J., assignor to Smiths Industries, Florham Park, N.J.

Filed Oct. 28, 1993, Ser. No. 143,846

Int. Cl.[6] G01N *27/74;* **G01R** *33/12*

U.S. Cl. 324—204 **17 Claims**



1. A metallic debris sensor comprising:

means for defining a flow passageway for fluid containing metallic debris;

resonant coil and capacitive means, disposed about said passageway defining means, for sensing the passage of said metallic debris and producing signals indicative thereof;

conductor means, having a predetermined impedance and coupled to said resonant coil and capacitive means, for conducting said indicative signals; and

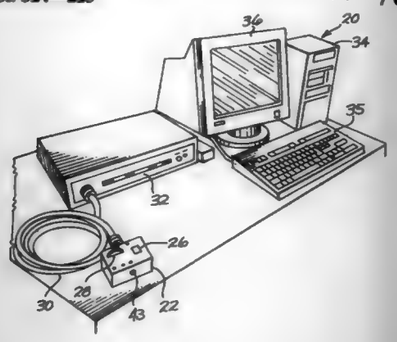
multiple turn coil means, disposed about said passageway defining means colinear with said resonant coil and capacitive means and loosely coupled thereto to form a step-up transformer therewith, for matching said predetermined impedance of said conductor means.

5,485,084

APPARATUS AND METHOD FOR DETECTING STRUCTURAL CRACKS USING A MOVABLE DETECTOR

Michael J. Duncan, Kent; Barry A. Fetzer; Glenn A. Geithman, both of Renton; Arthur P. Ricker, Seattle, and Clyde T. Uyehara, Renton, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 10, 1993, Ser. No. 58,183
Int. Cl.[6] G01N *27/62;27/72;* G01R *33/12*
U.S. Cl. 324—225 7 Claims



1. Apparatus for detecting a crack in a workpiece, the apparatus comprising:

a. means, which are movable with respect to the workpiece, for detecting a change in an eddy current in the workpiece due to the presence of the crack when the detecting means is moved near the crack;

b. means for generating a measurement signal which is a function of the change in the eddy current due to the presence of the crack such that the measurement signal has a first component when the detecting means moves in a first direction relative to the workpiece and a second component when the moving means moves in a second direction relative to the workpiece;

c. means for removing the second component from the measurement signal, the second component removing means including

(i) means for generating a first signal, represented by a vector having an endpoint x1,y1 of a vector coordinate system, resulting from movement of the detecting means relative to the workpiece,

(ii) means for generating a second signal, represented by a vector having an endpoint x_2,y_2 of the vector coordinate system, resulting from movement of the detecting means relative to the workpiece, such that the second signal differs from the first signal due to movement of the detecting means in the second direction relative to the workpiece,

(iii) means for calculating a compensation vector extending between endpoint x1,y1 and endpoint x2,y2,

(iv) means for rotating the vector coordinate system so that an axis of the vector coordinate system is parallel to the compensation vector,

(iv) means for referencing the first component and the second component of the measurement signal to the rotated vector coordinate system, and

(v) means for removing the second component of the measurement signal by ignoring any components of the measurement signal in the rotated vector coordinate system which are parallel to the compensation vector; and

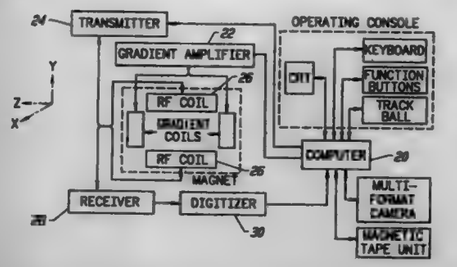
d. means for generating a visual display of the crack as a function of the first component of the measurement signal.

5,485,085

METHOD FOR CORRECTING MAGNETIC FIELD INHOMOGENEITY DISTORTION IN MRI IMAGES HAVING DISCONNECTED REGIONS

Thilaka Sumanaweera, Palo Alto; Napel Sandy A.; Gary H. Glover, both of Menlo Park, and John R. Adler, Jr., Stanford, all of Calif., assignors to Board of Trustees of the Leland Stanford Junior University

Filed Nov. 28, 1994, Ser. No. 345,518
Int. Cl.[6] G01V *3/14*
U.S. Cl. 324—307 6 Claims



1. In a method of correcting spatial distortion in magnetic resonance images due to magnetic field inhomogeneity in an object having disconnected regions, a method of correcting for phase-wraps in detected phase accural between the disconnected regions comprising the steps of

(a) obtaining a first map of off-resonant nuclei spins $\Delta\phi_1$ during a first known time interval, ΔT_{E2}, as a measure of perturbations, ΔB_o in a magnetic field, B_o with ΔT_{E2} chosen so that the phase-difference between fat and water signals is a non-zero integer multiple of 2π, and with phase-wraps between disconnected regions in said map of $\Delta\phi_1$,

(b) obtaining a second map of off-resonant nuclei spins, $\Delta\phi_2$, encompassing all disconnected regions during a second known time interval, ΔT_{E1}, as a measure of perturbations, ΔB_o, in said magnetic field, B_o, with a ΔT_{E1} chosen to eliminate phase-wrap in said map of $\Delta\phi_2$,

(c) subtracting from points in said first map a ratio, $\Delta T_{E2}/\Delta T_{E1}$, of corresponding points in said second map, and

(d) dividing said phase difference by 2π to obtain a measure of phase-wrap at said points in said first map, and

(e) subtracting from said first map said measure of phase-wrap.

5,485,086

CONTINUOUS FLUOROSCOPIC MRI USING SPIRAL K-SPACE SCANNING

Craig H. Meyer, Palo Alto, and Albert Macovski, Menlo Park, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Filed Jul. 26, 1994, Ser. No. 280,626
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—307 12 Claims

1. A method of acquiring continuous fluoroscopic data using magnetic resonance imaging comprising the steps of

a) placing an object in a magnetic field,

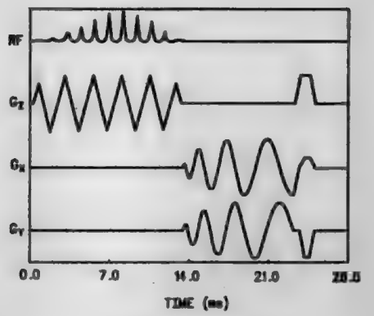
b) exciting nuclei in said object with an RF excitation pulse,

c) applying magnetic gradients to said object whereby magnetic resonance signals emitted from said excited nuclei traverse a spiral in k-space,

d) detecting magnetic resonance signals emitted from said exited nuclei,

e) repeating steps b), c) and d) at different initial trajectories to create an interleaved set of spirals in k-space, and

f) forming a fluoroscopic image based on said magnetic resonance signals.



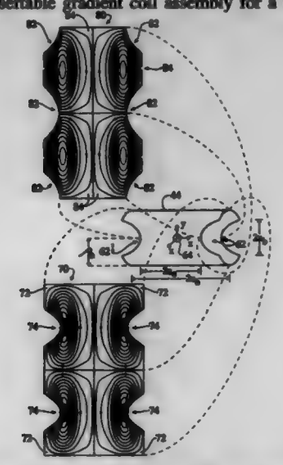
5,485,887

MAGNETIC RESONANCE INSERT GRADIENT COILS WITH PARABOLIC RETURNS FOR IMPROVED ACCESS

Michael A. Morich, Mentor; Labros Petropoulos, Cleveland Heights, and David A. Lampman, Eastlake, all of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Filed Aug. 5, 1994, Ser. No. 286,887
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—318 18 Claims

1. In an insertable gradient coil assembly for a magnetic resonance imaging apparatus, which insertable gradient coil assembly includes a dielectric cylinder having an interior bore dimensioned to receive a region of interest of the subject to be imaged, the cylinder carrying gradient coils for generating linear magnetic field gradients through the region of interest, the gradient coils being mounted symmetrically relative to an isocenter of the gradient coil assembly such that the generation of magnetic field gradients exerts substantially no net torque on the gradient coil assembly, the improvement comprising:



at least one cutout region defined adjacent a first end of the cylinder for receiving a portion of the subject adjacent the region of interest, the gradient coils including contoured first winding portions which follow a contour of the cutout region and contoured second winding portions adjacent a second end of the cylinder, the contoured second winding portions being mirror image symmetric with respect to the contoured first winding portions about the isocenter to cancel torques exerted on the gradient coil assembly due to the contoured first winding portions.

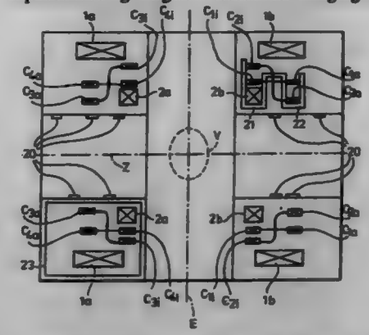
5,485,888

THERAPY TOMOGRAPH WITH HOMOGENEITY DEVICE

Michael Westphal, Offenbach, and Günther Laukien, Rheinstetten, both of, Germany, assignors to Bruker Analytische Messtechnik GmbH, Rheinstetten, Germany

Filed May 9, 1995, Ser. No. 437,598
Claims priority, application Germany, May 13, 1994, 44 16 907.8
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—320 8 Claims

1. A superconducting magnetic resonance imaging apparatus having a homogeneous magnetic field directed along a z-coordinate axis and having a center at an origin of the z-coordinate axis, the apparatus comprising:



a pair of mutually similar outer coils coaxial with the z-axis at a first axial separation g_1 from each other and symmetric with respect to a middle plane perpendicular to the z-axis, the first axial separation being between ¼ and ¾ of an outer coil inner diameter, the outer coils having a first current flowing in a first current direction;

a pair of mutually similar inner coils, having an inner coil width b, coaxial with the outer coils at a second axial separation g_2 from each other and symmetric with respect to the middle plane, the second axial separation being within 15% of the first axial separation, the inner coils having a second current flowing in a second current direction opposite the first current direction; a cryostat containing the outer and inner field coils and having an axial room temperature bore extending along the z-axis and having a transverse access opening transverse to the z-axis;

ferromagnetic homogeneity means, located at selected positions on a surface of the room temperature bore on both sides of the transverse access opening, the positions being selected to compensate at least one component of a tesseral field distortion of a type A_{nm} with n=1 through 6 and m=l through n; and

a least four superconducting correction coils, each correction coil having separate current terminals and being coaxial with the outer and inner field coils, each correction coil comprising a first partial coil having a first partial current flowing in a first partial current direction and a second partial coil having a second partial current flowing in a second partial current direction opposite the first partial current direction, wherein the first and second partial coils are coaxial with the z-axis and have a first partial diameter and a second partial diameter which are less than the outer coil inner diameter, wherein the first partial coils are located at an axial distance z_1 from the center, with $g_2/2 \leq |z_1| \leq g_2/2+b$ and the second partial coils are located at an axial distance z_2 from the center, with $g_2/2+b<|z_2|$.

5,485,089

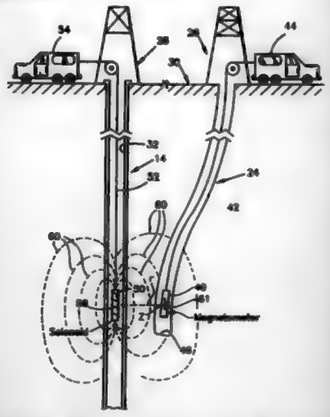
METHOD AND APPARATUS FOR MEASURING DISTANCE AND DIRECTION BY MOVABLE MAGNETIC FIELD SOURCE

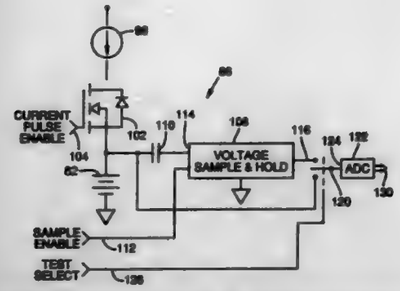
Arthur F. Kuckes, Ithaca, N.Y., assignor to Vector Magnetics, Inc., Ithaca, N.Y.

Continuation-in-part of Ser. No. 972,835, Nov. 6, 1992, abandoned. This application Oct. 8, 1993, Ser. No. 133,295

Int. Cl.[6] G01V *3/08;3/26*

U.S. Cl. 324—346 **33 Claims**





1. A method for determining the distance from a borehole to a nearby, substantially parallel target well, comprising:

positioning a magnetic field sensor at a first depth within a partially drilled borehole to detect x, y, and z components of magnetic fields at the location of said sensor;

placing a solenoid in a target well;

energizing the solenoid to produce a magnetic field in the earth surrounding the target well and the borehole;

positioning said energized solenoid in said target well at locations above and below a plane perpendicular to said borehole at said first depth;

measuring at said sensor the magnitude of the x, y, and z components of said solenoid magnetic field at selected locations of said solenoid to identify magnetic field maximum values on opposite sides of said plane;

measuring the depth of said solenoid in said target well for each magnetic field maximum value; and

determining the difference between the depths of said solenoid at each of said field maximum values, which difference is equal to the lateral distance between said sensor in said relief borehole and said solenoid in said target well at said first depth.

5,485,090

METHOD AND APPARATUS FOR DIFFERENTIATING BATTERY TYPES

Charles S. Stephens, Corvallis, Oreg., assignor to Hewlett-Packard Corporation, Palo Alto, Calif.

Filed Feb. 11, 1993, Ser. No. 17,053

Int. Cl.[6] G01N *27/416;* **H02J** *7/04*

U.S. Cl. 324—433 **12 Claims**

1. A method of determining a battery's type from a plurality of candidate cell types, the battery having positive and negative output voltage terminals, the candidate cell types comprising a first cell type and a second cell type, the method comprising:

measuring the series resistance of the battery between the positive and negative output voltage terminals thereof;

determining whether the series resistance of the battery lies within a predetermined range of series resistance values exhibited by batteries of both the first and second cell types;

when the series resistance of the battery is determined to lie within the predetermined range of series resistance values exhibited by batteries of both the first and second cell types, the method further comprising the steps of:

measuring the voltage of the battery between the positive and negative output voltage terminals thereof;

determining whether the voltage of the battery lies within a first predetermined range of voltages exhibited by batteries of the first cell type whose series resistance is within the predetermined range of series resistance values;

determining whether the voltage of the battery lies within a second predetermined range of voltages exhibited by batteries of the second cell type whose series resistance is within the predetermined range of series resistance values;

identifying the battery as having the first cell type if the series resistance is within the predetermined range of series resistance values and the voltage is within the first range of voltages; and

identifying the battery as having the second cell type if the series resistance is within the predetermined range of series resistance values and the voltage is within the second range of voltages.

5,485,091

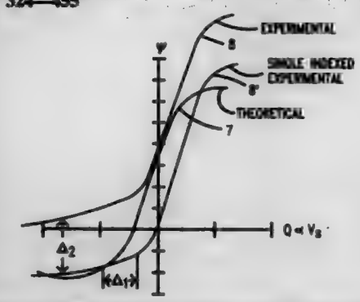
CONTACTLESS ELECTRICAL THIN OXIDE MEASUREMENTS

Roger L. Verkuil, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 12, 1995, Ser. No. 440,418

Int. Cl.[6] G01R *31/26;* **G01N** *27/60*

U.S. Cl. 324—455 **9 Claims**



1. In a method for measuring the thickness of an insulating layer on a semiconductor substrate, the steps comprising:

repetitively depositing a fixed charge density on the surface of said layer,

measuring the resultant changes in the surface potential of said layer relative to the bulk of said substrate,

establishing a theoretical bandbending versus bias characteristic for said layer and substrate, undergoing said repetitive deposition of charge density, for an assumed value of said thickness,

determining an experimental bandbending versus bias characteristic using said measured change in the insulating layer surface potential for each said deposited charge, and said assumed value of thickness,

comparing said theoretical and said experimental characteristics to ascertain any difference in the accumulation region of said characteristics, and

iteratively incrementing said assumed value while using said measured changes in said surface potential to determine corresponding experimental bandbending versus bias characteristics and

comparing each said corresponding characteristic with said theoretical characteristic until one of said corresponding characteristics matches said theoretical characteristic in the substrate accumulation region of said characteristics.

5,485,092

METHOD AND DEVICE FOR ELECTROSTATICALLY INVESTIGATING SURFACE AND SUB-SURFACE STRUCTURES

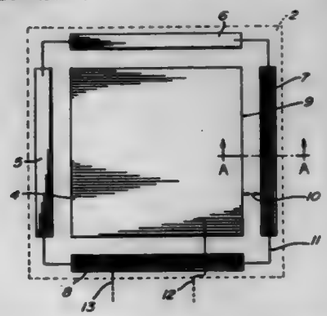
Gabriel Fortin, 495, chemin de la cote Ste-Catherine, Outremont, Québec, Canada

PCT No. PCT/CA91/00270, § 371 Date Jan. 31, 1994, § 102(e) Date Jan. 31, 1994, PCT Pub. No. WO93/03403, PCT Pub. Date Feb. 18, 1993

PCT Filed Aug. 1, 1991, Ser. No. 190,046

Int. Cl.[6] G01N *27/60*

U.S. Cl. 324—457 **13 Claims**



7. An electrostatic sensing device for investigating a surface and/or sub-surface structure presenting a permittivity to an electric field which is a function of at least one characteristic of said structure, comprising:

at least one first electrically conductive sensor plate that can be placed in the proximity of said structure under investigation, said first sensor plate being planar and comprising a first edge;

at least one second electrically conducively sensor plate comprising a second edge spaced apart from said first edge, said second sensor plate defining an acute angle with a plane of said first sensor plate;

means for electrically charging said first and second plates at different rates, said charging rate of at least one said first and second plates being affected by said permittivity of the structure to said electric field produced by said plates being charged; and

detecting and generating circuit for detecting a difference between respective electric voltage on said first and second plates as said plates charge, and for generating an output signal representative of the amplitude of said voltage differences which is affected by said charging rates of said first and second plates which are affected by said permittivity of said structure, whereby said output signal is a function of said permittivity and is therefore indicatively of at least one characteristic of said structure under investigation; and

means for adjusting a distance between said first and second edges and said acute angle of focus said electric field produced by said first and second sensor plates being charged, in said surface or sub-surface area of interest.

5,485,093

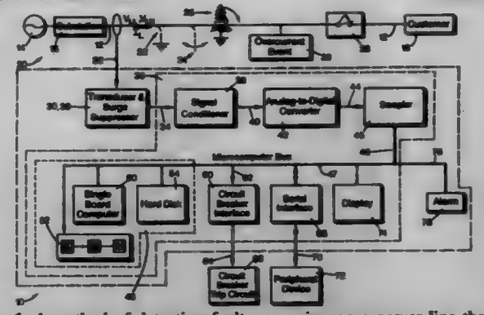
RANDOMNESS FAULT DETECTION SYSTEM

B. Don Russell; B. Michael Aucoin, both of College Station, and Carl L. Benner, Bryan, all of Tex., assignors to The Texas A & M University System, College Station, Tex.

Filed Oct. 15, 1993, Ser. No. 138,410

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—522 **3 Claims**



1. A method of detecting faults occurring on a power line that carries a power signal, said method comprising the steps of:

sampling said power signal to obtain energy values;

storing said energy values in a buffer to form buffered energy values;

generating a first threshold value based on the average of said buffered energy values;

sampling said power signal to obtain a new energy value;

comparing said new energy value to said first threshold value;

replacing one of said buffered energy values with said new energy value when said new energy value is less than or equal to said first threshold value;

executing event state operations when said new energy value is greater than said first threshold value, said executing step including the steps of

sampling said power signal to obtain event state energy values,

establishing a first count of the number of times said event state energy values are greater than an upper threshold value or less than a lower threshold value and determining whether said first count exceeds a predetermined threshold and thereby indicates a fault exists on said power line, and

maintaining a second count of the number of adjacent event state energy values that differ from one another, in absolute value, by more than a predetermined amount and determining whether said second count exceeds a specified threshold and thereby indicates a fault exists on said power line.

5,485,094

METHOD FOR TESTING PRINTED WIRING BOARDS FOR SHORT CIRCUITS

Chihiro Endoh, and Toshihiko Tada, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 17, 1994, Ser. No. 214,317

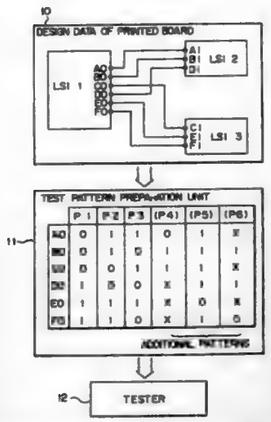
Claims priority, application Japan, Jun. 10, 1993, 5-138141

Int. Cl.[6] G01R *31/28;* **G06F** *11/22*

U.S. Cl. 324—537 **6 Claims**

1. A method of testing a printed wiring board, to detect short-circuit failures among wires arranged on the board according to test patterns prepared in advance comprising the steps of:

dividing the output pins of each circuit element mounted on the board into a group to which a logical value 0 is assignable and a group to which a logical value 1 is assignable, preparing a first test pattern for detecting short-circuit failures between the groups, and repeatedly dividing the output pins in each of the groups into a group to which the logical value 0 is assignable and a group to which the logical value 1 is assignable and wherein the ratio of the respective numbers of the output pins in the two divided groups is close to 1, to thereby provide first test patterns for detecting short-circuit failures; and



applying the first test patterns to the board using a tester and determining whether or not values observed at predetermined positions agree with expected output values, to thereby detect short-circuit failures among the wires.

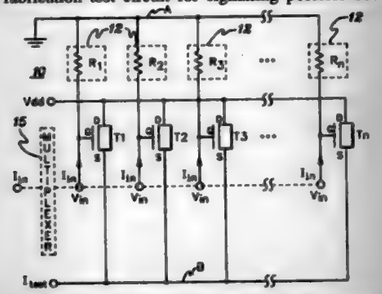
5,485,095

FABRICATION TEST CIRCUIT AND METHOD FOR SIGNALLING OUT-OF-SPEC RESISTANCE IN INTEGRATED CIRCUIT STRUCTURE

John E. Bertsch, Essex; Randy W. Mann, Jericho; Edward J. Nowak, Essex, and Minh H. Tong, Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 10, 1994, Ser. No. 337,342
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—537 **33 Claims**

1. A fabrication test circuit for signalling possible out-of-spec



resistance in a current carrying structure of an integrated circuit, said fabrication test circuit comprising:

a plurality of monitor structures connected in parallel, each monitor structure comprising an associated test structure and threshold sensitive device, each test structure being predesigned relative to the current carrying structure of the integrated circuit such that an out-of-spec resistance in the test structure signals a possible out-of-spec resistance in the current carrying structure, the threshold sensitive device of each monitor structure outputting a fail signal when a resistance proportional signal from the associated test structure is above a predefined level, said fail signal being representative of out-of-spec resistance in the associated test structure; and

means for monitoring said plurality of monitor structures for a fail signal output from at least one monitor structure of the plurality of monitor structures, said fail signal output from said at least one monitor structure signalling possible out-of-spec resistance in the current carrying structure.

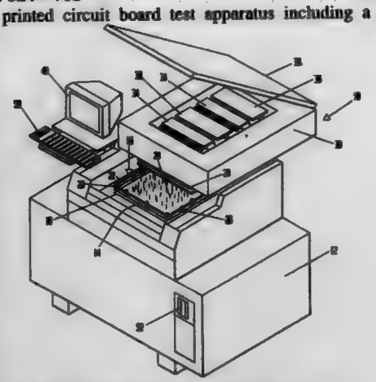
5,485,096

PRINTED CIRCUIT BOARD TESTER HAVING A TEST BED WITH SPRING PROBES AND EASILY REPLACEABLE SWITCH CARDS

Allen Aksu, 1044 Santiago Dr., Newport Beach, Calif. 92660

Filed Apr. 5, 1994, Ser. No. 223,166
Int. Cl.[6] G01R *1/073;31/02*
U.S. Cl. 324—761 **20 Claims**

1. A printed circuit board test apparatus including a support



frame and vertically moveable platen comprising:

a. a test bed formed as a planar member residing on said platen and having a plurality of through channels located at predetermined locations across the surface thereof to form a plurality of row of through channels;

b. a plurality of test probes, located one each in selected channels of said through channels, each of said test probes comprising a probe plunger which has an electrical contact at its upper end, and which is received within a tubular body and resiliently biased into an extended position in said body by a compression spring, also received within said body, and with said body having a pin-receiving socket at its end opposite said probe plunger;

c. a plurality of planar switch cards, each switch card supporting along one edge thereof a plurality of pins attached at one end thereof to said switch card and having their opposite ends disposed in rows at locations corresponding to said predetermined locations, said switch card supporting at another location thereon at least one connector having a plurality of connector contacts, with conductive circuit means carried on said switch card to interconnect selected ones of said pins to selected ones of said connector contacts, with said opposite ends of said pins received in respective ones of said sockets thereby establishing a plurality of conductive paths from the electrical contacts of selected ones of said probes to selected ones of said connector means; and

d. a plurality of said pins being bent at said one end substantially orthogonal to its respective switch card;

e. a plurality of support bars attached to said frame and disposed parallel to said switch cards, each bar of said plurality located between adjacent switch cards adjacent said one edge thereof, with the bent ends of said pins supported by said support bars to support said planar switch cards orthogonal to said planar member.

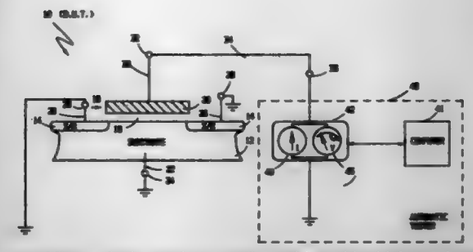
5,485,097

METHOD OF ELECTRICALLY MEASURING A THIN OXIDE THICKNESS BY TUNNEL VOLTAGE

Larry Y. Wang, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 8, 1994, Ser. No. 287,332
Int. Cl.[6] G01R *27/00*
U.S. Cl. 324—765 **6 Claims**

1. A method of electrically measuring a thin oxide thickness by tunnel voltage in a semiconductor integrated circuit device, said method comprising the steps of:



providing a device under test whose thin oxide thickness in the range of 50 Å to 100 Å is to be determined in which said device under test has a first terminal and a second terminal;

connecting one of said first and second terminals to a ground potential;

forcing a fixed current density of 20 mA/cm^2 so as to avoid resistive loading and to prevent rupture of the oxide through the other one of the first and second terminals by a forced measure unit;

measuring an initial tunneling voltage developed across the first and second terminals; and

calculating the oxide electrical thickness through a predetermined calibration equation obtained between known initial tunneling voltage measurements and known oxide thickness measurements.

5,485,098

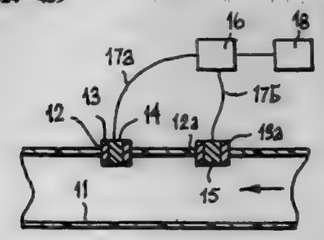
Patent Not Issued For This Number

5,485,099

SENSING METHOD AND DEVICE

Brian Collins, Chalfont St. Giles, and Michael J. Blanchard, Chesham, both of, United Kingdom, assignors to Blanchard Marketing Services Limited, Buckinghamshire, United Kingdom

PCT No. PCT/GB90/01456, § 371 Date May 14, 1992, § 102(e) Date May 14, 1992, PCT Pub. No. WO91/04486, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 20, 1990, Ser. No. 854,652
Claims priority, application United Kingdom, Sep. 22, 1989, 8921413; Feb. 7, 1990, 9002664; Mar. 6, 1990, 9004974; Jul. 12, 1990, 9015384
Int. Cl.[6] G01R *29/26*
U.S. Cl. 324—439 **19 Claims**



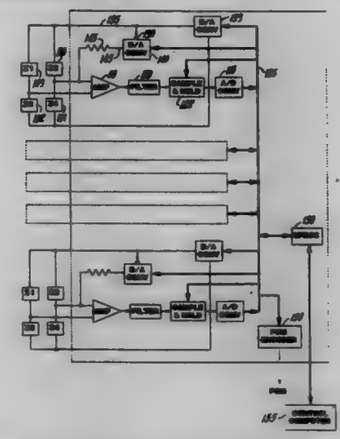
1. A method for sensing the course of an aggregation of an aqueous dispersion of charged particles in an aggregation control loop comprising a galvanic cell having a metallic indicator electrode without any particular ion-specificity and a second electrode, the electrolyte of the cell being a mixed stream of the dispersion and an aggregant for the charged particles, adding the aggregant to the stream upstream of the electrodes and mixing the aggregant into the stream to form the mixed stream, maintaining the electrolyte in contact with the indicator electrode, sensing a potential difference appearing between the electrodes, and controlling the addition of the aggregant to maintain the potential difference within a control range.

5,485,100

AUTOMATICALLY BALANCED AND TESTED BRIDGE MEASUREMENT CIRCUIT, AND METHOD

James R. Kogut, Meriden, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 4, 1993, Ser. No. 71,556
Int. Cl.[5] G01R *17/00*
U.S. Cl. 324—610 **11 Claims**



5. A bridge measurement circuit comprising:

four legs connected as a bridge, at least one of which comprises a variable impedance device the impedance of which varies in relation to a quantity being measured;

output terminals, connected across a first pair of opposite apexes of said bridge, for providing a bridge output signal indicative of said quantity being measured;

supply voltage means for providing a supply voltage across a second pair of opposite apexes of said bridge measurement circuit, the magnitude of said supply voltage being selected based on the expected output range of the bridge measurement circuit;

balance voltage means for providing a balance voltage to one of said output terminals of the bridge measurement circuit, the magnitude of said output signal varying in response to changes in said balance voltage;

control means for providing an automatic balance command signal, said automatic balance command signal only being provided when said output signal is a known or expected quantity; and

signal processing means response to said automatic balance command signal for automatically adjusting said balance voltage such that said output signal is equal to a predetermined reference signal.

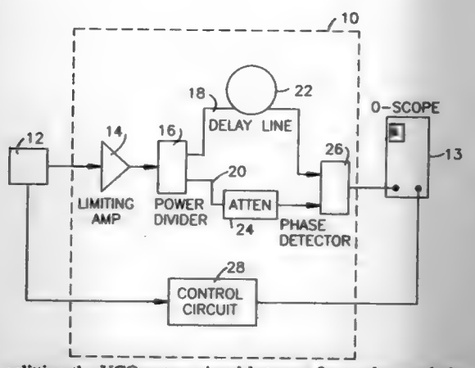
5,485,101

FREQUENCY ANALYZER FOR SUB-MICROSECOND TESTING

Mark Hynes, 3208 Oakmont Dr., Sierra Vista, Ariz. 85635

Filed Apr. 14, 1993, Ser. No. 47,527
Int. Cl.[6] G01R *23/00*
U.S. Cl. 324—617 **12 Claims**

12. A method for measuring the settling time of frequency changes in a voltage controlled oscillator (VCO) output signal in the modulation domain comprising the steps of:



splitting the VCO output signal between first and second channels for carrying corresponding first and second signals;

delaying the signal in one of said channels relative to the other for introducing a phase shift therebetween;

detecting the phase difference between the first and second signals for producing a phase signal;

initiating a signal for changing the VCO output frequency; and

detecting the phase signal and the initiating signal for producing an output indicative of the settling time of the VCO with respect to the initiation thereof in the modulation domain.

5,485,102

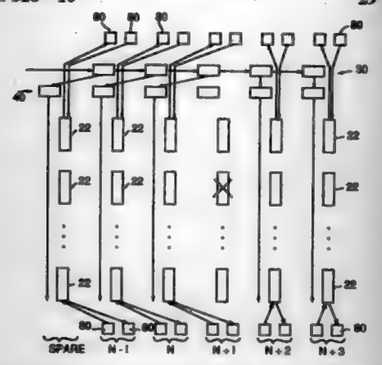
PROGRAMMABLE LOGIC DEVICES WITH SPARE CIRCUITS FOR REPLACEMENT OF DEFECTS

Richard G. Cliff, Milpitas; Rina Raman, Fremont, and Srinivas T. Reddy, Santa Clara, all of Calif., assignors to Altera Corporation, San Jose, Calif.

Continuation of Ser. No. 979,003, Nov. 19, 1992, Pat. No. 5,434,514. This application Apr. 4, 1995, Ser. No. 416,296

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—10 **29 Claims**



17. A programmable, integrated circuit, logic array device comprising:

a plurality of regular logic groups and at least one spare logic group, each of said logic groups having a plurality of logic modules, a plurality of programming signal input terminals, a plurality of data input terminals, a plurality of data output terminals, and a plurality of first conductors, each of said first conductors being capable of conveying data signals in either direction along said first conductor among the logic modules in the logic group of which said first conductor is a component;

a plurality of second conductors, each of said second conductors being capable of conveying data signals in either direction along said second conductor between said logic groups; and

a first plurality of switches, each of which connects a second conductor to a data output terminal of either of two logic groups.

5,485,103

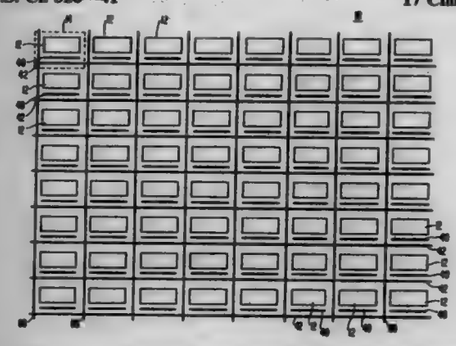
PROGRAMMABLE LOGIC ARRAY WITH LOCAL AND GLOBAL CONDUCTORS

Bruce B. Pedersen; Richard G. Cliff, both of Santa Clara; Bahram Ahanin, Cupertino; Craig S. Lytle, Palo Alto; Francis B. Heile, Santa Clara, and Kerry S. Veenstra, Concord, all of Calif., assignors to Altera Corporation, San Jose, Calif.

Continuation of Ser. No. 39,944, Mar. 29, 1993, Pat. No. 5,376,844, which is a continuation of Ser. No. 754,017, Sep. 3, 1991, Pat. No. 5,260,610. This application Dec. 15, 1994, Ser. No. 356,516

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—41 **17 Claims**



1. A programmable logic array integrated circuit comprising:

a plurality of logic modules, each of which has a plurality of inputs and at least one output for producing as said output a programmable logical function of said inputs, said logic modules being grouped in a plurality of logic array blocks, said blocks being disposed on said circuit in a two dimensional array including intersecting rows and columns of said blocks;

a plurality of first conductors adjacent to each of said logic array blocks, the first conductors adjacent to each block being adjacent to the logic modules within said block for selectively applying the outputs of the logic modules in each block to the inputs of any of the logic modules in that block;

a plurality of second conductors extending substantially parallel to a first dimension of said array, said second conductors being grouped in a plurality of groups, each of which is adjacent to a respective one of said rows of blocks, each second conductor in each of said groups of second conductors extending continuously past substantially all of the blocks in the adjacent row;

means for selectively applying the outputs of the logic modules in a row to the second conductors in the group adjacent to said row;

means for selectively applying the signals on the second conductors in each group to the inputs of the logic modules in the row adjacent to said group;

a plurality of third conductors extending substantially parallel to a second dimension of said array, said third conductors being grouped in a plurality of groups, each of which is adjacent to a respective one of said columns of blocks, each third conductor in each of said groups of third conductors extending continuously past substantially all of the blocks in the adjacent column;

means for selectively applying the outputs of the; logic modules in each column to the third conductors in the group adjacent to said column; and

means for selectively connecting said third conductors to said second conductors.

5,485,104

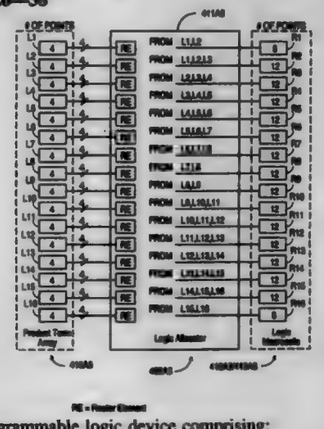
LOGIC ALLOCATOR FOR A PROGRAMMABLE LOGIC DEVICE

Om P. Agrawal, Los Altos, Calif.; Jerry D. Moench, and Kerry A. Ilgenstein, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 816,515, Dec. 31, 1991, Pat. No. 5,436,514, which is a continuation of Ser. No. 699,427, May 13, 1991, Pat. No. 5,225,719, which is a continuation-in-part of Ser. No. 490,808, Mar. 7, 1990, Pat. No. 5,015,884, which is a continuation-in-part of Ser. No. 243,574, Sep. 12, 1988, Pat. No. 4,963,768, which is a continuation-in-part of Ser. No. 178,707, Apr. 7, 1988, Pat. No. 4,931,671, which is a continuation of Ser. No. 717,640, Mar. 29, 1985, Pat. No. 4,742,252. This application Jan. 18, 1995, Ser. No. 375,465

Int. Cl.[6] H03K *19/173;* **H01L** *25/00*

U.S. Cl. 326—38 **31 Claims**



1. A programmable logic device comprising:

a programmable product term array having output lines; and

programmable logic allocator means, operatively coupled to said programmable product term array output lines, for selectively coupling and decoupling a set of said programmable product term array output lines to one output line in a multiplicity of output lines of said logic allocator means wherein upon coupling said set of said programmable product term array output lines to said one output line in said multiplicity of output lines of said logic allocator means, said set of programmable product term array output lines are unavailable to all other output lines in said multiplicity of output lines of said logic allocator means.

5,485,105

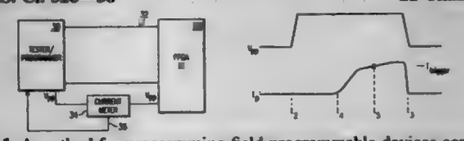
APPARATUS AND METHOD FOR PROGRAMMING FIELD PROGRAMMABLE ARRAYS

Mark G. Harward, Dallas, and David D. Wilmoth, Allen, both of Tex., assignors to Texas Instruments Inc., Dallas, Tex.

Filed Aug. 1, 1994, Ser. No. 283,469

Int. Cl.[6] H03K *19/173;* **H01H** *37/76*

U.S. Cl. 326—38 **21 Claims**



1. A method for programming field programmable devices comprising the steps of:

providing a field programmable device including a plurality of antifuses and a test antifuse;

applying a programming voltage to said test antifuse;

measuring the current through said test antifuse to determine the time from the application of said programming voltage until a threshold current is reached;

recording said time from the application of said programming voltage until said threshold is reached; and

utilizing said time for the application of said programming voltage to said test antifuse during the programming of said plurality of antifuses in said field programmable device.

5,485,106

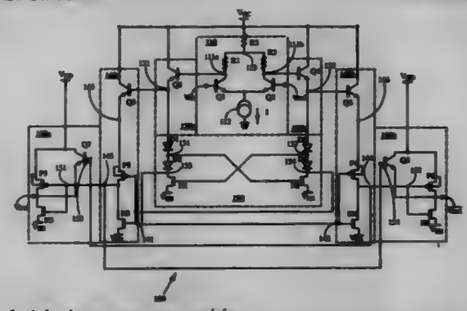
ECL TO CMOS CONVERTER

Robert J. Drost, Santa Clara; David M. Murata, San Jose; Robert J. Bosnyak, Sunnyvale; Mark R. Santoro, Sunnyvale, and Lee S. Tavrow, Sunnyvale, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Apr. 5, 1994, Ser. No. 222,988

Int. Cl.[6] H03K *19/0175;19/082;19/0948*

U.S. Cl. 326—66 **19 Claims**



1. A logic converter comprising:

a differential amplifier for receiving and differentially amplifying an input signal, said differential amplifier having a differential input node coupled to said input signal, said differential amplifier producing a first pair of complementary intermediate signals on a first and second output node, respectively, in response to said input signal;

a regenerative stage coupled to said first and second output nodes of said differential amplifier, said regenerative stage having a fast and a second pull-down portion for generating a second pair of complementary intermediate signals on corresponding first and second output nodes by switching between a partially on state and a fully on state in response to said fast pair of complementary intermediate signal; and

a first inverter stage having a first input node coupled to said first output node of said differential amplifier, and a second input node coupled to said second output node of said regenerative stage, and wherein said first inverter stage provides a third intermediate signal in response to said first pair of complementary intermediate signals and said second pair of complementary intermediate signal.

5,485,107

BACKPLANE DRIVER CIRCUIT

Brian C. Lacey, Glen Mills, and David F. Collins, St. Peters, both of Pa., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jan. 9, 1995, Ser. No. 370,115

Int. Cl.[6] H03K *19/0175*

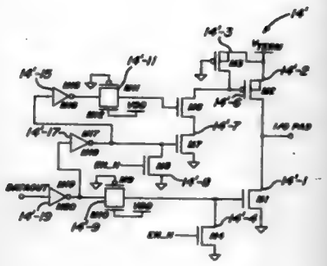
U.S. Cl. 326—86 **10 Claims**

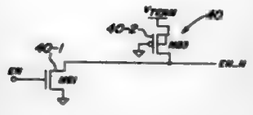
1. A backplane driver comprising:

(a) means for receiving a termination voltage (V_{term});

(b) means for receiving an output signal (DATAOUT) and in response thereto providing a drive signal to an output terminal (PAD); and

(c) means for temporarily clamping the voltage on the output terminal to approximately the termination voltage during a low to high transition of the output signal.





5,485,108

DELAYED DETECTION TYPE DEMODULATOR

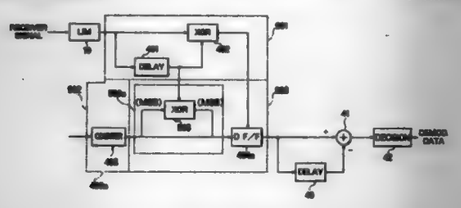
Toshiharu Kojima, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 997,768, Dec. 24, 1992, Pat. No. 5,313,170. This application Mar. 28, 1994, Ser. No. 218,977

Claims priority, application Japan, Dec. 27, 1991, 3-347245

Int. Cl.[6] G01R *25/00;* **H04L** *27/22*

U.S. Cl. 327—8 **7 Claims**



1. A phase detection circuit for detecting a phase shift of an input signal relative to a phase reference signal, comprising:

half-period detection means for receiving the input signal, for generating a half-period detection signal at each half-period of said input signal and for outputting the half-period detection signal;

phase reference signal generation means for generating and outputting said phase reference signal in response to a clock signal having a frequency not less than twice a frequency of said input signal; and

phase shift measurement means, having an input coupled to an output of said half-period detection means and an input coupled to an output of said phase reference signal generation means including:

phase inversion correction means for receiving the phase reference signal, for correcting said phase reference signal for a phase inversion thereof at each alternate half-period of said input signal and for outputting a corrected phase reference signal; and

wherein said phase shift measurement means determines a phase shift of said input signal with respect to said corrected phase reference signal at each half-period of said input signal, on the basis of said corrected phase reference signal and said half-period detection signal, and outputs a detected phase signal.

5,485,109

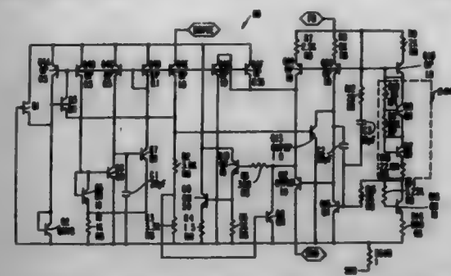
ERROR SIGNAL GENERATION CIRCUIT FOR LOW DROPOUT REGULATORS

Robert C. Dobkin, Monte Sereno; Carl T. Nelson, San Jose, and Dennis P. O'Neill, San Carlos, all of Calif., assignors to Linear Technology Corporation, Milpitas, Calif.

Continuation of Ser. No. 98,461, Jul. 27, 1993, Pat. No. 5,334,928, which is a division of Ser. No. 785,483, Oct. 31, 1991, Pat. No. 5,274,323. This application May 12, 1994, Ser. No. 241,595

Int. Cl.[6] H03K *5/153*

U.S. Cl. 327—77 **9 Claims**



1. An error signal generating circuit for a voltage regulator circuit, the voltage regulator circuit having a drive terminal, a feedback terminal, and a ground terminal, the error signal generating circuit being connected to the feedback terminal and the ground terminal and having an output node, wherein the error signal generating circuit is a bandgap circuit comprising:

an error amplifier including a first PNP transistor having an emitter coupled to the feedback terminal and a collector coupled to the output node and a first NPN transistor having an emitter coupled to the ground terminal and a collector coupled to the output node, wherein the error amplifier generates an error signal at the output node comprising a differential between currents conducted by the first PNP transistor and the first NPN transistor, the error signal causing the voltage regulator circuit to regulate an output voltage substantially at a desired voltage point;

a rectifying junction coupled with a base-emitter circuit of the first NPN transistor in a serial loop which includes a first resistor coupled between an emitter of the first NPN transistor and a first terminal of the rectifying junction, a second terminal of the rectifying junction being coupled to the feedback terminal through at least one impedance element so that the first NPN transistor and the rectifying junction conduct currents in a ratio which varies responsive to changes in potential difference between the feedback terminal and the ground terminal;

a second PNP transistor having a base coupled to a base of the first PNP transistor and an emitter coupled to the feedback terminal, an emitter-collector circuit of the second PNP transistor being coupled in series with at least one impedance element between the feedback and ground terminals, wherein the first and second PNP transistors draw currents from the feedback terminal in a substantially fixed ratio, the level of the currents varying together in response to changes in potential difference between the feedback terminal and the ground terminal;

wherein the error signal generated by the error amplifier varies in response to changes in potential difference between the feedback terminal and the ground terminal, and wherein impedance of the at least one impedance element through which the rectifying junction is coupled to the feedback terminal, and impedance of the at least one impedance element with which an emitter-collector circuit of the second PNP transistor is coupled in series between the feedback and ground terminals, contributes to the setting of the desired regulating voltage point of the voltage regulator.

5,485,110

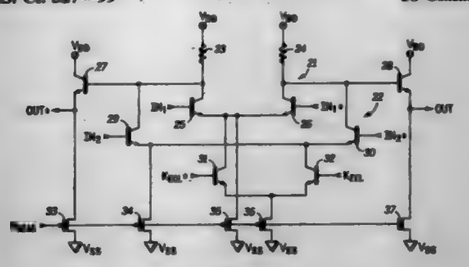
ECL DIFFERENTIAL MULTIPLEXING CIRCUIT

Kenneth W. Jones, and Stephen T. Flannagan, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Feb. 1, 1994, Ser. No. 189,776

Int. Cl.[6] H03K *19/086;17/62*

U.S. Cl. 327—99 **18 Claims**



1. A multiplexing circuit, comprising:

a first differential pair having first and second transistors, a first resistive element being coupled between a first power supply voltage terminal and a first current electrode of the first transistor, a second resistive element being coupled between the first power supply voltage terminal and a first current electrode of the second transistor, the differential pair for receiving a first input signal;

a second differential pair having third and fourth transistors, a first current electrode of the third transistor being coupled to the first current electrode of the first transistor, and a first current electrode of the fourth transistor being coupled to the first current electrode of the second transistor, the second differential pair for receiving a second input signal;

a fifth transistor having a first current electrode coupled to a second current electrode of both of the first and second transistors, a control electrode for receiving a third input signal, and a second current electrode coupled to a second power supply voltage terminal;

a sixth transistor having a first current electrode coupled to a second current electrode of both of the third and fourth transistors, a control electrode for receiving a fourth input signal, and a second current electrode coupled to the second power supply voltage terminal;

a first current source having a first terminal coupled to the second current electrodes of the first and second transistors, and a second terminal coupled to the second power supply voltage terminal;

a second current source having a first terminal coupled to the second current electrodes of the third and fourth transistors, and a second terminal coupled to the second power supply voltage terminal; and

a third current source having a first terminal coupled to the second current electrodes of the fifth and sixth transistors, and a second terminal coupled to the second power supply voltage terminal.

5,485,111

POWER ON RESET CIRCUIT WITH ACCURATE DETECTION AT LOW VOLTAGES

Susumu Tanimoto, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Apr. 8, 1994, Ser. No. 224,432

Claims priority, application Japan, Apr. 8, 1993, 5-081577

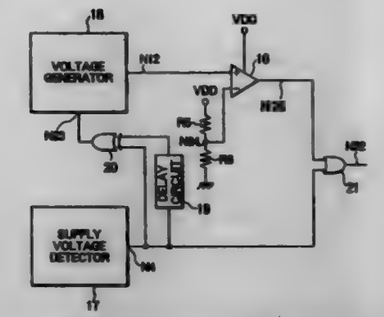
Int. Cl.[6] H03K *17/22;5/153*

U.S. Cl. 327—143 **5 Claims**

1. A power ON reset circuit comprising:

a first supply-voltage detector for outputting a predetermined pulse signal upon power on;

means for outputting a given pulse signal only when a logical level of said predetermined pulse signal changes;



a second supply-voltage detector for outputting a reference signal when triggered by said given pulse signal, a minimum operational voltage of said first supply-voltage detector, which is the minimum supply voltage at which said first supply-voltage detection is operable, being set lower than the minimum operational voltage of said second supply-voltage detector, which is the minimum supply voltage at which said second supply-voltage detector is operable, a detection voltage of said first supply-voltage detector being set higher than said minimum operational voltage of said second supply-voltage detector; and means responsive to said predetermined pulse signal and said reference signal for outputting the signal from said power ON reset circuit.

5,485,112

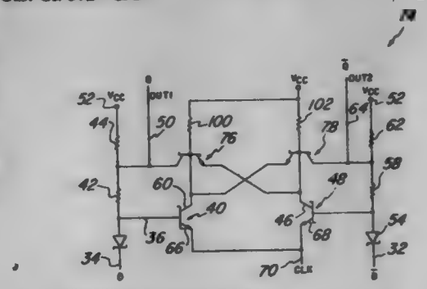
METASTABLE TOLERANT LATACH

Craig B. Greenberg, Rowlett; Jay A. Maxey, and Kevin M. Ovens, both of Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 95,364, Jul. 20, 1993, abandoned, which is a continuation of Ser. No. 876,820, Apr. 29, 1992, abandoned, which is a continuation of Ser. No. 800,710, Dec. 2, 1991, abandoned, which is a continuation of Ser. No. 653,861, Feb. 8, 1991, abandoned, which is a continuation of Ser. No. 288,545, Dec. 21, 1988, abandoned. This application Jul. 28, 1994, Ser. No. 278,715

Int. Cl.[6] H03K *3/286*

U.S. Cl. 372—198 **17 Claims**



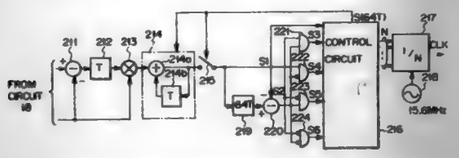
1. A flip-flop circuit comprising:

first and second transistors each having a control electrode and first and second current electrodes, each control electrode coupled to receive a respective input signal, said second current electrodes of said first and second transistors coupled to a clock; and

first and second load transistors to compensate for metastable conditions on said flip-flop, each of said load transistors having a control electrode and first and second current electrodes, said control electrodes coupled to a reference voltage, the first current electrode of each of said first and second load transistors coupled to a respective first current electrode of one of said first and second transistors and coupled to the control electrode of the other load transistor, the second

current electrode of each of said first and second load transistors coupled to an output and to a voltage divider network.

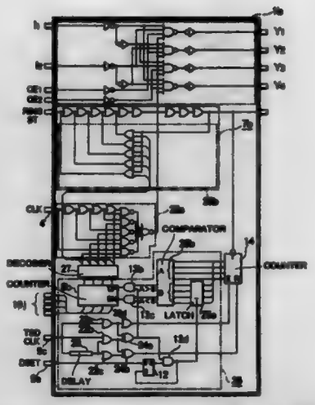
5,485,113
JITTER-COMPENSATED SAMPLING PHASE CONTROL APPARATUS
Tomokazu Ito, and Akihiko Sugiyama, both of Tokyo, Japan, assignors to NEC Corporation, Japan
Filed Dec. 28, 1994, Ser. No. 365,197
Claims priority, application Japan, Dec. 28, 1993, 5-337684
Int. Cl.[6] H03H *11/16;11/26*
U.S. Cl. 327—234 **11 Claims**



1. A sampling phase controlling apparatus for controlling a phase of a clock signal supplied to a transmission system including discriminating means for discriminating a received signal and equalizing means for removing an intersymbol interference component from the received signal, comprising:
intersymbol interference detecting means for detecting the intersymbol interference component;
accumulating means for accumulating the intersymbol interference component for a certain time period;
differential value calculating means for calculating a differential value of the accumulated intersymbol interference component;
first phase control means for controlling the phase of the clock signal in accordance with the accumulated intersymbol interference component;
second phase control means for controlling the phase of the clock signal in accordance with a combination of the accumulated intersymbol interference component and the differential value thereof; and
selecting means for selecting one of said first and second phase controlling means.

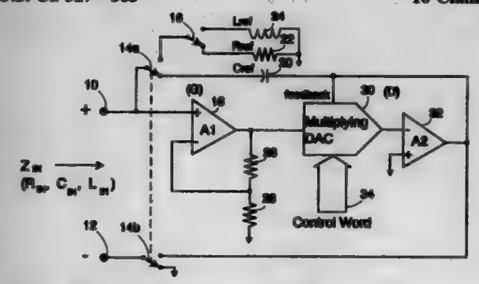
5,485,114
SEMICONDUCTOR INTEGRATED CIRCUIT WITH INTERNAL COMPENSATION FOR CHANGES IN TIME DELAY
Teruhiko Funakura, and Naomi Higashino, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 167,096, Dec. 16, 1993, abandoned. This application May 30, 1995, Ser. No. 453,107
Claims priority, application Japan, Dec. 17, 1992, 4-354714
Int. Cl.[6] H03H *11/26;* **H03K** *1/04;17/296;17/28*
U.S. Cl. 327—262 **8 Claims**

1. A semiconductor integrated circuit comprising:
a clock-synchronized logic circuit having a signal propagation delay, said logic circuit for performing a predetermined logic operation and comprising a plurality of interconnected device elements;
a ring oscillator comprising a plurality of dummy device elements, said dummy device elements being connected in a ring, an applied pulse being circulated through said dummy device elements to generate oscillating pulses with a repetition time period corresponding to a delay time of said dummy device elements;
counting means connected to one of said dummy device elements for counting the oscillating pulses generated by said ring oscillator relative to a reference pulse signal;



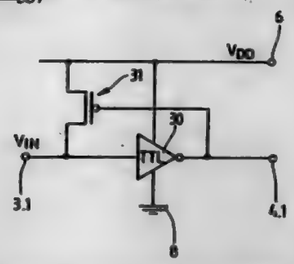
a delay time compensation control circuit connected to said counting means for generating control data based on a difference between a count of said counting means and an initial count counted by said counting means when said integrated circuit first stabilizes after said ring oscillator begins oscillation;
a synchronizing clock timing compensation circuit connected to and receiving the control data from said delay time compensation control circuit for generating an output signal supplied to said logic circuit for compensating for a change in the signal propagation delay of said logic circuit; and
an oscillation delay control circuit connected to and receiving the control data from said delay time compensation control circuit for generating an output signal coupled to said ring oscillator for controlling the delay time of said ring oscillator.

5,485,115
IMPEDANCE SYNTHESIZER
Arnold E. Nordeng, Mukilteo, Wash., assignor to Fluke Corporation, Everett, Wash.
Filed Dec. 2, 1993, Ser. No. 160,992
Int. Cl.[6] H03H *11/48*
U.S. Cl. 327—363 **10 Claims**



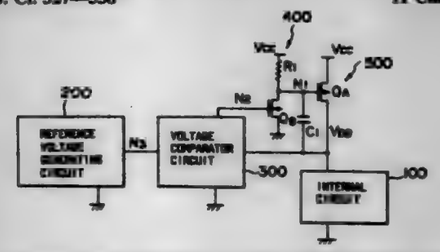
5. An impedance synthesizer, comprising:
a pair of reference terminals;
a reference element having a predetermined impedance value coupled to at least one of said pair of reference terminals;
an amplifier being configurable in one of a series mode and a shunt mode with said reference element to provide a plurality of selectable synthesized impedance values in accordance with a plurality of selectable gain factors and said predetermined impedance value;
wherein a selected one of said synthesized impedance values is provided across said pair of reference terminals by coupling said amplifier to said pair of reference terminals in accordance with said series mode and said shunt mode.

5,485,116
POWER DIVERTING CIRCUIT
Stefan Caerveny, Epalinges; Evert Dijkstra, Fontaines, and Vincent von Kaenel, Coffrane, all of, Switzerland, assignors to CSEM Centre Suisse d'Electronique et de Microtechnique SA - Recherche et Developpement, Neuchatel, Switzerland
Filed Jun. 6, 1994, Ser. No. 254,570
Int. Cl.[6] G05F *1/10*
U.S. Cl. 327—537 **20 Claims**



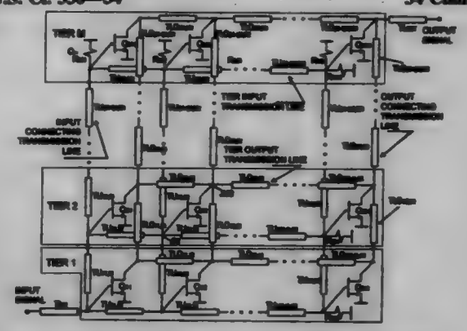
1. A power diverting circuit for creating a supply voltage for a signal processing circuit from a source of data signals each having a high or a low potential respectively corresponding to a first or a second logic state, said circuit comprising:
a first terminal for receiving said data signals;
a second terminal at which said supply voltage is manifested;
switch means for selectively connecting said first terminal to said second terminal and disconnecting said first terminal from said second terminal;
an inverter for inverting the state of said data signals, said inverter having an input terminal connected to said first terminal and an output terminal for providing inverted data signals to said signal processing circuit; and,
connecting means connecting said inverter to said switch means whereby said inverter, in response to the state of said data signals received at said first terminal controls the operation of said switch means.

5,485,117
POWER CIRCUIT AND SEMICONDUCTOR DEVICE INCLUDING THE SAME
Kazuto Furumochi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 170,974, Dec. 21, 1993, abandoned, which is a continuation of Ser. No. 952,707, Nov. 20, 1992, abandoned. This application Jun. 20, 1994, Ser. No. 262,373
Claims priority, application Japan, Mar. 20, 1991, 3-057218
Int. Cl.[6] G05F *1/10*
U.S. Cl. 327—538 **11 Claims**



1. A power circuit supplying a power supply voltage, from a power supply source and through a power supplying line to a power supply input terminal of a load, the power supply circuit comprising:
a variable resistance element having a control input terminal and inserted in the power supplying line leading to the load, the value of resistance thereof varying in response to a signal input into the control input terminal thereof;
a reference voltage generating source for generating and outputting a reference voltage;
a comparator which compares the power supply voltage with the reference voltage and produces a comparator output signal which varies in accordance with variations of the power supply voltage relative to the reference voltage;
a variable resistance element driver having a driver output terminal and responsive to the comparator output signal produced by said comparator and which produces a corresponding drive output signal, output from the driver output terminal, which varies in accordance with variations in the comparator output signal, the drive output signal being applied to the input control terminal of said variable resistance element and correspondingly varying the value of resistance thereof, thereby to maintain the power supply voltage applied to said load at a desired level;
a capacitor connected between the power supply input terminal of the load and the control input terminal of the variable resistance element, operable for negatively feeding back variations in the power supply voltage applied to said load to the control input terminal of said variable resistance element; and
a first resistance element connected between the driver output terminal of the variable resistance element driver and the control input terminal of the variable resistance element and augmenting the negative feedback of said capacitor.

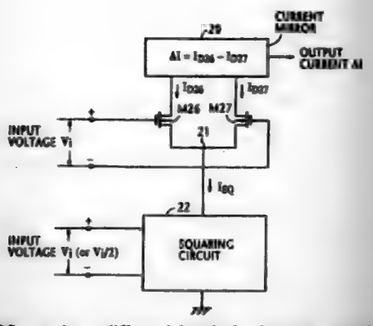
5,485,118
NON-UNIFORMLY DISTRIBUTED POWER AMPLIFIER
Richard W. Chick, Carlisle, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Jun. 3, 1994, Ser. No. 253,809
Int. Cl.[6] H03F *3/60*
U.S. Cl. 330—54 **34 Claims**



15. A multi-dimensional distributed amplifier, comprising:
a multi-dimensional array of active devices;
a multi-dimensional input network for presenting an input signal at progressively increasing delays to increasing numbers of the active devices; and
a multi-dimensional output network being matched in delay to the input network for collecting contributions of the active devices to an amplified signal.

5,485,119
MOS TRANSCONDUCTANCE AMPLIFIER HAVING SQUARING CIRCUIT FOR LSI IMPLEMENTATION
Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Mar. 10, 1995, Ser. No. 401,673
Claims priority, application Japan, Jul. 12, 1994, 6-182877
Int. Cl.[6] H03F *3/45*
U.S. Cl. 330—253 **9 Claims**

1. A metal oxide semiconductor (MOS) operational transconductance amplifier comprising:



a MOS transistor differential pair having gate terminals for receiving an input voltage thereacross and having channels connected together to a first node;

first and second constant current means connected to a reference potential;

a first current mirror connected to a voltage supply, and a second current mirror connected to said reference potential;

a third current mirror connected to said voltage supply, and a fourth current mirror connected to said reference potential, said second and fourth current mirrors being connected together to a second node connected to said first node;

a first MOS transistor having a channel connected between said voltage supply and said first constant current means, and a second MOS transistor having a channel connected at one end to said first current mirror and at the other end to said first constant current means and said second current mirror; and

a third MOS transistor having a channel connected at one end to said third current mirror and at the other end to said second constant current means and said fourth current mirror, and a fourth MOS transistor having a channel connected between said voltage supply and said second constant current means;

said first and third MOS transistors having gate terminals thereof coupled together and said second and fourth MOS transistors having gate terminals thereof coupled together for receiving said input voltage,

said first and second current mirrors and said second MOS transistor being connected to form a bootstrapping loop so that said second current mirror produces at said second node a first current equal to a sum of a constant current produced by said first constant current means and a current equal to a drain current produced by one of said first and second MOS transistors,

said third and fourth current mirrors and said third MOS transistor being connected to form a bootstrapping loop so that said fourth current mirror produces at said second node a second current equal to a sum of a constant current produced by said second constant current means and a current equal to a drain current produced by one of said third and fourth MOS transistors, said first and second currents being combined together at said node to drive said MOS transistor differential pair.

5,485,120

FEED-FORWARD POWER AMPLIFIER SYSTEM WITH ADAPTIVE CONTROL AND CONTROL METHOD

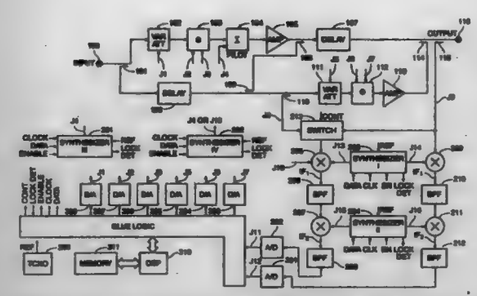
Kiomars Anvari, Walnut Creek, Calif., assignor to Aval Communications Inc., Walnut Creek, Calif.

Filed Jul. 28, 1994, Ser. No. 282,132

Int. Cl.[6] H03F *1/32*; H03P *3/66*

U.S. Cl. 330—151 **29 Claims**

1. In connection with a feed-forward linear amplifier having a main amplification path and a distortion signal path, said distortion signal path including means for controlling distortion signal delay and means for controlling distortion signal attenuation, an adaptive controller system for use in minimizing signal distortion of information signals applied through said linear amplifier, said adaptive controller system comprising:



means for continuously sampling analog signal output of said linear amplifier to produce an analog sampled signal;

means for downconverting said analog sampled signal to an IF band as a first analog IF signal;

first analog to digital converter means coupled to said downconverting means to convert said first analog IF signal to a first digitized IF signal;

means coupled to receive said first digitized IF signal for DSP processing said digitized IF signal to downconvert said digitized IF signal to a digitized baseband signal, to produce an in-phase component signal and a quadrature-phase component signal, and to generate from said in-phase component signal and said quadrature-phase component signal at least one error correction signal; and

means for applying said at least one error correction signal to said distortion signal delay controlling means and to said distortion signal attenuation controlling means for control in cancelling distortion in the information signal output of said linear amplifier.

5,485,121

AMPLIFIER ARRANGEMENT WITH MULTIPATH MILLER ZERO CANCELLATION

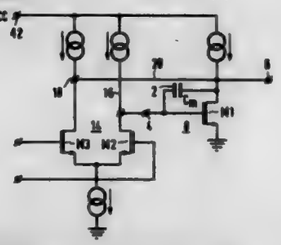
Johan H. Huijsing, Schipluiden, and Rudolphe G. H. Eschauzier, Spijkenisse, both of, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 21, 1994, Ser. No. 263,110

Claims priority, application European Pat. Off., Jun. 21, 1993, 93201779

Int. Cl.[6] H03F *1/14*

U.S. Cl. 330—260 **4 Claims**



1. An amplifier arrangement comprising:

an inverting transconductance stage having an input and an output;

a capacitor coupled between the input and the output of the inverting transconductance stage;

and signal current means having a first output coupled to the input of the inverting transconductance stage to provide a first signal current to the input of the inverting transconductance stage,

characterized in that the signal current means further comprises a second output coupled to the output of the inverting transconductance stage to provide a second signal current to the output of the inverting transconductance stage, which second signal current is substantially in phase opposition to the first signal current.

5,485,122

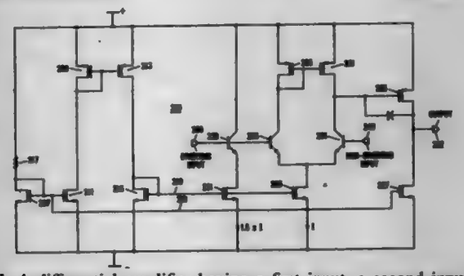
DIFFERENTIAL AMPLIFIER CIRCUIT GIVING REDUCED DC OFFSET WITH UNBALANCED SOURCE RESISTANCES

Perry S. Lorenz, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 127,650, Sep. 28, 1993, Pat. No. 5,398,005. This application Oct. 4, 1994, Ser. No. 317,850

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—252 **16 Claims**



1. A differential amplifier having a first input, a second input, and an output, the first input being one of an inverting input and a non-inverting input, the second input being the other of the inverting input and the non-inverting input, the amplifier providing a substantially zero output offset voltage when the first input is fed from a source resistance greater than the second input, the amplifier comprising:

a first current generator;

a second current generator;

a first input transistor and a second input transistor in a balanced long-tail pair configuration fed by the first current generator, each input transistor having a collector, the first input transistor having a base connected to the first input, the second input transistor having a base connected to the second input;

means for deriving an output voltage from the collector of one of the input transistors and for feeding the output voltage to the output; and

a third transistor, including:

a base connected to the second input, and

an emitter connected to the second current generator.

5,485,123

CIRCUIT CONFIGURATION FOR ADJUSTING THE QUADRATURE-AXIS CURRENT COMPONENT OF A PUSH-PULL OUTPUT STAGE

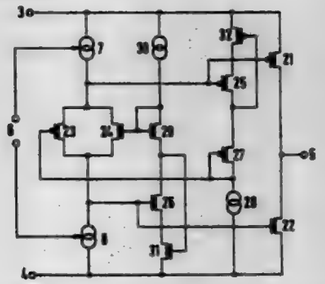
Oliver Kiehl, München, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 6, 1994, Ser. No. 301,709

Claims priority, application Germany, Sep. 3, 1993, 43 29 865.6

Int. Cl.[6] H03F *3/30*

U.S. Cl. 330—264 **1 Claim**



1. In a circuit configuration for adjusting the quadrature-axis current component of a push-pull output stage having two transistors of opposed conduction type and being triggered by an input signal, the improvement comprising:

a comparison circuit from which a variable being proportional to the quadrature-axis current component of the push-pull output stage is derived;

a final control element adjusting the quadrature-axis current components of the push-pull output stage and of said comparison circuit for matching the variable to a reference variable;

said final control element including two current sources being controlled by the input signal and furnishing currents of equal magnitude and opposite polarity, and a controllable load coupling said current sources to one another;

said current sources in turn triggering one of said two transistors of the push-pull output stage and said comparison circuit;

said controllable load including two field effect transistors of opposed conduction type being triggered in phase opposition with one another and having load paths being connected antiparallel to one another;

two further transistors having opposite conduction types and having load paths;

said comparison circuit including two constant current sources furnishing currents of equal magnitude and opposite polarity, each of said constant current sources supplying a respective one of said two further transistors;

each of said further transistors being triggered by respective one of said controlled current sources;

voltage drops at the load paths of each of said further transistors triggering a respective one of said field effect transistors; and

additional transistors each having a load path being connected in series with the load path of a respective one of said further transistors, being of the same conduction type as said respective one of said further transistors, and being triggered by a voltage drop across the load path of said respective one of said further transistors.

5,485,124

INTEGRATED AMPLIFIER WITH AN ACCURATELY DEFINED GAIN FACTOR

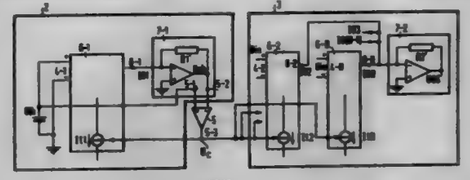
Jacob Mulder, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 6, 1994, Ser. No. 254,091

Claims priority, application European Pat. Off., Jun. 4, 1993, 93201607

Int. Cl.[6] H03G *3/30*

U.S. Cl. 330—278 **3 Claims**



3. An integrated amplifier comprising:

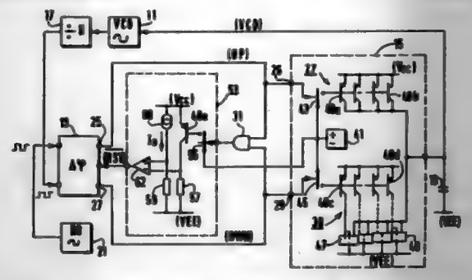
an auxiliary amplifier having a first transconductance and a first on-chip resistor;

a signal amplifier coupled to the auxiliary amplifier and including a second on-chip resistor and a plurality of further amplifiers each amplifier of the plurality of further amplifiers having a respective transconductance dependent upon the first transconductance and each amplifier of the plurality of further amplifiers is for supplying respective output currents, and wherein the second on-chip resistor is for receiving the respective output currents and for providing an accurate output voltage that is dependent on a ratio of the second resistance to the first resistance.

5,485,125
PHASE-LOCKED OSCILLATOR ARRANGEMENT

Yves R. Dufour, Sunnyvale, Calif., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 1, 1995, Ser. No. 397,507
Claims priority, application France, Mar. 2, 1994, 94 02383
Int. Cl.[6] H03L 7/089
U.S. Cl. 331—17 4 Claims



1. A phase-locked oscillator arrangement in which a variable-frequency oscillator supplies an output signal controlled by a control voltage from a storage capacitance, which is charged by a charge pump circuit, which arrangement comprises a phase detector which has an input which receives a signal derived from the output signal of the variable-frequency oscillator, another input which receives a signal from a reference oscillator, and a reset input, the charge pump circuit comprising two current sources which each comprise a plurality of transistors operating in parallel and which, respectively, charge and discharge the storage capacitance, which charge pump circuit has two inputs, i.e. a first control input coupled to a first output of the phase detector, which supplies a switching signal called the up-command signal, which activates one of the current sources, and a second control input coupled to a second output of the phase detector, which supplies a switching signal called the down-command signal, which activates the other current source, in which arrangement the time interval during which these two command signals are simultaneously active is controlled by a reset signal from a logic gate which combines the up-command signal and the down-command signal, which reset signal is applied to the reset input of the phase detector after passage through a delay device, characterised in that the delay device comprises a current source called annexed current source, which is switchable and comprises a transistor forming a matched pair with a transistor of one of the current sources of the charge pump circuit, and comparison means for comparing the current supplied by said annexed current source with a given threshold current, which means supply the reset signal when this threshold is reached.

5,485,126
RING OSCILLATOR CIRCUIT HAVING OUTPUT WITH FIFTY PERCENT DUTY CYCLE

John E. Gersbach, Burlington, and Masayuki Hayashi, Williston, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

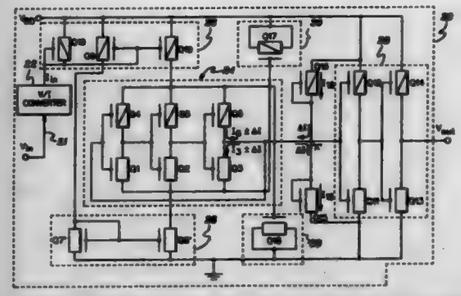
Filed Jan. 25, 1994, Ser. No. 186,742
Int. Cl.[6] H03B 1/00
U.S. Cl. 331—57 19 Claims

1. A compensation circuit for clamping an average output voltage of a ring oscillator to a threshold voltage of a subsequent logic circuit, the ring oscillator being of the type having an odd plurality of series-connected inverter stages, wherein an output of a last inverter stage is coupled to an input of a first inverter stage, the last inverter stage providing voltage to an output node, each inverter stage being connected to a first common control point and to a second common control point, the compensation circuit comprising:

clamping means coupled to said output node for providing current to said output node whenever the voltage at said output node departs from the threshold voltage, said current tending to clamp the average output voltage to the threshold voltage, said clamping means comprising a voltage divider connected to said output node for maintaining the average output voltage at said output node at said threshold voltage;

a first capacitor connected between said first common control point and a first voltage supply; and

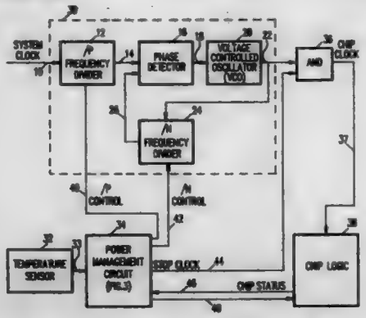
a second capacitor connected between said second common control point and a second power supply voltage.



5,485,127
INTEGRATED DYNAMIC POWER DISSIPATION CONTROL SYSTEM FOR VERY LARGE SCALE INTEGRATED (VLSI) CHIPS

Renitia J. Bertoluzzi, Saratoga, Calif.; Robert T. Jackson, Boynton Beach, and Stephen D. Weitzel, Boca Raton, both of Fla., assignors to Intel Corporation, Santa Clara, Calif., and International Business Machine Corp., Armonk, N.Y.

Continuation of Ser. No. 175,767, Dec. 29, 1993, abandoned.
This application Apr. 7, 1995, Ser. No. 418,849
Int. Cl.[6] H03L 1/02
U.S. Cl. 331—69 22 Claims



1. An apparatus including an integrated circuit chip, said apparatus comprising:

chip logic including a functional state output;

sensing means for measuring a temperature of said chip;

clocking means having a clock output connected to said chip logic; and,

power management means connected to said functional state output of said chip logic, to said sensing means and to said clocking means;

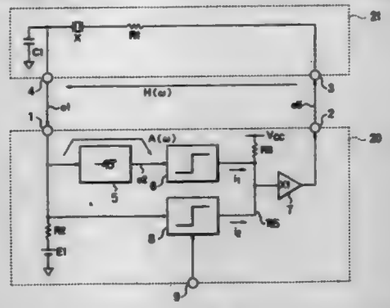
said power management means including control means responsive to said sensing means and to said functional state output of said chip logic for generating a control signal to said clocking means;

said clocking means including selecting means responsive to said control signal for changing an operating frequency of said clocking means, depending upon a state of said control signal.

5,485,128
OSCILLATION CIRCUIT HAVING A CURRENT-CONTROLLED PHASE SHIFT CIRCUIT

Kunihiko Azuma, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 6, 1994, Ser. No. 349,959
Claims priority, application Japan, Dec. 7, 1993, 5-306850
Int. Cl.[6] H03B 5/32
U.S. Cl. 331—135 9 Claims

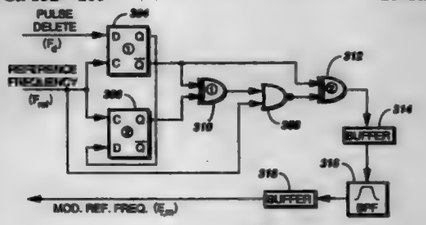


9. A current-controlled phase shift circuit for use in an oscillation circuit comprising a phase delay circuit, having a significant transfer gain at any frequency, for receiving a first signal to output a second signal having a fixed phase delay relative to the phase of said first signal, said phase delay being substantially different from 90°; a first limiter circuit for receiving said second signal to output a third signal having a first amplitude and remaining in phase with said second signal; a second limiter circuit for receiving said first signal and a control signal to output a fourth signal, said fourth signal being substantially in phase with said first signal and having a second amplitude controlled by said control signal; an adding section for adding said third signal and said fourth signal.

5,485,129
METHOD AND APPARATUS FOR DIGITAL MODULATION USING PULSE DELETION

Glen A. Franson, Sleepy Hollow, and Peter Nanni, Algonquin, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 20, 1995, Ser. No. 376,210
Int. Cl.[6] H03C 3/00; H03L 7/16; H04L 27/12
U.S. Cl. 332—100 20 Claims



1. A method for generating first and second output signals having predetermined frequency shifts relative to a frequency provided by a reference signal in a system comprising a phase-locked loop coupled to the reference signal for generating the first and second output signals, the method comprising the steps of:

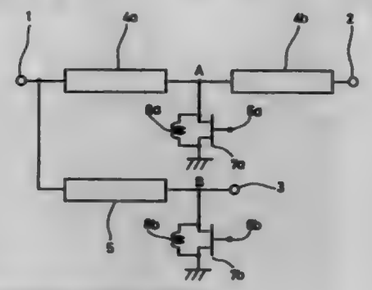
(a) deleting pulses from the reference signal at a first deletion rate to generate the first output signal; and

(b) deleting pulses from the reference signal at a second deletion rate to generate the second output signal.

5,485,130
MICROWAVE SWITCH CIRCUIT AND AN ANTENNA APPARATUS

Kazuhiko Nakahara, and Takao Kashiwa, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 162,307, Dec. 6, 1993, abandoned.
This application Jan. 24, 1995, Ser. No. 378,876
Claims priority, application Japan, Jan. 29, 1993, 5-013064
Int. Cl.[6] H01P 1/15
U.S. Cl. 333—104 4 Claims



1. An antenna apparatus including:

an antenna terminal,

a signal input terminal,

a receiving terminal, and

first and second microwave switch circuits, each of said first and second microwave switch circuits having an identical switch circuit characteristic impedance and compriaing:

an input terminal,

an output terminal,

a first impedance conversion circuit having an input, an output, and a first matching characteristic impedance less than the switch circuit characteristic impedance, the input of said first impedance conversion circuit being connected to said input terminal,

a switching circuit connected to the output of said first impedance conversion circuit and to ground and comprising a field effect transistor and an inductor connected in parallel, and

a second impedance conversion circuit having an input, an output, and a second matching characteristic impedance less than the switch circuit characteristic impedance, the input of said second impedance conversion circuit being connected to the output of said first impedance conversion circuit and the output of said second impedance conversion circuit being connected to said output terminal,

wherein said first microwave switch circuit is connected to said antenna terminal and to said signal input terminal, said second microwave switch circuit is connected to said antenna terminal and to said receiving terminal, and the first and second matching characteristic impedances are equal.

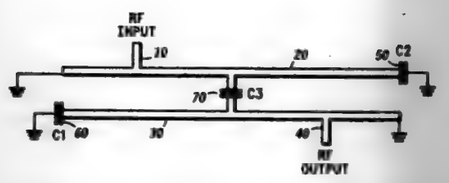
5,485,131
TRANSMISSION LINE FILTER FOR MIC AND MMIC APPLICATIONS

Lyle A. Fajen, and Michael Dydyk, both of Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 13, 1994, Ser. No. 322,663
Int. Cl.[6] H03H 7/00; H01P 1/20
U.S. Cl. 333—202 20 Claims

1. A transmission line filter for MIC and MMIC applications comprises:

first and second transmission lines, each including a first end and a second end, wherein the first and second transmission lines are substantially parallel, the first end of the first transmission line is adjacent to the first end of the second transmission line,



and the second end of the first transmission line and the first end of the second transmission line are both coupled to an electrical ground;

a RF input for inputting a RF signal coupled to the first transmission line;

a first capacitor coupled in series between the first end of the first transmission line and the electrical ground;

a second capacitor coupled in series between the second end of the second transmission line and the electrical ground;

a third capacitor coupled between the first and second transmission lines; and

a RF output coupled to the second transmission line, the RF output for outputting a filtered RF signal in response to the RF signal.

5,485,132

DIELECTRIC CERAMIC COMPOSITION CONTAINING ZNO-B_2O_3-SIO_2 GLASS, METHOD OF PREPARING THE SAME, AND RESONATOR AND FILTER USING THE DIELECTRIC CERAMIC COMPOSITION

Masahiro Abe; Tsutomu Nanataki, and Shinsuke Yano, all of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 251,567, May 31, 1994, which is a division of Ser. No. 181,423, Jan. 14, 1994, Pat. No. 5,350,721, which is a division of Ser. No. 102,059, Aug. 4, 1993, Pat. No. 5,304,521, which is a division of Ser. No. 948,585, Sep. 23, 1992, Pat. No. 5,264,403. This application May 16, 1995, Ser. No. 441,927

Claims priority, application Japan, Sep. 27, 1991, 3-276587; Mar. 18, 1992, 4-92180; Mar. 18, 1992, 4-92182; Mar. 25, 1992, 4-98862; Sep. 21, 1992, 4-276594; Sep. 21, 1992, 4-276595; Sep. 21, 1992, 4-276596

Int. Cl.[6] H01P *7/00;* **C04B** *35/40*

U.S. Cl. 333—219 **3 Claims**

1. A dielectric resonator comprising:

a dielectric ceramic obtained by firing a dielectric ceramic composition which consists essentially of (i) a main ceramic composition containing barium oxide, titanium oxide, rare earth oxide and bismuth oxide as major components, which composition is represented by $xBaO \cdot yTiO_2 \cdot z((1-a)RE_2O_3 \cdot aBi_2O_3)$, wherein RE represents at least one rare earth metal, $0.10 \leq x \leq 0.20$, $0.60 \leq y \leq 0.75$, $0.10 \leq z \leq 0.25$, $x+y+z=1$ and $0<a \leq 0.3$, and (ii) a glass composition comprised of ZnO, B_2O_3 and SiO_2, which is represented by k(wt. %) ZnO-m(wt. %)B_2O_3 -n(wt. %)SiO_2 where $30 \leq k \leq 85$, $5 \leq m \leq 50$, $2 \leq n \leq 40$, k+m+ n=100, said glass composition being contained in an amount of at least 0.1 parts by weight, but not more than (18–62.5a) parts by weight (where$0<a \leq 0.2$) or not more than 5.5 parts by weight. (where $0.2<a \leq 0.3$), per 100 parts by weight of said main ceramic composition; and

a conductor layer which is co-fired with said dielectric ceramic so that said conductor layer pattern is embedded in said dielectric ceramic.

5,485,133

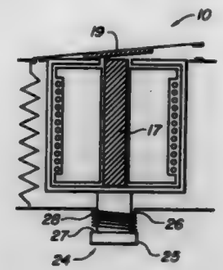
CIRCUIT BREAKER

Patrick Ward, Ballinasloe, Ireland, assignor to Tripco Limited, County Galway, Ireland

Filed Jun. 20, 1994, Ser. No. 261,773

Int. Cl.[6] H01H *51/22*

U.S. Cl. 335—78 **3 Claims**



1. A circuit breaker comprising first and second electrical contacts of which the first contact is mounted for movement relative to the second contact between a first position in which the contacts are closed and a second position in which the contacts are open, first resilient biassing means urging the first contact into the second position so as to maintain the contacts normally open, magnet means for retaining the first contact in the first position against the action of the first resilient biassing means so as to hold the contacts closed, the magnet means being demagnetisable at least sufficiently to permit the first contact to return to the second position under the action of the first resilient biassing means, and manually operable reset means for resetting the first contact from the second position to the first position against the action of the first resilient biassing means, wherein the circuit breaker also includes second resilient biassing means urging the second contact towards a rest position for engagement by the first contact when the latter is in the first position, the reset means being operable as it resets the first contact from the second position to the first position to also push the second contact away from its rest position against the action of the second resilient biassing means whereby when the first contact reaches the first position the second contact is held out of engagement therewith by the reset means, and wherein upon release of the reset means the second contact is urged by the second resilient biassing means into engagement with the first contact.

5,485,134

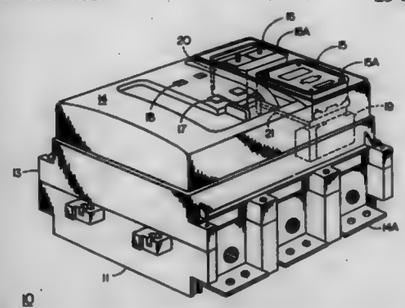
AUXILIARY SWITCH ACCESSORY MODULE UNIT FOR HIGH AMPERE-RATED CIRCUIT BREAKER

Raymond K. Seymour, Plainville, and Elaine B. Bogue, Stonington, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed May 31, 1994, Ser. No. 251,154

Int. Cl.[6] H01H *67/02*

U.S. Cl. 335—132 **23 Claims**



1. An industrial-rated circuit breaker for high level overcurrent protection comprising:

an insulative circuit breaker cover **14** arranged on an insulative base **12**;

a recess **15A** in said circuit breaker cover;

a support **21** within said recess; an electronic trip unit **15** on said support and arranged for interrupting circuit current upon occurrence of an overcurrent condition;

an auxiliary switch **19** attached to said support and arranged for providing remote indication of said overcurrent condition, said auxiliary switch comprising a microswitch **32** attached to a subframe **23**, said subframe including a lever **25** mounted on said subframe and arranged for interacting with a circuit operating mechanism lever **48** extending upwards within said circuit breaker cover.

5,485,135

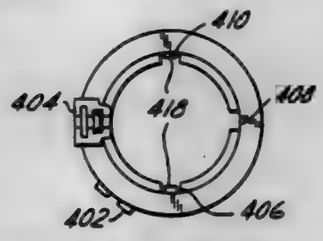
IGNITION COIL ASSEMBLY FILLED WITH RESINOUS MATERIAL

Mark E. Hipp, South Lyon, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 112,730, Aug. 26, 1993, abandoned. This application Jan. 6, 1995, Ser. No. 369,564

Int. Cl.[6] H01F *27/30*

U.S. Cl. 336—96 **5 Claims**



1. An ignition coil assembly comprising:

a primary winding assembly having at least one locating lug;

a secondary winding assembly including;

a bobbin having a tubular wall having defined therein a plurality of longitudinally extending slots spaced around and extending through the entire thickness of said tubular wall portion, said slots formed to receive said locating lug of said primary winding within said secondary winding, said bobbin having an inner portion and an outer portion delineated by said tubular wall;

a plurality of coil windings juxtaposed to said slots wound on the outer portion of said tubular wall portion; and

a potting material filling said secondary winding, said slots in said inner wall portion permitting said potting material to impregnate into said secondary winding through said tubular wall.

5,485,136

LOAD BREAK DISCONNECTING DEVICE WITH SOLID ARC SUPPRESSION MEANS

Stephen P. Johnson, Olean, N.Y.; Stephen P. Hassler, Muskego, and John Lapp, Franklin, both of Wis., assignors to Cooper Industries, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 946,961, Sep. 17, 1992, Pat. No. 5,274,349. This application Apr. 2, 1993, Ser. No. 41,954

Int. Cl.[6] H01H *71/10*

U.S. Cl. 337—168 **20 Claims**

1. An improved load break disconnecting device for use in a switch mounting having spaced apart stationary and hinged conductors, the device comprising:

a conductive portion having a current limiting fuse for conducting a predetermined range of current;

a fuse cartridge having first and second ends and enclosing said fuse;



first and second end caps affixed to and enclosing said first and second ends, respectively, of said fuse cartridge and each including a cylindrical portion projecting outwardly from its center, said cylindrical portions each having an outer diameter;

a conducting hinge assembly affixed to said second cap for pivotally mounting said conductive portion on the hinged conductor;

a contact tube having one end affixed to a nonconducting plug and pull ring and having a second end connected to said cylindrical portion of said first cap, and having conductive engagement with the stationary conductor;

a nonconducting sleeve concentrically slidingly positioned over said first end of said fuse cartridge and said first cap, said sleeve having a closure portion at its first end and a cylindrical reentry portion extending into said sleeve from said closure portion, said reentry portion having an inner diameter sized to sequentially slidingly engage said outer diameters of said first cylindrical portion of said first cap, said contact tube, and said plug;

a coil spring disposed between said first cap and said closure portion and centered on said reentry portion for biasing said sleeve toward said plug;

a latch means mounted within said contact tube and positioned to hold said nonconductive sleeve in a latched position below said contact tube until it is unlatched by engagement with the stationary conductor, whereupon said coil spring urges said nonconductive sleeve upward until said nonconductive sleeve engages the stationary conductor, so that disengagement of the contact tube from the stationary conductor allows said spring to urge said nonconductive sleeve upward into engagement with said plug, thereby confirming and extinguishing any arc between the stationary conductor and said conductive portion.

5,485,137

METHOD FOR MANUFACTURING A FUSE AND A FUSE MADE BY THAT METHOD

Börje Maléus, Järfälla, and Jan Tjerngren, Ludvika, both of, Sweden, assignors to Asea Brown Boveri AB, Vasteras, Sweden

PCT No. PCT/SE92/00740, § 371 Date Apr. 29, 1994, § 102(e) Date Apr. 29, 1994, PCT Pub. No. WO93/10551, PCT Pub. Date May 27, 1993

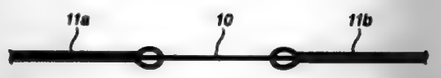
PCT Filed Oct. 28, 1992, Ser. No. 232,161

Claims priority, application Sweden, Nov. 18, 1991, 9103394

Int. Cl.[6] H01H *85/04*

U.S. Cl. 337—295 **14 Claims**

9. A continuous string of fuses having at least one fuse element formed of a single strand of said single strand of wire, comprising:



at least one fuse element formed from said single strand of fuse wire;

at least one terminal partially formed by moving said single strand of wire back and forth over a portion of said single strand of wire forming said fuse element to form at least one ring or loop;

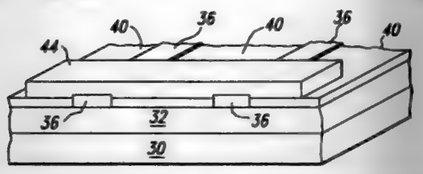
said terminal being completely formed with said ring or loop at the junction of said fuse element and said terminal by twisting said at least one ring or loop; and

the continuous string of fuses being formed by successively repeating said step of moving and twisting.

5,485,138
THIN FILM RESISTOR AND METHOD FOR MANUFACTURING THE SAME

Frank J. Morris, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 62,526, May 10, 1993, Pat. No. 5,367,284. This application Jun. 9, 1994, Ser. No. 255,636
The portion of the term of this patent subsequent to Nov. 22, 2011, has been disclaimed.
Int. Cl.[6] H01C *1/012*
U.S. Cl. 338—306 **17 Claims**



1. A method of fabricating a microelectronic inverted thin film resistor structure, said method comprising:

(a) forming a metallic interconnect layer having predetermined patterns delineating two or more metallic interconnect leads, on a supporting layer;

(b) forming an interlevel dielectric layer on said metallic interconnect layer and said supporting layer;

(c) planarizing said interlevel dielectric layer so as to expose a top contact portion of said metallic interconnect leads; and

(d) forming an inverted thin film resistor on said planarized interlevel dielectric layer and on said exposed top contact portion of said metallic interconnect leads.

5,485,139
TALKING DISPLAY SIGNAGE

Goerge V. Tarnovsky, 402 Riley Rd., New Windsor, N.Y. 12553

Continuation of Ser. No. 129,346, Sep. 30, 1993, abandoned.
This application Mar. 28, 1995, Ser. No. 412,059
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—573 **4 Claims**

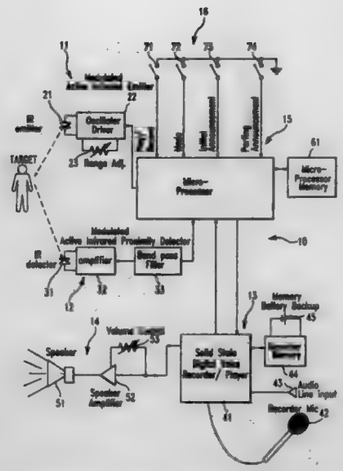
1. A system for presenting automatic verbal announcements comprising:

a modulated infrared signal generator for generating a modulated signal of given frequency at a target when the target is within a sensing range;

a detector for detecting a modulated infrared signal of the given frequency after is it reflected from a target within the sensing range;

a digital voice recorder/playback means for recording an announcement and subsequently providing said announcement when a target is within the sensing range;

speaker means to provide an audible output in response to the announcement received from said digital voice recorder/playback means; and,

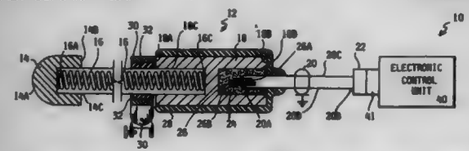


a microprocessor operatively connected to said generator to periodically output a modulated signal from said generator to said detector, said microprocessor being operatively connected to said digital voice recorder/playback means for initiating an announcement when a reflected signal of the given frequency is received at said detector.

5,485,140
VEHICLE OBSTACLE DETECTOR AND ALARM SYSTEM

George N. Bussin, 2934 Tyler Ct., Simi Valley, Calif. 93063

Filed Jun. 24, 1994, Ser. No. 264,990
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 340—436 **19 Claims**



1. An improved obstacle detector and alarm system comprising:

a) at least one obstacle detector assembly comprising:

(1) an impact probe having a front end, a rear end, and having a first rod cavity that extends longitudinally from the rear end,

(2) a flexible rod having a front section and a rear section, where the front section is sized to be frictionally inserted into and held within the first rod cavity,

(3) a housing having a front end, a rear end, and having a second rod cavity that extends longitudinally from the front end, and an acoustic transducer cavity that extends longitudinally from the rear end, where into the second rod cavity is frictionally inserted and held therein the rear section of said flexible rod,

(4) a cable having a first end and a second end with the cable encompassing a first conductor and a second conductor, where the first and second conductors projecting from the second end are connected to a female connector with the second conductor connected to common ground,

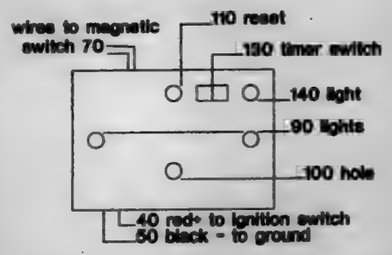
(5) an acoustic transducer having a first electrode and a second electrode, where the first electrode is attached to the first conductor projecting from the first end of said cable, and the second electrode is attached to the second conductor projecting from the first end of said cable, where the attached acoustic transducer is inserted into the acoustic transducer cavity on said housing and is held therein by the insertion of a potting compound, where when said impact probe touches or scrapes against an obstacle, mehcanical oscillations are produced by said impact probe that travel through said flexible rod into said housing, from said housing the oscillations are mechanically transmitted through the potting compound to said acoustic transducer from where a series of electrical pulses are produced and applied through the female connector attached to said cable, and

b) an electronic control unit housed within an enclosure having attached at least one male connector that mates with the female connector on said cable, and having circuit means for processing the electrical pulses and subsequently producing an alarm that alerts a driver of a vehicle when the vehicle has encountered an obstacle.

5,485,141
LOGALERT

Jay D. Gregory, 2237 E. Acoma Dr., Phoenix, Ariz. 85022-4101

Filed Dec. 17, 1993, Ser. No. 95,677
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 340—457 **2 Claims**



1. An alarm system for reminding the driver of a commercial truck to fill out a log book, which comprising:

electronic components comprising integrated circuits, resistors, diodes, switches and a sound emitting device connected to an electrical circuit board;

a power supply means for supplying 12 volts D.C. to said electrical circuit board;

a housing means for housing said circuit board, said diodes and said switches;

a magnetic material means connecting around a parking brake knob;

a magnetic switch means connecting around the base of said knob, when said parking brake knob is pulled out, said magnetic material means leaves the close proximity of said magnetic switch means such that said magnetic switch means moves from closed to open position and causes said electrical circuit board to activate said diodes to light and said sound emitting device to emit a tone for alerting said driver to fill out said log book, and deactivating means for deactivating said alarm system by said driver activating a reset button of said deactivating means;

wherein said magnetic material means comes in close proximity to said magnetic switch means causing said magnetic switch means to close when said parking brake knob is pushed in, causing said electrical circuit board to activate said diodes to light and said sound emitting device to emit a tone for alerting said driver to fill out the log book, and deactivating the alarm system by activating said reset button of said deactivating means;

wherein one of said switches comprising a timer switch means, wherein said timer switch means is caused to activate a two hour timer such that said electrical circuit board, said diodes and said sound emitting device are activated every two hour period, and deactivating said timer switch means by activating said reset button of said deactivating means;

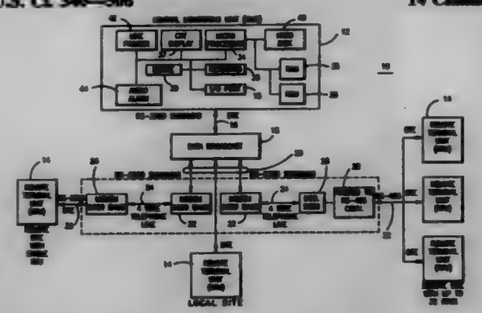
electrical wires connecting said magnetic switch means to said electric circuit board;

whereby pushing on said reset button causes said electrical circuit board to deactivate causing said diodes to stop lighting and said sound emitting device to stop emitting a tone.

5,485,142
REMOTE MONITOR ALARM SYSTEM

Robert A. Stute, Orlando; F. Houston Galloway, Cocoa; Pedro J. Medelius, Merritt Island; Robert W. Swindle, Orlando, and Tracy A. Bierman, Mims, all of Fla., assignors to United States of America as represented by Administrator National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 8, 1994, Ser. No. 223,481
Int. Cl.[6] G08B *29/00*
U.S. Cl. 340—506 **14 Claims**



1. A remote monitor alarm system for monitoring alarm conditions of remotely located communications terminal equipment at a central location comprising:

a) a plurality of remote terminal units, each said unit including:

i) means to monitor a plurality of discrete alarm points and a plurality of analog power supply voltage points of communications equipment to be monitored; and,

ii) memory means for storing discrete alarm and analog power supply voltage condition information, and for storing a system program, operation instructions for said program and a database containing alarm and power supply voltage parameters;

b) a central monitoring unit for monitoring discrete alarm and analog power supply voltage conditions of said remotely located communications terminal equipment, said central monitoring unit including:

i) means for receiving discrete alarm and analog power supply voltage condition information from each said remote terminal unit;

ii) memory means for storing discrete alarm and analog power supply voltage condition information received from each said remote terminal unit, a system program for each said remote terminal unit and a database containing alarm and power supply voltage parameters for each said remote terminal unit;

iii) means for downloading said operation instructions and said database for each said remote terminal unit into the corresponding one of said plurality of remote terminal units; and

c) communication means connecting said central monitoring unit with each of said remote terminal units.

5,485,143

SECURITY DYE PACK HAVING FLEXIBLE HEAT-RESISTANT CHEMICAL POUCH

Scott E. Keniston, Scottsdale, Ariz., assignor to U.S. Currency Protection Corp., Fountain Hills, Ariz.

Continuation of Ser. No. 86,682, Jul. 2, 1993, abandoned. This application Feb. 21, 1995, Ser. No. 391,838

Int. Cl.[6] G08B *13/14*

U.S. Cl. 340—568 **15 Claims**



1. A security dye pack disguised as a bundle of currency bills for discharging active chemicals to assist in the apprehension of an assailant and in the recovery of monies stolen from a protected premises, said security dye pack comprising in combination:

a. a housing resembling a bundle of currency bills and having a hollowed inner chamber;

b. a substrate disposed within said hollowed inner chamber;

c. electronic circuit means disposed upon said substrate for detecting removal of said security dye pack from the protected premises and generating an actuating electrical signal in response thereto;

d. a squib coupled to said electronic circuit means and responsive to said actuating electrical signal for generating heat to ignite chemicals;

e. a heat resistant flexible container disposed within the hollowed inner chamber of said housing, said squib extending into said flexible container; and

f. a chemical mixture comprising active chemicals disposed within said flexible container and adapted to be ignited by heat generated by said squib for discharging active chemicals from said housing to assist in the apprehension of the assailant and in the recovery of stolen monies;

g. said flexible container being relatively soft and bendable by comparison with a rigid metal chemical canister.

5,485,144

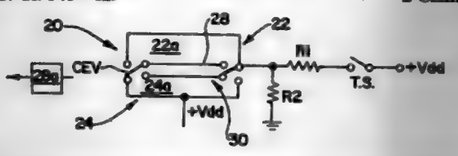
COMPENSATED IONIZATION SENSOR

Perrouz Amleshi, St. Charles; Hsing G. Jen, Buffalo Grove; William MacPherson, West Chicago, and Lee D. Tice, Bartlett, all of Ill., assignors to Pittway Corporation, Chicago, Ill.

Filed May 7, 1993, Ser. No. 59,807

Int. Cl.[6] G08B *17/10*

U.S. Cl. 340—629 **2 Claims**



1. A compensated smoke detector with a predetermined characteristic comprising:

a housing;

a compensated smoke sensor carried by said housing, said sensor including an active electrode, a reference electrode, an intermediate electrode and a compensating electrode directly electrically connected to said active electrode and capacitively coupled to said intermediate electrode; and

an output electrical device coupled to said intermediate electrode.

5,485,145

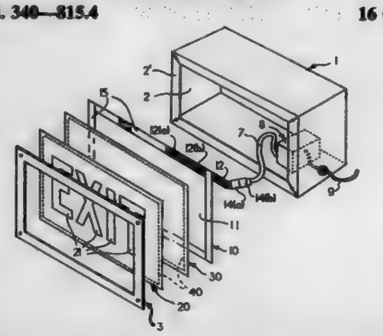
ELECTROLUMINESCENT SIGN CONVERSION KIT

Donald Saiff, Middleburg Heights, Ohio, assignor to Emergency Safety Products, Inc., East Pittsburgh, Pa.

Filed Mar. 11, 1991, Ser. No. 667,139

Int. Cl.[6] G08B *7/00*

U.S. Cl. 340—815.4 **16 Claims**



1. A conversion kit for converting a sign fixture originally illuminated by incandescent bulb or fluorescent tube to electroluminescent lighting, said kit comprising:

(a) an electroluminescent panel having a light emitting surface;

(b) means for placing said electroluminescent panel into electrical communication with an AC line current power cord supplied to said sign fixture; and

(c) a generally flat and thin opaque sign mask constructed of a stiff, flexible sheet material and having adjacent a perimeter thereof a plurality of spaced apart and parallel sign mask breakaway lines such that edge strips of said opaque sign mask may be broken away to adapt fitting of said opaque sign mask to said sign fixture, said opaque sign mask being adapted for receiving sign indicia in the nature of one or more stencil like cutouts therethrough prior to installation of said opaque sign mask to said sign fixture, said opaque sign mask, bearing said sign indicia, being disposable over said light emitting surface of said electroluminescent panel such that only light emitted by said light emitting surface underlying said cutouts may pass through said opaque sign mask.

5,485,146

PAGING RECEIVER

Shinjiro Umetsu, and Yasuhiro Kobayashi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 64,671, May 21, 1993, abandoned, which is a continuation of Ser. No. 708,311, May 31, 1991, abandoned. This application May 31, 1995, Ser. No. 455,254

Claims priority, application Japan, May 31, 1990, 2-139815

Int. Cl.[6] G08B *5/22*

U.S. Cl. 340—825.44 **8 Claims**

1. A paging receiver which has a function of writing its own paging code only once, comprising:

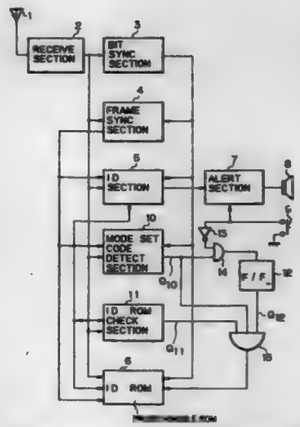
a programmable ROM for storing a paging code corresponding to said paging receiver;

programmable ROM checking means for generating a no-data signal only when no data is present in said programmable ROM, and a data signal only when data is present in said programmable ROM;

detecting means for generating a detection signal when a predetermined mode set code is detected in a received signal received by said paging receiver;

commanding means for generating a write command signal to command writing of the paging code in said programmable ROM; and

means responsive to said no-data signal, said detection signal, and said write command signal for writing into said programmable ROM a paging code indicated by said received signal, said paging code being written to said programmable ROM



according to said received signal only when all of said no-data signal, said detection signal and said write command signal are generated;

said programmable ROM checking means generating said no-data signal only until said paging code is written, as said data, into said programmable ROM a first time.

5,485,147

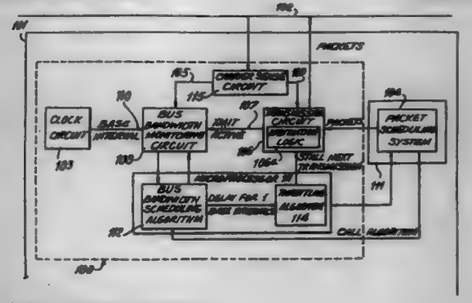
METHOD AND APPARATUS FOR SCHEDULING ACCESS TO A CSMA COMMUNICATION MEDIUM

David H. Jaffe, Belmont; Hoke S. Johnson, III, Monte Sereno, and Chris W. Eidler, Morgan Hill, all of Calif., assignors to MTI Technology Corporation, Anaheim, Calif.

Division of Ser. No. 825,282, Jan. 22, 1992, Pat. No. 5,359,320, which is a continuation of Ser. No. 501,663, Mar. 29, 1990, abandoned. This application Apr. 7, 1994, Ser. No. 224,249

Int. Cl.[6] H04Q *3/00*

U.S. Cl. 340—825.5 **5 Claims**



3. In a network including:

a plurality of nodes,

a communication medium shared by the plurality of nodes for permitting data transmissions between nodes,

a carrier sense multiple access communication protocol that requires each data transmission on the communication medium to be accompanied by a carrier signal,

a system for controlling access by a local node of the plurality of nodes to the communication medium, the system comprising:

means for sensing the communication medium for the presence of a carrier signal to determine total transmission activity on the communication medium, wherein the sensing means comprises:

first sampling circuitry for providing an indication of the presence or absence of a carrier signal on the communication medium at particular intervals; and

first counting circuitry responsive to the first sampling circuitry for determining the number of intervals at which the presence of a carrier signal is indicated over a selected period of time; and

means for determining and controlling a share of bandwidth used by the local node as a function of the total transmission activity on the communication medium, wherein the controlling means comprises:

means for defining a first programmable limit on the share of bandwidth used by the local node when free time on the communication medium is less than a second programmable threshold value;

programmable means for selectively scheduling a delay of variable length in accessing the communication medium when the local node seeks to transmit; and

means for deriving a measure of the free time on the communication medium from the first counting circuitry and a measure of the share of bandwidth used for transmission by the local node, wherein the programmable means schedules the delay of variable length if the measure of free time is less than a first programmed threshold value and the measure of bandwidth share of the local node exceeds a second programmed threshold value.

5,485,148

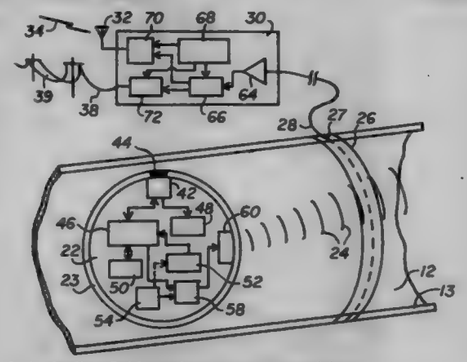
PIPELINE FLUID TRAVEL MONITORING SYSTEM

Ling-yuan Tseng, 13772 Calle Tacuba, Saratoga, Calif. 95070

Filed Mar. 31, 1993, Ser. No. 40,887

Int. Cl.[6] H04Q *7/00*

U.S. Cl. 340—825.54 **14 Claims**



1. A pipeline fluid tagging system, comprising:

a housing adapted to travel with a fluid in a pipeline;

a transmitter disposed in said housing operative to transmit signals representative of information relating to the identification of said fluid;

at least one stationary receiver disposed externally to said pipeline to receive the signals transmitted by said transmitter; and

signal processing and communication circuitry connected to said receiver operative to output said identification information to a user of said system for the purpose of monitoring said fluid as it travels through said pipeline.

5,485,149

REMOTE CONTROLLER AND METHOD FOR ASSIGNING TO SIGNALS PRIORITY BASED ON TYPE AND MANUFACTURE OF EQUIPMENT

Iwao Takiguchi, Chiba, and Toshiyuki Takahashi, Kanagawa, both of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 9, 1993, Ser. No. 74,092

Claims priority, application Japan, Jun. 18, 1992, 4-182846

Int. Cl.[6] H04B *1/20*

U.S. Cl. 340—825.69 **16 Claims**

1. A remote controller comprising:

transmitter means for transmitting remote control signals;

No. of Key Presses / Key Number	1	2	3	4
1	A Corp. Cm	A Corp. Cm		
2	B Corp. Cm	B Corp. Cm	B Corp. Cm	B Corp. Cm
3	C Corp.			
4	D Corp.			
5	E Corp. Cm	E Corp. Cm		
6	F Corp.			
7	G Corp.			
8	H Corp. Cm	H Corp. Cm	H Corp. Cm	
9	I Corp. Cm	I Corp. Cm		
10	J Corp.			
11	K Corp. Cm	K Corp. Cm		
12	L Corp.			

first storage means for storing a plurality of remote control signal groups, each of said remote control signal groups comprising data representing a respective plurality of associated remote control signals;

a plurality of actuatable operating means for selecting upon actuation a remote control signal group from said first storage means, said plurality of remote control signal groups being greater in number than said plurality of actuatable operating means;

control means for reading from said first storage means, data of the remote control signals of the remote control signal group corresponding to a most-recently actuated one of said plurality of actuatable operating means, said remote control signals being selected according to the number of times said most-recently actuated one of said plurality of actuatable operating means has been actuated, and,

second storage means for storing the data of said selected remote control signals read from said first storage means, wherein upon subsequent actuation of any of said plurality of actuatable operating means, said control means causes data of said selected remote control signals to be transmitted by said transmitter means.

5,485,150

REMOTE DATA READ SYSTEM

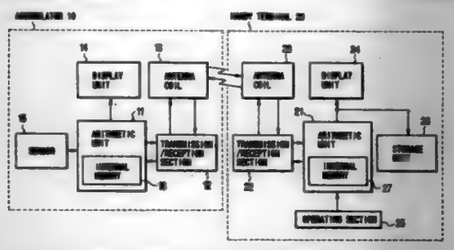
Tetsuo Hisanaga, and Tetsuya Kajita, both of Kanagawa, Japan, assignors to Yamatake-Honeywell Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1992, Ser. No. 956,797

Claims priority, application Japan, Jan. 7, 1991, 3-285465

Int. Cl.[6] G08B *23/00*; G08C *15/06*

U.S. Cl. 340—870.02 **4 Claims**



1. A remote data reading system comprising:

at least one accumulator for accumulating data representing an amount under measurement; wherein each accumulator includes first transmission/reception means of an electromagnetic induction type for receiving a data request signal, and for sending data in response to the data request signal;

wherein each of the accumulators further includes a first memory adapted for storing an accumulated amount, an accumulated identification code, and a previously read accumulation amount;

wherein each of the accumulators transmits the accumulated amount, the accumulator identification code, and the previously read accumulation amount together in response to the data request signal; and

a portable, hand-held terminal for reading and displaying data from the accumulator, the hand-held terminal second transmission/reception means of an electro magnetic induction type for sending the data request signal to the first transmission/reception means, and for receiving the data from the first transmission/reception means;

wherein the hand-held terminal further includes a second memory adapted for storing the accumulated identification code, unique to each accumulator, for identifying each of the accumulators and adapted for storing the previously read accumulated amount for each accumulator.

wherein the hand-held terminal is adapted to check on the basis of the received accumulator identification code and the previously read accumulated amount whether the received data is from a target accumulator;

wherein the hand-held terminal transmits the data request signal including the accumulator identification code of a target accumulator and the previously read accumulated amount of the target accumulator,

wherein each of the accumulators updates/stores the accumulated amount data transmitted to the hand-held terminal as a new accumulated identification code, in the first memory, and the hand-held terminal reads the accumulated amount from the target accumulator in a next read operation by using the accumulated amount data stored in the first memory.

5,485,151

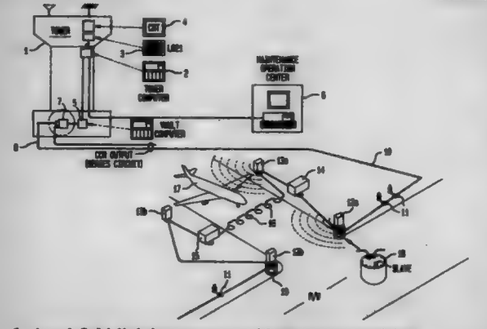
AIRFIELD LIGHTING SYSTEM

Edwin K. Runyon, Gahanna; Harold R. Williams, Columbus; Todd E. McCorkle, Newark; Mark E. Weihs, Toledo, and Earl R. Williams, Columbus, all of Ohio, assignors to ADB-Alnaco, Inc., Columbus, Ohio

Filed May 6, 1993, Ser. No. 59,023

Int. Cl.[6] B64F *1/18*

U.S. Cl. 340—953 **9 Claims**



1. An airfield lighting system, said system comprising:

(a) an electrical circuit, said circuit adapted to conduct a current and a control electrical signal, and comprising a plurality of transformers connected in series, each of said transformers adapted to energize at least one airfield light;

(b) a general control microprocessor;

(c) a master control module adapted to accept a respective control digital signal and a detection control digital signal from said general control microprocessor, to convert said respective control digital signal and detector control digital signal to a respective control electrical signal and detector control electrical signal, and to send said respective control electrical signal and detector control electrical signal through said circuit;

(d) remote controller means connected to each of said transformers, each of said remote controller means comprising:

1. means to accept said control electrical signal and to convert said control electrical signal to a converted control digital signal,

2. switching means to control said at least one airfield light, and

3. remote controller microprocessor means adapted to process said converted control digital signal and control said switching means in accordance with said converted control digital signal;

(e) a constant current regulator adapted to control the current flowing through said circuit;

(f) at least one additional transformer connected to said electrical circuit, for energizing an aircraft detection means coupled thereto, wherein said aircraft detection means has (1) a microwave receiver and (2) a microwave transmitter adapted to transmit a microwave frequency to said microwave receiver; and wherein said electrical control means is adapted to disturb said microwave frequency to simulate the effect of an aircraft passing between said microwave receiver and said microwave transmitter;

(g) and detection remote controller means connected to each of said transformers, each of said detection remote controller means comprising:

(i) means to accept said detection control electrical signal and to convert said detection control electrical signal to a converted detection control digital signal,

(ii) electrical control means to control said at least one aircraft detection means,

(iii) detection remote controller microprocessor means adapted to (1) process said converted detection control digital signal and control said electrical control means in accordance with said converted detection control digital signal and (2) generate a detection return digital signal, and

(iv) means to convert said detection return digital signal to a detection return electrical signal and to send said detection return electrical signal through said circuit; and wherein said master control module is adapted to accept said detection return electrical signal, to convert said detection return electrical signal to a converted detection return digital signal, and to send said converted detection return digital signal to said general control microprocessor.

5,485,152

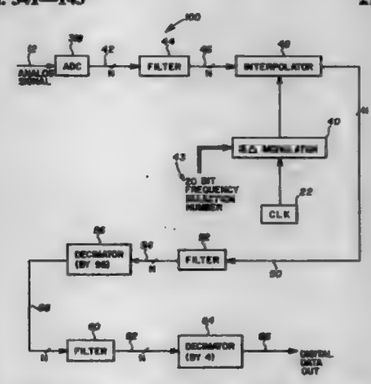
ANALOG TO DIGITAL CONVERSION USING NON-UNIFORM SAMPLE RATES

James Wilson, Sharon; Ronald A. Cellini, Newton, and James M. Sobol, Norfolk, all of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 121,104, Sep. 13, 1993, abandoned. This application Oct. 25, 1994, Ser. No. 328,560

Int. Cl.[6] H03M *3/02*

U.S. Cl. 341—143 **21 Claims**



1. An analog to digital converter system, comprising:

analog to digital conversion means for converting an analog signal to a digital signal having a first data rate;

interpolation means, coupled to the analog to digital conversion means, for receiving the digital signal having a first data rate and for supplying the digital signal having an increased data rate;

decimation means, coupled to the interpolation means, for decimating the digital signal having the increased data rate to provide a digital signal having a second data rate; and

modulator means, coupled to and controlling the interpolation means, for providing a modulated output signal representative of the second data rate and for controlling the interpolation means to provide the digital signal having the increased data rate.

5,485,153

SINUSOIDAL WAVE GENERATION APPARATUS

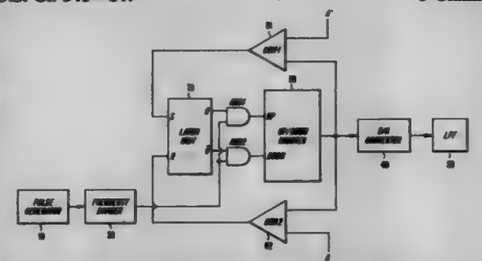
Sang-Gon Park, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 12, 1993, Ser. No. 133,918

Claims priority, application Rep. of Korea, Jan. 15, 1992, 92-18953

Int. Cl.[6] H03M *1/66*

U.S. Cl. 341—147 **5 Claims**



1. A sinusoidal wave generation apparatus comprising:

pulse generation means for generating a pulse signal of a precise frequency in response to a clock signal;

frequency division means for dividing the precise frequency of the pulse signal from said pulse generation means by a desired ratio to output a desired frequency of pulse signal;

up/down counting means for alternately up-counting and down-counting the frequency-divided pulse signal from said frequency division means and outputting alternately up-counted and down-counted values corresponding to digital triangular wave data;

a plurality of AND gates for receiving the frequency-divided pulse signal from the frequency division means and inputting said frequency-divided signal into said up-down counting means for the up or down-counting operation;

digital/analog conversion means for converting the digital triangular wave data of the up/down-counted values from said up/down counting means into an analog triangular wave signal;

low pass filtering means for filtering a harmonic component of the analog triangular wave signal from said digital/analog conversion means to output a sinusoidal wave signal;

comparison means for comparing the up/down-counted values from said up/down counting means with predetermined upper and lower reference values, respectively, and outputting pulse signals in accordance with the comparison, wherein said comparison means compares the predetermined upper reference value with the up-counted values of the up/down counting means, and if the counted value of the up/down counting means is the same as the predetermined upper reference value, the up/down counting means starts a down-counting operation for the frequency-divided pulse signal from the frequency division means

latch means for changing the up-counting operation of said up/down counting means to the down-counting operation thereof and vice versa in response to the pulse signals from said comparison means;

wherein said comparison means includes:

a first comparator, connected to a set input of said latch means and having a first input for receiving predetermined lower reference value and a second input for receiving the down-counted value from said up/down counting means, for comparing the down-counted value from said up/down counting means with the predetermined lower reference value and outputting the pulse signal if the down-counted value from said up/down counting means is equal to the predetermined lower reference value as a result of the comparison; and

a second comparator, connected to the reset input of said latch means and having a first input for receiving a predetermined upper reference value and a second input for receiving the up-counted value from said up/down counting means, for comparing the up-counted value from said up/down counting means with the predetermined upper reference value and outputting the pulse signal if the up-counted value from said up/down counting means is equal to the predetermined upper reference value as a result of the comparison.

5,485,154

COMMUNICATION DEVICE AND METHOD(S)

David R. Brooks, and Graham A. Murdoch, both of Perth, Australia, assignors to Magellan Corporation (Australia) Pty. Ltd., Canning Vale, Australia

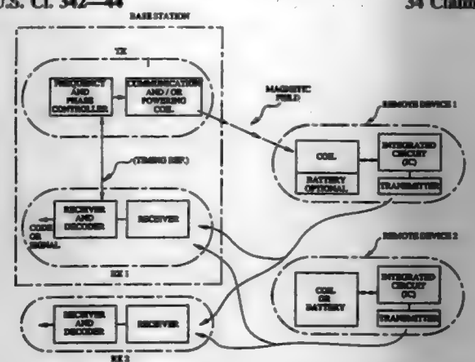
Continuation-in-part of Ser. No. 978,033, Nov. 18, 1992, Pat. No. 5,302,954. This application Jan. 18, 1994, Ser. No. 183,118

Claims priority, application Australia, Dec. 4, 1987, PI 5744

The portion of the term of this patent subsequent to Apr. 12, 2011, has been disclaimed.

Int. Cl.[6] G01S *13/80*

U.S. Cl. 342—44 **34 Claims**



1. A transmitting arrangement adapted to provide communication and/or identification, said arrangement comprising:

transmitter means adapted to transmit a communication signal via a carrier signal having a frequency selected from a set of possible carrier signal frequencies;

selection means for selecting the carrier signal frequency from the set of possible carrier signal frequencies; and

generating means for providing the set of possible carrier signal frequencies for use by the selection means; wherein

the communication signal is transmitted, at each transmission, at a newly selected carrier signal frequency.

5,485,155

RADAR SYSTEM DETECTING PLURAL OBSTACLES AND MEASURING DISTANCE BASED ON FULL GAIN AND AUTOMATIC GAIN CONTROL

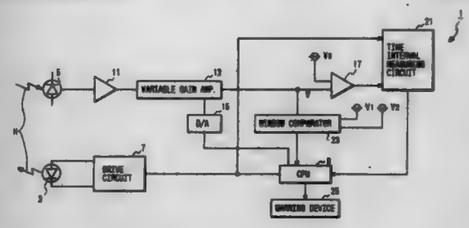
Katsuhiko Hibino, Toyoake, Japan, assignor to Nippondenso Co., Ltd., Toyota, Japan

Filed Nov. 23, 1994, Ser. No. 346,297

Claims priority, application Japan, Nov. 25, 1993, 5-295340

Int. Cl.[6] G01S *13/93*

U.S. Cl. 342—70 **20 Claims**



1. A radar system comprising:

electromagnetic wave transmission means for intermittently emitting an electromagnetic wave of a pulse waveform;

electromagnetic wave reception means for receiving said electromagnetic wave reflected from an obstacle;

distance calculating means for calculating a distance of said obstacle from said radar system based on a time interval between said transmission of said electromagnetic wave from said electromagnetic wave transmission means and said reception said electromagnetic wave by said electromagnetic wave reception means;

first reception control means for controlling a gain of said electromagnetic wave reception means to have a standard sensitivity corresponding to a maximum value of said electromagnetic wave received by said electromagnetic wave reception means; and

second reception control means for controlling said gain of said electromagnetic wave reception means to have its maximum sensitivity,

wherein said time interval is calculated based on said electromagnetic wave detected by said electromagnetic wave reception means having said standard sensitivity and said electromagnetic wave detected by said electromagnetic wave reception means having said maximum sensitivity.

5,485,156

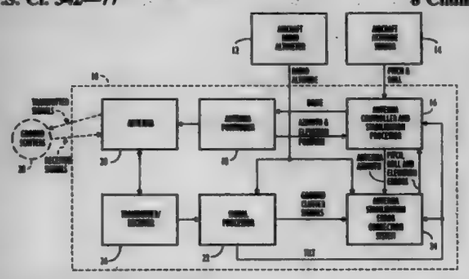
ANTENNA STABILIZATION ERROR CORRECTION SYSTEM FOR RADAR

Arezki Manseur; William C. Weist, both of Boca Raton; Ruy L. Brandao, Fort Lauderdale, and Phillip R. Hermann, Coral Springs, all of Fla., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Sep. 21, 1994, Ser. No. 310,117

Int. Cl.[6] G01S *13/66*

U.S. Cl. 342—77 **8 Claims**



1. A radar system comprising:

antenna controller and stabilization processor means connected to an aircraft attitude sensor;

antenna positioner means connected to said antenna controller and stabilization processor means;

antenna means connected to said antenna positioner means for transmitting signals, for receiving signals and for receiving ground clutter;

transmitter/receiver means connected to said antenna means;

signal processor means connected to said transmitter/receiver means, said antenna controller and stabilization processor means and an aircraft radio altimeter;

antenna stabilization error correction system connected to said signal processor means, said antenna controller and stabilization processor means and said aircraft radio altimeter means, wherein said antenna stabilization error correction system estimates pitch, roll and elevation errors and transmits corrected signals to said antenna controller and stabilization processor means;

said antenna stabilization error correction system includes compute incremental component means for computing ΔPe, ΔR, ΔEe and ΔT, wherein Pe is pitch error, Re is roll error, Ee is elevational error and T is time, compute slew rate limit means connected to said compute incremental component means, integrate means connected to said compute slew rate limit means for integrating ΔPe, ΔRe, ΔEe and for providing Pe, Re, Ee, and magnitude limit means connected to said integrate means; and

said signal processor means extracting ground clutter signals from signals received from said transmitter/receiver means and sending said ground clutter signals to said antenna stabilization error correction system.

5,485,157

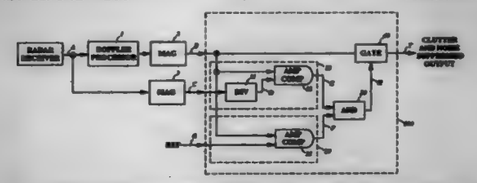
DOPPLER RADAR DETECTION SYSTEM

Maurice W. Long, 1036 Somerset Dr., NW., Atlanta, Ga. 30327

Filed Oct. 11, 1994, Ser. No. 320,695

Int. Cl.[6] G01S *13/534;7/28*

U.S. Cl. 342—160 **16 Claims**



1. A radar detection system for processing the received signal from a radar receiver—to detect moving targets while suppressing clutter and noise; said clutter being radar echo signals from stationary and slowly moving objects of land or sea having small doppler frequencies including frequencies at and near zero, and said noise being randomly fluctuating signals having wide doppler spectra including zero frequency; comprising:

doppler processor means for frequency filtering the received signal and providing at least one filtered signal in response to the said received signal;

means of providing a first signal having doppler frequencies at and near zero frequency with magnitude in response to the magnitude of the said received signal;

means of providing a second signal with a magnitude in response to the magnitude of a filtered signal of said at least one filtered signal;

clutter thresholder means for comparing the first and second signals and for providing a clutter thresholder output signal of a first level only when the ratio of the second signal magnitude to the first signal magnitude is less than a predetermined value and of a second level whenever this ratio exceeds the predetermined value;

reference voltage means for providing a reference voltage with magnitude that exceeds the noise level of said second signal;

noise thresholder means for comparing the second signal magnitude and magnitude of the reference voltage for providing a noise thresholder output signal of a first level only when the second signal magnitude is less than the magnitude of the reference voltage and of a second level whenever the second signal magnitude exceeds the magnitude of the reference voltage; and

radar output means for selectively passing a radar output signal constituting a clutter and noise suppressed radar output only in the presence of both the clutter thresholder output signal and the noise thresholder output signal being of the second level.

5,485,158

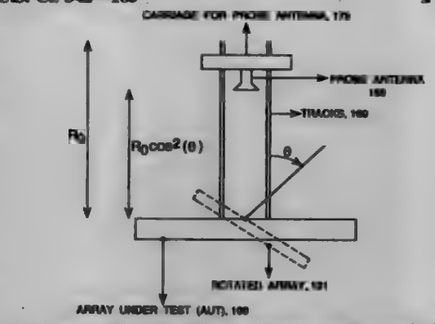
LINEAR NEAR FIELD TEST FACILITY AND PROCESS

Robert J. Mailloux, Wayland; Peter R. Franchi, Winchester, and Harvey E. Tobin, Dracut, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 21, 1994, Ser. No. 278,341

Int. Cl.[6] G01S *7/40*

U.S. Cl. 342—165 **2 Claims**



1. A process for measuring a phased array antenna's far field antenna pattern which is exhibited as electro-magnetic power measured in watts per square centimeter by a beam emitted by the phased array antenna wherein said phased array anteana has an antenna center, said process comprising the steps of:

rotating the phased array antenna by an angle θ which is measured from foresight;

focusing the beam at a point Ro near a probe antenna which measures the beam;

measuring the electromagnetic power of the beam with the probe antenna to identify a pattern of electromagnetic power emitted therefrom;

moving the probe antenna to different positions that are on a linear path from the phased-array antenna; wherein said moving step is accomplished by repositioning the probe antenna along different positions ro on a line given by

$$\left[\frac{r_0}{R_0}\right]^2 = \cos^4(\theta)$$

and repeating the rotating, focusing, measuring and moving steps.

5,485,159

APPARATUS AND METHOD TO DETECT RADAR RADOMK OBSTRUCTION

Zhaohong Zhang, and Mark F. Henderson, both of Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

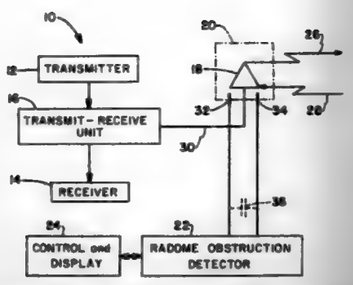
Filed Aug. 24, 1994, Ser. No. 299,168

Int. Cl.[6] G01S *7/40;* **G08B** *19/02*

U.S. Cl. 342—165 **3 Claims**

1. An antenna system comprising:

(a) an antenna for transmitting and receiving signals;



(b) a radome sheltering said antenna and having an outer surface susceptible to accumulating obstruction material which has an electrical resistance characteristic;

(c) a pair of spaced-apart electrodes affixed to said outer surface of said radome;

(d) means connected to the electrodes for measuring the electrical resistance characteristic of said obstruction material accumulated between said spaced-apart electrodes;

(e) means for correlating the measured electrical resistance characteristic to a degree of attenuation of said transmitted and received signals due to the presence of said obstruction material on said radome; and

(f) means for providing a warning indication when a surface impedance measurement corresponding to a predetermined degree of signal attenuation is reached.

5,485,160

RADAR-TYPE OBJECT SHAPE DETECTOR

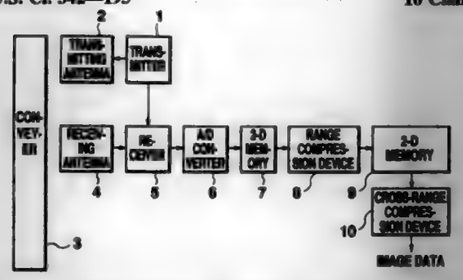
Seishi Suganuma, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1994, Ser. No. 297,798

Claims priority, application Japan, Sep. 3, 1993, 5-220066; Jun. 24, 1994, 6-143448

Int. Cl.[6] G01S *13/00*

U.S. Cl. 342—195 **10 Claims**



1. An apparatus for detecting the shape of a target by means of radar, said apparatus comprising:

a transmitter which emits a continuous wave signal, said signal comprising a unit which is repeated with a fixed period, the transmitting frequency being continuously varied within a predetermined frequency bandwidth for each signal unit,

a transmitting antenna which radiates said transmitting signal output by the transmitter towards said target,

conveyor means which transports said target, and rotates it in the transmitting beam formed by the transmitting antenna,

a receiving antenna which receives signals reflected by said target,

a receiver which receives the signals output by said receiving antenna, and converts them to I/Q (In-Phase Quadrature) video signals by performing orthogonal phase detection, a signal generated by delaying the transmitting signal by the propagation time required for radio waves to travel in both directions between the rotation axis of the target and the receiving antenna being used as a reference signal when orthogonal phase detection is performed,

an A/D converter which sets sampling times according to transmission frequencies which divide the frequency bandwidths in the aforesaid signal units into a predetermined number of equal parts, and samples and digitizes the aforesaid I/Q video signals at each of these sampling times,

a first two-dimensional memory which stores said digitized I/Q video signals output by said A/D converter in a sequence determined by a transmission frequency index m assigned according to the sampling times in each signal unit, and by a transmission period index n assigned to each signal unit,

a range compression device which collects reflected signal components from various ranges present in said digitized I/Q video signals into groups of components having the same range, by performing an inverse Fourier transformation on said digitized I/Q video signals stored in said first two-dimensional memory in the direction of the transmission frequency index for each column having the same transmission period index, and thereby generates video signal data which is resolved in the range direction,

a second two-dimensional memory which stores video signal data resolved in the range direction, in the form of a two-dimensional matrix according to a range index k assigned to the data according to range, and to the transmission period index n, and

a cross-range compression device which collects reflected signal components from various directions present in the video signals resolved according to range, into groups of components having the same Doppler frequency, by performing a Fourier transformation on said video signals stored in said second two-dimensional memory in the direction of the transmission frequency index for each row having the same range index, thereby generating video signal data which is resolved in the cross-range direction corresponding to the Doppler frequency, and performs amplitude detection on the video signals so resolved in the cross-range direction so as to generate image data.

5,485,161

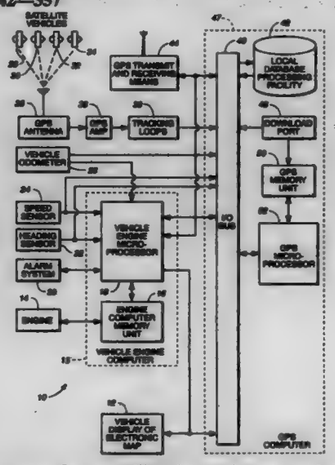
VEHICLE SPEED CONTROL BASED ON GPS/MAP MATCHING OF POSTED SPEEDS

David Vaughn, San Jose, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Nov. 21, 1994, Ser. No. 325,130

Int. Cl.[6] H04B *7/185*; G01S *5/02*

U.S. Cl. 342—357 **26 Claims**



1. An apparatus for controlling the maximum speed of a vehicle based on the speed limits posted on the street on which the vehicle is travelling, said apparatus comprising:

a position-, bearing- and speed-determining navigation receiver-computer with an earth navigation format data output;

a vehicle engine computer connected to said navigation receiver; and

a location-speed relational map database, wherein said location-speed relational map database is stored in said navigation receiver-computer;

wherein said navigation receiver-computer determines the location and the speed of the vehicle, inputs the maximum speed from said location-speed map database, and forwards the speed limit to said engine computer, and wherein said engine computer uses the speed limit information contained in said location-speed map database to limit the maximum ground speed of the vehicle.

5,485,162

METHOD OF PERFORMING BEAM COMPRESSION PROCESS ON ANTENNA PATTERN OF RADAR

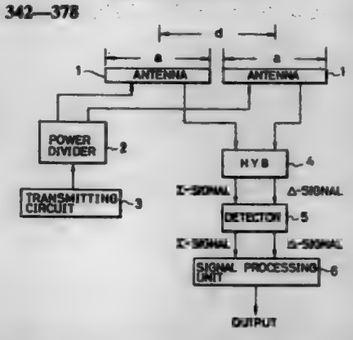
Toshihiro Sezai, Tokyo, Japan, assignor to National Space Development Agency of Japan, Tokyo, Japan

Filed Aug. 22, 1994, Ser. No. 293,888

Claims priority, application Japan, Sep. 13, 1993, 5-249690

Int. Cl.[6] G01S *3/16*

U.S. Cl. 342—378 **1 Claim**



1. A method for compressing a beam width of the antenna pattern of a radar antenna, comprising:

providing a radar antenna system comprising two antennas including a monopulse feed system;

scanning said antenna system while transmitting radio waves from said two antennas of the antenna system in such a manner that both the radio waves transmitted from the respective antennas are in phase;

receiving by the antenna system the radio waves which were transmitted from said antenna system and reflected by scattering objects and have finally come back to said antenna system;

calculating a double differential coefficient of a sum signal by differentiating twice a sum signal of signals received by said two antennas of the antenna system with respect to the scanning angle;

calculating a double differential coefficient of a difference signal by differentiating twice a difference signal of signals received by said two antennas of the antenna system with respect to a scanning angle; and

processing an output signal such that said sum signal is output as a final output signal only if the double differential coefficient of said sum signal is equal to or less than a predefined positive real number value and if the double differential coefficient of said difference signal is equal to or greater than a predefined negative real number value, and a zero signal is output in any other cases.

5,485,163

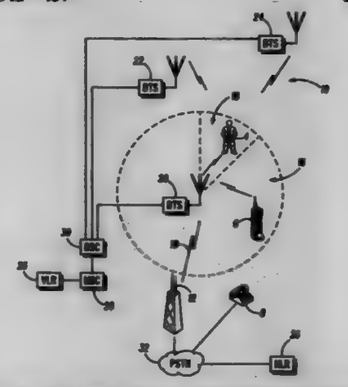
PERSONAL LOCATOR SYSTEM

Martin H. Singer, Northbrook; Daniel Tell, Deerfield, and Anthony Kobrinetz, Hoffman Estates, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 30, 1994, Ser. No. 220,342

Int. Cl.[6] G01S *3/02*

U.S. Cl. 342—457 **38 Claims**



1. A method of locating a portable locator unit (PLU) in a communications system comprising the steps of:

a) accessing the communications system and requesting location of the PLU to be sent to a receiving device;

b) sending a signal from the communications system to the PLU;

c) sending a response, including a PLU identifier, from the PLU;

d) receiving the response at a first node of the communications system. said first node having a node identifier;

e) providing location information within the communications system indicative of the location of the PLU based on analysis of the node identifier;

f) determining a desired format for the location information based on the PLU identifier; and

g) providing the location information of the PLU in the desired format to the receiving device.

5,485,164

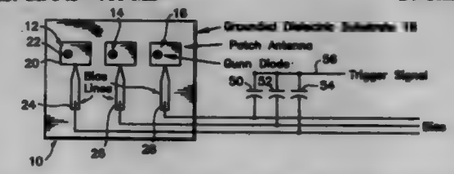
SELF-SCANNING PULSED SOURCE USING MODE-LOCKED OSCILLATOR ARRAYS

Richard C. Compton, Ithaca, N.Y., and Robert A. York, Goleta, Calif., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation of Ser. No. 914,146, Jul. 16, 1992, abandoned. This application Feb. 24, 1994, Ser. No. 201,078

Int. Cl.[6] H01Q *1/38*

U.S. Cl. 343—700 MS **24 Claims**



1. An antenna array for radiating high power microwave and millimeter wavelength signals, comprising:

a plurality of oscillator elements in side-by-side relationship, each element including an active device and a radiator;

bias means connected to each of said elements for producing, in each element, free oscillation at a different frequency, said elements each producing a corresponding radiated output signal; and

means including mutual coupling of said output signals producing mode locking of all said oscillator elements due to pulling effects to provide a resultant radiated signal from said array,

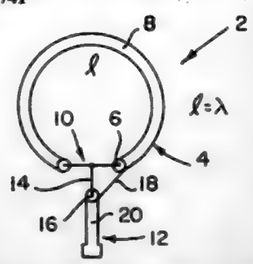
the composite signal having a power determined by the number of oscillator elements.

5,485,165

BROADBAND HIGH EFFICIENCY FULL WAVE OPEN COAXIAL STUB LOOP ANTENNA

Richard D. Foard, Culpeper, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 15, 1994, Ser. No. 290,273
Int. Cl.[6] H01Q *11/12*
U.S. Cl. 343—741 **7 Claims**



1. A broadband, high efficiency antenna radiator adapted for connection with an unbalanced feed line and source, comprising

(a) a section of coaxial cable having a length of one wavelength and including a center conductor and an outer shield, said center conductor being arranged in a continuous loop and said outer shield being arranged in a shorter loop to define an open stub; and

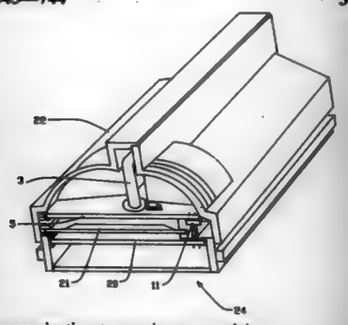
(b) means for connecting said cable with the feed line, including a T-shaped connector arranged in said open stub for connecting the ends of said cable center conductor with a center conductor of the feed line and a bridging connector for connecting one end of said coaxial shield with a shield of the feed line, thereby to define a coaxial open stub loop which provides maximum efficiency and bandwidth.

5,485,166

EFFICIENT ELECTRICALLY SMALL LOOP ANTENNA WITH A PLANAR BASE ELEMENT

Vikram Verma; Nian J. Yao, both of Palo Alto, Calif., and Quirino Balzano, Plantation, Fla., assignors to Savi Technology, Inc., Mountain View, Calif.

Filed May 27, 1993, Ser. No. 68,682
Int. Cl.[6] H01Q *1/24*
U.S. Cl. 343—744 **32 Claims**



1. A communication transceiver comprising,

an electrical circuit mounted on a circuit board for operation at a nation frequency,

an electrically small loop antenna including,

a radiation device including,

a conductive planar base element extending in a base plane,

a conductive loop extending from a first end to a second end, said tint end of the conductive loop for connection to said base element at a first location and said second end of the conductive loop for connection to said base element at a second location spaced from said first location,

a matching network for matching the impedance of the radiation device to the impedance of the electrical circuit, said matching network connecting the second end of the conductive loop to the base element at the second location whereby radiation current is conducted through the base element and the conductive loop,

connector means having first and second conductors for connecting to the electrical circuit, one of said conductors connected to said base element and the other of said conductors connected to the matching network whereby a connector current is conducted between the antenna and the electrical circuit,

battery means for powering the electrical circuit,

a housing including,

means for engaging and locating the circuit board having the electrical circuit at a first level,

means for engaging and locating the battery at a second level parallel to the first level,

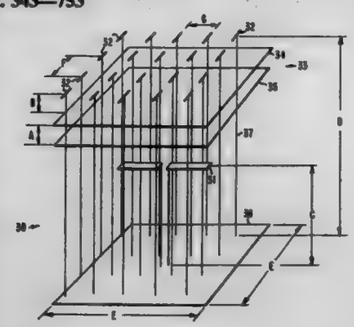
means for engaging and locating the base element of the radiation device at a third level parallel to the first level whereby the base element and the battery are positioned between the conductive loop of the radiation device and the electrical circuit to shield the electrical circuit from the conductive loop of the radiation device.

5,485,167

MULTI-FREQUENCY BAND PHASED-ARRAY ANTENNA USING MULTIPLE LAYERED DIPOLE ARRAYS

Nam S. Wong, Fullerton; Kuan M. Lee, Brea, and Raymond Tang, Fullerton, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 971,712, Nov. 4, 1992, abandoned, which is a continuation of Ser. No. 447,973, Dec. 8, 1989, abandoned. This application Jan. 18, 1994, Ser. No. 183,205
Int. Cl.[6] H01Q *15/02;5/02;21/12*
U.S. Cl. 343—753 **9 Claims**



1. A multi-frequency band array antenna for providing simultaneous operation over at least two frequency bands comprising:

a first array antenna including a plurality of first antenna array elements and having a first antenna aperture, said first antenna array elements being spaced apart from one another in a two dimensional array, said first antenna array elements being tuned to a first array operating frequency that is in a first frequency band, the spacing between said first antenna array elements being approximately half of the wavelength of said first array operating frequency;

a second array antenna including a plurality of second antenna array elements and having a second antenna aperture, said second antenna array elements being spaced apart from one another in a two dimensional array, said second antenna array elements being tuned to a second array operating frequency that is in a second frequency band, the spacing between said second antenna array elements being approximately half of the wavelength of said second array operating frequency; and

a frequency selective ground plane screen interposed between said first array antenna and said second array antenna;

wherein said first frequency band is higher than said second frequency band and said first array antenna is positioned to receive incident radiation first,

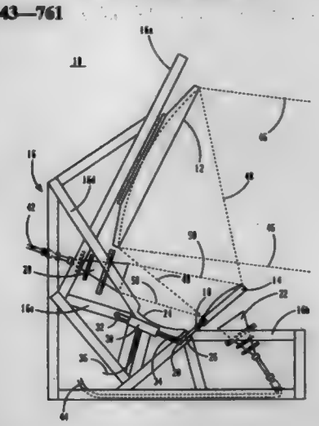
wherein said first array antenna is positioned above said second array antenna such that said first and second array antennas are spaced from each other by a predetermined distance, and wherein the number of first array elements is larger than the number of second antenna array elements.

5,485,168

MULTIBAND SATELLITE COMMUNICATION ANTENNA SYSTEM WITH RETRACTABLE SUBREFLECTOR

Sharad V. Parekh, Dallas, Tex., assignor to Electrospace Systems, Inc., Richardson, Tex.

Filed Dec. 21, 1994, Ser. No. 360,338
Int. Cl.[6] H01Q *3/20*
U.S. Cl. 343—761 **7 Claims**



1. A multiband satellite communication antenna system, comprising:

a primary reflector,

a movable subreflector,

a first feed,

a second feed positioned at a focus location of said primary reflector,

a mechanical drive connected to said movable subreflector, and

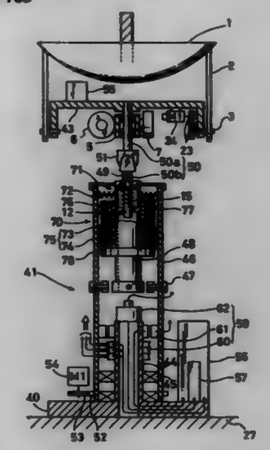
said subreflector having a deployed position in which said subreflector reflects energy between said primary reflector and said first feed and said subreflector having a stowed position in which energy is reflected between said primary reflector and said second feed.

5,485,169

ANTENNA ORIENTING APPARATUS FOR VEHICLES

Asao Kitaisaka, Kakogawa; Naosumi Tamaoka, Kobe; Hiteshi Ueda, Ashiya, and Kenichi Wada, Itami, all of, Japan, assignors to Furuno Electric Company, Limited, Hyogo, Japan

PCT No. PCT/JP92/01650, § 371 Date Aug. 3, 1993, § 102(e) Date Aug. 3, 1993, PCT Pub. No. WO93/12558, PCT Pub. Date Jun. 24, 1993
PCT Filed Dec. 18, 1992, Ser. No. 98,345
Claims priority, application Japan, Dec. 19, 1991, 3-336973
Int. Cl.[6] H01Q *1/18;3/08*
U.S. Cl. 343—765 **15 Claims**



2. An apparatus for orienting an antenna on a vehicle, comprising:

a platform for supporting said antenna;

a post for supporting said platform;

a base carried on the vehicle;

a shaft defining a hollow interior;

said base including means for rotatably supporting said shaft;

said shaft having a universal gimbals within said hollow interior for supporting said post;

rotating means for rotating said post to set the azimuth angle of said antenna;

an electric rotary joint interposed between said base and said post for transmitting power and signals necessary for communication transmission and antenna attitude control; and

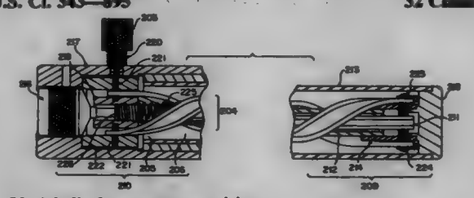
means for radially biasing and damping said post within said hollow interior to axially align said post with said shaft.

5,485,170

MSAT MAST ANTENNA WITH REDUCED FREQUENCY SCANNING

Charles D. McCarrick, Plymouth, Mass., assignor to AMSC Subsidiary Corporation, Reston, Va.

Filed May 10, 1993, Ser. No. 58,079
Int. Cl.[6] H01Q *1/36*
U.S. Cl. 343—895 **32 Claims**



31. A helical antenna, comprising:

at least one flexible helical element having a pitch over its axial length, and

an adjustment mechanism, coupled to said at least one flexible helical element, for adjusting the pitch of said at least one flexible helical element by adjusting the number of helix turns for the axial length of said at least one flexible helical element.

5,485,171

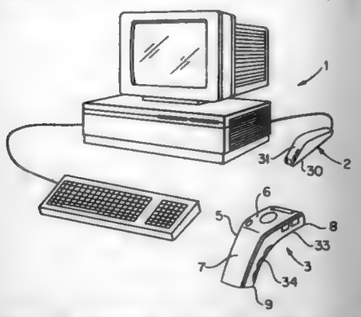
HAND HELD COMPUTER INPUT APPARATUS AND METHOD

John M. Copper, and John M. Richter, both of Pittsburgh, Pa., assignors to MicroMed Systems, Inc., Pittsburgh, Pa.

Division of Ser. No. 864,466, Apr. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 771,601, Oct. 4, 1991, abandoned. This application May 5, 1994, Ser. No. 238,355

Int. Cl.[6] G09G *5/08*

U.S. Cl. 345—160 **14 Claims**



1. A system for generating command signals for a computer monitor or other equipment, comprising;

a position transducer comprising at least one pressure responsive potentiometer comprising a fixed resistance and pressure responsive wiper means electrically contactable to said fixed resistance, and means operatively connected with said position transducer for generating a command signal reflecting at least one of the direction, intensity and duration of pressure applied to said position transducer.

5,485,172

AUTOMATIC IMAGE REGULATING ARRANGEMENT FOR HEAD-MOUNTED IMAGE DISPLAY APPARATUS

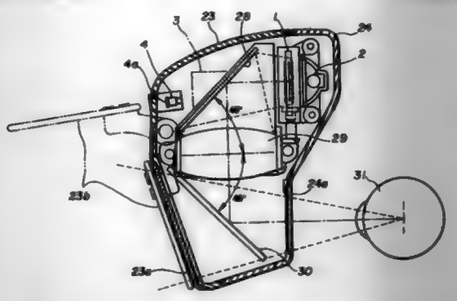
Isao Sawachika, Kanagawa; Yoshiro Muraoka, Tokyo, and Masami Torizuka, Kanagawa, all of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 17, 1994, Ser. No. 243,705

Claims priority, application Japan, May 21, 1993, 5-119401; Jun. 1, 1993, 5-129888

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—8 **15 Claims**



1. An automatic image regulating arrangement for an enclosed image display device, comprising:

a light opaque casing;

a display portion disposed in said casing and receivable of a video signal, said display portion including means for producing an image and a selectively energizable backlighting source which exclusively illuminates the image;

a first reflective member disposed in said casing for reflecting the image produced by said display portion in a first direction;

a single second semi-reflective member disposed statically in said casing for reflecting said image in a second direction different from said first direction, said second semi-reflective member exclusively permitting ambient light to be transmitted therethrough in said second direction into said casing;

sensor means for detecting a condition affecting visibility of said image displayed on said display portion and outputting a signal indicative thereof; and

regulating means for receiving said sensor output and including means for varying visibility of an image displayed at said display portion in response to said sensor signal, and for compensating for the visibility reducing effect of excess ambient light which is transmitted through said second semi-reflective member in said second direction.

5,485,173

LCD ADDRESSING SYSTEM AND METHOD

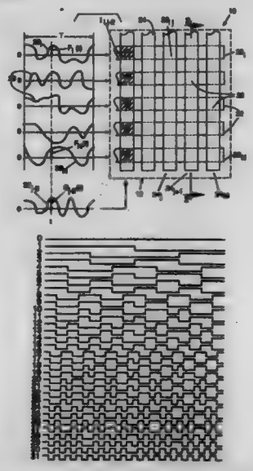
Terry J. Scheffer, Portland, and Benjamin R. Clifton, Beaverton, both of Oreg., assignors to In Focus Systems, Inc., Wilsonville, Oreg.

Filed Apr. 1, 1991, Ser. No. 678,736

The portion of the term of this patent subsequent to May 30, 2012, has been disclaimed.

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—100 **79 Claims**



1. A method for addressing a display including overlapping first and second electrodes positioned on opposite sides of an rms-responding material to define an array of pixels that display arbitrary information patterns characterized by optical states that depend on values of rms voltages established across the pixels and corresponding to pixel input data, the method comprising:

applying a set of first signals to corresponding first electrodes during a frame period that is divided into time intervals, the first signals having amplitudes, and multiple ones of the first signals each causing multiple selections of the corresponding first electrodes, the multiple selections taking place during different ones of the time intervals and being distributed over the frame period;

each of the first signals provides a number of the time intervals over the frame period that is less than an exponential function of the number of first electrodes;

generating second signals and applying them to the second electrodes, each of the second signals being different from any of the first signals, and the second signals having at a particular time interval during the frame period amplitudes determined by both the amplitudes of the first signals causing selections at the particular time interval and the corresponding pixel input data; and

the amplitudes of multiple second signals being determined by contributions of the multiple selections by each one of the first signals in the set that are distributed over the frame period so as to reduce the frame response of the display.

5,485,174

DISPLAY IMAGE SCROLL CONTROL AND METHOD

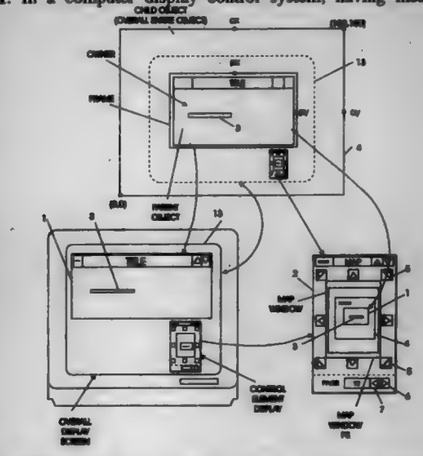
Susan F. Henshaw, Raleigh, and Sarah D. Redpath, Cary, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 636,655, Dec. 31, 1990, abandoned. This application Nov. 12, 1992, Ser. No. 973,929

Int. Cl.[6] G09G *5/34*

U.S. Cl. 345—123 **12 Claims**

1. In a computer display control system, having means for



presenting within a first area of a display screen at least a portion of a work object, said work object having overall dimensions larger than said display screen, control means for controlling which portions of said work object are displayed in said first area of said display screen, comprising:

means for presenting simultaneously with said display of said portion of said work object, a second display of data in a second area of said display screen, said second display of data comprising a reduced size representation of the overall relative dimensions of said work object and the placement of said first display area relative to the overall dimensions of said work object; and

means for controlling the portion of said work object presented in said first display area of said display screen in response to changes in the relative positioning of said representation of said first display area and said representation of said overall dimensions of said work object in said second display area.

5,485,175

METHOD AND APPARATUS FOR CONTINUOUSLY DISPLAYING A HIERARCHICAL MENU WITH A PERMANENT STATIONING SETTING/CLEARING ICON

Yasuhiro Suzuki, Inagi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

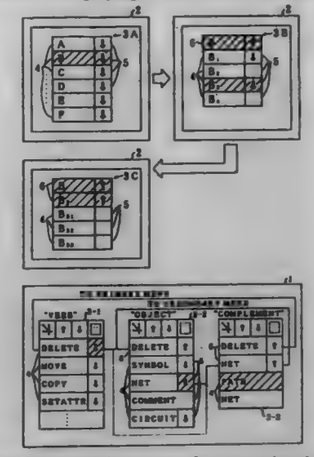
Continuation of Ser. No. 97,718, Jul. 27, 1993, abandoned, which is a continuation of Ser. No. 626,559, Dec. 12, 1990, abandoned. This application Feb. 6, 1995, Ser. No. 384,223

Claims priority, application Japan, Dec. 12, 1989, 1-321772

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—156 **17 Claims**

1. A method of displaying a hierarchial edit command menu



operated in a data processing system for processing data by editing a drawing displayed on a display unit, and executing a selected command, comprising the steps of:

editing said drawing according to a first command operating procedure when at least one element of said drawing displayed on said display unit is selected, and editing said drawing according to a second command operating procedure when said at least one element is not selected;

for each said first and second command operating procedure, preparing a primary command menu having a first hierarchy of at least one primary command name, a secondary command menu having a second hierarchy of at least one secondary command name, said second hierarchy being lower than said first hierarchy, and at least one lower order branch mark corresponding to said at least one secondary command name in said second hierarchy of said secondary command menu and indicating an existence of a third command menu having a third hierarchy of at least one tertiary command name, said third hierarchy being lower than said second hierarchy;

said command menus further including a permanent stationing setting/clearing icon for determining the permanent stationing of said command menus, and when the permanent stationing setting/clearing icon is in a setting state, continuously displaying the selected command on said display unit, and when a plurality of elements in said drawing are successively selected, performing the selected command on the plurality of elements without selecting the selected command repeatedly; and

sequentially displaying said prepared primary, secondary and tertiary command menus in an order based on a selected one of said first and second command operating procedures.

5,485,176

INFORMATION DISPLAY SYSTEM FOR ELECTRONICALLY READING A BOOK

Makoto Ohara, Tokyo; Hirotsugu Tomizawa, Kawaguchishi, and Shinichirou Sugiura, Tokyo, all of, Japan, assignors to Kabushiki Kaisha Sega Enterprises, Tokyo, Japan

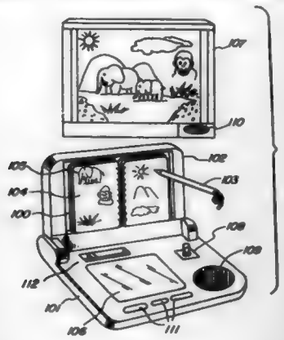
Continuation of Ser. No. 952,329, Sep. 28, 1992, abandoned. This application Jun. 23, 1994, Ser. No. 265,693

Claims priority, application Japan, Nov. 21, 1991, 3-332541

Int. Cl.[6] G09G *3/02*

U.S. Cl. 345—173 **5 Claims**

1. An apparatus for displaying a video image on a display,



comprising:

an information storing device having a sheet plate with a plurality of predetermined visual indicia, readable by an operator, printed at locations on the surface thereof, and an integrated memory storing a plurality of packets of predetermined data at addresses corresponding to coordinates of the respective visual indicia on the surface of said sheet plate;

location detection means comprising:

a first planar panel constituted so that said information storing device is detachably disposed on the first planar panel and including a plurality of electrode wires constituting a grid array of a predetermined pattern along the plane of the panel;

a second planar panel including a plurality of electrode wires constituting a grid array of a predetermined pattern along the plane of the panel; and

means for supplying electromagnetic signals to said plurality of electrode wires;

a pickup sensor connected to said location detection means, said sensor operating in cooperation with said location detection means and said information storing device when said storing device is detachably disposed on said first panel so that said location detection means responds to an operator selecting an indicium by placing said pickup sensor adjacent to the indicium on said sheet plate by outputting a location signal which corresponds to the location of the indicium selected by the operator;

a control means, responsive to the information supplied from said information storing device and responsive to the location signal supplied from said location detection means, for retrieving the data from one of said plurality of packets of predetermined data, the data corresponding to the indicium selected by the operator and for using the retrieved data to provide a video signal for displaying an image on a display screen; and

means for displaying the image at a desired location on the display screen by placing said pickup sensor on the plane of said second planar panel at a position corresponding to the desired location.

5,485,177

MATRIX DISPLAY DEVICE WITH WRITE-IN FACILITY

John M. Shannon, Whyteleafe, and Alan G. Knapp, Crawley, both of, United Kingdom, assignors to U.S. Philips Corporation, New York, N.Y.

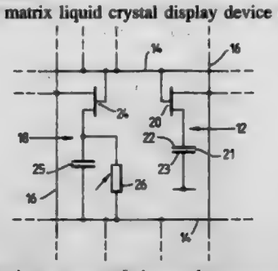
Filed Nov. 26, 1991, Ser. No. 797,852

Claims priority, application United Kingdom, Dec. 19, 1990, 9027481

Int. Cl.[6] G09G *3/28*

U.S. Cl. 345—182 **25 Claims**

1. An active matrix liquid crystal display device comprising: a



display panel having an array of picture elements each comprising a liquid crystal display element and an associated switching means, a set of row address conductors and a set of column address conductors connected to the picture elements, drive means for applying drive signals to the set of row address conductors and to the set of column address conductors for driving the picture elements, said drive means being arranged to apply data signals to the column address conductors and a selection signal to each row address conductor individually in turn so as to operate the switching means of the picture elements associated with the selected row address conductor thereby to apply the data signals to their respective display elements, the display panel further including an array of active addressed sensing elements each comprising a photosensitive element and a switching device, wherein the sensing elements each include a charge storage means which is connected to the switching device, wherein the switching devices of each row of sensing elements are each connected to a said row address conductor and a said column address conductor and are operable by a said selection signal applied to an associated row address conductor of said set of row address conductors so as to charge the charge storage means of the sensing elements according to the level of the data signals, wherein the photosensitive element of each sensing element is connected so as to discharge the charge storage means in response to the illumination thereof, and detection means connected to the sensing elements for periodically detecting the state of charge of their respective charge storage means.

5,485,178

PRINTER CONTROL APPARATUS FOR SYNCHRONOUSLY CONTROLLING DRIVING OF RECORDING HEAD AND TRANSFER OF DATA

Jiro Tateyama, and Naohisa Suzuki, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 635,870, Dec. 28, 1990, abandoned. This application Nov. 23, 1993, Ser. No. 155,916

Claims priority, application Japan, Dec. 29, 1989, 1-344916; Dec. 29, 1989, 1-344917

Int. Cl.[6] B41J *2/01*

U.S. Cl. 347—5 **7 Claims**

1. A printer controller apparatus comprising:

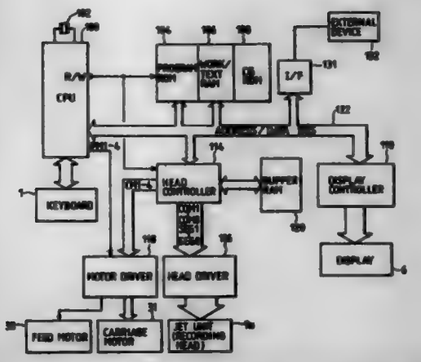
first memory means for storing inputted first data;

first control means for processing the first data stored in said first memory means;

second memory means for storing the first data processed by said first control means as second data;

a recording head for recording data based on the second data stored in said second memory means;

a carriage for mounting said recording head and moving in a direction normal to a paper feed direction; and



second control means for controlling inputting of the first data into said first memory means, transferring of the second data from said second memory means to said recording head, and moving of said carriage,

wherein said first and second control means execute their respective control operations in parallel with each other.

5,485,179

INK-JET RECORDING APPARATUS AND TEMPERATURE CONTROL METHOD THEREFOR

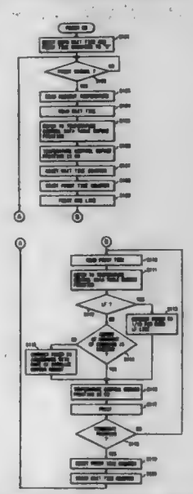
Naoji Otsuka, Kawasaki; Kentaro Yano, and Hitoshi Sugimoto, both of Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 18, 1990, Ser. No. 585,924

Claims priority, application Japan, Sep. 18, 1989, 1-241058; Apr. 11, 1990, 2-94091; Apr. 11, 1990, 2-95974; Aug. 6, 1990, 2-208908

Int. Cl.[6] B41J *2/01*

U.S. Cl. 347—14 **9 Claims**



1. An ink-jet recording apparatus for discharging ink droplets from a recording head to perform recording, said apparatus comprising:

heat means for heating said recording head to control a temperature of ink;

temperature measurement means for measuring an ambient temperature of said recording head;

timer means for measuring a time period during a previous recording operation; and

control means for subsequently controlling an energy to be supplied to said heat means on a basis of the time period measured by said timer means with respect to the ambient temperature measured by said temperature measurement means,

wherein said timer means measures a record time and a non-record time of said recording head, the record time being a time period during which said recording head is conveyed and performs recording, the non-record time being a time period during which said recording head does not perform recording, and

said control means controls the energy supplied to said heat means during the recording operation on a basis of the ambient temperature and the record time, and controls the energy supplied to said heat means prior to the recording operation on a basis of the ambient temperature and the non-record time.

5,485,180

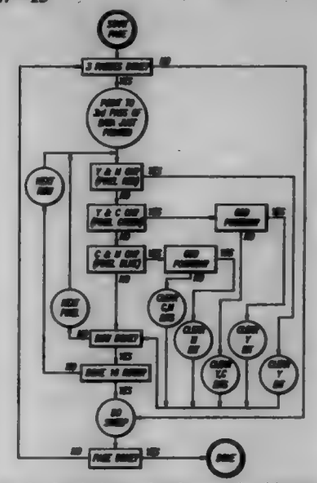
INKING FOR COLOR-INKJET PRINTERS, USING NON-INTEGRAL DROP AVERAGES, MEDIA VARYING INKING, OR MORE THAN TWO DROPS PER PIXEL

Ronald A. Askeland; Catherine B. Hunt, both of San Diego; Keshava A. Prasad, San Marcos; Corrina A. E. Hall, Escondido, all of Calif.; Mark S. Hickman, Vancouver, Wash.; Lance Cleveland, San Diego, Calif., and William J. Allen, Portland, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 926,264, Aug. 5, 1992. This application Apr. 30, 1993, Ser. No. 56,263

Int. Cl.[6] B41J *2/205*

U.S. Cl. 347—15 **24 Claims**



1. A method of printing color images by binary construction from individual ink drops deposited in pixel arrays; said method comprising the steps of:

establishing at least one certain primary or secondary chromatic color that is binary-printed as a predetermined, fixed number of drops of ink which exceeds two drops per pixel, said at least one primary or secondary chromatic color being fewer than all primary and secondary colors that are printed;

receiving information about a given desired image to be printed on a given printing medium;

determining for each particular pixel, in the given desired image on the given printing medium, a specific desired primary or secondary chromatic color;

if the specific desired primary or secondary chromatic color is one which said establishing step has established is printed as more than two drops of ink per pixel, then applying to that particular pixel or one or more closely associated pixels said predetermined, fixed number of drops which exceeds two drops of ink per pixel; and

if the specific desired primary or secondary chromatic color is not one which the establishing step has established is printed as more than two drops of ink per pixel, then applying to that particular pixel no more than one drop of ink for a primary chromatic color, or two drops of ink for a secondary chromatic color.

5,485,181

INK JET PRINTHEAD WITH IMPROVED DURABILITY

Ronald J. Convers, Towanda, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 18, 1994, Ser. No. 245,409
Int. Cl.[6] G01D *15/16*
U.S. Cl. 347—63 **10 Claims**

1. In a printhead of an ink jet printer, said printhead comprising a top plate with a noble metal surface, an intermediate photoresist layer, and a bottom plate, the improvement wherein an adhesion promoter having the formula

$X(-R-Y)_n$

wherein

X is a thioether, disulfide, polysulfide, or sulfur-containing heterocycle group;

Y is a terminal group that reacts with the photoresist;

R is a flexible non-polar molecular group; and

n is at least one;

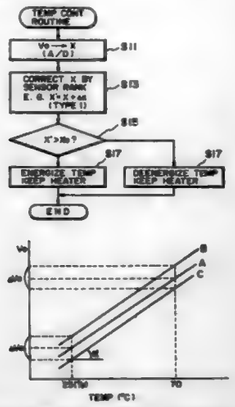
is employed between said noble metal surface and said photoresist layer.

5,485,182

LIQUID JET RECORDING APPARATUS

Yoshiaki Takayanagi; Asao Saito; Ryoichi Koizumi, and Akira Nagatomo, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 841,285, Feb. 28, 1992, abandoned, which is a continuation of Ser. No. 457,192, Dec. 26, 1989, abandoned. This application Aug. 15, 1994, Ser. No. 290,071
Claims priority, application Japan, Dec. 29, 1988, 63-331185; Jan. 12, 1989, 1-3862; Mar. 29, 1989, 1-74913
Int. Cl.[6] B41J *29/38*
U.S. Cl. 347—17 **31 Claims**



1. An ink jet recording apparatus, comprising:

a recording head detachably mountable to said apparatus and including an ejection outlet for ejecting ink, an energy generating element disposed proximate to the ejection outlet to generate energy for ejecting the ink, a temperature detecting element for detecting a temperature of said recording head and storing means for storing information to be used for discriminating a type of characteristic curve providing a predetermined output for a predetermined temperature for said temperature detecting element;

mounting means for mounting said recording head;

correcting means for correcting an output of said temperature detecting means on the basis of information stored by said storing means and outputting a corrected signal; and

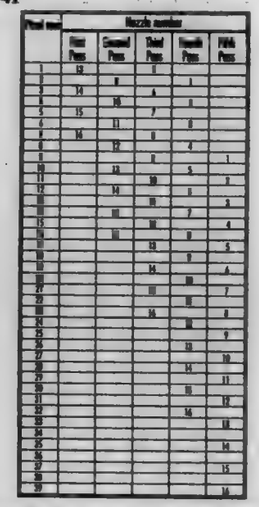
outputting means for outputting a control signal for controlling the temperature of the recording head in accordance with the corrected signal.

5,485,183

INTERLACED DOT-ON-DOT PRINTING

Said Zandian, Agoura Hills, and Leo J. Rheingold, Thousand Oaks, both of Calif., assignors to DataProducts Corporation, Woodland Hills, Calif.

Filed Jun. 30, 1993, Ser. No. 83,560
Int. Cl.[6] B41J *2/01;2/145*
U.S. Cl. 347—41 **12 Claims**



1. In apparatus for producing a printed image on a printing medium with phase change ink, the printing medium providing a printing area having a width dimension extending in a first direction and a height dimension extending in a second direction perpendicular to the first direction, the printing area being composed of a plurality of parallel pixel rows extending in the first direction with a uniform spacing, p, between pixel rows in the second direction, with each row being made up of a plurality of elemental pixel areas, the improvement wherein said apparatus comprises:

a print head having at least one set of N nozzles for projecting drops of phase change ink onto the printing area, N being an integer greater than 2 and said nozzles having a uniform spacing, in a direction corresponding to the second direction when said print head faces a printing area, equal to s·p, s being an integer smaller than N and greater than unity; and

control means for effecting relative movement between the printing medium and said print head such that the relative movement includes:

successive passes of said print head in the first direction while said drops of phase change ink are projected onto respective pixel areas; and

in alternation with the successive passes in the first direction, stepwise movements of said print head in the second direction such that each stepwise movement in the second direction has an amplitude equal to an integral number multiple of p, which said integral number is not equal to s, and the amplitudes of every two successive movements in the second direction have a sum which is less than N·S·P; and

wherein said control means effect said relative movement for enabling printing to be performed on all elemental pixel areas

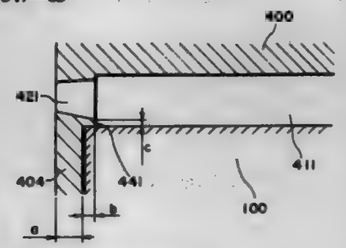
of each said pixel row by ink from respectively different nozzles during two different passes of said print head in the first direction.

5,485,184

INK JET RECORDING HEAD AND INK JET APPARATUS HAVING SAME

Hiroshi Nakagomi, Yamato; Teruo Arashima, Yokohama; Kunihiko Macoka, Kawasaki; Takashi Ohba, Zama; Jun Kawai, Yokohama; Tsutomu Abe, Isehara; Hiroshi Sugitani, Machida; Yoshifumi Hattori, Yamato; Masami Ikeda, Tokyo; Asao Saito, Yokohama; Kazuaki Masuda, Sagamihara; Akio Saito, Hadano; Makiko Kimura, Sagamihara; Toshio Kashino, Chigasaki; Hideo Saikawa, Kawasaki; Seiichiro Karita, Yokohama, and Tsuyoshi Orikasa, Kasukabe, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 344,626, Nov. 17, 1994, Pat. No. 5,436,649, which is a continuation of Ser. No. 101,287, Aug. 3, 1993, abandoned, which is a continuation of Ser. No. 583,168, Sep. 17, 1990, abandoned. This application May 4, 1995, Ser. No. 434,843
Claims priority, application Japan, Sep. 18, 1989, 1-241029; Sep. 18, 1989, 1-241046; Sep. 18, 1989, 1-241047; Sep. 18, 1989, 1-241051; Sep. 18, 1989, 1-241056
Int. Cl.[6] B41J *2/14*
U.S. Cl. 347—63 **1 Claim**



1. An ink jet head, comprising:

a first member;

a second member joined with said first member to form a liquid passage having walls, said second member has an ejection outlet forming member for forming therein an ejection outlet communicating with said passage, wherein said ejection outlet forming member has a thickness a, and is provided with a jaw having a dimension b, wherein an inside end of the ejection outlet of said ejection outlet forming member is displaced by a distance c from adjacent wall of said passage, wherein the following is satisfies:

$b \geqq 5$ microns

$c \geqq 3$ microns

20 microns$\leqq a+b \leqq$60 microns.

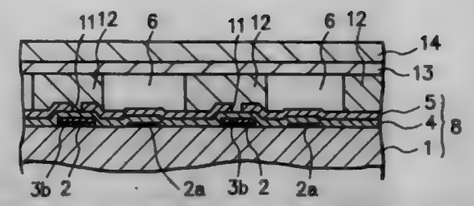
5,485,185

INK JET RECORDING HEAD, AN INK JET RECORDING APPARATUS PROVIDED WITH SAID RECORDING HEAD, AND PROCESS FOR THE PRODUCTION OF SAID INK JET RECORDING HEAD

Masaru Suzuka, Yokohama; Makoto Shibata, Kawasaki, and Hirokazu Komuro, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1993, Ser. No. 128,109
Claims priority, application Japan, Sep. 29, 1992, 4-260265; Jan. 27, 1993, 5-011853
Int. Cl.[6] B41J *2/01*
U.S. Cl. 347—64 **18 Claims**

1. An ink jet recording head which includes a substrate for ink jet recording head and a nozzle structural body provided with a plurality of nozzle-forming walls which is disposed over said substrate for ink jet recording head, said substrate for ink jet recording head comprising (a) a base member, (b) a heat generating resistor for generating, thermal energy to be utilized for discharging an ink, (c) a pair of electrodes electrically connected to said heat generating resistor, (d) a first protective layer serving as an insulating layer, and (e) a second protective layer serving as a cavitation resistant layer and having a plurality of stepped portions, wherein said heat generating resistor (b) and said pair of electrodes (c) are arranged on said base member (a), and said first protective layer (d) and said second protective layer (e) are disposed in this order over said heat generating resistor (b) and said pair of electrodes (c), characterized in that said second protective layer is constructed such that a plurality of particular portions of said second protective layer (e) each have a recess defining a gap therethrough are each situated at a position where said nozzle structural body is joined by one of said nozzle-forming walls through an associated said recess to said substrate for ink jet recording head while said stepped portions of said second protective layer (e) having said recesses are situated above said pair of electrodes (c).

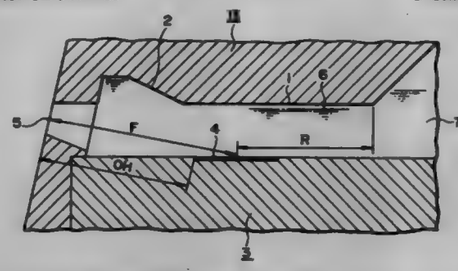


5,485,186

INK JET RECORDING APPARATUS WITH EFFICIENT AND RELIABLE INK SUPPLY

Hiroyuki Ishinaga, Tokyo; Hiroshi Sugitani, Machida; Kazuaki Masuda, Kawasaki; Masami Kasamoto, Ayase; Seiji Suzuki, Kawasaki; Toshio Kashino, Chigasaki; Jun Kawai, Yokohama; Takeshi Okazaki, Sagamihara; Teruo Arashima, Kawasaki, and Yuji Kamiyama, Fujisawa, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1993, Ser. No. 136,106
Claims priority, application Japan, Jan. 15, 1992, 4-277180
Int. Cl.[6] B41J *2/05*
U.S. Cl. 347—65 **2 Claims**



1. An ink jet recording apparatus comprising:

an orifice for ejecting ink;

a heater for generating thermal energy to produce a bubble to eject the ink;

an ink passage for supplying ink to said orifice, said ink passage being provided with said heater;

an ink container for containing ink to be supplied to said ink passage, said ink container retaining the ink, using capillary force;

wherein the following is satisfied:

$$V_{OH} > [(R'+P')/(F'+R'+P') \times (F+R)/R+1]Vd$$

where V_{OH} is a volume of the ink passage from said orifice to an

edge of said heater adjacent said orifice; Vd is a volume of from said orifice ejected ink; F is a flow resistance from a center of said heater to said orifice; R is a flow resistance from a center of said heater to said ink container; F' is a flow resistance from a maximum bubble produced on said heater to said orifice; R' is a flow resistance from a maximum bubble produced on said heater to said ink container; and P is a flow resistance of said ink container.

5,485,187

INK-JET RECORDING APPARATUS HAVING IMPROVED RECOVERY DEVICE

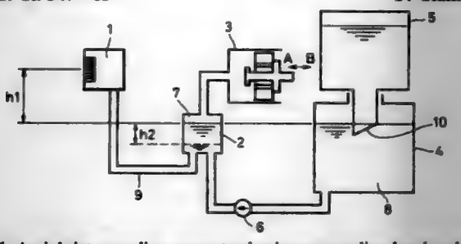
Yoshitaka Okamura, Machida; Hiroshi Sugiyama, Yokohama, and Kousuke Yamamoto, Kawasaki, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 953,842

Claims priority, application Japan, Jan. 2, 1991, 3-255485; Nov. 22, 1991, 3-307748

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—85 **14 Claims**



1. An ink-jet recording apparatus having a recording head and a main ink tank for maintaining ink at a predetermined pressure for supply to said recording head, said apparatus comprising:

an auxiliary ink tank for storing ink with an air space above an ink surface in said auxiliary ink tank, wherein said auxiliary ink tank is disposed relative to said main ink tank so that the ink in said auxiliary ink tank assumes substantially the same level as the ink in said main ink tank when the air space is at atmospheric pressure;

a first ink supply section including a one-way valve for permitting ink flow from said main ink tank to said auxiliary ink tank and preventing ink flow from said auxiliary ink tank to said main ink tank;

a second ink supply section for supplying ink from said auxiliary ink tank to said recording head; and

an air pressurizing pump for delivering a fixed amount of air under pressure to the air space above the ink surface within said auxiliary ink tank during a recording head recovery operation, and thereafter restoring atmospheric pressure within the air space.

5,485,188

INK JET RECORDING METHOD EMPLOYING INKS, INK SET, AND APPARATUS FOR USE WITH THE INKS

Shinichi Tochihara, Hadano, and Shinichi Sato, Kawasaki, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1993, Ser. No. 166,819

Claims priority, application Japan, Dec. 25, 1992, 4-346709

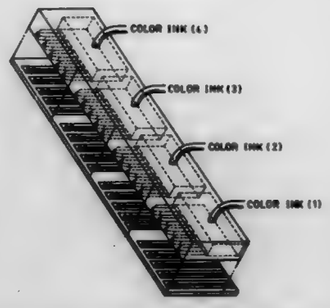
Int. Cl.[6] C09D *11/02*

U.S. Cl. 347—100 **20 Claims**

1. An ink jet color recording method for forming a color image on a recording member by using at least four colors of ink, comprising the steps of:

selecting the following color inks (1) to (4):

(1) a yellow ink containing an anion dyestuff and a nonionic surfactant, the nonionic surfactant being 0.5 to 20% by weight of the ink,



(2) a magenta ink containing an anion dyestuff and a nonionic surfactant, the nonionic surfactant being 0.5 to 20% by weight of the ink,

(3) a cyan ink containing an anion dyestuff and a nonionic surfactant, the nonionic surfactant being 0.5 to 20% by weight of the ink, and

(4) a color ink containing a cation dyestuff and capable of developing a black color when mixed with at least one of inks (1) to (3); and

performing recording by mixing the color ink (4) and at least one of inks (1), (2), and (3) on the recording member to form a black image.

5,485,189

THERMAL FIXING APPARATUS HAVING MEMBER PROJECTING INTO RECORDING MEDIUM

Tokihide Ebata, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 924,617, Aug. 6, 1992, abandoned, which is a continuation of Ser. No. 648,145, Jan. 30, 1991, abandoned. This application Nov. 10, 1993, Ser. No. 150,531

Claims priority, application Japan, Feb. 2, 1990, 2-22232

Int. Cl.[6] B41J *2/01*

U.S. Cl. 347—102 **19 Claims**

1. A thermal fixing apparatus for fixing an image formed by an

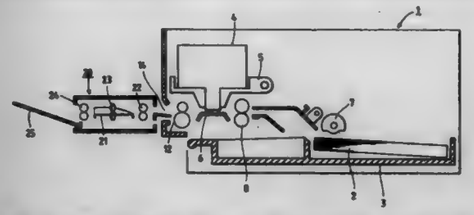


image forming apparatus on a face of a recording medium comprising: (a) a heating member for heating said recording medium; by contact with the other face of said recording medium and (b) a surface of said heating member which contacts said recording medium having a first section and a second section, said first section being perpendicular to the conveying direction for said recording medium, central portion of said first section extremely projects into the conveying pass side for said recording medium and, the second section being parallel to the conveying direction for said recording medium, wherein the second section gradually and continuously projects into the conveying pass side for said recording medium in the direction of the downstream side.

5,485,190

PRINTHEAD WRITER ASSEMBLY ENGAGEABLE WITH A WEB IMAGE MEMBER

Frank J. Koetter, Hilton, and W. Charles Kaiske, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 20, 1993, Ser. No. 65,248

Int. Cl.[6] G01D *15/14;9/42*

U.S. Cl. 347—130 **16 Claims**

1. A linear printhead writer assembly for use with a web type

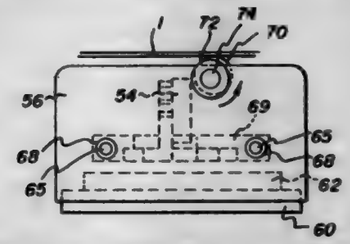


image member having a width and at least one radiation-sensitive layer and movable through a path in an in-track direction, said writer assembly comprising:

an elongated linear source of radiation,

an elongated linear focusing device for focusing radiation from said linear source of radiation at an elongated exposure locus,

a support housing for supporting both said source of radiation and said focusing device in a fixed relation to each other and to the exposure locus with said source of radiation, said focusing device and said exposure locus being oriented in a cross-track direction with respect to the path of the image member by the support housing,

at least one positioning bar having a length in the cross-track direction at least as long as the width of the image member and supported by the housing and accurately positioned with respect to the exposure locus, and

means for fixing the assembly in an image forming apparatus with the positioning bar intersecting the path of the image member to partially support the image member and partially define the path of the image member with the radiation-sensitive layer in the exposure locus.

5,485,191

IMAGE FORMING APPARATUS HAVING TONE CORRECTING FUNCTION

Sono Gu, Ohmiya, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 17, 1992, Ser. No. 945,920

Claims priority, application Japan, Sep. 18, 1991, 3-268381

Int. Cl.[6] G01D *15/14*

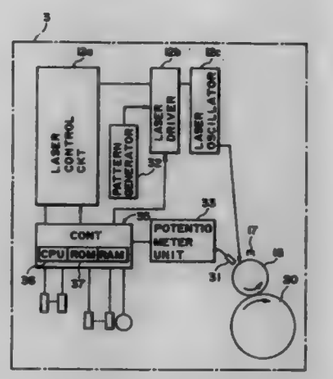
U.S. Cl. 347—131 **6 Claims**

1. An image forming apparatus comprising:

a photosensitive member;

charging means for uniformly charging said photosensitive member;

exposure means for exposing said photosensitive member charged by said charging means to light modulated in accordance with an image signal to form an electrostatic image including potential portions respectively corresponding to a first density, a second density higher than the first density and a third density higher than the second density;



potential detecting means for detecting first, second and third potentials of the electrostatic image respectively corresponding to the first, second and third densities;

calculating means for calculating a potential contrast ratio on the basis of potentials detected by said potential detecting means;

storing means for storing data corresponding to a plurality of image forming conditions; and

selecting means for selecting data corresponding to an image forming condition on the basis of a ratio calculated by said calculating means.

5,485,192

THERMAL PRINTHEAD

Takaya Nagahata, and Tokihiko Kishimoto, both of Ukyo, Japan, assignors to Rohm Co. Ltd., Kyoto, Japan

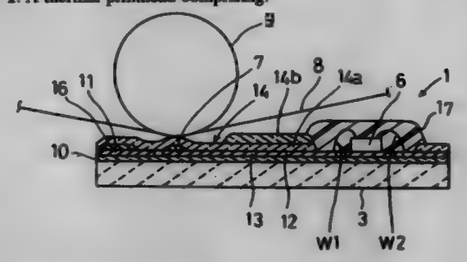
Filed Dec. 28, 1994, Ser. No. 365,241

Claims priority, application Japan, Dec. 28, 1993, 5-338115

Int. Cl.[6] B41J *2/335*

U.S. Cl. 347—203 **8 Claims**

1. A thermal printhead comprising:



an insulating head substrate;

a conductor pattern formed on the head substrate;

a row of heating dots formed on the head substrate in electrical conduction with the conductor pattern;

an array of drive ICs mounted on the head substrate and spaced from the row of heating dots;

a resin body enclosing the array of drive ICs; and

a protective coating covering the conductor pattern together with the row of heating dots;

wherein the protective coating comprises a smaller thickness portion at least at the row of heating dots, and a larger thickness portion held in contact with the resin body and extending to a position short of the row of heating dots.

5,485,193

THERMAL HEAD INCLUDING AT LEAST ONE PARALELLOGRAMMATIC RESISTOR

Nobuhiro Inoue, Hachioji; Katsunari Sasaki, Hino; Toshiro Nose, Sagamihara, and Yoshio Hatate, Musashino, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

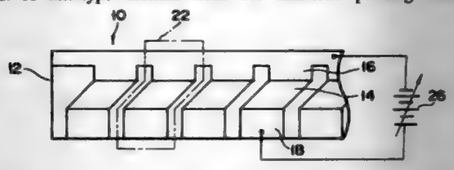
Continuation of Ser. No. 7,029, Jan. 21, 1993, abandoned, which is a continuation of Ser. No. 888,296, May 26, 1992, abandoned, which is a continuation of Ser. No. 558,480, Jul. 27, 1990, abandoned. This application Sep. 17, 1993, Ser. No. 122,175

Claims priority, application Japan, Jul. 28, 1989, 1-195686; Mar. 19, 1990, 2-66954

Int. Cl.[6] B41J *2/345*

U.S. Cl. 347—206 10 Claims

1. A line-type thermal head for half-tone printing which



expresses various densities by utilizing printing dots of various sizes, the thermal head having a main scanning axis and comprising:

a substrate;

a plurality of heating elements arranged on the substrate along the main scanning axis, each of the heating elements including at least one non-rectangular parallelogrammatic resistor for generating heat; and

means for supplying electric energy, an amount of which corresponds to a size of a printing dot to be recorded, to each of the heating elements to make the resistor generate heat, wherein the resistor has a region which generates sufficient heat for recording the printing dot, and a size of the region is changed in response to the amount of electric energy applied to the resistor so that printing dots having various sizes are produced by each of the resistors, the supply means including lead electrodes connected electrically to one pair of opposite sides of the resistor, each of the lead electrodes having a width not less than a length of one side of the one pair of opposite sides of the resistor;

wherein a ratio of the length of one side of the one pair of opposite sides of the resistor to that of one side of another pair of opposite sides of the resistor is not greater than 1.5, and an acute angle formed by two sides of the one and another pair of opposite sides of the resistor is no more than 45°.

5,485,194

OPTICAL SCANNING APPARATUS

Masamichi Tateoka, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 979,058, Nov. 19, 1992, abandoned. This application Mar. 17, 1995, Ser. No. 407,399

Claims priority, application Japan, Nov. 20, 1991, 3-332534

Int. Cl.[6] B41J *2/435*

U.S. Cl. 347—232 40 Claims

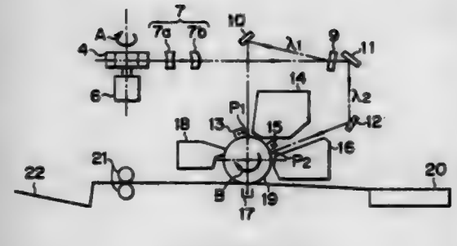
1. An optical scanning apparatus comprising:

light source means provided with a plurality of light emitting portions different in emission wavelength on a single stem;

a deflector for deflecting a plurality of beams from said light source means;

an optical system for converging said plurality of beams deflected by said deflector; and

wavelength separation means for separating said plurality of beams from said optical system from each other.



5,485,195

MULTI-PHASE PIXEL CLOCK FOR A RASTER OUTPUT SCANNER (ROS) PRINTER

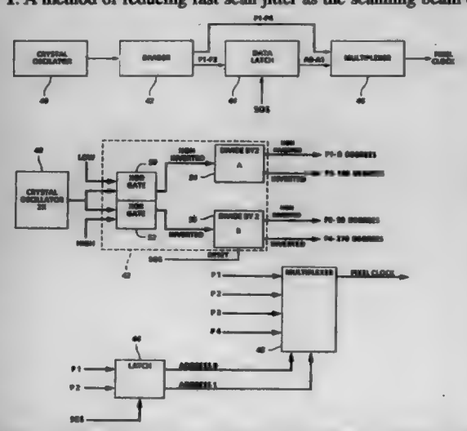
Aron Nacman, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 21, 1993, Ser. No. 78,337

Int. Cl.[6] H04M *1/21*

U.S. Cl. 347—247 6 Claims

1. A method of reducing fast scan jitter as the scanning beam of



a Raster Output Scanner scans across a recording member, said scanner including means for modulating said beam in accordance with signal inputs controlled by a pixel clock, said method comprising the steps of:

detecting said recording beam prior to the start-of-scan (SOS) of a scan line and generating an SOS output signal having a rising and falling edge,

subdividing the output of a crystal oscillator into multiple phased outputs, each output having a rising and leading edge separated by phase,

identifying the phased output having a rising edge closest in time to the rising edge of the SOS signal, and

using said identified phased output as the pixel clock for the scan line.

5,485,196

SECURE INTERACTIVE PROGRAM DISTRIBUTION CONTROL FOR TELEDISTRIBUTION NETWORK

Guy E. Nathan, Yerres, and Simon Elkaim, Paris, both of, France, assignors to Lyonnaise Communications, Paris, France

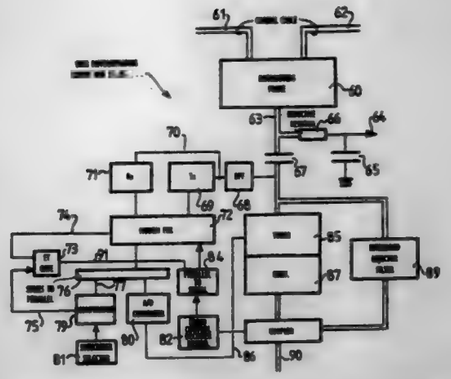
Continuation of Ser. No. 773,662, Oct. 24, 1991, abandoned. This application Jul. 14, 1993, Ser. No. 93,303

Claims priority, application France, Jan. 10, 1988, 88 13261

Int. Cl.[6] H04N *7/10*

U.S. Cl. 348—7 40 Claims

13. An interactive arborescent architecture teledistribution network comprising:



a master terminal controlling the distribution of television programs, images and sound programs to a plurality of remote user differentiating stations,

each remote station being connected on one side to the master terminal and on the other side to a tuned passive circuit disposed on a coaxial cable connected to a TV receiver,

said tuned passive circuit being tuned to receive modulated signals emitted by a remote circuit control box on actuation of a keypad of the remote circuit control box by a user to express his request for a given TV program, said modulated signal being transmitted through the coaxial cable to decoding means of the remote station and transmitting means for transmitting said request to said master terminal which includes means for processing said request and means for emitting a signal for validating the program as the result of the comparison between the request and a verification of the programs authorized in access for a given user.

5,485,197

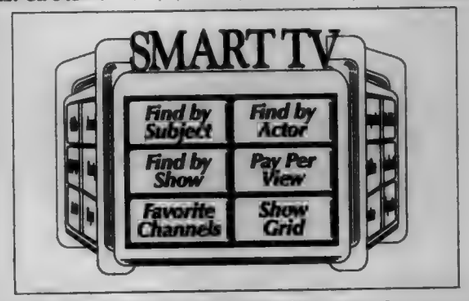
CAROUSEL DISPLAY

W. Leo Hoarty, Santa Clara, Calif., assignor to ICTV, Inc., Los Gatos, Calif.

Division of Ser. No. 56,958, May 3, 1993, which is a continuation-in-part of Ser. No. 877,325, May 1, 1992, Pat. No. 5,412,720, which is a continuation-in-part of Ser. No. 754,932, Sep. 10, 1991, Pat. No. 5,220,420, which is a continuation-in-part of Ser. No. 589,205, Sep. 28, 1990, Pat. No. 5,093,718. This application Sep. 22, 1994, Ser. No. 310,720

Int. Cl.[6] H04N *7/173*

U.S. Cl. 348—7 6 Claims



1. An interactive television information system for use on a cable television system having a cable television distribution network for delivering television information signals to subscriber televisions comprising:

headend means for accessing any of a plurality of information services;

a plurality of home interface controller means, each in television communication with a subscriber television;

node means, in television communication with the headend means and in television communication with a group of the home interface controller means over the cable television distribution network, and in data communications with the group of home interface controller means over a data communications link, for selecting information services obtained through the headend means based on data obtained over the data communications link from home interface controller means in the group and for providing selected information services to said cable distribution network for delivery to said home interface controller means;

carousel means for generating a television display of a carousel having a plurality of faces, including a frontal face, for display on a subscriber television and providing at least one available choice on an established one of the faces;

a plurality of cursor movement means, each in communication with one of said home interface controller means, for causing movement of a cursor over the television display of the subscriber television in communication with said one of said home interface controller means;

a plurality of selection means, each in communication with one of said home interface controller means, for causing selection of an available choice when indicated by the cursor on the television display of the subscriber television in communication with said one of said home interface controller means; and

carousel movement means for causing apparent rotation of the carousel on a television display to display different information on the established face in response to operation of the selection means associated with said television display.

5,485,198

MULTIPLE CHANNEL DECODING DEVICE FOR TV SYSTEMS

Ulf Källström, Göteborg, Sweden, assignor to Sweden On Line AB, Stockholm, Sweden

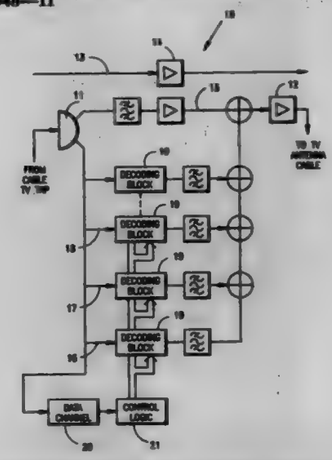
PCT No. PCT/SE92/00685, § 371 Date Apr. 29, 1994, § 102(e) Date Apr. 29, 1994, PCT Pub. No. WO93/11642, PCT Pub. Date Jun. 10, 1993

PCT Filed Sep. 30, 1992, Ser. No. 232,095

Claims priority, application Sweden, Nov. 26, 1991, 9103493

Int. Cl.[6] H04N *7/167*

U.S. Cl. 348—11 12 Claims



1. A decoding device for use in television systems, comprising:

first connection means for connecting to a television tap;

first tap means for connecting to an antenna cable of a television;

a plurality of decoding blocks arranged in parallel and being connected to the first connection means and the first tap means, the decoding blocks being adapted to simultaneously

decode a plurality of coded television channels and to send an output signal to the first tap means; and

a data channel and a control logic connected to the plurality of decoding blocks to enable each decoding block to be remotely controlled.

7. A self-contained decoding device for use in cable television systems, comprising:

connection means for connecting to a cable television tap;

tap means for connecting to an antenna cable of a television;

a by-pass connected to the connection means and the tap means for uncoded signals;

a plurality of decoding blocks arranged in parallel and being connected to the connection means and the tap means, each individual decoding block being capable of converting a plurality of coded television channels to UHF channels and the plurality of decoding blocks being adapted to simultaneously convert a plurality of coded television channels to UHF channels; and

means connected to the plurality of decoding blocks for enabling each decoding block to be remotely controlled.

5,485,199

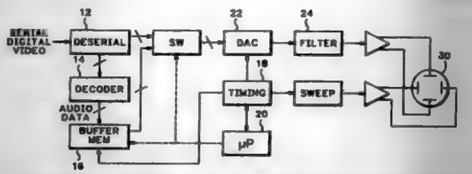
DIGITAL AUDIO WAVEFORM DISPLAY ON A VIDEO WAVEFORM DISPLAY INSTRUMENT

Bob Elkind, Gaston, and Gilbert A. Hoffman, Aloha, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Jul. 19, 1994, Ser. No. 277,054

Int. Cl.[6] H04N *17/04*

U.S. Cl. 348—180 **7 Claims**



1. A method of displaying digital audio data, which is embedded in a digital video signal, on a video waveform display instrument comprising the steps of:

extracting the digital audio data from the digital video signal;

storing the extracted digital audio data in a buffer memory as received; and

replacing a video display portion of each video line of the digital video signal with the extracted digital audio data read out from the buffer memory at a video sample rate so that the extracted digital audio data is displayed as an audio waveform on the video waveform display instrument.

5,485,200

OPERATIONAL INFORMATION RENEWING AND MEMORIZING APPARATUS AND METHOD FOR A PHOTOGRAPHING INSTRUMENT

Hitoshi Shimizu, Omiya, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 813,985, Dec. 26, 1991, abandoned. This application Aug. 22, 1994, Ser. No. 293,647

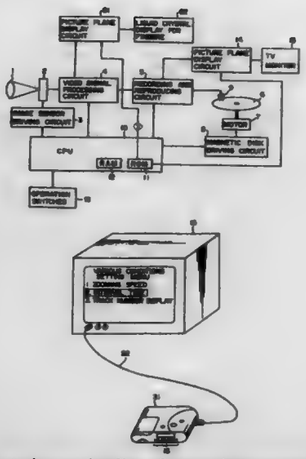
Claims priority, application Japan, Dec. 26, 1990, 2-404736 U; Dec. 26, 1990, 2-414199

Int. Cl.[6] H04N *5/225*

U.S. Cl. 348—207 **15 Claims**

1. An operational parameter setting apparatus for a photographing instrument, said photographing instrument being operable in a condition setable mode wherein operating parameters of said photographing instrument are manually set and a non-condition setable mode, wherein operating parameters of said photographing instrument are automatically set, comprising:

means for selecting between said condition setable mode and said non-condition setable mode;



means for storing a plurality of menu items corresponding to setable conditions for said photographing instrument and a plurality of sets of parameters, each set relating to a corresponding one of said menu items;

display means for displaying an image to be photographed by said photographing instrument and for displaying said plurality of menu items and said plurality of sets of parameters for said menu items when said condition setable mode is selected;

an indicator on said displaying means;

means for moving said indicator means on said displaying means to select a menu item and a parameter of the set of parameters corresponding to the selected one menu item; and

means for storing data related to said parameter selected by said indicator means.

5,485,201

FILL-IN LIGHT EMITTING APPARATUS AND STILL VIDEO CAMERA

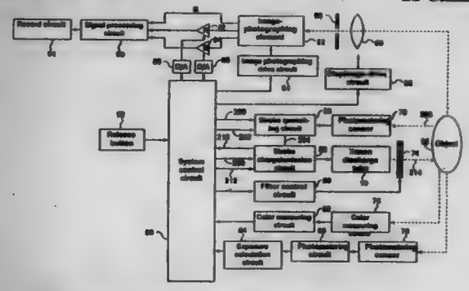
Harumi Aoki; Kimiaki Ogawa, and Tahei Morisawa, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1993, Ser. No. 113,322

Claims priority, application Japan, Aug. 28, 1992, 4-253955; Nov. 26, 1992, 4-339718; Dec. 2, 1992, 4-349789; Jan. 19, 1993, 5-023683; Jan. 19, 1993, 5-023684; Feb. 10, 1993, 5-045854; Feb. 18, 1993, 5-052958; Feb. 19, 1993, 5-055013; Feb. 22, 1993, 5-056505; Feb. 24, 1993, 5-059556

Int. Cl.[6] H04N *9/73*

U.S. Cl. 348—223 **21 Claims**



1. A Fill-in light emitting apparatus, comprising:

illuminating means for emitting illumination light whose color temperature can be varied, said illuminating means comprising a single strobe light emitting element;

color temperature metering means for measuring the color temperature of an external light; and,

color temperature controlling means for varying the color temperature of the illumination light in accordance with color temperature data measured by said color temperature metering means, wherein said color temperature controlling means varies the color temperature of the illumination light to approach the color temperature measured by said color temperature metering means, said temperature controlling means comprising a single color temperature varying filter provided in an optical path of said strobe light emitting element.

5,485,202

WHITE BALANCE ADJUSTING APPARATUS

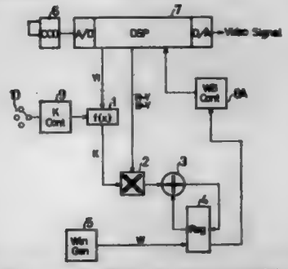
Osamu Ueda, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1994, Ser. No. 203,820

Claims priority, application Japan, Mar. 4, 1993, 5-043667

Int. Cl.[6] H04N *5/225*

U.S. Cl. 348—223 **16 Claims**



1. A white balance adjusting apparatus comprising:

an image pickup device for picking up an object image;

image signal processing means for processing an image signal produced from the image pickup device and for deriving a brightness signal and color information signals;

multiplication factor generating means for generating a variable multiplication factor in response to the brightness signal in such a manner that a high multiplication factor is set when the value of the brightness signal is within a predetermined range, whereas a multiplication factor lower than the above is set when the value of the brightness signal is out of said predetermined range;

computing means for computing between multiplication factor derived from said multiplication factor generating means and said color information signals;

integrating means for integrating output data from said computing means; and

white balance controlling means for performing a white balance control to correct said image signal within said image signal processing means based upon the integrated data derived from said integrating means.

5,485,203

COLOR MISREGISTRATION EASING SYSTEM WHICH CORRECTS ON A PIXEL OR BLOCK BASIS ONLY WHEN NECESSARY

Kazunari Nakamura, Hino; Kenji Matsunaka, and Akira Watanabe, both of Hachioji, all of, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1992, Ser. No. 925,498

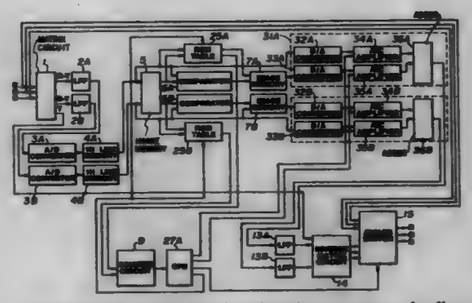
Claims priority, application Japan, Aug. 12, 1991, 3-201970; Sep. 17, 1991, 3-236624; Sep. 17, 1991, 3-236628; Sep. 20, 1991, 3-241949

Int. Cl.[6] H04N *9/093*

U.S. Cl. 348—263 **14 Claims**

1. A color misregistration easing system, comprising:

a detecting means for using a color image signal originating from an imaging means for imaging a subject in field sequential mode to detect color misregistration or an event leading to color misregistration either on a pixel basis or a block basis; and



a correcting means for selectively correcting color misregistration of said color image signal either on a pixel basis or a block basis based on whether the detection result provided by said detecting means indicates color misregistration or the event leading to color misregistration has occurred either on a pixel basis or on a block basis, and providing an output.

5,485,204

SOLID STATE IMAGE SENSOR AND IMAGING METHOD USING SPATIAL PIXEL OFFSET

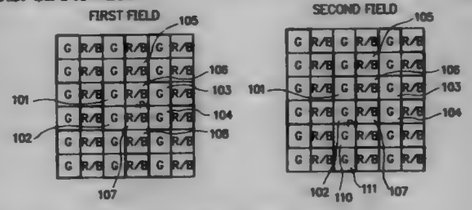
Yukio Taniji, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 2, 1994, Ser. No. 284,283

Claims priority, application Japan, Aug. 2, 1993, 5-191053

Int. Cl.[6] H04N *9/04*

U.S. Cl. 348—264 **8 Claims**



1. A solid state image sensor, comprising:

a plurality of solid state imaging devices arranged in a matrix for green color and red/blue colors;

vertical transfer means for transferring charges output from the solid state imaging devices in a vertical direction;

summing means for transferring the charges transferred from the vertical transfer means in a horizontal direction and summing the transferred charges; and

control means for controlling timings of the transferring and the summing of the vertical transfer means and the summing means, respectively,

the control means controlling the vertical transfer means and the summing means so that a first mass center as a sampling point obtained by summing the charges of the solid state imaging devices for the green color is made to be coincident with a second mass center obtained by summing the charges of the solid state imaging devices for the red/blue colors.

6. An imaging method, comprising:

a photoelectric conversion step for detecting image information of an object to be imaged using a plurality of imaging devices arranged in a matrix for green color and red/blue colors to output a charge array of the imaging devices;

vertical transfer step for transferring the charge array obtained in the photoelectric conversion step in a vertical direction; and

horizontal transfer summing step for transferring the charge array transferred from the vertical transfer means in a horizontal direction and summing the transferred charge array,

wherein, by the vertical transfer step and the horizontal transfer summing step, a first mass center as a sampling point,

obtained by summing the charges of the solid state imaging devices for the green color is made to be coincident with a second mass center obtained by summing the charges of the solid state imaging devices for the red/blue colors.

5,485,205

SMEAR COMPENSATION CIRCUIT FOR A SOLID STATE IMAGER

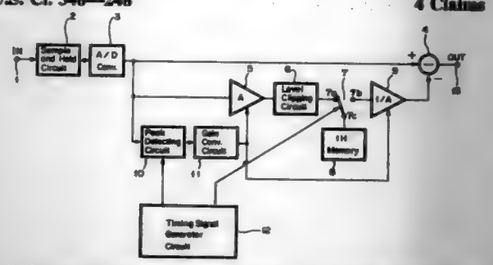
Katsurou Miyata, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 901,182, Jun. 19, 1992, abandoned. This application May 31, 1994, Ser. No. 250,949

Claims priority, application Japan, Jun. 21, 1991, 3-177175

Int. Cl.[6] H04N *5/335*

U.S. Cl. 348—248 **4 Claims**



1. A smear compensation circuit for a solid state imager comprising:

(a) an analog-to-digital converting means for converting an analog video signal supplied thereto from an output of a solid state imager into a digital video signal;

(b) peak detecting means coupled to an output of said analog-to-digital converting means for detecting a peak value of said digital video signal in a vertical blanking period;

(c) first level adjusting means, coupled to output of said analog-to-digital converting means, for adjusting said digital video signal on the basis of an output from said peak detecting means, said level adjusting means including a first multiplier with a gain of A wherein A is less than one;

(d) memory means for storing therein write data in which the level of said digital video signal is adjusted by first level adjusting means;

(e) second level adjusting means for adjusting a level of read-out data read out from said memory, and including a second multiplier with a gain of 1/A,

(f) subtracting means for subtracting from said digital video signal a value in which the level of the read-out data read out from said memory means is level-adjusted by said second level adjusting means during a video period of said digital video signal, and in which said peak detecting means detects a peak value during a 1H period of 3H periods before the end of the vertical blanking period where H is the horizontal scanning period.

5,485,206

METHOD OF DRIVING IMAGE SENSOR AND IMAGE SENSOR

Eigo Nakagawa; Norikazu Yamada, and Chikaho Ikeda, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 9, 1993, Ser. No. 88,643

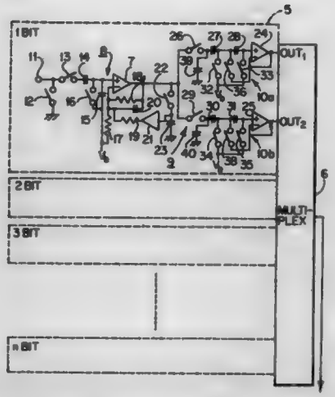
Claims priority, application Japan, Jul. 10, 1992, 4-206143

Int. Cl.[6] H04N *5/335*

U.S. Cl. 348—301 **5 Claims**

1. A method for driving an image sensor comprising the steps of:

periodically reading and amplifying optical charges from photodiodes during a succession of reading periods;



sampling the optical charges read vin signal switching means from the photodiodes during a succession of first sampling periods, each being virtually twice as long as each of said reading periods,

sampling the optical charges read via said signal switching means from the photodiodes during a succession of second sampling periods, each being virtually twice as long each of said reading periods and out of phase with said first sampling periods; and

during said second sampling periods, outputting signals indicative of the optical charges sampled during said first sampling periods respectively occurring immediately before said second sampling periods, and during said first sampling periods, outputting signals indicative of the optical charges sampled during said second sampling periods respectively occurring immediately before said first sampling periods.

5,485,207

CCD IMAGE SENSOR FOR NORMAL AND MIRROR IMAGES

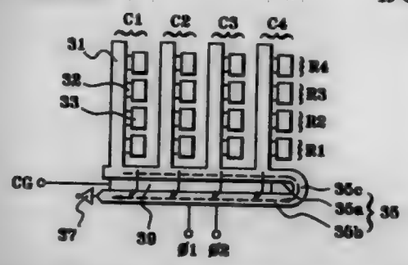
Jung H. Nam, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 24, 1993, Ser. No. 65,018

Claims priority, application Rep. of Korea, May 22, 1992, 92-8682

Int. Cl.[6] H04N *5/335;3/14*

U.S. Cl. 348—321 **13 Claims**



1. A CCD image sensor for creating normal and mirror images, comprising:

a plurality of photodiodes arranged in a matrix of rows and columns, said photodiodes sensing incident light to obtain a plurality of image signals, one image signal from each photodiode;

a plurality of transfer gates, each transfer gate connected to one of said photodiodes for transferring one of said image signals;

a vertical transfer charge coupled device arranged in a plurality of columns adjacent to said columns of said photodiodes, said vertical transfer charge coupled device coupled to said photodiodes through said transfer gates, each of said vertical transfer charge coupled device columns sequentially transferring image signals from each row of photodiodes to a column end using clock signals;

an upper horizontal transfer charge coupled device connected to said column ends of each said vertical transfer charge coupled device columns, said upper horizontal transfer charge coupled device sequentially inputting each row of image signals from each row of photodiodes in row image order and subsequently serially transferring each of said rows of image signals in a first direction in an absence of a transfer signal to a horizontal row output and transfers said rows of image signals in a fourth direction perpendicular to said first direction in a presence of said transfer signal;

an output circuit connected to only one horizontal charge coupled device;

a lower horizontal transfer charge coupled device having a horizontal row input, said lower horizontal transfer charge coupled device inputting said image signals from each row and subsequently serially transferring each of said rows of image signals in a second direction as a lower horizontal charge output to said output circuit;

rotating means connected to said horizontal row output and said horizontal row input for transposing said row image order for each row of image signals serially transferred by said upper horizontal transfer charge coupled device to said lower horizontal transfer charge coupled device, said rotating means transferring each of said rows of image signals in a third direction;

transfer means connected between said upper horizontal transfer charge coupled device and said lower horizontal transfer charge coupled device for transferring each row of image signals from said upper horizontal transfer charge coupled device to said lower horizontal transfer charge coupled device in response to said presence of said transfer signal;

wherein said upper horizontal transfer charge coupled device and said lower horizontal transfer charge coupled device serially transfer said image signals using said clock signals,

and wherein said row of image signals travel through said upper horizontal transfer charge coupled device, said lower horizontal transfer charge coupled device, and said rotating means respectively in said first, second and third directions when said CCD image sensor is creating one of a normal and a mirror image, and travel in said upper horizontal transfer charge coupled device in said fourth direction and in said lower horizontal transfer charge coupled device in said second direction when said CCD image sensor is creating the other of said normal and said mirror images.

5,485,208

CAMERA SYSTEM

Toshiaki Mabuchi, Tokyo, and Yoshikazu Nishikawa, Kanagawa, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 191,711, Feb. 3, 1994, which is a continuation of Ser. No. 67,488, May 25, 1993, abandoned, which is a continuation of Ser. No. 970,286, Nov. 2, 1992, abandoned, which is a division of Ser. No. 711,124, Jun. 6, 1991, Pat. No. 5,161,026, which is a continuation of Ser. No. 587,001, Sep. 24, 1990, abandoned. This application Sep. 13, 1994, Ser. No. 305,429

Claims priority, application Japan, Sep. 27, 1989, 1-253392; Feb. 26, 1990, 2-046283; Feb. 26, 1990, 2-046284; Jul. 10, 1990, 2-183171

Int. Cl.[6] H04N *5/30*

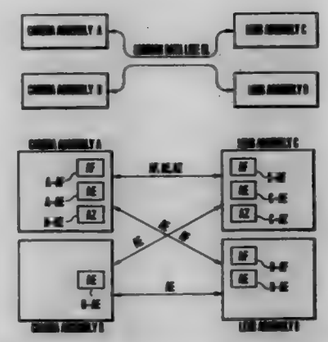
U.S. Cl. 348—335 **34 Claims**

1. A video camera device; comprising:

(a) automatic focus adjusting means for automatically adjusting a focus to an image of an object;

(b) image movement correcting means for correcting a movement of the image; and

(c) control means for controlling operations of said automatic focus adjusting means and said image movement correcting means, said control means being arranged to effect control of said image movement correction means before control of said automatic focus adjusting means.



5,485,209

PUPIL DIVISIONAL TYPE FOCUSING POSITION DETECTION APPARATUS FOR ELECTRONIC CAMERAS

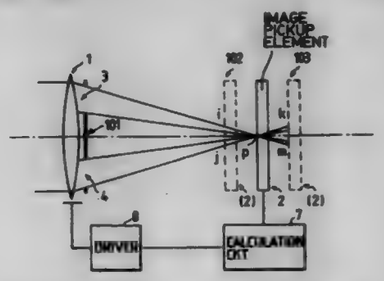
Tomotaka Muramoto, Tokyo, and Nobuhiro Takeda, Kawasaki, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 40,437, Apr. 1, 1993, abandoned. This application Mar. 20, 1995, Ser. No. 406,792

Claims priority, application Japan, Apr. 3, 1992, 4-110679; Sep. 22, 1992, 4-279434; Mar. 22, 1993, 5-061810; Mar. 24, 1993, 5-089390; Mar. 26, 1993, 5-092036

Int. Cl.[6] H04N *5/232*

U.S. Cl. 348—349 **20 Claims**



1. An apparatus for detecting a focus adjustment state of an objective lens, said apparatus comprising:

photoelectric conversion means for receiving a light beam transmitted through the objective lens and comprising a photosensor array;

area defining means for defining different areas of a pupil of the objective lens, and arranged so that light beams passing through the different areas overlap each other on said photoelectric conversion means when the objective lens is at an in-focus state; and

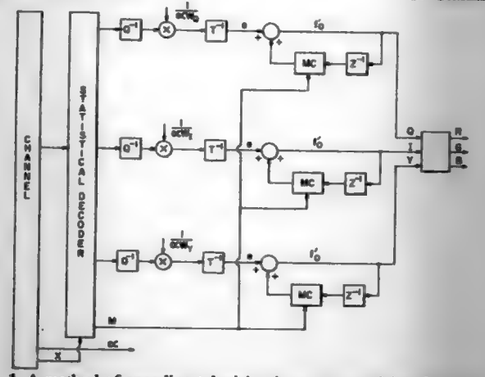
calculation means for calculating an autocorrelation from an output signal from said photoelectric conversion means,

wherein said photoelectric conversion means serves as both image pickup means for picking up an image of an object, and image receiving means for focus detection.

5,485,210
DIGITAL ADVANCED TELEVISION SYSTEMS

Jae S. Lim, Winchester, and Peter A. Monta, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 658,192, Feb. 20, 1991, Pat. No. 5,218,435. This application Jun. 7, 1993, Ser. No. 72,738
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[6] H04N 7/12;7/13
U.S. Cl. 348—409 **17 Claims**

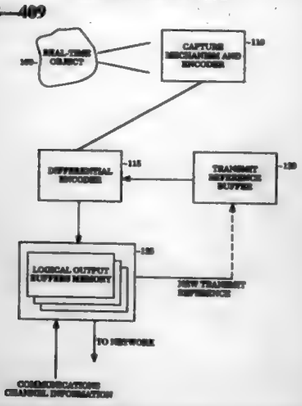


1. A method of encoding television images comprising the steps of:
forming a predicted current image frame by motion compensating a prior reconstructed image frame;
coding a residual frame using subband representation, the subbands being formed by scaling the predicted current image frame relative to an actual current image frame so that a fraction of the current image is injected into the residual frame, the amount of the current image injected varying between subbands; and
quantizing the subband-represented residual frame.

5,485,211
MULTIPLE ENCODER OUTPUT BUFFER APPARATUS FOR DIFFERENTIAL CODING OF VIDEO INFORMATION

Andrew Kuzma, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 159,665, Nov. 30, 1993, Pat. No. 5,416,520. This application Jan. 4, 1995, Ser. No. 368,372
Int. Cl.[6] H04N 7/12
U.S. Cl. 348—409 **16 Claims**

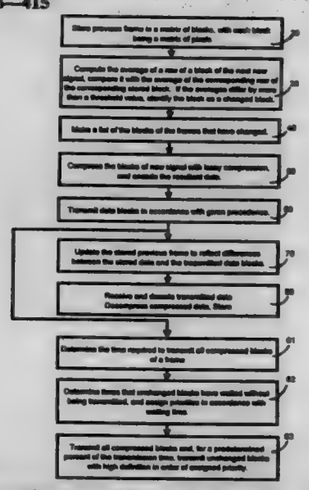


1. An apparatus for processing encoded real-time information in a communications network comprising:
a real-time information capturing and encoding mechanism for encoding said real-time information;
a transmit reference storage buffer for storing a current transmit reference;
differential compression circuitry coupled to said real-time information capturing and encoding mechanism and to said transmit reference storage buffer for producing compressed data corresponding to a difference between data stored in said transmit reference storage buffer and the encoded real-time information;
a plurality of output buffer memory elements coupled to said differential compression circuitry, said plurality of output buffer memory elements receiving subsequently encoded real-time compressed data; and
a network interface coupled to said plurality of output buffer memory elements, said network interface for transmitting data over said network from one of said plurality of output buffer memory elements providing a best differential data to a receiving node in said network, wherein said best differential data represents a differential data which when used in conjunction with a previously stored transmit reference produces data that approximates a current frame better than use of other differential data contained in said plurality of output buffer memory elements.

5,485,212
SOFTWARE VIDEO COMPRESSION FOR TELECONFERENCING

Ronald A. Frederick, Mountain View, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 2, 1993, Ser. No. 146,761
Int. Cl.[6] H04N 7/36
U.S. Cl. 348—415 **11 Claims**

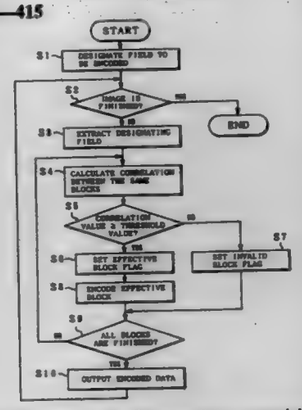


1. A computer-implemented method for producing a video signal for transmission, in a system having a source of a first video signal comprised of sequential frames of signals, comprising
transmitting video signals at least partially with lossy compression, corresponding to a sequence of said sequential frames of signals;
storing a frame of signals corresponding to a composite of signals that have been transmitted in said step of transmitting video signals corresponding to a sequence of sequential frames;
comparing blocks of said stored frame of signals with corresponding blocks of a video frame that occurs subsequent said sequence;
identifying blocks of said stored frame that differ in information content from blocks of said video frame by more than a predetermined extent;
transmitting said identified blocks of said video frame with lossy compression; and
modifying blocks of said stored frame to conform to data of said identified blocks of data transmitted in said step of transmitting with lossy compression.

5,485,213
METHOD AND APPARATUS FOR ENCODING AND DECODING IMAGE DATA

Kimitaka Murashita, and Tsugio Noda, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 28, 1994, Ser. No. 233,982
Claims priority, application Japan, Sep. 17, 1993, 5-230696
Int. Cl.[6] H04N 7/36
U.S. Cl. 348—415 **19 Claims**

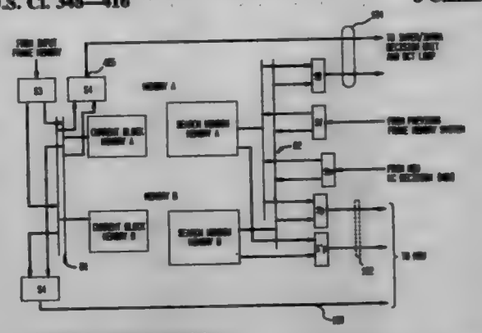


1. A compressing method of image data, comprising:
an image holding step of holding image data which is continuously input on a frame unit basis;
a compressing field designating step of designating either one of the image data of an odd field and the image data of an even field which are targets to be compressed;
a field image extracting step of extracting the image data of the odd field or the image data of the even field from present frame image data held in said image holding step on the basis of the result of the designation in said compressing field designating step;
a reference field holding step of holding reference field image data every field;
a change discriminating step of obtaining a correlation between the image regarding the field image data which was extracted from the present frame image data in said field extracting step and the image at the same position of the reference field image data held in said reference field holding step every block which is obtained by dividing the field image data into blocks on a unit basis of a plurality of pixels and discriminating whether the block is an effective block indicating that said block changes or an invalid block indicative of no change on the basis of a value of said correlation;
a compressing step of compressing only the field image data of each block which was judged to be the effective block in said change discriminating step; and
a code output step of adding block information which indicates whether each block is an effective block or an invalid block and was obtained as a result of the discrimination of said change discriminating step to field encoded data of one field which was obtained in said compressing step and outputting the resultant data.

5,485,214
DUAL BUS DUAL BANK ARCHITECTURE FOR MOTION COMPENSATION

Vincent M. S. Lin, Taipei, and Foo-Ming Lee, Kaohsiung, both of, Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed Feb. 25, 1993, Ser. No. 23,796
Int. Cl.[6] H04N 7/32
U.S. Cl. 348—416 **8 Claims**



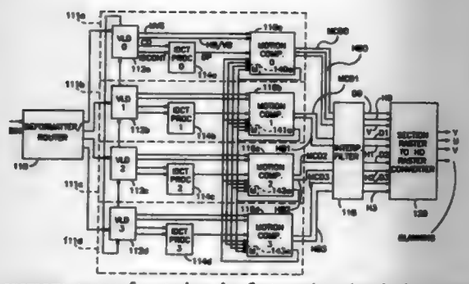
1. A video coder comprising
an input frame memory storing a current video frame to be coded,
a coding circuit for coding the current video frame stored in said input frame memory utilizing motion estimation and compensation,
a previous frame memory for storing a previous frame coded by said coding circuit,
a memory architecture comprising a plurality of current block memories and a plurality of search window memories including one search window memory corresponding to each of said current block memories,
a first bus for enabling said coding circuit in an ith cycle of a sequence of cycles to access an ith current block of pixels from a first one of said current block memories for motion estimation and compensation, for transmitting an $(i-1)^{th}$ current block of pixels from a second one of said current block memories to said coding circuit for coding, and for transmitting an $(i+1)^{th}$ current block of pixels from said input frame memory to said second one of said current block memories,
a second bus for enabling said coding circuit in the ith cycle to access search window pixels from one of said search window memories corresponding to said first one of said current block memories for motion estimation and compensation of said i^{th} current block, for transmitting a best match or zero displacement block of pixels from a second one of said search window memories corresponding to said second one of said current block memories to said coding circuit for the coding of said $(i-1)^{th}$ current block, and for transmitting a search window of pixels corresponding to said $(i+1)^{th}$ current block from said previous frame memory to said second one of said search window memories.

5,485,215
HDTV RASTER CONVERTER AND INTERPOLATION FILTER WITH SECTION OVERLAP

Edwin R. Meyer, Bensalem; Saiprasad V. Naimpally, Langhorne, both of Pa.; Larry Phillips, Collingswood, and Shuji Inoue, Mount Holly, both of N.J., assignors to Matsushita Electric Corporation of America, Secaucus, N.J.

Filed May 19, 1994, Ser. No. 246,308
Int. Cl.[6] H04N 7/12
U.S. Cl. 348—423 **15 Claims**

1. Apparatus for processing an input signal representing an image frame having a first section signal followed by a second section signal, the second section signal having a boundary section portion which immediately follows the first section signal in the frame, the apparatus comprising:



memory means for storing the first section signal, the second section signal, and the boundary section portion of the second section signal;

first processing means for receiving from said memory means the first section signal and the boundary section portion of the second section signal and for processing the first section signal and the boundary section portion of the second section signal to produce a first processed signal;

second processing means for receiving from said memory means the second section signal and for processing the second signal, concurrently with the processing of the first section signal, to produce a second processed signal; and

means for combining the first processed signal and the second processed signal to produce a processed output signal.

5,485,216

VIDEO FORMAT CONVERSION APPARATUS FOR HIGH DEFINITION TELEVISION

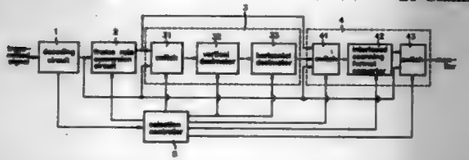
Dong H. Lee, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 11, 1994, Ser. No. 288,777

Claims priority, application Rep. of Korea, Aug. 18, 1993, 16036/1993

Int. Cl.[6] H04N *7/01;5/46*

U.S. Cl. 348—443 **20 Claims**



2. A video format conversion apparatus for a high definition television, comprising:

decoding means for decoding an encoded signal to generate a first signal and a format signal;

first means for converting a frame rate of the first signal to generate a second signal;

second means for converting a vertical resolution and a horizontal resolution of a selected one of the first signal and the second signal to generate a third signal; and

third means for converting a scanning format of a selected one of the first signal, the second signal, and the third signal into an interlaced scanning format to generate a fourth signal and outputting a selected one of the fourth signal and the first signal.

5,485,217

LINE TRIPLER FOR NTSC/HDTV DUAL RECEIVER

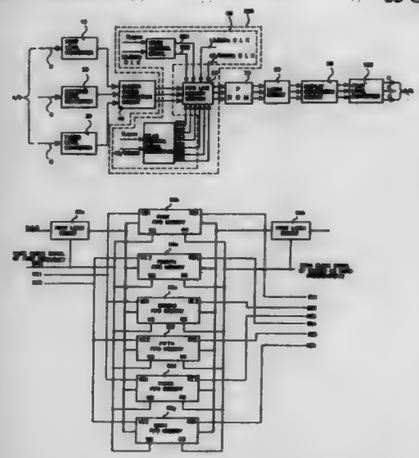
Jong S. Park, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 27, 1993, Ser. No. 141,743

Claims priority, application Rep. of Korea, Dec. 29, 1992, 26221/1992

Int. Cl.[6] H04N *7/01*

U.S. Cl. 348—445 **33 Claims**



1. A line tripler for an NTSC/HDTV dual receiver comprising:

control signal generation means for generating a plurality of write enable signals and a plurality of read enable signals, a write clock signal and a plurality of read clock signals; and

memory means for storing each line of an NTSC video signal a plurality of times at a predetermined write sampling rate in response to the plurality of write enable signals from said control signal generation means to generate multiple lines and for sequentially outputting the stored multiple lines of the NTSC video signal at a predetermined read sampling rate in response to the plurality of read enable signals from said control signal generation means, the memory means including first latch means for temporarily storing the NTSC video signal in line units in response to the write clock signal of a first frequency;

first, second and third first-in-first-out (FIFO) line memories for storing lines of the NTSC video signal from said first latch means in response to the write clock signal of the first frequency and a transmitted first write enable signal, said first, second and third FIFO line memories sequentially outputting the stored lines of the NTSC video signal in response to the read clock signal of one of second and third frequencies and first, second and third read enable signals;

fourth, fifth and sixth FIFO line memories for storing next lines of the NTSC video signal from said first latch means in response to the write clock signal of the first frequency and a second write enable signal, said fourth, fifth and sixth FIFO line memories sequentially outputting the stored next lines of the NTSC video signal in response to the read clock signal of one of the second and third frequencies and a fourth, fifth and sixth read enable signals; and

second latch means for temporarily storing three lines of the NTSC video signal from said first, second and third FIFO line memories or said fourth, fifth and sixth FIFO line memories in response to the read clock signal of one of the second and third frequencies.

5,485,218

IMAGE PROCESSOR FOR PRODUCING EVEN FIELD VIDEO DATA BASED ON ODD FIELD VIDEO DATA

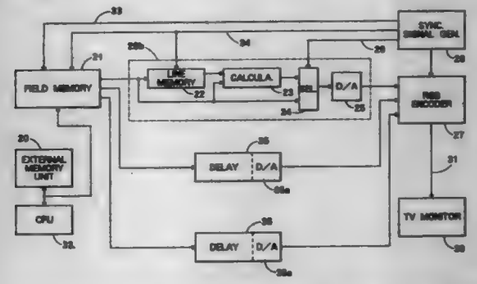
Yasutada Aoyama, Inazawa; Hiroyuki Takada, Aichi; Koichi Hayashi, Nagoya; Norio Chaya, Nagoya, and Hiroshi Nishikawa, Nagoya, all of, Japan, assignors to Brother Kogyo Kabushiki Kaisha, and Xing Inc., both of Aichi, Japan

Filed Jan. 20, 1995, Ser. No. 375,685

Claims priority, application Japan, Jan. 21, 1994, 6-005337

Int. Cl.[6] H04N *7/01;11/20*

U.S. Cl. 348—447 **22 Claims**



1. An image processor for constructing a complete picture with an odd field and an even field which are formed by interlaced scanning, comprising:

synchronization signal generation means for sequentially generating synchronization signals at a predetermined timing;

field identification means for producing a field identification signal identifying one of the odd field and the even field;

a field memory for storing field data of selected one of the odd field and the even field and for separately outputting red color video data, blue color video data and green color video data contained in the field data on a line-by-line basis of horizontal lines making up of the selected field and the even field in response to a synchronizing signal generated from said synchronizing signal generation means;

a line memory operatively connected to said field memory to receive and store one line green color video data, said line memory outputting the one line green color video data in response to an ensuing synchronization signal generated after the synchronization signal;

calculation means operatively connected to said field memory to receive another one line green color video data outputted from said field memory in response to the ensuing synchronizing signal and also connected to said line memory to receive the one line green color video data generated from said field memory preceding to the another one line green color video data, said calculation means calculating an interline green color video data to be scanned along a line of non-selected field falling between adjacent two lines of the selected field scanned by the one line green color video data and the another one line green color video data based on the one line green color video data and the another one line green color video data;

switching means operatively connected to said calculation means to receive the interline green color video data and also connected to said field memory to receive the one line green color video data, said switching means selectively outputting the interline green color video data and the one line green color video data in response to the field identification signal;

first delay means for delaying the red color video data outputted from said field memory in synchronization with timing at which green color video data is outputted from said switching means; and

second delay means for delaying the blue color video data outputted from said field memory in synchronization with the timing at which green color video data is outputted from said switching means.

5,485,219

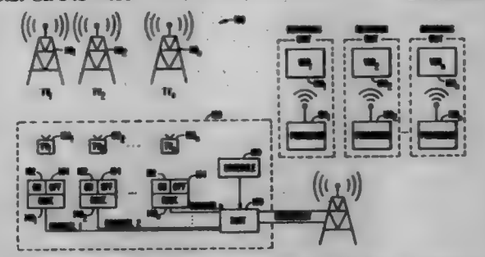
ELECTRIC SERVICE TO RECORD TRANSMISSIONS WITHOUT RECORDING COMMERCIALS

Thomas Woo, Hong Kong, Hong Kong, assignee to Depromax Limited, Kowloon, Hong Kong

Filed Apr. 18, 1994, Ser. No. 229,296

Int. Cl.[6] H04N *5/14;9/64*

U.S. Cl. 348—460 **17 Claims**



1. A method for controlling a recording device receiving a broadcast including a plurality of program segments interspersed with a plurality of commercial segments, the method comprising the steps of:

identifying a first period-type when one of the plurality of program segments is broadcast;

identifying a second period-type when one of the plurality of commercial segments is broadcast;

broadcasting over a transmission medium an ON command when said first period type is identified, wherein said ON command comprises data including a system identifier and a predetermined ON code;

broadcasting over said transmission medium an OFF command when said second period type is identified, wherein said OFF command Comprises data including said system identifier and a predetermined OFF code;

receiving at a controller said ON command and said OFF command broadcast over said transmission medium;

transmitting, from said controller, a RECORD command to the recording device upon receipt of said ON command; and

transmitting, from said controller, a PAUSE command to the recording device upon receipt of said OFF command.

5,485,220

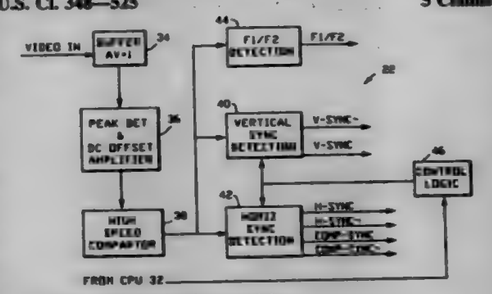
SYNC STRIPPER CIRCUIT

Peter J. McNeilly, and Martin E. Trzcinski, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 23, 1992, Ser. No. 979,999

Int. Cl.[6] H04N *5/08*

U.S. Cl. 348—525 **5 Claims**



1. A sync stripper circuit comprising:

composite sync signal stripping means for receiving a composite video signal with a horizontal sync frequency within one of first, second, third, and fourth frequency ranges,

and for stripping the composite sync signal from said received composite video signal;

horizontal sync detection means for detecting the horizontal sync signal from said stripped composite sync signal;

vertical sync detection means for detecting the vertical sync signal from said stripped composite sync signal;

F1/F2 field detection means for detecting the F1 or F2 field from said stripped composite sync signal; and

control means for controlling said horizontal sync detection means, said vertical sync detection means and said F1/F2 field detection means to operate in the selected one of said first, second, third and fourth frequency ranges of said received composite video signal.

5,485,221

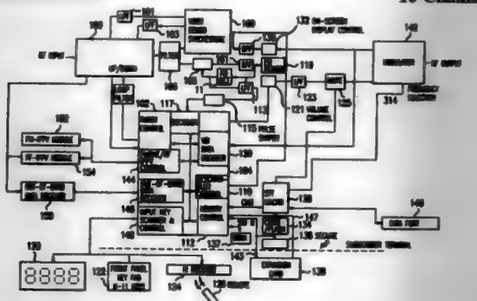
SUBSCRIPTION TELEVISION SYSTEM AND TERMINAL FOR ENABLING SIMULTANEOUS DISPLAY OF MULTIPLE SERVICES

Robert O. Banker, Cumming, Ga.; Michael T. Hayashi, Aurora, Colo., and Kinney C. Bacon, Lawrenceville, Ga., assignors to Scientific-Atlanta, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 73,404, Jun. 7, 1993. This application Apr. 19, 1994, Ser. No. 229,805

Int. Cl.[6] H04N *5/445*

U.S. Cl. 348—563 **10 Claims**



1. A subscription television system comprising a headend for transmitting a broadband television signal and at least one subscriber terminal remote from said headend for receiving the broadband television signal via a distribution system, wherein:

said headend comprises:

a video combiner for combining a plurality of video signals, each corresponding to a different video program, to produce a composite video signal;

circuitry for inserting data streams into said composite video signal, each data stream corresponding to a different data service; and

circuitry for modulating the composite video signal, including the data streams inserted therein, onto a channel of the broadband television signal, the broadband television signal being transmitted to said at least one subscriber terminal; and

said at least one subscriber terminal comprising:

a selector for selecting a virtual channel from a plurality of virtual channels, each said virtual channel representative of a different combination of a video program and a data service;

control signal generating means, responsive to the selected virtual channel, for generating tuning control signals, data extraction control signals, and video program control signals corresponding to the selected virtual channel;

a tuner, responsive to said tuning control signals, for tuning to the channel of the broadband television signal carrying the composite video signal;

processing circuitry for processing the composite video signal received from said tuner, said processor circuitry including extracting means for extracting from said composite video signal a data stream determined from said data extraction control signals; and

an on-screen display control, responsive to said video program control signals, for generating a video output display signal from said extracted data stream and said processed composite video signal to enable simultaneous display of the data service corresponding to said extracted data stream in a first continuous picture portion and the video program corresponding to the selected virtual channel in a second contiguous picture portion different from the first contiguous picture portion.

5,485,222

METHOD OF DETERMINING THE NOISE COMPONENT IN A VIDEO SIGNAL

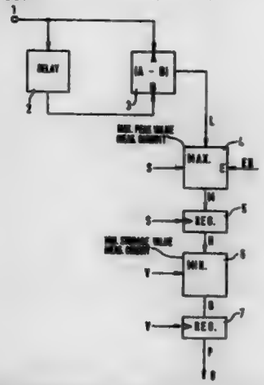
Gerhard Wischermann, Welterstadt, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 1, 1994, Ser. No. 252,507

Claims priority, application Germany, Jun. 11, 1993, 43 19 343.9

Int. Cl.[6] H04N *5/21*

U.S. Cl. 348—607 **8 Claims**



1. A method of determining a noise component in a video signal comprising the steps:

forming a motion signal (L) by subtracting an undelayed and a delayed video signal and by forming the absolute value of the difference;

establishing a plurality of search windows each having a predetermined time duration;

determining an amplitude maximum value (M) of the motion signal within each of said plurality of search windows; and

determining a minimum value, corresponding to a noise peak value, from the amplitude maximum values determined within said plurality of search windows.

5,485,223

NOISE REDUCING APPARATUS

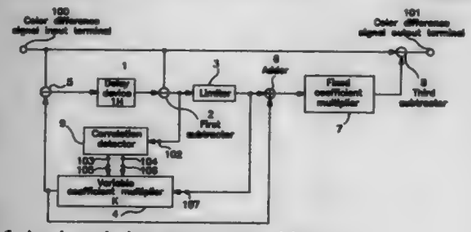
Kazunari Yamaguchi, Settsu, and Atsuhisa Kageyama, Ibaraki, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 1, 1994, Ser. No. 283,636

Claims priority, application Japan, Sep. 16, 1993, 5-229972

Int. Cl.[6] H04N *9/64*

U.S. Cl. 348—622 **3 Claims**



1. A noise reducing apparatus comprising:

delay means for delaying a first video signal by one horizontal period to produce a delayed video signal;

first subtracting means for subtracting the delayed video signal from an input color difference signal to produce a second video signal;

limiting means for clipping said second video signal at a designated level to produce a clipped video signal;

variable coefficient multiplying means for multiplying said clipped signal by a variable coefficient value which is between 0 and 1 to produce a third video signal;

second subtracting means for subtracting the third video signal from said input color difference signal to produce said first video signal and for providing said first signal to said delay means;

adding means for adding said clipped video signal and said third video signal to produce a fourth video signal;

coefficient multiplying means for multiplying said fourth video signal by a fixed coefficient value which is between 0 and 0.5 to produce a fifth video signal;

third subtracting means for subtracting said fifth video signal from said input color difference signal to produce a noise reduced color difference signal; and

correlation detecting means, responsive to said second signal, for controlling said variable coefficient multiplying means by:

decreasing the variable coefficient value of said variable coefficient multiplying means, in response to an increase in said second video signal, and

increasing the variable coefficient value of said variable coefficient multiplying means, in response to a decrease in said second video signal.

5,485,224

MOTION COMPENSATED VIDEO SIGNAL PROCESSING BY INTERPOLATION OF CORRELATION SURFACES AND APPARATUS FOR DOING THE SAME

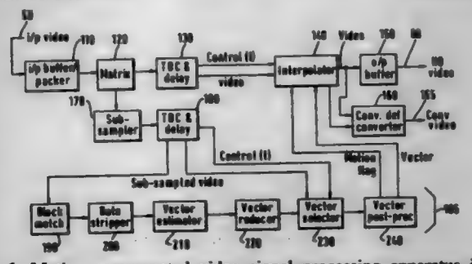
James E. Burns, Basingstoke; Morgan W. A. David, Farnham, and Martin R. Dorricott, Basingstoke, all of, United Kingdom, assignors to Sony United Kingdom Limited, Staines

Filed Feb. 4, 1994, Ser. No. 191,924

Claims priority, application United Kingdom, Apr. 8, 1993, 9307410

Int. Cl.[6] H04N *7/34;7/46;7/28*

U.S. Cl. 348—699 **18 Claims**



1. Motion compensated video signal processing apparatus in which motion vectors are generated to represent image motion between a pair of input images of an input video signal, said apparatus comprising:

means for comparing search blocks within one of said pair of input images with respective search areas, comprising a plurality of blocks, in the other of said pair of input images, to generate a first plurality of original correlation surfaces, each comprising an array of correlation values representing correlation between said respective search block and search area;

means for generating a second plurality of interpolated correlation surfaces by interpolation from said plurality of original correlation surfaces; and

means for generating a respective motion vector from each interpolated correlation surface, in dependence on a point of maximum correlation in said interpolated correlation surface.

5,485,225

VIDEO PROJECTION SYSTEM USING PICTURE AND LINE SCANNING

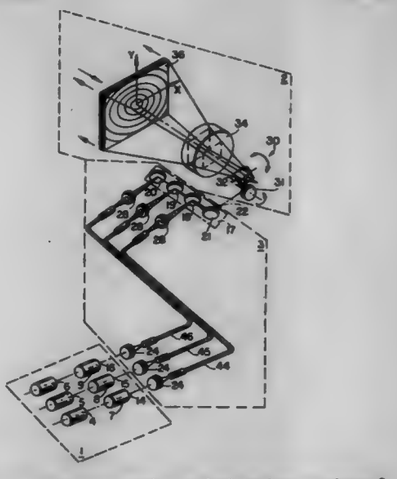
Christhard Deter, and Jürg Wunderlich, both of Gera, Germany, assignors to Schneider Elektronik Rundfunkwerke GmbH, Nersingen, Germany

Filed Jul. 5, 1994, Ser. No. 270,259

Claims priority, application Germany, Jul. 23, 1993, 43 24 848.9

Int. Cl.[6] H04N *5/66*

U.S. Cl. 348—804 **20 Claims**



1. A video projection system for producing picture points of a video picture on a screen by picture and line scanning, comprising:

a first component group containing at least one light source which can be controlled in intensity and having a light output from which at least one light bundle exits, said first component group including means for modulating the intensity of said one light source with video information;

a second component group having a deflecting device and having a light input through which a light bundle can be imaged into the deflecting device;

a light transmission device having an output for optically connecting the light output of the first component group with the light input of the second component group and for allowing an optional arrangement of the two component groups relative to each other; and

an optical system arranged between said output of said light transmission device and said deflecting device for bundling the light exiting from said light transmission device.

5,485,226

HOOD ASSEMBLY FOR A VIDEO DISPLAY UNIT

John S. Chipperfield, Birch Croft, Pinelands Rd., Chilworth, Southampton SO1 7HH, England

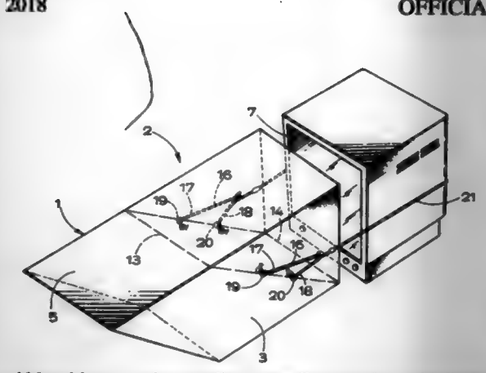
Filed Mar. 15, 1994, Ser. No. 213,212

Claims priority, application United Kingdom, Dec. 9, 1993, 9325210

Int. Cl.[6] H04N *5/645*; G03B *21/22;21/14*

U.S. Cl. 348—836 **6 Claims**

1. A hood assembly for use with a display having an outwardly facing display surface to reduce unwanted ambient light reflected from said outwardly facing display surface, said hood assembly comprising a tubular hood body having internal wall surfaces, said hood body having a rear end shaped to fit said display whereby



said hood has an axis extending generally normal to said display surface, and a partially reflecting mirror located inside said hood to extend at an acute angle to said hood axis, said internal wall surfaces having a low reflectance; wherein said partially reflecting mirror comprises a sheet of transparent material carrying a metallic layer, and wherein said partially reflecting mirror has a visible light transmittance in the range substantially 25% to substantially 45%.

5,485,227

LIGHT TRANSMISSION ADJUSTABLE SPECTACLES

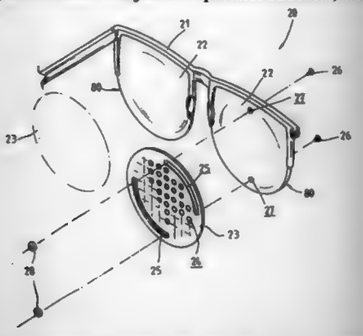
Chwen Y. Lin, No. 170, Fwucherng Rd., Fwucherng Li, Tourcherng Jenn, Yilan Hsien, Taiwan, Prov. of China

Filed Feb. 28, 1995, Ser. No. 395,954

Int. Cl.[6] G02C *7/16*

U.S. Cl. 351—46 **12 Claims**

1. A light transmission adjustable spectacle structure, comprising



a frame on which two lens sets are mounted, each of said lens sets comprising a first polaroid lens having a first polarization direction and a second polaroid lens having a second polarization direction rotatably mounted to said frame so as to have said second polaroid lens movable, relative to said first polaroid lens, between a first position where the second polarization direction is substantially oriented in such a direction with respect to the first polarization direction to allow light to pass through the lens set and a second position where the second polarization direction is substantially normal to the first polarization direction to block light transmission through the lens set, said second polaroid lens having multiple non-polarized aperture-like areas formed thereon to allow light to partially transmit therethrough when said second polaroid lens is in the second position.

5,485,228

MULTIFOCAL OPHTHALMIC LENS PAIR

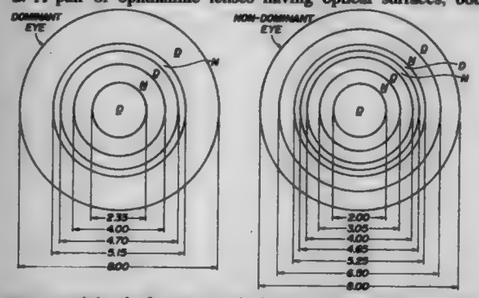
Jeffrey H. Roffman; Timothy R. Poling, both of Jacksonville, Fla.; Michel Guillon, London, England, and Edgar V. Menezes, Jacksonville, Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Continuation of Ser. No. 988,071, Dec. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 827,199, Jan. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 728,903, Jul. 10, 1991, Pat. No. 5,198,844. This application May 20, 1994, Ser. No. 246,644

Int. Cl.[6] G02C *7/04*

U.S. Cl. 351—161 **25 Claims**

2. A pair of ophthalmic lenses having optical surfaces, both



lenses containing both a near optical power and a distance optical power with distance optical power at the center of both lenses, one lens of said pair containing on the lens optical surface more than 50% said distant optical power and the other lens of said pair containing on the lens optical surface more than 50% said near optical power.

5,485,229

METHOD AND APPARATUS FOR DETERMINING ELECTRICAL ACTIVITY IN THE RETINAL NERVE FIBER LAYER USING INTRINSIC BIREFRINGENT PROPERTIES OF RETINAL GANGLION CELL AXONS

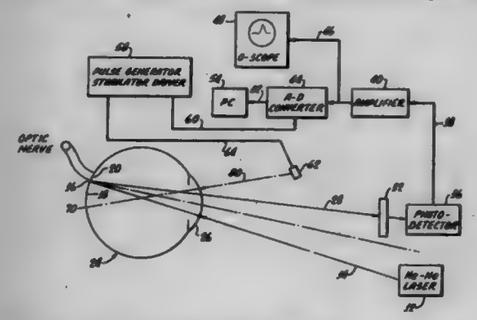
William A. Hare, Tustin, Calif., assignor to Allergan, Inc., Irvine, Calif.

Filed May 24, 1994, Ser. No. 248,356

Int. Cl.[6] A61B *3/10*

U.S. Cl. 351—215 **11 Claims**

1. A method for measuring retinal function in discrete regions of



a retina, said method comprising the steps of:

(a) selecting a discrete region of a retina having ganglion cell axons extending therefrom and to an optic nerve head;

(b) directing a linearly polarized beam of light on a probe region of retinal nerve fibers proximate the optic nerve head and having the ganglion cell axons from the discrete region extending therethrough;

(c) stimulating the discrete region with light;

(d) detecting light reflected from the probe region, before, during and after stimulation, unshifted linearly polarized light; and

(e) analyzing a change in the detected reflected light after stimulation and producing an electrical signal corresponding thereto as a function of time.

5,485,230

CHROMATIC MOTION DIAGNOSIS SYSTEM AND METHODS

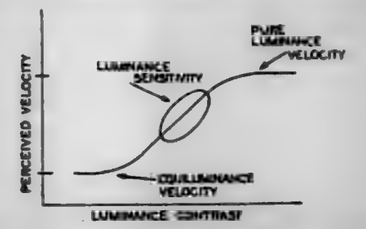
George L. Zimmerman, New Orleans, La., assignor to The Administrators of the Tulane Educational Fund, New Orleans, La.

Filed May 3, 1993, Ser. No. 56,474

Int. Cl.[6] A61B *3/02*

U.S. Cl. 351—239 **26 Claims**

1. A method for determining a subject's perceived motion ability



utilizing only a chromatic pathway as compared to a luminance pathway, the method comprising the steps of:

a. selecting a first color and a second color which determine the chromatic pathway;

b. determining the equiluminant point of the subject with respect to the first and second colors;

c. providing a first moving pattern of the first color and the second color, the first and second colors of the first pattern being luminant with respect to each other;

d. providing a second moving pattern, the first and second colors of the second pattern being equiluminant with respect to each other;

e. maintaining one of the first and second patterns at a fixed velocity;

f. providing a means for adjusting the velocity of another one of the first and second patterns;

g. having the subject match the appearance of the adjustable velocity to the fixed velocity;

h. determining if a difference exists between the matched adjustable velocity and the fixed velocity, the difference being a determination oil the subject's perceived motion ability utilizing only the chromatic pathway of the subject;

i. providing a motion perception standard; and

j. comparing the determination to the standard to evaluate the subject's perceived motion ability.

5,485,231

APPARATUS FOR VISUAL ACUITY TEST HAVING AN ADJUSTABLE MIRROR

Akihiro Hayashi, Toyokawa; Kazuhiro Yoshimura, Toyohashi; Yasuhisa Murakami, Anjo, and Yasumi Hikosaka, Gamagori, all of, Japan, assignors to Nidek Co., Ltd., Japan

Filed Jan. 27, 1995, Ser. No. 380,001

Claims priority, application Japan, Jan. 31, 1994, 6-029074; Feb. 28, 1994, 6-055191

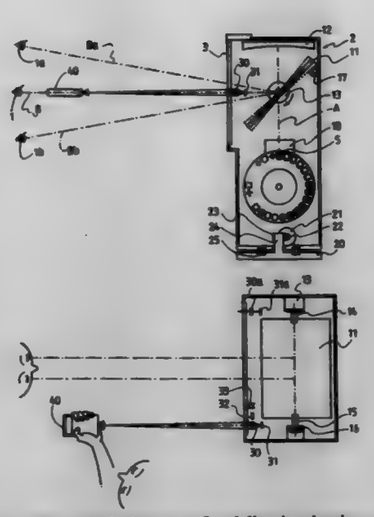
Int. Cl.[6] A61B *3/02*

U.S. Cl. 351—243 **9 Claims**

1. An apparatus for visual acuity test of an examinee's eye comprising:

means for changing and presenting test chart to the examinee's eye;

a switch for designating test chart to be presented by said test chart presenting means;



a light delivery optical system for delivering luminous flux of test chart from said test chart presenting means to the examinee's eye, the light delivery optical system comprising a concave mirror for making said luminous flux of test chart optically from 4 m ahead of the examinee to infinite and a first reflection mirror for reflecting the luminous flux reflected said concave mirror to the examinee's eye; and

means for adjusting reflection angle of said reflection mirror so as to fit to a height of the examinee's eye;

a housing for internally mounting said test chart presenting means and said light delivery optical system, the housing having an aperture to allow the luminous flux of test chart pass therethrough and the aperture being provided with a filter on which reflection reducing coating is coated.

5,485,232

DIGITAL AUDIO SIGNAL RECORDING DEVICE FOR MOTION PICTURE FILM AND AUDIO SIGNAL RECORDING SYSTEM FOR MOTION PICTURE FILM EMPLOYING THE DIGITAL AUDIO SIGNAL RECORDING DEVICE

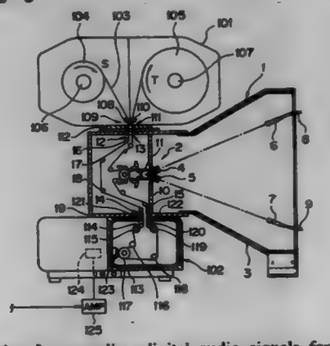
Etsuro Saito, Kanagawa; Yoshio Ozaki, Tokyo; Toshiyuki Shirasu, and Koichi Yoshikawa, both of Kanagawa, all of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 13, 1994, Ser. No. 226,846

Claims priority, application Japan, Apr. 16, 1993, 5-090223

Int. Cl.[6] G03B *31/00*

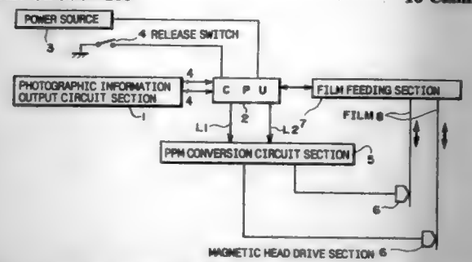
U.S. Cl. 352—5 **7 Claims**



1. A device for recording digital audio signals for a motion picture film in which the digital audio signals are recorded on the travelling motion picture film reeled out from a film magazine, comprising

a first film feed-in section provided at a position in register with a film feed, out section adapted for feeding out the motion picture film loaded in the film magazine,
a digital audio signal recording section for recording the digital audio signals in digital sound track areas on said motion picture film,
a first film feed out section provided at a position in register with a film lead-in portion of an analog audio signal recording device adapted for recording analog audio signals in an analog sound track area on said motion picture film,
a second film feed-in section provided in register with a film lead-out section of the analog audio signal recording device, and a second film feed-out section provided at a position in register with a film taker-in section re-introducing the motion picture film into the film magazine.

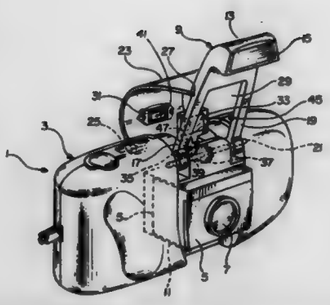
5,485,233
INFORMATION RECORDING DEVICE
Norikazu Yokonuma, Yokohama; Kazuyuki Kazami, Tokyo; Hideo Hibino, and Youichi Yamazaki, both of Kawasaki, all of, Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Mar. 10, 1994, Ser. No. 208,569
Claims priority, application Japan, Mar. 12, 1993, 5-052630
Int. Cl.[6] G03B *17/24;* **G11B** *5/02;20/08*
U.S. Cl. 354—106 **16 Claims**



9. A camera equipped with an information recording device which is capable of magnetically recording information related to photography on a film, comprising:
a photographic information output circuit which outputs information related to photography as a plurality of parallel data items separated according to the type of information;
a parallel to serial conversion circuit which alternatingly selects said plurality of parallel data items from said photographic information output circuit, to convert said plurality of parallel data items into a single serial data item;
a PPM signal conversion circuit which converts said single serial data item into a plurality of PPM signals corresponding to said plurality of parallel data items; and;
a plurality of magnetic recording devices which magnetically record said plurality of PPM signals on said film.

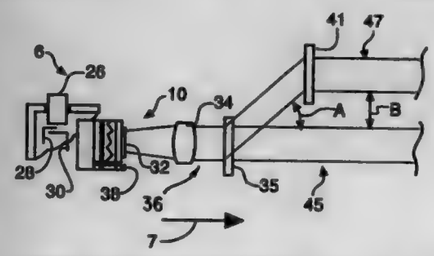
5,485,234
LIGHT SOURCE INDICATOR FOR COMPACT CAMERA WITH COMBINATION FLIP-UP FLASH AND VIEWFINDER ASSEMBLY
Stanley W. Stephenson, III, Spencerport, and Tom M. Seamans, Corfu, both of N.Y., assignors to Eastman Kodak Company, Rochster, N.Y.
Filed May 16, 1994, Ser. No. 243,019
Int. Cl.[6] G03B *15/03;15/02*
U.S. Cl. 354—149.11 **5 Claims**

1. A compact camera comprising a pair of front and rear viewfinder elements supported for movement between storage positions collapsed with respect to a camera body to store said pair of viewfinder elements and viewing positions erected with respect to said camera body to use the pair of viewfinder elements to view a subject to be photographed, is characterized in that:



a light source indicator is supported for movement between an indicating position erected with respect to said camera body and pointing towards said front viewfinder element to view said light source indicator together with a subject to be photographed, when said pair of viewfinder elements are in their viewing positions, and a concealed position collapsed with respect to said camera body to store said light source indicator, when said pair of viewfinder elements are in their storage positions.

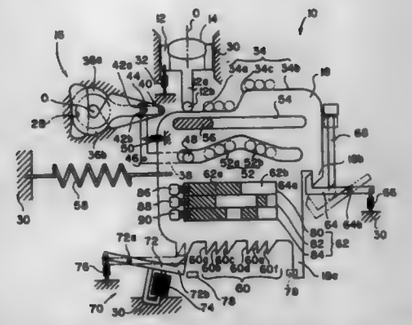
5,485,235
POINTING SYSTEM FOR CORRECTLY AIMING AN IMAGE RECORDING APPARATUS TOWARDS A HUMAN SUBJECT
Mark M. Meyers, Hamlin, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 19, 1994, Ser. No. 245,993
Int. Cl.[6] G03B *13/20*
U.S. Cl. 354—165 **8 Claims**



1. A pointing system for correctly aiming an image recording apparatus towards a human subject, comprising:
means for producing a plurality of discrete, visible aiming beams of laser radiation, at least two of which are separated from each other by a distance slightly greater than the diameter generally of an eye-pupil of a human subject to prevent said two beams from simultaneously impinging on the eye-pupil when they are pointed towards the human subject; and
means for activating said producing means.

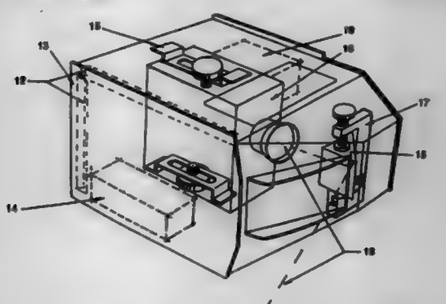
5,485,236
CAMERA
Akihiro Arai, and Hisashi Tatamiya, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 29, 1993, Ser. No. 175,240
Claims priority, application Japan, Dec. 29, 1992, 4-093806 U; Dec. 17, 1993, 5-072648 U
Int. Cl.[6] G03B *13/32*
U.S. Cl. 354—195.11 **32 Claims**

1. A camera comprising:
a lens, movable for focusing, and having a plurality of positions;



a focusing mechanism for moving said lens, and having a plurality of focus settings, each of said settings corresponding to a position of said lens;
an aperture mechanism, for setting a size of a diaphragm aperture of said lens through which a film is exposed, said aperture mechanism having a plurality of aperture settings and a plurality of positions, and each position of said aperture mechanism corresponding to a unique combination of aperture settings and focus settings such that the number of aperture mechanism positions equals the number of unique combinations of focus settings and aperture settings; and
a focusing control mechanism, for controlling said focusing mechanism;
an aperture control mechanism, for controlling said aperture mechanism;
a movable control member that drives both said aperture control mechanism and said focusing control mechanism; and
means for stopping said movable control member at one of a plurality of positions.

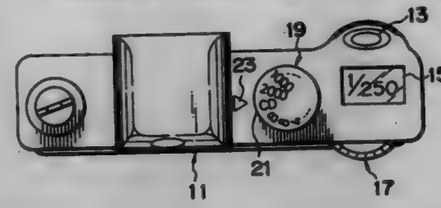
5,485,237
PROTECTIVE CAMERA HOUSING AND OPTICAL SYSTEM FOR USE IN DESTRUCTIVE ENVIRONMENT
David A. Adermann, and Anthea Dean, both of P.O. Box 218, Charlestown, NSW 2290, Australia
PCT No. PCT/AU92/00279, § 371 Date Oct. 14, 1993, § 102(e) Date Oct. 14, 1993, PCT Pub. No. WO92/22850, PCT Pub. Date Dec. 23, 1992
PCT Filed Jun. 12, 1992, Ser. No. 142,395
Claims priority, application Australia, Jun. 12, 1991, PK6628
Int. Cl.[6] G03B *17/02*
U.S. Cl. 354—288 **16 Claims**



1. A protective camera housing disposed to be placed in a three-dimensional hole with one side of said hole opening to a path that a shock wave of a destructive event is expected to take to permit the recording of said destructive event by said camera within said housing, said destructive event being initiated by an operator initiated signal, said housing comprising:
a three-dimensional case defining a port therethrough, said case sized and shaped to contain said camera therewithin and to fit within said three-dimensional hole with said port oriented to said open side of said hole;
a face plate to provide closure to said port of said three-dimensional case with at least a portion of said face plate at an oblique angle to said case to cause explosion debris and shock waves to be deflected away from said case and face plate;
a transparent viewing port mounted within said at least a portion of said face plate disposed to enable said camera within said case to view said shock wave when said housing is placed within said hole; and
a light bending device mounted within said case to transmit images visible through said transparent viewing port to said camera to record said images with said camera out of the direct line of said explosion shock wave.

5,485,238
PHOTOGRAPHING INFORMATION SETTING DEVICE FOR CAMERA
Kosho Miura, Funabashi, and Naoki Kitaoka, Tokyo, both of, Japan, assignors to Nikon Corporation, Tokyo, Japan
Continuation of Ser. No. 984,525, Dec. 2, 1992, abandoned. This application Sep. 1, 1994, Ser. No. 299,797
Claims priority, application Japan, Dec. 6, 1991, 3-323068
Int. Cl.[6] G03B *17/00;7/08*
U.S. Cl. 354—289.12 **20 Claims**

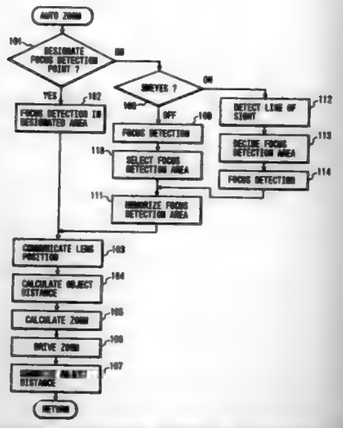
1. A photographing information setting device of a camera



comprising:
first signal outputting means for outputting, in response to an operation of an externally operable first operation member, a first signal for varying photographing information of a predetermined kind by a predetermined step;
second signal outputting means for outputting, in response to an operation of an externally operable second operation member which is different from said first operation member, a second signal for varying the same photographing information as the last-mentioned photographing information by another step different from said predetermined step;
third signal outputting means for outputting a third signal when said second operation member is set to a predetermined position; and
photographing information setting means for setting said photographing information either according to said first signal when said third signal outputting means is outputting said third signal, or according to said second signal when said third signal outputting means is not outputting said third signal.

5,485,239
CAMERA INCORPORATING AN AUTO-ZOOM FUNCTION
Toshifumi Ohsawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 2, 1993, Ser. No. 160,205
Claims priority, application Japan, Dec. 3, 1992, 4-349963
Int. Cl.[6] G03B *13/36*
U.S. Cl. 354—402 **9 Claims**

1. A camera incorporating an auto-zoom function to automatically drive a zoom optical system in a predetermined zoom state, said camera comprising:



(a) an inhibiting means for inhibiting the auto-zoom function after the zoom optical system has been shifted to a predetermined zoom state with the auto-zoom function;

(b) a detecting means for detecting a change in distance to an object equal to or larger than a predetermined quantity; and

(c) a control circuit for making the auto-zoom function operative by canceling the inhibiting of the auto-zoom function by said inhibiting means when said detecting means detects the change in distance to an object equal to or larger than the predetermined quantity in a state where said inhibiting means inhibits the auto-zoom function.

5,485,240

FOCUSING CONTROLLER

Hiroyuki Tsuru, Tokyo; Shigemasa Sato, Chiba, and Hiroshi Terunuma, Ichikawa, all of, Japan, assignors to Nikon Corporation, Tokyo, Japan

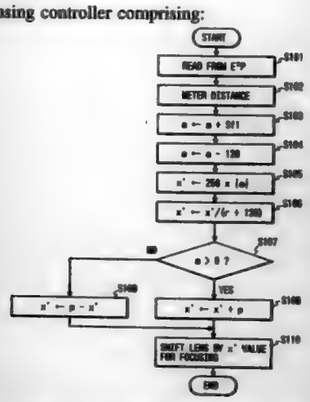
Continuation of Ser. No. 116,732, Sep. 7, 1993, abandoned, which is a continuation of Ser. No. 778,445, Oct. 17, 1991, abandoned. This application Aug. 3, 1994, Ser. No. 283,173

Claims priority, application Japan, Jan. 26, 1990, 2-287137

Int. Cl.[6] G03B *13/36*

U.S. Cl. 354—402 **9 Claims**

1. A focusing controller comprising:



a distance meter which detects film-to-object distance to calculate and emit a distance signal;

a lens shifting distance calculating means which calculates a lens shifting distance for effecting focusing in a focusing optical system from said distance signal by using one or more linear expressions approximately relating the distance signal and the lens shifting distance;

means cooperable with an external adjusting device to enable changing of coefficients and constants of said one or more linear expressions to adjust said lens shifting distance; and

a driving means for driving said focusing optical system in accordance with said lens shifting distance;

whereby both the lens shifting distance for said focusing optical system and the reciprocal of film-to-object distance can be set at equal intervals.

5,485,241

OPTICAL EQUIPMENT WITH DEVICE FOR DETECTING DIRECTION OF VISUAL AXIS

Yoshiaki Irie; Akira Yamada, both of Yokohama, and Akihiko Nagano, Ichihara, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

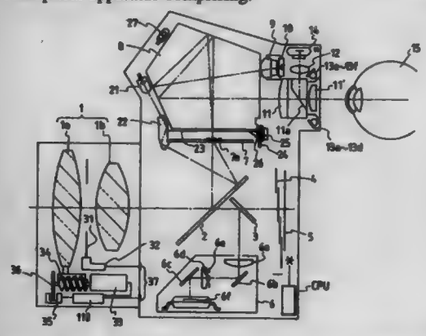
Continuation of Ser. No. 115,018, Sep. 2, 1993, abandoned. This application Feb. 9, 1995, Ser. No. 386,200

Claims priority, application Japan, Sep. 7, 1992, 4-264290; Jan. 29, 1992, 4-291505

Int. Cl.[6] G03B *13/02*

U.S. Cl. 354—410 **43 Claims**

1. An optical apparatus comprising:



illumination means for illuminating an eyeball, including a movable light source;

light-receiving means for receiving light reflected from the eyeball and converting the light into an electrical signal;

signal forming means for forming a signal indicating a visual axis of the eyeball, based on the electrical signal; and

means for displacing said light source.

5,485,242

EXPOSURE CONTROL APPARATUS OF CAMERA

Osamu Sato; Satoshi Nakano; Isamu Hirai; Toshiyuki Kitazawa; Takayuki Sensui; Masato Yamamoto; Toshimasa Yamanaka; Takenao Shishikura, and Akio Takahashi, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

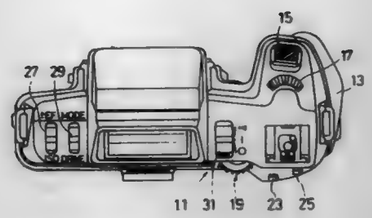
Continuation of Ser. No. 236,142, May 2, 1994, abandoned, which is a continuation of Ser. No. 868,686, Apr. 15, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 461,755

Claims priority, application Japan, Apr. 15, 1991, 3-173496; Apr. 15, 1991, 3-173497; Apr. 15, 1991, 3-173498; Apr. 15, 1991, 3-173499; Apr. 15, 1991, 3-173500; Apr. 15, 1991, 3-173501; Nov. 29, 1991, 3-342127; Nov. 29, 1991, 3-342128; Nov. 29, 1991, 3-342133; Nov. 29, 1991, 3-342146; Nov. 29, 1991, 3-342151; Nov. 29, 1991, 3-342167

Int. Cl.[6] G03B *7/08*

U.S. Cl. 354—442 **42 Claims**

1. An exposure control apparatus of a camera, said apparatus comprising:



photometering means for measuring a brightness of an object to be photographed;

exposure value calculating means for calculating an exposure value according to the brightness measured by said photometering means;

means for manually setting a shutter speed;

means for manually setting an aperture value;

means for selecting an exposure mode from a plurality of exposure modes, said plurality of exposure modes including at least an automatic exposure mode, a shutter priority exposure mode, an aperture priority exposure mode, and a specific exposure program mode;

said automatic exposure mode automatically determining a shutter speed and an aperture value based upon the exposure value calculated by said exposure value calculating means;

said shutter priority exposure mode automatically determining an aperture value in accordance with a manually set shutter speed and an object brightness;

said aperture priority exposure mode automatically determining a shutter speed in accordance with a manually set aperture value and an object brightness;

means for setting said shutter priority exposure mode by operation of said manual shutter speed setting means when said specific exposure program mode is selected by said selecting means, and for changing from said shutter priority exposure mode to said aperture priority exposure mode, when in said specific exposure program mode, by operation of said manual aperture value setting means;

means for setting said aperture priority exposure mode by operation of said manual aperture value setting means when said specific exposure program mode is selected by said selecting means, and for changing from said aperture priority exposure mode to said shutter priority exposure mode, when in said specific exposure program mode, by operation of said manual shutter speed setting means;

means for returning to said automatic exposure mode from one of said shutter priority exposure mode and said aperture priority exposure mode when said returning means is operated in said specific exposure program mode; and

means for selecting said specific exposure program mode upon an occurrence of a predetermined event, other than operation of said returning means.

5,485,243

AFOCAL CONCENTRATOR FOR LOW WAVELENGTH LITHOGRAPHY, PARTICULARLY FOR SEMICONDUCTOR LITHGRAPHY

Michael D. Rostoker, Boulder Creek, Colo.; Nicholas F. Pasch, Pacifica, and Joe Zelayeta, Saratoga, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Apr. 30, 1993, Ser. No. 56,553

Int. Cl.[6] G03B *27/00*

U.S. Cl. 355—1 **33 Claims**

1. An afocal concentrator for a radiation beam, comprising:

a hollow, tapered section having a first bore, a broad mouth of a first diameter at first end of the first bore, and a narrow opening of a second diameter at a second end of the first bore; and



a hollow cylindrical section having second bore with a diameter equal to the second diameter, and one end of the second bore abutting and aligned with the narrow opening of the tapered section.

5,485,244

ELECTROPHOTOGRAPHIC APPARATUS WITH FREELY OPENABLE UPPER AND LOWER HOUSINGS

Katsuhiko Gotoda; Hisanobu Inada; Susumu Shoji; Katsuya Shiba, all of Kobe; Yasunori Tsukuda, and Masanari Nakamura, both of Shizuoka, all of, Japan, assignors to Star Micronics Co., Ltd., Shizuoka, Japan

Continuation of Ser. No. 21,527, Feb. 23, 1993, abandoned. This application Aug. 3, 1993, Ser. No. 101,712

Claims priority, application Japan, Aug. 3, 1992, 4-206833

Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—200 **3 Claims**

1. An electrophotographic apparatus comprising:

a lower housing of box-shaped configuration with an open top;

an upper housing having first and second ends and swingably mounted at said first end to said lower housing for swinging movement relative thereto between a lower closed position, whereat said second end is relatively adjacent said lower housing, and an upper open position, whereat said second end is relatively spaced from said lower housing;

a support member;

a process cartridge, including a housing having a photoconductor drum and a developing device, detachably fixed to said support member to form an assembly having a first end composed of said support member and a second end;

said support member being swingably mounted to said upper housing for swinging movement of said second end of said assembly toward and away from said upper housing;

whereby when said upper housing is in said lower closed position said assembly is relatively adjacent said upper housing and said process cartridge is in a mounting position at said lower housing, and whereby when said upper housing is in said upper open position said assembly is swung away from said upper housing and said process cartridge is disengaged from said mounting position and spaced from said lower housing;

a guide piece extending from said support member; and

a guide member on said lower housing, said guide member having a guide face to be abutted by said guide piece during said swinging movement of said upper housing from or toward said lower closed position, said guide face being configured to control movement of said assembly relative to said upper housing when said upper housing is moved from or toward said lower closed position to provide an alignment of said process cartridge during movement thereof from or toward said mounting position corresponding generally to an orientation thereof when in said mounting position.

5,485,245

IMAGE FORMING APPARATUS IN WHICH IMAGES ARE STORED IN AN EXTERNAL MEMORY

Kenji Kobayashi, and Akimaro Yoshida, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

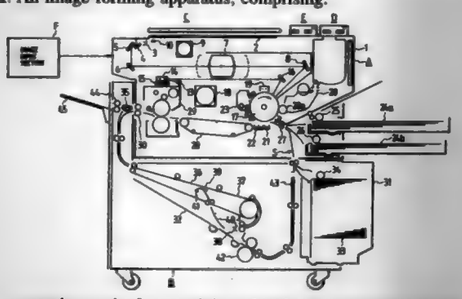
Continuation of Ser. No. 873,633, Apr. 23, 1992, abandoned, which is a continuation of Ser. No. 606,474, Oct. 30, 1990, abandoned, which is a continuation of Ser. No. 290,637, Dec. 27, 1988, Pat. No. 4,992,827. This application Oct. 22, 1993, Ser. No. 139,885

Claims priority, application Japan, Dec. 28, 1987, 62-329681; Dec. 28, 1987, 62-329682; Dec. 28, 1987, 62-329683; Dec. 28, 1987, 62-329684

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—202 **30 Claims**

1. An image forming apparatus, comprising:



a reception unit for receiving therein an external memory medium storing image data representing a plurality of images;

input/output means for inputting/outputting data in/from the external memory medium received in said reception unit;

reading means for reading an original, and for outputting image data in accordance with the original;

control means for controlling storing in the external memory of image data outputted from said reading means, and for controlling reading out of stored image data from the external memory medium;

exposing means for exposing an original;

operation means;

display means for displaying information concerning image data to be selected so as to select at least one data from the data representing a plurality of images stored in the external memory medium, said display means displaying the information concerning image data to be selected, changed for each actuation of said operation means;

selection means for selecting at least one image from the data representing a plurality of images stored in the external memory medium; and

recording means for recording on one sheet both an image of the original exposed by said exposing means and the image selected by said selection means.

5,485,246

CONTROL DEVICE FOR COLLECTIVELY SUPERVISING A PLURALITY OF IMAGE FORMING APPARATUSES

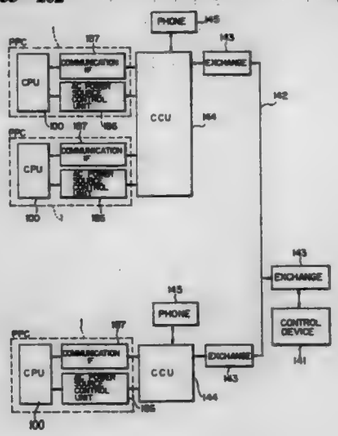
Masayuki Hayashi; Yoshihiro Mitekura; Koichi Kanaya, all of Yokohama; Masato Terao, Tokyo; Toshiya Tagawa, Ichikawa; Nobuaki Tomidokoro, Sagamihara; Masahiro Kitayama, Kawasaki; Osamu Kizaki, Asaka; Yasuo Kawada, Kawasaki; Kazuyuki Nakahara, Tokyo; Tomofumi Harada, Yokohama, and Yasunari Hashimoto, Tokyo, all of, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 69,350, May 28, 1993, abandoned. This application Nov. 22, 1994, Ser. No. 345,796

Claims priority, application Japan, May 28, 1992, 4-137128; May 28, 1992, 4-137130; Nov. 30, 1992, 4-321045; Dec. 18, 1992, 4-339147; Mar. 15, 1993, 5-053542

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—202 **48 Claims**



1. In a control system for controlling at least one image forming apparatus connected to a control device by a communication line;

said at least one image forming apparatus comprising first communicating means for communicating with said control device, storing means for storing data relating to image formation, and timepiece means for setting an operative state or an inoperative state of at least part Of said at least one image forming apparatus in terms of time;

said control device comprising second communicating means for communicating with said at least one image forming apparatus, and rewriting means for reading a state of said timepiece means and rewriting data stored in said storing means when said at least part of said at least one image forming apparatus is in the inoperative state, wherein even when said at least part of said at least one image forming apparatus is in the inoperative state, said rewriting means does not rewrite the data when it is determined that said at least part of said at least one image forming apparatus will be brought to an operative state within a predetermined period of time by referencing said timepiece means.

5,485,247

IMAGE FORMING APPARATUS INCLUDING A PAPER FEEDING DEVICE HAVING IMPROVED PAPER JAM DETECTION CAPABILITY

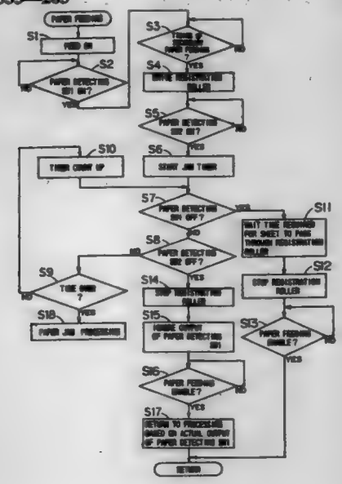
Hiroki Morishita; Hiroaki Nakamura; Makoto Eki; Yoshinori Makiura; Masao Otsuka; Kazushiro Taguchi, and Keiji Ban, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Aug. 13, 1993, Ser. No. 105,929

Claims priority, application Japan, Aug. 28, 1992, 4-230273

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—205 **13 Claims**



7. A paper jam judging method which is applied to an image forming apparatus having an image forming section for recording an image on a paper sheet and a registration roller provided on a paper feeding path on which a paper sheet fed to the image forming section is conveyed for feeding the paper sheet to the image forming section at a predetermined timing, said method comprising:

detecting a paper sheet in a first predetermined position on the paper feeding path on an upstream side of said registration roller with respect to a paper conveyance direction in which the paper sheet is conveyed toward the image forming section;

detecting a paper sheet conveyed to the image forming section in a second predetermined position on the paper feeding path, said second predetermined position being a position between the registration roller and the image forming section; and

judging that a paper jam has occurred on the basis of the fact that a paper sheet is detected in said first predetermined position and a paper sheet is detected in said second predetermined position when a predetermined time has elapsed since said registration roller started to feed a paper sheet.

5,485,248

IMAGE FORMING APPARATUS HAVING A CONTACT CHARGER FOR VARYING A CHARGE APPLIED TO A PHOTOSENSITIVE DRUM BASED ON A RESISTANCE OF THE PHOTOSENSITIVE LAYER

Hideyuki Yano; Junji Araya, both of Yokohama; Norio Hashimoto, Tokyo; Harumi Kugoh; Takashi Shibuya, both of Kawasaki, and Tadashi Furuya, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

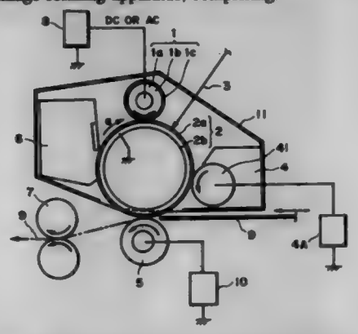
Continuation of Ser. No. 14,521, Feb. 8, 1993, abandoned. This application Jan. 12, 1995, Ser. No. 371,584

Claims priority, application Japan, Feb. 7, 1992, 4-056914; Apr. 28, 1992, 4-137744

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—206 **76 Claims**

1. An image forming apparatus, comprising:



an image bearing member having an image bearing layer for bearing an image;

a charging member, contactable to said image bearing member, for charging said image bearing member; and

detecting means for detecting an electric current flowing through said charging member at a time when a predetermined area of said image bearing member, which has been charged to a potential V1 by said charging member supplied with a first voltage, is charged to a potential V2 by said charging member supplied with a second voltage different from said first voltage;

wherein, in the case an increase of electric current is detected, a decrease of a thickness of said image bearing layer can be determined.

5,485,249

PROCESS CARTRIDGE FRAME, PROCESS CARTRIDGE AND IMAGE FORMING APPARATUS

Akira Higeta, Funabashi; Kazuyoshi Odagawa, Koshigaya, and Shinichi Sasaki, Fujisawa, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1994, Ser. No. 298,152

Claims priority, application Japan, Aug. 31, 1993, 5-215654; Aug. 26, 1994, 5-201981

Int. Cl.[6] G03G *21/00*

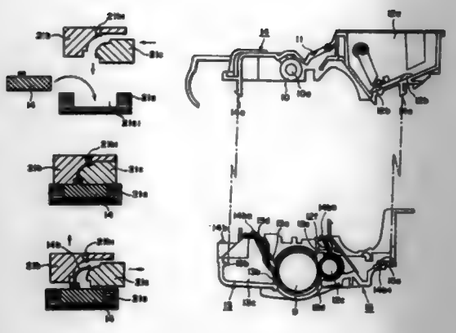
U.S. Cl. 355—210 **40 Claims**

1. A frame for a process cartridge which is detachably mountable to an electrophotographic image forming apparatus and which comprises an electrophotographic photosensitive member and process means actable on the electrophotographic photosensitive member, said frame comprising:

a base member having a mounting portion for mounting the process means; and

an elastic sealing member for preventing leakage of a developer from the process cartridge when the process cartridge is assembled,

wherein said base member and said elastic sealing member are integrally molded.



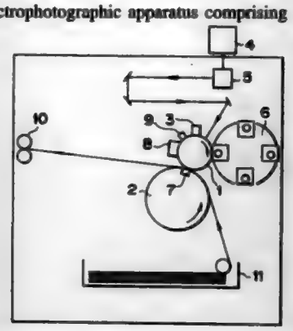
5,485,250

ELECTROPHOTOGRAPHIC APPARATUS WITH PHOTOSENSITIVE MEMBER HAVING SURFACE LAYER OF BINDER RESIN AND FLUORO AND/OR SILICON COMPOUND PARTICLES

Noboru Kashimura, Tokyo; Harumi Sakoh, Kawasaki; Kazushige Nakamura, Yokohama; Shoji Amamiya, Kawasaki; Takashige Kasuya, Soka; Haruyuki Tsuji, Yokohama; Masaaki Yamagami, Yokohama, and Tatsuya Ikezne, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 114,925, Sep. 2, 1993, Pat. No. 5,357,320.
This application Aug. 11, 1994, Ser. No. 289,269
Claims priority, application Japan, Sep. 4, 1992, 4-260627; Sep. 4, 1992, 4-260628; Sep. 4, 1992, 4-260629; Sep. 4, 1992, 4-260630
Int. Cl.[6] G03G *5/00*
U.S. Cl. 355—211 6 Claims

1. An electrophotographic apparatus comprising an electrophotographic photosensitive member and a transfer means, wherein:



said electrophotographic photosensitive member comprises a conductive support having on its surface a photosensitive layer, and said electrophotographic photosensitive member has a surface layer comprising carbon atoms and at least one selected from the group consisting of fluorine atoms and silicon atoms, the proportion of fluorine atoms and silicon atoms to carbon atoms (F+Si)/C, in said surface layer as measured by X-ray photoelectron spectroscopy being from 0.01 to 1.0; and

said transfer means transfers different colors one by one onto a transfer medium in a plurality of times.

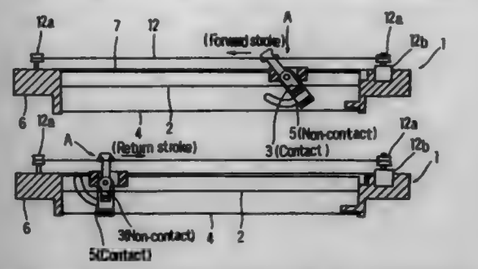
5,485,251

CLEANING DEVICE FOR AN ELECTROSTATIC CHARGER

Hideki Kita; Akira Nakamura; Yasuyuki Fukunaga, and Toshinobu Katafuchi, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Sep. 1, 1994, Ser. No. 299,756
Claims priority, application Japan, Sep. 6, 1993, 5-220884
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—215 2 Claims

1. A cleaning device for an electrostatic charger comprising: a



first cleaning member which contacts with and separates from a discharge wire of an electrostatic charger, tensed parallel with a photosensitive body, and a second cleaning member which contacts with and separates from a grid wire provided between the photosensitive body and the discharge wire and tensed parallel with the photosensitive body, and being characterized in that, in a cleaning device for an electrostatic charger, which cleans both the discharge and grid wires by reciprocating the first and second cleaning members together in a same direction, the respective first and second cleaning members alternately contacts with each of the discharge and grid wires in the forward stroke and return stroke.

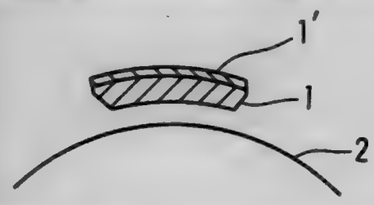
5,485,252

ELECTRIFYING DEVICE FOR AN IMAGE FORMING APPARATUS

Hiroshi Ishida, and Masahiro Hashizume, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Oct. 24, 1994, Ser. No. 316,360
Claims priority, application Japan, Nov. 8, 1993, 5-278020
Int. Cl.[6] G03G *15/02*
U.S. Cl. 355—219 3 Claims

1. An electrifying device of an image forming apparatus having



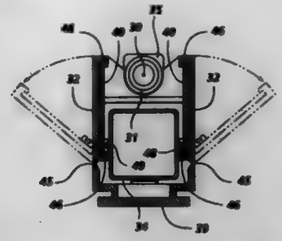
an electrifying member disposed opposite to the surface of a photosensitive body and electrifying the surface thereof by application of electric charge and curved to meet the curvature of the surface of the photosensitive body, and has a curved or flat face along the surface of the photosensitive body and resistance from 10^5 to 10^{10} ohms, and at the same time the electrifying member is disposed about 350 μm to about 1000 μm from the surface of the photosensitive body, and being characterized in that both ends of the electrifying member at the photosensitive body are rounded or cut so that no sharp-pointed pan where an electric discharge is likely to occur.

5,485,253

CORONA GENERATING DEVICE HAVING REPLACEABLE SHIELD MEMBERS

William G. Osbourne, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1994, Ser. No. 176,188
Int. Cl.[6] G03G *15/02*
U.S. Cl. 355—221 20 Claims



1. A corona generating device for depositing an electrostatic charge on a surface, comprising:

a housing;

an elongated electrode supported by said housing;

opposed side panels movably mounted on said housing, defining an open face in said housing for exposing said elongated electrode to the surface to be charged; and

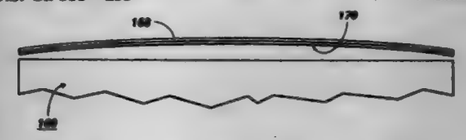
a removable conductive shield mounted on an interior surface of said housing.

5,485,254

METERING BLADE FOR SINGLE-COMPONENT MAGNETIC DEVELOPER IN A XEROGRAPHIC APPARATUS

Gregory V. Bogoshian, Rochester, and John S. Berkes, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 12, 1995, Ser. No. 371,907
Int. Cl.[6] G03G *15/09*
U.S. Cl. 355—253 9 Claims



1. An apparatus for applying toner particles on a charge-retentive surface to develop an electrostatic latent image thereon, comprising:

a donor member, defining two ends, rotatable in a process direction, adapted to convey toner particles on a surface thereof from a supply of toner particles to a development zone at an area of close proximity to the charge-retentive surface; and

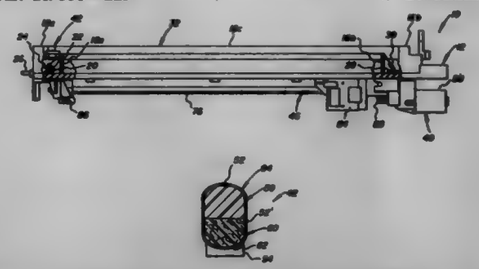
a metering blade urged against a longitude of the donor member, the metering blade comprising a resilient blade member defining a curved plane when there is no external pressure applied thereto so that the blade member exerts a greater pressure toward the ends of the donor member than toward a central portion of the donor member.

5,485,255

AUTOMATIC CLEANING MECHANISM FOR A CORONA CHARGER USING CLEANING PAD

Patricia D. Reuschle, Hilton; Michael Kenin, Rochester; John E. Posato, Spencerport, and Joseph M. Szostek, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1994, Ser. No. 298,875
Int. Cl.[6] G03G *15/02*
U.S. Cl. 355—225 20 Claims



1. A mechanism for automatically cleaning the primary operative surfaces of corona wires and charge control grid of a corona charger at the same time, said cleaning mechanism comprising:

a cleaning pad assembly including a cleaner bar having a main body defining an upper surface and a pair of legs depending from said main body adjacent to the ends thereof, said main body and the legs defining a receptacle for a batting member having a lower surface substantially matching said upper surface of said cleaner bar, and cleaning material wrapped about said cleaner bar and batting member, said upper surface and said lower surface providing opposed substantially parallel surfaces for wiping substantially parallel operative surfaces of said corona wire and charge control grid with said cleaning material;

means for holding said cleaning pad assembly within said corona charger in association with said corona wire and charge control grid;

means, associated with said holding means, for moving said holding means linearly along substantially the length of said corona wire and charge control grid; and

means for automatically selectively activating said moving means to move said holding means such that said cleaning pad assembly is moved to clean said corona wire and charge control grid at the same time.

5,485,256

METHOD AND APPARATUS FOR FORMING COMBINED TONER IMAGES

Kent A. Randall, Webster; Francisco L. Ziegelmuller, Penfield; Dennis R. Kamp, Spencerport; Sven Sonnenberg, and Donald S. Rimai, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 12, 1994, Ser. No. 180,580
Int. Cl.[6] G03G *15/01*
U.S. Cl. 355—271 28 Claims

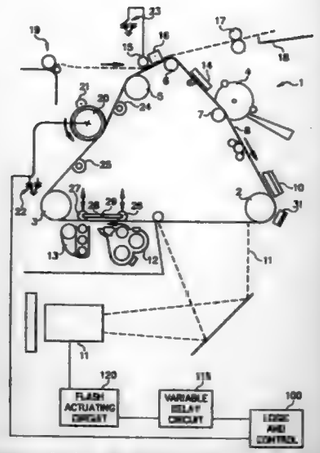
5. Image forming apparatus comprising:

an endless belt primary image member,

an intermediate image member comprising a cylindrical roller positioned in engagement with the primary image member with said primary image member wrapping around a portion of the intermediate image member,

means for moving the primary image member through an endless path past a series of image forming stations, said intermediate image member being positioned to engage the primary image member with sufficient frictional contact to be frictionally driven by movement of the primary image member,

means for forming first and second toner images on different portions of the primary image member, and

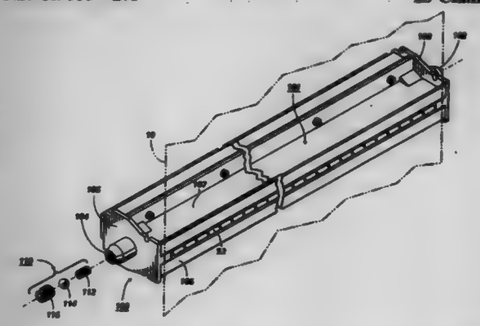


means for transferring the first toner image to the intermediate image member and then back to the primary image member in registration with the second toner image to form a combined toner image on the primary image member.

5,485,257
IMAGE FORMING APPARATUS WITH ENDLESS TRANSFER MEMBER
Masahide Ueda, Takatsuki; Tomoo Izumi; Hiroyuki Yamasaki, both of Amagasaki; Atsuto Hirai, Ikoma; Masahiko Matsuura; Eiichi Sano, both of Takatsuki; Yoshihisa Terasaka, Suita; Masami Yamada, Osaka, and Satoshi Yoshida, Itami, all of, Japan, assignors to Minolta Co., Ltd., Osaka, Japan
Filed Oct. 19, 1994, Ser. No. 326,003
Claims priority, application Japan, Jan. 20, 1993, 5-262576
Int. Cl.[6] G03G *15/14*
U.S. Cl. 359—272 **22 Claims**

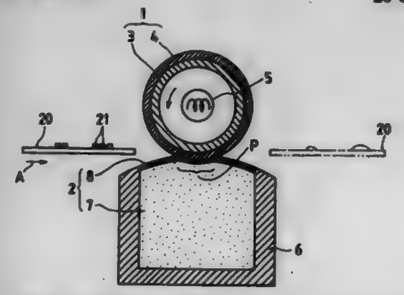
1. A method of producing a plurality sets of prints from a plural-page original in an image forming apparatus having an endless transfer member onto which images are transferred from an image retaining member, said endless transfer member being operable to support a predetermined number (X) of images during one cyclic movement thereof, said method comprising:
executing a first printing operation in which said predetermined number (X) of images of a first page of the original are formed on said endless transfer member during one cyclic movement thereof when a desired number (Y) of sets of prints exceeds said predetermined number (x);
repeating said first printing operation until a remaining number (M) of image(s) of the first page becomes less than said predetermined number (X); and
executing a second printing operation in which the remaining number (M) of image(s) of the first page and a calculated number (X-M) of image(s) of a second page of the original are formed on said endless transfer member during one cyclic movement thereof after the remaining number (M) of image(s) of the first page becomes less than said predetermined number (X).

5,485,258
VACUUM COUPLING ARRANGEMENT FOR APPLYING VIBRATORY MOTION TO A FLEXIBLE PLANAR MEMBER
David B. Montfort, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jan. 6, 1995, Ser. No. 369,442
Int. Cl.[6] G03G *15/16*
U.S. Cl. 355—273 **23 Claims**



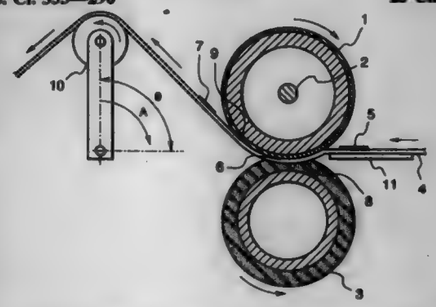
1. A system for enhancing transfer of toner from an image bearing member, comprising:
means for applying vibratory energy to the image bearing member to facilitate toner release therefrom;
vacuum means for generating negative air pressure to draw the image bearing member toward said vibratory energy applying means; and
air flow regulating means for regulating the negative air pressure at an interface between said vibratory energy applying means and the image bearing member.

5,485,259
FUSING DEVICE
Yasuhiro Uehara, and Yasuhiro Kusumoto, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Jul. 18, 1994, Ser. No. 276,329
Claims priority, application Japan, Jul. 19, 1993, 5-177742
Int. Cl.[6] G03G *15/20*
U.S. Cl. 355—284 **20 Claims**



1. A fusing device for fusing a toner image by passing a recording sheet carrying an unfused toner image by means of torque from a rotating heating roll through a nip portion between the rotating heating roll and a curved surface of a substantially stationary heat-resistant solid elastic member which is forced to contact an outer peripheral surface of the heating roll to form a nip portion, said heat-resistant solid elastic member comprising:
an elastic body penetrated with a liquid release agent; and
a release-agent penetration control film formed of a porous film having a region which covers a surface of said elastic body and corresponds to at least the nip portion.

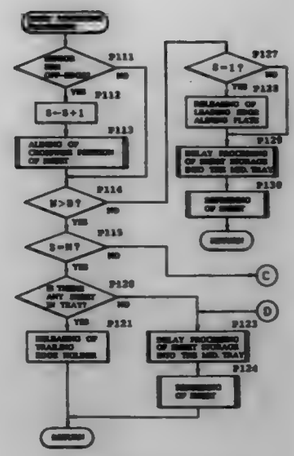
5,485,260
FIXING DEVICK, FIXING METHOD, AND RECORDING APPARATUS
Teruaki Mitsuya, Ibaraki, Japan, assignor to Hitachi, Ltd., and Hitachi Koki Co., Ltd., both of Tokyo, Japan
Filed Nov. 29, 1994, Ser. No. 350,069
Claims priority, application Japan, Dec. 1, 1993, 5-301752
Int. Cl.[6] G03C *15/20*
U.S. Cl. 355—290 **25 Claims**



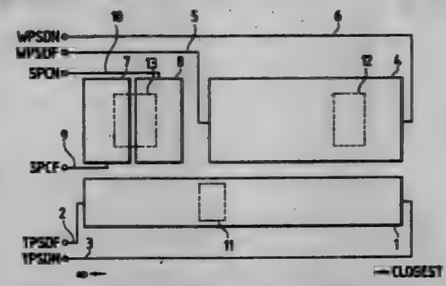
1. A fixing device in which a recording medium to be transported is nipped to fix a toner image formed thereon, said fixing device comprising:
a pair of rotatable fixing rollers which face each other, with at least one of the rollers internally provided with a heating element, said pair of fixing rollers press-contacting the recording medium to form a nipping and fusing section for the toner image; and
recording medium guiding means which is provided at the downstream side following the nipping and fusing section formed by the fixing rollers and which change the length of contact area of the recording medium to the outer periphery of the fixing roller, internally having built therein a heating element, in accordance with the recording medium thickness.

5,485,261
IMAGE FORMING APPARATUS
Masayoshi Kuroda, Toyokawa, and Masataka Oda, Toyohashi, both of, Japan, assignors to Minolta Co., Ltd., Osaka, Japan
Filed Jul. 25, 1994, Ser. No. 279,923
Claims priority, application Japan, Jul. 30, 1993, 5-206958
Int. Cl.[6] G03G *21/02*
U.S. Cl. 355—319 **12 Claims**

1. An image forming apparatus comprising:
sheet feeding means for feeding sheets one by one;
image forming means for forming images on a sheet;
sheet storage means for temporarily storing the sheets with images formed thereon;
sheet refeeding means for refeeding to said image forming means the sheets stored temporarily in said sheet storage means;
sheet count setting means for setting a number of sheets on which images are formed; and
control means used, if the number of sheets set by said sheet count setting means is larger than a predetermined value and when the number of times said image forming means operates has exceeded the predetermined value, for delaying by a predetermined delay time the start of the subsequent operation of said image forming means.



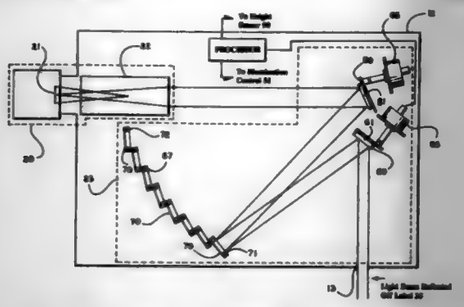
5,485,262
DISTANCE MEASURING APPARATUS, HAVING PLURAL POSITIONING SENSORS TO MEASURE DIFFERENT DISTANCE RANGES
Takanobu Tsunemiya, and Masanori Ohtsuka, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 921,637, Jul. 30, 1992. This application Oct. 26, 1993, Ser. No. 141,682
Claims priority, application Japan, Aug. 2, 1991, 3-194108; Jan. 31, 1992, 4-040730
Int. Cl.[6] G01C *3/00;5/00*
U.S. Cl. 356—3.08 **75 Claims**



1. A distance measuring apparatus comprising:
first light projecting means for projecting a light to a projection range;
first light receiving means, arranged along a base length direction thereof, for receiving a reflection light of the light projected from said first light projecting means, said first light receiving means having a first position sensor to detect, in accordance with a position of light reception, a distance to an object, the object being located at least within a middle distance range;
second light projecting means, provided independent of said first light projecting means, for projecting a light to substantially the same projection range as said first light projecting means; and
second light receiving means, arranged in a direction different from the base length direction of said first light receiving means, for receiving a reflection light of the light projected from said second light projecting means, said second light receiving means including (i) a second position sensor to detect, in accordance with a position of light reception, a distance to an object, the object being located at least within a near distance range, and (ii) a third sensor, disposed at a position corresponding to light reception for an object which

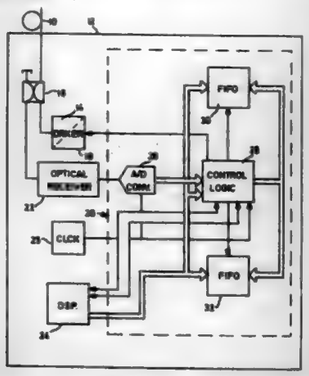
is located within a far distance range, to detect a distance to the object in the far distance range.

5,485,263
OPTICAL PATH EQUALIZER
Johannes A. S. Bjorner, Woodbury, and Steven L. Smith, Oxford, both of Conn., assignors to United Parcel Service of America, Inc., Atlanta, Ga.
Filed Aug. 18, 1994, Ser. No. 292,400
Int. Cl.[6] G01C *3/08*
U.S. Cl. 356—4.01 **27 Claims**



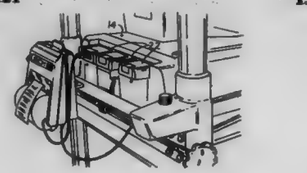
1. An optical system for adjusting the optical path length between a detector and a label affixed to a package, said optical system comprising:
a pair of movable mirrors; and
an array of path defining mirrors;
one of said movable mirrors being positionable to direct an image reflected from the label to any one of said array of path defining mirrors and the other of said movable mirrors being positionable to direct the image reflected by said one of said array of path defining mirrors to the detector.

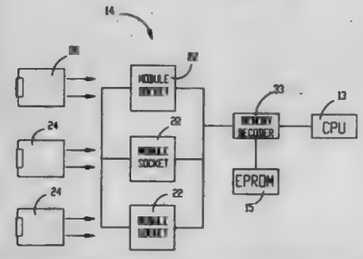
5,485,264
HIGH DYNAMIC RANGE OTDR DATA ACQUISITION CIRCUIT
Ching Chu, Oakville, and Mike VanderWindt, Hamilton, both of, Canada, assignors to Antel Optronics, Inc., Burlington, Canada
Filed Dec. 14, 1993, Ser. No. 166,546
Int. Cl.[6] G01N *21/88*
U.S. Cl. 356—73.1 **24 Claims**



1. An OTDR to conduct a test on optic fibre by passing a light pulse along the fibre and monitoring the signal reflects; said OTDR comprising a switchable light source to generate an optical pulse upon application of an enabling signal thereto, a receiver to receive a signal reflected from said fibre, an analog to digital converter to sample periodically said received signal during an interrogation period associated with each of said light pulses and provide during each interrogation period a plurality of digitized samples of the received signal with each of said samples corresponding to a particular location along said fibre, a memory to store said samples to provide an indication of the variation of said reflected signal as said light pulse passes along said fibre, said memory having a plurality of storage locations to receive and store individual ones of said digitized samples and having a control associated therewith to generate successive control signal each control signal being operable (to store said samples) upon said memory to access a next one of said locations in a predetermined sequence within said memory and a reset signal generator to apply said enabling signal to said light source and to reset said control to access an initial one of said storage locations in said predetermined sequence and thereby permit repetitive storage of samples in said predetermined sequence in said memory.

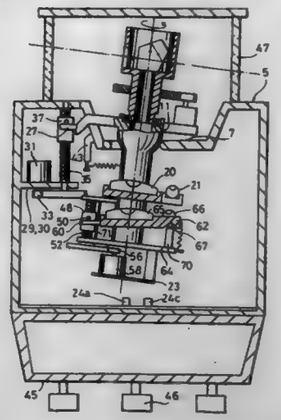
5,485,265
VEHICLE HEADLIGHT AIMING APPARATUS
Evan L. Hopkins, Emporia, Kans., assignor to Hopkins Manufacturing Corporation, Emporia, Kans.
Filed Sep. 2, 1994, Ser. No. 300,283
Int. Cl.[6] G01J *1/00*
U.S. Cl. 356—121 **15 Claims**





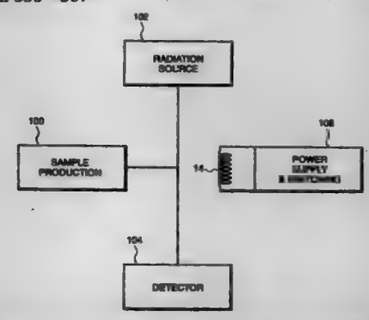
1. An apparatus for aiming a light beam projected from a vehicle headlight, comprising:
means for sensing the light pattern and intensity of a lightbeam projected from a vehicle headlight; and
a comparator coupled with said sensing means for comparing the light pattern and intensity of the lightbeam to a known headlight aiming standard;
said comparator including coupling means for coupling with at least one of a plurality of different types of plug-in modules selected from the group of a memory module configured for communicating a known headlight aiming standard to said comparator, a printer expansion module for coupling said comparator to a printer, a serial communication module for coupling said comparator to a computer device, a language module configured for communicating a known headlight standard written in a foreign language to said comparator, a demonstration module for coupling said comparator to a demonstration software program, and a training module for coupling said comparator to a training software program.

5,485,266
LASER BEAM SURVEY INSTRUMENT HAVING A TILTABLE LASER BEAM AXIS AND TILT DETECTORS
Satoshi Hirano, and Hirofumi Shinozaki, both of Tokyo, Japan, assignors to Kabushiki Kaisha TOPCON, Tokyo, Japan
Filed May 12, 1993, Ser. No. 60,905
Claims priority, application Japan, Jul. 9, 1992, 4-206014
Int. Cl.[6] G01B *11/26*
U.S. Cl. 356—249 **7 Claims**



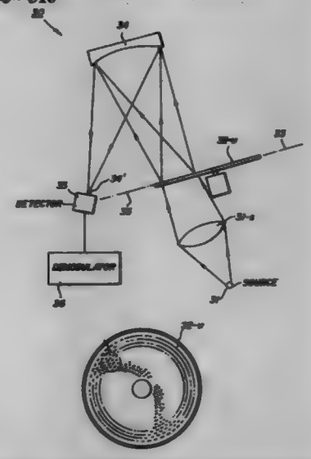
1. A laser beam survey instrument, comprising a laser projector having a laser beam axis tiltable at least in one direction, at least one fixed tilt detector fixed on said laser projector in a plane crossing perpendicularly to the laser beam axis of the laser projector, a base plate placed tiltably with respect to the laser beam axis of the laser projector, and at least one tilt detector arranged on said base plate.

5,485,267
ZEEMAN EFFECT SPECTROMETER HAVING HIGH-SPEED ELECTROMAGNETIC SWITCHING CAPABILITY
Ronald G. Grey, Beaumaris; Clive T. Davenport, Patterson Lakes, and John T. Huberts, Menzies Creek, all of, Australia, assignors to GBC Scientific Equipment Pty. Ltd., Dandenong, Australia
Filed Nov. 3, 1993, Ser. No. 145,095
Claims priority, application Australia, Nov. 5, 1992, PL5666
Int. Cl.[6] G01J *3/36*
U.S. Cl. 356—307 **7 Claims**



1. A spectrometer using Zeeman background correction including:
sample producing means for producing a cloud of atoms for analysis;
a source of electromagnetic radiation for producing a beam of radiation for application to the atom cloud;
a detector for detecting the beam of electromagnetic radiation after it passes through the atom cloud;
an electromagnet for applying a magnetic field to the cloud of atoms or the source of electromagnetic radiation;
switching means for switching on and off the electromagnet periodically to create a Zeeman effect to compensate for background absorption; and
power supply means for powering the electromagnet with a high voltage such as to produce a changing magnetic field in which the change between when the electromagnet is switched on and when the electromagnet is switched off is minimum in time;
wherein the high voltage is in the range of 400 to 800 volts and a switching time for switching on and off the electromagnet is less than 1.5 ms.

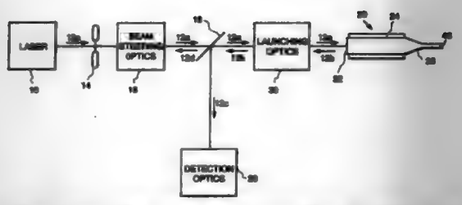
5,485,268
MULTIPLEX SPECTROSCOPY
Reginald Tobias, 822 Langen Rd., Lancaster, Mass. 01523
Filed Mar. 18, 1993, Ser. No. 33,339
Int. Cl.[6] G01J *3/06;3/32*
U.S. Cl. 356—310 **17 Claims**



1. Apparatus for analyzing energy emanating from a source, which comprises
chopper modulator means comprising an apertured, rotatable member with apertures proportioned to generate sinusoidal signals for converting energy from said source into spectral components distributed according to frequency along a flat field;
means for combining said spectral components into a beam;
means for detecting said beam combining said spectral components; and
means for demodulating said spectral components.

5,485,269
SYSTEM FOR MINIMIZING NATIVE FIBER FLUORESCENCE VARIATIONS IN FIBER OPTIC SENSORS
Sandra F. Feldman, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Continuation of Ser. No. 250,234, May 27, 1994, abandoned, which is a continuation-in-part of Ser. No. 36,573, Mar. 24, 1993, Pat. No. 5,399,866. This application Mar. 27, 1995, Ser. No. 411,059
Int. Cl.[6] G01J *3/30*
U.S. Cl. 356—318 **16 Claims**

1. An optical system in which native fluorescence variations from a fiber optic laser induced fluorescence sensor are minimal, the optical system comprising:



a fiber probe for receiving excitation light, the fiber probe capable of guiding excitation light to an analyte; and

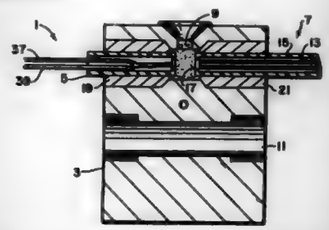
excitation means for selectively supplying the excitation light to the fiber probe during a plurality of predetermined varying measurement periods separated by intervals in which said excitation light is not supplied, said intervals being long enough to allow a background signal of the fiber probe to recover so as to minimize said native fluorescence variations from the fiber optic laser induced fluorescence sensor, said fiber probe being adapted to couple fluorescence from the analyte during said plurality of predetermined measurement periods.

5,485,270

DYNAMIC LIGHT SCATTERING MICROVOLUME CELL ASSEMBLY FOR CONTINUOUS FLOW DIALYSIS

Paul J. Freud, Furlong, Pa., and Clarissa G. Jakob, Columbia, S.C., assignors to General Signal Corporation, New York, N.Y.

Filed Jul. 25, 1994, Ser. No. 279,992
Int. Cl.[6] G01N *21/05*
U.S. Cl. 356—336 **26 Claims**



1. A sample cell for use in a dynamic light scattering assembly which is capable of measuring the size of particles contained within said sample cell, said sample cell comprises:

a cell housing;

a cell chamber, said cell chamber being formed within said cell housing such that said cell chamber is exposed to a membrane which is capable of retaining within said cell chamber the particles of a sample introduced into said cell chamber while allowing a liquid carrier to diffuse across said membrane in and out of said cell chamber; and

a means for exposing said particles contained within said cell chamber to a light source, said means for exposing being disposed substantially opposite said membrane.

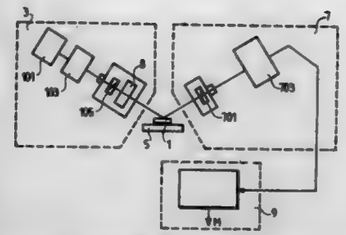
5,485,271

DUAL-MODULATION INTERFEROMETRIC ELLIPSOMETER

Bernard Drevillon, Meudon, France, and Adolfo C. Bioscа, Lleida, Spain, assignors to Centre National de la Recherche Scientifique, Paris, France

Continuation of Ser. No. 2,493, Jan. 6, 1993, abandoned. This application Apr. 6, 1995, Ser. No. 418,162
Claims priority, application France, Jan. 7, 1992, 92 00090
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—345 **10 Claims**

1. An infrared ellipsometer for measuring a sample, comprising:



a) an exciter group including a source, a Michelson interferometer providing a first reference signal, a polarizer, and optical means for aligning said source and the sample, said exciter group generating infrared source energy directed at the sample;

b) a sample support for supporting the sample;

c) an analysis group including a polarizer-analyzer, a detector, and optical means for aligning the sample and said detector, said analysis group being aligned for receiving infrared source energy reflected from said sample;

d) an electro-optical phase modulator, located along a beam path of the infrared source energy, for providing a second reference signal, and modulating at a frequency ω; and

e) electronic means for controlling said exciter group including the Michelson interferometer, for controlling said electro-optical phase modulator, for receiving signals from said analysis group, and for supplying a measurement result, wherein said electronic means includes:

1) a pre-amplifier for receiving a signal produced by said detector in said analysis group and for providing a pre-amplifier output signal;

2) an analog-to-digital converter receiving the pre-amplifier output signal and for providing a digital output signal;

3) a Fourier analyzer for receiving (A) the digital output signal from said analog-to-digital converter, (B) the first reference signal originating from said Michelson interferometer and (C) the second reference signal originating from said electro-optical phase modulator, for simultaneously extracting the dc component of the digital signal and components of the digital signal at frequencies ω and 2ω, and for producing values which are representative data of the input signal in response to the first reference signal and the second reference signal;

4) a register for receiving the values produced by said Fourier analyzer; and

5) a microcomputer for storing the values produced by said Fourier analyzer, and for generating values of ellipsometer angles of the measurement result by inverse optical Fourier transform.

5,485,272

RADIATION-SOURCE UNIT FOR GENERATING A BEAM HAVING TWO DIRECTIONS OF POLARISATION AND TWO FREQUENCIES

Peter Dirksen; Manfred G. Tenner, and Jan E. van der Werf, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 24, 1994, Ser. No. 247,933
Claims priority, application Belgium, Dec. 17, 1993, 09301407
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—349 **20 Claims**

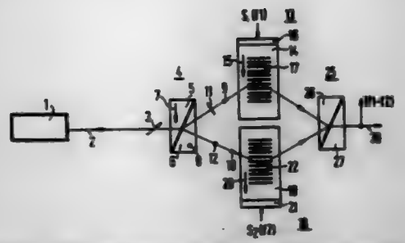
1. A radiation-source unit for producing a radiation beam having two components which are polarised perpendicularly to one another and which have different frequencies thereof and further having a desired optical frequency difference, said unit comprising:

a coherent radiation source;

a beam splitter;

an acousto-optical modulation system for generating a desired frequency difference between two sub-beams formed by said beam splitter, said acousto-optical modulation system receiving a drive signal having a drive signal frequency, wherein tile drive signal frequency dictates a desired optical frequency difference between the two sub-beams; and

a beam combiner for recombining the two sub-beams emerging from said modulation system to one beam, wherein said beam splitter is a polarisation-sensitive beam splitter which forms two linearly polarised sub-beams having mutually perpendicular directions of polarisation, further wherein said beam splitter and said beam combiner are of a similar type and operate in transmission, still further wherein a connecting line between a centre of said beam splitter and said beam combiner extends through a centre of said modulation system, and wherein said beam splitter, said modulation system, and said beam combiner form a symmetrical unit about the centre of said modulation system.

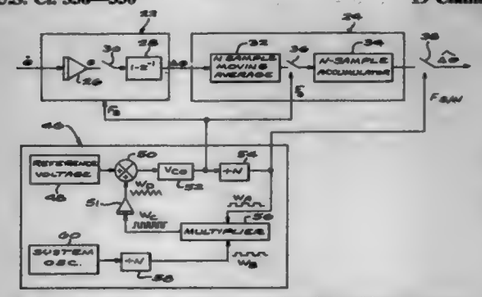


5,485,273

RING LASER GYROSCOPE ENHANCED RESOLUTION SYSTEM

John G. Mark, Pasadena; Daniel A. Tazartes, West Hills; Robert E. Ebner, Tarzana, all of Calif.; Neal J. Dahlen, Freiburg, Germany, and Nibir K. Dutta, West Hills, Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Filed Apr. 22, 1991, Ser. No. 690,174
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—350 **19 Claims**



1. In a ring laser gyroscope and inertial guidance system, a system for enhancing the resolution of detected angular rate information:

means for detecting angular increments, representative of optically integrated angular rate, in the form of digital counts, said detecting means positioned at an output optics location of said ring laser gyroscope;

digital filter means for sampling and accumulating angular incremental information as accumulated digital counts;

frequency modulated sampling means for sampling the accumulated digital counts at a pre-determined rate, such that the effects of aliasing of said accumulated digital counts in said digital filter means is minimized;

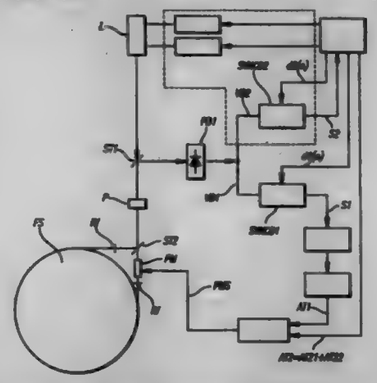
whereby, an enhanced resolution of angular and angular rate information is achieved.

5,485,274

FIBER OPTIC INTERFEROMETER WITH WAVELENGTH-STABILIZED LIGHT SOURCE

Manfred Kemmler, Vörstetten, Germany, assignor to Litef GmbH, Freiburg im Breisgau, Germany

Filed Oct. 17, 1994, Ser. No. 324,762
Claims priority, application European Pat. Off., Jan. 28, 1993, 93117510
Int. Cl.[6] G01C *19/64*
U.S. Cl. 356—350 **9 Claims**



1. In a fiber optic Sagnac interferometer for measuring rotation rate of the type in which a pair of light beams that originate from a light source, are polarized and generated by beam splitting, injected in opposite directions into a fiber coil and subsequently recombined, wherein the created interference pattern acts, after passing through the polarizer, on a detector whose output corresponds to the light intensity of the interference pattern and in which the light beams are modulated by means of a phase modulator located downstream of the beam splitting and ahead of the fiber coil by a signal composed of a plurality of variable components and limited by a modulo operation to 2π, and in which a first signal component is a ramp generated by means of an integration process that compensates non-reciprocal incremental phase shifts of the two light beams and a second signal component has a positive integral value of π/2 in each instance for a time t_L the transit time of each light beam through the fiber coil in the neutral condition, and in which the second signal component is composed of the sum of two components, of which the first component is formed from alternately successive values 0 and π/2 and the second component is formed from values 0 and π which are successive to a large extent without correlation, and in which the output of the detector is demodulated by a first synchronous demodulator driven by the product of four factors, of which the first factor is −1, the second factor is −1 when said second component is 0, and is +1 when said second component is π, the third factor is −1 when said second component derived from the last preceding modulation cycle is 0, and is +1 when said second component derived from the preceding modulation cycle is π, and the fourth factor is −1 when said first component is 0, and is +1 when said first component is π/2, the improvement comprising, in combination:

a) a portion of the light beams downstream of the beam splitting and the phase modulation being reflected and said reflected light beam components being recombined and directed, after passing through said polarizer onto said detector;

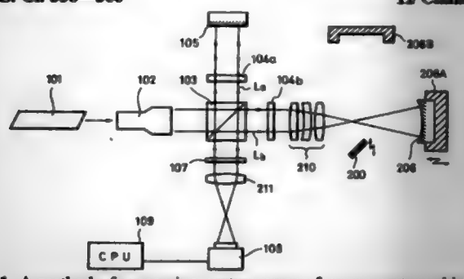
b) said output of said detector being demodulated by a second synchronous demodulator driven by the product of two factors, of which (i) said first factor is −1 when said first component is 0, and +1 when said first component is π/2, (ii) said second factor is −1 when said ramp is between 0 and π/2 or between π and 3π/2 and, +1 when said ramp is between π/2 and π or between 3π/2 and 2π; and

c) said signal demodulated by said second synchronous demodulator varies the wavelength of said light source by selectively varying at least one of two factors, the temperature and the source injection current of said light source.

5,485,275
APPARATUS AND METHOD FOR MEASURING THE ERROR OF AN APPARATUS WHICH MEASURE A CYLINDRICAL SHAPE USING AN INTERFEROMETER

Masaru Ohtsuka, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1993, Ser. No. 73,305
Claims priority, application Japan, Jun. 17, 1992, 4-184508; May 14, 1993, 5-136885
Int. Cl.[6] G01B 9/02
U.S. Cl. 356—360 12 Claims



1. A method of measuring system error of an apparatus which measures a cylindrical shape using an interferometer designed to produce interference from a light wave having a cylindrical wavefront formed by a condenser system and reflected by a cylindrical surface to be measured of the cylindrical shape after emission thereof from the condenser system, said system error measuring method comprising the steps of:

performing a first measurement operation using the interferometer under a condition that a predetermined cylindrical surface is disposed so that a focusing line of the condenser system substantially coincides with a center line of curvature of the predetermined cylindrical surface and the light wave emitted from the condenser system is incident on the predetermined cylindrical surface;

performing a second measurement operation using the interferometer under a condition that a reflecting member is disposed near the focusing line of the condenser system and the predetermined cylindrical surface is disposed so that the light wave emitted from the condenser system is made incident on the predetermined cylindrical surface by the reflecting member;

performing a third measurement operation using the interferometer wherein one of the following conditions is satisfied: (1) the predetermined cylindrical surface is disposed near the focusing line of the condenser system or (2) the reflecting member is disposed near the focusing line of the condenser system so that the light from the reflecting member is reflected directly to the condenser system; and

calculating the system error of the apparatus on the basis of the results of said first, second and third measurement operations.

5,485,276
MULTI-PASS OPTICAL CELL SPECIES CONCENTRATION MEASUREMENT SYSTEM

Fritz Blen, Concord; Michael Gersh, Bedford; Neil Goldstein, Belmont, and Jamine Lee, Burlington, all of Mass., assignors to Spectral Sciences Inc., Burlington, Mass.

Filed Sep. 22, 1994, Ser. No. 310,666
Int. Cl.[6] G01N 21/31;21/59
U.S. Cl. 356—437 17 Claims

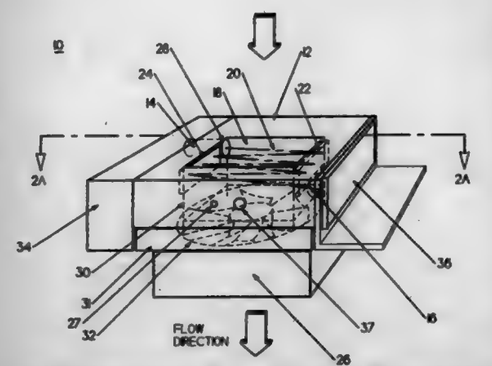
1. A multi-pass optical cell system for measuring the concentration of one or more species in a fluid to be monitored, comprising:

a sample region;

a source of collimated radiation;

a detector device for sensing the intensity of said radiation;

at least two reflective surfaces for reflecting in a first direction in said sample region a number of times the radiation from said source and delivering it to said detector device; and



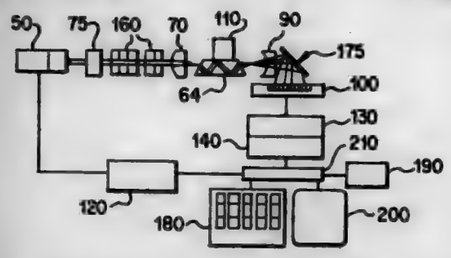
a fluid propellant device for moving the fluid to be monitored through said sample region in a second direction traverse to said first direction;

said fluid propellant device having a port for interconnecting with said sample region, said port being approximately the same or greater in area than said sample region.

5,485,277
SURFACE PLASMON RESONANCE SENSOR AND METHODS FOR THE UTILIZATION THEREOF

Mark W. Foster, Torrance, Calif., assignor to Physical Optics Corporation, Torrance, Calif.

Filed Jul. 26, 1994, Ser. No. 280,475
Int. Cl.[6] G01N 21/17
U.S. Cl. 356—445 20 Claims



1. A surface plasmon resonance sensor comprising:

a substrate-mode metal film coated waveguide cartridge comprising:

a planar waveguide including a plurality of reflector surfaces within the planar waveguide; and

a metal film deposited directly on the planar waveguide, the metal film and the planar waveguide defining a plasmon resonance interface directly on the planar waveguide;

a sample flow cell adjacent the substrate-mode metal film coated waveguide cartridge;

a transverse magnetic polarized light source optically connected to the planar waveguide;

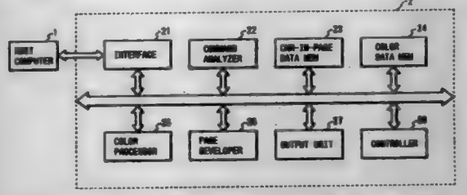
a cylindrical diverging lens optically connected to the planar waveguide; and

a detector array comprising a plurality of photodetectors optically connected to the cylindrical diverging lens.

5,485,278
CHARACTER PROCESSING METHOD AND APPARATUS WITH BRIGHTNESS CORRECTION BASED OUTPUT SIZE

Nobuyuki Nakajima, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 97,914, Jul. 28, 1993, abandoned, which is a continuation of Ser. No. 749,887, Aug. 26, 1991, abandoned. This application Nov. 22, 1994, Ser. No. 347,184
Claims priority, application Japan, Aug. 29, 1990, 2-225378
Int. Cl.[6] H04N 1/23;1/46; G06F 15/00; G09G 5/00
U.S. Cl. 358—296 24 Claims



1. An image processing method comprising the steps of:

inputting individual command data for each character of an image, including character color information and character size information, the command data representing character image information;

analyzing for said each character the command data input in said inputting step;

deriving for said each character an adjustment value for adjusting the character color information based on the character size information and character color information as analyzed in said analyzing step;

modifying for said each character the character color information using the adjustment value derived in said deriving step;

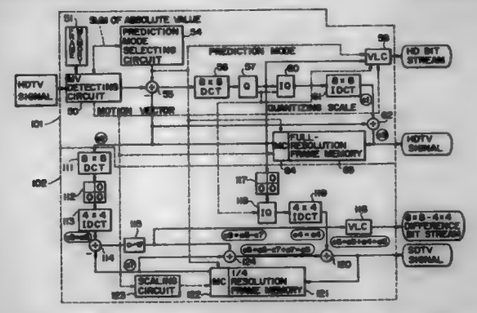
storing for said each character the character color information modified in said modifying step; and

outputting for said each character the character image information represented by the command data in accordance with the modified character color information stored in said storing step.

5,485,279
METHODS AND SYSTEMS FOR ENCODING AND DECODING PICTURE SIGNALS AND RELATED PICTURE-SIGNAL RECORDS

Jun Yonemitsu; Katsumi Tahara, both of Kanagawa, and Teruhiko Suzuki, Chiba, all of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 2, 1993, Ser. No. 87,207
Claims priority, application Japan, Jul. 3, 1992, 4-177217; Jan. 23, 1992, 4-286186; Nov. 2, 1992, 4-294654; May 28, 1993, 5-126778
Int. Cl.[6] H04N 7/32;5/92
U.S. Cl. 348—411 20 Claims



3. A system for encoding an input image signal through transformation and predictive encoding, comprising:

means for producing first image difference data of first resolution through transformation and predictive encoding of the input image signal based on first predicted image data of said first resolution;

means for producing second predicted image data of second resolution relatively lower than said first resolution from the first image difference data;

means for producing third predicted image data of said second resolution based on the first predicted image data;

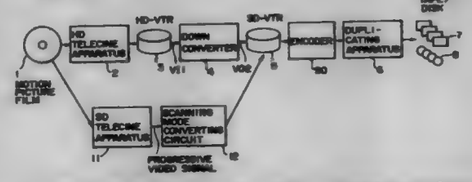
means for producing mismatch error data based on differences between the second and third predicted image data; and

means for encoding the mismatch error data.

5,485,280
APPARATUS AND METHOD FOR PRODUCING DOWNWARDS COMPATIBLE VIDEO SIGNALS WITH INCREASED VERTICAL RESOLUTION, AND APPARATUS FOR REPRODUCING AND DISPLAYING SAME

Yasushi Fujinami, and Jun Yonemitsu, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 27, 1993, Ser. No. 144,749
Claims priority, application Japan, Jan. 30, 1992, 4-316302
Int. Cl.[6] H04N 5/76;7/01
U.S. Cl. 358—335 32 Claims



1. Apparatus for deriving an output video signal for transfer to a non-volatile video recording medium from a motion picture fixed in a motion picture film, the output video signal representing the motion picture, having an increased vertical resolution, and requiring display using progressive scanning to reduce inter-line flicker, the apparatus comprising:

progressive video signal generating means for generating a progressive video signal from the motion picture film, the progressive video signal including plural frames, each of the frames including odd lines interleaved with even lines;

deriving means for deriving the output video signal from the progressive video signal, the output video signal being an interlaced, standard-definition video signal including plural frames, each of the frames including an odd field and an even field, each field including plural lines, and having a greater vertical resolution than a conventional interlaced, standard-definition video signal having an equal number of lines, the deriving means including:

a first odd field memory and a first even field memory,

means for feeding the odd lines of each one of the frames of the progressive video signal into the first odd field memory, and for feeding the even lines of the one of the frames of the progressive video signal into the first even field memory, and

means for reading the odd field of each one of the frames of the output video signal from the first odd field memory and for reading the even field of the one of the frames of the output video signal from the first even field memory;

flag signal generating means for generating a flag signal indicating that the output video signal from the deriving means is for display using progressive scanning to prevent interline flicker; and

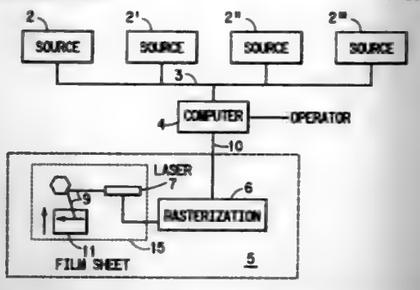
recording means for recording the output video signal from the deriving means together with the flag signal from the flag signal generating means in the non-volatile recording medium.

5,485,281

RASTER IMAGE PROCESSING WITH PIXEL MAPPING TO ALLOW IMAGE BORDER DENSITY ALLOCATION

Mark E. Faulhaber, Wilmington, and Mark A. Mosciloviich, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 31, 1992, Ser. No. 922,654
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—451 7 Claims



1. A method for displaying images from digital data representing a first predetermined number of image density levels, together with border areas, comprising:

(a) selecting one of said first predetermined number of image density levels to represent a preselected border density level;

(b) mapping the digital data representing the first predetermined number of image density levels to a second predetermined number of image density levels, the second predetermined number of image density levels excluding the level selected in step (a); and

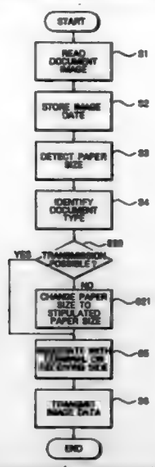
(c) displaying said images using said second number of image density levels and displaying said border areas using said selected one of said first number of image density levels.

5,485,282

COMMUNICATION PROCESSING APPARATUS

Takashi Takeda, Higashimurayama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 823,055, Jan. 17, 1992, abandoned, which is a continuation of Ser. No. 419,775, Oct. 11, 1989, abandoned. This application Jun. 28, 1993, Ser. No. 83,786
Claims priority, application Japan, Jan. 13, 1988, 63-255936
Int. Cl.[6] H04N *1/00;1/40*
U.S. Cl. 358—435 28 Claims



1. A communication processing apparatus comprising:

receiving means for receiving first information showing recording paper sizes from a terminal;

detecting means for detecting a paper size of a transmission document;

generating means for generating second information showing width and height of the transmission document in accordance with a detection result by said detecting means and the first information received by said receiving means; and

transmitting means for transmitting the second information;

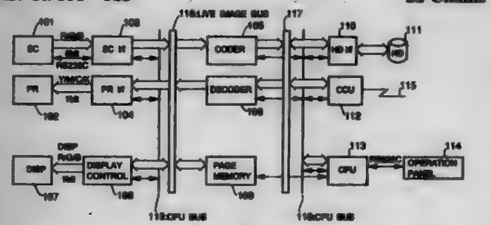
wherein the terminal is informed of the second information as a paper size of the transmission document.

5,485,283

IMAGE TRANSMITTING APPARATUS FOR TRANSMITTING COLOR IMAGE DATA IN A COLOR TRANSMITTING MODE OR A MONOCHROMATIC TRANSMITTING MODE

Yoji Kaneko, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 758,799, Sep. 12, 1991, abandoned. This application Jun. 7, 1994, Ser. No. 255,814
Claims priority, application Japan, Sep. 14, 1990, 2-245029
Int. Cl.[6] H04N *1/56;1/64*
U.S. Cl. 358—518 22 Claims



1. An image transmitting apparatus for transmitting a color image or a monochromatic image comprising:

a transmission memory for storing color image data transmitted;

transmission means for transmitting the color image data stored in said transmission memory in a color transmission mode or in a monochromatic transmission mode;

a display memory separated from said transmission memory for storing color image data corresponding to the color image data stored in said transmission memory;

a monitor for visually displaying the color image data stored in said display memory, as a color image or a monochrome image, before said transmission means transmits the correspondent image data stored in said transmission memory to a network; and

process means for processing image data to be stored in said display memory according to the transmission mode of said transmission means.

5,485,284

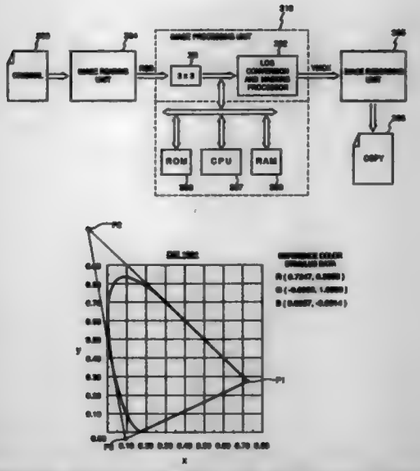
IMAGE PROCESSING SYSTEM FOR PERFORMING COLOR IMAGE DATA CALIBRATION

Seita Shono, Warabi, and Akihiro Usami, Yokohama, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 30, 1992, Ser. No. 998,863
Claims priority, application Japan, Jan. 6, 1992, 4-000112; Feb. 13, 1992, 4-026424
Int. Cl.[6] H04N *1/56;1/60*
U.S. Cl. 358—504 18 Claims

1. A color image processing apparatus comprising:

obtaining means for obtaining color signal data corresponding to a predetermined color by using an input system, the color signal data being expressed by a combination of three stimulus data corresponding to vertices of a triangle which substantially contacts a spectrum locus of an xy chromaticity diagram at wavelengths of about 505 nm and 525 nm, and substantially overlaps the locus of a purple boundary formed by connecting 380 nm and 780 nm; and



calibration means for calibrating the input system so that the color signal data is substantially equivalent to expected color signal data of the predetermined data.

8. A color image processing apparatus comprising:

obtaining means for obtaining color signal data corresponding to a predetermined color, the color signal data being expressed by a combination of three stimulus data corresponding to vertices of a triangle which substantially contacts a spectrum locus of an xy chromaticity diagram at wavelengths of about 505 nm and 525 nm, and substantially overlaps the locus of a purple boundary formed by connecting 380 nm and 780 nm;

output means for outputting a color image in accordance with the color signal data using an output system; and

calibration means for calibrating the output system so that the output color image is substantially equivalent to the predetermined color.

13. An image processing apparatus comprising:

generating means for generating correction data for converting first color image data represented in a first color space, which depends on an image reading unit, to second color image data represented in a second color space, which is formed as a triangle on a xy chromaticity diagram, said triangle substantially contacting a spectrum locus of the xy chromaticity diagram at wavelengths of about 505 nm and 525 nm, and substantially overlapping the locus of a purple boundary formed by connecting 380 nm and 780 nm;

input means for inputting first color image data in the first color space from the image reading unit;

conversion means for converting the first color image data to second color image data in the second color space based on the correction data generated by said generating means.

5,485,285

IMAGE RECORDING APPARATUS

Shunichi Tachibana, Urayasu, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

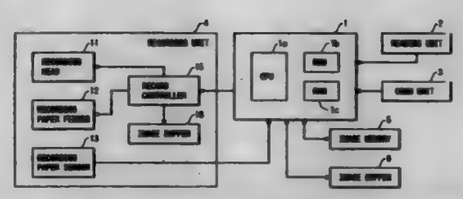
Continuation of Ser. No. 97,374, Jul. 27, 1993, abandoned. This application Jul. 18, 1994, Ser. No. 276,499
Claims priority, application Japan, Jul. 28, 1992, 4-201160; Jul. 9, 1993, 5-170026
Int. Cl.[6] H04N *1/21*
U.S. Cl. 358—296 56 Claims

1. An image recording apparatus for recording an image on a recording medium on the basis of image data comprising:

recording means for recording one or more line data on the recording medium through one time recording scan;

transfer means for transferring the recording medium;

data generating means for removing an isolation pixel on the basis of the image data and generating line data;



white area forming means for forming on the recording medium a white area constituted by single or continuous line data involved in only white information in such a way that when the white area exists, the recording medium is transferred by the number of associated lines corresponding by said transfer means;

recording data forming means for forming recording data on the basis of line data an amount of which is necessary for one time of recording scan of said recording means, said line data beginning with line data including black information; and

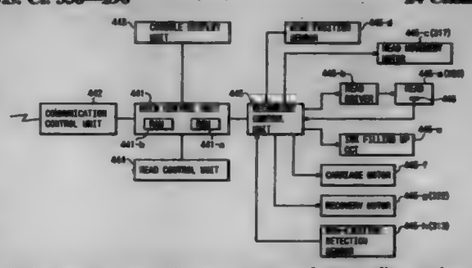
recording control means for causing said recording means to carry out the recording scan on the basis of the recording data.

5,485,286

IMAGE COMMUNICATION SYSTEM USING INK JET RECORDER WITH RECOVERY PROCESSING AND CAPPING DEVICE

Seishi Ejiri, Kawasaki; Yasuyuki Shinada; Yasuhito Shimamura, both of Yokohama; Akihiro Ryuka; Tsunehiro Makino, both of Tokyo, and Hideaki Chishima, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 933,570, Aug. 24, 1992, abandoned, which is a continuation of Ser. No. 641,551, Jan. 15, 1991, abandoned. This application Dec. 13, 1993, Ser. No. 165,582
Claims priority, application Japan, Feb. 23, 1990, 2-41057; Mar. 8, 1990, 2-59691
Int. Cl.[6] H04N *1/23;1/32;1/034;* B41J *2/165*
U.S. Cl. 358—296 24 Claims



1. An image communication apparatus for recording an image using a recording head for ejecting ink from an ejection port utilizing energy generated by an ejection energy generation element, the apparatus comprising:

communication means for communicating with another image communication apparatus to receive one or more pages of image data transmitted therefrom in one transmission mode of at least two transmission modes that can be associated with the transmission;

driving means for driving said recording head to eject ink onto a recording medium in accordance with the image data received by said communication means;

capping means for capping said ejection port of said recording head;

discriminating means for discriminating a procedure signal transmitted after transmission of a page of image data; and

control means for controlling said capping means in accordance with a discrimination result by said discriminating means, wherein said control means causes said capping means to cap said ejection port when the procedure signal indicates that another page of image data is to be transmitted from the other

image communication apparatus and that the transmission mode associated with the transmission of such page is changed from the transmission mode associated with the transmission of a previous page of image data, and said control means causes said capping means not to cap said ejection port when the procedure signal indicates that another page of image data is to be transmitted and that the transmission mode associated with the transmission of such page is unchanged from the transmission mode associated with the transmission of a previous page of image data.

5,485,287

HIGH-SPEED IMAGE SIGNAL PROCESSING SYSTEM

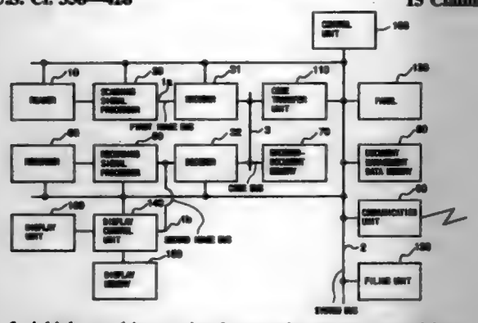
Keso Nakamura, Hitachiota; Yasushi Yokosuka, Nakaminato; Yasuyuki Kozima, Yokohama; Kazuhiko Taksoka, Yokohama; Kagehiro Yamamoto, Yokohama, and Takeshi Asai, Hitachi, all of, Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Engineering Co., Ltd., Ibaraki, both of, Japan

Filed Jun. 18, 1992, Ser. No. 900,476

Claims priority, application Japan, Jun. 18, 1991, 3-171899; Sep. 25, 1991, 3-271915

Int. Cl.[6] H04N *1/41;1/21*

U.S. Cl. 358—426 **15 Claims**



1. A high-speed image signal processing system comprising:

a control unit (**100**) for controlling said image signal processing system;

input means (**10**, **20**) for providing an image signal;

encoding means (**31**) for encoding said image signal and outputting an encoded signal;

memory means (**70**) for storing said encoded signal;

code transfer means (**110**) for transferring said encoded signal into and out from said memory means;

an image bus (*1a*);

a code bus (**3**); and

a system bus (**2**),

wherein:

an output port of said input means and an input port of said encoding means are connected to said image bus to transfer said image signal from said input means to said encoding means through said image bus;

an output port of said encoding means and said memory means are connected to said code bus to transfer said encoded signal from said encoding means to said memory means through said code bus;

said code transfer means has a first port connected to said code bus and a second port connected to said system bus to read out said encoded signal from said memory means and output the read out encoded signal to said system bus; and

said control unit is connected to said system bus to control read out of said encoded signal from said memory means through said code transfer means.

5,485,288

IMAGE PROCESSING APPARATUS FOR CONVERTING A COLOR IMAGE INTO A PATTERN IMAGE WITH A SYNTHESIZED GRADATION IMAGE INCREASING IN DENSITY CLOSER TO CONTOUR PORTIONS OF THE PATTERN IMAGE

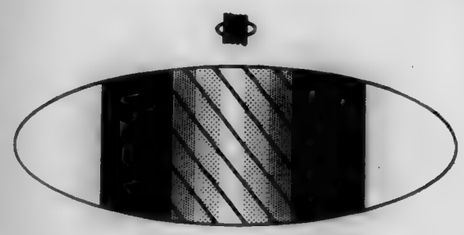
Masafumi Kamei; Yoshiyuki Suzuki; Shizuo Hasegawa, all of Tokyo; Hiroyuki Ichikawa, Kawasaki; Yoshihiro Funamizu, Soka; Akio Itoh, Machida, and Yoshinori Abe, Tama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1992, Ser. No. 843,725

Claims priority, application Japan, Mar. 1, 1991, 3-059656; May 29, 1991, 3-153940; Nov. 7, 1991, 3-319865

Int. Cl.[6] H04N *1/56;1/40;1/409;* **G06T** *5/00*

U.S. Cl. 358—530 **10 Claims**



1. An image processing apparatus comprising:

converting means for converting an input color image into a pattern image; and

synthesizing means for synthesizing a gradation image onto a contour portion of the pattern image converted by said converting means,

wherein the closer the gradation image is to the contour portion of the pattern image, the higher a density of the gradation image which is to be synthesized by said synthesizing means becomes.

5,485,289

HYPERACUITY PRINTER ARCHITECTURE

Douglas N. Curry, Menlo Park, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 28, 1993, Ser. No. 144,856

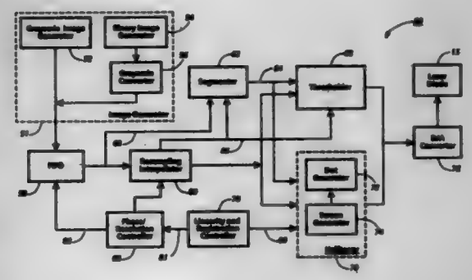
Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—448 **10 Claims**

1. A hyperacuity printing system for rendering bitmapped image data on a photosensitive recording medium, the bitmapped image data being rendered as an array of pixels across the photosensitive recording medium in both a fastscan direction and an orthogonal slowscan direction, the hyperacuity printing system comprising:

an output scanning device having a writing device for writing scan spots on the photosensitive recording medium;

transformation circuitry for transforming grayscale input image data into grayscale output image data, the transformation circuitry including a halftoner for rendering toneart, a thresholder for rendering lineart and text, a resampling interpolator connected to the thresholder to provide information about local rate of change of intensity of scan spots on the photosensitive recording medium in both fastscan and slowscan directions, and a segmenter for switching between the thresholder and the halftoner to provide grayscale output image data; and,



a modulating device receiving grayscale output image data from the transformation circuitry to drive the output scanning device by intensity modulating scan spots in accordance with the grayscale output image data.

5,485,290

Patent Not Issued For This Number

5,485,291

UNIFORMLY THIN, HIGH EFFICIENCY LARGE AREA LIGHTING PANEL WITH TWO FACET GROOVES THAT ARE SPACED APART AND HAVE LIGHT SOURCE FACING FACETS WITH SMALLER SLOPES THAN THE FACETS FACING AWAY FROM THE LIGHT SOURCE

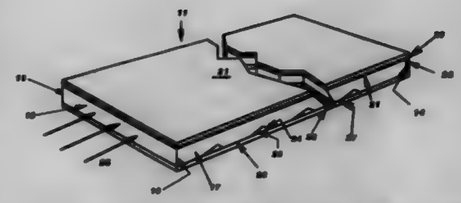
Yong Qiao; William F. Redmond; Richard E. Dunah, and Werner W. Clupke, Sonoma County, all of Calif., assignors to Precision Lamp, Inc., Cotati, Calif.

Filed Feb. 22, 1994, Ser. No. 199,721

Int. Cl.[6] G02F *1/1335;* **G01D** *11/28;* **F21V** *7/04*

U.S. Cl. 359—49 **31 Claims**

1. A lighting panel comprising a uniformly thin transparent optical guide having parallel end, surfaces, parallel side surfaces, first and second major surfaces and a light source for projecting light into said light guide through one of said end surfaces characterized in that:



one of said major surfaces includes faceted grooves which extend from one said side surface to the other said side surface, said faceted grooves including first optically flat facets facing said light source, making an angle of between 1° and 15° with the plane of said major surface, and having second, optically flat facets facing away from the light source, making an angle of between 35° and 55° with respect to the plane of said major surface, said grooves being spaced to provide flat spacings of between 1 and 200 microns between said faceted grooves, whereby said first optically flat facets and spacings primarily reflect light from the source toward the other end surface, and whereby said second facets reflect light primarily toward the other major surface.

5,485,292

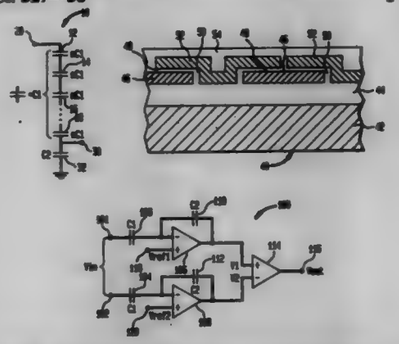
HIGH VOLTAGE DIFFERENTIAL SENSOR HAVING A CAPACITIVE ATTENUATOR

Stephen Wong, Scarsdale; Satyendranath Mukherjee, Yorktown Heights, and Naveed Majid, Mohegan Lake, all of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 82,188, Jun. 24, 1993, abandoned. This application May 12, 1995, Ser. No. 439,617

Int. Cl.[6] G01R *19/00;* **H03K** *5/12;5/153*

U.S. Cl. 327—56 **1 Claim**



1. A high-voltage differential sensor, which comprises:

attenuator means having two matched monolithic capacitive divider networks, each network comprising a series connection of a plurality of matched monolithically integrated capacitors, for generating an attenuated differential signal from a high-voltage differential input signal;

amplifier means for amplifying said attenuated differential signal; and

comparator means for generating a first output level when said high-voltage differential input signal is above a selected level, and for generating a second output level when said high-voltage differential input signal is below said selected level;

wherein each said series connection of monolithically integrated capacitors comprises a string of at least two first capacitors each having a same capacitance value connected in series with a second capacitor at a first end of said second capacitor, said high-voltage differential input signal being applied between first ends of said strings of first capacitors, and the attenuated signal being generated between said first ends of said second capacitors;

wherein each series connection of monolithically integrated capacitors is formed by a plurality of first polysilicon layer portions and a plurality of at least partially overlapping second polysilicon layer portions, said first and second polysilicon layer portions being located entirely above a semiconductor substrate and insulated therefrom, being in proximity to each other, and being electrically insulated from each other by a dielectric layer;

wherein said amplifier means comprises two amplifiers, each having an input coupled to said first end of one of said second capacitors, and an output connected to a second end of one of said second capacitors and an input of said comparator means; and

wherein said two amplifier-outputs are connected directly to said comparator means, and a second end of each of said second capacitors is coupled to the output of its respective amplifier, said amplifier means and said attenuator means together forming an active attenuator circuit.

5,485,293

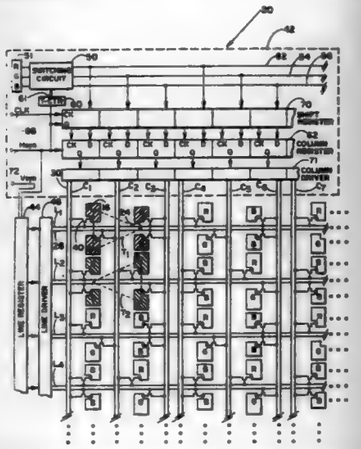
LIQUID CRYSTAL DISPLAY INCLUDING COLOR TRIADS WITH SPLIT PIXELS

Ronald C. Robinder, Albuquerque, N.M., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 29, 1993, Ser. No. 130,599

Int. Cl.[6] G02F *1/1335; 1/1343*

U.S. Cl. 359—59 **8 Claims**



1. A liquid crystal multi-color display panel structure, comprising:

(a) a substantially transparent substrate;

(b) a plurality of color display pixel electrodes disposed on said substrate in a matrix array having columns extending in a first direction and rows extending in a second direction transverse to said first direction, said color display pixel electrodes consisting of those of a first type for displaying in a first preselected color, those of a second type for displaying in second preselected color different from said first preselected color, and those of a third type for displaying in a third preselected color different from said first and second preselected colors, the color display pixel electrodes of each of said columns being approximately a half pitch distance offset from the color display pixel electrodes of the adjacent column, wherein one of said pixel electrode of each said first, second and third preselected colors together form a generally triangular triad having one side extending in a vertical direction;

(c) a plurality of signal lines disposed between the columns of said electrodes forming the matrix array and extending in the first direction, wherein a single one of said plurality of signal lines is alternately disposed between adjacent ones of said columns, and wherein two of said plurality of signal lines are alternately disposed between adjacent ones of said columns such that there are three total of said plurality of signal lines for every two of said columns;

(d) a plurality of scanning lines, one scanning line being disposed every one and one-half rows of said electrodes forming said matrix array and extending in the second direction between two said electrodes of said first and second types in alternating ones of said columns and bifurcates one said electrode of said third type into a first and second half in alternating ones of said columns;

(e) a plurality of switching transistors, each said transistor having a first terminal connected to one of said color display pixel electrodes, a second terminal connected to one of said signal lines, and a third terminal connected to one of said scanning lines to control conductivity between the respective first and second terminals;

(f) row drive means connected to said scanning lines for driving each said plurality of scanning lines in synchronism with the horizontal scanning cycle of a video signal;

(g) column drive means having an input, and an output connected to said signal lines for supplying a video signal to each of said signal lines where two of every three of said signal lines are connected to the third terminals of the switching transistors associated with the pixel electrodes of two of said color types; and

(h) control means coupled to the input of said column drive means for controlling which of said video signals are supplied to said signal lines.

5. A liquid crystal multi-color display panel structure, comprising:

(a) a substantially transparent substrate;

(b) a plurality of color display pixel electrodes disposed on said substrate in a matrix array having columns extending in a first direction and rows extending in a second direction transverse to said first direction, said color display pixel electrodes consisting of those of a first type for displaying in a first preselected color, those of a second type for displaying in second preselected color different from said first preselected color, and those of a third type for displaying in a third preselected color different from said first and second preselected colors, the color display pixel electrodes of each of said columns being approximately a half pitch distance offset from the color display pixel electrodes of the adjacent column, wherein one of said pixel electrode of each said first, second and third preselected colors together form a generally triangular triad having one side extending in a vertical direction;

(c) a plurality of signal lines disposed between the columns of said electrodes forming the matrix array and extending in the first direction, wherein a single one of said plurality of signal lines is alternately disposed between adjacent ones of said columns, and wherein two of said plurality of signal lines are alternately disposed between adjacent ones of said columns such that there are three total of said plurality of signal lines for every two of said columns;

(d) a plurality of scanning lines, one scanning line being disposed every one and one-half rows of said electrodes forming said matrix array and extending in the second direction between two said electrodes of said first and second types in alternating ones of said columns and bifurcates one said electrode of said third type into a first and second half in alternating ones of said columns;

(e) a plurality of switching transistors, each said transistor having a first terminal connected to one of said color display pixel electrodes, a second terminal connected to one of said signal lines, and a third terminal connected to one of said scanning lines to control conductivity between the respective first and second terminals;

(f) row drive means connected to said scanning lines for driving each said plurality of scanning lines in synchronism with the horizontal scanning cycle of a video signal;

(g) column drive means having an input, and an output connected to said signal lines for supplying a video signal to each of said signal lines where each said signal line is connected to the third terminal of the switching transistors associated with the electrodes of two of said color types; and

(h) control means coupled to the input of said column drive means for controlling which of said video signals are supplied to said signal lines.

5,485,294

PROCESS FOR PRODUCING MIM ELEMENTS BY ELECTROLYTIC POLYMERIZATION

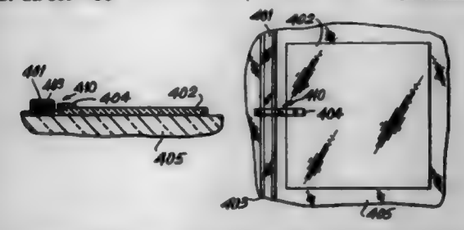
Jun Sugiyama, and Tadashi Ota, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 286,543, Dec. 19, 1988, abandoned. This application Oct. 3, 1991, Ser. No. 771,878

Claims priority, application Japan, Dec. 18, 1987, 62-320483; Dec. 18, 1987, 62-320485; Jan. 19, 1988, 63-263063

Int. Cl.[6] G02F *1/136;* H01L *21/02*

U.S. Cl. 359—58 **13 Claims**



1. A method of forming a two-terminal conductor—nonlinear conductor—conductor active element for an electrical device, on a substrate, comprising the steps of:

selectively disposing a first layer of electrically conductive material on a substrate;

immersing the first layer in an electrolytic solution containing electrolytically polymerizable material;

applying voltage to the first layer to selectively deposit a layer of non-linearly conductive material, including organic material, on the first layer, by electrolytic polymerization, to a thickness of about 15 nm to about 50 nm;

selectively disposing a second electrically conductive layer on at least a portion of the non-linearly conductive layer at a position opposed to the first conductive layer with the nonlinearly conductive layer therebetween.

5,485,295

LIQUID CRYSTAL DISPLAY APPARATUS HAVING DRIVING VOLTAGE TO ENABLE LIGHT OF MANY WAVELENGTHS TO TAKE A SAME SIGN ALONG ONE AXIS OF A POINCARE SPHERE

Osamu Itoh, Hitachi; Katsumi Kondo, Katsuta; Naoki Kikuchi, and Hitomi Madokoro, both of Mobara, all of, Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Device Engineering & Co., Ltd., Chiba, both of, Japan

Filed Mar. 30, 1994, Ser. No. 220,600

Claims priority, application Japan, Mar. 30, 1993, 5-072529

Int. Cl.[6] G02F *1/1335*

U.S. Cl. 359—73 **20 Claims**

1. A liquid crystal display apparatus comprising:

a pair of facing base plates provided with electrodes,

a liquid crystal layer,

a pair of polarizers,

at least one optical compensation layer, and

a driving means capable of applying at least two voltages;

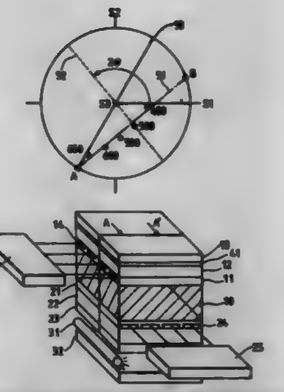
said apparatus having a structure wherein:

said facing base plates hold said liquid crystal layer therebetween,

said polarizers are arranged outside said facing base plates, and

said optical compensation layer is arranged between said polarizer and said facing base plate;

said apparatus is characterized in that:



said driving means applies an applied voltage to said liquid crystal layer in a dark state so that said applied voltage makes light of all wavelengths take a same sign in a S3' direction when light having plural wavelengths transmitted through said liquid crystal layer are expressed by normalized Stokes parameters, respectively, where S1', S2', and S3' are also coordinate axes of a Poincare sphere,

said optical compensation layer has wavelength-dependence characteristics of retardation which substantially coincides with wavelength-dependence characteristics of retardation of said liquid crystal layer when said liquid crystal layer is in a condition wherein the respective normalized Stokes parameter S3' of light having plural wavelengths transmitted through said liquid crystal layer takes a same sign for light of all wavelengths, and said optical compensation layer is arranged so that its slow axis crosses over a regression line which is obtained in connection with S1' and S2' among the normalized Stokes parameters for light having plural wavelengths transmitted through said liquid crystal layer, and

an absorbing axis of a polarizer among said pair of polarizers located at a side of said optical compensation layer is set in an angle so as to cross over either of two points at which said regression line crosses over the equation on the Poincare sphere sighted from the S3' axis direction.

5,485,296

MONITOR UNIT FOR MONITORING AN OPTICAL WAVEGUIDE

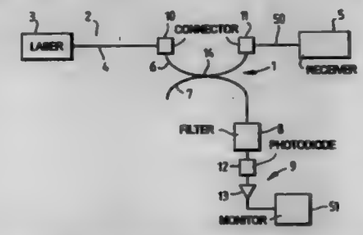
Peter Healey, Ipswich, and David Smith, Woodbridge, both of, England, assignors to British Telecommunications public limited company, London, England

Continuation of Ser. No. 834,239, Feb. 20, 1992, abandoned. This application Apr. 15, 1994, Ser. No. 227,982

Claims priority, application United Kingdom, Jul. 31, 1989, 8917422

Int. Cl.[6] G08B *1/00*

U.S. Cl. 359—112 **19 Claims**



17. An optical communications line security monitor for detecting the presence of physical tampering with an optical communications channel which causes changes in the relative power distribution between different modes of the optical signal being carried

by the optical communications channel at some point between an optical signal transmitter and an optical signal receiver coupled to opposite ends of said optical communications channel, said monitor comprising:

a selective optical signal mode coupler disposed to extract from said optical communications channel at least one mode but not all modes of optical signal propagation being carried by the optical communications channel;

an optical-to-electrical transducer connected to said mode coupler for converting said selectively coupled mode(s) of optical signals to an electrical signal; and

a monitor circuit connected to said transducer to monitor said electrical signal and to detect changes therein greater than a predetermined amount thereby detecting the presence of physical tampering with the optical communications channel at some point between an optical signal transmitter and an optical signal receiver coupled to opposite ends of the communications channel.

5,485,297

OPTICAL SWITCHING MATRIX

Michel Sotom, Paris, France, assignor to Alcatel N.V., Amsterdam

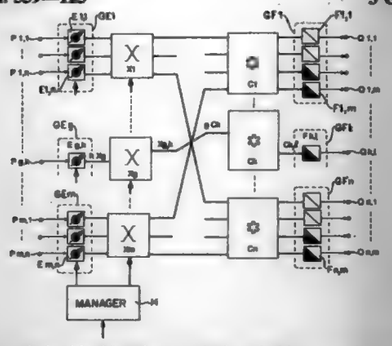
PCT No. PCT/FR93/01006, § 371 Date Jun. 3, 1994, § 102(e) Date Jun. 3, 1994, PCT Pub. No. WO94/09602, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 9, 1992, Ser. No. 244,610

Claims priority, application France, Jan. 9, 1992, 92 12018

Int. Cl.[6] H04J *14/02*; H04B *10/207*

U.S. Cl. 359—123 **3 Claims**



1. A strictly blocking-free optical switching matrix using a succession of carrier wavelengths and including:

a management member (M);

a set of emitters (E1,1, . . . , Em,n) constituted by a succession of groups of emitters (GE1, GEm) in which succession said groups have ranks (1, . . . , m), each said group of emitters (GE1) being constituted by emitters (E1,1, . . . , E1,n) in succession and having ranks (1, . . . , n) in the group, each of said emitters being provided with an input (P1,1, . . . , P1,n) of the same rank for receiving data to be transmitted, the emitter being controlled by the data so as to emit a light wave carrying the data and having one of said carrier wavelengths constituting a wavelength of the emitter, which wavelength is controlled by said management member;

a group of switching distributors (X1, . . . , Xm) in succession, having ranks (1, . . . , m) in the group, each of said switching distributors (Xg) being capable of distributing said light waves, and including a succession of inputs (hXg) having ranks (h) in the succession, each switching distributor input being connected to a corresponding emitter (Egh) which has the same rank (h) as the input, and which belongs to the emitter group (GEg) that has the same rank (g) as the switching distributor, each of the switching distributors also including a succession of outputs (Xgk) in which the outputs have ranks (k), the switching distributor being controlled by said management member (M) when the switching distributor receives a light wave via one of said inputs so that the switching distributor transmits the wave via at least one of said outputs selected by the management member;

a group of star distributors (C1, . . . , Cn) forming a succession in which they have ranks (1, . . . , n), each star distributor (Ck) including a respective succession of inputs (gCk), each of which inputs has a rank (g) in the respective succession, and is connected to an output (Xgk) of the switching distributor having the same rank as the star distributor and belonging to a corresponding switching distributor (Xg) that has the same rank (g) as said each input for receiving a light wave therefrom, each said star distributor forming a mixture of all said light waves received by said inputs of said star distributor, each said star distributor also including a succession of outputs (Ck,1), each of said outputs of each said star distributor having a rank (1) in the respective succession and transmitting a group of waves constituted by a fraction of said mixture; and

a set of filters (F1,1, . . . , Fn,m) constituted by a succession of groups of filters (GF1, . . .GFn) in which the groups of filters have ranks (1, . . . , n), each group of filters (GF1) being constituted by filters F1,1, . . . F1,m) in succession and having ranks (1, . . . , m) in the group, each of the filters having a wavelength constituted by one of said carrier wavelengths for selective transmitting waves having said wavelength of the filter, each filter (Fk,1) in a group of filters (GFk) being connected to an output of one said star distributors which has the same rank (1) as the filter, and which belongs to a said star distributor (Ck) that has the same rank (k) as the group of filters.

5,485,298

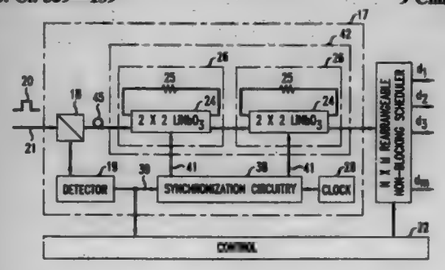
OPTICAL PACKET SYNCHRONIZATION CIRCUIT

Zygmunt Haas, Holmdel, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 89,068, Jul. 7, 1993, abandoned. This application Mar. 7, 1995, Ser. No. 400,402

Int. Cl.[6] H04J *14/08*

U.S. Cl. 359—139 **9 Claims**



4. An apparatus for synchronizing the arrival times of information packets at synchronously operated nodes in an optical time division multiplexed network, comprising:

means for receiving a stream of information packets, each packet having a time duration τ, which is equal to or less than one-half the length of the local time slot of the node:

means for determining any packet delays required to adjust the input packet stream to have a single packet per the local time slot; and

means for delaying selected packets to form a packet stream having one packet per local time slot, based upon the delays established by the determining means.

5,485,299

COMMUNICATIONS SYSTEM

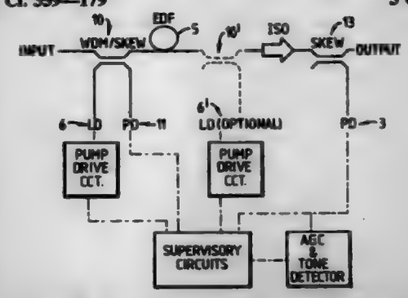
Kevan P. Jones, London, England, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jul. 1, 1994, Ser. No. 269,569

Claims priority, application United Kingdom, Jul. 31, 1993, 9315903

Int. Cl.[6] H04B *10/17*

U.S. Cl. 359—179 **5 Claims**



1. An optical fibre communications system including a first transmitter terminal, a second receiver terminal, and an optical transmission path therebetween said transmission path including a repeater incorporating an optical fibre amplifier driven from a pump source coupled to the transmission path via a 2×2 coupler, wherein the transmitter terminal has means for superimposing an intensity modulated supervisory tone at a first frequency (f1) on data signals transmitted from that terminal, wherein the repeater includes;

tone detection means for recovering the supervisory tone;

means for modulating the pump source with the recovered tone so as to intensity modulate signals amplified by the amplifier,

a received light level (RLL) detector connected to the coupler and arranged to receive light signals from the pump source and from the transmission path;

sampling means associated with the RLL detector for providing a measure of the received light level;

frequency divider means for deriving a pump control signal frequency (f2) from the supervisory tone, said control signal frequency being less than the supervisory tone frequency;

means for driving the pump source in an on-off chopping manner at the control signal frequency;

and timing means for enabling the sampling means during periods when the pump is off so as to measure the received light level in the absence of pump power.

5,485,300

OPTICAL TRANSMITTER AND POWER SETTING METHOD IN OPTICAL TRANSMITTERS FOR USE IN OPTICAL NETWORKS

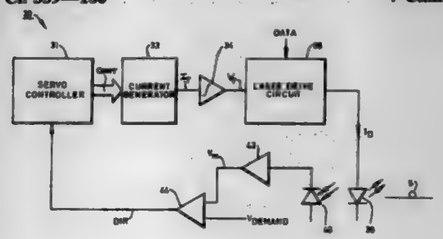
Robert Daley, Great Malvern, United Kingdom, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 3, 1994, Ser. No. 285,228

Claims priority, application United Kingdom, Aug. 4, 1993, 9316171

Int. Cl.[6] H04B *10/04*; H01S *3/13*

U.S. Cl. 359—180 **7 Claims**



1. An optical transmitter comprising:

an optical source;

an optical sensor coupled optically to said optical source for producing monitoring signals indicative of the optical output power thereof; and

drive means, connected to said optical sensor for receiving therefrom said monitoring signals and also connected to said optical source for applying thereto drive signals, for controlling the optical output power thereof, and having a power setting mode in which said drive means are operable to apply a first drive signal, having a value equal to half a predetermined maximum drive signal value, to the optical source at a first time instant and to determine, on the basis of the monitoring signal, whether the optical output power of the optical source for the first drive signal value exceeds a predetermined demand level and if so to apply a second drive signal to the optical source at a second time instant, the value of the second drive signal being made smaller than the first drive signal value by one-quarter of said predetermined maximum drive signal value, whereas if the optical output power for the first drive signal value is less than the predetermined demand level the second drive signal value is made greater than the first drive signal value by one-quarter of said predetermined maximum drive signal value, and so on applying further drive signals such that the difference between one of the drive signal values and the next is one-half that between the one drive signal value and the immediately-preceding drive signal value.

5,485,301

OPTICAL COMMUNICATIONS

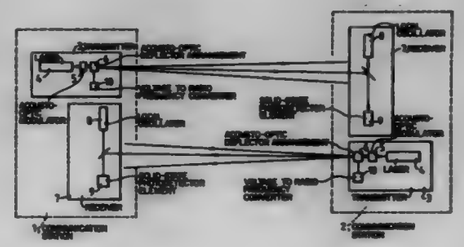
Lee D. Miller, Filton, Great Britain, assignor to British Aerospace PLC, London, England

Filed Sep. 24, 1993, Ser. No. 126,201

Claims priority, application United Kingdom, Jan. 24, 1992, 9222392

Int. Cl.[6] H04B *10/04*

U.S. Cl. 359—181 **5 Claims**



1. An optical communication system comprising:

a transmitter including:

means for generating an optical beam,

means for modulating said optical beam to produce a frequency-modulated optical beam,

acousto-optic deflector cell means for deflecting and introducing a Doppler shift into said frequency-modulated optical beam to produce a Doppler-shifted, deflected beam, and

a receiver including:

a photodetector for receiving said Doppler-shifted, deflected beam, and

demodulating means for determining a magnitude of said Doppler shift.

5,485,302

OPTICAL RECEIVER WITH SIGNAL SPLITTER

Klaus Braun, and Ulrich Steigenberger, both of Stuttgart, Germany, assignors to Alcatel N.V., Amsterdam, Netherlands

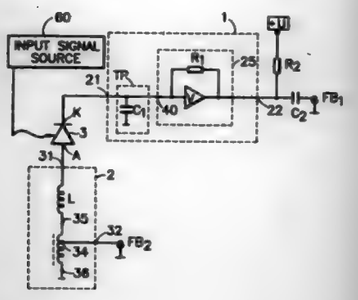
Continuation of Ser. No. 139,529, Oct. 20, 1993, abandoned.

This application Apr. 18, 1995, Ser. No. 424,245

Claims priority, application Germany, Jan. 20, 1992, 42 35 331.1

Int. Cl.[6] H04B *10/06*

U.S. Cl. 359—189 **18 Claims**



1. An optical receiver (4) for receiving a wideband input signal, and for separating the wideband input signal into at least a first narrowband signal and a second broadband signal that has a narrower frequency band than the wideband input signal, comprising:

a photodiode (3) for generating a photo-current having therein a first narrowband signal component (FB_1), a second broadband signal component (FB_2), and a wideband signal component respectively corresponding to said first narrowband signal, said second broadband signal and the wideband input signal, said photodiode generating said photo-current responsive to the wideband input signal;

said photodiode having a first terminal (K) and a second terminal (A);

first (1) and second (2) subcircuits respectively being coupled serially to said photodiode with said first subcircuit (1) being connected to one of said first and second terminals and said second subcircuit being connected to the other of said first and second terminals, so that each of said subcircuits receive an entirety of said photo-current generated by said photodiode (3), said first and second subcircuits respectively including signal separation means therein for separating the first narrowband signal component (FB_1) and the second broadband signal component (FB_2) from the wideband input signal component in said photo-current;

said first subcircuit (1) including an amplifier, and wherein:

said first narrowband signal component (FB_1) and said second broadband signal component (FB_2) are respectively separated by said separation means from said wideband input signal component in said photo-current by said first subcircuit (1), and by said second subcircuit (2), respectively, before said wideband input signal component in said photo-current is amplified in said first subcircuit (1) of said optical receiver, whereby said first narrowband signal component (FB_1) and said second broadband signal component (FB_2) are not commonly amplified in the optical receiver before said respective separation means separates said first narrowband signal component and said second broadband signal component from said photo-current, thereby enabling optimization of said separation means.

5,485,303

Patent Not Issued For This Number

5,485,304

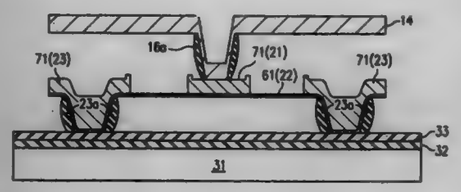
SUPPORT POSTS FOR MICRO-MECHANICAL DEVICES

Toshiyuki Kaeriyama, Plano, Tex., assignor to Texas Instruments, Inc., Dallas, Tex.

Filed Jul. 29, 1994, Ser. No. 283,486

Int. Cl.[6] G02B *26/00*

U.S. Cl. 359—291 **10 Claims**



1. An improved micro-mechanical device of a type having support posts for mechanical elements, wherein the improvement comprises a support post having:

a hollow support post stem, said stem made by depositing a stem material into a via in a spacer layer that is subsequently removed, said hollow support post stem being filled with material from another layer of said micro-mechanical device; and

a sidewall ring around the outer circumference of said stem, said sidewall ring made by depositing an oxide layer over said spacer layer and into said vias prior to the deposition of said stem material and eching back said oxide layer.

5,485,305

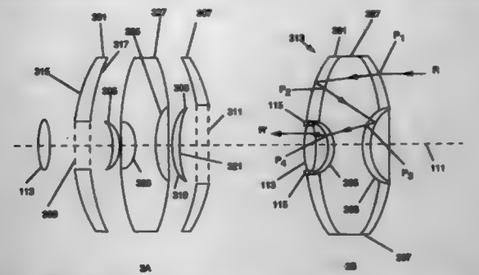
LIGHTWEIGHT BINOCULAR TELESCOPE

John L. Johnson, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 152,633, Nov. 10, 1993, Pat. No. 5,452,126. This application Apr. 3, 1995, Ser. No. 416,024

Int. Cl.[6] G02B *23/00;17/00*

U.S. Cl. 359—407 **1 Claim**



1. A lightweight binocular telescope, said telescope comprising:

a lens having an optical axis and a refractive index, said lens being defined by a first convex side and a second convex side, said sides tending to join each other at their outer perimeters; said first convex side comprising a first depression at the center thereof and a first non-depressed region surrounding said first depression and said second convex side comprising a second depression at the center thereof and a second non-depressed region, said second non-depressed region surrounding said second depression and being suitable for transmitting through said region light to be incident on said first non-depressed region; a first meniscus having a central hole therethrough, a reflective outer surface and a transmissive inner surface, said first meniscus being coupled to said lens such that said inner surface conforms to said first convex side and said hole aligns with said first depression; a second meniscus having a transmissive inner surface and a reflective outer surface, said second meniscus being fitted into said second depression so that said reflective outer surface faces said second convex side; a third meniscus and a fourth meniscus having a central hole therethrough, said menisci each having a transmissive inner surface and a transmissive outer surface, said third meniscus being inserted into said first depression so that said inner surface of said third meniscus faces said first convex side, said fourth meniscus being coupled to said lens such that said inner surface of said fourth meniscus conforms to said second convex side and said hole of said fourth meniscus aligns with said second depression, and said first, second, third and fourth menisci each further having a second refractive index for causing refraction of light during its intertravel between said lens and menisci to achieve the achromatism of the light prior to its ultimate emanation through said first depression.

5,485,306

WIDE FIELD OF VIEW MULTI-TELESCOPE OPTICAL MULTIPLEXED SENSOR

Paul C. Klunke, Long Beach; Dean C. Hatfield, Jr., and Reynold S. Kebo, both of Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 13, 1992, Ser. No. 976,583

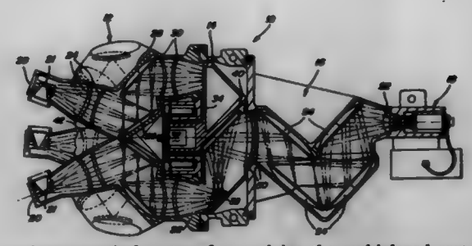
Int. Cl.[6] G02B *23/08;23/22*

U.S. Cl. 359—419 **16 Claims**

14. An optical sensor comprising:

a multiple telescope assembly including a plurality of telescopes mounted in a common housing, each of said telescopes viewing a sector of an object to be viewed to generate a sector output, said sector outputs combining together to form a system field of view;

a rotating periscope assembly for receiving said sector outputs from said multiple telescopes, said periscope assembly optically multiplexing said sector outputs from said telescopes;



an imager optical system for receiving the multiplexed sector outputs from said periscope assembly, said imager optical system imaging said multiplexed sector outputs to provide output energy; and

a detector for receiving said output energy from said imager optical system, said detector providing information on said viewed object.

5,485,307

BINOCULARS

Byung-Sun Kim, Borken, Germany, assignor to Bresser Optik GmbH & Co. KG, Borken, Germany

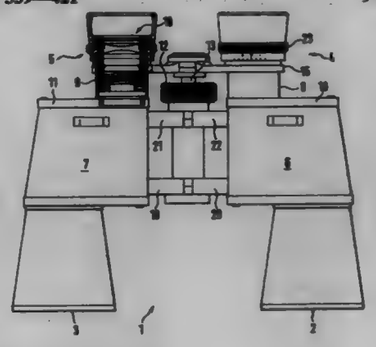
Continuation of Ser. No. 927,911, Aug. 7, 1992, abandoned.

This application Feb. 2, 1994, Ser. No. 191,062

Claims priority, application Germany, Aug. 9, 1991, 41 26 288; European Pat. Off., Nov. 12, 1991, 91119224.3

Int. Cl.[6] G02B *23/00*

U.S. Cl. 359—421 **9 Claims**



1. A binocular comprising:

an eye-piece tube;

a first lens system associated with the eye-piece tube for providing a base magnification as seen through the eye-piece tube; and

an eye-piece module having a second lens system therein which is interchangeably installed in the eye piece tube for changing the position of the first lens system to a position of a preset increase in magnification.

5,485,308

REAR-PROJECTION TYPE IMAGE DISPLAY APPARATUS AND REAR-PROJECTION TYPE SCREEN

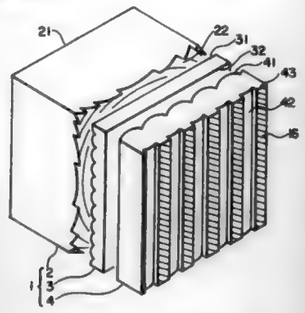
Koji Hirata, Kamakura; Takahiko Yoshida, Miura; Hiroki Yoshikawa, Hiratsuka; Masayuki Muranaka; Atsuo Osawa, both of Yokohama, and Yutaka Matuda, Fujisawa, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 994,101, Dec. 21, 1992, abandoned. This application Feb. 13, 1995, Ser. No. 387,354

Claims priority, application Japan, Dec. 24, 1991, 3-355569; Jun. 1, 1992, 4-140388; Jul. 30, 1992, 4-203450; May 15, 1994, 4-123462

Int. Cl.[6] G03B *21/60*

U.S. Cl. 359—457 **23 Claims**



1. A rear-projection screen comprising a Fresnel lens sheet having a Fresnel lens on a light exit surface of said Fresnel lens sheet, a first lenticular lens sheet, and a second lenticular lens sheet arranged in this order from an image generating source side to an image observing side, wherein a shape of a light entrance surface of said first lenticular lens sheet is formed in such a manner that a plurality of horizontally elongate lenticular lenses having a longitudinal direction corresponding to a horizontal direction of said rear-projection screen are continuously arranged on a light entrance surface of said first lenticular lens sheet and along a vertical direction of said rear-projection screen and each of said horizontally elongate lenticular lenses of said first lenticular lens sheet has a symmetrical shape with respect to the optical axis thereof, and when a contour shape of said horizontally elongate lenticular lenses is expressed by a function Z(r) of a distance "r" separated from said optical axis along the radial direction, a second differential value of said function Z(r) increases monotonously as r is increased, and a shape of a light entrance surface of said second lenticular lens sheet is formed in such a manner that a plurality of first vertically elongate lenticular lenses having a longitudinal direction corresponding to said vertical direction of said rear-projection screen are continuously arranged on a light entrance surface of said second lenticular lens sheet and along said horizontal direction of said rear-projection screen and each of said first vertically elongate lenticular lenses forming the entrance surface of said second lenticular lens sheet has a convex, horizontal cross section toward said image generating source and symmetrical with respect to the optical axis thereof, and a sign of a second differential of a function Z=f(r), where "r" is the distance between a point on a convex contour of the convex, horizontal cross section and the optical axis and Z is the distance parallel to the optical axis between a same point on the convex contour and a vertex of the convex, horizontal cross section, defining the convex contour of the convex, horizontal cross section for a point on the convex contour near the optical axis and the sign of the second differential of the function Z=f(r) for a point on the convex contour remote from the optical axis are different from each other.

5,485,309

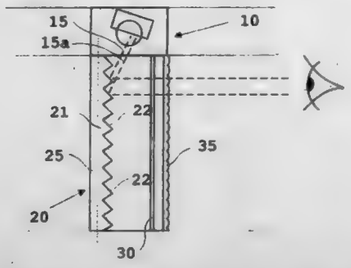
COMPACT DISPLAY FOR ANIMATING POLARIZED IMAGES

Oleg N. Baranetz, and Leonid Lysy, both of 455 Huntington Ave., Buffalo, N.Y. 14214

Continuation-in-part of Ser. No. 43,036, Apr. 5, 1993, abandoned. This application Feb. 14, 1994, Ser. No. 195,207

Int. Cl.[6] G02B *5/30;27/28*

U.S. Cl. 359—485 **19 Claims**



15. The combination comprising means for providing a beam of polarized light having a pattern of polarized light rays and first and second riffled reflecting means arranged within said beam of polarized light to transform said beam of polarized light from a smaller to a larger cross-sectional area;

said first riffled reflecting means comprising a plurality of light reflecting surfaces, arranged to intersect said pattern of polarized light rays incrementally along and progressively through a cross-section of said pattern of polarized light rays and reflect intersected polarized light rays in a first reflected beam comprising generally parallel polarized rays, having a perpendicular cross-section comprising a first increased dimension from a perpendicular cross-section of said beam, to said second riffled reflecting means;

said second riffled reflecting means comprising a plurality of light reflecting surfaces, arranged along the path of said first reflected beam so as to intersect polarized light rays incrementally along and progressively through a cross-section of said first reflected beam and angled from said first increased dimension to reflect a polarized light beam, comprising generally parallel polarized rays, having a cross section comprising a second increased dimension.

5,485,310

LINEAR POLARIZATION/CONVERSION APPARATUS

Tomohide Inada, Tokyo, Japan, assignor to Nippon Avionics Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 983,671, Dec. 1, 1992, abandoned. This application Dec. 8, 1994, Ser. No. 352,430

Claims priority, application Japan, Dec. 2, 1991, 3-341792

Int. Cl.[6] G02B *5/30;27/28*

U.S. Cl. 359—495 **10 Claims**

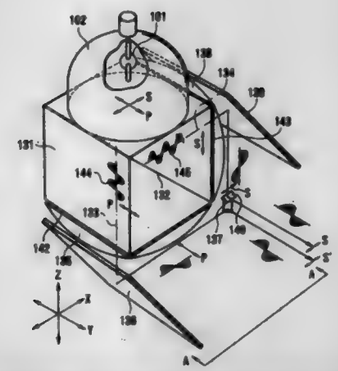
1. A linear polarization/conversion apparatus comprising:

light source means, including a reflector having a paraboloid of revolution, for emitting a white natural light to project an image;

polarizing beam splitting means for splitting substantially parallel light from said source means into a linearly polarized transmission light component and a linearly polarized reflection light component which are polarized in orthogonal directions, through a beam splitting surface which is inclined at 45 degrees with respect to an optical axis of said light source;

first converging means, disposed to oppose an exit surface of said polarizing beams splitting means from which the linearly polarized transmission light component emerges, for converging the linearly polarized transmission light component from said polarizing beam splitting means;

second converging means, disposed to oppose an exit surface of said polarizing beam splitting means from which the linearly



polarized reflection light component emerges, for converging the linearly polarized reflection light component from said polarizing beam splitting means;

first total reflection means, disposed parallel to the beam splitting surface of said polarizing beam splitting means, for totally reflecting the linearly polarized transmission light component from said first converging means in a direction perpendicular to the optical axis of said light source;

second total reflecting means, disposed parallel to the beam splitting surface of said polarizing beam splitting means, for totally reflecting the linearly polarized reflection light component from said second converging means in a direction parallel to the optical axis of said light source, a reflection optical axis of said first and second total reflection means crossing in an approximately orthogonal form on one plane;

third total reflection means, inclined at 45 degrees with respect to a reflection optical axis of said first total reflection means, for totally reflecting the light from said first total reflection means in parallel to surfaces of said first and second total reflection means; and

fourth total reflection means, inclined at 45 degrees with respect to a reflection optical axis of said second total reflection means, for totally reflecting the light from said second total reflection means in parallel to surfaces of said first and second total reflection means, in the same direction as that of the light reflected by said third total reflection means,

wherein said third and fourth reflection means are disposed to come close to each other at positions near focal points of said first and second converging means, in order to make the axes of the polarized reflection light components from said third and fourth total reflection means come close to each other.

5,485,311

METHOD OF INCREASING RETROREFLECTIVE BRIGHTNESS IN A RETROREFLECTIVE SHEET MATERIAL

Richard McAllister, 30 Harrow Place SW, Calgary, Alberta, Canada

Filed Jan. 6, 1995, Ser. No. 369,926

Int. Cl.[6] G02B *5/124*

U.S. Cl. 359—530 **1 Claim**



1. A method of increasing retroreflective brightness in a retroreflective sheet material having a multitude of prism-like reflective elements contained within a transparent polymer plastic top film, the top film adhering in a grid pattern to a backing sheet, comprising the step of:

heating the retroreflective sheet material until bubbles form in the transparent polymer plastic top film containing within it the prism-like reflective elements, the bubbles being confined by the grid, the bubbles serving as miniature magnifying lenses which increase retroreflective brightness and widen the observation angle.

5,485,312

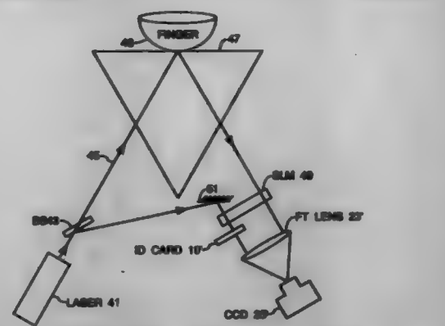
OPTICAL PATTERN RECOGNITION SYSTEM AND METHOD FOR VERIFYING THE AUTHENTICITY OF A PERSON, PRODUCT OR THING

Joseph L. Horner, Belmont, Mass.; Bahram Javidi, Storrs, Conn., and John F. Walkup, Lubbock, Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 14, 1993, Ser. No. 127,651

Int. Cl.[6] G02B *27/46;* **G06K** *9/76;9/74*

U.S. Cl. 359—561 **23 Claims**



1. A method of verifying the authenticity of an object comprising the steps of:

(a) associating an object related phase mask having invisible phase encoding thereon with said object; and

(b) comparing said object related phase mask with a reference phase mask in a coherent optical processor, said reference phase mask having a high degree of phase correlation with respect to said object related phase mask.

17. Apparatus for verifying the authenticity of an object having a phase mask coupled thereto comprising:

(a) means for inputting a coherent optical representation of said phase mask coupled to said object into a coherent optical processor, said coherent optical processor including comparator means for comparing said representation of said phase mask with a reference phase mask; and

(b) means for producing a positive authentication signal in response to a close phase match condition sensed by said comparator means.

5,485,313

ZOOM LENS SYSTEMS

Ellis I. Betensky, Redding, Conn., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 27, 1993, Ser. No. 144,126

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—689 **22 Claims**

1. A zoom lens system for forming an image, said system comprising:

(a) a first lens unit having a negative optical power;

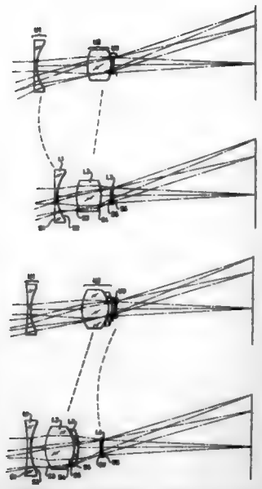
(b) a second lens unit which is on the image side of said first lens unit and has a positive optical power;

(c) a third lens unit which is on the image side of said second lens unit and has a negative optical power; and

(d) an aperture stop which is on the image side of said second lens unit;

wherein:

said second lens unit is moveable to change the magnification of the lens system;



said first lens unit is moveable to focus the lens system and to compensate for changes in focus resulting from movement of said second lens unit; and

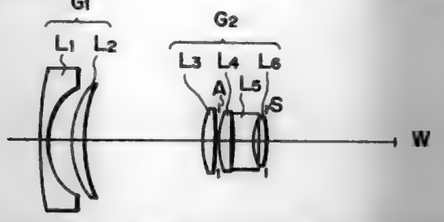
said aperture stop is fixed during zooming of the lens system.

5,485,314

STANDARD ZOOM LENS

Haruo Sato, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 24,215, Mar. 1, 1993, abandoned.
This application Aug. 1, 1994, Ser. No. 283,749
Claims priority, application Japan, Mar. 6, 1992, 4-49471
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—691 **31 Claims**



1. A standard phototaking zoom lens comprising, in order from the object side:

a first lens group constructed of a negative meniscus lens with its concave surface having a large curvature toward an image and a positive meniscus lens with its convex surface toward the object, said first lens group having negative refracting power on the whole; and

a second lens group constructed of a plurality of lenses having at least one negative lens component and having positive refracting power on the whole,

wherein said first lens group includes at least one aspherical surface in the lens surfaces of said negative and positive meniscus lenses, a process of variable power is performed by mutually altering a group-to-group space between said first and second lens groups, and further said first and second lens groups are constructed to satisfy the following conditions:

$$.6<f_2/f_1<1.0$$

$$.0\leq X_2/f_w\leq 1.8$$

where

f_1: the focal length of said first lens group,

f_2: the focal length of said second lens group,

X_2: the moving quantity of said second lens group from the wide-angle end to the telephoto end during the process of variable power, and

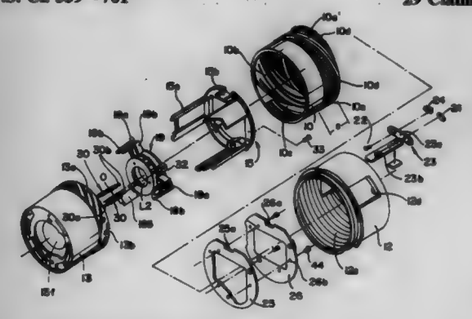
f_w: the focal length of the whole system at the wide-angle end.

5,485,315

BACKLASH REMOVING MECHANISM FOR ZOOM LENS ASSEMBLY

Hiroshi Nomura; Norio Sato, and Nobuaki Aoki, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 46,721, Apr. 16, 1993, abandoned.
This application Dec. 13, 1994, Ser. No. 358,578
Claims priority, application Japan, Apr. 17, 1992, 4-24854 U
Int. Cl.[6] G02B *7/10*
U.S. Cl. 359—701 **29 Claims**



9. A zoom lens assembly comprising:

a rotatable cam ring having first helicoid threads and a cam groove;

a front lens group;

a front lens group barrel holding said front lens group and having second helicoid threads held in mesh with said first helicoid threads for moving said front lens group along an axis of said rotatable cam ring;

a rear lens group;

a rear lens group frame holding said rear lens group and having a cam follower engaging in said cam groove for moving said rear lens group along said axis relative to said front lens group; and

tension spring means coupled between said front and rear lens group frames for removing backlash between said first and second helicoid threads and between said cam follower and said cam groove;

wherein said tension spring means comprises at least one coil spring extending axially between said front lens group barrel and said rear lens group frame;

wherein said at least one coil spring further comprises a central axis about which coils of said at least one coil spring are oriented, said central axis being distanced from an optical axis of the zoom lens assembly; and

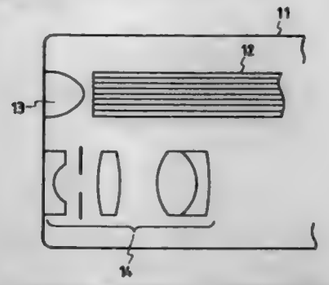
wherein said at least one coil spring is kept under tension at all times and at all positions of said front and rear lens group frames.

5,485,316

ILLUMINATION OPTICAL SYSTEM FOR ENDOSCOPES

Takao Mori, and Takayuki Suzuki, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 965,691
Claims priority, application Japan, Jan. 25, 1991, 3-305531; Jan. 25, 1991, 3-305540
Int. Cl.[6] G02B *3/02;13/18;6/32*
U.S. Cl. 359—708 **16 Claims**



1. An endoscope comprising an illumination optical system disposed on a distal end thereof for illuminating an object to be observed;

wherein said illumination optical system comprises in order from the object side, a positive lens component having an aspherical surface and being disposed on said distal end of said endoscope, and a light emitting means;

wherein said positive lens component serves to diverge a ray emitted from said light emitting means to said object to be observed; and

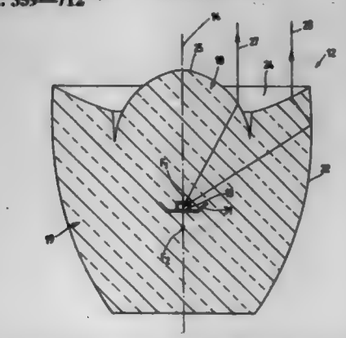
wherein a ray made incident upon said positive lens component in parallel with an optical axis intersects the optical axis at a point inside of said positive lens component due to refractive properties of said positive lens component.

5,485,317

OPTICAL SYSTEM FOR LIGHT EMITTING DIODES

Claudio Perissinotto, Torreano Di Martignacco, and Antonio Fiorentini, Milan, both of, Italy, assignors to Solari Udine S.p.A., Udine, Italy

Filed Oct. 8, 1993, Ser. No. 134,295
Claims priority, application Italy, Jul. 23, 1993, MI93A1654
Int. Cl.[6] G02B *3/02;13/18*
U.S. Cl. 359—712 **14 Claims**



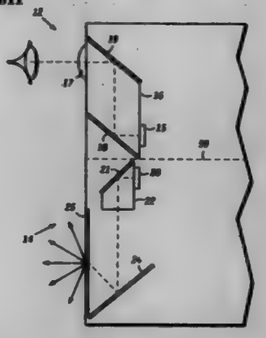
1. An optical system for a light emitting diode (13) which is incorporated in a fixed manner on an optical axis (14) of a carrier lens (12), said carrier lens (12) consisting of a front portion (18) with an outer transverse surface (25) formed concave towards emitted light, and for incorporating the diode (13), a longitudinal portion (19) with an outer longitudinal surface (22), wherein said outer longitudinal surface (22) is formed concave towards the diode (13) and is coaxial to the optical axis (14) of the carrier lens and said concave transverse surface (25) having a further outer transverse surface (24) circumscribed thereto characterised in that said outer longitudinal surface (22) has an ellipsoidal form and said further outer transverse surface (24) has a curved form.

5,485,318

DUAL IMAGE MANIFESTATION APPARATUS WITH INTEGRATED ELECTRO-OPTICAL PACKAGE

Michael S. Lebby, Apache Junction, and Karen E. Jachimowicz, Laveen, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 3, 1994, Ser. No. 316,955
Int. Cl.[6] G02B *7/02*
U.S. Cl. 359—811 **34 Claims**



1. Dual image manifestation apparatus with an integrated electro-optical package comprising:

a mounting structure;

real image generation means mounted on the mounting structure for providing at least one real image;

a low magnification optical system supported on the mounting structure to receive the one real image at a low magnification optical input and provide a magnified real image directly viewable at a low magnification optical output; and

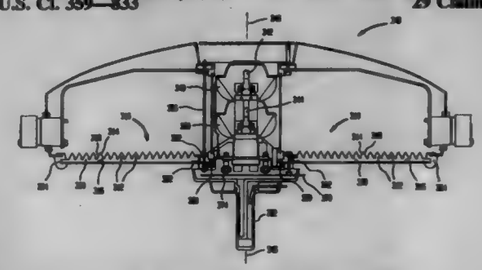
a high magnification optical system supported on the mounting structure to receive the one real image at a high magnification optical input and provide an enlarged virtual image at a high magnification optical output.

5,485,319

MEDICAL DEVICE FOR LIGHTING A TREATMENT FIELD

Thomas M. Lemons, Marblehead, Mass., assignor to Alm S.A., Romainville, France

Continuation of Ser. No. 720,962, Jun. 25, 1991, abandoned.
This application Mar. 17, 1993, Ser. No. 212,141
Int. Cl.[6] G02B *5/04;17/08;* F21V *5/00;* A61G *13/00*
U.S. Cl. 359—833 **29 Claims**



1. A device for lighting a treatment field comprising:

a. means for focusing a plurality of light rays;

b. prism assembly formed of a plurality of sector members, wherein each of said sector member has a plurality of prisms,

each prism having an entry face and an exit face, the vertices of the sector members being substantially located at the center of the prism assembly, the sector members having prisms being configured and dimensioned so that the focusing means can focus the plurality of light rays generally onto the entry faces of the prisms; and

c. means for displacing at least a predetermined number of sector members such that the exit faces of the prisms of the predetermined sector can be selectively disposed in a configuration being one of a generally planar and a non-planar configuration.

5,485,320

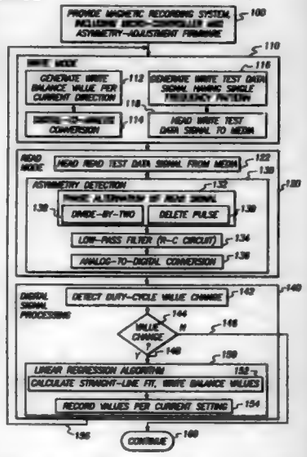
METHOD AND APPARATUS FOR ADJUSTING ASYMMETRIC RECORDING SIGNALS

Russell Vogel, Santa Cruz; William D. Van Alstyne, Aptos; Gerald L. Pressman, Cupertino; Charles A. Linquist, Campbell; James L. Michelotti, San Jose, and Paul A. Lind, Santa Cruz, all of Calif., assignors to Trace Mountain Products, Inc., San Jose, Calif.

Filed May 24, 1993, Ser. No. 67,312

Int. Cl.[6] G11B *27/36;5/02*

U.S. Cl. 360—31 **9 Claims**



1. A method for recording data in and reading data from a magnetic medium, the method comprising the steps of:

generating an asymmetry control signal;

writing a data signal to a magnetic medium responsive to the asymmetry control signal;

reading the written data signal from the magnetic medium;

dividing the read signal by two to produce a divided read signal;

filtering the divided read signal to generate an asymmetry indication;

repeating the generating, writing, reading, dividing, and filtering steps for a predetermined number greater than 2 of asymmetry control signals;

determining by a linear regression analysis a best fit function relating the asymmetry indications to the asymmetry control signals; and

computing from the best fit function an asymmetry control signal for a null asymmetry indication.

5,485,321

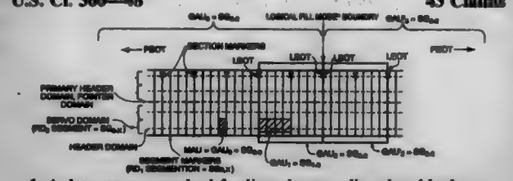
FORMAT AND METHOD FOR RECORDING OPTIMIZATION

Michael L. Leonhardt, Longmont, and Charles A. Milligan, Golden, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Dec. 29, 1993, Ser. No. 176,162

Int. Cl.[6] G11B *5/09;15/12*

U.S. Cl. 360—48 **43 Claims**



1. A data storage method for linearly recording data blocks on a physical recording medium, having at least one data recording domain having a predetermined cross-width dimension and a longitudinal length dimension, said method comprising:

a. demarcating said domain into "a" number of longitudinal segments, where "a" is an integer greater than 1;

b. partitioning each said longitudinal segment across said cross-width dimension of said recording domain into "b" number of cross-width segments, where "b" is an integer greater than or equal to 1, each said cross-width segment having "c" number of parallel recording tracks, where "c" is an integer greater than or equal to 1; and

c. recording, beginning at any position within said recording domain, a collection of related data blocks on said recording tracks within a sequence of one or more allocation units,

such that each said collection of related data blocks defines a virtual medium, and each physical medium comprises "d" number of virtual media, where "d" is an integer greater than or equal to one.

5,485,322

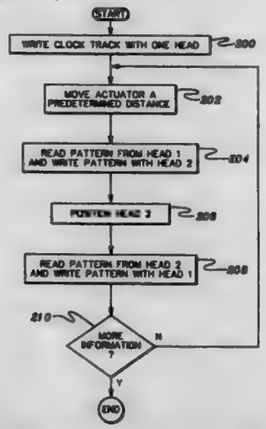
METHOD AND SYSTEM FOR WRITING A CLOCK TRACK ON A STORAGE MEDIUM

Timothy J. Chainer, Mahopac, N.Y.; Wayne J. Sohn, Modiin, Israel, and Edward J. Yarmchuk, Somers, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 28,044, Mar. 8, 1993. This application Jan. 11, 1995, Ser. No. 371,229

Int. Cl.[6] G11B *27/19*

U.S. Cl. 360—51 **7 Claims**



1. A method for writing a servo-pattern on a storage medium located in a recording device, said recording device comprising a plurality of internal recording heads and a plurality of recording media, each of said plurality of recording media having at least one

of said plurality of internal recording heads associated therewith, said method comprising the steps of:

generating a timing pattern on said storage medium, said generating comprising:

writing a first plurality of transitions representative of a timing pattern with a first of said plurality of internal recording heads;

positioning said first of said plurality of internal recording heads and a second of said plurality of internal recording heads;

reading said first plurality of transitions with said positioned first of said plurality of internal recording heads and writing a second plurality of transitions representative of a timing pattern with said positioned second of said plurality of internal recording heads;

repositioning said first and second of said plurality of internal recording heads; and

reading said second plurality of transitions with said repositioned second of said plurality of internal recording heads and writing a third plurality of transitions with said repoaitioned first of said plurality of internal recording heads;

determining a radial positioning value used for radially positioning at least one of said plurality of internal recording heads;

writing a servo-pattern on said storage medium with said at least one of said plurality of internal recording heads, said servo-pattern being written at locations determined by said timing pattern and said radial positioning value.

5,485,323

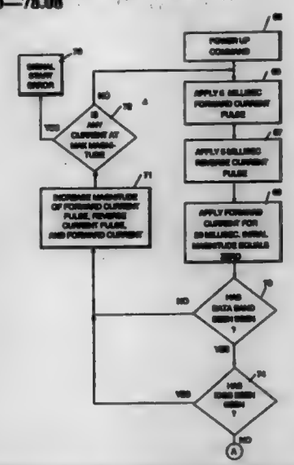
METHOD AND APPARATUS FOR MOVING A DISK DRIVE ACTUATOR AWAY FROM A MAGNETIC LATCH

Todd B. Anderson; Jeffrey F. Bolgenzahn; John J. Stephenson, and Amy L. Warner, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 14, 1993, Ser. No. 91,856

Int. Cl.[6] G11B *5/596*

U.S. Cl. 360—78.08 **6 Claims**



1. In a disk drive having a head, an actuator arm carrying said head, an actuator motor for moving said arm and said head, and a disk having two edge portions and a central portion located intermediate said two edge portions, said disk being arranged in operative relation with said heads and the construction and arrangement of said disk drive providing a bias three that biases said arm away from said the two edge portions of said disk toward said center portion of said disk, a method for optimizing movement of said arm away from a parked position adjacent to one edge portion of said disk, comprising the steps of:

(A) providing a magnetic latch operating to overcome said arm bias force and to magnetically hold said arm in said parked position;

(B) applying a first current pulse of one polarity to said actuator motor, said first current pulse normally causing said arm to move away from said magnetic latch toward another edge portion of said disk;

(C) applying a second current pulse of an opposite polarity to said actuator motor to decelerate movement of said arm away from said magnetic latch;

(D) determining if said first and second current pulses provided by steps B and C has failed to move said arm away from the magnetic force influence of said magnetic latch, and upon detecting such a failure, repeating said steps B and C while increasing the magnitude of said first and second current pulses provided by Steps B and C and providing a third current pulse of said first sense to said actuator motor following each repeat of step C;

(E) determining that said arm has moved out of the magnetic force influence of said magnetic latch by operation of steps B and C; and

(F) positioning said arm at a preselected position relative to said center portion of said disk.

5,485,324

DOUBLE-DECK CAMCORDER WITH PERPENDICULARLY INSTALLED HEAD DRUM

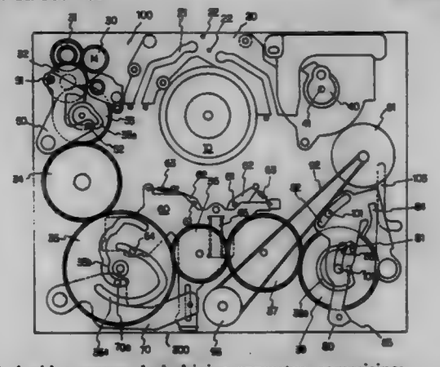
In R. De, and Do Y. Choi, both of Suwon, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 1, 1992, Ser. No. 907,124

Claims priority, application Rep. of Korea, Jan. 16, 1991, 91-1209

Int. Cl.[6] G11B *5/027;5/008*

U.S. Cl. 360—85 **19 Claims**



1. A video camera deck driving apparatus, comprising:

a main deck with a drum installed thereon and a sub-deck movable from a first position spaced apart from said main deck to a second position adjacent to said drum, said drum being installed to rotate around an axis extending perpendicularly from said main deck;

a supply reel;

a main brake for preventing rotation of said supply reel;

a hinge-coupled lever;

tape guide means for guiding a tape toward said drum;

an actuating lever;

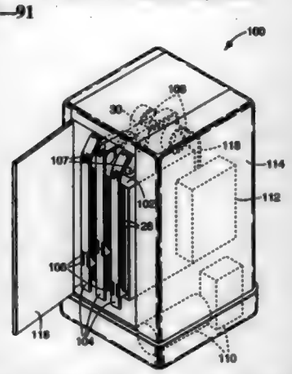
a first guide pin positioned on said actuating lever;

a first cam gear positioned on said main deck to receive rotational power from a motor installed on said main deck, said first cam gear having a first cam slot for accommodating said first guide pin, said actuating lever engaging a first end of said hinge-coupled lever with a second end of said hinge-coupled lever opposite said first end engaging and releasing said main brake of said supply reel as said first guide pin travels through said first cam slot during rotation of said first cam gear;

sub-deck moving means for moving said sub-deck to said second position adjacent to said drum to load said tape onto said drum, said sub-deck moving means comprising:

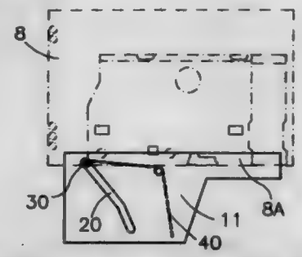
a second cam gear having second and third cam slots for respectively accommodating second and third guide pins, said second cam gear positioned on said main deck to receive rotational power via said first cam gear from the motor;
a pair of loading arms; and
arm moving means for engaging and moving said pair of loading arms in a direction towards said perpendicular drum when said arm moving means moves relative to said main deck from an upper position to a lower position, said arm moving means having said second guide pin guided within said second cam slot of said second cam gear for lifting and lowering said arm moving means with said pair of loading arms being moved by rotation of said second cam gear;
a drum base having upper loading slots and lower loading slots separately formed upon said drum base for guiding pole bases to said chum;
a take-up reel;
main braking means for preventing rotation of said take-up reel;
pivoting lever;
a fourth guide pin extending from a bottom portion of said pivoting lever; and
a third cam gear positioned on said main deck to receive rotational power via said second cam gear from said motor, said third cam gear having a fourth cam slot for accommodating said fourth guide pin, said pivoting lever moving in dependence upon rotation of said third cam gear, said pivoting lever having a guide slot formed on a first end and a contact protuberance formed on a second end opposite said first end, said movement of said pivoting lever causing said contact protuberance to engage and release said main braking means of said take-up reel and further causing said guide slot to engage lock pinch means for enabling a pinch roller to press said tape into contact with a capstan shaft.

5,485,325
MAGAZINE STORAGE SYSTEM FOR RECORDING STRIPS
Lynn R. Skow, North Branch, Minn.; Arthur R. Moore, Deer Park, Wis., and James R. Gilbertson, Maplewood, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 4, 1994, Ser. No. 222,080
Int. Cl.[6] G11B *5/008;15/00*
U.S. Cl. 360—91 **19 Claims**



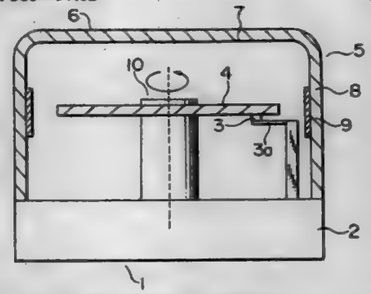
1. A magazine storage system for recording strips, comprising:
a loop-shaped drive comprising a first loop-shaped conduit having an inner periphery and an outer periphery, the first conduit having a first continuous working surface on an exterior surface of one of the peripheries, the first working surface having a first plurality of orifices for directing fluid, supplied to the first conduit, to support and transport the strip around said one of the peripheries in at least a first direction and into close proximity with at least one transducer;
a magazine comprising a plurality of shelves for storing recording strips thereon;
a second conduit having a second continuous working surface, the second working surface having a second plurality of orifices for directing fluid, supplied to the second conduit, to support a recording strip and transport it from the magazine to the drive, wherein the orifices are provided on both sides of a longitudinal centerline along a direction of travel of the strip;
a third conduit having a third continuous working surface, the third working surface having a third plurality of orifices for directing fluid, supplied to the third conduit, to support a recording strip and transport it from the drive to the magazine, wherein the orifices are provided on both sides of a longitudinal centerline along a direction of travel of the strip; and
a cusp for facilitating transport of a recording strip from the shelves to the second working surface, wherein the cusp can be moved among the shelves, whereby any desired recording strip in the magazine may be accessed, and wherein the recording strip is transported, by fluid streams originating from the shelves, from the shelves via the cusp to the second working surface.

5,485,326
COMPACT CASSETTE RECORDER CAPABLE OF LOADING DIGITAL OR ANALOGUE CASSETTES AND HAVING A MOVING PIN FOR OPENING A COVER OF A DIGITAL CASSETTE
Chiou: Chyi-Fwu; Pi-Ling Lin; Chien: Sen-Yuan, and Wei-Don Lin, all of Hsinchu, Taiwan, Prov. of China, assignors to Industril Technology Research Institute, Hsinchu, Taiwan, Prov. of China
Filed May 17, 1994, Ser. No. 245,223
Int. Cl.[6] G11B *15/66;33/02;5/008*
U.S. Cl. 360—96.5 **6 Claims**



1. A cassette load/unload device for use in a digital compact cassette recorder, said digital compact cassette having a recessed region with a predetermined depth and a cover which is in a normally closed position but can be pushed to open in a first direction, said cassette load/unload device comprising:
a cassette holder which is dimensioned for insertion of a digital compact cassette or an analogue compact cassette;
a base plate mounted in said cassette holder, said base plate being disposed in a parallel relationship with respect to said digital or analogue compact cassette when inserted inside said cassette holder;
a guiding slot formed on said base plate;
a pin mounted in said base plate, said pin is mounted vertically projecting over a surface of said base plate and is slidable along said guiding slot, and said pin has a projecting height which is slight less than said depth of recessed region of said digital compact cassette so as to allow said pin to move into said recessed region and in contact with an edge of said digital cassette cover when said digital cassette is inserted into said cassette holder;
said guiding slot having an initial position, a intermediate position and an end position;
a return spring for retaining said pin in said initial position until said pin is being pushed;
wherein said guiding slot is so structured such that said pin, while in said initial position, will be received by said recessed region of said digital cassette when said digital cassette is first inserted into said cassette holder and said initial position of said guiding slot enables said pin to be in a position to open said cover;
said guiding slot is also structured such that when said digital cassette is pushed further inside said cassette holder into a working position, said pin is pushed from said initial position to said intermediate position, thus causing said cover to open;
said guiding slot is further structured such that when an analogue cassette, which does not have a recessed region is inserted into said cassette holder and pushed into a working position, said pin will be pushed all the way to said end position thus will not interfere with a working of said analogue cassette; and
said returning spring is structured to return said pin to said initial position in said guiding slot when said digital cassette or said analogue cassette is ejected from said cassette holder.

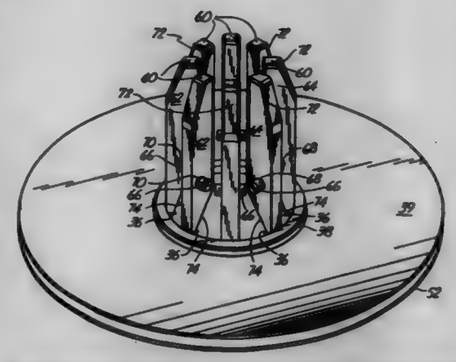
5,485,327
MAGNETIC MEMORY DEVICE HAVING A PERFLURO-POLYETHER FILM COATED ON AN INNER SURFACE OF ITS HOUSING FOR ENTRAPPING DUST
Masahiro Yanagisawa, Tokyo, Japan, assignor to NEC Corporation, Japan
Continuation of Ser. No. 8,195, Jan. 25, 1993, abandoned. This application Nov. 4, 1994, Ser. No. 334,805
Claims priority, application Japan, Jan. 31, 1992, 4-040632
Int. Cl.[6] G11B *33/14*
U.S. Cl. 360—97.02 **8 Claims**



1. A magnetic memory device comprising:
a housing means separating mechanical components means, including a magnetic medium means, from outside atmosphere, and
coating means comprising a prefluoro-polyether film coated on whole or a part of the inner surface of said housing means for trapping dust which may be contained within said housing means.

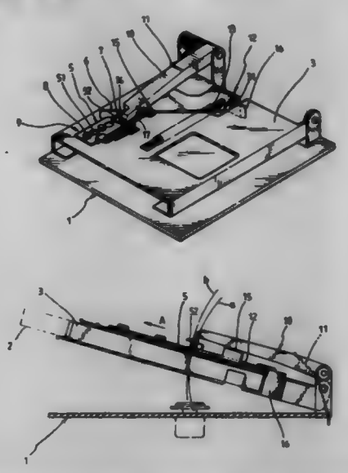
5,485,328
SYSTEM FOR REMOVING A CLAMP FROM A DISC DRIVE HUB ASSEMBLY
Hatem R. Radwan, San Jose, and Bradley D. Kelemen, Santa Cruz, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.
Filed May 4, 1994, Ser. No. 237,774
Int. Cl.[6] G11B *17/08*
U.S. Cl. 360—98.08 **20 Claims**

1. A hub in a disc drive, the hub for receiving a heat shrink clamp and having a magnetic disc concentrically mounted about the hub for rotation with the hub, the hub comprising:
a generally cylindrical body portion having a first axial end, a second axial end and a generally cylindrical surface extending between the first and second axial ends;
a flange disposed generally at the second axial end of the hub, the flange supporting the magnetic disc; and



wherein the body portion of the hub includes at least seven slots angularly spaced from one another about the first axial end of the body portion.

5,485,329
DEVICE FOR INSERTING/EXTRACTING A DISK CARTRIDGE WITH LOCKING MECHANISM
Min-su Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kungki-do, Rep. of Korea
Filed May 27, 1994, Ser. No. 250,456
Claims priority, application Rep. of Korea, Jun. 1, 1993, 93-9796
Int. Cl.[6] G11B *17/04;5/016*
U.S. Cl. 360—99.06 **7 Claims**



1. A device for inserting and extracting a disk cartridge for use in a disk player having a deck; said device comprising:
a cartridge holder pivotally attached at one end thereof to said deck to enable rotation of said cartridge holder between a down position for playing disks in said cartridge and an up position for insertion and withdrawal of the disk cartridge into and from said cartridge holder;
an extracting member rotatably installed on said cartridge holder; said extracting member having an extracting piece at one end thereof; said extracting piece being positioned to push an inserted cartridge outwardly with respect to said cartridge holder as said extracting member rotates in a first direction;
a locking member slidably installed on said cartridge holder to slide rectilinearly between a first position which holds said extracting member in a locked position stopping rotation of

said extracting member in said first direction, and a second position which does not hold said extracting member in a locked position; and

a locking release member pivotally installed at one end thereof on said deck for movement between a down position and an up position and having a center of rotation above that of said cartridge holder such that said locking release member and said cartridge holder have different rotation loci; a part of said locking release member at an opposite end thereof engaging said locking member, wherein when said locking release member and said cartridge holder are rotated upward away from said deck and due to the different rotation loci of said locking release member and said cartridge holder, the end of said locking release member engaging said locking member forces said locking member to slide towards said second position and release said extracting member from the locked position, permitting said extracting member to rotate in said first direction;

a first biasing member for biasing said locking member towards said first position;

a second biasing member for biasing said locking release member towards the down position; and

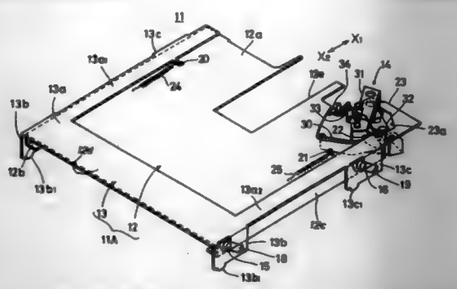
a third biasing member for biasing said extracting member towards rotation in said first direction.

5,485,330

DEVICE FOR LOADING AND EJECTING RECORDING MEDIUM REQUIRING PUSHING OF RECORDING MEDIUM FOR EJECTING THE MEDIUM

Yoshio Hirose, Urawa, and Kenji Matsumoto, Hoya, both of, Japan, assignors to TEAC Corp., Japan

Continuation of Ser. No. 992,545, Dec. 17, 1992, abandoned.
This application Jun. 29, 1994, Ser. No. 267,854
Claims priority, application Japan, Dec. 27, 1991, 3-107955 U; Dec. 27, 1991, 3-347169; Dec. 27, 1991, 3-347173; Dec. 27, 1991, 3-347192; Dec. 27, 1991, 3-347213
Int. Cl.[6] G11B *17/04*
U.S. Cl. 360—99.06 **10 Claims**



1. A device for loading into a structure a recording medium apparatus in which data is recorded on or reproduced from, said device comprising:

a holder into which the recording medium apparatus is inserted, said holder having means for preventing erroneous insertion of said recording medium apparatus in said structure;

a moving mechanism which slides to move said holder between a recording/reproducing position at which recording/reproducing on/from the apparatus occurs and a non-recording/reproducing position;

biasing means for biasing said moving mechanism so that said holder is at said position at which recording/reproducing occurs on the apparatus;

detecting means for detecting movement of the apparatus;

keeping means for keeping said moving mechanism at a position so that said holder is kept at said non-recording/reproducing position; and

a returning mechanism including driving means which responds to the detecting of the apparatus's movement by said detecting means so as to drive said moving mechanism, against a biasing force applied by said biasing means, so that said moving mechanism moves to the position at which said keeping means keeps said moving mechanism;

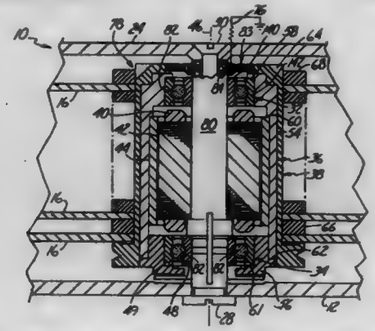
said moving mechanism having a cam arrangement on which said driving means slides during the driving of said moving mechanism by said driving means.

5,485,331

HIGH RESISTIVITY BEARING BALLS FOR SPINDLE MOTOR ISOLATION

John C. Dunfield, Aptos; Klaus Kloeppel, Watsonville; Robert M. Pelstring; Donald J. Macleod, both of Santa Cruz; Michael Raffetto, Scotts Valley, and Frederick F. Kazmierczak, San Jose, all of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Sep. 30, 1993, Ser. No. 129,655
Int. Cl.[6] G11B *17/02;33/14*
U.S. Cl. 360—99.08 **27 Claims**



1. A disc drive spindle motor rotatably driving at least one memory storage disc of a disc drive, the spindle motor comprising:

a drive base;

a rotor hub for supporting the at least one memory storage disc above the base about an axis;

means extending above the base and fixedly coupled to the base for supporting the rotor hub above the base;

a bearing unit rotatably supporting the rotor hub above the base, the bearing unit comprising:

a first race coupled to the means for supporting;

a second race coupled to the rotor hub; and

a bearing ball fitted between the first race and the second race and rotatably supporting the first race relative to the second race, wherein the bearing ball is made of high resistivity material to provide high electrical impedance between the first race and the second race so that the rotor hub is electrically isolated from the base.

5,485,332

FLOATING MAGNETIC HEAD HAVING A CHAMFERED MAGNETIC HEAD CORE

Motoji Egawa, and Tetsuji Fujita, both of Shizuoka, Japan, assignors to Minebea Co., Ltd., Nagano, Japan

Filed Aug. 23, 1993, Ser. No. 109,903
Claims priority, application Japan, Nov. 30, 1992, 4-343425; Dec. 8, 1992, 4-351663
Int. Cl.[6] G11B *5/60*
U.S. Cl. 360—103 **5 Claims**

1. A floating magnetic head, comprising:

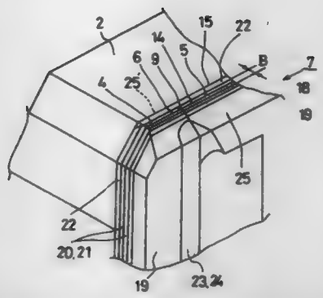
a nearly rectangular non-magnetic slider having a floating surface for generating a floating force against a magnetic recording medium; and

a magnetic head core comprising a trailing portion and a leading portion which are thin films made of a magnetic material laminated into a width equivalent to a track width of the floating magnetic head, the trailing portion and leading portion being sandwiched by non-magnetic substrates:

said magnetic head core being bonded via glass to a side portion of said slider, said magnetic head core including a magnetic gap located on a sliding surface of said magnetic head core which slides against said magnetic recording medium;

said magnetic head core having a length shorter than a length of the side portion of said slider and being adhered to the side portion so that said magnetic head core does not extend beyond end portions of said slider; and

one of said non-magnetic substrates being adjacent said slider and having a chamfered portion located at said sliding surface so that the glass is not exposed to the sliding surface.

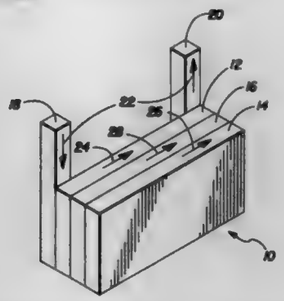


5,485,333

SHORTED DMR REPRODUCE HEAD

Danny D. L. Yang, San Diego, and Jay D. Freeman, Leucadia, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 23, 1993, Ser. No. 52,447
Int. Cl.[6] G11B *5/39*
U.S. Cl. 360—113 **5 Claims**



1. A shorted dual magnetoresistive (MR) reproduce head, comprising:

a. a pair of magnetoresistive elements;

b. a spacer consisting of titanium nitride having a resistivity value of between 200 μΩ-cm and 2,000 μΩ-cm between said magnetoresistive elements; and

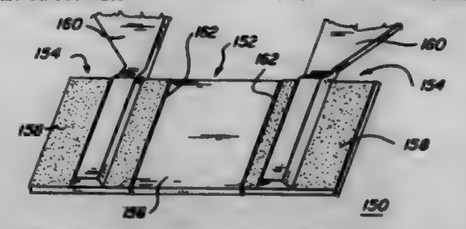
c. means for flowing electrical current in the same direction through said pair of MR elements and said spacer, wherein the current flowing through said spacer is substantially less than the electrical current flowing through said MR elements due to the much higher resistivity of said spacer than the resistivity of said MR elements, and wherein said signal loss of said reproduce head due to current shunting through said spacer is substantially reduced.

5,485,334

MAGNETORESISTIVE DEVICE AND METHOD HAVING IMPROVED BARKHAUSEN NOISE SUPPRESSION

James L. Nix; Guy F. Rose, both of Boulder; Paul D. Reinholz, Westminster; Anthony C. Helms, Lafayette, all of Colo., and Daniel J. O'Connor, Prior Lake, Minn., assignors to Quantum Peripherals Colorado, Inc., Louisville, Colo.

Continuation of Ser. No. 975,479, Nov. 12, 1992, abandoned.
This application Feb. 22, 1996, Ser. No. 392,393
Int. Cl.[6] G11B *5/39;5/31*
U.S. Cl. 360—113 **45 Claims**



1. A magnetoresistive device comprising:

a magnetoresistive structure presenting first and second oppositely disposed end portions transverse to a major axis thereof, said magnetoresistive structure comprising a magnetoresistive layer and a generally coextensive soft magnetic layer disposed in an underlying relationship thereto; and

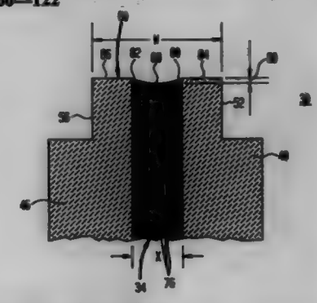
first and second permanent magnet layers disposed adjacent to, but spaced apart from, said first and second end portions of said magnetoresistive structure in a generally co-planar relationship thereto, said first and second permanent magnet layers for providing a longitudinal bias to said magnetoresistive structure while being physically separated therefrom by a separation layer.

5,485,335

MAGNETIC RECORD/REPRODUCE HEAD HAVING IMPROVED SERVICE LIFE, AND NEW MATERIAL THEREFOR

Bradford D. West, Del Mar, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 886,562, May 19, 1992, abandoned.
This application Sep. 19, 1994, Ser. No. 308,878
Int. Cl.[6] C04B *35/36*
U.S. Cl. 360—122 **12 Claims**



1. A magnetic head comprising:

a magnetic core of a magnetic material, said magnetic material having a thermal coefficient of expansion;

a ceramic body laminated to said magnetic core, said ceramic body including a ceramic matrix having small uniform grain size of substantially pure first ceramic material with no glass formers; and further including a substantially uniform distribution of inclusions of a second ceramic material, as a second phase in said ceramic matrix with no third phase formed, no solid solution of the second phase and no appreciable reaction between said first and second ceramic materials; wherein said thermal expansion coefficients of said first ceramic material,

said second ceramic material and said magnetic material, respectively, are suitably matched to each other, with the result that said first and second ceramic materials can withstand wide temperature excursions without delamination; wherein said second ceramic material is harder than said first ceramic material; wherein said inclusions of said second ceramic material are of a size substantially comparable to said grain size of said ceramic matrix; wherein said ceramic substrate has low internal stresses and full density with no pores.

5,485,336

MAGNETIC RECORDING AND/OR REPRODUCING HEAD WITH SLIDER

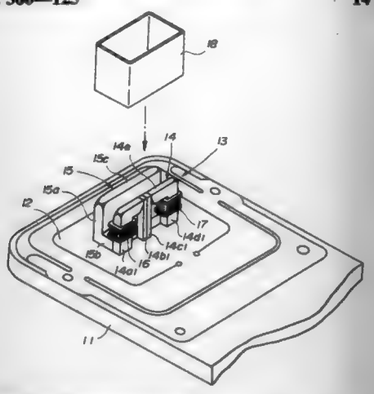
Hiroshi Matsunaga, Kunitachi, Japan, assignor to TEAC Corporation, Japan

Continuation of Ser. No. 909,147, Jul. 6, 1992, abandoned. This application Sep. 14, 1994, Ser. No. 306,215

Claims priority, application Japan, Jul. 10, 1991, 3-170158

Int. Cl.[6] G11B *5/193*

U.S. Cl. 360—125 **14 Claims**



1. A magnetic head comprising:

a head core formed of a plurality of cores each made of a magnetic substance, each of said cores having a sliding surface at one end thereof sliding on a surface of a disk comprising a magnetic recording medium, said plurality of cores cooperatively forming at least one gap, said plurality of cores being aligned along a line of predetermined direction;

a plurality of coils electromagnetically coupled to said head core; and

a slider made of a magnetic substance and having an L-shaped cross-section, said slider having a sliding surface located at a first, extended end of said slider, said sliding surface of said slider sliding on the surface of said disk and lying in a plane in which said sliding surface of said head core extends, said slider having a second, extended end connected to the other end of each core of said head core so that said slider is integral with said head core, said sliding surface of said slider extending parallel to the line of direction of said head core but being spaced by an opening from said sliding surface of said core in a direction normal to the line of direction of said head core;

a closed magnetic circuit being made from said head core, said slider, and said disk as a result of said sliding surface of said head core and said sliding surface of said slider being in contact with said surface of said disk and as a result of said second, extended end of said slider being connected to the other end of said head core.

5,485,337

THIN FILM MAGNETIC HEAD STRUCTURE AND METHOD OF FABRICATING THE SAME FOR ACCURATELY LOCATING AND CONNECTING TERMINALS TO TERMINAL CONNECTIONS

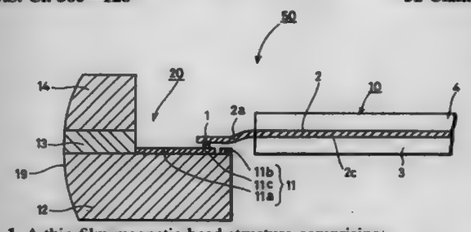
Tomoyuki Sagara, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 894,593, Jun. 5, 1992, abandoned. This application Jun. 6, 1994, Ser. No. 254,426

Claims priority, application Japan, Jun. 7, 1991, 3-136797; Jul. 4, 1991, 3-163244; May 26, 1992, 4-133553

Int. Cl.[6] G11B *5/147;5/127*

U.S. Cl. 360—126 **32 Claims**



1. A thin film magnetic head structure comprising:

a thin film magnetic head substrate having a major surface and including a thin film magnetic head;

a plurality of connection terminals being arranged on said major surface of said thin film magnetic head substrate to extend from an element portion included in said thin film magnetic head;

a plurality of lead terminals arranged in correspondence to respective ones of said connection terminals;

a terminal formation substrate holding respective portions of ones of said lead terminals to expose at least surfaces being opposite to said connection terminals, another portion of said lead terminals including one end of each of said lead terminals projecting from said terminal formation substrate and only the projected one end of each of said lead terminals being opposite to said connection terminals; and

a conductive layer corresponding to ones of said connection terminals and said lead terminals, said conductive layer being formed on surfaces of either said connection terminals or said projected one end of said lead terminals, the projected one end of each of said lead terminals being connected to said connection terminals with said conductive layer interposed therebetween by direct application of pressure onto said projected one end of said lead terminals by a bonding tool, wherein the terminal formation substrate is not found on the rear surface of the lead terminals at the projecting portion where the lead terminals are connected to the conductive layer.

5,485,338

PAPERBOARD MICRO COMPUTER DISKETTE

Thomas D. Harmon, Woburn, Mass., assignor to International Paper Company, Purchase, N.Y.

Continuation-in-part of Ser. No. 239,000, May 6, 1994. This application May 8, 1995, Ser. No. 436,680

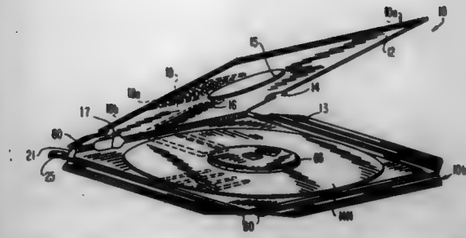
Int. Cl.[6] G11B *23/033*

U.S. Cl. 360—133 **11 Claims**

1. An improved micro computer diskette including a magnetic media, the diskette comprising:

a foldable paperboard blank having nonwoven liner material on given inner surfaces thereof and external surfaces thereof adapted for printing thereon,

wherein said paperboard blank is scored with a heavy-caliber single score line to form a hinged portion of a given thickness between two jacket halves of the paperboard blank at a leading edge thereof and similar heavy-caliber single score lines to form three side edges and overlay flaps on one jacket half, said overlay flaps of the one jacket half being secured to the other jacket half to form a rigid rectangular box-like



structure with liner material on its inner surfaces for housing the magnetic media, and wherein said jacket halves of said paperboard blank are embossed with ridge portions for lifting the liner material into cleaning contact with the magnetic media.

5,485,339

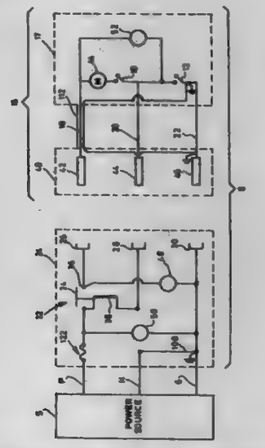
SAFETY ELECTRICAL ASSEMBLY FOR ELECTRIC POWER EQUIPMENT

Jacques Dufresne, 6889, avenue Lamont, Montréal, Québec, Canada

Continuation of Ser. No. 171,684, Dec. 22, 1993, abandoned. This application May 17, 1995, Ser. No. 443,390

Int. Cl.[6] H02H *3/14*

U.S. Cl. 361—42 **5 Claims**



1. A safety electrical assembly for connecting an electric power equipment to an electric power source,

said electric power equipment including a housing, a main switch and a male plug having a ground prong, a neutral prong and at least one power prong respectively connected to a ground conductor, a neutral conductor, and at least one power conductor, and a safety switch;

said power source including a ground wire, a neutral wire and at least one power wire;

said safety switch connected between said neutral conductor and said ground conductor; and

a female plug comprising;

a ground socket engageable with said ground prong for connection to said ground wire;

a neutral socket engageable with said neutral prong;

at least one power socket engageable with said at least one power prong for connection to said at least one power wire;

a relay comprising control coil mounted between said at least one power wire and said neutral socket and a normally open switch mounted in series with said at least one power wire, said relay also comprising a stationary contact adjacent said at least one power socket, said relay being activated by electricity passing from said at least one power wire to said neutral socket through said control coil; and

first light means mounted between said stationary contact of said relay and said ground wire in such a manner so as to be visible to a user for indicating that said relay is operative, whereby, engagement of the safety switch provides indication that are the ground conductor and ground wired are operative, such that the relay will close and will allow the power equipment to be energized by actuation of the main switch.

5,485,340

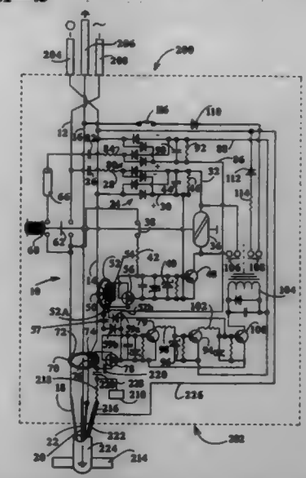
ELECTRICAL SUPPLY SAFETY PLUG

Shimon Avitan, Fairlawn, N.J., assignor to Aditan, Inc., Upper Brookville, N.Y.

Continuation of Ser. No. 726,875, Jul. 8, 1991, abandoned. This application Feb. 19, 1993, Ser. No. 20,317

Int. Cl.[6] H02H *3/16*

U.S. Cl. 361—45 **17 Claims**



1. An electrical safety plug for connection to the end of a power cord of an electrical appliance, the power cord having a live conductor and a neutral conductor, the appliance having an ON condition which establishes a completed electrical path between the live and neutral conductors of the power cord, comprising:

a plug housing;

a live prong projecting from said housing for connection to a source of electrical power having live and neutral lines;

a neutral prong projecting from said housing for connection to the source of electrical power;

a live output connectable to the live conductor of the power cord of an appliance;

a neutral output connectable to the neutral conductor of the power cord of the appliance;

a switching circuit electrically connected between said live and neutral prongs and said live and neutral outputs, respectively, said switching circuit including a switch having (i) a normally open state in which said live and neutral prongs are disconnected from said live and neutral outputs, and (ii) a closed state in which said live and neutral prongs are connected to said live and neutral outputs., said switch being electrically activatable to said closed state;

a first circuit for enabling said switch to said closed state when said live and neutral prongs are electrically connected to the live and neutral lines, respectively; and when an electrical circuit across said live and neutral outputs is completed, said electrical circuit being completed when the appliance is in said ON condition; and

a second circuit for monitoring the current at said live and neutral outputs and for disabling said switch to said open state when a current imbalance is detected;

a touch pad mounted on said plug housing; and

a third circuit connected to said touch pad and said second circuit for disabling said switch to said open state responsive to a user touching said touch pad.

5,485,341

POWER TRANSISTOR OVERCURRENT PROTECTION CIRCUIT

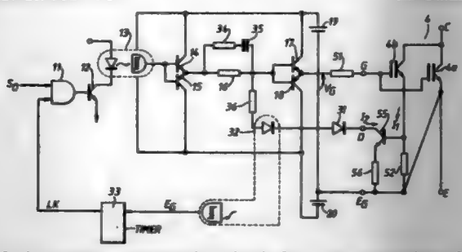
Chihiro Okado, and Makoto Hideshima, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 16, 1993, Ser. No. 121,641

Claims priority, application Japan, Sep. 21, 1992, 4-250308; Apr. 9, 1993, 5-082332

Int. Cl.[6] H02H *3/093*

U.S. Cl. 361—98 **22 Claims**



1. An overcurrent protection circuit for a power transistor for flowing a main current in response to a gate drive voltage generated by a gate circuit, comprising:

current detection means for detecting said main current flowing in said power transistor to generate a detection voltage corresponding to said main current;

level detection means connected to receive said detection voltage for generating a control current corresponding to a difference between said detection voltage and a prescribed value when said detection voltage exceeds said prescribed value;

current control means connected to receive said control current for limiting said main current by regulating said gate drive voltage based on said control current; and

drive instruction control means connected to receive said control current for making said main current zero by controlling said gate drive voltage to an OFF condition based on said control current.

5,485,342

ABNORMAL CURRENT CUTOFF CIRCUIT

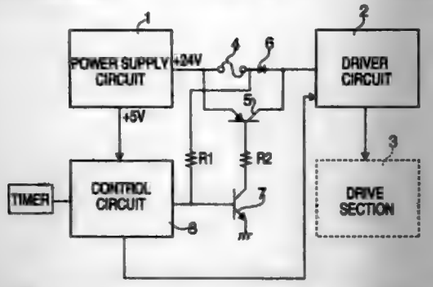
Koichi Sugino, and Nobuhiro Michimoto, both of 1-1, Taihei 4-Chome, Sumida-ku, Tokyo, Japan

Filed Jul. 28, 1993, Ser. No. 98,643

Claims priority, application Japan, Jul. 30, 1992, 4-203835

Int. Cl.[6] H02H *3/093*

U.S. Cl. 361—104 **9 Claims**



1. An abnormal current cutoff system for cutting off current supplied from a power supply output terminal to a load input terminal comprising:

a cutoff circuit for cutting off current from said power supply output terminal to said load input terminal if an abnormal current in excess of a standby threshold flows from said power supply output terminal towards said load input terminal when said load is on standby;

a first switching circuit connected in parallel with said cutoff circuit for conducting current at a level above said standby threshold from said power supply output terminal to said load input terminal when said load is to be driven and;

a second switching circuit for controlling driving of said first switching circuit and for disabling said first switching circuit when said cutoff circuit is in cutoff.

5,485,343

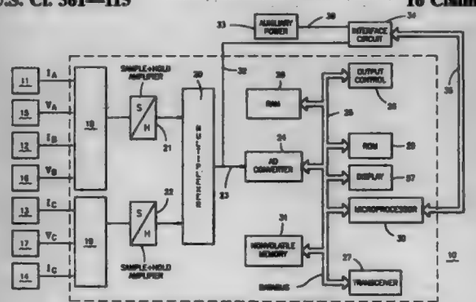
DIGITAL CIRCUIT INTERRUPTER WITH BATTERY BACK-UP FACILITY

Esteban Santos, Windsor; Hanns P. Sailer, Plainville; Paul H. Singer, West Hartford, and Indrajit Purkayastha, Weatogue, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Feb. 22, 1994, Ser. No. 200,048

Int. Cl.[6] H02H *3/08*

U.S. Cl. 361—115 **16 Claims**



1. An electronic trip unit for a circuit interrupter comprising:

transformer means arranged for connection with an electrical distribution system;

a processor circuit connecting with said transformer means receiving sample current signals from said distribution system to determine the occurrence of an overcurrent condition, said processor circuit further receiving operational power from said transformer means;

display means connecting with said processor circuit displaying magnitudes associated with an overcurrent condition;

auxiliary power means connecting with said processor circuit providing operational power to said processor circuit when said electrical distribution system is disconnected from said processor circuit; and

an interface circuit connecting with said processor circuit and said auxillary power means for controlably connecting said auxiliary power means with said processor circuit after said electrical distribution circuit has become disconnected from said electrical distribution system, said auxiliary power means including a battery or a first photocell.

5,485,344

METHOD OF CONTACT-CHARGING THE SURFACE OF A PHOTOSENSITIVE MATERIAL

Shoji Matsumoto; Masanori Matsuda; Eiji Goto; Akinori Nishida, and Takeshi Hori, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

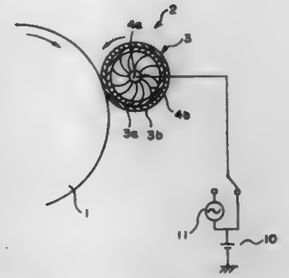
Filed Sep. 27, 1993, Ser. No. 126,773

Claims priority, application Japan, Sep. 28, 1992, 4-258642

Int. Cl.[6] G03G *15/02*

U.S. Cl. 361—225 **10 Claims**

1. In a method of contact-charging the surface of a photosensitive material by bringing an endless electrically conducting flexible



sheet containing a brush roller into physical contact with the surface of the photosensitive material and applying a voltage to said electrically conducting flexible sheet, the improvement comprising using as said electricity conducting flexible sheet a laminated flexible sheet which comprises a first resistance layer positioned on the side of the brush roller and a second resistance layer laminated on the outer surface of the first resistance layer such that the second resistance layer is interposed between the first resistance layer and the surface of the photosensitive material, and the second resistance layer having an electric resistance greater than that of the first resistance layer.

5,485,345

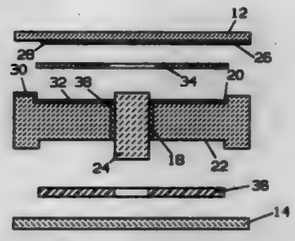
PRESSURE TRANSDUCER APPARATUS

Stanley J. Lukasiewicz, North Attleboro; Robert P. Bishop, Pembroke, both of Mass.; Robert O. Southworth, Pawtucket, R.I., and Keith W. Kawate, Attleboro Falls, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 14, 1994, Ser. No. 339,039

Int. Cl.[6] H01G *7/00*; G01L *9/12*

U.S. Cl. 361—283.3 **3 Claims**



1. A differential pressure transducer having a top surface and a bottom surface, a first recess formed adjacent to the top surface and a second recess formed adjacent to the bottom surface, the recesses each having a bottom wall, first and second diaphragm portions closing the respective first and second recesses, a passage extending between the first and second recesses, a motion transfer pin having opposite ends, one end integrally attached to a central part of the first diaphragm portion and the other end integrally attached to a central part of the second diaphragm portion, first and second capacitor plates disposed in at least one recess on a respective diaphragm portion and bottom wall spaced from one another to form a selected gap therebetween, means to electrically energize the capacitor plates and means to compensate for error due to common mode pressure subjected to the first and second diaphragm portions.

5,485,346

ELECTROLYTE FOR DRIVING ELECTROLYTIC CAPACITOR AND THE ELECTROLYTIC CAPACITOR

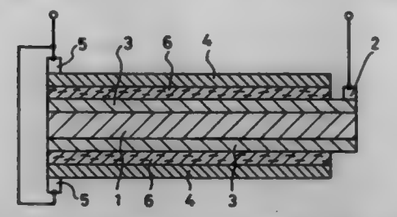
Teruhisa Kanbara, Ikeda, and Yuichiro Trabaki, Kyoto, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 28, 1993, Ser. No. 127,547

Claims priority, application Japan, Sep. 29, 1992, 4-259567; Sep. 29, 1992, 4-259568; Sep. 29, 1992, 4-259569; Sep. 29, 1992, 4-259570

Int. Cl.[6] H01G *9/02*

U.S. Cl. 361—504 **16 Claims**



1. An electrolyte for driving an electrolytic capacitor comprising an organic solvent, at least one ammonium carboxylate, at least one solute selected from the group consisting of quaternary ammonium borates and quaternary ammonium phosphates, and a polymer including a polyether polyol represented by the following formula as a skeletal structure wherein a polyether portion of said polyether polyol is a random copolymer of oxyethylene and oxypropylene:

$$\begin{array}{l} CH_2-O-[(C_2H_4O)l_1-(C_3H_6O)m_1]n_1-R_1 \\ | \\ CH-O-[(C_2H_4O)l_2-(C_3H_6O)m_2]n_2-R_2 \\ | \\ CH_2-O-[(C_2H_4O)l_3-(C_3H_6O)m_3]n_3-R_3 \end{array}$$

where,

l_1, l_2, l_3, m_1, m_2, m_3, n_1, n_2 and n_3 are positive integers, and $2 \leqq (l_1 + m_1) \times n_1 \leqq 50$, $2 \leqq (l_2 + m_2) \times n_2 \leqq 50$ and $2 \leqq (l_3 + m_3) \times n_3 \leqq 50$, and

R_1, R_2 and R_3 independently represents a hydrogen atom, which may be substituted one another by the same or different isocyanate residue or acrylic residue, wherein each end of the isocyanate residue or acrylic residue may be three-dimensionally linked.

5,485,347

RIDING SITUATION GUIDING MANAGEMENT SYSTEM

Okimi Miura, Sagamihara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 15, 1994, Ser. No. 260,984

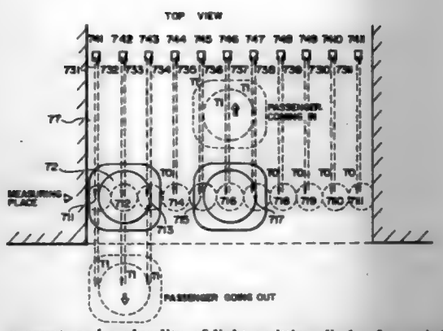
Claims priority, application Japan, Jun. 28, 1993, 5-156678

Int. Cl.[6] B61B *1/00*; E01F *1/00*; G06M *7/00*;9/00

U.S. Cl. 364—557 **14 Claims**

1. A situation guiding management system comprising:

a plurality of counting means for counting a number of persons entering and a number of persons exiting each of a plurality of enclosed areas, said plurality of counting means including a plurality of temperature sensors linearly arranged for sensing a temperature change, in respective portions of said enclosed areas, sensing pattern recognition means for determining, responsive to outputs of said temperature sensors, a number of persons entering and exiting each of the enclosed areas, photosensors for determining whether said persons entering and exiting said each of said plurality of enclosed areas are entering or exiting, an up/down counter connected to the pattern recognition means and the photosensors for accumulatively counting up and down the number of persons entering and exiting each of the plurality of enclosed areas to generate



a count, and a plurality of light emitting diodes for emitting light into respective ones of said portions of said enclosed areas so that when one of the plurality of persons is in one of the areas, said one of the plurality of persons reflects said light from a respective one of the plurality of light emitting diodes to a respective one of the photosensors;

transmission means for receiving the count from the plurality of counting means and transmitting the count to at least one waiting area; and

broadcasting means, arranged in the at least one waiting area, for receiving the count and analyzing the count from the transmission means, to broadcast information indicating a current crowding situation in each of the plurality of enclosed areas.

5,485,348

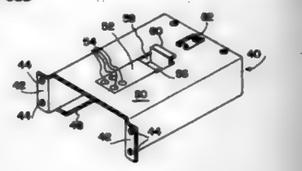
MOUNTING ASSEMBLY FOR COMPUTER FLOPPY DRIVE REQUIRING NO TOOL FOR REMOVAL FROM COMPUTER

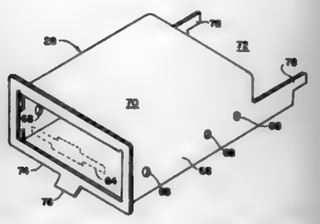
Donald L. Oros, Solon, Ohio, assignor to Elsag International N.V., Netherlands

Filed Jan. 24, 1994, Ser. No. 185,196

Int. Cl.[6] G06F *1/16*; H05K *7/14*; G12B *9/04*

U.S. Cl. 361—685 **12 Claims**





1. A floppy drive mounting assembly for a computer allowing the insertion and removal of same from the computer by an operator without the use of tools comprising:

a computer;

a front panel having an opening therein and being fixably mounted to a face of said computer;

a slide casing assembly located proximately to the opening of said front panel;

a drive retaining assembly for affixing the floppy drive thereto so as to allow it to be inserted through the opening of said front panel into said slide casing assembly by sliding there along;

pressure means for retaining said drive retaining assembly within said slide casing assembly whenever said drive retaining assembly is slid into said slide casing assembly by the operator while allowing the drive retaining assembly to be removed by the operator without the use of any tools; and

floppy drive door cover means for covering the floppy drive in one position and being slidable into said front panel opening to press against said pressure means in a second position with a part of said door cover means extending out from said front panel while exposing the floppy drive.

5,485,349

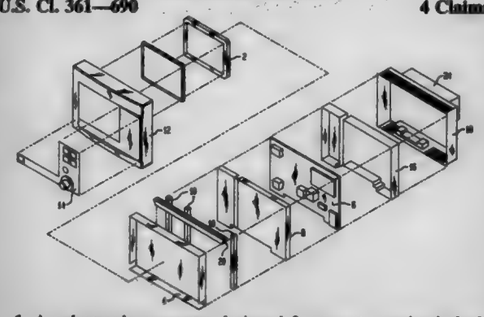
HEAT-DISSIPATING ELECTRONIC APPARATUS FOR USE AT A PATIENT'S BEDSIDE

Cliff Kelly, Windham, N.H.; Helen C. Crouse, Waltham, and Per Hoel, Magnolia, both of Mass., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Jun. 3, 1994, Ser. No. 253,643

Int. Cl.[6] H05H *7/20*

U.S. Cl. 361—690 **4 Claims**



1. An electronic apparatus designed for use at a patient's bedside, comprising:

a chimney-shaped heat sink having sides and open top and bottom ends;

electronic components thermally connected to at least one side of the heat sink;

a generally rectangular housing having a top, a bottom and sides surrounding and enclosing the components and the sides of the heat sink, the housing having openings in said top and said bottom, said openings mating with the top and bottom ends of the heat sink; and

a funnel positioned in an abutting manner between the open top end of said heat sink and the top of said housing so that said funnel directs the passage of fluids accidentally spilled on the top of said housing, through the open top and bottom ends of said heat sink and out of the bottom of said housing via the mating openings in said housing.

5,485,350

COOLED ELECTRONIC HOUSING

Franz Hecht, Herzogenaurach; Berad Kurze, Erlangen; Mona Hentschel, Weisendorf; Volker Schinn, Hallerndorf; Thomas Weichselbaum, Nürnberg, and Hans-Werner Kranz, Baiersdorf, all of, Germany, assignors to Siemens Aktiengesellschaft, München, Germany

Filed Nov. 18, 1994, Ser. No. 342,185

Claims priority, application Germany, Nov. 26, 1993, 43 40 244.5

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—692 **18 Claims**

1. A die cast housing to hold a control device that is equipped with heat-producing components, comprising

a side wall;

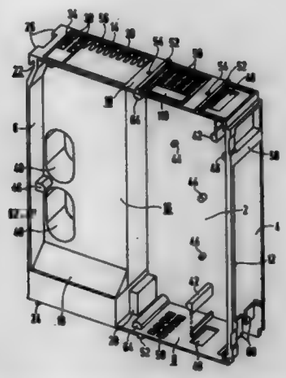
a rear wall;

a bottom;

a cover;

a front strut;

a cooling element;



an air guide device coupled to said cooling element;

a cover plate; and

a front cover;

wherein the cooling element includes cooling ribs that run parallel to said rear wall, end in the plane of said side wall and are covered with a bulkhead plate, said cooling ribs forming cooling channels that are open on a frontal side and begin at the air guide device connected with the bottom, and end at the cover;

wherein said cover and said bottom are each provided with perforations in the region of the front housing half for removing heat from this housing half and an opening to pass through connection lines; and

wherein said front strut between the bottom and the cover is structured as a lateral frame part for the cover plate which covers a lateral access opening of the housing in removable manner and for the front cover which can close off the one front-side opening of the housing.

5,485,351

SOCKET ASSEMBLY FOR INTEGRATED CIRCUIT CHIP PACKAGE

Albert N. Hopfer, Park Ridge, and Edward M. Allard, Des Plaines, both of Ill., assignors to Labinal Components and Systems, Inc., Elk Grove Village, Ill.

Continuation-in-part of Ser. No. 871,586, Apr. 20, 1992, Pat. No. 5,282,111, which is a continuation of Ser. No. 499,025, Mar. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 364,343, Jun. 9, 1989, abandoned. This application Jul. 31, 1992, Ser. No. 923,849

Int. Cl.[6] H05K *7/20*

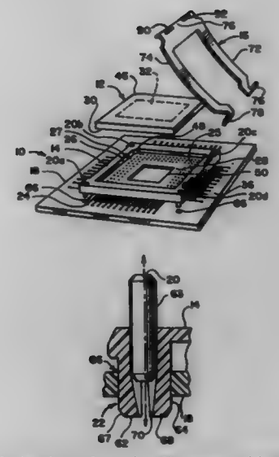
U.S. Cl. 361—704 **94 Claims**

1. A socket assembly for providing an electrical and mechanical connection between an integrated circuit chip package and a circuit board having at least one aperture formed therein, the integrated circuit chip package and circuit board each provided with a plurality of electrical contacts, said socket assembly comprising:

a socket body having a first mounting surface to be disposed toward such a circuit board on which said socket assembly is to be mounted, a second mounting surface opposite said first mounting surface for receiving such an integrated circuit chip package, and an expandable member extending from said first mounting surface for fitting into said aperture in such circuit board and of hollow configuration having an inner surface; and

a post element having an exterior surface and being retentively engaged in said expandable member;

said outer surface of said post element and said inner surface of said expandable member being of a complimentary configurations to effect expansion of said expandable member into fixed engagement relation with said circuit board upon forcible axial movement of such post element in said expandable member to orient the plurality of electrical contacts of the integrated circuit package in alignment with the plurality of electrical contacts of the circuit board.



5,485,352

ELEMENT JOINING PAD FOR SEMICONDUCTOR DEVICE MOUNTING BOARD

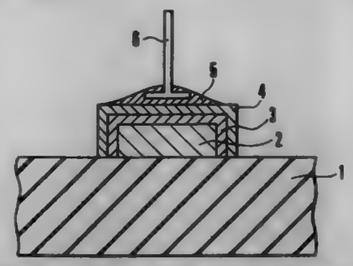
Akinobu Shibuya, and Mitsuru Kimura, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Dec. 16, 1994, Ser. No. 358,196

Claims priority, application Japan, Dec. 27, 1993, 5-330278

Int. Cl.[6] H05K *1/09*

U.S. Cl. 361—771 **9 Claims**



1. An element joining pad for a semiconductor device mounting board, comprising:

a thick-film metalized layer selectively formed on a low-temperature sintered board and consisting of one of a metal and an alloy which can be sintered at not less than 500° C. and not more than 1,200° C.;

a barrier layer formed on said thick-film metalized layer and constituted by one of a Rh plating layer and a Ru plating layer; and

a Ni plating layer formed on said barrier layer.

5,485,353

RETAINER ASSEMBLY

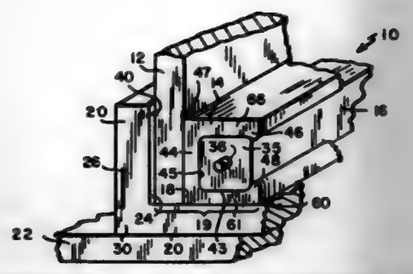
William P. Hayes, Santa Ana, and John P. Dreher, Mura Loma, both of Calif., assignors to Eg&G Birtcher, Inc., El Monte, Calif.

Continuation of Ser. No. 23,613, Feb. 26, 1993, abandoned. This application Jul. 18, 1994, Ser. No. 276,542

Int. Cl.[6] H05K *7/14*; *7/20*

U.S. Cl. 361—802 **17 Claims**

6. A construction for mounting circuit boards comprising:



a housing having a slot for each of the circuit boards, each of said slots having a base wall and a pair of opposed side walls; and

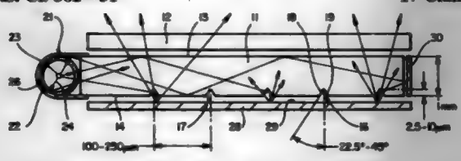
an assembly mounted in each of said slots in which a board is to be mounted, said assembly including a stiff elongated bar having a U-shaped cross-section, the bar having a base wall of selected width with side walls extending from opposite ends of the base wall at substantially perpendicular angles, the extent of each side wall being at least a significant fraction of the width of the base wall, the base wall and side walls of said bar defining a channel, and a pressure applying retainer at least a significant portion of which is mounted in said channel and oriented to apply pressure to the base wall of the bar, an assembly, when mounted in a corresponding slot, being positioned between a circuit board mounted in the slot and a side wall of the slot and being oriented with the base wall of the bar facing the circuit board.

5,485,354

FLAT PANEL DISPLAY LIGHTING SYSTEM

Werner W. Ciupke; William F. Redmond, and Richard E. DuNah, all of Sonoma County, Calif., assignors to Precision Lamp, Inc., Cotati, Calif.

Filed Sep. 9, 1993, Ser. No. 119,706
Int. Cl.[6] F21V *8/00*
U.S. Cl. 362—31 **17 Claims**



1. A thin, large-area lighting system comprising:

a thin, transparent, rectangular light guide having first and second parallel major surfaces, said first major surface having a plurality of v-shaped parallel microgrooves extending across said first major surface and a plurality of planar surface portions extending between said microgrooves, said microgrooves having a longitudinal axis;

means for introducing light into said light guide from one edge in a direction generally perpendicular to said longitudinal axis of said microgrooves,

said microgrooves each having a pair of adjacent surfaces which form an angle with respect to the first major surface which, when taken together with the index of refraction of the transparent light guide material, externally reflect light through said first major surface, one of said adjacent surfaces being oriented to transmit substantially all the light within said light guide striking said one of said adjacent surfaces outwardly through said one of said adjacent surfaces and across said microgroove toward the other of said adjacent surfaces, said other of said adjacent surfaces being oriented to externally reflect the transmitted light away from the first major surface,

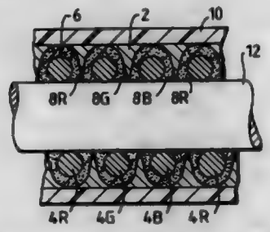
said planar surface portions being configured for internally reflecting light striking said planar surface portions toward said second major surface for transmitting light along said light guide.

5,485,355

ELECTROLUMINESCENT LIGHT SOURCES

Moses Voskoboinik; Israel Baumberg, both of Maalch Adumim, and Joseph S. Bodenheimer, Jerusalem, all of, Israel, assignors to Elam-Electroluminescent Industries Ltd., Jerusalem, Israel

Filed Dec. 6, 1993, Ser. No. 163,340
Claims priority, application Israel, Dec. 10, 1992, 104052
Int. Cl.[6] H05B *33/02*
U.S. Cl. 362—84 **2 Claims**



1. A cable-like electroluminescent light source, comprising:

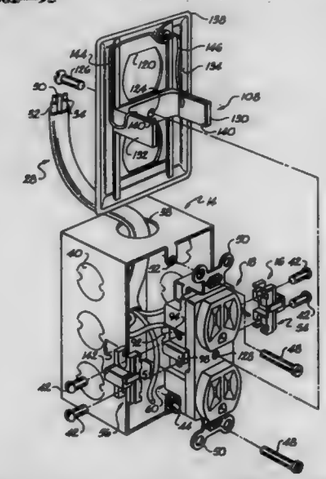
a cable-like, flexible and shapeable structure including a dielectric core, a first electrode and three further electrodes wound about said dielectric core and forming a triple helix, said first and each of said three electrodes being mutually disposed in such a way as to create between them an electric field when a voltage is applied to them, at least one of said electrodes being electrically insulated, each of said three electrodes being coated with a different electroluminophor powder, emitting, when excited, light of a different color, controllable with respect to hue, saturation and brightness, and a transparent polymer sheath encasing said electrodes and said electroluminophors.

5,485,356

RECEPTACLE POWER INDICATOR

Duc H. Nguyen, 109 Wake Robin Cir., Spartanburg, S.C. 29301

Filed Nov. 14, 1994, Ser. No. 337,766
Int. Cl.[6] F21V *33/00*
U.S. Cl. 362—95 **17 Claims**



1. An indicator for use in connection with an electrical receptacle to indicate electrical energization of the receptacle, the receptacle having first and second sides and at least one terminal connector on each of the first and second sides for receiving an electrical wire, the indicator comprising:

a first contact member connectable to the terminal connector on the first side of the receptacle;

a second contact member connectable to the terminal connector on the second side of the receptacle;

a cover plate connectable to the receptacle, the cover plate having a front side and a back side opposite said front side;

cover plate contact means connected to said cover plate for contacting at least one of said first and second contact members upon connection of said cover plate to the receptacle; and

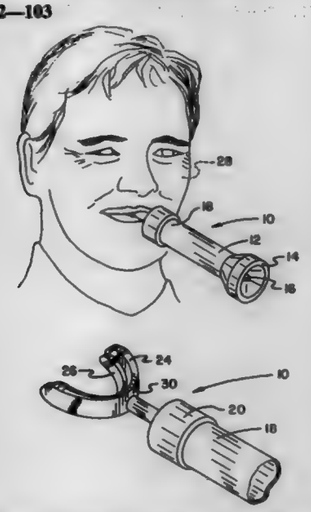
annunciator means connected to said cover plate contact means for annunciating energization of the receptacle upon electrical current being supplied to the receptacle, when said cover plate contact means contacts at least one of said first and second contact members.

5,485,357

FLASHLIGHT WITH MOUTH SUPPORT AND ASSOCIATED CONTROLS

Gregory C. Zolninger, 7128 Hull Rd., Cherryville, N.C. 28021

Filed Jun. 30, 1994, Ser. No. 269,144
Int. Cl.[6] F21L *15/08*
U.S. Cl. 362—103 **1 Claim**



1. A new and improved flashlight with mouth support and associated controls, the apparatus comprising, in combination:

a flashlight having a forward end with a bulb, a rearward end with a separable cap formed with an inwardly extending spherical recess and an intermediate cylindrical extent between the forward end and rearward end, the separable cap being separable from the remainder of the flashlight;

a mouthpiece fabricated of an elastomeric material with an arcuate inner surface capable of being supported by a user's teeth an enlarged external surface capable of being positioned between the teeth and lips of the user an intermediate portion connecting the inner surface and the external surface and a central post extending forwardly thereof, the central post terminating in a ball adapted to be received within the spherical recess in the separable cap for allowing rotational movement of the cap and flashlight with respect to the mouthpiece;

electrical coupling components between the mouthpiece and the flashlight including a central axial aperture extending from the flashlight to the cap and to an intermediate section of the mouthpiece with electrical wires extending therethrough; and

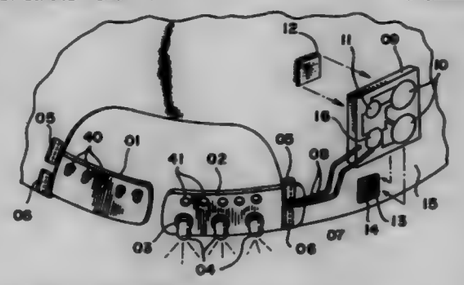
a contact switch located within the intermediate portion of the mouthpiece, the contact switch having electrically conductive plates normally out of contact but positionable into contact with each other to close the circuit and light the bulb.

5,485,358

UNIVERSAL L.E.D. SAFETY LIGHT FOR HEAD-WEAR

Tseng L. Chien, P.O. Box 56-104, Taipei, Taiwan, Prov. of China

Filed May 18, 1994, Ser. No. 245,019
Int. Cl.[6] F21L *15/14*
U.S. Cl. 362—106 **5 Claims**



1. In head-wear, comprising:

an adjustable-length belt made up of two straps secured to the head-wear, a first of said straps includes a plurality of holes and a second of said straps includes a plurality of projections arranged to fit within the holes to secure said first of the straps to the second of said straps, the relative position of the straps secured together determining a size of the head-wear, the improvement comprising:

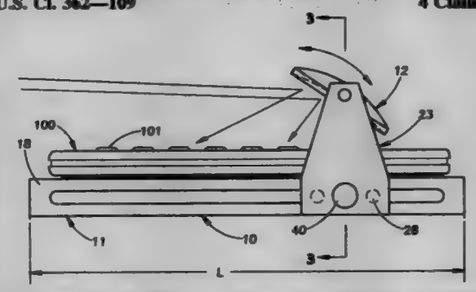
a lighting arrangement made up of at least one LED mounted in at least one LED mounting hole in one of the first and second straps, wherein said one of the first and second straps is secured to the head-wear by stitches at one end of the strap, and wherein lead wires for the LED extended through a channel in the stitches to a circuit board mounted inside the head-wear.

5,485,359

REMOTE CONTROL HOLDER AND ILLUMINATOR

William J. Galvin, 7 E. 10th St., Brooklyn, N.Y. 11218

Filed Apr. 7, 1994, Ser. No. 224,678
Int. Cl.[6] F22V *33/00*
U.S. Cl. 362—109 **4 Claims**



1. A remote control holder and illumination device, for a remote control having a keypad, comprising:

(a) a base comprising:

at least a guide passage in the base; including an upper surface, a lower surface and a plurality of sides; and

(b) an illumination member comprising:

at least a support frame attached to the base; through at least one actuation member

a mirror housing connected to the support frame; and

a mirror attached to the mirror housing; and

(c) a mirror housing adjustment member comprising:

a guide tab, connected to the support frame, traversing the guide passage; and

said actuation member, slidingly engaged within the guide passage, extending through the guide passage and connected to the support frame.

5,485,360

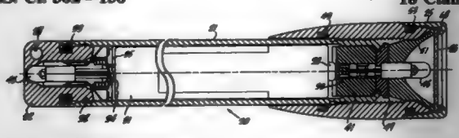
MINIATURE FLASHLIGHT

Anthony Maglica, Anaheim, Calif., assignor to MAG Instrument, Inc., Ontario, Canada

Continuation of Ser. No. 49,525, Apr. 20, 1993, Pat. No. 5,349,506, which is a division of Ser. No. 866,422, Apr. 10, 1992, Pat. No. 5,207,502, which is a continuation of Ser. No. 719,156, Jun. 21, 1991, Pat. No. 5,113,326, which is a continuation-in-part of Ser. No. 553,977, Jul. 16, 1990, abandoned, which is a continuation of Ser. No. 356,361, May 23, 1989, Pat. No. 4,942,505, which is a continuation of Ser. No. 222,378, Jul. 19, 1988, Pat. No. 4,899,265, which is a continuation of Ser. No. 34,918, Apr. 6, 1987, abandoned, which is a continuation of Ser. No. 828,729, Feb. 11, 1986, Pat. No. 4,658,336, which is a continuation of Ser. No. 648,032, Sep. 6, 1984, Pat. No. 4,577,263. This application Sep. 19, 1994, Ser. No. 308,356

Int. Cl.[6] F21V *31/00*

U.S. Cl. 362—158 **18 Claims**



1. A flashlight comprising:

a battery housing having a first opening;

a lamp bulb;

an electrical circuit extending from said battery housing to said lamp bulb;

a lens positioned adjacent said lamp bulb;

a reflector positioned about said lamp bulb to reflect light from said lamp bulb through said lens;

a head assembly containing a circumferential channel and enclosing said first opening of said battery housing forming a closed internal volume having a passageway extending from said closed internal volume through said circumferential channel to atmosphere; and

a one-way valve in said circumferential channel oriented to permit gas flow through said passageway from said closed internal volume to atmosphere.

5,485,361

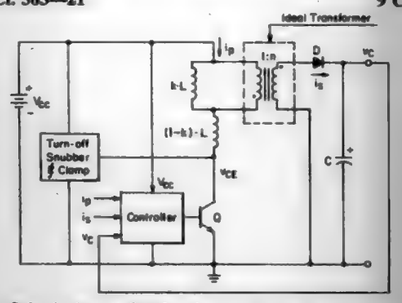
FLYBACK CHARGING WITH CURRENT MODE CONTROLLED FLYBACK CONVERTER

Nathan O. Sokal, Design Automation, Inc., 809 Massachusetts Ave., Lexington, Mass. 02173-3992

Continuation of Ser. No. 911,270, Jul. 7, 1992, abandoned, which is a continuation of Ser. No. 667,462, Mar. 11, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 461,127

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—21 **9 Claims**



1. A flyback charger for charging an energy-storage capacitor to a predetermined voltage within a predetermined time interval from an energy source providing source voltage, apparatus comprising,

a flyback transformer having at least a primary winding receiving said source voltage and a secondary winding,

a controller for causing the energy-storage pulses of current in the transformer primary winding and the energy-delivery pulses of current in the transformer secondary winding to be nearly flat-topped,

said controller comprising,

a switching circuit connected to the primary winding,

a limit-current-commanding current-mode controller that controls the switching of the switching circuit between the on and off conditions delivering and interrupting respectively current to the transformer primary winding in response to the current flowing in at least one transformer winding to provide a sequence of short-duration nearly flat-topped current pulses to the primary winding interlaced with a sequence of short-duration nearly flat-topped delivery pulses from the secondary winding of prescribed amplitude to provide charge for charging said energy-storage capacitor to said predetermined voltage within said predetermined time interval from said energy source,

wherein said limit-current-commanding current-mode controller is a valley-current-commanding-mode controller which controls the duration of the switching circuit off interval in response to the current in the secondary winding,

and further comprising a timing circuit characterized by circuit components with parameter values that establish a fixed duration for the switching circuit on interval.

5,485,362

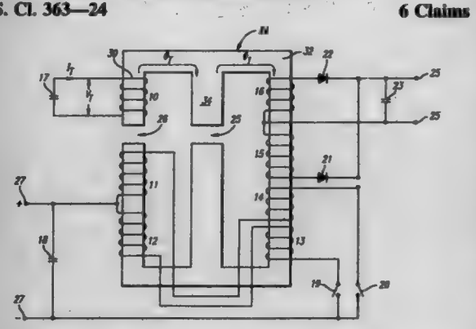
RESONANT POWER CONVERTER FOR CHANGING THE MAGNITUDE OF A DC VOLTAGE

Michael P. Archer, Westlake Village, Calif., assignor to EOS Corporation, Camarillo, Calif.

Filed Sep. 8, 1993, Ser. No. 117,818

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—24 **6 Claims**



1. A resonant power converter for changing the magnitude of a DC voltage, comprising:

a transformer having a core with at least three legs utilizing three different flux paths, and primary winding means on a first of said legs for effecting alternate flux flow in opposite directions through said core,

control switch means for effecting alternate pulses of current flow through said primary winding means to effectuate said alternate flux flow,

said control switch means and said primary winding means having a predetermined parasitic capacitance with a predetermined delay time between the termination of a given pulse and initiation of the succeeding pulse,

said first leg including a pair of secondary windings oriented to conduct alternately in phase with said alternate flux flow,

there being inherent in said first leg of said transformer a magnetizing inductance, such that the magnetizing current will be great enough to charge said parasitic capacitance in a controlled fashion,

secondary circuit means including said secondary windings and having rectifying means therein for rectifying the currents in said secondary windings,

output circuit means having output terminal means and an output capacitor,

tank circuit means comprising transformer means having control winding means on a second of said legs positioned in the converter to be responsive to the load current, means for applying input voltage to said control winding means,

a tank winding linked magnetically to said control winding means,

and tank capacitor means in parallel with said tank winding.

5,485,363

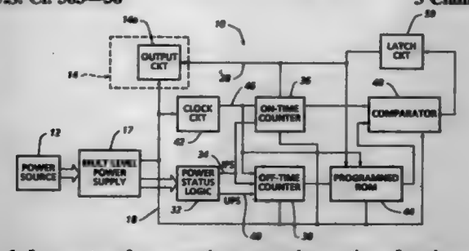
WARM-UP TIME DELAY SYSTEM FOR RELAY CONTROLLED ELECTRICAL POWER SUPPLY

John S. Reitwiesner, 3619 Castle Ter., Silver Spring, Md. 20904

Filed Jun. 25, 1993, Ser. No. 81,749

Int. Cl.[6] H02H *5/04*; F04B *49/00*

U.S. Cl. 363—56 **3 Claims**



1. In a system for preventing powered operation of equipment during a delay interval following interruptions in supply of power to the equipment, timing means for measuring duration of said interruptions in the supply of power, wherein said timing means includes clock means for continuously generating clock signals during the supply of power and during said interruptions thereof, on-time counter means connected to the clock means for producing a restart count of the clock signals in response to restoration of the supply of power and off-time counter means connected to the clock means during said interruptions for limiting the restart count to determine said delay interval and programmed logic means operatively connected to the timing means for varying said delay interval as a function of the duration of the interruptions measured by the timing means.

5,485,364

POWER SUPPLY FOR AN AF SOUND OUTPUT STAGE

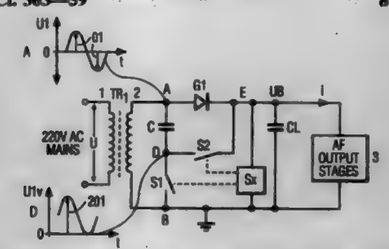
Jaromir Palata, and Jean-Paul Louvel, both of Villingen-Schwenningen, Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

Continuation of Ser. No. 128,621, Sep. 23, 1993, abandoned. This application May 17, 1995, Ser. No. 443,029

Claims priority, application Germany, Sep. 30, 1992, 42 32 867.5

Int. Cl.[6] H02M *7/19*

U.S. Cl. 363—59 **8 Claims**



1. A power supply for an audio power amplifier having an input audio signal subject to dynamic amplitude variation said power supply comprising:

a transformer, having a secondary winding;

a rectifier coupled to said secondary winding;

a capacitor coupled to said rectifier and to said amplifier;

a first supply voltage value developed across said capacitor being coupled to said audio power amplifier: and,

a voltage doubler coupled to said secondary winding having a greater supply voltage value than said first supply voltage value, and being controllably coupled to said amplifier responsive to said dynamic audio signal.

5,485,365

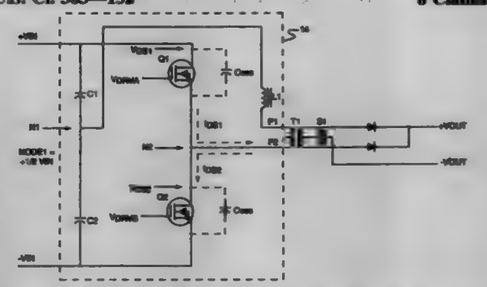
HIGH FREQUENCY, HIGH DENSITY POWER CONVERSION SYSTEM

Dawari D. Dan-Harry, 145 Ward St., #53, Revere, Mass. 02151

Continuation-in-part of Ser. No. 647,865, Jan. 29, 1991, abandoned. This application Apr. 20, 1993, Ser. No. 50,513

Int. Cl.[6] H02M *7/5387*

U.S. Cl. 363—132 **8 Claims**



1. A high-frequency, double-ended, low-loss, high power density power converter, comprising:

three input terminals for receiving voltage input;

first and second transistors connected source-to-drain at a first node in series across the two outer input terminals, each said transistor having an inherent parasitic capacitance;

first and second capacitors connected at a second node in series across the two outer input terminals, the second node comprising the third input terminal;

a low-leakage inductance transformer for coupling power to an output, one side of the transformer primary connected to the first node, said transformer having a leakage inductance of no more than 1 uH so that said leakage inductance has a negligible effect on resonance;

a dedicated inductor connected in series with said transformer primary between the first and second nodes, said inductor and the inherent transistor capacitance thus together forming a resonant energy storage tank on the transformer primary side of the power converter for shifting the voltage input into a sinusoidal waveform, and for transferring power stored in said transistors by reason of the inherent capacitance of said transistors;

wherein said transformer has a magnetizing inductance at least one hundred times greater than the inductance of said dedicated inductor, said transformer thus having a large impedance which causes it to act as an open circuit and thus have a negligible effect on resonance; and

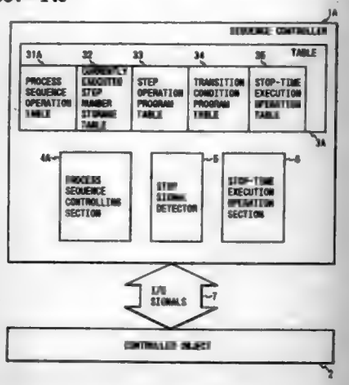
means for switching between said transistors at the resonant frequency of said resonant energy storage tank to provide a sinusoidal output current pulse to the transformer primary at the transistor switching rate and to utilize energy stored in the inherent transistor capacitance.

5,485,366

SEQUENCE CONTROLLER INCLUDING ERROR CORRECTION AND METHOD THEREFOR

Yasunobu Iwata, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 8, 1993, Ser. No. 2,027
Claims priority, application Japan, Jan. 10, 1992, 4-003229
Int. Cl.[6] G05B *11/01*
U.S. Cl. 364—140 **2 Claims**



1. A sequence control system comprising:

a sequence controller for sequence-controlling a controlled object based upon a main sequence control program;

a stop-time operation execution table storing step numbers of steps in said main sequence control program to be executed at a stop time and step numbers of steps in said main sequence control program to be executed at a resumption time, wherein said step numbers for said stop time and said step numbers for said resumption time correspond to step numbers at which a stop is expected to occur in said main sequence control program for controlling the controlled object;

an input signal change detector for detecting a change in an input signal in each process; and

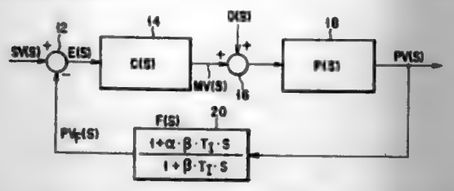
a stop-time operation executer for stopping the sequence control when a change in the input signal is detected, for reading a step number to be executed at said stop time corresponding to a step number at which a stop has occurred from the stop-time operation execution table, for executing a step having the step number read, for reading a step number to be executed at said resumption time, and for resuming execution when the input signal is restored to an original state.

5,485,367

PROCESS CONTROL APPARATUS

Kazuo Hiroi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 132,820, Oct. 7, 1993, abandoned. This application Feb. 7, 1995, Ser. No. 385,365
Claims priority, application Japan, Jan. 8, 1992, 4-270629
Int. Cl.[6] G05B *13/02*
U.S. Cl. 364—160 **10 Claims**



1. A process control apparatus for controlling operation of an object, comprising:

subtractor means for obtaining a deviation between a signal derived from a process value of the object and a set point value;

control arithmetic operation means for calculating a manipulative value by subjecting the deviation to at least a proportional-integral control arithmetic operation;

means for controlling the object in response to a control signal developed by adding the manipulative value and a disturbance and supplying a sum of the manipulative value and the disturbance to the object to control the object; and

filter means, connected between the subtractor means and the process value of the object, for applying a lead/lag time proportional to an integral time of the proportional-integral control arithmetic operation to the process value to produce said signal derived from said process value and supply said signal to said subtractor means in order to improve a set point value following characteristic and a disturbance suppression characteristic, wherein said filter means has a transfer function represented by

$$(1+\alpha \cdot T_I s)/(1+T_I s)$$

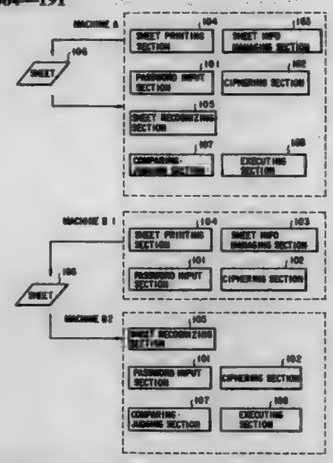
where T_I is an integral, s is a Laplace operator, and α is a coefficient in the range of 1 to 4.

5,485,368

SYSTEM FOR SPECIFYING A DUTY BY MEANS OF A HANDWRITTEN SHEET WITH A CIPHER FUNCTION

Takeshi Ogaki, Tokyo, and Yoshiko Takeda, Yokohama, both of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 21, 1994, Ser. No. 215,356
Claims priority, application Japan, Mar. 25, 1993, 5-067067
Int. Cl.[6] G05B *19/42*
U.S. Cl. 364—191 **5 Claims**



1. An information processing apparatus for executing a plurality of information processing, said apparatus comprising:

means for storing format information which defines contents of instructions to execute at least one of the plurality of information processes;

means for printing the format information stored in the storing means and first code information for judging permission to execute the information processing on a sheet;

means for reading the sheet printed by said printing means for inputting the contents of instructions required to be executed on said information processing apparatus;

means for inputting second code information when said reading means reads the sheet on which the format information is printed by said printing means;

means for collating the first code information printed on the sheet by said printing means with the second code information input by said input means; and

means for permitting the execution of information process corresponding to the contents of instructions printed on the sheet read by said sheet reading means on the basis of the collation result at said collating means,

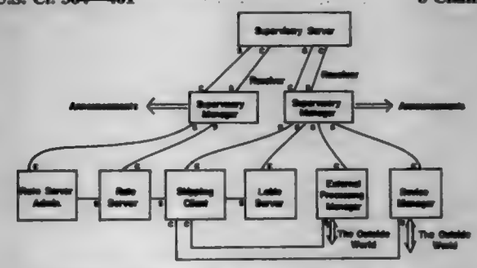
wherein said printing means contains first conversion means for converting said first code information into first ciphered information, second conversion means for converting the first ciphered information converted by the first conversion means into pattern information; and means for printing the pattern information converted by the second conversion means on said sheet.

5,485,369

LOGISTICS SYSTEM FOR AUTOMATING TANSPORTATION OF GOODS

Peter Nicholls; Robert Kinyon; Jeff Skaistis, all of Tulsa; Steve Johnson, Glenpool; Andy Locker, Tulsa; Chris Guzik, Tulsa, and Scott Howard, Tulsa, all of Okla., assignors to TanData Corporation, Tulsa, Okla.

Filed Sep. 28, 1993, Ser. No. 128,358
Int. Cl.[6] G06F *17/60*
U.S. Cl. 364—401 **8 Claims**



1. A logistics management system to facilitate the process of shipping goods by a shipper having a predefined set of shipping requirements via a carrier having a predefined rate structure, comprising:

a multitasking operating system environment for running a plurality of computer processes substantially simultaneously and having interprocess communication means for passing messages between said processes;

a supervisory server running in said operating system environment for providing registration services to connect computer processes to said interprocess communication means;

at least one rate server comprising one of said computer processes running in said operating system environment substantially simultaneously with said supervisory server for providing access to carrier rate structure data and for providing predefined data processing services using said carrier rate structure data in response to a predefined set of request messages, said predefined data processing services including providing response messages based at least in part on said carrier rate structure data;

said rate server having registration means for communicating with said supervisory server to invoke said registration services and to establish a first connection to said interprocess communication means;

at least one client process comprising one of said computer processes running in said operating system environment substantially simultaneously with said supervisory server and substantially simultaneously with said rate server, said client process having user interface means for collecting input information from a user about a desired operation and for providing output information;

said client process having registration means for communicating with said supervisory server to invoke said registration services and to establish a second connection to said interprocess communication means;

said client process further having preprogrammed set of rules reflective of said shipper's predefined set of shipping requirements and having processing means for using said preprogrammed set of rules and at least a portion of said input information to issue request messages to said rate server and to interpret response messages received from said rate server in providing said output information;

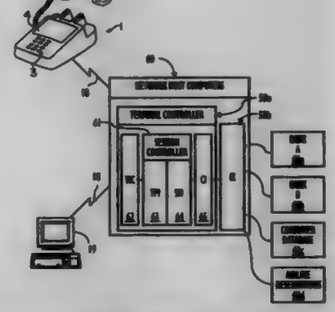
said supervisory server, said rate server and said client process being interoperable through said interprocess communication means (a) to receive said input information from a user via the user interface of said client process, (b) to use said input information to issue a request message to said rate server via said interprocess communication means, (c) to process said issued request message and thereby cause a response message to be generated by said rate server, (d) to send said response message to said client process via said interprocess communication means, and (e) to provide said output information based on said response message.

5,485,370

HOME SERVICES DELIVERY SYSTEM WITH INTELLIGENT TERMINAL EMULATOR

Leslie C. Moes; Carol A. Medine, both of Los Angeles, and William Naylor, Topanga, all of Calif., assignors to Transaction Technology, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 104,931, Aug. 12, 1993, Pat. No. 5,321,840, and Ser. No. 84,319, Jun. 30, 1993, abandoned, which is a continuation of Ser. No. 433,825, Nov. 9, 1989, abandoned, said Ser. No. 104,931is a continuation of Ser. No. 439,739, Nov. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 260,832, Oct. 21, 1988, Pat. No. 5,008,927, and Ser. No. 190,440, May 5, 1988, Pat. No. 4,991,199. This application Aug. 25, 1993, Ser. No. 112,178
Int. Cl.[6] G06F *15/30*
U.S. Cl. 364—408 **22 Claims**



1. A system for enabling a plurality of customers to interact with at least one service provider through a heterogenous plurality of terminals and at least one applications program related to the service provided by the at least one service provider, the system comprising:

a) a heterogenous plurality of terminals;

b) at least one of said terminals consisting of a home terminal having a housing essentially configured as a telephone, said home terminal including:

1) a user input device having means for receiving input from the user and for converting the input into input signals, the input possibly having formatting errors;

2) a packet assembler and disassembler (PAD) element, located within the terminal and in communication with the customer input device, the PAD element including:

i) means for receiving the input signals, for analyzing the input signals in accordance with input formatting rules resident in said PAD which are related to the service provided by the service provider, and for providing local feedback signals in accordance with the analysis; and

ii) means, responsive to the input signals, for forming first packets of information in accordance with first formatting rules and a first communications protocol, and for transmitting the first packets of information which have no formatting errors or fewer formatting errors than the input signals;

3) a display including means for receiving the local feedback signals and for displaying them to the customer and for displaying prompts for controlling the operation of the home terminal;

4) means for generating a signal specifying the terminal being used by the user and

5) telephone electronics;

6) computing means;

7) memory;

8) means to electronically connect and control the user input means, display, PAD, signal generating means, telephone electronics, computing means, and memory, to function as both a standard telephone and a microcomputer and;

9) a modem to connect the home terminal to the host computer via a first telephone network;

c) a terminal controller, located remotely from the terminal, and implemented on at least one computing device having means to identify the terminal being used by the user by the signal generated by the terminal and means to execute the applications program, the terminal controller including:

1) a terminal interface controller including means for managing flow of packets of information into and out of the terminal controller in accordance with the first communications protocol compatible with the terminal being used;

2) means for translating the information in the first packets to a second format and a second communications protocol which are compatible with the service provider, so that the applications program forms commands for output to the service provider in accordance with the customer's input;

3) means for receiving information in the second format and the second communications protocol from the service provider;

4) means for translating the information from the second format and the second communications protocol in accordance with the applications program; and

5) means for causing the terminal interface controller to form second packets in accordance with the first formatting rules and the first communications protocol compatible with the terminal being used;

d) the PAD element further includes means for receiving the second packets and for forming signals in response to content of the second packets; and

e) the display further constitutes means for displaying the signals to the customer in response to the PAD element, the signals reflecting some of the information received from the service provider.

5,485,371

METHOD FOR FORMING ENERGY SUBTRACTION RADIATON IMAGES, AND METHOD AND APPARATUS FOR SMOOTHING RADIATION IMAGES

Wataru Ito, and Kazuo Shimura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 12, 1991, Ser. No. 654,450

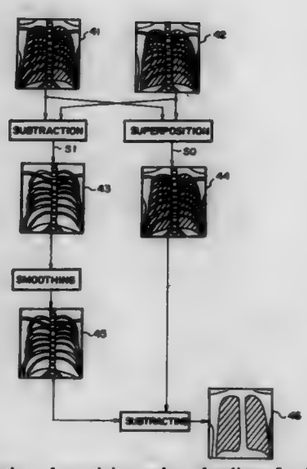
Claims priority, application Japan, Feb. 14, 1990, 2-32765; Feb. 14, 1990, 2-32766; Apr. 10, 1990, 2-94653; Apr. 18, 1990, 2-102019

Int. Cl.[6] H04N *5/32;* **G06F** *15/00*

U.S. Cl. 364—413.23 **48 Claims**

1. A method for forming an energy subtraction image, which comprises the steps of:

i) after a plurality of radiation images of an object are recorded on recording media by radiation, having different energy distributions, having passed through said object, which is constituted of a plurality of tissues exhibiting different levels



of radiation absorptivity and a plurality of original image signals representing the plurality of said radiation images are then detected,

generating a first image signal, which represents a first image primarily composed of patterns of first tissues of said object, from the plurality of said original image signals,

ii) generating a first smoothed image signal by processing said first image signal, said first smoothed image signal representing a first smoothed image in which noise components of said first image have been one of reduced and eliminated, and

iii) generating a second image signal by subtracting said first smoothed image signal from a superposition image signal, which is obtained by carrying out an addition process on the plurality of said original image signals representing the plurality of said radiation images, said second image signal representing a second image primarily composed of patterns of second tissues of said object.

5,485,372

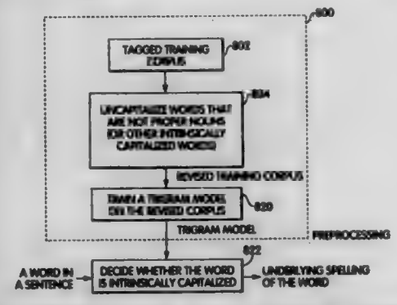
SYSTEM FOR UNDERLYING SPELLING RECOVERY

Andrew R. Golding, Cambridge; Yves Schabes, and Emmanuel Roche, both of Boston, all of Mass., assignors to Mitsubishi Electric Research Laboratories, Inc., Cambridge, Mass.

Filed Jun. 1, 1994, Ser. No. 252,333

Int. Cl.[6] G06F *17/27*

U.S. Cl. 364—419.08 **8 Claims**



1. In a grammar checking system, a system for establishing a correct lexical entry for a word in a sentence to permit unambiguous dictionary lookup of said word by identifying if said word is intrinsically capitalized comprising:

pre-processing means for providing a modified training corpus having words that are not proper nouns or intrinsically capitalized words converted to lower case even if they are at the beginning of a sentence;

means for generating two versions of said sentence in which said word appears in each version in capitalized and uncapitalized form respectively;

means coupled to said modified training corpus for establishing which of said two versions is the more likely; and,

means responsive to said two versions for determining by said more likely version of said sentence if said word is an intrinsically capitalized word.

5,485,373

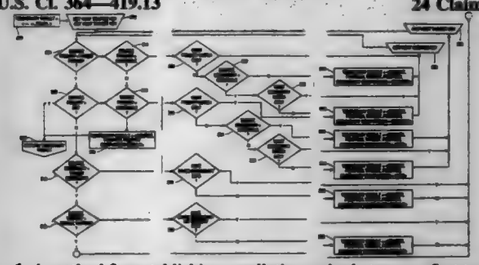
LANGUAGE-SENSITIVE TEXT SEARCHING SYSTEM WITH MODIFIED BOYER-MOORE PROCESS

Mark E. Davis, Cupertino, and Judy Lin, San Jose, both of Calif., assignors to Taligent, Inc., Cupertino, Calif.

Filed Mar. 25, 1993, Ser. No. 36,785

Int. Cl.[6] G06F *17/30*

U.S. Cl. 364—419.13 **24 Claims**



1. A method for establishing a collating order between a first text string and a second text string, the first text string and the second text string consisting of characters belonging to a language which has a predefined character precedence, the method being operable in a computer system having a processor and a memory connected to the processor and containing locations for storing information including the first text string and the second text string and comprising the steps of:

(a) defining at least one ordering value for each character based on the predefined character precedence the language;

(b) storing ordering values for all characters in the memory;

(c) retrieving from the memory pairs of characters including a first character from the first text string and a second character from the second text string;

(d) retrieving an ordering value for the first character and an ordering value for the second character;

(e) performing a comparison of the retrieved ordering values of the characters to determine a difference between the first and the second text string; and

(f) computing a minimum trailing match length value for each position in the second text string.

5,485,374

COMBUSTION-CONDITON DIAGNOSTIC SYSTEM AND METHOD FOR A MULTICYLINDER ENGINE

Yutaka Takaku, Katsuta, and Toshio Ishii, Mito, both of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 2, 1993, Ser. No. 70,226

Claims priority, application Japan, Jun. 3, 1992, 4-142979

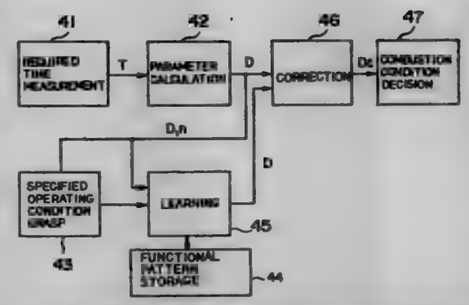
Int. Cl.[6] G06F *17/00;* **F02D** *41/04*

U.S. Cl. 364—424.03 **16 Claims**

1. A combustion-condition diagnostic system which diagnoses combustion conditions of individual cylinders in a multicylinder engine, comprising:

revolution speed measuring means for measuring revolution speeds of individual cylinders of said engine;

parameter evaluating means for producing a combustion condition parameter based on a difference between revolution speeds of a predetermined cylinder and one of the other



cylinders of said engine from revolution speeds of individual cylinders measured by said revolution speed measuring means;

function storage means for storing therein a function indicating a fluctuational error of a combustion condition parameter, said function including said revolution speed as a variable and a coefficient to be specified;

specific operating condition grasping means for determining when a specific operating condition occurs, in which substantially no combustional errors among individual cylinders exists;

learning means for specifying said coefficient of said function stored in said function storage means, based on a revolution speed measured for said predetermined cylinder only at a time when said specific operating condition grasping means determines the existence of said specific operating condition and said combustion condition parameter produced for said predetermined cylinder, and for substituting said measured revolution speed of said predetermined cylinder and said specified coefficient in said function, so as to calculate a fluctuational error of said combustion condition parameter of said predetermined cylinder for said measured revolution speed;

correction means for setting said fluctuational error calculated by said learning means as a corrected value and for subtracting the corrected value from said combustion condition parameter produced by said parameter evaluating means to obtain a result representing a new combustion condition parameter; and

combustion condition determining means for diagnosing a combustion condition of said predetermined cylinder based on a value of said new combustion condition parameter obtained by said correction means.

5,485,375

PROTECTING DEVICE OF ELECTROMOBILE

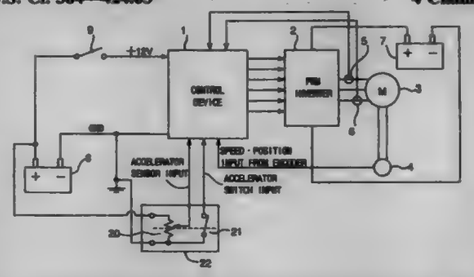
Satoshi Tamaki, Hirakata; Yasufumi Ikkai, Kobe, and Yasuhiro Kondo, Hirakata, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 16, 1994, Ser. No. 307,052

Claims priority, application Japan, Sep. 17, 1993, 5-232079

Int. Cl.[6] B60L *3/04*

U.S. Cl. 364—424.03 **4 Claims**



1. A protecting device for protecting an electromobile having a control device, the control device receiving as inputs a speed

command signal outputted from an accelerator sensor and a present motor speed signal outputted from an encoder, and calculating a torque command current corresponding to a difference between the inputs to thereby control a motor in accordance with the torque command current, said protecting device comprising:

an accelerator switch for generating an output signal which switches states depending on a presence/absence of the speed command signal outputted from the accelerator sensor;

an abnormality detecting means for detecting an abnormal state in which the torque command current assumes a value to rotate the motor while the output signal of said accelerator switch indicates that the speed command signal is absent; and

an abnormality processing means for controlling the motor for a safe operation in response to the detection of the abnormal state by said abnormality detecting means.

5,485,376

STEERING WHEEL POSTURE CONTROL SYSTEM

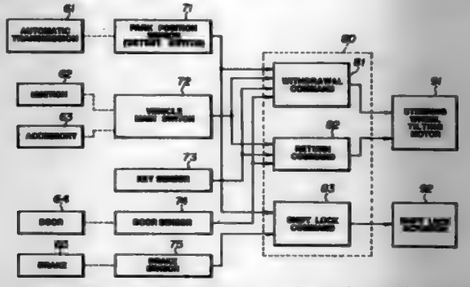
Mitsuru Oike; Masahiro Kusano, and Osamu Sato, all of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 30, 1992, Ser. No. 866,775

Claims priority, application Japan, Jun. 14, 1991, 3-142226; Jun. 14, 1991, 3-142227

Int. Cl.[6] G06F *7/70*; G06G *7/76*

U.S. Cl. 364—424.05 **19 Claims**



1. A control system for changing a position of a steering wheel of a vehicle, said control system comprising:

a drive means for changing a position of the steering wheel of the vehicle in response to a command signal;

a sensing means for sensing a vehicle speed of the vehicle, and a condition of an automatic transmission of the vehicle; and

a controlling means for commanding said drive means to change the position of said steering wheel by producing said command signal to make it easy for a driver of said vehicle to get on and off said vehicle, said controlling means delivering said command signal only when said vehicle speed is equal to or lower than a predetermined speed value, and simultaneously said automatic transmission is in a parking state.

5,485,377

APPARATUS AND METHOD FOR CONTROLLING DAMPING FORCE CHARACTERISTIC OF VEHICULAR SHOCK ABSORBER

Mitsuo Sasaki, and Toshiro Hirai, both of Atsugi City, Japan, assignors to Unisia Jec Corporation, Kanagawa, and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Sep. 12, 1994, Ser. No. 304,229

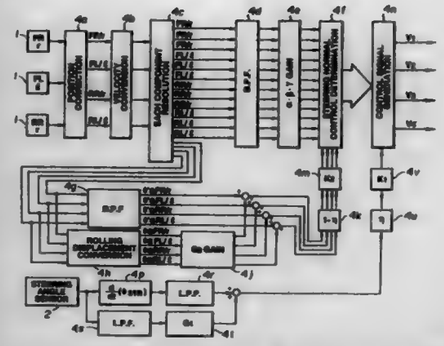
Claims priority, application Japan, Sep. 13, 1993, 5-227085

Int. Cl.[6] B60G *17/015;21/06*

U.S. Cl. 364—424.05 **12 Claims**

1. An apparatus for an automotive vehicle comprising:

a) a plurality of shock absorbers, each shock absorber being interposed between a sprung mass and an unsprung mass and having damping force characteristic changing means for operatively setting a damping force characteristic at either of



extension or compression stroke side with respect to a piston of the shock absorber to a desired damping force characteristic in response to a drive signal input thereto;

b) vertical sprung mass acceleration detecting means for detecting vertical accelerations of the sprung mass at at least right and left positions of a vehicle body with respect to a vehicular forward direction and outputting vertical acceleration signals indicative thereof;

c) vertical sprung mass velocity determining means for determining vertical sprung mass velocity signals corresponding to a position of each of the shock absorbers on the basis of the respective vertical sprung mass acceleration signals;

d) steering state detecting means for detecting a steering angular displacement and a steering angular velocity from a vehicular steering system and outputting signals indicative thereof;

e) controlling means for controlling the damping force characteristic of each of the shock absorbers on the basis of a control signal, said control signal being a synthesization of a bouncing rate signal calculated on the basis of the vertical sprung mass velocity signal corresponding to each shock absorber position and a control gain, a rolling rate signal calculated on the basis of a difference between the vertical sprung mass velocity signals for left and right portions of the vehicle body, a rolling angular displacement signal calculated on the basis of the vertical sprung mass velocity signals for the left and right portions of the vehicle body and a rolling angular gain, the steering angular displacement signal, and the steering angular velocity signal, said controlling means synthesizing said control signal at a predetermined rate of synthesis and converting said control signal into the drive signal; and

f) rate of synthesis setting means for variably setting the predetermined rate of synthesis according to the steering angular velocity signal and steering angular displacement signal.

5,485,378

DEVICE FOR STEERING A VEHICLE WITH CONTROLLED COURSE HOLDING

Uwe Franke, Uhingen; Stefan Hahn, Denkendorf, and Avshalom Suissa, Renningen, all of, Germany, assignors to Daimler-Benz AG, Germany

Filed Sep. 27, 1994, Ser. No. 313,981

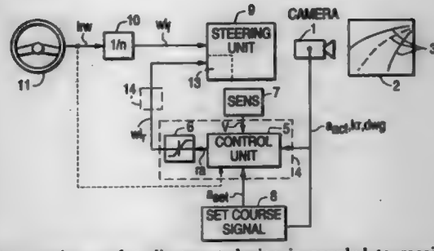
Claims priority, application Germany, Sep. 27, 1993, 43 32 836.9

Int. Cl.[6] G06F *165/00*

U.S. Cl. 364—424.05 **12 Claims**

1. Apparatus for steering and maintaining course of a vehicle, of the type having a position sensor 1 for detecting position of the vehicle in relation to a roadway; a between the position of the vehicle detected by the position sensor and a prescribed set vehicle position, and emits a steering-aid adjustment signal and a steering angle adjustment device 9 for adjusting a steering angle of the vehicle in response to the steering-aid adjustment signal; wherein:

a limiter unit coupled to an output of said steering control device limits a steering angle adjustment requested by the steering control device to predetermined upper and lower limits; and



the steering angle adjustment device is coupled to receive a driver-requested steering angle adjustment signal from a driver operated steering angle input device, and sets a steering angle of the vehicle by combining the steering angle adjustment requested by the steering control device and the steering angle adjustment requested by the driver, whereby an output of said steering angle adjustment device is limited in a predeterminable manner.

5,485,379

METHOD AND SYSTEM FOR DETECTING THE PROPER FUNCTIONING OF AN ABS CONTROL UNIT UTILIZING SUBSTANTIALLY IDENTICAL PROGRAMMED MICROPROCESSORS

Marin T. Kremer, Canton, Mich., assignor to Kelsey Hayes Company, Romulus, Mich.

Filed Jul. 25, 1994, Ser. No. 280,184

Int. Cl.[6] B60T *8/88*; G06F *15/16*

U.S. Cl. 364—426.02 **16 Claims**

1. In a vehicle anti-lock brake system (ABS), a method for detecting the improper functioning of an ABS control unit having first and second microprocessors, the first microprocessor being programmed with a first program to operate on a first program loop and the second microprocessor being programmed with a second program to operate on a second program loop, the method comprising the steps of:

a) generating a wheel speed signal based on a variable angular speed of a wheel of the vehicle;

b) processing the wheel speed signal to obtain a digital representation for the wheel speed signal;

c) utilizing the first programmed microprocessor to calculate a first wheel speed during the first program loop based on the digital representation for the wheel;

d) utilizing the second programmed microprocessor to calculate a second wheel speed during the second program loop also based on the digital representation for the wheel;

e) utilizing each of the first and second programmed microprocessors to subtract the first and second wheels speeds to obtain first and second difference values, respectively, and to compare the first and second difference values with a first predetermined value, respectively;

f) repeating steps a)–e) as long as both the first difference value is greater than the first predetermined value for a first time defined by a first predetermined number of consecutive program loops of the first programmed microprocessor and the second difference value is greater than the first predetermined value for a second time defined by the first predetermined number of consecutive program loops of the second programmed microprocessor;

g) allowing the variable angular speed of the wheel of the vehicle to vary during the first and second times so that the first wheel speed has a different value during the step of repeating and the second wheel speed has a different value during the step of repeating;

h) utilizing the first and second programmed microprocessors to generate first and second output inhibit signals, respectively, based on repeating steps a)–e) for the first and second times, respectively, thereby indicating improper functioning of the ABS control unit wherein the first and second output inhibit signals are utilized to disable the ABS;

i) utilizing one of the programmed microprocessors to compare timing of the first program loop with a first reference time to obtain a first delay value and to compare the first delay value with a first predetermined time value;

j) repeating step i) for a time defined by a second predetermined number of consecutive program loops as long as the first delay value is greater than the first predetermined time value; and

k) utilizing the one of the programmed microprocessors to generate a third output inhibit signal based on repeating step i) for the time defined by the second predetermined number of consecutive program loops, thereby indicating improper functioning of the ABS control unit, wherein the third output inhibit signal is utilized to disable the ABS.

5,485,380

COMBUSTION KNOCK DETECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

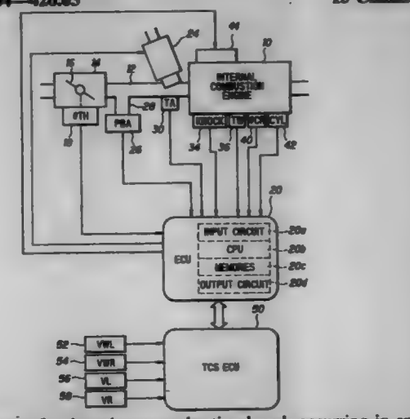
Yoshitaka Takasuka; Yasuyuki Kimura, and Akira Kato, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 981,733, Nov. 25, 1992, abandoned. This application Oct. 28, 1994, Ser. No. 330,616

Claims priority, application Japan, Nov. 29, 1991, 3-340298

Int. Cl.[6] B60T *8/32*; F02P *5/14*; G06F *17/00*

U.S. Cl. 364—426.03 **15 Claims**



1. A system, for detecting a combustion knock occurring in an internal combustion engine, said system comprising:

a knock sensor;

first means for receiving an output of the knock sensor detected within a first range of crankshaft angles during which a combustion knock could occur;

second means for establishing a reference level;

third means for determining occurrence of a combustion knock by comparing the output of the knock sensor detected within the first range of crankshaft angles with the reference level; and

fourth means for detecting a slipping condition of a driven wheel of a vehicle on which the engine is mounted by calculating a ratio between a driven wheel speed and a non-driven wheel

speed and for controlling the slipping condition of the driven wheel in response to the calculated ratio, and

wherein when said fourth means controls the slipping condition of the driven wheel a) said second means for raising the reference level in response to the calculated ratio and b) said third means for determining combustion knock by comparing the output of the knock sensor, detected within the first range of crankshaft angles, with the raised reference level.

5,485,381

NAVIGATION SYSTEM FOR LAND VEHICLES

Frieder Heintz, Ettlingen; Hermann Winner, and Georg Geiser, both of Karlsruhe, all of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE93/00094, § 371 Date Oct. 22, 1993, § 102(e) Date Oct. 22, 1993, PCT Pub. No. WO93/17406, PCT Pub. Date Sep. 2, 1993

PCT Filed Feb. 4, 1993, Ser. No. 140,006

Claims priority, application Germany, Feb. 27, 1992, 42 05 979.8

Int. Cl.[6] G06F *165/00*

U.S. Cl. 364—426.04 **7 Claims**



1. A navigation device for a land vehicle comprising

a) a storage device storing geographical data;

b) sensors for detecting existing travel data;

c) a calculating unit for calculating a safe driving speed of a particular section of road based on said geographical data stored in said storage device and for calculating an actual speed based on said travel data detected by said sensors;

d) a comparison device for comparing said safe driving speed and said actual speed calculated by said calculating unit; and

e) an information delivery system for indicating an unsafe condition if said actual driving speed is not within said safe driving speed,

wherein said geographical data stored in said storage device includes road edges and associated angles which define a section of road between two base points,

wherein a curvature value is determined based on a length of a road edge and its associated angle,

wherein said safe driving speed is determined based on said curvature value, and

wherein said calculating unit further:

(i) determines a virtual stopping point from a current position based on said actual speed and a maximum deceleration value thereby defining a first line between said current position and said virtual stopping point;

ii) determines an actual stopping point based on said actual speed, said maximum deceleration value, and said curvature of a future section of road thereby defining a second line between said current position and said actual stopping point; and

(iii) determines an angle between said first line and said second line.

5,485,382

OXYGEN SENSOR DETERIORATION-DETECTING SYSTEM FOR INTERNAL COMBUSTION ENGINES

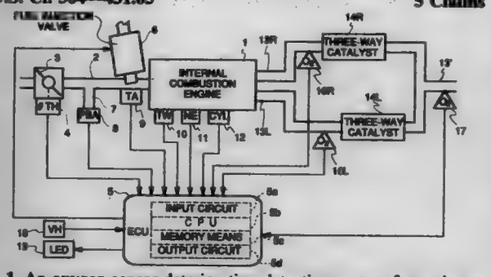
Yasunari Seki; Toshihiko Sato; Naoki Iida, and Yoichi Iwata, all of Wako, Japan, assignors to Honda Giken Kogyo K.K., Tokyo, Japan

Filed Apr. 11, 1994, Ser. No. 226,007

Claims priority, application Japan, Apr. 15, 1993, 5-112329

Int. Cl.[6] G06G *7/70*; G06F *19/00*; F01N *3/00*

U.S. Cl. 364—431.05 **5 Claims**



1. An oxygen sensor deterioration-detecting system for an internal combustion engine having a plurality of groups of cylinders, an exhaust system having a plurality of exhaust passages extending from respective ones of said groups of cylinders, said exhaust passages having downstream end portions thereof cojoined into a confluent portion, and catalytic exhaust gas-purifying means arranged in said exhaust system, and a plurality of upstream oxygen sensors arranged in respective ones of said exhaust passages at locations upstream of said catalytic exhaust gas-purifying means, comprising:

a single downstream oxygen sensor arranged in said confluent portion of said exhaust passages at a location downstream of said catalytic exhaust gas-purifying means, for detecting a mixed air-fuel ratio of exhaust gases emitted from said groups of cylinders;

a plurality of air-fuel ratio control means responsive to outputs from said upstream oxygen sensors and an output from said downstream oxygen sensor, for determining air-fuel ratio control amounts for respective ones of said groups of cylinders, and for controlling air-fuel ratios of air-fuel mixtures supplied into said respective ones of said groups of cylinders by the use of said air-fuel ratio control amounts determined; and

oxygen sensor deterioration-detecting means for detecting deterioration of each of said upstream oxygen sensors, based on an output from said each of said upstream oxygen sensors obtained by operation of a corresponding one of said air-fuel ratio control means.

5,485,383

ATTITUDE AND ORBIT CONTROL SYSTEM (AOCS) COMPRISING A TESTING SYSTEM

Wolfgang Schreiber, Arget, Germany, assignor to Deutsche Aerospace AG, Germany

Filed Mar. 12, 1993, Ser. No. 29,278

Claims priority, application Germany, Mar. 12, 1992, 42 07 826.1

Int. Cl.[6] B64G *1/24*

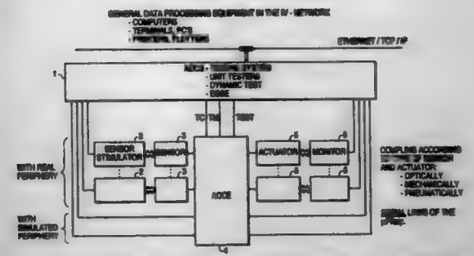
U.S. Cl. 364—434 **15 Claims**

1. A spacecraft attitude and orbit control system comprising:

a plurality of peripheral systems;

an attitude and orbit control electronics unit which controls such peripheral systems, and which comprises a multiplicity of expandable microprocessors which have a uniform configuration, a plurality of connection links, and expandable processing capabilities; and

a uniform standard interface between the attitude and orbit control electronics unit and said peripheral systems, and between the attitude and orbit control electronics unit and a telecommand/telemetry system of said spacecraft;



each of said peripheral systems, being coupled to at least one expandable microprocessor in said attitude and orbit control electronics unit, by a separate direct point-to-point connection; and

expandable microprocessors coupled to said peripheral systems being coupled to each other by respective separate serial point-to-point connection links, whereby separation of potentials of communication links is achieved;

whereby a multiplicity of peripheral systems in a first group of said peripheral systems is coupled in communication with a multiplicity of peripheral systems in a second group of said peripheral systems, by means of busless point-to-point connection of said expandable microcomputers.

5,485,384

ON-BOARD NAVIGATION SYSTEM FOR AN AERIAL CRAFT INCLUDING A SYNTHETIC APERTURE SIDEWAYS LOOKING RADAR

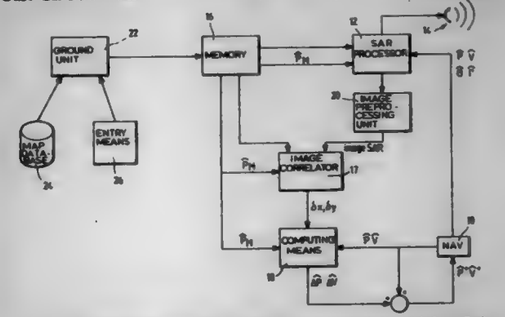
Bruno Falconnet, Verneuil Sur Seine, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Sep. 3, 1993, Ser. No. 116,337

Claims priority, application France, Sep. 3, 1992, 92 10531

Int. Cl.[6] G06F *165/00*

U.S. Cl. 364—449 **6 Claims**



1. An on-board navigation system for an aerial vehicle of the type including an inertial navigation facility (**10**) delivering an estimation of the position and velocity of the vehicle with respect to the terrestrial surface, a SAR synthetic aperture sideways looking radar (**12**) producing a SAR radar image of the territory in the vicinity of the point (Mo) overflown by the vehicle, memory means (**16**) containing a reference map of the territory overflow, means (**17**) for comparison based on alignment of said SAP, radar image produced in flight with the stored reference map and providing an alignment deviation δ in two perpendicular directions and computing means (**18**) linked to the memory means (**16**), to the inertial navigation facility (**10**) and to the means of comparison (**17**), which include filter means of the KALMAN type, and which deliver an inceptor to the KALMAN filter for the estimation of the inertial errors in position and in velocity as a function of the alignment deviation δ, wherein said computing means (**18**) express the alignment deviation as a function of the estimation error vector ΔU associated with the state vector U consisting of the components of the vectors P, V for the position and relative velocity of the vehicle, in accordance with the following equation:

$$\delta = \begin{vmatrix} \delta_x \\ \\ \delta_y \end{vmatrix} = \begin{vmatrix} \Delta X + f(\Delta Z, \Delta V) + \eta_x \\ \\ \Delta Y + g(\Delta Z, \Delta V) + \eta_y \end{vmatrix}$$

in which:

η is the vector of alignment error in two perpendicular directions ηx, ηy;

ΔX and ΔY represent the inertial error in position of the vehicle in two horizontal perpendicular directions;

ΔZ represents the inertial error in altitude of the vehicle;

ΔV represents the vector of inertial errors in velocity of the vehicle; and

f(ΔZ, ΔV) and g(ΔZ, ΔV) are two scalar functions; and wherein the filter is a KALMAN-BUCY filter with gain matrix K such that the estimate Δ^U of the vector of estimation error is equal to Δ^U=K.δ.

5,485,385

MAGNETIC AZIMUTH SENSOR COMPENSATION APPARATUS FOR VEHICLE NAVIGATION SYSTEM AND METHOD THEREOF

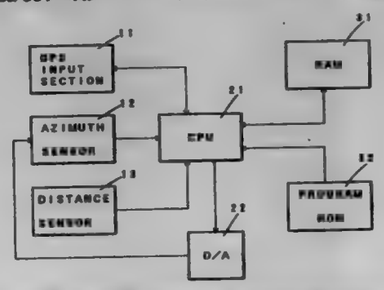
Tatsuya Mitsugi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 173,279, Dec. 27, 1993, abandoned, which is a continuation of Ser. No. 735,284, Jul. 24, 1991, abandoned. This application Apr. 5, 1995, Ser. No. 417,277

Claims priority, application Japan, Sep. 19, 1990, 2-247235

Int. Cl.[6] G01C *17/00*; *21/04*

U.S. Cl. 364—449 **24 Claims**



1. A vehicle-mounted navigation apparatus comprising:

a magnetic azimuth sensor for establishing first azimuth data by detecting magnetic field of the earth;

a distance sensor establishing distance data indicative of a moving distance of a vehicle;

means for calculating first position data indicative of a calculated present position of said vehicle by using said magnetic azimuth sensor and said distance sensor;

means for calculating biased center data of said magnetic azimuth sensor based on said first position data;

a global positioning system establishing second position data indicative of an actual present position of said vehicle;

means for calculating second azimuth data indicating an azimuth of said vehicle by using said biased center data and said second position data established by said global positioning system;

means for comparing said first position data and said second position data; and

means for establishing compensation data for compensating said biased center data based on said second azimuth data and said first position data to obtain new center data of said magnetic azimuth sensor when said first position data and said second position data are not substantially equal.

5,485,386

METHOD AND DEVICE FOR THE CONTROL AND REGULATION OF THE STRETCH OF A RUNNING WEB

Bengt Andreasson, Mörtebolsgatan 15, S-662 00 Åmål, Sweden

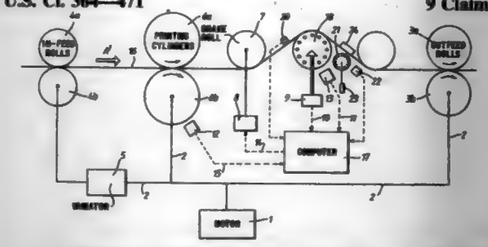
PCT No. PCT/SE91/00849, § 371 Date Jun. 10, 1993, § 102(e) Date Jun. 10, 1993, PCT Pub. No. WO92/10419, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 11, 1991, Ser. No. 74,859

Claims priority, application Sweden, Dec. 12, 1990, 9003961

Int. Cl.[6] B65H *23/00*

U.S. Cl. 364—471 9 Claims



1. A method of controlling the elongation of a running web of printing material in a continuous printing apparatus having at least one infeed roll, at least one printing cylinder and at least one outfeed roll and wherein the running web is tensioned between the infeed roll and the outfeed roll, comprising the steps of:

(1) measuring said tension and a length of the running web between the infeed roll and the outfeed roll;

(2) immediately after step (1), accelerating or decelerating the running web by a selected amount so as to change said tension and length;

(3) measuring said change in tension and the change in length;

(4) determining a value of an elastic elongation of the running web as a function of said change in tension and said change in length; and

(5) increasing or decreasing the tension of the running web as a function of the value of elastic elongation so as to control the elastic elongation of the running web.

5,485,387

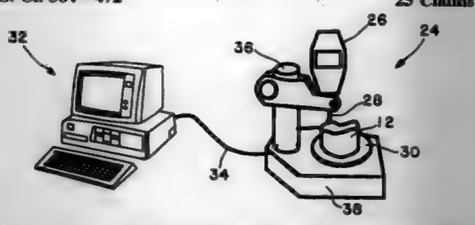
METHOD AND APPARATUS FOR PERFORMING CUP EARING TEST

Eric M. Franke-Polz, Porter, Ind., assignor to National Steel Corporation, Mishawaka, Ind.

Filed Oct. 17, 1994, Ser. No. 325,082

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—472 25 Claims



1. A method of testing a drawn metal cup for earing, wherein the cup includes an upper rim portion having a known minimum number of alternating peaks and valleys thereon, said method comprising the steps of:

(a) using a sensing device to obtain a first data set representing the height of the rim portion of said cup by rotating the cup relative to said sensing device and recording rim height data each time the cup rotates a given number of degrees;

(b) loading said first data set into an information processing device;

(c) generating a second data set which represents the first derivative of said first data set; and

(d) calculating the percent earing for said cup from said first data set by using values in said first data set which correspond to zero-crossings in said second data set;

said step of generating said second data set including:

(e) counting the number of zero-crossings in said second data set; and

(f) if said number of zero-crossings is less than the known minimum number of peaks and valleys, generating a biased first data set by adding a biasing data set thereto, wherein said biasing data set is selected to increase the detectability of the peaks and valleys in said first data set, and regenerating said second data set to represent the first derivative of said biased first data set.

5,485,388

COMPUTERED SYSTEM OF ROTATIVE ACTION FOR THE SYNCHRONIC MOTION OF PRODUCTS IN A MANUFACTURE LINE

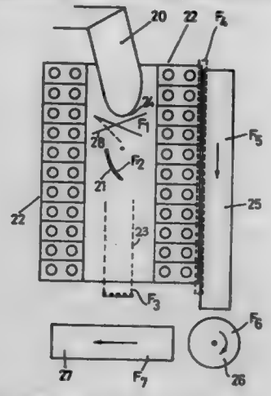
Ivo Dutto, and Alfonso Arechaga, both of Lledio, Spain, assignors to Vidrala S.A., and Avacon, S.A., both of, Spain

Filed Feb. 23, 1994, Ser. No. 200,748

Int. Cl.[6] G06F *15/46*

U.S. Cl. 364—473 10 Claims

1. A computerized rotary drive system for the synchronized



movement of individual elements comprising:

a) a series of unit blocks constituted by a mechanical device (Ti), driven by asynchronous motors (Mi) that carry out a cyclic stage (Fi) for each of them;

b) at least one sensor (15*i*) in each stage (Fi), each said sensor emitting one pulse per cycle, and sending a signal to a CPU (2') programmed with the synchronism equation

$$C_{ts}^{EFi} - C_{ts}^{EFj} = C_{ti}^{EFi} - C_{ti}^{EFj} = D_{ts}^{ij};$$

wherein:

ti=any instant

ts=instant of synchronism

C_{ts}^{EFi} and C_{ti}^{EFi}=cumulative quantity of individual elements conveyed in stage Fi at instant ts and at instant ti respectively

C_{ts}^{EFj} and C_{ti}^{EFj}=cumulative quantity of individual elements conveyed in stage Fj at instant ts and at instant ti respectively

D_{ts}^{ij}=difference in individual elements conveyed between stages Fi and Fj at instant ts said CPU calculating the real difference D_{ti}^{ij} in individual elements conveyed between any two stages (Fi) (Fj) at any instant (ti) and by comparison with the difference D_{ts}^{ij} calculating a frequency variation (fi) that orders the frequency variator (Vi) to act on the corresponding asynchronous motor (Mi) and modify its operation to attain

the result that the real difference (D_{ti}^{ij}) and synchronism difference (D_{ts}^{ij}) will tend to equality.

5,485,389

MANUAL FEEDING METHOD FOR ROBOTS

Tomoyuki Terada, and Hirotsugu Kaihori, both of Oshino, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP93/00787, § 371 Date Feb. 14, 1994, § 102(e) Date Feb. 14, 1994, PCT Pub. No. WO93/25356, PCT Pub. Date Dec. 23, 1993

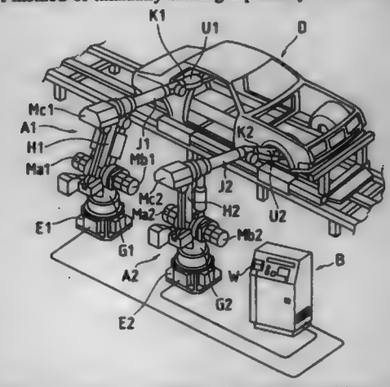
PCT Filed Jun. 11, 1993, Ser. No. 193,210

Claims priority, application Japan, Jun. 17, 1992, 4-181576

Int. Cl.[6] G05B *19/4061;* G06F *19/00*

U.S. Cl. 364—474.2 9 Claims

1. A method of manually feeding a plurality of robots arranged



at positions having a possibility of interfering with one another, said method comprising the steps of:

(a) automatically finding the shortest distance between one robot of said plurality of robots, for which a manual feed command is inputted by an operator, and the other robots of said plurality of robots based on current positions and postures of said plurality of robots;

(b) setting a manual feed rate lower as said shortest distance decreases; and

(c) performing a manual feed of the one robot at said manual feed rate set in said step (b).

5,485,390

INDUCTIVE-DEDUCTIVE PROCESS DESIGN FOR MACHINED PARTS

Steven R. LeClair, Spring Valley; Yoh-han Pao, Cleveland Heights, both of Ohio; Timothy E. Westhoven, Huntington Beach, Calif.; Hilmi N. Al-Kamhawi, Columbus, Ohio; C. L. Philip Chen; Allen G. Jackson, both of Kettering, Ohio, and Adel C. Chemaly, Cincinnati, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 30, 1993, Ser. No. 159,968

Int. Cl.[6] G06F *19/00*

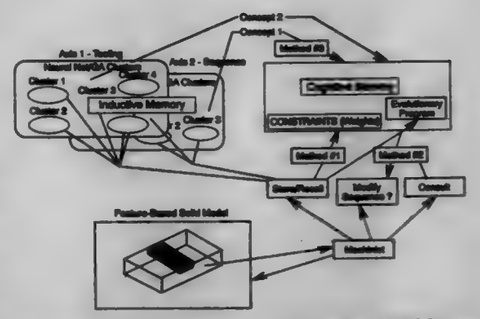
U.S. Cl. 364—474.24 6 Claims

1. A computer aided design system for determining a process design of machining a part based on given features including geometric features, wherein the system comprises:

an Episodal Associative Memory (EAM) which includes means including a genetic algorithm for self-organizing designs;

a cognitive memory;

means for producing a model of said part which includes a Feature-Based Design Environment (FBDE) for creating, manipulating, and editing a model of the part based on said given features;



means for determining a setup sequence using said EAM, means for automatically generating a fixture configuration for each setup;

means for automatically generating a feature sequence which depends on the setup sequence using said EAM;

means for determining an operation sequence using said EAM;

wherein the cognitive memory includes means for modifying one or more of the setup sequence, the feature sequence, and operation sequence, including means for comparing previously provided and updated sequences to update weights of the cognitive memory, the resultant process being stored and clustered in the cognitive memory for future retrieval;

means for concept generation to identify new knowledge regarding the process design.

5,485,391

APPARATUS AND METHOD FOR ENSURING PROPER MACHINING OF A WORKSHEET

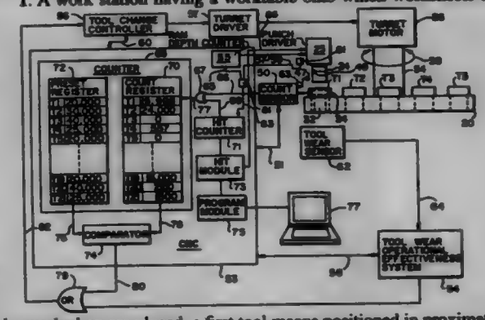
Mikko Lindstrom, Streamwood, Ill., assignor to Finn-Power International, Inc., Schaumburg, Ill.

Continuation of Ser. No. 773,317, Oct. 10, 1991, abandoned. This application Mar. 23, 1994, Ser. No. 216,364

Int. Cl.[6] G05B *19/18*

U.S. Cl. 364—474.17 46 Claims

1. A work station having a worktable onto which worksheets to



be worked on are placed, a first tool means positioned in proximate relation to said work station for performing work on successive ones of said worksheets at a work location, apparatus for ensuring each one of said worksheets is not worked on by an operationally ineffective tool means, comprising:

at least one additional tool means positioned relative to said work station and movable to said work location for replacing said first tool means;

means for generating hit signals to operate said first tool means;

means for counting each hit signal output from said hit signal generating means;

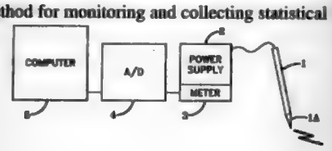
means associated with said work station for automatically replacing said first tool means with said additional tool means at said work location when the number of hit signals output from said hit signal generating means to operate said first tool means, as counted by said counting means, reaches a predetermined number.

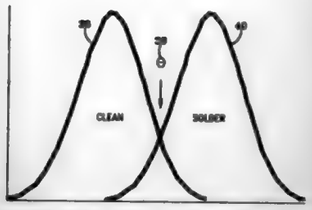
5,485,392
MANUAL SOLDERING PROCESS MONITORING SYSTEM

Michael D. Frederickson; Stephen T. Kertis, both of Indianapolis; Joel A. Mearig, McCordsville; Alex E. Cragoe, Indianapolis, and Frank Carpenter, Edinburgh, all of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 12, 1994, Ser. No. 304,335
Int. Cl.[6] H05B *1/02*
U.S. Cl. 364—477 **14 Claims**

1. A method for monitoring and collecting statistical information





on soldering operations in a soldering system having

a soldering means having a means for monitoring analog heat flow,

a means for converting said analog heat flow into digital temperature data points, said digital temperature data points having a point at they begin to decay and a point at which they begin to recover, connected to said means for monitoring analog heat flow, and

a computing means having a memory and being operatively connected to said means for converting analog heat flow, said method comprising the steps of:

reading the digital temperature data points into the memory of the computing means; and

smoothing the digital temperature data points;

locating the beginning of the temperature decay as being when a consistent number of digital temperature points decrease;

locating the beginning of the temperature recovery as being when a consistent number of digital temperature points increase;

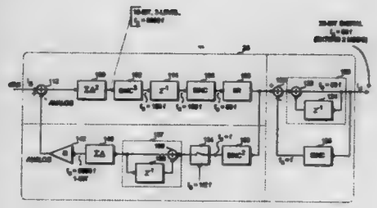
calibrating to distinguish between a soldering operation and a cleaning operation; and

collecting statistical information on soldering operations, the statistical information including operator timing, time dependent temperature behavior, and distinguishing between operations such as the cleaning operation and the soldering operation.

5,485,393
METHOD AND APPARATUS FOR MEASURING ELECTRICAL PARAMETERS USING A DIFFERENTIATING CURRENT SENSOR AND A DIGITAL INTEGRATOR

Curtis V. Bradford, Campbell, Calif., assignor to Metricom, Inc., Los Gatos, Calif.

Continuation-in-part of Ser. No. 887,116, May 20, 1992, Pat. No. 5,243,536, which is a continuation of Ser. No. 575,000, Aug. 30, 1990, abandoned. This application Jul. 27, 1993, Ser. No. 97,816
Int. Cl.[6] G01R *21/06*; G06F *19/00*
U.S. Cl. 364—483 **20 Claims**



1. A power meter which outputs voltage and current samples at an output sample rate, where a voltage sample indicates a quantity of voltage across an electrical load at a sample time and a current sample indicates a quantity of current flowing through the electrical load at the sample time, the power meter comprising:

a voltage sensor, electromagnetically coupled to the electrical load, which outputs a voltage sensor signal representing the voltage across the electrical load;

voltage sampling means, coupled to receive said voltage sensor signal, for digitally sampling said voltage sensor signal and outputting a voltage waveform comprising digital samples at an input sample rate;

a voltage filtering path, coupled to receive said voltage waveform from said voltage sampling means, which outputs a filtered voltage waveform;

a current sensor electromagnetically coupled to the electrical load, which outputs a current sensor signal representing a derivative with respect to time of the current flowing through the electrical load;

a differential adder coupled at a first adder input to receive said current sensor signal, said differential adder outputting a signal at an adder output which is a difference of said current sensor signal and a signal applied to a second adder input of said differential adder;

current sampling means, coupled to said adder output, for digitally sampling said signal at said adder output at said input sample rate and outputting a time derivative current waveform comprising digital samples at said input sample rate;

a current feedforward filtering path, coupled to receive said time derivative current waveform, which outputs a filtered time derivative current waveform, wherein said current feedforward filtering path comprises filters with characteristics equal to filters in said voltage filtering path;

a current feedback signal path, coupled to receive said filtered time derivative current waveform from said current feedforward filtering path, which outputs a feedback signal to said second adder input of said differential adder, where said current feedback signal path comprises filters which cause the cancellation of direct-current (DC) components of said filtered time derivative current waveform;

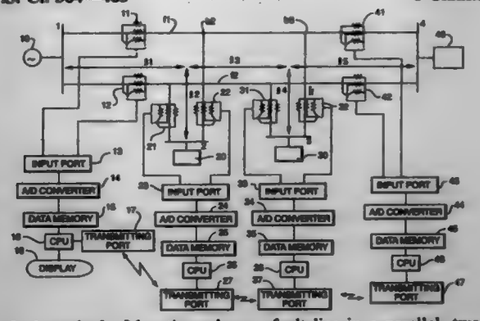
a digital integrator, coupled to receive said filtered time derivative current waveform, which integrates said filtered time derivative current waveform and outputs, at the output sample rate, samples indicating an instantaneous value of the current flowing through the electrical load; and

a delay means, clocked by an intermediate clock having a rate of at least twice the output sample rate, for delaying current samples in said current feedforward filtering path by a time equal to one-half a period of the output sample rate, thereby providing a substantially equal delay for samples through said current feedforward filtering path combined with said digital integrator and through said voltage filtering path.

5,485,394
FAULT LOCATION METHOD FOR A PARALLEL TWO-CIRCUIT TRANSMISSION LINE WITH N TERMINALS

Kenji Murata; Kazuo Sonohara; Susumu Ito; Kyoji Ishizu, all of Osaka, and Tokuo Emura, Kyoto, all of, Japan, assignors to Nissin Electric Company, Limited, Kyoto, and The Kansai Electric Power Co., Inc., Osaka, both of, Japan

Continuation of Ser. No. 208,034, Mar. 9, 1994, abandoned, which is a continuation of Ser. No. 707,907, May 30, 1991, abandoned. This application May 18, 1995, Ser. No. 443,765
Claims priority, application Japan, May 31, 1990, 2-143824; May 31, 1990, 2-143825
Int. Cl.[6] G01R *31/00*
U.S. Cl. 364—483 **6 Claims**



1. A method of locating where a fault lies in a parallel, two-circuit transmission line in an n-terminal system, having at least a sending end and a receiving end, and further having a plurality of circuits and a plurality of branches connected to the transmission line at branch points, the method comprising the steps of:

detecting physical current signals of each phase of each end of each circuit of the parallel, two-circuit transmission line;

converting each detected physical current signal into digital data;

storing the digital data in a memory;

transmitting the digital data stored in said memory to a predetermined main station;

storing the transmitted digital data of currents of all the ends in a memory in said main station which also contains connection information of the n-terminal system and data about the lengths of different portions of the transmission line;

determining, by the main station, a distance to the fault from one of the ends of the transmission line based on the connection information of the system and the data about the lengths of the transmission line portions, the distance determining step including the substeps of:

(a) performing equivalent transformation with respect to a branch point b_k of said parallel two-circuit transmission line, to transform said transmission line into a T three-terminal parallel two-circuit transmission line circuit having three terminals T_{k-1}, T_k, and T_{k+1}, said equivalent circuit including at least one branch B_k having a length on the equivalent circuit indicative of a distance from said branch point b_k to a first terminal connected to the branch point, b_k,

(b) setting a value x_k as a length on the equivalent circuit from said first terminal connected to said branch point b_k to the fault on the equivalent circuit, on the basis of said branch lengths and said detected current signals flowing out of terminals T_{k-1}, T_k, and T_{k+1},

(c) if x_k is less than the length on the equivalent circuit of said branch B_k, identifying the value x_k as the closest distance on the parallel two-circuit transmission line from said first terminal to the fault,

(d) if x_k is not less than the length on the equivalent circuit of said branch B_k, setting a value x_{k-1} to a length on the equivalent circuit from a terminal connected to a branch B_{k-1} to the point on the basis of said branch lengths and said detected current signals flowing out of terminals T_{k-1}, T_k, and T_{k+1},

(e) if x_{k-1} is less than a length on the equivalent circuit of branch B_{k-1}, and if the branch point b_k is connected to a second terminals with no branch points therebetween, identifying x_{k-1} as the closest distance from said second terminal to the fault,

(f) if x_{k-1} is less than the length on the equivalent circuit of branch B_{k-1} and if the branch point b_k is not connected to a second terminal with no branch points therebetween, decrementing k by 1 and repeating steps (b)–(f),

(g) if x_{k-1} is not less than the length on the equivalent circuit of said branch B_{k-1}, setting a value x_{k+1} to a length on the equivalent circuit from a terminal connected to a branch B_{k+1} to the fault on the basis of said branch lengths and said detected current signals flowing out of terminals T_{k-1}, T_k, and T_{k+1},

(h) if x_{k+1} is less than a length on the equivalent circuit of branch B_{k+1} and if the branch point b_k is connected to a third terminal with no branch points therebetween, identifying x_{k+1} as the closest distance from said third terminal to the fault, and

(i) if x_{k+1} is less than the length on the equivalent circuit of branch B_{k+1} and if the branch point b_k is not connected to a third terminal with no branch points therebetween, incrementing k by 1 and repeating steps (b), (c), and (g)–(i); and

locating the fault using the closest distance identified in the distance determining step.

5,485,395
METHOD FOR PROCESSING SAMPLED DATA SIGNALS

Craig C. Smith, Provo, Utah, assignor to Brigham Young University, Provo, Utah

Filed Feb. 14, 1994, Ser. No. 195,994
Int. Cl.[6] G06F *17/00*; G01J *3/28*
U.S. Cl. 364—485 **24 Claims**



22. A method of processing a temporal signal obtained by a spectrum analyzer and stored in said spectrum analyzer comprising the steps of:

segmenting the temporal signal stored in the spectrum analyzer into a plurality of segments;

transforming the segments of the temporal signal into the frequency domain; and

adding the frequency domain segments to form an averaged spectral signal.

5,485,396
SYMBOLIC ROUTING GUIDANCE FOR WIRE NETWORKS IN VLSI CIRCUITS

Daniel R. Brasen, San Francisco, and Sunil V. Ashtaputre, San Jose, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Jun. 28, 1991, Ser. No. 723,109
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—491 **13 Claims**

1. A method for laying out logical circuits on a chip, the method comprising the steps of:

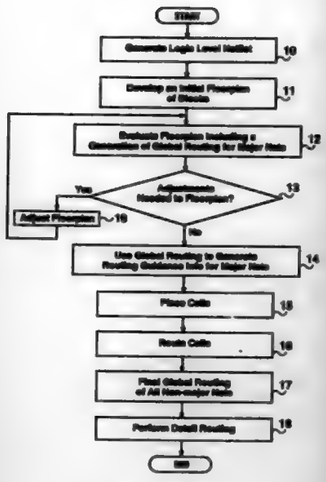
(a) laying out an initial floor-plan of component blocks of the logical circuits;

(b) routing a first set of connection networks between connection areas of the component blocks;

(c) from the routing performed in step (b), generating routing guidance information which indicates location and size of the first set of connection networks;

(d) after step (c) performing optimized placement and routing of logical circuits within the component blocks; and,

(e) after step (c) routing a second set of connection networks between the component blocks.



5,485,397
COMMUNICATION SYSTEM

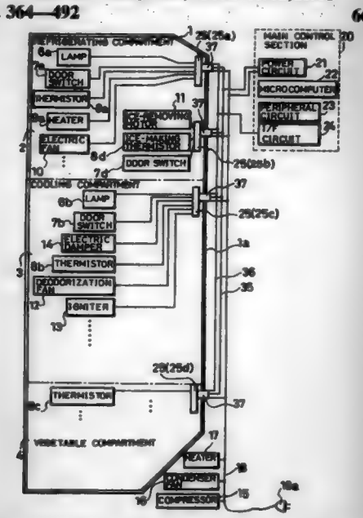
Hisao Yamazato, Hirakata; Naoki Tani, Nara; Naohiko Aoki, Nara; Jyunzou Kashihara, Kashiba, and Yasunari Uramoto, Kitakyushu, all of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 23, 1993, Ser. No. 95,402

Claims priority, application Japan, Jul. 30, 1992, 4-203641; Jan. 21, 1993, 5-008039; Mar. 4, 1993, 5-044050; Apr. 9, 1993, 5-083350; May 7, 1993, 5-106681

Int. Cl.[6] H02J *5/00;* **G05B** *15/02;23/02*

U.S. Cl. 364—492 **66 Claims**



1. A communication system, provided in an electric device including a plurality of internal devices, comprising:

at least one sub-control means for controlling operations of the internal devices, said sub-control means being placed in a vicinity of a corresponding internal device so as to be connected thereto;

main control means for controlling the electric device by controlling said sub-control means;

a single communication line for connecting said main control means and said sub-control means so as to permit communications between them,

a pair of AC power feeders for feeding AC power from an AC power supply to said main control means and for feeding AC power from the AC power supply to the internal devices through said sub-control means; and

a pair of DC power feeders for feeding DC power, which connect said main control means and said sub-control means,

wherein said main control means includes:

first transmission means for transmitting a message to said sub-control means through said communication line; and

first receiving means for receiving a message from said sub-control means through said communication line, and

said sub-control means includes:

second transmission means for transmitting a message to said main control means through said communication line; and

second receiving means for receiving a message from said main control means through said communication line, and

said main control means includes:

a power converter means for converting AC power supplied from the AC power supply into DC power, and supplies the converted DC power to said sub-control means through said pair of DC power feeders, and

said first transmission means of said main control means and said second transmission means of said sub-control means are provided between one of said pair of DC power feeders and said communication line, and

said first transmission means and said second transmission means respectively include:

first switching means for switching a state of said communication line between a low level and a high level by connecting and disconnecting it to one of said pair of DC power feeders, and

first transmission control means for controlling switching operations of said first switching means, and

said first transmission means and said second transmission means respectively transmit messages through said communication line by controlling the switching operations of said first switching means using said first transmission control means, and

said first receiving means of said main control means includes level detection means for detecting a collision among messages by detecting a level of said communication line.

5,485,398
METHOD AND APPARATUS FOR INSPECTING BENT PORTIONS IN WIRE LOOPS

Nobuto Yamazaki, Tachikawa, and Shinichi Kumazawa, Higashikurume, both of, Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

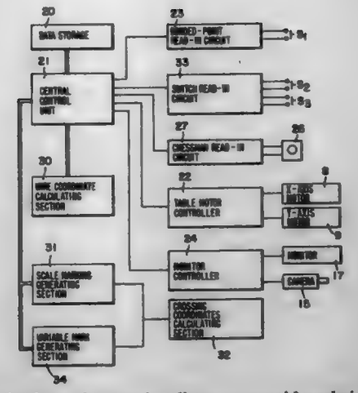
Continuation of Ser. No. 234,938, Apr. 28, 1994, abandoned, which is a continuation of Ser. No. 828,427, Jan. 31, 1992, abandoned. This application Mar. 16, 1995, Ser. No. 405,924

Claims priority, application Japan, Jan. 31, 1991, 3-029016

Int. Cl.[6] G01B *11/24*

U.S. Cl. 364—506 **3 Claims**

1. An apparatus for inspecting a bend in a wire loop after wires are connected to a workpiece at a bonding station of a wire bonding machine wherein said wire bonding machine includes an XY table with a bonding tool provided thereon, through which said wire is passed, a camera for monitoring an image of a selected one of said connected wires of said workpiece, said camera being mounted on said XY table and said camera and bonding tool being moved in X and Y directions by said XY table and a monitor for displaying said image obtained by said camera, said inspection apparatus comprising: a wire coordinate calculating means for calculating coordinates of a first bonded point and a second bonded point of said selected one of said connected wires, said coordinates of said first and second bonding points for determining a bonded point line which is a straight line connecting said first and second bonded points; and crossing coordinates calculating means for calculating scale markings on a straight scale line passing through a center point of said monitor, said scale line being perpendicular to said bonded point line, said scale markings corresponding to predetermined actual measuring distances on said workpiece; and a scale marking generating means for displaying said scale markings of said scale line on said monitor along with said selected one of said connected wires to be measured to visually measure said bend in said wire loop accurately by counting the number of scale markings between said wire loop and the center point without moving the workpiece from the bonding station.



5,485,399
SPECTACLE LENS SUPPLY METHOD

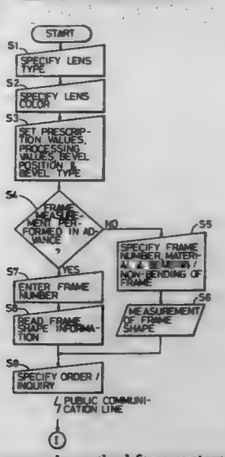
Tsuyoshi Saigo; Takeo Koseki, both of Hamura; Yoshihiro Kikuchi, Akikawa, and Takashi Hatanaka, Higashimurayama, all of, Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Jun. 23, 1993, Ser. No. 80,210

Claims priority, application Japan, Jun. 24, 1992, 4-165912; Aug. 7, 1992, 4-211645

Int. Cl.[6] G02C *13/00*

U.S. Cl. 364—525 **19 Claims**



1. A spectacle lens supply method for a system which includes a terminal installed at a lens orderer side and a computing device installed at a lens processor side and connected to the terminal through a communication line, for supplying spectacle lenses, said spectacle lens supply method comprising:

a first step of transmitting processing condition data, which includes at least one of lens information, frame information, prescription values, layout information and processing information, from the terminal to the computing device;

a second step of calculating a desired lens shape including a bevel figure by the computing device in accordance with the processing condition data transmitted thereto;

a third step of creating accept/reject information as to whether a lens process including a beveling is possible or not, by the computing device in accordance with the result of the calculation, and transmitting the accept/reject information to the terminal; and

a fourth step of displaying the transmitted accept/reject information at the terminal to permit the orderer side to learn whether the lens process including the beveling is possible or not.

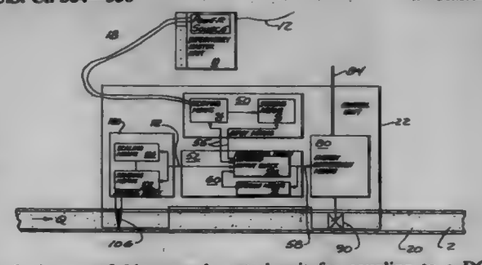
5,485,400
FIELD-MOUNTED CONTROL UNIT

Jogesh Warrior, Chanhassen; Vincent C. Jacobson, Minnetonka; Kelly M. Orth, Apple Valley, and Craig R. Tielens, Minneapolis, all of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Continuation of Ser. No. 264,785, Jun. 23, 1994, abandoned, which is a division of Ser. No. 86,167, Jul. 1, 1993, Pat. No. 5,333,114, which is a continuation of Ser. No. 2,257, Jan. 8, 1993, abandoned, which is a continuation of Ser. No. 785,168, Nov. 13, 1991, abandoned, which is a continuation of Ser. No. 416,180, Oct. 2, 1989, abandoned. This application Apr. 10, 1995, Ser. No. 420,434

Int. Cl.[6] G05B *19/00*

U.S. Cl. 364—550 **49 Claims**



1. A smart field-mounted control unit for coupling to a DC current two-wire process control loop, comprising: a housing;

communications circuitry in the housing coupled to the two-wire process control loop to receive power over the two-wire process control loop, the communications circuitry comprising:

a receiver for receiving process signals over the two-wire process control loop, and output circuitry for sending information related to the control unit over the two-wire process control loop; and

a storage element which stores the process signals received from the two-wire loop; and

control circuitry in the housing coupled to the communications circuitry, which provided a command output for controlling a process and which stores previous values of the command output, where the command output is a function of a stored process signal and a stored previous value of the command output.

5,485,401
METHOD AND APPARATUS FOR TESTING OVERFILL PROTECTION DEVICES

Gary R. Cadman, Norwell, Mass., assignor to Scully Signal Company, Wilmington, Mass.

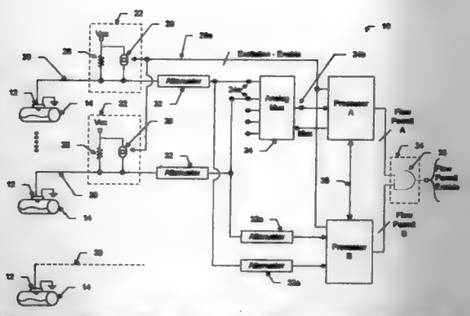
Filed Jun. 14, 1993, Ser. No. 77,012

Int. Cl.[6] G01F *23/00*

U.S. Cl. 364—551.01 **14 Claims**

1. A probe excitation and testing, "PET", system for an overfill protection device including a probe mounted in a tank for sensing a level of material therein, said probe operable to produce a probe output signal in response to a normal operating excitation of at least a preselected magnitude being applied thereto, said PET system comprising:

A) processor means for conducting any of a plurality of diagnostic tests and for generating an excitation control signal;



B) channel means for coupling said processor means with said probe, said diagnostic tests conducted by said processor means being able to determine whether said probe and said channel means can operate within preselected limits; and

C) excitation means coupled with said channel means and responsive to said excitation control signal for applying said normal operating excitation to provide overfill protection during filling of said tank, and for applying a bias test excitation to said probe instead of said normal operating excitation during said diagnostic test, said bias test excitation having a magnitude less than the preselected magnitude of said normal operating excitation and insufficient to power said probe to provide overfill protection yet being sufficient to conduct said diagnostic test.

5,485,402

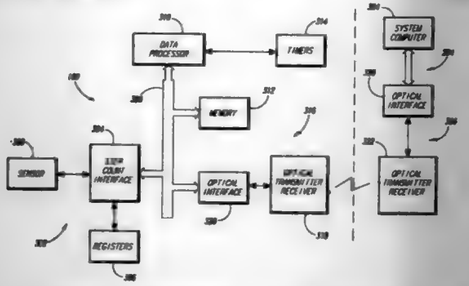
GAIT ACTIVITY MONITOR

Douglas G. Smith, Seattle; Aaron W. Joseph, Bellevue; David A. Boone; Robert E. Borchers, both of Seattle, and Ernest M. Burgess, Mercer Island, all of Wash., assignors to Prosthetics Research Study, Seattle, Wash.

Filed Mar. 21, 1994, Ser. No. 215,134

Int. Cl.[6] G01P *15/00*

U.S. Cl. 364—566 **13 Claims**



1. A monitor for determining the step activity of a wearer comprising:

a housing having a communication surface, said communication surface being selected of a material and opacity to permit transmission of infrared radiation, said housing having a support surface that is shaped and contoured to mate with an ankle of the wearer, said housing including a strap, fixed to the exterior of said housing, for releasably mounting the monitor to the ankle of the wearer;

an electronic accelerometer for providing an acceleration signal indicative of the acceleration of said housing;

a step determination unit coupled to receive the acceleration signal, said step determination unit including a memory device for recording a minimum acceleration data unit, a maximum acceleration data unit, and a minimum time unit, said step determination unit comparing the stored minimum acceleration data unit and the minimum time unit with the received acceleration signal for determining when the wearer of the monitor has taken a step and said step determination unit providing a step signal to indicate that the user has taken a step when the received acceleration signal is both greater than the stored minimum acceleration data unit, and less than the maximum acceleration data unit for the minimum time unit;

processor memory for storing data relating to the step activity of the wearer and for storing step activity data including a time interval data unit indicating the length of a measurement interval and a step rate data unit indicating the amount of time that the step signal will be ignored after a step is counted;

a data processor for determining the step activity of the wearer, said data processor being coupled to said step determination unit and said processor memory, said data processor including a first timer for counting consecutive measurement time intervals wherein each measurement time interval is equal to the time specified by the time interval data unit stored in said processor memory, said data processor including a second timer for counting a step rate time interval wherein each step rate time interval is equal to the time specified by the step rate data unit stored in said processor memory, said data processor being responsive to said first timer and the step signal for storing a plurality of step count data units in said processor memory wherein each step count data unit represents the number of steps made during the measurement time interval, said data processor being responsive to said second timer to count only one step during each step rate time interval;

a monitor interface, including a monitor transceiver, for transmitting and receiving infrared radiation, said monitor interface being constructed for converting received infrared radiation to electronic signals and for converting electronic signals to infrared radiation, said monitor interface being coupled to exchange electronic signals with said data processor, said electronic accelerometer, said step determination unit, said processor memory, and said data processor each being mounted in said housing with said transceiver being mounted proximate to said communication surface;

an interface module for receiving and transmitting infrared radiation to and from said monitor interface, including an interface transceiver, said interface module being constructed to convert received infrared radiation to electronic signals and to convert electronic signals to infrared radiation; and

a system processor coupled to exchange electronic signals with said interface module, said system processor including a user interface and being responsive to user input for establishing communication with said data processor by way of said interface module and said monitor interface, said system processor being constructed to respond to user input to provide the time interval data unit and the step rate data unit to said data processor for storage in said processor memory, said system processor being further responsive to user input for providing the minimum acceleration data unit, and the minimum time unit to said data processor for storage in said memory device of said step determination unit, said data processor being responsive to control signals received from said system processor to provide the plurality of step count data units to said system processor.

5,485,403

METHOD AND APPARATUS FOR PROCESSING SIGNALS FROM PHOTOCONDUCTIVE SENSOR

Osamu Shindo, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 7, 1990, Ser. No. 623,566

Claims priority, application Japan, Dec. 7, 1989, 1-316466; Dec. 7, 1989, 1-316468

The portion of the term of this patent subsequent to Jan. 16, 2013, has been disclaimed.

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—559 **19 Claims**

1. A method of analyzing output signals of a line sensor, the line sensor including an array of photoconductive bit elements, for determining a point of change from a first output signal level to a second output signal level of signals outputted from the array of photoconductive bit elements of the line sensor, said method comprising the steps of:

setting a threshold level between the first signal level and the second signal level;

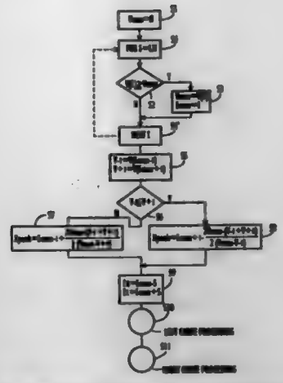
detecting a pair of bit elements from among said array of photoconductive bit elements which have outputs that are larger than and smaller than the threshold level, respectively;

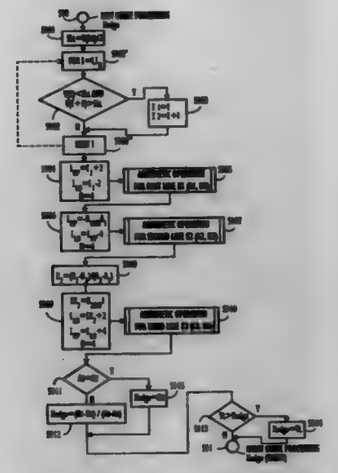
determining a first line based on the outputs of the pair of bit elements or on the outputs of another pair of bit elements from among said array of photoconductive bit elements which have a specific relationship to the pair of bit elements;

obtaining a zero-cross bit element which is located at an intersecting point of the first line with a predetermined output level;

determining a second line which has an inclination angle in absolute value that is smaller than that of the first line, based on the outputs of the zero-cross bit element and a bit element having a specific relationship to the zero-cross bit element or the outputs of a pair of bit elements having a specific relationship to the zero-cross bit element; and

determining the point of change by the intersecting point of the first line and the second line.





determining a second line which has an inclination angle in absolute value smaller than that of the first line, based on the outputs of the zero-cross bit element and a bit element having a specific relationship to the zero-cross bit element or the outputs of a pair of bit elements having a specific relationship to the zero-cross bit element;

determining a third line which has an inclination angle in absolute value larger than that of the first line with reference to the zero-cross bit element;

judging whether the inclination angle of the second line is substantially identical to that of the third line; and,

determining the point of change by the intersecting point of the second line and the third line when the inclination angles of the second and third lines are not substantially identical to each other and by the intersecting point of the first line and the second line when the inclination angles of the second and third lines are substantially identical to each other, respectively.

5,485,404

EYE DIRECTION DETECTING METHOD AND APPARATUS INCLUDING METHOD AND APPARATUS FOR DETECTING BOUNDARY OF THE IRIS

Osamu Shindo, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 7, 1990, Ser. No. 623,570

Claims priority, application Japan, Dec. 7, 1989, 1-316467

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—559 **20 Claims**

1. An eye direction detecting method in which eye direction detecting light flux reflected by an eye impinges on a line sensor comprised of a photoconductive bit element array, so that the line sensor generates output signals including a first signal level corresponding to light flux reflected by an iris and a second signal level corresponding to light reflected by a retina, whereby information on a point of change between the first signal level and the second signal level is used to detect the eye direction, said eye direction detecting method comprising the steps of;

setting a threshold level between the first signal level and the second signal level;

detecting a pair of bit elements which have outputs larger and smaller than the threshold level, respectively;

determining a first line based on the outputs of the pair of bit elements or a pair of bit elements which have a specific relationship to said pair of bit elements;

obtaining a zero-cross bit element which is located at an intersecting point of the first line with a predetermined output level;

determining a second line which has an inclination angle in absolute value smaller than that of the first line, based on the outputs of the zero-cross bit element and a bit element having a specific relationship to the zero-cross bit element or the outputs of a pair of bit elements having a specific relationship to the zero-cross bit element;

determining a third line which has an inclination angle in absolute value larger than that of the first line with reference to the zero-cross bit element;

judging whether the inclination angle of the second line is substantially identical to that of the third line; and,

determining the point of change by the intersecting point of the second line and the third line when the inclination angles of the second and third lines are not substantially identical to each other and by the intersecting point of the first line and the second line when the inclination angles of the second and third lines are substantially identical to each other, respectively.

5,485,405

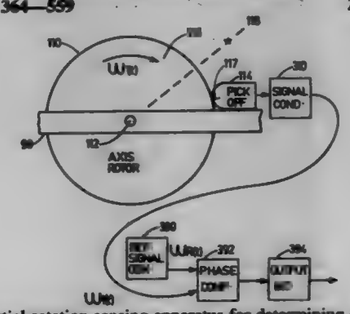
INERTIAL ROTATION SENSING APPARATUS AND METHOD

S. Edward G. Wilson, 519 West 14 Street, North Vancouver, British Columbia, Canada

Filed Mar. 31, 1993, Ser. No. 41,059

Int. Cl.[6] G01C *19/08; 19/28*

U.S. Cl. 364—559 **23 Claims**



1. Inertial rotation sensing apparatus for determining orientation of a body, about a first axis fixed with respect to said body, and with respect to an inertial frame of reference, said apparatus comprising:

(a) a first rotatable member rotatable about said first axis;

(b) a first rotational drive means for initiating and maintaining rotation of said first rotatable member about said first axis, substantially independently of motion of said body and at a

speed substantially constant with respect to said inertial frame of reference and substantially greater than rotational speeds of said body with respect to said inertial frame of reference;

(c) a first relative position detector means for detecting rotational position of said first rotatable member with respect to said body, and for producing a first output signal $\omega_1(t)$ representative thereof;

(d) reference signal means for generating a reference signal $\omega_R(t)$ representative of rotational position of said first rotatable member with respect to said inertial frame of reference; and

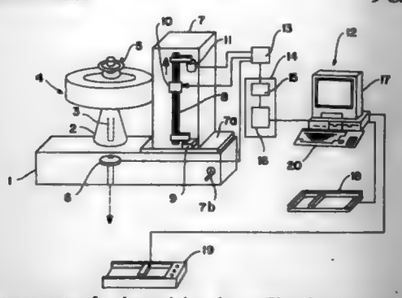
(e) comparator means for comparing phase of said first output signal $\omega_1(t)$ with phase of said reference signal $\omega_R(t)$, and for producing an orientation signal $\phi(t)$ representative of said orientation of said body about said first axis and with respect to said inertial frame of reference.

5,485,406

APPARATUS AND METHOD FOR DETERMINING THE PROFILE OF THE TREAD OF A TIRE

Yasuo Wada, Amagasaki, and Kazuo Asano, Kobe, both of, Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Continuation of Ser. No. 646,258, Jan. 28, 1991, abandoned. This application Jul. 26, 1993, Ser. No. 96,837
Claims priority, application Japan, Jan. 31, 1990, 2-22553
Int. Cl.[6] G01B *11/00;11/24;11/08*
U.S. Cl. 364—560 **9 Claims**



1. An apparatus for determining the profile of a tire tread with distinctive determinations of radii of a crown portion and shoulder portions comprising:

a mounting means for mounting the tire about an X axis such that the tire axis is parallel to the X axis;

a non-contact type Y axis distance measuring means for measuring a Y axis distance from the tire profile thereto and movable along the X axis, the Y axis distance measured being kept as Y data;

an X axis distance measuring means for measuring an X axis position of the Y axis distance measuring means, the X axis distance being kept as X data, each value of the X data being paired with one value of the Y data;

a radius calculating means for calculating a radius of at least part of the tire profile based on the paired X data and Y data, said radius calculating means including a sorting means for classifying pairs of the X data and Y data into data classified in point of local portions of the crown portion and shoulder portions of the tire with application of reference data for the tire, and an arithmetic means for determining radii of the respective tire portions by use of the classified data; wherein

said reference data represents data prestored for reference to x axis regions of shoulder portions and the crown portion defining the tire profile, on a basis that a tire equator line is zero on the X axis as datum point,

said sorting means includes an end determination means for determining X data on two distal ends of the tire profile by detecting the two X data which exceed predetermined Y data,

a center determination means for determining a center point from the X data on two distal ends,

means for correcting the measured data with the reference data based so that the measured data as a whole is converted to be based on the datum point for the reference data, and for classifying the measured X and Y data pairs into data classified in point of the crown portion and of the shoulder portions by comparison with reference data on the crown portion and the two shoulder portions; and

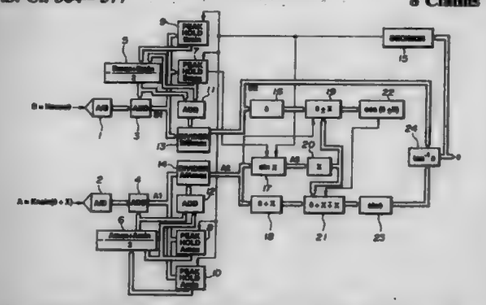
said arithmetic means comprises calculation resources for calculating the radii of the crown portion and the shoulder portions, respectively, with use of the classified data.

5,485,407

INTERPOLATION DEVICE FOR SCALE ARRANGEMENT

Shigeru Ishimoto; Yasuhiko Matuyama, both of Yokohama, and Hideo Maejima, Kawasaki, all of, Japan, assignors to Sony Magnescale Inc., Tokyo, Japan

Filed Nov. 16, 1993, Ser. No. 152,390
Claims priority, application Japan, Nov. 27, 1992, 4-318181
Int. Cl.[6] G06G *7/30*
U.S. Cl. 364—577 **8 Claims**



1. A rotational position measuring system having a measuring scale and a sensor for reading the measuring scale, the system comprising:

first input means for inputting an input sine wave signal from said sensor;

second input means for inputting an input cosine wave signal from said sensor;

first output means comprising:

a first DC offset value calculating circuit for calculating a first DC offset value of the input sine wave signal, and

a first amplitude coefficient calculating circuit for calculating a first amplitude coefficient of the input sine wave signal,

said first output means outputting an interpolated sine wave signal from which the first DC offset value of the input sine wave signal determined by the first DC offset calculating circuit has been removed and which has been normalized according to the first amplitude coefficient determined by the first amplitude coefficient calculating circuit;

second output means comprising:

a second DC offset value calculating circuit for calculating a second DC offset value of the input cosine wave signal, and

a second amplitude coefficient calculating circuit for calculating a second amplitude coefficient of the input cosine wave signal,

said second output means outputting a corrected cosine wave signal from which the second DC offset value of the input cosine wave determined by the second DC offset calculating circuit has been removed and which has been normalized according to the second amplitude coefficient determined by the second amplitude coefficient calculating circuit;

correcting means for correcting a phase drift between the interpolated sine wave signal output from said first output means and the corrected cosine wave signal output from said second output means, said correcting means outputting a correct measured angle signal based on the interpolated sine wave signal and corrected cosine wave signal; and

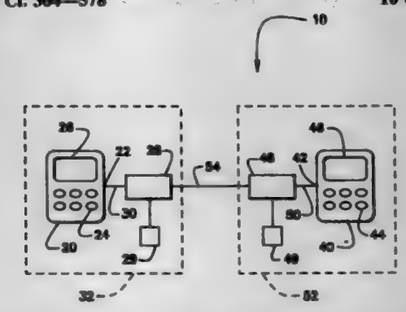
decision means for determining whether one period of a measuring period has been measured based on the correct measured angle signal of said correcting means and outputting a synchronizing signal to said first output means, said second output means and said correcting means.

5,485,408

PUMP SIMULATION APPARATUS

Michael L. Blomquist, Coon Rapids, Minn., assignor to SIMS Deltec, Inc., St. Paul, Minn.

Continuation of Ser. No. 942,288, Sep. 9, 1992, Pat. No. 5,338,157. This application Jul. 15, 1994, Ser. No. 276,025
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—578 **10 Claims**



1. A pump simulation system for simulating a medical pump for intravenous delivery of a fluid, the pump simulation system comprising:

a computer system including processor means, and display means electrically interconnected to the processor means of the computer system;

first circuitry configured to generate a graphical user interface having an image of the medical pump, the graphical user interface being generated on the display means and having an input region and a display region;

second circuitry configured to permit manipulation of the input region of the graphical user interface by an operator such that access to the processor means of the computer system is achieved; and

third circuitry configured to generate and send a predetermined message to the display region of the image of the pump in response to manipulations of the input region of the image, thereby simulating operation of the pump.

5,485,409

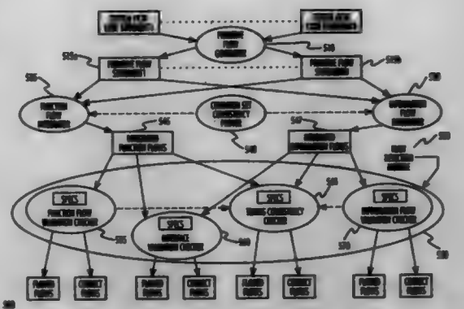
AUTOMATED PENETRATION ANALYSIS SYSTEM AND METHOD

Sarbari Gupta, Rockville, and Virgil D. Gligor, Chevy Chase, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1992, Ser. No. 875,945
Int. Cl.[6] H04L *9/00;* **G06F** *13/00*
U.S. Cl. 395—186 **6 Claims**

1. A method for preventing users of a computer system from exploiting system flaws to gain illegal or unintended access to system variables, objects and/or operations, comprising the steps of:

(1) generating a set of interpretation constants by applying a set of penetration-resistant properties to a given system, wherein said set of interpretation constants represent a database of required conditions, parameter validations and privilege checks that are associated with access to each abstract cell and critical function in said given system, wherein said given system has previously been determined to be penetration-resistant;



(2) generating an integrated flow path within said given system which records information regarding flows and condition checks that would be encountered along a given integrated flow path to an alter operation or a view operation on a particular abstract cell or an invoke operation on an internal system function;

(3) applying, in response to said alter operation, said view operation, or said invoke operation, a set of model rules to said given integrated flow path to determine whether said given integrated flow path conforms to said penetration-resistant properties, wherein said model rules are based on said interpretation constants: and

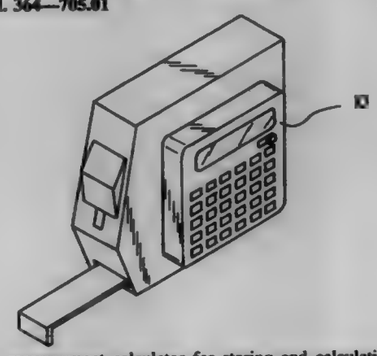
(4) allowing said alter operation, said view operation, or said invoke operation to proceed if said given integrated flow path was in conformity with said penetration-resistant properties.

5,485,410

MEASUREMENT CALCULATOR

Tonino Mastromattei, 33 Gateway Ln., Lynn, Mass. 01905

Filed Apr. 25, 1994, Ser. No. 232,631
Int. Cl.[6] G01B *3/08*
U.S. Cl. 364—705.01 **1 Claim**



1. A measurement calculator for storing and calculating measurement data comprising, in combination:

a hollow housing adapted to be coupled to the side of a tape measure;

computer circuitry disposed within and extended from the housing, the computer circuitry further comprising:

central processing unit circuitry adapted for controlling the status of operations of the computer circuitry and manipulating measurement data therein;

read-only-memory circuitry having a plurality of memory cells adapted for storing non-volatile instructions and data for use by the central processing unit circuitry;

random-access-memory circuitry having a plurality of memory cells adapted for storing user-supplied volatile measurement data with a single item of measurement data being logically accessed by a user with a label denoted by a single alphabetic symbol from 'a' through 'z';

gate circuitry coupled to the read-only-memory circuitry and random-access-memory circuitry and adapted for selecting

volatile and non-volatile instructions and data therefrom for processing and display;

liquid crystal display circuitry adapted for displaying measurement data and operational status indications, the liquid crystal display circuitry having a display window with a status section and a memory cell content section, the status section displaying error status, arithmetic operation in-progress status, and an indication of fractional processing in-progress status, the memory cell content section displaying a label with the associated numeric measurement data, fractional measurement data, and unit of measure;

driver circuitry coupled between the central processing unit circuitry and liquid crystal display circuitry adapted for converting measurement data and operational status indications to a form compatible for display by the liquid crystal display circuitry;

bus circuitry adapted for transferring computer circuitry instructions and data between the central processing unit circuitry, read-only-memory circuitry, random-access-memory circuitry, gate circuitry, and driver circuitry;

keypad circuitry coupled to the central processing unit circuitry and adapted for receiving user input measurement data and instructions for use, the keypad circuitry having numeric keys adapted for inputting numeric measurement data, fraction keys adapted for inputting fractional measurement data, arithmetic operation keys adapted for performing operations on measurement data, unit-of-measurement keys adapted for converting measurement data having an existing unit of measure to another unit of measure, memory operation keys adapted for controlling memory, processing, and display operations, and scrolling

keys adapted for accessing and scrolling through measurement data indexed by the labels;

computer instructions resident in the read-only memory circuitry adapted for operating with the computer circuitry for manipulating the measurement data;

power circuitry for energizing the computer circuitry; and

switch means coupled between the power circuitry and computer circuitry and having one orientation for activating the computer circuitry and another orientation for de-activating the computer circuitry.

5,485,411

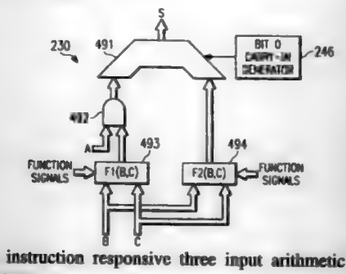
THREE INPUT ARITHMETIC LOGIC UNIT FORMING THE SUM OF A FIRST INPUT ANDED WITH A FIRST BOOLEAN COMBINATION OF A SECOND INPUT AND A THIRD INPUT PLUS A SECOND BOOLEAN COMBINATION OF THE SECOND AND THIRD INPUTS

Karl M. Guttag, Missouri City, Tex.; Richard Simpson, Carlton, and Brendan Walsh, Bedford, both of, England, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 30, 1993, Ser. No. 159,345

Int. Cl.[6] G06F *7/38*

U.S. Cl. 364—716 **27 Claims**



1. An instruction responsive three input arithmetic logic unit comprising:

an AND gate having a first input receiving a first multibit input signal, a second input and an output forming the bit wise AND of signals received at said first and second inputs;

a first two input Boolean function generator having a first input receiving a second multibit input signal, a second input receiving a third multibit input signal and an output connected to said second input of said AND gate, said output forming a first Boolean combination of signals received at said first and second inputs, said first Boolean combination selected by a current instruction;

a second two input Boolean function generator having a first input receiving the second multibit input signal, a second input receiving the third multibit input signal and an output forming a second Boolean combination of signals received at said first and second inputs, said second Boolean combination selected by said current instruction; and

an adder having a first input connected to said output of said AND gate, a second input connected to said output of said second two input Boolean function generator and an output forming the addition of signals received at said first and second inputs.

5,485,412

METHOD AND APPARATUS FOR SUCCESSIVE HORIZONTAL AND VERTICAL DATA FILTERING

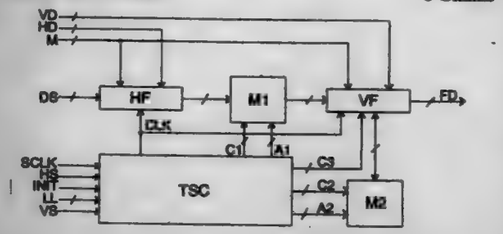
Timo Sarkkinen, Kempele; Pertti Alapuranen, Kontio, and Kari Tiensyrjä, Oulu, all of, Finland, assignors to Rautaruukki Oy, Oulu, Finland

Filed Oct. 20, 1994, Ser. No. 326,294

Claims priority, application Japan, Jan. 29, 1993, 934807

Int. Cl.[6] G06F *15/31*

U.S. Cl. 364—724.05 **8 Claims**



1. A method of continuous two-dimensional filtering of discrete m*n data to be processed comprising n lines each containing m data samples, wherein filtering is performed as successive horizontal and vertical filtering operations, data being stored in connection with horizontal and vertical filtering in a first memory and a second memory, respectively, and wherein data is divided for the processing into blocks comprising y lines, said method comprising the steps of:

(a) filtering a data block comprising y lines in the horizontal direction,

(b) storing the results of the horizontal filtering by lines in the first memory, the memory each time containing y stored lines of the results of the horizontal filtering,

(c) reading the results of the horizontal filtering from the first memory by columns along the length of the block,

d) filtering the results read from the first memory by columns in the vertical direction, which results of the vertical filtering constitute filtered data,

e) storing intermediate states of the vertical filtering in the second memory, upon processing the y lines of each column,

f) reading from the second memory, before the vertical filtering of next block, the y lines earlier state of the corresponding column to be the initial value of the vertical filtering, and

g) continuing the blockwise processing until n data lines have been filtered.

5,485,413

MULTIPLIER UTILIZING THE BOOTH ALGORITHM

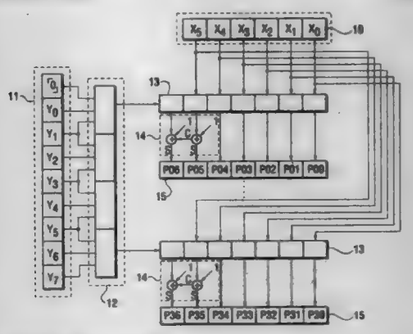
Osamu Kuboniwa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 23, 1994, Ser. No. 311,185

Claims priority, application Japan, Sep. 24, 1993, 5-250937

Int. Cl.[6] G06F *7/52*

U.S. Cl. 364—760 **2 Claims**



1. A multiplier, comprising:

coefficient generating means for generating a plurality of coefficients each corresponding to radical numbers of 2 including 2^0 and 2^1 from predetermined bits of a multiplier based on the Booth algorithm;

partial product generating means for calculating a plurality of partial products indicative of products of said coefficients and a multiplicand of M bits (M is a positive integer);

first adding means for adding "1" to each of Mth and (M+1)th bits as counted from a least significant bit of each of said partial products;

second adding means for adding "1" to an Mth bit as counted from a least significant bit of a multiplication result; and

third adding means for adding a sum from said first adding means and a sum from said second adding means depending on the radical numbers of 2.

5,485,414

DIVIDER CIRCUIT WHICH CALCULATES AN INTEGRAL QUOTIENT OF AN INTEGRAL DIVISOR

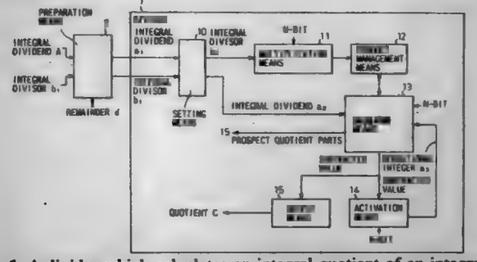
Mitsuyoshi Yao, and Kohichi Ueda, both of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed Mar. 17, 1994, Ser. No. 214,315

Claims priority, application Japan, Jul. 2, 1993, 5-164485

Int. Cl.[6] G06F *7/52*

U.S. Cl. 364—766 **14 Claims**



1. A divider which calculates an integral quotient of an integral divisor and an integral dividend, the divider comprising:

a first multiplication unit which calculates products of the integral divisor and all n-bit pattern values of an n-bit pattern, where n is a predetermined number, the n-bit pattern values respectively corresponding to the calculated products;

a calculation unit which sets the integral dividend as an initial value of an operational integer, specifies a product among the products calculated by the first multiplication unit of which the subordinate n-bit value is equal to the subordinate n-bit value of the operational integer, and calculates a difference of the operational integer and the specified product;

an activation unit which, when the difference calculated by the calculation unit is not zero, sets a new operational integer by canceling the subordinate n bits of the difference and causes the calculation unit to set the integral dividend, specify a product and calculate a difference based on the new operational integer; and

an output unit which successively takes n-bit pattern values respectively corresponding to products specified by the calculation unit, and outputs these n-bit pattern values as the quotient when the difference calculated by the calculation unit is zero.

5,485,415

DIGITAL INTEGRATING CIRCUIT DEVICE

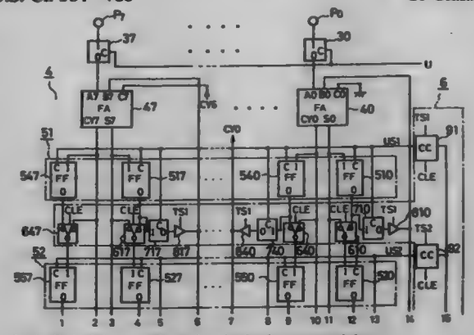
Akio Kiji, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1994, Ser. No. 230,361

Claims priority, application Japan, May 7, 1993, 5-131285

Int. Cl.[6] G06F *7/50*

U.S. Cl. 364—786 **10 Claims**



1. A digital integrating circuit device comprising:

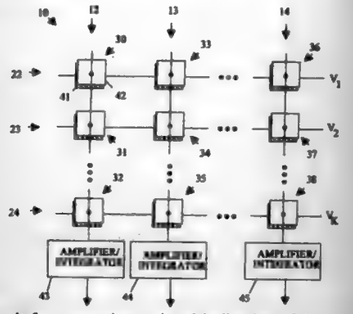
a carry holding type adder having a plurality of full adders corresponding to the number of bits of input data and a predetermined number of holding means for temporarily holding the sum outputs and carry outputs of said full adders and inputting the held sum outputs and carry outputs to said respective full adders, which performs accumulation using the carries of the previous full adders in the previous additions;

a carry propagation type adder having a plurality of full adders for receiving the sum outputs and carry outputs held in said holding means as the results of accumulation, which performs addition by propagating carries to the following full adders;

a predetermined number of result storage means for storing the results of additions performed by the full adders of said carry propagation type adder; and

a control circuit for selecting one of the predetermined number of said holding means of said carry holding type adder to perform accumulation for each section of input data which are divided into a predetermined number of sections, sequentially inputting sum outputs and carry outputs held in the predetermined number of said holding means into the add inputs of the respective full adders of said carry propagation type adder after completion of accumulation, causing the full adders of said carry propagation type adder to add the input sum outputs and carry outputs, and sequentially storing the results of additions in the predetermined number of said result storage means.

5,485,416
COMPUTATIONAL CIRCUIT BASED ON CAPACITOR ARRAYS
Calvin B. Ward, 9580 Crow Canyon Rd., Castro Valley, Calif. 94546
Filed May 5, 1994, Ser. No. 238,637
Int. Cl.[6] G06G 7/02
U.S. Cl. 364—825 6 Claims



1. A circuit for generating a signal indicative of the result of the computation

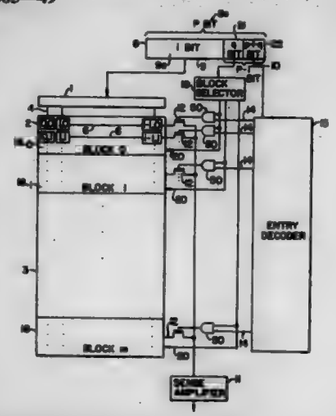
$$F = \sum_{i=0}^{N-1} a_i S_i,$$

wherein said a_i are fixed weights, said circuit comprising:
a plurality of signal input lines, each said signal line receiving a voltage proportional to a different one of said signal values S_i;
a first charge integration circuit having an input terminal and means for generating an output signal indicative of the total charge received on said input terminal, said input terminal being held at a reference potential independent of the charge input thereto, said output signal determining said value F if all of said a_i are non-negative; and
a first capacitor network comprising a plurality of capacitors, each said capacitor having a top electrode and a bottom electrode, each said top electrode being connected to one of said signal input lines and each said bottom electrode being connected to said input terminal of said first charge integration circuit, wherein said capacitor connected to said signal line corresponding to S_i has a capacitance proportional to a_i.

5,485,417
PROCESS AND ARRANGEMENT FOR CONTROLLING A VIBRATION DAMPER
Fritz Wolf, Bergrheinfeld; Thomas Kutsche, Schweinfurt, and Manfred Röder, Schwebheim, all of, Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany
Filed Jan. 23, 1992, Ser. No. 824,603
Claims priority, application Germany, Jan. 31, 1991, 41 02 827.9; Nov. 2, 1991, 41 36 224.1
Int. Cl.[6] B60G 17/015;17/033;21/05
U.S. Cl. 364—424.01 20 Claims

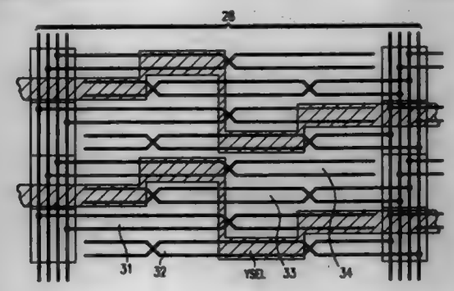
1. A method for operatively influencing the damping properties of a damping module arranged between a vehicle wheel and a vehicle body of a motor vehicle, as a function of damping requirement defining quantities including at least one of transverse acceleration, transverse jolt, longitudinal force, longitudinal force change, frequency-evaluated vehicle body acceleration and frequency-evaluated vehicle wheel acceleration, with which method the damping properties of the damping module are changed between at least two damping characteristics, said method comprising the steps of:
(a) determining instantaneous values of said damping requirement defining quantities;
(b) converting said instantaneous values of said damping requirement defining quantities according to respective power functions into instantaneous values of damping requirement contributions, the base of a respective power function comprising the respective damping requirement defining quantity and the exponent of the respective power function defining a relative significance of the respective damping requirement defining quantity within a total damping requirement;
(c) adding said instantaneous values of said damping requirement contributions of the damping requirement defining quantities to provide said total damping requirement;
(d) comparing said total damping requirement with a damping characteristic switching value; and
(e) switching the damping module to a respective next damping characteristic, when said total damping requirement and said damping characteristic switching value are substantially equal.

5,485,418
ASSOCIATIVE MEMORY
Toshiyuki Hiraki, and Masayuki Hata, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of Ser. No. 641,986, Jan. 16, 1991, abandoned. This application May 21, 1992, Ser. No. 887,272
Claims priority, application Japan, Jan. 16, 1990, 2-7592
Int. Cl.[6] G11C 15/00
U.S. Cl. 365—49 8 Claims



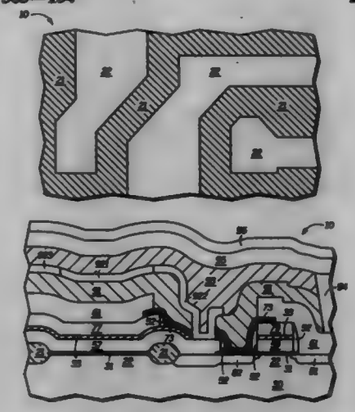
1. An associative memory, comprising:
a content addressable memory array, responsive to a first part of an externally-supplied input address, for storing data, said content addressable memory array divided into a plurality of blocks, each of which includes a plurality of cells arranged in a plurality of rows and columns, each said cell having means for comparing data stored therein with a corresponding portion of said first part of said externally-supplied input address;
block select means, coupled to said content addressable memory array and responsive to a second part of said externally-supplied input address, for selecting a particular block from said content addressable memory array;
decoder means, coupled to said content addressable memory array and responsive to a third part of said externally-supplied input address, for selecting a particular row in said particular block; and
output means, coupled to said content addressable memory array and responsive to said block select means and said decoder means, for providing a comparison result between said first part of said externally-supplied input address and data stored in said particular row of said particular block.

5,485,419
MEMORY DEVICE COLUMN ADDRESS SELECTION LEAD LAYOUT
John P. Campbell, 4921 Portola Dr., Garland, Tex. 75243
Filed May 23, 1994, Ser. No. 247,914
Int. Cl.[6] G11C 5/08
U.S. Cl. 365—69 8 Claims



1. A semiconductor memory device having storage cells arranged in an array and addressable by row and column addresses, the device comprising:
a number N of bitlines addressable by a partially decoded column address, where N is an integer greater than two, each of the bitlines is fabricated as a pair of leads in a first conductive layer and includes one or more crossover straps in a second conductive layer;
an insulator separating the first and second conducting layers and having a through connection between each crossover strap and each lead of the bitline associated with that strap;
a column address selection lead fabricated in the second conductive layer, the column address selection lead having N segments, each segment of which overlays a length of one of the bitlines; and
each of the N segments of the column address selection lead overlays no more than approximately 1/N of the length of a bitline.

5,485,420
STATIC-RANDOM-ACCESS MEMORY CELL AND AN INTEGRATED CIRCUIT HAVING A STATIC-RANDOM-ACCESS MEMORY CELL
Craig S. Lage; Frank K. Baker; James D. Hayden, and Kent J. Cooper, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Division of Ser. No. 990,341, Dec. 11, 1992, abandoned. This application Jul. 21, 1994, Ser. No. 278,465
Int. Cl.[6] G11C 11/00
U.S. Cl. 365—154 25 Claims



22. An integrated circuit including a first static-random-access memory cell, a second static-random-access memory cell, and a third static-random-access memory cell, wherein the integrated circuit comprises:
a substrate having a first region, a second region, a third region, a fourth region, a fifth region, and a sixth region wherein:
the second region lies between and adjacent to the first and third regions; and
the fifth region lies between and adjacent to the fourth and sixth regions;
a first capacitor that lies within the first memory cell and includes a first plate and a second plate, wherein:
the first plate of the first capacitor includes a first plate section of a gate electrode of a first transistor of the first memory cell, wherein the first plate of the first capacitor is disposed over the first region;
the second plate of the first capacitor is disposed over and substantially coincident with the first plate of the first capacitor;
a second capacitor that lies within the second memory cell and includes a first plate and a second plate, wherein:
the first plate of the second capacitor includes a first plate of a gate electrode of a transistor of the second memory cell, wherein the first plate of the second capacitor is disposed over the third region; and
the second plate of the second capacitor is disposed over and substantially coincident with the first plate of the second capacitor;
a third capacitor that lies within the first memory cell and includes a first plate and a second plate, wherein:
the first plate of the third capacitor includes a first plate section of a gate electrode of a second transistor of the first memory cell, wherein the first plate of the third capacitor is disposed over a fourth region of the substrate; and
the second plate of the third capacitor is disposed over and substantially coincident with the first plate of the third capacitor;
a fourth capacitor that lies within the third memory cell and includes a first plate and a second plate, wherein:
the first plate of the fourth capacitor includes a first plate of a gate electrode of a transistor of the third memory cell, wherein the first plate of the fourth capacitor is disposed over a sixth region of the substrate; and

the second plate of the fourth capacitor is disposed over and substantially coincident with the first plate of the fourth capacitor; and

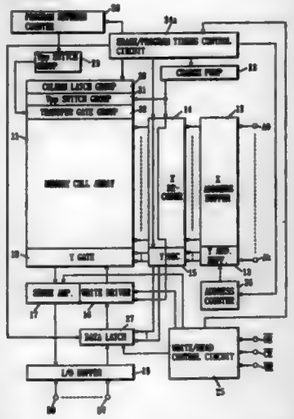
a conductive member that is electrically connected to the second plates of the first, second, third, and fourth capacitors, and the second region of the substrate, and the fifth region of the substrate.

5,485,421

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE INCORPORATING DATA LATCH AND ADDRESS COUNTER FOR PAGE MODE PROGRAMMING

Shinichi Kobayashi; Takeshi Nakayama; Yoshikazu Miyawaki; Tomoshi Futatsuya, and Yasushi Terada, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 826,943, Jan. 28, 1992, Pat. No. 5,363,330.
This application Aug. 25, 1994, Ser. No. 295,582
Claims priority, application Japan, Jan. 28, 1991, 3-29404; Jan. 25, 1991, 3-280012
Int. Cl.[6] G11C *16/02*
U.S. Cl. 365—189.05 **11 Claims**



1. A non-volatile semiconductor memory device capable of electrically programming/erasing a plurality of bytes at one time, comprising:

a plurality of bit lines;

a plurality of memory cells connected to said plurality of bit lines;

write data supplying means for supplying write data to each of said plurality of bit lines;

a plurality of write voltage establishing means each including high voltage switch means and column latch means for establishing a write voltage in accordance with the write data,

each of said plurality of write voltage establishing means being commonly provided for a predetermined plurality of bit lines; and

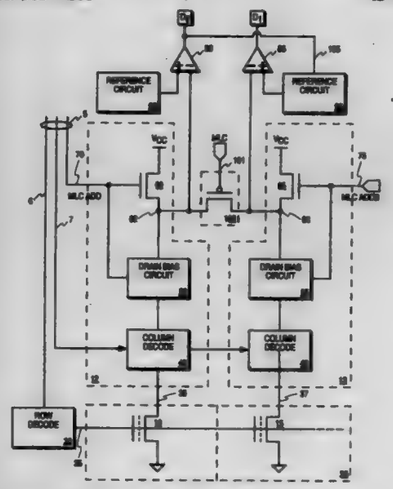
selecting means for periodically and repetitively selecting during a programming cycle each of said plurality of bit lines and for connecting the selected bit line to a corresponding one of the write voltage establishing means.

5,485,422

DRAIN BIAS MULTIPLEXING FOR MULTIPLE BIT FLASH CELL

Mark E. Bauer, Cameron Park; Kevin W. Frary, Fair Oaks, and Sanjay S. Talreja, Folsom, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 2, 1994, Ser. No. 252,684
Int. Cl.[6] G11C *11/34*
U.S. Cl. 365—168 **43 Claims**



1. A memory device comprising:

a first memory cell;

a first comparator including a first terminal and a second terminal;

a first read path circuit coupled between the first memory cell and the first terminal of the first comparator;

a second memory cell;

a second comparator including a first terminal and a second terminal;

a second read path circuit coupled between the second memory cell and the first terminal of the second comparator;

a switching circuit coupled to the first terminals of the first and second comparators and coupled to receive a control signal, the switching circuit for coupling the first terminal of the first comparator to the first terminal of the second comparator and for disabling the second read path circuit when the control signal is active such that the first terminals of the first and second comparators are both coupled to the first read path circuit.

5,485,423

METHOD FOR ELIMINATING OF CYCLING-INDUCED ELECTRON TRAPPING IN THE TUNNELING OXIDE OF 5 VOLT ONLY FLASH EEPROMS

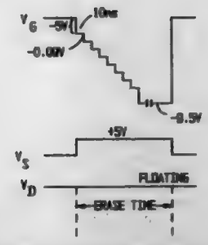
Yuan Tang, San Jose; Chi Chang, Redwood City; Michael A. Van Buskirk, San Jose, and Chung K. Chang, Sunnyvale, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 11, 1994, Ser. No. 320,368
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—185 **10 Claims**

1. A method for eliminating of cycling-induced electron trapping in the tunneling oxide of flash EEPROM devices, said method comprising the steps of:

applying a relatively low positive pulse voltage to a source region of said EEPROM devices during an entire erase cycle; and

simultaneously applying a negative ramp voltage to a control gate of said EEPROM devices during the entire erase cycle so



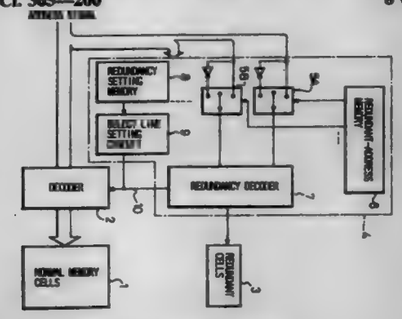
as to accomplish an averaging tunneling field from the beginning of the erase cycle to the end of the erase cycle.

5,485,424

SEMICONDUCTOR MEMORY AND REDUNDANT-ADDRESS WRITING METHOD

Shouichi Kawamura, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 23, 1993, Ser. No. 172,250
Claims priority, application Japan, Mar. 18, 1993, 5-058967
Int. Cl.[6] G11C *29/00*; H01L *27/10*
U.S. Cl. 365—200 **8 Claims**



1. A semiconductor memory comprising:

a matrix array of normal memory cells;

a decoder for selecting some of said memory cells in accordance with an address signal;

redundant cells for replacing some of said memory cells; and

a redundancy decision circuit for detecting whether the address signal is a signal that selects a part replaced by said redundant cells, and for disabling selection by said decoder and enabling selection of said redundant cells when the signal is for the replaced part, said redundancy decision circuit including:

gate circuits that can be set either to such a state as to enable one of the complementary input signals for output, or to a high impedance state;

a redundant-address memory, constructed of a nonvolatile semiconductor memory, for outputting a signal that sets the state of said gates;

a redundancy decoder which, when the outputs of said gate circuits are put in a prescribed state, outputs a signal to select said redundant cell and, at the same time, outputs a select-inhibit signal onto a redundancy select signal line to said decoder to inhibit the selection of any of said memory cells;

a redundancy setting memory for storing information regarding whether redundancy is switched on or not; and

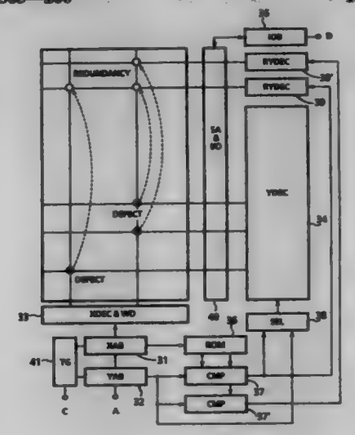
a select line setting circuit which outputs a signal onto said redundancy select signal line not to inhibit the selection when redundancy is not switched on, and which is put in a high impedance state with respect to said redundancy select signal line when redundancy is switched on.

5,485,425

SEMICONDUCTOR MEMORY DEVICE HAVING REDUNDANT COLUMN AND OPERATION METHOD THEREOF

Hidetoshi Iwai, Ome; Masuya Muranaka, Akishima; Takumi Nasu, Tachikura, and Shunichi Sukegawa, Ome, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan, and Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 82,958, Jun. 29, 1993, abandoned.
This application Jan. 20, 1995, Ser. No. 375,727
Claims priority, application Japan, Jun. 30, 1992, 4-196683
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—200 **15 Claims**



1. A semiconductor memory device comprising:

a plurality of word lines;

a plurality of data lines;

a first redundant data line;

a plurality of memory cells each of which is coupled to a corresponding one of said plurality of word lines and a corresponding one of said plurality of data lines;

a plurality of first redundant memory cells each of which is coupled to said first redundant data line and a corresponding one of said plurality of word lines;

a first decoder receiving a plurality of first address signals and selecting one of said plurality of word lines in accordance with said plurality of first address signals;

a defect address signal storing circuit receiving address signals from only said plurality of first address signals and outputting a plurality of first defect address signals corresponding to said first address signals;

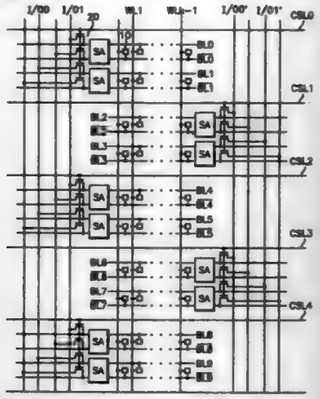
a first comparing circuit receiving a plurality of second address signals and said plurality of first defect address signals and deciding whether or not said plurality of first defect address signals are coincident with said plurality of second address signals; and

a second decoder selecting one of said plurality of data lines in accordance with said plurality of second address signals when said first comparing circuit decides that said plurality of first defect address signals are not coincident with said plurality of second address signals and selecting said first redundant data line when said first comparing circuit decides that said plurality of first defect address signals are coincident with said plurality of second address signals.

5,485,426
SEMICONDUCTOR MEMORY DEVICE HAVING A STRUCTURE FOR DRIVING INPUT/OUTPUT LINES AT A HIGH SPEED

Si-Yeol Lee, Kyungki-do; Hyun-Soon Jang, Seoul, and Myung-Ho Kim, Kyungki-do, all of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 15, 1994, Ser. No. 289,583
Claims priority, application Rep. of Korea, Aug. 14, 1993, 15744/1993
Int. Cl.[6] G11C *29/00*
U.S. Cl. 365—203 9 Claims



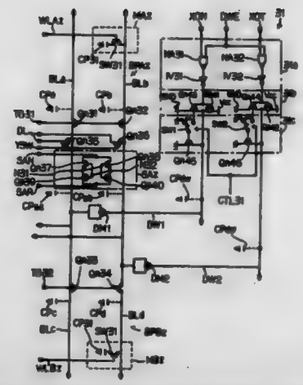
1. An input/output structure for a semiconductor memory device comprising:
a first plurality of input/output line pairs;
a first plurality of selection signals for selectively activating said first plurality of input/output line pairs;
a second plurality of input/output line pairs different from said first plurality of input/output line pairs;
a second plurality of selection signals for selectively activating said second plurality of input/output line pairs;
said first plurality of input/output line pairs being precharged and equalized when said second plurality of input/output line pairs are selectively activated; and
said second plurality of input/output line pairs being precharged and equalized when said first plurality of input/output line pairs are selectively activated.

5,485,427
DYNAMIC RANDOM ACCESS MEMORY DEVICE EQUIPPED WITH DUMMY CELLS IMPLEMENTED BY ENHANCEMENT TYPE TRANSISTORS

Sumio Ogawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 10,162, Jan. 28, 1993, Pat. No. 5,371,707. This application Aug. 24, 1994, Ser. No. 294,963
Claims priority, application Japan, Jan. 30, 1992, 4-40326
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—210 3 Claims

1. A semiconductor memory device comprising:
a plurality of sense amplifiers each having a first node and a second node;
a plurality of first bit lines each associated with one of said sense amplifiers and selectively connected to said first node via first transfer gate;
a plurality of second bit lines each associated with one of said sense amplifiers and selectively connected to said second node via second transfer gate;
a plurality of word lines;
a plurality of dummy word lines;
a plurality of memory cells each associated with one of said word lines and each associated and selectively connected to one of said first bit lines;

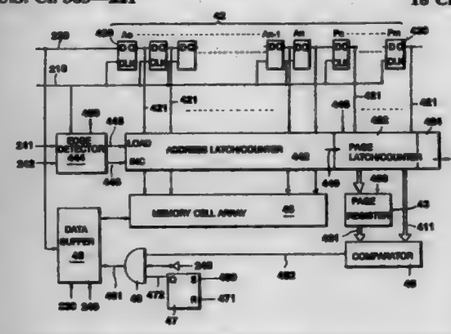


a plurality of dummy cells each associated with one of said dummy word lines and each associated and selectively connected to said second node, each of said dummy cells including an enhancement transistor;
a word line driver coupled to said plurality of word lines, for selectively activating at least one of said word lines; and
a dummy word line driver coupled to said plurality of dummy word lines, for selectively activating at least one of said dummy word lines.

5,485,428
MEMORY DEVICE WITH PAGE SELECT CAPABILITY

James J. Y. Lin, Hsinchu, Taiwan, Prov. of China, assignor to Winbond Electronics Corp., Hsinchu, Taiwan, Prov. of China

Filed May 24, 1994, Ser. No. 248,520
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—221 18 Claims

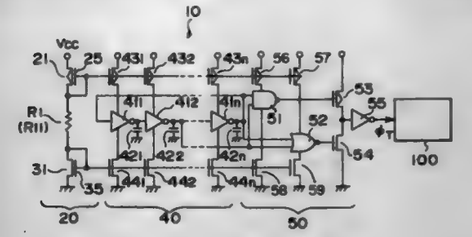


1. A serial access memory device having a first data terminal and a memory cell array having a plurality of address locations, comprising:
a shift register, in response to an address clock signal, for storing a first address value of a serial access memory operation, the shift register having a first input terminal coupled to the first data terminal;
an address decode circuit for serially accessing the plurality of address locations of said memory cell array, in response to an access control signal, the first address value, the address clock signal, and a clock signal; and
a page select means, coupled to the shift register, and in response to the access control signal, the address clock signal and the clock signal, for selectively storing a page number therein.

5,485,429
SEMICONDUCTOR MEMORY DEVICE WITH REFRESH TIMER CIRCUIT

Yoshitaka Ono, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Oct. 21, 1994, Ser. No. 326,833
Claims priority, application Japan, Jan. 22, 1993, 5-264420
Int. Cl.[6] G11C *11/403*
U.S. Cl. 365—222 2 Claims

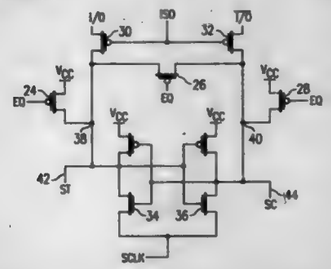


1. A semiconductor memory device comprising:
a dynamic memory element including a capacitor and a transistor;
a refresh timer circuit for recharging said dynamic memory element at periodic time intervals corresponding to an electric charge holding time of the dynamic memory element, which varies in accordance with ambient temperature,
wherein the refresh timer circuit includes:
a current bias circuit for varying an electric current in accordance with changing ambient temperature, said current bias circuit having a resistance component constructed by connecting in parallel a first resistance element exhibiting a resistance value variation that is 10 times or above between 0° C. and 100° C. and a second resistance element exhibiting a resistance value variation that is 10 times or under between 0° C. and 100° C.; and
an oscillation circuit for oscillating at a frequency corresponding to the electric current of the current bias circuit.

5,485,430
MULTIPLE CLOCKED DYNAMIC SENSE AMPLIFIER

David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 995,580, Dec. 22, 1992, abandoned. This application Sep. 15, 1994, Ser. No. 306,527
Int. Cl.[6] G11C *8/00;7/00*
U.S. Cl. 365—233 12 Claims

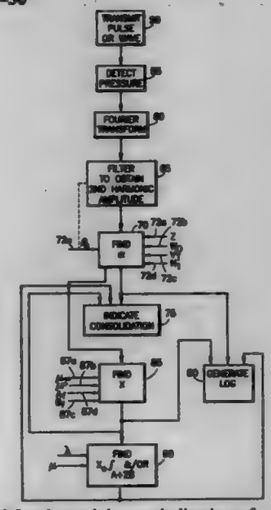


1. A circuit for use with a memory array, comprising:
a sense amplifier connected to an input line and a complementary input line, wherein the sense amplifier senses data on the input line and complementary input line only during a clock pulse applied to a sense amplifier clock input;
a clocking circuit connected to the sense amplifier clock input, utilized to enable said sense amplifier to read data on the input line and complementary input line by generating clock pulses, wherein said clocking circuit generates, during a single read cycle of the memory array, a first clock pulse followed after a predetermined time period by a second clock pulse, wherein the single read cycle of the memory array is the period between two consecutive equilibrations of the input line and the complementary input line; and
a latch connected to the sense amplifier, wherein the latch stores data sensed by the sense amplifier during the first and second clock pulses.

5,485,431
MEASUREMENT OF NONLINEAR FORMATION PARAMETERS USING SONIC BOREHOLE TOOL

David L. Johnson, Danbury; Sergio Kostek, Ridgefield, both of Conn., and Andrew Norris, Mountainside, N.J., assignors to Schlumberger Technology Corporation, Ridgefield, Conn.

Filed Nov. 19, 1993, Ser. No. 154,645
Int. Cl.[6] G01V *1/40*
U.S. Cl. 367—30 24 Claims



1. A method for determining an indication of a nonlinear property of a formation traversed by a fluid-filled borehole by using a sonic borehole tool having a sonic transmitter and a sonic receiver, comprising:
a) generating with the sonic transmitter a sonic signal having multiple cycles of a wave of a predetermined frequency, the sonic signal generating a tube wave of the predetermined frequency in the fluid-filled borehole;
b) measuring at the sonic receiver an amplitude of a parameter of the tube wave;
c) determining from the amplitude of the measured parameter of the tube wave an indication of nonlinearity of the formation according to the following relationship:

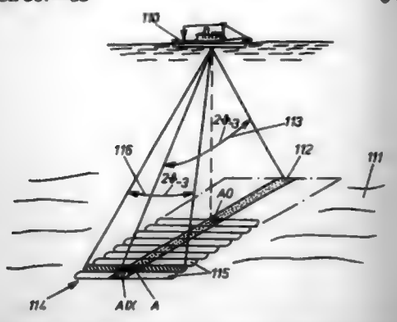
$$p(z,t)=P_0 \cos(kz-w_o t)+P_0^2[(\alpha V_T w_o/4)kz \sin(2kz-2w_o t)+(\alpha V_T^2-2N_1/8)\cos(2kz-2w_o t)]$$

where p(z,t) is a measured acoustic pressure (p) over time (t) at the sonic receiver which is located at a distance (z) from the sonic transmitter, α is a parameter which is a function of the nonlinearity of the formation, w_o is the predetermined frequency, V_T is the velocity of the tube wave of the predetermined frequency, P_0 is the maximum amplitude of the tube wave at the predetermined frequency, $k=w_o V_T$, and N_1 is a parameter related to the linear compliance of a wall of the fluid-filled borehole, the relationship relating the measured amplitude to an amplitude of a harmonic tube wave having a frequency which is a second harmonic of the predetermined frequency and which is generated in the fluid-filled borehole by the tube wave of the predetermined frequency and due to a nonlinear property of the formation.

5,485,432
METHOD OF MEASURING THE ACOUSTIC BACKSCATTER PROPERTY OF THE FLOOR OF BODIES OF WATER

Burckhard Aechter, Achim; Benno Freking, Weyhe-Leeste, and Holger Klindt, Rastede, all of, Germany, assignors to STN Atlas Elektronik GmbH, Bremen, Germany

Filed Dec. 22, 1994, Ser. No. 361,672
Claims priority, application Germany, Dec. 24, 1993, 43 44 509.8
Int. Cl.[6] G01V *1/38;13/00;* G01S *15/89*
U.S. Cl. 367—88 6 Claims



1. A method of measuring an acoustic backscatter property of a floor of a body of water, with the use a ship having vertical and longitudinal axes and moving in a travel direction, wherein a multibeam echosounder is installed on the ship and includes a transmitting and receiving apparatus and a transmitting antenna and a receiving antenna, said a method including:

(a) successively exposing a plurality of narrow transmission target strips on the sea floor that extend essentially vertically beneath a center of the transmitting antenna and transversely to the travel direction of the ship to sonic pulses by the transmitting antenna;

(b) forming, with the receiving antenna, a fan of narrow receiving strips extending in the travel direction and arranged side-by-side transversely to the travel direction for each transmission target strip, the receiving strips each having a section which covers the associated transmission target strip, of which sections there is a plumb section that lies essentially vertically beneath the center of the receiving antenna;

(c) measuring sonic backscatter from the sections of the receiving strips that cover the transmission target strips respectively exposed to a sonic pulse and forming first sonic backscatter values from the measured sonic backscatter;

(d) correcting the first sonic backscatter values of said measuring step by:

(d)(1) pivoting, at selected points in time, the transmission target strip and the fan of receiving strips respectively by 90° around the vertical axis of the ship from a measuring position into a calibrating position such that the transmission target strip extends essentially vertically beneath the ship along the longitudinal axis of the ship and the receiving strips extend transversely of the longitudinal axis of the ship;

(d)(2) measuring sonic backscatter from individual sections of sea floor successively covered by both the transmission target strips and receiving strips defined in said pivoting step and forming second sonic backscatter values corresponding to the individual sections;

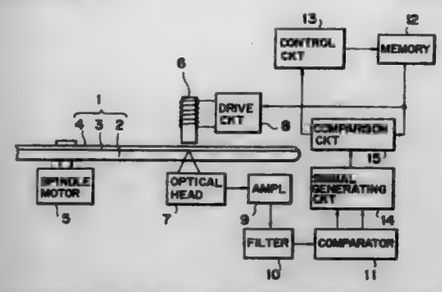
(d) (3) constructing a calibration curve for each of said plumb sections of the sea floor defined in said measuring step (b) and covered by individual receiving strips during said pivoting step, in which curve the second sonic backscatter values measured from the plumb section in the individual receiving strips are allocated to the respective receiving strips; and

(d) (4) correcting the first sonic backscatter values obtained during said measuring step (c) with the calibration curves constructed for each plumb section.

5,485,433
INFORMATION RECORDING METHOD AND APPARATUS FOR DETERMINING WHETHER RECORDING HAS BEEN CORRECTLY PERFORMED

Seiichiro Satomura; Katuya Yamazaki, both of Yokohama, and Kazuyoshi Ishii, Tokyo, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1992, Ser. No. 991,447
Claims priority, application Japan, Dec. 19, 1991, 3-354085; Apr. 10, 1992, 4-118196
Int. Cl.[6] G11B *11/00*
U.S. Cl. 369—13 35 Claims



1. An apparatus for recording new information on a recording medium, on which information was previously recorded, comprising:

a memory for storing the new information;

overwriting means for overwriting the new information on the previously recorded information by scanning the medium with a light beam;

a photodetector for receiving the light beam reflected by the medium, and reproducing a signal including both the previously recorded information and the new information, while simultaneously performing the overwriting by said overwriting means;

an extraction circuit for extracting a signal component corresponding to the new information from the signal reproduced by said photodetector, said extraction circuit comprising (i) a separation circuit comprising a high pass filter for separating frequency components corresponding to leading and trailing edges of a signal of the new information from the reproduced signal, (ii) a comparator for comparing an output from said high pass filter with a reference value and (iii) a signal generation circuit for generating the signal components on the basis of an output from said comparator;

a comparison circuit for comparing the signal component extracted by said extraction circuit with the new information stored in said memory; and

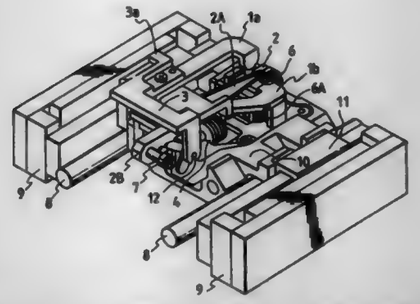
a determining circuit for determining, based on an output from said comparison circuit, whether or not recording is normally performed.

5,485,434
MAGNE TO-OPTICAL DISK APPARATUS FOR RECORDING AND/OR REPRODUCING INFORMATION USING MODULATED AND CONSTANT MAGNETIC FIELD APPLYING DEVICES

Masahiko Chaya, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 15,432, Feb. 9, 1993, abandoned. This application Jul. 29, 1993, Ser. No. 98,809
Claims priority, application Japan, Jan. 28, 1993, 5-031167
Int. Cl.[6] G11B *11/00*
U.S. Cl. 369—13 22 Claims

1. A magneto-optical disk apparatus which performs at least one of recording of information on and reproduction of information from a magneto-optical recording medium of a disk shape, said apparatus comprising:



optical means comprising an objective lens, for irradiating the medium with a light beam modulated according to information to be recorded on the medium, when optical modulation recording is executed, and for irradiating the medium with a light beam which is not modulated according to the information to be recorded on the medium, when magnetic field modulation recording is executed;

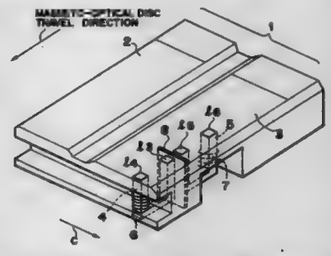
first magnetic field applying means for applying a magnetic field modulated according to the information to be recorded to a portion on the medium which is irradiated with the light beam which is not modulated according to the information, when the magnetic field modulation recording is executed, said first magnetic field applying means comprising a magnetic head for generating a magnetic field and a floating-type slider for supporting said magnetic head; and

second magnetic field applying means for applying a constant magnetic field, an orientation of which is inclined with respect to an optical axis of said objective lens, to a portion on the medium which is irradiated with the light beam which is modulated according to the information, when the optical modulation recording is executed.

5,485,435
MAGNETIC FIELD GENERATOR IN WHICH AN END FACE OF A MAGNETIC MATERIAL MEMBER PROJECTS FROM MAN END FACE OF MAGNETIC FIELD GENERATING CORES

Toru Matsuda, Yokohama; Fujihiro Ito, Saitama; Yutaka Kusano; Kenji Makino, both of Yokohama, and Koyo Hasegawa, Tokyo, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 749,729, Aug. 26, 1991, abandoned. This application Oct. 28, 1994, Ser. No. 331,148
Claims priority, application Japan, Mar. 20, 1990, 3-080647; Aug. 29, 1990, 2-225083; Aug. 31, 1990, 2-228049; Jul. 10, 1991, 3-195062
Int. Cl.[6] G11B *13/04*
U.S. Cl. 369—13 26 Claims



1. A magnetic field generator for applying a magnetic field to a recording medium, said magnetic field generator comprising:

a base;

a plurality of magnetic field generating cores formed on said base, said magnetic field generating cores being arranged in the direction of a track on the recording medium;

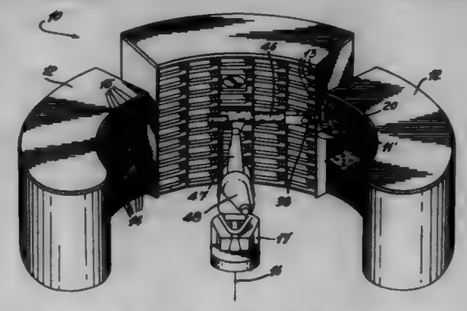
magnetic field generating coils respectively wound around said plurality of magnetic field generating cores; p1 a magnetic material member being disposed between adjacent twos of said plurality of magnetic field generating cores, an end face of said magnetic material member projecting from a respective end face of said magnetic field generating cores; and

drive means capable of independently driving each of said plurality of magnetic field generating coils.

5,485,436
SYSTEM AND METHOD FOR ACCESSING INFORMATION ON STORED OPTICAL DISCS

Robert Forget, Laval; Kurt Hibchen, Montreal; Robert Pareteau, Notre-Dame de L'Ile Perrot; Robert Daoust, Boucherville; Francois Beaumont, Laval; Yves Chagnon, Montreal; Bernard Lefebvre, Montreal, and Marc-Antoine Archambault, Montreal, all of, Canada, assignors to National Film Board of Canada, Montreal, Canada

Filed May 24, 1993, Ser. No. 65,710
Int. Cl.[6] G11B *17/22;* B66C *1/00;* B25J *15/10*
U.S. Cl. 369—36 25 Claims



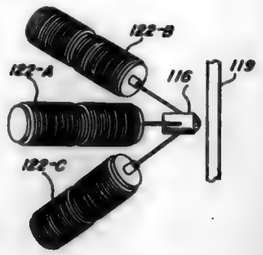
1. An automatic disc handling system for retrieving and positioning information carrying discs between a storage means to a position of use where there is provided one or more disc information retrieving devices operated by end user command, said system comprising pivotable robot means having a pair of robotic arms, each of said arms having actuable engaging means for engaging and disengaging one of said discs, said storage means having a plurality of superposed sliding trays containing one or more disc retaining cavities on a top surface thereof, said sliding trays having engageable means for the displacement of said trays from said storage means to a retracted loading or unloading position, said robot means having tray engaging means for engaging said engageable means of a selected one of said trays to displace the same from said storage means to said loading or unloading position and back to said storage means, a control means to cause said robot means to move to a selected position and cause one of said robotic arms to engage a selected one of said discs at a selected location at said storage means or position of use and to effect a specific work function, said pair of robotic arms being individually controllable pivotal arms, said arms each having a picker mechanism at a free end thereof, said picker mechanism engaging a disc for displacement and release of said disc at a desired location, said pair of robotic arms being pivotally connected to said pivotable robot means for simultaneous movement about a respective pivot connection, said control means controlling the pivoting of said arms to cause said disc engaged by said mechanism of one of said arms to be transferred to said picker mechanism of the other arm to invert said disc.

5,485,437

SHOCK-RESISTANT, ELECTROSTATICALLY ACTUATED PICK-UP FOR OPTICAL RECORDING AND PLAYBACK

David P. Gregg, Culver City, Calif., assignor to Discovision Associates, Irvine, Calif.

Filed Feb. 5, 1993, Ser. No. 13,773
Int. Cl.[6] G11B 7/095
U.S. Cl. 369—44.14 8 Claims



1. A bi-axial actuator for moving an optical module selectably in directions normal and/or parallel to a surface, said bi-axial actuator comprising;

first hi-directional linear actuator coupled to said optical module, the line of action of said first bi-directional linear actuator being a oriented obliquely to said surface: and

a second bi-directional linear actuator coupled to said optical module, the line of action of said second bi-directional linear actuator intersecting said line of action of said first bi-directional linear actuator at an angle with respect to both the normal to said surface and said line of action of said first bi-directional linear actuator;

wherein each of said first and second bi-directional linear actuators is further defined as comprising:

a. a first uni-directional linear actuator comprising a first elongated flexible tubular housing, a first transverse end wall of said housing having attached thereto an elongated actuator rod which extends longitudinally through said housing, said actuator rod protruding through a second transverse end wall of said tubular housing and through a mounting base member attached to said second transverse end wall of said tubular housing, said uni-directional linear actuator incorporating means responsive to a first external command signal in shortening the length of said tubular housing, thereby moving said first transverse end wall closer to said second transverse end wall and said mounting base and thereby causing said actuator rod to extend further outwards from said mounting base, and

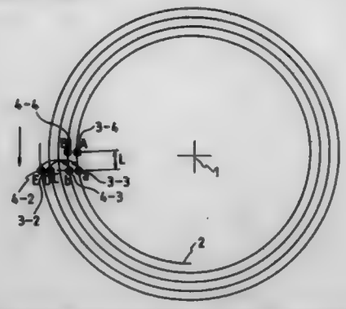
b. a second uni-directional linear actuator substantially similar in construction and operation to said first linear actuator, said second uni-directional linear actuator being longitudinally aligned with said first uni-directional linear actuator and having a second transverse wall attached to said mounting base, said second uni-directional linear actuator having a first, flexible transverse end wall, said actuator rod having a free end protruding outward through said first transverse end wall, said rod being fastened to said first transverse end wall, said second uni-directional linear actuator incorporating means responsive to a second external command signal in shortening the length of said tubular housing of said second uni-directional linear actuator, thereby moving said first transverse end wall of said second uni-directional linear actuator closer to said mounting base, and thereby causing said actuator rod to retract inwards towards said base, whereby alternately applying first and second command signals to said bi-directional actuator causes said free end of said actuator rod to alternately apply pushing and pulling forces on an object mechanically coupled to said free end of said actuator rod.

5,485,438

METHOD AND APPARATUS FOR OPTICALLY RECORDING AND/OR REPRODUCING INFORMATION

Osamu Koyama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 12, 1993, Ser. No. 133,871
Claims priority, application Japan, Jan. 12, 1992, 4-298214
Int. Cl.[6] G11B 7/095;7/00
U.S. Cl. 369—44.28 17 Claims



1. An optical information recording and/or reproducing method for recording or reproducing information in parallel from a first point to a second point on an optical information recording medium in which at least (N+1) track turns are provided between the first and second points on a helical track thereof, where N is an integer greater than or equal to two, using N light beams forming N beam spots via an optical system irradiating respectively N track turns adjacent to each other in the radial direction of the helical track, wherein said method comprises the steps of:

recording or reproducing one portion of the information with the N beam spots from a third point between the first and second points to the second point;

moving the N beam spots in a radial direction of the helical track so that the N beam spots move from the third point to a track turn upstream thereof; and

recording or reproducing the other portion of information not including the one portion of the information with the N beam spots from the first point to the third point.

5,485,439

METHOD FOR RECORDING/REPRODUCING INFORMATION AND APPARATUS THEREFOR

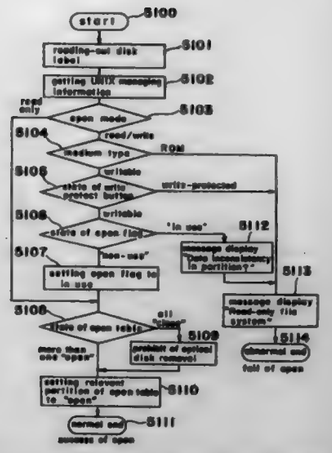
Hiroshi Hamasaka, Nishinomiya; Isao Satoh, Neyagawa; Yoshihisa Fukushima, Osaka; Yuji Takagi, Hirakata, and Yasushi Azumatani, Neyagawa, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 30, 1991, Ser. No. 785,296
Claims priority, application Japan, Jan. 30, 1990, 2-293831; Nov. 30, 1990, 2-337927; Jul. 4, 1991, 3-164320
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—47 3 Claims

1. A method for recording and reproducing information carried out by an apparatus employing an information recording medium having at least one partition composed of a plurality of files and file management information and a flag area in which an open flag is recorded in one-to-one correspondence with each partition, said open flag setting an in-use state in a partition where logically imperfect file management information is recorded and setting a non-use state in a partition where logically perfect file management information is recorded, said method having a partition opening process conducted before the start of a file recording operation and a partition closing process conducted after the completion of the file recording operation,

said partition opening process comprising the steps of:

discriminating the states of the open flags read out from the flag area;



error-terminating said opening process when at least one of the open flags shows the in-use state is detected in said flag discriminating step; and

setting the open flag corresponding to the partition to be subjected to the partition opening process to the in-use state when only the open flag shows the non-use state is detected in said flag discriminating step and recording on said flag area,

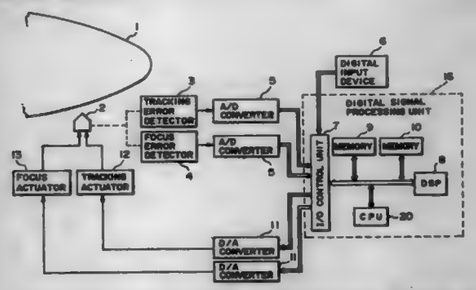
said partition closing process comprising the steps of setting the open flag corresponding to the partition to be subjected to the closing process to the non-use state and recording on said flag area.

5,485,440

OPTICAL INFORMATION RECORDING/REPRODUCING APPARATUS COMPRISING DIGITAL SERVO DEVICE FOR PERFORMING FOCUSING AND/OR TRACKING OF OPTICAL HEAD BASED ON DIGITAL INFORMATION

Tsukasa Ogino, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 351,035, Nov. 28, 1994, abandoned, which is a continuation of Ser. No. 514,320, Apr. 25, 1990, abandoned. This application May 22, 1995, Ser. No. 446,317
Claims priority, application Japan, Apr. 28, 1989, 1-107762; Apr. 20, 1990, 2-103055
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—44.34 6 Claims



1. An optical information recording/reproducing apparatus for effecting at least one of recording and reproducing of information on/from an optical information recording medium having a plurality of tracks by employing a light beam, comprising:

an optical system for irradiating a desired track on the recording medium with the light beam;

tracking and focusing error detecting means for detecting tracking and focusing errors of the light beam with respect to the desired track and for outputting an analog signal corresponding to the tracking and the focusing errors;

a tracking and focusing actuator for moving at least a part of said optical system in order to move the light beam with respect to the desired track on the recording medium and to adjust a focusing state of the light beam with respect to the recording medium;

A/D conversion means for converting the analog signal output from said tracking and focusing error detecting means into a digital signal;

calculating means for calculating a control amount of said tracking and focusing actuator by processing the digital signal converted by said A/D conversion means on the basis of a predetermined calculation equation in order to correct the tracking and focusing errors of the light beam, said calculating means outputting a digital signal;

memory means for storing a plurality of calculation equations each having a different order which are employed by said calculating means and correspond to a plurality of operation states or operation environments of said apparatus; and

D/A conversion means for converting the digital signal output from said calculating means into an analog signal,

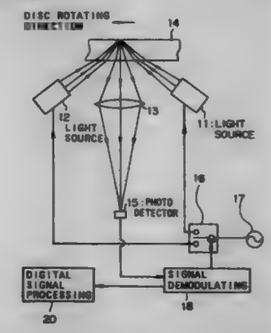
wherein said tracking and focusing actuator is driven ill accordance with the analog signal output from said D/A conversion means, and said calculating means selects a calculation equation having an order different from that of the calculation equation which is being employed among said plurality of calculation equations each having a different order stored in said memory means, in accordance with a variation in the operation state or operation environment of said apparatus, said calculating means performing a calculation on the basis of the selected calculation equation.

5,485,441

METHOD OF OPTICALLY READING INFORMATION, OPTICAL PICKUP APPARATUS AND OPTICAL REPRODUCING APPARATUS

Takanori Maeda, Tsurugashima, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 28, 1994, Ser. No. 314,233
Claims priority, application Japan, Jan. 1, 1993, 5-247156
Int. Cl.[6] G11B 7/085
U.S. Cl. 369—44.37 24 Claims



8. An optical pickup apparatus for optically reading information from an optical recording medium on which concave or convex signal pits are formed, said apparatus comprising:

a light source means for irradiating each of pit edge portions of one signal pit which are opposed to each other, with a reading light respectively; and

a light detecting means for detecting a reflection light from said each of pit edge portions, separately, to output two detection signals indicating detected positions of the pit edge portions with respect to said one signal pit.

5,485,442

DISPLAY DEVICE FOR A COMPACT DISC PLAYER AND A COMPACT DISC

Masamichi Furukawa, and Takurou Sone, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

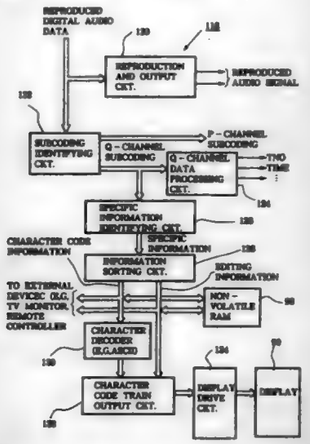
Division of Ser. No. 718,551, Jun. 20, 1991, Pat. No. 5,268,889. This application Jul. 28, 1993, Ser. No. 99,091

Claims priority, application Japan, Jun. 21, 1990, 2-163635; Dec. 7, 1990, 2-406237

The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—47 **14 Claims**



1. A recording apparatus for recording digital audio data on a disc recording medium, the digital audio data including an audio signal and a plurality of Q-channel subcodings, the recording apparatus comprising:

data recording means for recording digital audio data on the disc recording medium that can be used to reproduce the audio signal and the plurality of Q-channel subcodings corresponding to the audio signal;

specific information identifying means for recording identifying information into one of the plurality of Q-channel subcodings to identify a displayable character code train imparted into the plurality of Q-channels subcodings as specific information;

information sorting means for sorting the specific information into character code information and editing information for recording; and

recording means for recording the character code information and the editing information into the plurality of Q-channel subcodings.

5,485,443

RECORDING AND REPRODUCING SYSTEM

Masaki Niwayama, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 880,164, May 6, 1992, abandoned. This application Jul. 25, 1994, Ser. No. 279,903

Claims priority, application Japan, Jun. 19, 1991, 3-147205

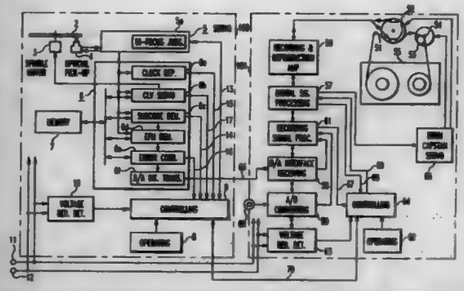
Int. Cl.[6] G11B *3/90*

U.S. Cl. 369—54 **5 Claims**

1. A recording and reproducing system comprising:

compact disc reproducing means for reproducing a signal recorded on a compact disc in a reproduction process so as to provide a reproduction signal;

digital signal recording and reproducing means for recording the reproduction signal from said compact disc reproducing means and for reproducing the thus recorded reproduction signal;



means for separating data blocks of the reproduction signal from said compact disc reproducing means;

abnormal reproduction detecting means for detecting an abnormal condition in said reproduction signal reproduced in said reproduction process from a signal recorded on a compact disc at the compact disc reproducing means;

means for causing, when said abnormal condition is detected, said compact disc reproducing means to return to a head portion of the data block currently being reproduced or a portion immediately forward of said head portion and re-initiate reproduction of said data block; and

means for causing, when said abnormal condition is detected, said digital signal recording and reproducing means to, beginning with the head portion of the data block currently being recorded or a portion immediately forward of said head portion, re-initiate recording of said reproduction signal.

5,485,444

SIGNALIZATION OF TYPES OF DEFECTS OF AN OPTICAL INFORMATION CARRIER

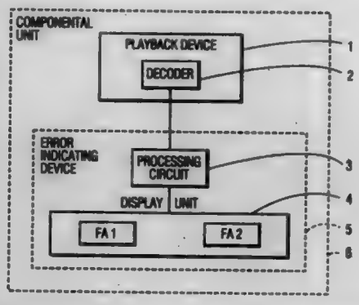
Hans-Robert Kühn; Engelbert Läufer, both of St. Georgen, and Richard Rutschmann, Wutöschingen, all of, Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

Continuation of Ser. No. 163,237, Dec. 6, 1993, abandoned. This application May 16, 1995, Ser. No. 442,555

Claims priority, application Germany, Jun. 7, 1991, 41 18 672.9; Jun. 25, 1991, 41 20 870.6; Mar. 28, 1992, 42 10 264.2

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—54 **15 Claims**



1. Optical apparatus for signaling a cause of error in a reproducing apparatus for recovering information recorded on an optical recording medium having a plurality of tracks and subject to defects, said apparatus comprising:

pickup circuitry conditioned to produce an RF signal from said optical recording medium, said RF signal, in the absence of defects, exhibiting output values which swing between a relatively positive average maximum value A and a relatively negative average minimum value B;

a threshold value circuit coupled to receive said RF signal to generating a dynamic threshold value which is a predetermined amount less than said relatively positive average maximum value A;

comparator circuitry arranged, to determine occurrences of an envelope of said RF signal falling below said threshold value when said RF signal is concurrently greater than a second predetermined value:

a duration detector including an integrator, coupled to said comparator circuitry, said duration detector producing a control signal when the duration of one of said occurrences exceeds a predetermined duration, indicating an occurrence of an error of a particular cause; and

display means coupled to said duration detector and displaying fingerprint as the cause of error responsive to said control signal.

5,485,445

DISC DRIVING APPARATUS HAVING MEANS FOR PLACING A READ RECORD HEAD AT A PREDETERMINED POSITION IN THE INNERMOST REGION OF A DISC

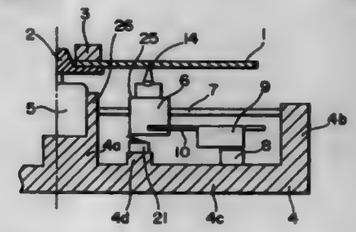
Hiroshi Oinoue, Tokyo, and Tokio Kanada, Kanagawa, both of, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 989,356, Dec. 11, 1992, abandoned. This application Jun. 1, 1994, Ser. No. 252,069

Claims priority, application Japan, Dec. 13, 1991, 3-351982; Jan. 9, 1992, 4-298068

Int. Cl.[6] G11B *3/90*

U.S. Cl. 369—56 **10 Claims**



1. A disc driving apparatus comprising:

an optical head for recording information on and reproducing information from a disc type recording medium having an innermost region which includes table of contents (TOC) information;

a detector means for detecting that the optical head is at a first predetermined position relative to the disc type recording medium;

a feed motor that moves the optical head in a radially inward direction of the disc-type recording medium at the initiation of a playback operation at a first speed toward the innermost region and, when the detector means detects that the optical head is at the first predetermined position that thereafter continues to move the optical head radially inwardly of the disc-type recording medium at a second, reduced speed for a predetermined period of time sufficient for the feed motor to move the optical head to a second predetermined position more proximate to the innermost region of the disc type recording medium than the first predetermined position; and

a mechanical stop for restricting an inner limit of the radial motion of the optical head to the second predetermined position by butting against the optical head when the optical head is at the second predetermined position, wherein at the second predetermined position the optical head is aligned to read recorded information signals in the TOC from the innermost region of the disc type recording medium.

5,485,446

STORAGE DISK MODULE AND STORAGE DISK DEVICE HAVING A PLURALITY OF STORAGE DISK MODULES

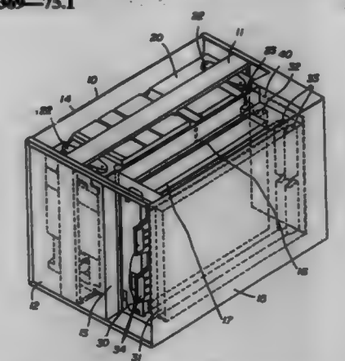
Hiroi Uno, and Takao Hakamatani, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 799,610, Nov. 27, 1991, abandoned. This application Jun. 10, 1994, Ser. No. 258,594

Claims priority, application Japan, Nov. 30, 1990, 2-334161; Feb. 14, 1991, 3-042578; Feb. 22, 1991, 3-050679; Mar. 1, 1991, 3-059321; Mar. 1, 1991, 3-059322

Int. Cl.[6] G11B *33/12*

U.S. Cl. 369—75.1 **17 Claims**



1. A storage disk module adapted to be inserted into a locker, the storage disk module comprising:

a frame having front and back portions, the front portion of the frame having an opening;

a disk drive unit having a storage disk, said disk drive unit being accommodated in said frame;

a circuit unit which controls said disk drive unit, said circuit unit being accommodated in said frame;

a power source unit which supplies said disk drive unit and said circuit unit with electrical energy, said power source unit being accommodated in said frame;

said disk drive unit, said circuit unit and said power source unit each having corresponding front and back portions and being slidingly insertable in a first direction into said frame via the opening at the front portion of the frame in substantially parallel, side by side relationship with respect to each other so that the back portion of each unit is opposite to the back portion of the frame; and

a back panel mounted in the back portion of said frame and extending transversely to the first direction, wherein said back panel has a front surface electrically connecting said disk drive unit, said circuit unit and said power source to each other, and wherein said back panel has a rear surface used for an external connection with another storage disk module.

5,485,447

HIGH-SPEED DATA DUBBING METHOD

Hidenori Minoda, Higashihiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 16, 1994, Ser. No. 243,145

Claims priority, application Japan, Jul. 22, 1993, 5-181338

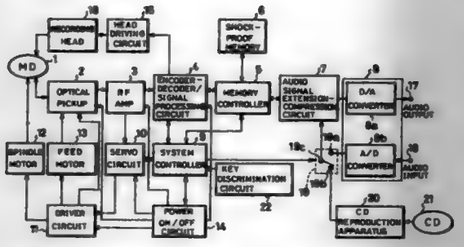
Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—84 **29 Claims**

1. A high-speed data dubbing method comprising the steps of:

storing data externally transmitted in a memory at a transmission speed that is higher than that of normal reproduction, but lower than a transfer speed to a recording medium;

recognizing respective recording start positions in accordance with positional information of the recording medium having a plurality of intermittent recordable areas possibly having varying lengths;



recognizing amounts of data to be recorded in the recordable areas including the respective recording start positions;

calculating waiting time by which the amount of remaining data stored in the memory is substantially emptied upon completion of the data transferring process to the recordable area prior to transferring data to one of the recordable areas, based on the data transfer speed to the memory and the amount of data to be recorded in the recordable area; and

interrupting the dubbing operation by stopping the data transferring process for the waiting time.

5,485,448

OPTICAL DISK MASTERING APPARATUS HAVING TWO DATA TRANSFERRING RATES FOR RECORDING AND MONITORING

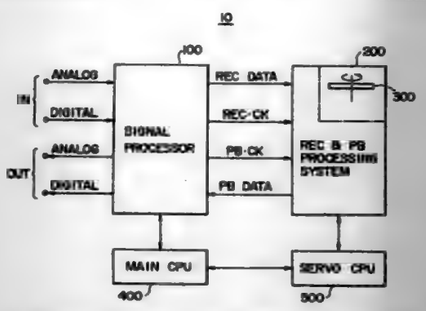
Yoshio Kishi; Teruhito Noshiro; Masato Noguchi, all of Kanagawa, and Hiroaki Takahashi, Tokyo, all of, Japan, assignors to Sony Corporation, Japan

Filed Mar. 8, 1994, Ser. No. 209,111

Claims priority, application Japan, Mar. 9, 1993, 5-048399

Int. Cl.[6] G11B *19/02;7/28*

U.S. Cl. 369—99 **19 Claims**



1. An apparatus for recording and reproducing signals in data blocks onto and from a disk medium, comprising:

a recording and reproducing head;

first memory means for receiving and storing input signals at a first data transferring rate and supplying the stored signals at a second data transferring rate higher than the first data transferring rate so as to be recorded onto the disk medium at the second data transferring rate by means of said recording and reproducing head;

second memory means for receiving and storing signals reproduced from the disk medium at the second data transferring rate by means of said recording and reproducing head and outputting the signals stored in the second memory at a data transferring rate lower than the second data transferring rate; and

control means for controlling said recording and reproducing head to relatively scan a portion of the disk medium corresponding to a predetermined number of blocks twice for a predetermined period of time so that recording and reproduction occur alternately and successively at said portion of the disk medium.

5,485,449

METHOD AND DEVICE FOR RECORDING DATA ON AN OPTICAL DISC

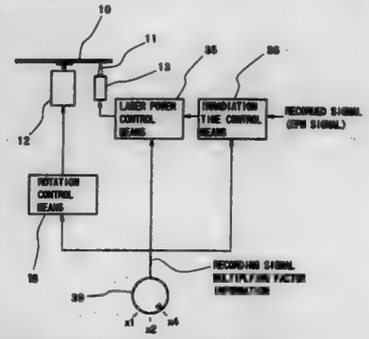
Yukihisa Nakajo, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed May 4, 1993, Ser. No. 57,700

Claims priority, application Japan, May 8, 1992, 4-143157

Int. Cl.[6] G11B *7/007*

U.S. Cl. 369—116 **8 Claims**



1. An optical disc recording device comprising:

rotation driving means for rotating an optical disc;

rotation speed controlling means connected to said rotation driving means for controlling a rotational speed of the optical disc;

data recording means for irradiating a laser beam on the optical disc rotated by said rotation driving means in accordance with digital data to be recorded during an irradiation time, wherein a pit having a length is formed on the optical disc;

recording speed setting means for designating a desired recording speed, the desired recording speed being a constant linear velocity;

irradiation time control means for controlling an actual irradiation time of said data recording means in accordance with a recording speed designated by said recording speed setting means, wherein a ratio of the actual irradiation time compared with a predetermined unadjusted irradiation time corresponding to a pit to be recorded is shortened in accordance with the designated recording speed; and

laser power control means for controlling a laser power level of the laser beam to be irradiated to obtain a predetermined pit length using the actual irradiation time determined by the irradiation time control means.

5,485,450

Patent Not Issued For This Number

5,485,451

INFORMATION PROCESSING APPARATUS

Akihiko Yamano, Sagamihara; Katsunori Hatanaka, Yokohama; Kunihiro Sakai, Isehara; Takahiro Oguchi, Ebina, and Shunichi Shido, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

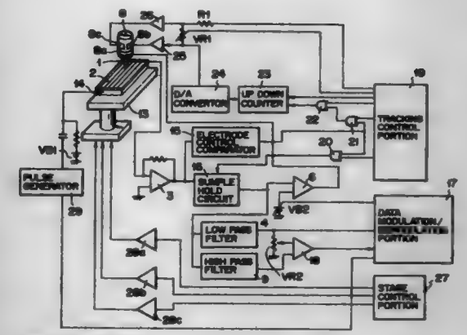
Division of Ser. No. 882,930, May 14, 1992, Pat. No. 5,299,184. This application Dec. 28, 1993, Ser. No. 174,443

Claims priority, application Japan, May 15, 1991, 3-139631

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—126 **2 Claims**

1. An information recording/reproducing apparatus for effecting at least one of recording and reproducing of information with a probe electrode on a recording medium provided with a reference mark used as a reference, said apparatus comprising:



a probe electrode;

means for applying a voltage between said probe electrode and said recording medium;

means for detecting a current flowing to said probe electrode upon said voltage application;

means for adjusting a distance between said recording medium and said probe electrode on the basis of said detected current;

means for relatively moving said probe electrode and said recording medium such that said probe electrode crosses said reference;

means for detecting an edge portion of said reference mark from a change in the detected current; and

means for inhibiting the distance adjustment of said recording medium and said probe electrode by said adjusting means when said edge portion is detected.

5,485,452

OPTICAL INFORMATION RECORDING MEDIUM

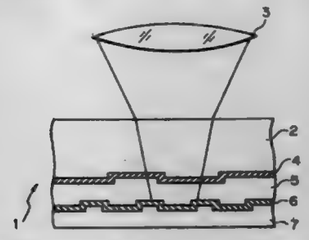
Takanori Maeda, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 37,660, Mar. 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 804,585, Dec. 10, 1991, abandoned. This application Oct. 5, 1994, Ser. No. 318,485

Claims priority, application Japan, Jun. 28, 1991, 3-158914

Int. Cl.[6] G11B *7/24*

U.S. Cl. 369—284 **5 Claims**



1. An optical information recording medium comprising: a first recording layer having a first transparent support layer having a first surface on which pits representing recorded information are formed and a thin silver film formed on said first surface of said first transparent support layer, said thin silver film reflecting a first incident light of a first wavelength and transmitting a second incident light of a second wavelength different from the first wavelength; and

a second recording layer having a second transparent support layer having a second surface on which pits representing recorded information are formed and a thin aluminum film formed on said second surface of said second transparent support layer, said thin aluminum film reflecting the second incident light, the first recording layer and the second recording layer being laminated in the order of the first recording layer and second recording layer from a side where the first incident light enters.

5. An optical information recording medium having a first side comprising:

a first recording layer for reflecting a first light incident from said first side to change an optical phase characteristic thereof, said first light having a first wavelength and said first recording layer transmitting a second light incident from said first side having a second wavelength different from the first wavelength; and

a second recording layer laminated on the first recording layer for reflecting the second light to change an optical phase characteristic thereof;

the second recording layer further comprising a second transparent support layer having a second information recording surface and a second reflecting layer formed on the second information recording surface;

wherein the second reflecting layer is made of Al.

5,485,453

METHOD FOR HANDLING REDUNDANT SWITCHING PLANES IN PACKET SWITCHES AND A PACKET SWITCH FOR CARRYING OUT THE METHOD

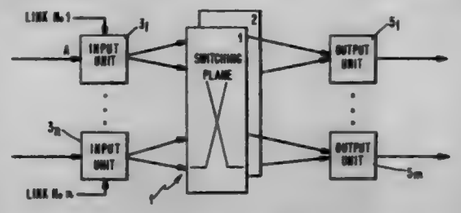
Jan S. R. Wahlman, Kista; Hans A. P. Berghager, Älvsjö , and Leif M. Larsson, Stockholm, all of, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Feb. 15, 1995, Ser. No. 196,485

Claims priority, application Sweden, Feb. 15, 1993, 9300485; May 27, 1993, 9301885

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—16 **41 Claims**



1. In a packet switch comprising an input side including an input unit for receiving a sequence of data packets arriving at the switch; an output side including an output unit for forwarding the sequence of data packets from the switch; and at least two identical switching planes, each having an input coupled to receive the sequence of data packets from the input unit and coupled to provide the sequence of data packets to the output unit, a method for forwarding, from the output unit, the sequence of data packets, comprising the steps of:

at the input unit receiving the sequence of data packets and supplying the sequence of data packets to each of the switching planes;

at each of the switching planes, supplying the sequence of data packets to the output unit; and

at the output unit, for each arriving data packet in the sequence of data packets, selecting a preferred switching plane from the at least two identical switching planes, and receiving from the preferred switching plane a preferred data packet to be forwarded from the output unit, wherein the step of selecting comprises:

generating, for each of the switching planes, a corresponding quality value based on earlier arriving data packets that have been supplied to the output unit, the quality value indicating to what extent the switching plane has transmitted without error, from the input unit to the output unit, the earlier arriving data packets;

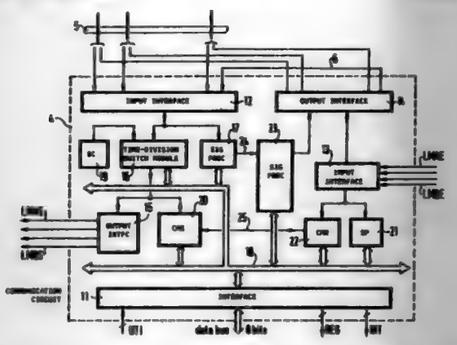
using the quality values to select the preferred switching plane.

5,485,454

SYSTEM AND METHOD OF COMMUNICATION BETWEEN CIRCUIT MODE COMMUNICATION INSTALLATION CORE UNITS

Raymond Gass, Bolsenheim, and André Ruhlmann, Marmoutier, both of, France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Aug. 28, 1992, Ser. No. 937,577
Claims priority, application France, Aug. 29, 1991, 91 10736
Int. Cl.[6] H04L *12/52*
U.S. Cl. 370—58.3 15 Claims



1. Communication system consisting of at most n circuit mode supporting switching units interconnected by point-to-point circuits to thereby form a core of a communication installation, wherein

each distinct pair of said switching units is interconnected by a different said point-to-point circuit,

the point-to-point circuits between said switching units are direct connections forming a communication subnetwork in which all the circuits are structured and managed in exactly the same manner,

each of said switching units has

exactly one respective integrated communication circuit for communicating with the switching units to which it is connected by the point-to-point circuits, all said communications circuits being of a same type,

each said communication circuit has

exactly n point-to-point circuit ports, each of said point-to-point circuits being connected to a different one of said n point-to-point circuit ports and providing exactly p point-to-point channels, to thereby supply the respective switching unit with p point-to-point channels to each of said switching units,

exactly q time-division multiplex circuit ports each providing exactly r respective multiplex link channels, to thereby supply the respective switching unit with qxr link channels serving up to qxr terminal units connected to the respective switching unit, and

a microprocessor coupled to said point-to-point circuit ports and to said time-division multiplex circuit ports, for

distributing during each frame of duration T, a first set of bytes from said qxr multiplex link channels to one or more of said switching units via said n point-to-point circuit ports, and

switching during each said frame of duration T, a second set of bytes arriving on any of up to pxq of said pxn point-to-point channels to respective ones of said qxr multiplex link channels,

where n, p, q and r are predetermined positive integers greater than one, n being the maximum number of said switching units in said system, p being the number of channels on each said circuit mode point-to-point circuit, r being the number of channels on each said time-division multiplex link and q being the maxium number of said time division multiplex links per each said communication circuit, such that $p \geq qxr$.

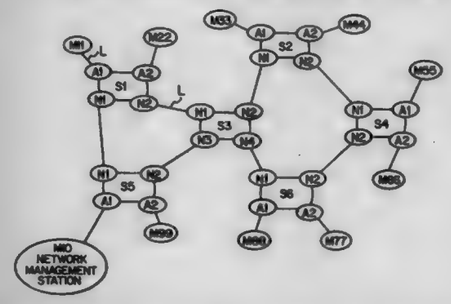
5,485,455

NETWORK HAVING SECURE FAST PACKET SWITCHING AND GUARANTEED QUALITY OF SERVICE

Kurt Dobbins, Bedford; Phil Andlauer, Londonderry; Chris Oliver, Rochester; Tom Parker, Merrimack, all of N.H.; Andy Grimes, Cape Neddick, Me.; Bruce Nutbrown, Campton, N.H.; Dan Hullette, Wilton, N.H.; Roger Dev, Durham, N.H., and Jason Jeffords, Dover, N.H., assignors to Cabletron Systems, Inc., Rochester, N.H.

Filed Jan. 28, 1994, Ser. No. 188,238
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—60 34 Claims

1. In a packet switched data communications network, the



network including a plurality of end systems and switches connected by links, each switch having at least one network port connected to another switch and some switches having access ports connected to end systems, and each end system having a unique physical layer address, each switch including a connection database of valid connections between different ports on the switch and a switching mechanism for establishing temporary connections between the different ports on the switch, the improvement comprising:

a connection server coupled to each switch,

means coupled to each switch and the connection server for registering each switch with the connection server, and

means, prior to transmission of a data packet comprising a connectionless datagram from a first end system having a first physical layer address to a second end system having a second physical layer address, for determining a path from the first end system to the second end system through one or more of the switches and for configuring the connection database of each respective switch on the path with a connection identifier including the first physical layer address and the second physical layer address of the first and second end systems, respectively,

the determining and configuring means being coupled to each switch and the connection server, and the data packet remaining as a connectionless datagram as the data packet is transmitted through the respective switches along the path.

5,485,456

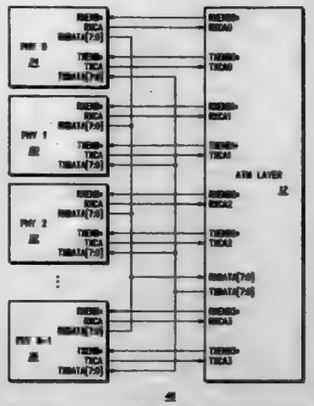
ASYNCHRONOUS TRANSFER MODE (ATM) SYSTEM HAVING AN ATM DEVICE COUPLED TO MULTIPLE PHYSICAL LAYER DEVICES

Ronen Shtayer, Tel-Aviv; Roul Eliyahu, Ramat-Gan; Yehuda Shvager, Hashmonaim, and Yaron Ben-Arie, Ramat-Gan, all of, Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 21, 1994, Ser. No. 326,972
Int. Cl.[6] H04J *3/24*
U.S. Cl. 370—60 21 Claims

10. An asynchronous transfer mode (ATM) system comprising:

an asynchronous transfer mode (ATM) layer device which forms an ATM layer, the ATM layer device having terminals for communicating signals via a receive data bus, a receive enable control signal, a receive cell available control signal, a transmit data bus, a transmit enable control signal, a transmit cell available control signal;



N physical layer devices for forming N PHY layer, the N physical layer devices being coupled to the ATM layer device wherein N is a finite positive integer, the N physical layer devices each having terminals coupled to the receive data bus, a receive enable control signal, the receive cell available control signal, the transmit data bus, the transmit enable control signal, the transmit cell available control signal; and

means for communicating control values between the ATM layer device and the N Phy layer device to perform handshaking operations which determine when data cells are communicated between the N Phy layer device and the ATM layer device using one of either the receive data bus or the transmit data bus.

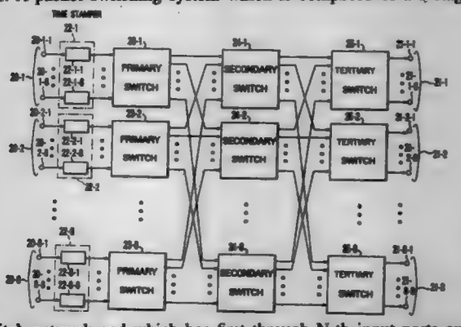
5,485,457

PACKET SWITCHING SYSTEM CAPABLE OF REDUCING A DELAY TIME FOR EACH PACKET

Toshiya Aramaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 968,507, Oct. 29, 1992, Pat. No. 5,383,181. This application Oct. 6, 1994, Ser. No. 319,039
Claims priority, application Japan, Jan. 31, 1991, 3-286033; Nov. 29, 1991, 3-315845
The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—60 11 Claims

1. A packet switching system which is composed of a 3-stage



switch network and which has first through N-th input ports and first through N-th output ports, where N represents a predetermined integer which is not less than two, each of said first through said N-th input ports being supplied with an input packet having a fixed-length while said first through said N-th output ports produce first through N-th output packets, respectively, each of which has said fixed-length, said input packet consisting of a header and information bits, the header of said input packet including a destination address indicative of destination for said input packet in question, said packet switching system comprising:

first through N-th time stampers connected to said first through said N-th input ports, respectively, each of said first through said N-th time stampers assigning a time stamp indicative of a time instant to said input packet to produce a time stamped packet;

first through N-th primary switches connected to said first through said N-th time stampers, respectively, each of said first through said N-th primary switches having a primary input line and first through N-th primary output lines, each of said first through said N-th primary switches carrying out a primary switching operation on said time stamped packet so as to selectively connect said primary input line with said first through said N-th primary output lines to produce primary switched packets;

first through N-th secondary switches connected to said first through said N-th primary switches in a cross link connection fashion, each of said first through N-th secondary switches having first through N-th secondary input lines and first through N-th secondary output lines, the n-th secondary input line of each said first through said N-th secondary switches being connected to said first through said N-th primary output lines of an n-th primary switch, respectively, where n represents an integer varying between one and N, both inclusive, each of said first through N-th secondary switches carrying out a secondary switching operation on said primary switched packets supplied thereto in sequence on the basis of said destination addresses included in the respective primary switched packets to produce secondary switched packets; and

first through N-th tertiary switches connected to said first through N-th secondary switches in the cross link connection fashion, each of said first through said N-th tertiary switches having first through N-th tertiary input lines and a tertiary output line, the n-th tertiary input line of each said first through said N-th tertiary switches being connected to said first through said N-th secondary output lines of an n-th secondary switch, respectively, each of said first through said N-th tertiary switches carrying out a tertiary switching operation on the secondary switched packets successively supplied thereto on the basis of the time stamps assigned to the respective secondary switched packets, said first through said N-th tertiary switches producing first through N-th tertiary switched packets, respectively, the tertiary output lines of said first through N-th tertiary switches being connected to said first through said N-th output ports, respectively, whereby said first through said N-th output ports produce, as said first through N-th output packets, said first through said N-th tertiary switched packets, respectively.

5,485,458

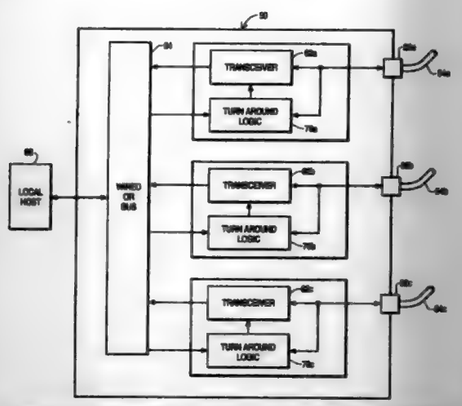
BUS INTERCONNECT CIRCUIT INCLUDING PORT CONTROL LOGIC FOR A MULTIPLE NODE COMMUNICATION NETWORK

Florin Oprescu, Sunnyvale, and Roger W. Van Brunt, San Francisco, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Mar. 5, 1993, Ser. No. 27,015
Int. Cl.[6] H04L *12/413;12/44*
U.S. Cl. 370—85.2 21 Claims

1. A node in a communication network for coupling to a second node by a point-to-point link including a first signal line and a second signal line, the communication network including a plurality of nodes interconnected by point-to-point links, said first node comprising:

a local physical bus having a dominant state; and



at least one port coupled to said local physical bus, including

a transmit connection for coupling to the first signal line,

a receive connection for coupling to the second signal line to supply a RB signal,

a bidirectional transceiver including a receiver and a transmitter, said receiver coupled to the receive connection and said transmitter coupled to the transmit connection, said bidirectional transceiver coupled to receive a TxEN control signal having a first value that enables the transmitter to transmit from the local physical bus to the first signal line, and a second value that disables the transmitter so that it outputs a non-dominant state on the first signal line,

a LB monitor coupled to the local bus for supplying a LB signal having a value indicative of the signal on the local bus, and

a turn around logic circuit coupled to receive the RB signal and the LB signal, and to supply said TxEN control signal responsive thereto, said turn around logic including an output latch for storing said TxEN control signal, said turn around logic operating so that

if said RB signal is high, then said TxEn signal has said first value,

if said RB signal is low and said LB signal is high, then said TxEn signal has said second value, and

if said RB signal is low and said LB signal is low, then said TxEn signal remains unchanged from its latched value stored in said output latch.

5,485,459

LOCAL COMMUNICATION SYSTEM WITH PLURAL DATA CHANNELS

Bernard Van Steenbrugge, Eindhoven, Netherlands, assignor to D2B Systems Company Limited, Redhill, England

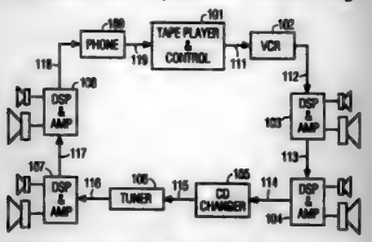
Filed Dec. 15, 1993, Ser. No. 167,389

Claims priority, application United Kingdom, Dec. 21, 1992, 9226580

Int. Cl.[6] H04J *3/02*

U.S. Cl. 370—85.4 **13 Claims**

1. A local communication system for communicating messages



via a plurality of serial data channels, comprising:

a first group of stations, to each of which is assigned a respective one of said serial data channels for data transmission; and

a second group of stations, to which is assigned a shared serial data channel for transmission, such that said second group of stations transmits data via the shared serial data channel;

each station in said second group of stations being prevented from transmitting on said shared serial data channel unless authorized to transmit by a command received from one of said stations in said first group of stations having its own data channel, and wherein only one of said second group of stations being so authorized to transmit via said shared serial data channel at any given time.

5,485,460

SYSTEM AND METHOD FOR RUNNING MULTIPLE INCOMPATIBLE NETWORK PROTOCOL STACKS

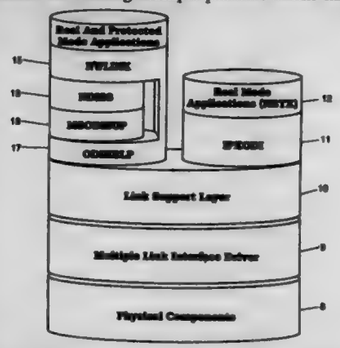
Evan J. Schrier, Kirkland; Thomas R. Reardon, Seattle, and Aaron W. Ogus, Kirkland, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Aug. 19, 1994, Ser. No. 293,998

Int. Cl.[6] G06F *13/00;15/16*

U.S. Cl. 370—94.1 **24 Claims**

1. A method for running multiple protocol stacks implementing



the same protocol on a network client having a generic interface which is capable of receiving incoming data packets destined for applications running on the client and presenting the data packets to multiple protocol stacks for consumption, comprising the steps of:

generating and maintaining a unique identifier for each application that is associated with the multiple protocol stacks of the same type;

prescanning the incoming data packets received by the generic interface to determine if the incoming data packets contain unique identifiers of any of the applications;

providing the incoming data packets to the applications associated with the prescanned unique identifiers.

5,485,461

ATM CELL DETECTOR

Hamidreza Asgari, Rotterdam, Netherlands, assignor to Koninklijke PTT Nederland N.V., Groningen, Netherlands

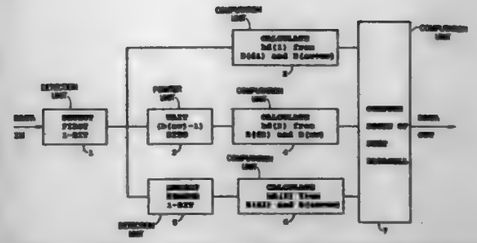
Filed Jun. 23, 1994, Ser. No. 264,317

Claims priority, application Netherlands, Jul. 1, 1993, 9301156

Int. Cl.[6] H04J *3/24*

U.S. Cl. 370—94.2 **2 Claims**

1. Method for detecting, from a bit stream, the beginning of data packets such as ATM data cells, which data packets originate from different sources and are combined into one stream of data packets, each data packet being preceded by a preamble which comprises at least a gap, formed by a number of 0-bits, and a unique word UW having a unique word reference value which is formed by a



specific combination of 0-bits and 1-bits and which unique word reference value has a length of b(uw) bits, wherein the unique word UW is preceded by a bit alignment word AW having an alignment word reference value which is formed by, beginning with a 1-bit, a specific combination of 0-bits and 1-bits and which has a length of b(aw) bits,

the method comprising the following steps being carried out successively for the purpose of detecting a new data packet after a previous data packet has ended:

detecting, from a bit stream, the first 1-bit to occur and calculating, for a first detected bit string B(d1), which begins with the first detected 1-bit and which has a length b(d1) equal to the number of bits b(aw) of the alignment word reference value plus the number of bits b(uw) of the unique word reference value, a Hamming distance hd(1) between the first detected bit string B(d1) and a first reference bit string B(aw+uw) being equal to the alignment word reference value plus the unique word reference value;

calculating, for a second detected bit string B(d2), which begins with the detected first 1-bit, (b(aw)-1) bits after said detected first 1-bit occurs and which has a length b(d2) equal to the number of bits b(uw) of the unique word reference value, the Hamming distance hd(2) between the second detected bit string B(d2) and a second reference bit string B(uw) which is equal to the unique word reference value;

detecting, from the bit stream, a second 1-bit to occur and calculating, for a third detected bit string B(d3), which begins with the second detected 1-bit and which has a length b(d3) equal to the number of bits b(aw) of the alignment word reference value plus the number of bits b(uw) of the unique word reference value, the Hamming distance hd(3) between the third detected bit string B(d3) and the third reference bit string B(aw+uw) which is equal to the alignment word reference value plus the unique word reference value;

calculating the position of the first bit of a new data packet on the basis of at least one of the calculated Hamming distances hd(1), hd(2) and hd(3) according to the following rules, where p is the number of bits of possible further preamble words which follow the gap, the alignment word AW and the unique word UW:

if hd(1)=0 or hd(1)=1, then the first bit of the data packet is situated at a distance of b(aw+uw)+p bits after the detected first 1 -bit;

if hd(2)=0, then the first bit of the data packet is situated at a distance of b(aw+uw)-1+p bits after the detected first 1-bit; and

if hd(3)=0, then the first bit of the data packet is situated at a distance of b(aw+uw)+p bits after the detected second 1-bit.

5,485,462

METHOD OF FACILITATING AN AUDIO SOURCE CHANGE IN A DIGITAL RADIO COMMUNICATION SYSTEM

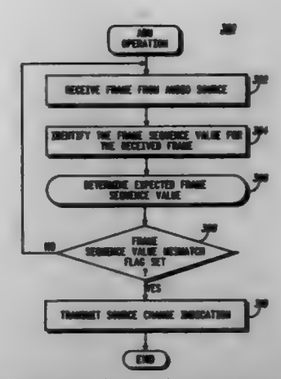
David Helm, 1518 Pearl Ave., Glendale Heights, Ill. 60139, and William Felderman, 1310 Spring Beach Rd., Cary, Ill. 60013

Filed Aug. 25, 1994, Ser. No. 296,197

Int. Cl.[6] H04Q *7/22*

U.S. Cl. 370—95.1 **11 Claims**

1. In a digital radio communication system that includes a plurality of audio source units and a switching unit that couples the



plurality of audio source units to at least one communication unit, a method of facilitating an audio source change comprising the steps of:

identifying a frame sequence value for a received frame to produce an identified frame sequence value;

determining whether the identified frame sequence value matches an expected frame sequence value; and

when the identified frame sequence value does not match the expected frame sequence value, transmitting a source change indication to the at least one communication unit, thereby facilitating the audio source change.

5,485,463

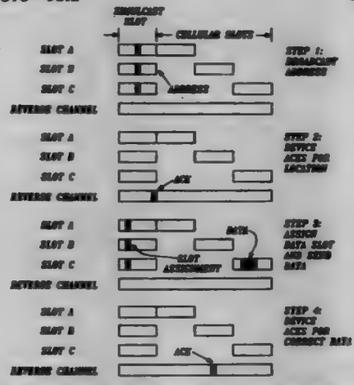
SYSTEM FOR TRANSMITTING PAGING SIGNALS USING TIME-DIVISION-MULTIPLEXING

Andrei Godoroja, Vancouver, Canada, assignor to Glenayre Electronics, Inc., Charlotte, N.C.

Filed Sep. 9, 1994, Ser. No. 303,348

Int. Cl.[6] H04Q *7/12*

U.S. Cl. 370—95.1 **19 Claims**



1. A method for simultaneously transmitting paging messages on a single frequency to two or more paging units within a geographic area that is divided into a plurality of cells, comprising the steps of:

synchronizing a plurality of transmitters in the geographic area to a common, repetitive time base;

dividing the time base into a plurality of discrete time slots;

preassigning each cell one of the plurality of discrete time slots during which radio frequency signals are transmitted in the cell, wherein the time slots are assigned to the cells such that cells assigned the same time slot are sufficiently spaced apart geographically such that signals transmitted on the same radio frequency during the same time slot do not interfere;

transmitting a locate signal within all of the cells to the two or more paging units in the geographic area;

transmitting an acknowledge signal from the paging units upon receipt of the locate signal;

receiving the acknowledge signals from the two or more paging units and determining from the acknowledge signals the cells in which the two or more paging units are located; and

simultaneously transmitting the paging messages to the two or more paging units from the synchronized transmitters if the two or more paging units are located in different cells that are assigned the same time slot.

5,485,464

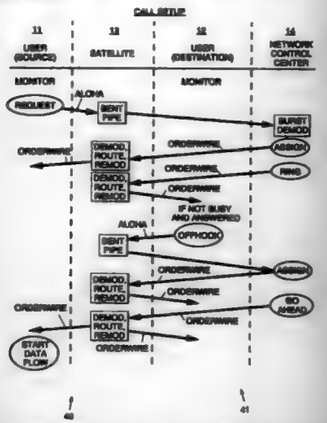
COMMUNICATION PROTOCOL FOR A HIGH DATA RATE SATELLITE COMMUNICATION SYSTEM

Andrew L. Strodtbeck, El Segundo, and Jennifer L. Vollbrecht, Hermosa Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 21, 1993, Ser. No. 141,779

Int. Cl.[6] **H04B** *7/185;* **H04J** *4/00*

U.S. Cl. 370—95.2 **21 Claims**



17. A communication method for use with high data rate satellite communication system that comprises a plurality of user terminals that are linked by and that communicate with each other by way of a satellite relay system, and wherein a network control center provides command signals that control the satellite relay system and coordinates linking of terminals to each other, said method comprising the steps of:

sending modulated user data containing an embedded packet from the source user terminal to the satellite relay system;

demodulating the user data and the embedded packet;

extracting the embedded packet from the user data;

remodulating the extracted packet;

sending the remodulated extracted packet to the network control center;

routing and remodulating the user data; and

sending the remodulated user data to the destination user terminal.

5,485,465

REDUNDANCY CONTROL FOR A BROADCAST DATA TRANSMISSION SYSTEM

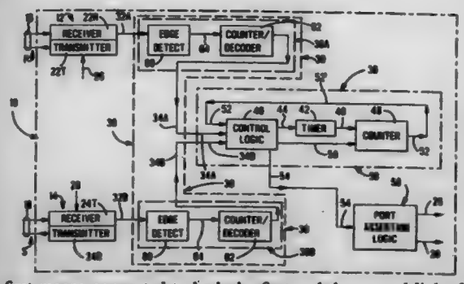
Ming Liu, and Charles H. Marsh, both of Raleigh, N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed May 20, 1992, Ser. No. 885,962

Int. Cl.[6] **G06F** *11/00*

U.S. Cl. 395—182.02 **8 Claims**

1. Apparatus for a first station connectible in a broadcast network with a second station over both a first link and a second link, the first link during fault-free operation being a primary communications link and the second link during fault-free operation being a secondary communications link, the apparatus comprising:



first means connected to both the first and the second links for generating respective indication signals each representative of an information signal arriving over a respective one of the first link or the second link;

logic means coupled to the first means and responsive to an indication signal for generating a first error signal in the event of an information signal not arriving on one of the links within a predetermined time period following an information signal arriving over the other of the links and a second error signal in response to a predetermined number of said first error signals; and

switching means coupled to said first and second links and to said logic means and responsive to the second error signal for switching the primary communications link to the second link and the secondary communications link to the first link.

5,485,466

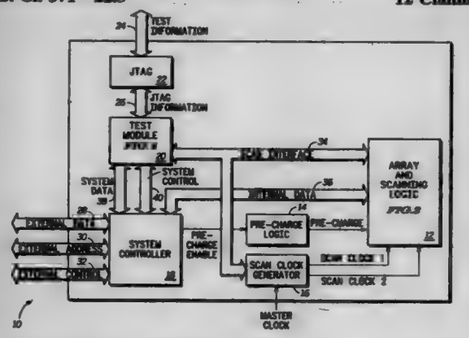
METHOD AND APPARATUS FOR PERFORMING DUAL SCAN PATH TESTING OF AN ARRAY IN A DATA PROCESSING SYSTEM

Jose A. Lyon; Tony Cheng; Anthony M. Reipold, and Eric Hoang, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 4, 1993, Ser. No. 131,227

Int. Cl.[6] **G06F** *17/00*

U.S. Cl. 371—22.3 **12 Claims**



1. A data processing system, comprising:

a data array for providing a plurality of data outputs in response to an input stimulus and a scan data value;

scan test means for receiving the plurality of data outputs and providing serial test data in response to the plurality of data outputs, the scan test means being coupled to the data array for receiving the plurality of data outputs;

a test module for providing both the input stimulus and the scan data input to the data array, a stimulus output of the test module being coupled to a stimulus input of the data array, the test module comprising:

a first shift register for storing the scan data value, the first shift register providing the scan data value in response to a first enable signal;

a repetition register for storing the scan data value during a first mode of operation of the data processing system and

for storing a vector count value during a second mode of operation, the repetition register storing one of the scan data value and the vector count value in response to a second enable signal, the repetition register being coupled to the first shift register for receiving the scan data value and being coupled to an external interface for receiving the vector count value;

a control register for storing a plurality of control values, the plurality of control values being used to determine when the data processing system is operating in one of the first and second modes of operation; and

a state machine for providing the first and second enable signals in response to at least one of the plurality of control values, the state machine enabling the test module to provide the scan data input to the data array during both a first period of time and a second period of time when the data processing system is operating in the first mode of operation.

5,485,467

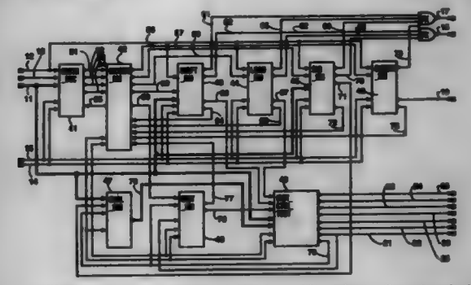
VERSATILE RECONFIGURABLE MATRIX BASED BUILT-IN SELF-TEST PROCESSOR FOR MINIMIZING FAULT GRADING

Habibollah Goinabi, Dallas, Tex., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Sep. 24, 1993, Ser. No. 127,270

Int. Cl.[6] **G06F** *11/267;11/27;* **G01R** *31/3185;31/3187*

U.S. Cl. 371—22.5 **8 Claims**



1. A method for controlling built-in self-testing of a circuit in which during self-testing scan row registers within the circuit provide input to combination logic and output from the combination logic is utilized to generate a checksum, the method comprising the steps of:

(a) receiving, by a self-test processor within the circuit, configuration information which indicates the configuration of the scan row registers, the configuration information including information which indicates a number of bits in each scan row register; and,

(b) generating, by the self-test processor, control signals which control the built-in self-testing of the circuit, the control signals including signals which control data transfer to the scan row register, the control signals being based on the configuration information received in step (a).

5,485,468

DATA OUTPUT ENCODER HAVING RESETTING MECHANISM

Tetsuro Kiriyama, Kawasaki, and Mahito Unno, Nagoya, both of, Japan, assignors to Mitutoyo Corporation, and Mitsubishi Denki Kabushiki Kaisha, Japan

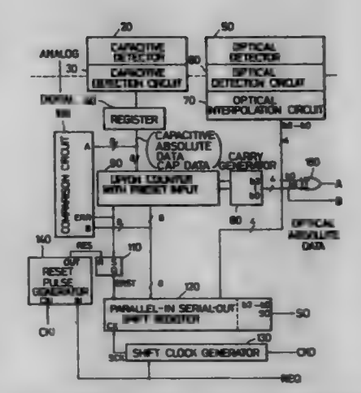
Filed Sep. 11, 1992, Ser. No. 943,548

Claims priority, application Japan, Sep. 17, 1991, 3-265328

Int. Cl.[6] **G06F** *11/00;* **H03M** *1/10;13/00;1/22*

U.S. Cl. 364—560 **17 Claims**

1. A data output encoder for outputting detected positions as data, said data output encoder comprising:



means for retaining encoder internal error information or encoder self-diagnostic information;

means for outputting said data in response to an externally furnished output request signal;

means for monitoring a changing status of said output request signal; and

means for resetting said encoder internal error information or said encoder self-diagnostic information when said changing status of said output request signal reaches a predetermined pattern, wherein said means for resetting said encoder internal error information or said encoder self-diagnostic information is a reset pulse generator generating reset pulses when said output request signal reaches said predetermined pattern, said reset pulses resetting said encoder internal error information or said encoder self-diagnostic information.

5,485,469

SIGNAL RECORDING AND/OR REPRODUCING DEVICE FOR UNEQUAL QUANTIZED DATA WITH ENCODED BIT COUNT PER FRAME CONTROL OF WRITING AND/OR READING SPEED

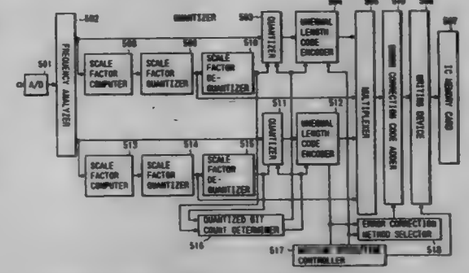
Hiroshi Suzuki, Saitama, Japan, assignor to Sony Corporation, Japan

Continuation of Ser. No. 931,790, Aug. 18, 1992, abandoned. This application Feb. 21, 1995, Ser. No. 391,278

Claims priority, application Japan, Aug. 29, 1991, 3-244643

Int. Cl.[6] **G11B** *19/28;20/18;* **H03M** *13/00*

U.S. Cl. 371—41 **13 Claims**



1. A signal recording device, comprising:

means for providing quantized signals depending upon a predetermined scale factor and predetermined bit counts;

an unequal length encoder for encoding said quantized signals into unequal length coded quantized signals, said unequal length coded quantized signals being representative of the respective bit counts of said quantized signals;

a multiplexer receiving said unequal length coded quantized signals and outputting bit stream data based thereon;

a writing speed/time controller receiving said unequal length coded signals from said unequal length encoder, wherein said writing speed/time controller includes means for calculating a

total encoded bit count for each frame of said unequal length coded signals and means for providing a write speed signal based on said total encoded bit count;

an error correction method selector selecting an error correction method according to the bit count per frame calculated by said writing speed/time controller;

an error correction code adder receiving said bit stream data from said multiplexer and an error correction method signal from said error correction method selector and adding an error correction code to said bit stream data from the multiplexer according to the error correction method selected by the error correction method selector; and

a writing device responsive to said error correction code adder for writing said bit stream data with said error correction code to a recording medium at a rate determined by said write speed signal provided from said writing speed/time controller.

4. A device capable of recording and reproducing a signal on a recording medium, comprising:

means for recording frames of quantized data onto said recording medium, said frames differing in bit-length, wherein a first number of bits in each of said frames of quantized data is recorded on a first portion of said recording medium and a second number of bits in each of said frames of quantized data is recorded on a second portion of said recording medium, said first number of bits being representative of total bit-length of its frame;

means for reading frames of quantized data from said recording medium, including reading said first number of bits; and

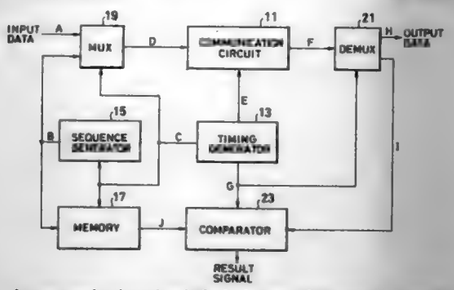
means for controlling a speed at which said means for reading reads frames of quantized data from said recording medium, said speed being controlled based on the total bit-length of each frame of said first number of bits read out from the first portion of said recording medium.

5,485,470

COMMUNICATION CIRCUIT FAULT DETECTOR

Yoshiko Yamada, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 531,130, May 31, 1990, abandoned.
This application Apr. 6, 1993, Ser. No. 42,761
Claims priority, application Japan, Jun. 1, 1989, 1-141544
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—20.5 **15 Claims**



1. A communication circuit fault detector for testing a transmitting circuit and a receiving circuit during transmission and reception of a transmit signal and a receive signal at a certain communication rate, comprising;

a timing generator, coupled to said transmitting circuit and said receiving circuit, for driving said transmitting circuit and said receiving circuit at a rate faster than said communication rate;

sequence generating means for generating an original digital test signal, including a bit sequence which is separate from said transmit signal;

a first multiplexer, coupled to said sequence generating means and said transmitting circuit, for multiplexing said original digital test signal and said transmit signal into said transmitting circuit;

a first demultiplexer, coupled to said transmitting circuit, for demultiplexing an output signal from said transmitting circuit, thus generating a loop-back test signal;

a second multiplexer, coupled to said first demultiplexer and said receiving circuit, for multiplexing said loop-back test signal and said receive signal into said receiving circuit;

a second demultiplexer, coupled to said receiving circuit, for demultiplexing an output signal from said receiving circuit, thus generating a return digital test signal; and

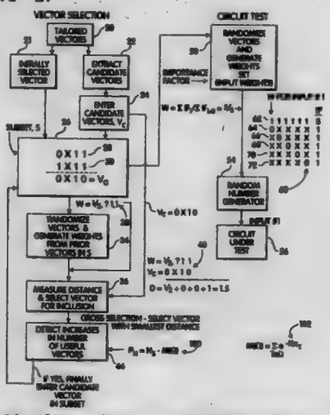
a comparator, coupled to said second demultiplexer and said sequence generating means, for comparing said return digital test signal with said original digital test signal and generating a result signal indicating whether said return digital test signal matches said original digital test signal.

5,485,471

SYSTEM FOR TESTING OF DIGITAL INTEGRATED CIRCUITS

Mikhail Bershteyn, Campbell, Calif., assignor to Mitsubishi Electric Research Laboratories, Inc., Cambridge, Mass.

Filed Oct. 15, 1993, Ser. No. 138,135
Int. Cl.[6] G06F *11/263*
U.S. Cl. 371—27 **9 Claims**



1. A machine for use in the testing of digital integrated circuits comprising:

a digital integrated circuit;

random number generator means for generating signals to test said circuit;

means for applying said signals to said circuit for the testing thereof, said random number generator means including:

means for generating test vectors, means for coupling said test vectors to said random number generator, and means for partitioning said test vectors into subsets, said partitioning means including:

means for initially selecting a vector for one of said subsets;

means for filling said one of said subsets with similar vectors starting with a candidate vector close to said initially selected vector and adding dissimilar candidate vectors to said one of said subsets; means for generating a random sequence of vectors in said one of said subsets including said added candidate vectors to produce a random sequence of vectors including almost all of the vectors in said one of said subsets including said first mentioned candidate vector, but resulting in a random sequence in which some vectors in said one of said subsets are missing due to the randomizing process; and,

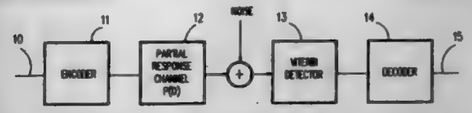
means for terminating vector additions to said one of said subsets when the number of vectors in said subset minus the number of vectors missed ceases to increase, said means for generating said signals only using those vectors existing prior to the terminating of said vector additions for the control of said random number generator.

5,485,472

TRELLIS CODES WITH ALGEBRAIC CONSTRAINTS FOR INPUT RESTRICTED PARTIAL RESPONSE CHANNELS

Lisa Fredrickson, Sunnyvale, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 16, 1994, Ser. No. 242,942
Int. Cl.[6] G06F *11/10*
U.S. Cl. 371—43 **20 Claims**



1. A method of improving reliability of data storage devices that transmit binary data as codewords over a partial response channel, comprising the steps of:

constructing a trellis code with a prespecified algebraic constraint on a predetermined algebraic attribute;

tracking the algebraic attribute for analyzing successive output sequences from the channel to detect a preselected error event;

providing an enlarged detector trellis that includes current state of a channel memory and current state of the algebraic attribute; and

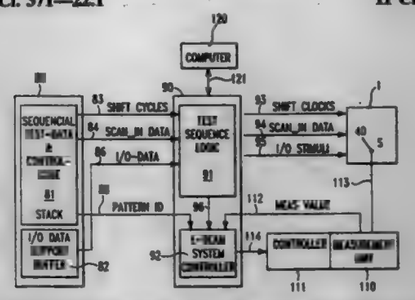
adding time-variation to the trellis to remove from the trellis all output sequences that fail to satisfy the prespecified algebraic constraint on the value of the tracked algebraic attribute after the end of each at least one codeword for thereby correcting said error event.

5,485,473

METHOD AND SYSTEM FOR TESTING AN INTEGRATED CIRCUIT FEATURING SCAN DESIGN

Ulich Diebold, Gaensbergring 74, 7033 Herrenberg; Peter Rost, In den Lunkteilen 4, 7260 Calw; Manfred Schmidt, Dachenhaeuserweg 37, 71101 Schoenaich; tto Torreiter, Fleinsbachstrasse 14, 7022 Leinfelden-Echterdingen; Rolf Vogt, Herrschaftsgartenstrasse 73, 7030 Boeblingen, and Klaus Wagner-Drebenstedt, Eugenstrasse 19, 7403 Ammerbuch 1, all of, Germany

Filed Aug. 20, 1993, Ser. No. 109,794
Claims priority, application European Pat. Off., Aug. 25, 1992, 92114431
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—22.1 **11 Claims**



1. A method of testing circuitry including at least one shift register, comprising the steps of:

(a) inputting an X+A-bit test signal pattern into the shift register;

(b) forming an input test signal pattern of X bits by recirculating said X+A-bit test signal pattern;

(c) shifting said X-bit input test signal pattern from the shift register to the circuitry under test and carrying out a first test;

(d) shifting said X+A-bit test signal pattern in the shift register by Y bits ($1 \leq Y < X$) to input a new X-bit test signal pattern to the circuit under test and carrying out a second test;

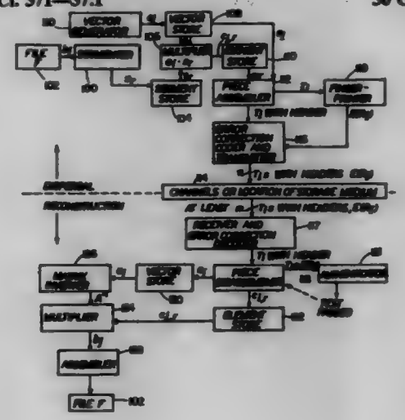
(e) repeating step (d) N times ($N \geq 0$) to carry out N additional tests.

5,485,474

SCHEME FOR INFORMATION DISPERSAL AND RECONSTRUCTION

Michael O. Rabin, Cambridge, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.

Continuation of Ser. No. 160,356, Feb. 25, 1988, abandoned.
This application May 15, 1991, Ser. No. 702,110
Int. Cl.[6] H03M *13/00*
U.S. Cl. 371—37.1 **30 Claims**



1. A process for protecting against loss and for enhancing accessibility in storage or memory, or protecting against loss and enhancing speed of transmission on communication paths, of information which is represented in storage or memory, or represented as data signals on communication paths, said information comprising data elements, each said data element representable as an element of a finite field or computational structure, said process comprising

transforming and breaking apart said information among a set of smaller assemblages of elements of said finite field or computational structure, and

dispersing said information by transmitting said smaller assemblages in the form of said data signals carried on multiple communication paths, or by transmitting said smaller assemblages at different times in the form of said data signals carried on a single communication path, or by storing said assemblages in multiple storage or memory locations, in a manner that is expected to yield no fewer than a required number of said assemblages,

said step of transforming and breaking apart comprising

representing said information by N elements of said field or computational structure,

grouping said N elements into N/m groups, each containing m elements, where N is greater than m, and hence there are more than one of said groups,

selecting a set of vectors $\{a_i; i=1, \ldots, n\}$, each of said vectors having m elements of said field or computational structure, there being an arbitrarily high probability that any subset of m of the vectors are linearly independent,

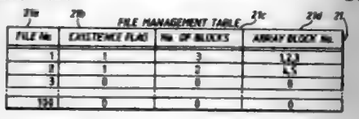
generating a set of elements $\{C_{i,r}: i=1, \ldots, n, r=1, \ldots, N/m\}$ for assembly into n said assemblages, each element $c_{i,r}$ being generated as the product of a vector a_i times the elements of the r-th said group of elements, and

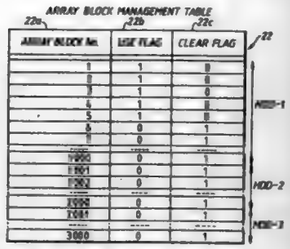
assembling the n assemblages such that the i-th assemblage comprises the elements $\{C_{i,r}: r=1, \ldots, N/m\}$.

5,485,475
DATA STORAGE DEVICE AND DATA MANAGING METHOD

Shiro Takagi, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 31, 1994, Ser. No. 298,275
Claims priority, application Japan, Sep. 22, 1993, 5-236922
Int. Cl.[6] G06F *11/20*
U.S. Cl. 371—404 **14 Claims**





1. A data storage device comprising:

a plurality of data disks for storing data in units of data blocks;

a parity disk for storing parity data used for restoring data to the data disks;

first managing means for managing data blocks on the respective data disks with respect to whether each data block is used for data storage;

second managing means for managing the data blocks on the respective data disks with respect to whether data of each data block is used for computing parity;

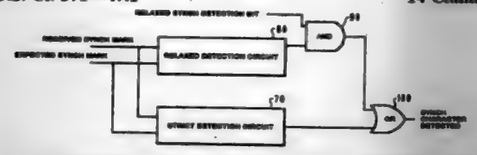
detecting means, responsive to the first and second managing means, for detecting each data block which is not used for data storage and is used for computing parity; and

purge processing means for updating the parity data based on data in the data blocks detected by the detecting means and the parity data stored to the parity disk corresponding to the detected data blocks.

5,485,476
METHOD AND SYSTEM FOR ERROR TOLERANT SYNCHRONIZATION CHARACTER DETECTION IN A DATA STORAGE SYSTEM

Suthama M. Paranjape, and Fernando Quintana, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1993, Ser. No. 77,176
Int. Cl.[6] G06F *11/00*; H04L *12/00*
U.S. Cl. 371—47.1 **14 Claims**



1. An error tolerant synchronization character detection system for identifying occurrences of synchronization characters in a data storage system having multiple data blocks stored within multiple tracks therein in association with a plurality of multibit synchronization characters, said synchronization character detection system comprising:

track logic means for identifying each expected multibit synchronization character within a data block;

first comparison means within said track logic means for comparing a detected prospective multibit synchronization character with an expected multibit synchronization character and for generating a first output signal in response to an identical match therebetween;

second comparison means within said track logic means for comparing a detected prospective multibit synchronization character with an expected multibit synchronization character and for generating a second output signal in response to a variation between said detected prospective multibit synchronization character and said expected multibit synchronization character of not greater than two adjacent bits; and

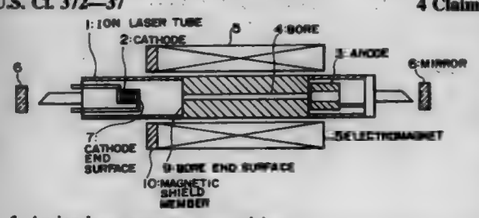
synchronization character detection means coupled to said first comparison means and said second comparison means for identifying an occurrence of a synchronization character in response to a presence of either said first output signal or said second output signal.

5,485,477
Patent Not Issued For This Number

5,485,478
ION LASER GENERATOR

Kenji Baba, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 29, 1993, Ser. No. 38,606
Claims priority, application Japan, Apr. 8, 1992, 4-086769
Int. Cl.[6] H01S *3/00*
U.S. Cl. 372—37 **4 Claims**



1. An ion laser generator comprising:

an ion laser tube having a bore and a pair of discharge electrodes comprising a cathode and an anode, said cathode being positioned at a distance from and facing a first end surface of said bore, and said anode being positioned facing a second end surface of said bore;

an electromagnet for converging plasma generated between said pair of discharge electrodes, around a center axis of said bore;

an end surface of said electromagnet facing the cathode and being positioned between the first end surface of said bore and an end surface of said cathode,

a magnetic shield member provided in a flux path outside the electromagnet, said magnetic shield member comprising a ferromagnetic member abutting an end surface of the electromagnet, said end surface of said electromagnet being an end surface which is nearer to an end surface of said cathode, and said magnetic shield member converging a total flux entering said end surface of said cathode to a cross-sectional area which is less than the cross-sectional area of said bore at the first end surface of said bore;

an end surface of said magnetic shield member facing the cathode being positioned between said first end surface of said bore and an end surface of said cathode,

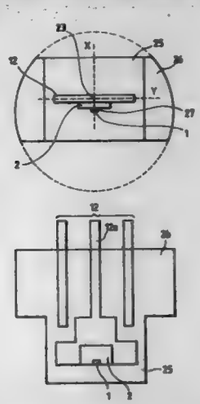
said end surfaces of said electromagnet and said magnetic shield member being arranged to converge a total magnetic flux passing an entire area of said end surface of said cathode at said first end surface of said bore, said convergence reducing said total magnetic flux to an area which is smaller than a cross-sectional area of said bore and to reduce a magnetic intensity at said end surface of said cathode to less than 100 Gauss; and

a pair of reflecting mirrors, each of said mirrors being placed facing an individually associated one of two output ends of said ion laser tube, and a distance between said pair of reflecting mirrors being tuned to a wavelength of a laser light generated in said plasma.

5,485,479
SEMICONDUCTOR LASER DEVICE ENCAPSULATED IN A TRANSPARENT RESIN LAYER

Shoji Kitamura, and Yoichi Shindo, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 43,482, Apr. 6, 1993, Pat. No. 5,444,726, which is a continuation-in-part of Ser. No. 788,601, Nov. 6, 1991, Pat. No. 5,355,385. This application Dec. 13, 1994, Ser. No. 354,927
Claims priority, application Japan, Nov. 7, 1990, 2-302258; Apr. 7, 1992, 4-85323; Jan. 22, 1993, 5-8679; Mar. 30, 1993, 5-70597; Dec. 14, 1993, 5-312360
Int. Cl.[6] H01S *3/025*; H01L *33/00*
U.S. Cl. 372—43 **1 Claim**



1. A semiconductor laser device, comprising:

a laser diode chip for emitting a laser beam;

a sub-mount layer on which said laser diode chip is disposed;

connecting means to which said laser diode chip is connected through said sub-mount layer; and

a sealing resin layer transparent for said laser beam for tightly covering said connecting means and at least a main portion of said laser diode chip;

wherein said sealing resin layer comprises:

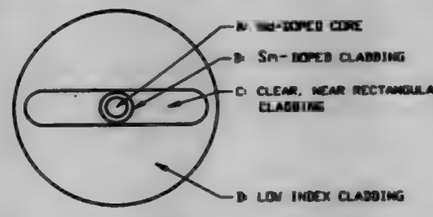
a flat portion covering at least said main portion of said laser diode chip, said flat portion including top and bottom surfaces arranged symmetrically with respect to an X-axis which is vertical to a surface of said chip and crosses a center of said connecting means defined by a position of said laser diode chip, and side faces arranged symmetrically with respect to a Y-axis which is parallel to said surface of said chip and crosses said center of said connecting means; and

a flange portion integrated with said flat portion and covering a portion near a terminal of said connecting means to be mounted to an apparatus into which said semiconductor laser device is incorporated, said flange portion including a peripheral surface and at least a part of said peripheral surface having a curvature of a virtual circle with a center of a laser beam emitting point of said laser diode chip.

5,485,480
FIBER OPTIC LASERS AND AMPLIFIERS

Marcos Y. Kleinerman, 24 Jerome St., Southbridge, Mass. 01550

Division of Ser. No. 815,741, Jan. 2, 1992, Pat. No. 5,363,463, which is a continuation-in-part of Ser. No. 491,942, Mar. 12, 1990, Pat. No. 5,096,277, which is a continuation-in-part of Ser. No. 293,119, Jan. 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 102,835, Sep. 30, 1987, which is a continuation-in-part of Ser. No. 711,062, Mar. 12, 1985, Pat. No. 5,004,913, which is a continuation-in-part of Ser. No. 608,932, May 14, 1984, Pat. No. 4,708,494, which is a continuation of Ser. No. 405,732, Aug. 6, 1982, abandoned. This application Mar. 25, 1994, Ser. No. 187,293
Int. Cl.[6] H01S *3/30;3/091*; G02B *6/22*
U.S. Cl. 372—6 **12 Claims**



1. An arrangement for selectively generating laser radiation within a defined spectral band, comprising

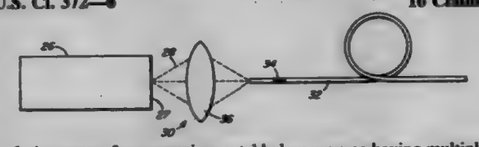
(a) an optical fiber having a core with an index of refraction n_1, a radius not greater than a few micrometers, and doped along its length with laser material so characterized that, when excited with optical radiation of wavelengths λ_s within an absorption band characteristic of said material, it emits luminescence radiation within at least two spectral bands, the first of said bands including wavelengths λ_{f1} and the second of said bands being said defined spectral band and including wavelengths λ_{f2} different from λ_{f1}, the material being further characterized by emitting laser radiation within said first band including wavelengths λ_{f1} when pumped with sufficiently high intensities of said radiation of wavelengths λ_s in a suitable configuration, the material being additionally characterized by emitting laser radiation within said second band including said wavelengths λ_{f2} when pumped with sufficiently high intensities of said radiation of wavelengths λ_s in a suitable configuration, the fiber having a first end and a second end; and

(b) a second material characterized by absorbing light of said wavelengths λ_{f1}, said second material being in optical communication with said laser material in such a manner as to absorb radiation emitted from said laser material within said first band of wavelengths λ_{f1} along the fiber length and thus selectively prevent laser action at these wavelengths without preventing laser action at said defined spectral band including wavelengths λ_{f2}.

5,485,481
FIBRE-GRATING-STABILIZED DIODE LASER

Brian F. Ventrudo, and Grant Rogers, both of Victoria, Canada, assignors to Seastar Optics Inc., Sidney, Canada

Filed Jun. 28, 1994, Ser. No. 267,785
Int. Cl.[6] H01S *3/10*
U.S. Cl. 372—6 **16 Claims**



1. Apparatus for generating a stable laser source having multiple longitudinal modes, comprising:

a diode laser that emits light in substantially a single spatial mode and which includes a diode lasing cavity and an output facet defining an end of the diode lasing cavity, and which lases in multiple longitudinal modes within the lasing cavity in the absence of external optical feedback;

an optical fibre including a guided wave portion of the fibre which is capable of sustaining at least one mode at the wavelength of the diode laser;

means for directing the emitted light from the diode laser into the optical fibre;

a fibre Bragg grating in the guided wave portion of the fibre and having a reflection bandwidth; and,

said output facet having a reflectivity approximately equal to or greater than that of the fibre Bragg grating,

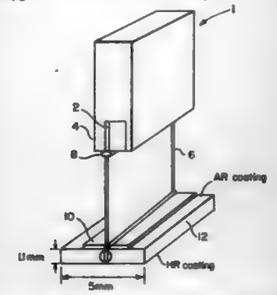
wherein the reflected light from the fibre Bragg grating into the diode lasing cavity limits the bandwidth of lasing to a value less than or equal to the reflection bandwidth of the grating and induces lasing in multiple longitudinal modes of the external cavity formed by the fibre Bragg grating and the output facet of the diode laser whereby to enhance the stability of the optical spectrum and intensity of the diode laser relative to the operation of said laser in the absence of optical feedback from said grating.

5,485,482

METHOD FOR DESIGN AND CONSTRUCTION OF EFFICIENT, FUNDAMENTAL TRANSVERSE MODE SELECTED, DIODE PUMPED, SOLID STATE LASERS

Mark D. Selker, 3000 Powder Mill Rd., Adelphi, Md. 20783, and Robert S. Afzal, 1615 Q. St., NW., Apt. 702, Washington, D.C. 20009

Filed Dec. 8, 1993, Ser. No. 165,781
Int. Cl.[6] H01S *3/091*
U.S. Cl. 372—75 **32 Claims**



1. A fundamental transverse mode selected solid state laser comprising:

a slab of laser gain material;

cavity forming means positioned around said slab of laser gain material;

means for side pumping a constrained gain region in said slab of laser gain material, the dimensions transverse to the direction of beam propagation of said constrained gain region being smaller in at least one axis than the transverse dimensions of the fundamental transverse mode volume in said laser gain material;

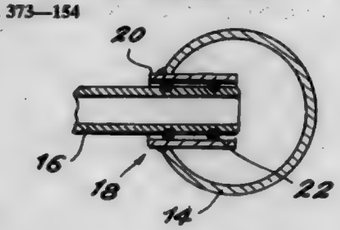
said cavity forming means and said means for side pumping said constrained gain region acting in conjunction such that the fundamental transverse mode is selected in said solid state laser.

5,485,483

DEVICE FOR PROTECTING AND COOLING THE POLES OF AN ELECTROMAGNETIC INDUCTOR

Claude Couffet, Montreuil; Jean Hellegouarc'h, Le Perreux/Marne; Gérard Prost, Fresnes, and Jean C. Uring, Colmar, all of, France, assignors to Celes, Lautenbach, France

Filed Jun. 23, 1993, Ser. No. 80,258
Claims priority, application France, Jun. 24, 1992, 92 07739
Int. Cl.[6] H05B *6/22*
U.S. Cl. 373—154 **10 Claims**



1. A device for thermally protecting and cooling the poles of an electromagnetic inductor for an induction furnace comprising:

a plurality of tubes positioned in parallel spaced coplanar relation through which cooling fluid flows;

an inlet pipe connected to first ends of the tubes;

an outlet pipe connected to the second ends of the tubes; and

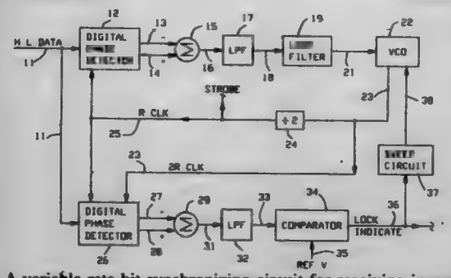
means connecting each of said first and second ends of the tubes to the pipes to allow free expansion-contraction of the tubes relative to the pipes, for ensuring electrical isolation and fluid leaktightness therebetween.

5,485,484

DIGITALLY IMPLEMENTED PHASE AND LOCK INDICATORS FOR A BIT SYNCHRONIZER

Bruce H. Williams, Sandy; Glenn A. Arbanas, and Roy E. Greeff, both of Salt Lake City, all of Utah, assignors to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 21, 1993, Ser. No. 171,059
Int. Cl.[6] H03D *3/24*
U.S. Cl. 375—376 **6 Claims**



1. A variable rate bit synchronizing circuit for receiving incoming data and for synchronizing a voltage controlled oscillator with a clock rate of the incoming data, comprising:

digital phase detector means having a pair of inputs connected to the incoming data and to a data rate clock for producing a pair of digital output signals,

first summing means coupled to the digital outputs from said digital phase detector means,

first filter means coupled to the output of said first summing means for producing a phase error signal output,

a voltage control oscillator having an input coupled to the output of said filter means for producing a VCO clock output synchronized with the incoming data,

a divider circuit connected in series between said VCO clock output and said digital phase detector means,

digital lock detector means having inputs connected to said incoming data and to said VCO clock output from said voltage controlled oscillator and to said divider circuit for producing a pair of digital lock detection output signals,

second summing means coupled to the digital outputs from said digital lock detector means, and

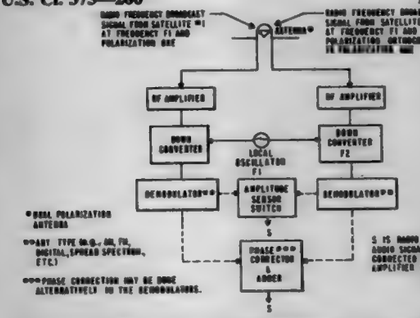
second filter means coupled to the output of said second summing means for producing a lock detector signal indicative of a predetermined lock condition.

5,485,485

RADIO FREQUENCY BROADCASTING SYSTEMS AND METHODS USING TWO LOW-COST GEOSYNCHRONOUS SATELLITES AND HEMISPHERICAL COVERAGE ANTENNAS

Robert D. Briskman, Bethesda, Md.; John M. Seavey, Cohasset, and Paul Medeiros, Fall River, both of Mass., assignors to CD Radio Inc., Washington, D.C.

Continuation-in-part of Ser. No. 48,663, Apr. 16, 1993, Pat. No. 5,319,673, which is a continuation-in-part of Ser. No. 866,910, Apr. 10, 1992, Pat. No. 5,278,863. This application Apr. 13, 1994, Ser. No. 227,045
Int. Cl.[6] H04B *1/69*
U.S. Cl. 375—200 **29 Claims**



1. A method for reducing multi-path fading in a radio broadcasting system adapted to broadcast signals having frequencies in the range of about 300 MHz to about 3,000 MHz comprising:

broadcasting a first signal using spread spectrum modulation from a first satellite source traveling on a geosynchronous orbit;

substantially simultaneously broadcasting a second signal using spread spectrum modulation, said second signal having substantially the same content and frequency as said first signal from a second satellite source on said geosynchronous orbit, said second satellite source being spaced from said first satellite source a predetermined number of degrees to reduce multi-path fading and to reduce signal attenuation from physical objects in the paths of said first signal and said second signal and

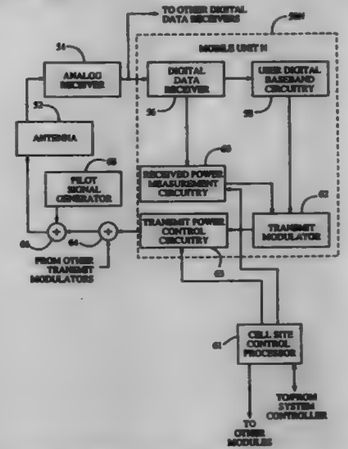
producing an output signal from said first signal and said second signal at a plurality of fixed receivers, at least some of said fixed receivers being connected to substantially flat, hemispherical coverage antennas located at or near the surface of the earth, and having an outer diameter no greater than about 10 inches, said antennas being adapted to receive said frequencies in the range of about 300 MHz to about 3,000 MHz and a plurality of mobile receivers, at least some of said mobile receivers being connected to substantially flat, hemispherical coverage antennas located at or near the surface of the earth, and having an outer diameter no greater than about 10 inches, said antennas being adapted to receive said frequencies in the range of about 300 MHz to about 3,000 MHz.

5,485,486

METHOD AND APPARATUS FOR CONTROLLING TRANSMISSION POWER IN A CDMS CELLULAR MOBILE TELEPHONE SYSTEM

Klein S. Gilhousen; Roberto Padovani, and Lindsay A. Weaver, Jr., all of San Diego, Calif., assignors to QUALCOMM Incorporated, San Diego, Calif.

Continuation of Ser. No. 948,548, Sep. 23, 1992, abandoned, which is a continuation of Ser. No. 702,829, May 17, 1991, Pat. No. 5,265,119, which is a continuation-in-part of Ser. No. 433,031, Nov. 7, 1989, Pat. No. 5,056,109. This application Mar. 23, 1994, Ser. No. 217,083
Int. Cl.[6] H04J *13/02;13/04;* H04B *1/69;1/707*
U.S. Cl. 375—205 **30 Claims**



1. In a cellular mobile telephone system in which system users communicate information signals between one another via a system controller and through at least one cell-site using code division multiple access (CDMA) spread spectrum communication signals between said cell-sites and mobile telephones, wherein each cell-site has a plurality of modules for communicating with mobile telephones in said cellular mobile telephone system and at least two cell-site modules of a cell-site are each in communication with a different mobile telephone, a power control system for adjusting cell-site module transmission signal power in response to a power adjustment request from a mobile telephone, wherein each mobile telephone has an antenna, transmitter and receiver and each cell-site has an antenna, at least one transmitter and at least one receiver, said power control system comprising:

means for determining transmission signal quality, at a mobile telephone for CDMA communication signals intended for said mobile telephone as transmitted from a cell-site module, with respect to a desired signal quality level, for generating a power adjustment request when said determined transmission signal quality is below said desired signal quality level, and for communicating said power adjustment request to said module;

means at said module for communicating said power adjustment request to a system controller;

means at said system controller responsive to said power adjustment request for generating and communicating a power adjustment command to each module of said cell-site;

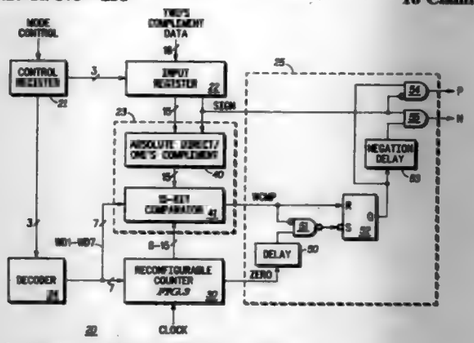
means at each cell-site module for receiving said power adjustment command, said cell-site module responsive thereto for increasing transmission signal power in CDMA communication signals to said mobile telephone by a predetermined increment, and each other cell-site module responsive thereto for reducing transmission signal power in CDMA communication signals as communicated therefrom to a corresponding mobile telephone in communication therewith by a predetermined increment.

5,485,487

RECONFIGURABLE COUNTER AND PULSE WIDTH MODULATOR (PWM) USING SAME

Yair Orbach, Hashomron; Heinrich Iosub, LeZion, and Efi Orian, Saba, all of, Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 25, 1994, Ser. No. 201,736
Int. Cl.[6] H03K *7/08*
U.S. Cl. 375—238 **16 Claims**



1. A pulse width modulator comprising:

an input register having an input for receiving an input number, and an output;

a reconfigurable counter having a clock input for receiving a clock input signal, a control input for receiving at least one decoded width signal, and an output for providing a counter output value, said reconfigurable counter having a counter width determined by said control input;

a comparator having a first input coupled to said output of said input register, a second input coupled to said output of said reconfigurable counter, and an output for providing an output signal in a predetermined logic state in response to said first and second inputs thereof being equal; and

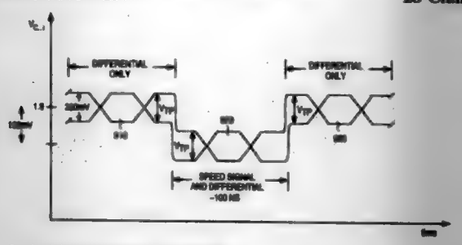
an output circuit having an input coupled to said output of said comparator, and an output for providing a pulse width modulated output signal having a duty cycle determined by a proportion of a period of said reconfigurable counter during which said comparator detects that said first and second inputs thereof are equal.

5,485,488

CIRCUIT AND METHOD FOR TWISTED PAIR CURRENT SOURCE DRIVER

Roger W. Van Brunt, San Francisco, and Florin A. Oprescu, Sunnyvale, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Mar. 29, 1994, Ser. No. 219,728
Int. Cl.[6] H04B *3/00*
U.S. Cl. 375—257 **28 Claims**



1. A driver circuit comprising:

a first arrangement for generating differential signals over a twisted pair cable, said differential signals representative of binary information, said first arrangement responsive to a data input; and

a second arrangement for generating a common mode signal over said twisted pair cable, said second arrangement responsive to a speed signal input, wherein said first arrangement and said second arrangement are implemented within a single driver circuit;

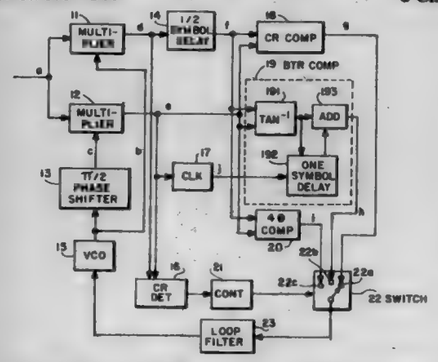
wherein said second arrangement is also for generating differential signals over said twisted pair cable simultaneously with said common mode signal.

5,485,489

CARRIER RECOVERY CIRCUIT FOR OFFSET QPSK DEMODULATORS

Kenichiro Chiba, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 5, 1994, Ser. No. 286,464
Claims priority, application Japan, Aug. 5, 1993, 5-215288
Int. Cl.[6] H04L *27/06*; H03D *3/18*
U.S. Cl. 375—344 **8 Claims**



1. A carrier recovery (CR) circuit for recovering carriers from Offset Quadrature Phase Shift Keying (O-QPSK) modulated carriers, in which each of two orthogonal sequences of burst signals modulated by an O-QPSK system has a preamble field including a CR field and a bit timing recovery (BTR) field in a time series in that order and a unique word and a data field following said preamble field, and said CR field in both sequences has a pattern fixed to one of binary digits values while said BTR field of one of the two sequences has a pattern fixed to one of two binary values and that of the other sequence of the two sequences has a pattern of an alternating series of binary digits values, comprising:

first and second multiplying means for multiplying said O-QPSK modulated carriers by respectively first and second recovered carriers differing from each other by a $\pi/2$ phase;

a CR detecting circuit for detecting said CR field from the output signals of said first and second multiplying means;

a ½ symbol delay circuit for delaying the output signal from one of said first and second multiplying means by ½ of the symbol rate from the other of said first and second multiplying means;

a clock recovery circuit for recovering a sampling clock on the basis of the output signal from either one of said first and second multiplying means;

a phase comparator having one phase stabilization point for the CR field for detecting phase difference between one delayed by said ½ symbol delay circuit and the other not delayed from the output signals of said first and second multiplying means and generating first output signals;

a phase comparator having two phase stabilization points for the BTR field for detecting phase difference between one delayed by said ½ symbol delay circuit and the other not delayed from the output signals of said first and second multiplying means and generating second output signals;

a four-phase comparator having four phase stabilization points for said unique word and data field for detecting phase difference between one delayed by said ½ symbol delay circuit and the other not delayed from the output signals of said first and second multiplying means and generating third output signals;

selector means for successively selecting one out of said first output signals, said second output signals, and said third output signals on the basis of clocks from said CR detecting circuit; and

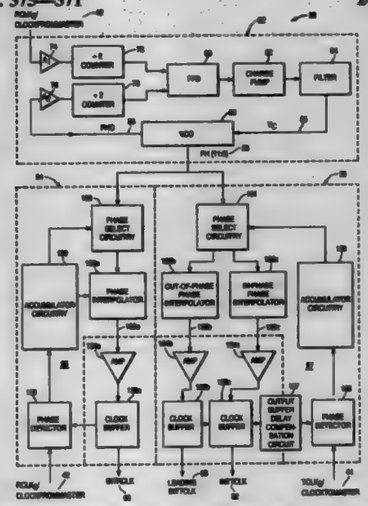
a recovered carrier generating circuit for generating a recovered carrier on the basis of the output signal of said selector means.

5,485,490

METHOD AND CIRCUITRY FOR CLOCK SYNCHRONIZATION

Wingyu Leung, Cupertino, and Mark A. Horowitz, Mountain View, both of Calif., assignors to Rambus, Inc., Mountain View, Calif.

Continuation of Ser. No. 890,834, May 28, 1992, abandoned. This application Nov. 29, 1994, Ser. No. 346,363
Int. Cl.[6] H04C *7/00*
U.S. Cl. 375—371 **24 Claims**



22. Phase tuning circuitry for generating an output phase signal, comprising:

a) an accumulator for generating an underflow/overflow signal and a count signal in response to a control signal;

b) a digital to analog converter for generating an even weighting signal and an odd weighting signal in response to the count signal;

c) control circuitry for generating a barrel shift control signal in response to the underflow/overflow signal;

d) a first barrel shifter generating a multiplicity of even select signals in response to the barrel shift control signal; and

e) a second barrel shifter generating a multiplicity of odd select signals in response to the barrel shift control signal;

f) a phase selector comprising:

i) a first multiplexing means for selecting an even phase signal from a multiplicity of even phase signals in response to the multiplicity of even select signals;

ii) a second multiplexing means for selecting an odd phase signal from a multiplicity of odd phase signals in response to the multiplicity of odd select signals; and

g) a phase interpolator for interpolating between the even phase signal and the odd phase signal to generate the output phase signal, the phase interpolator comprising:

i) a first differential amplifier coupled to the even phase signal and the even weighting signal, the even weighting signal preventing the even phase signal from contributing to the output phase signal when the even select signal is changing states, the first differential amplifier having a first output; and

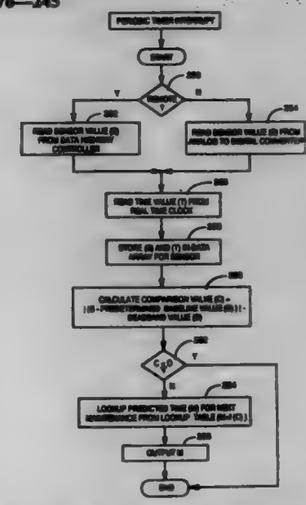
ii) a second differential amplifier coupled to the odd phase signal and the odd weighting signal, the odd weighting signal preventing the odd phase signal from contributing to the output phase signal when the odd select signal is changing states, the second differential amplifier having a second output coupled to the first output.

5,485,491

ONLINE DIAGNOSTIC SYSTEM FOR ROTATING ELECTRICAL APPARATUS

Richard E. Salnick, Monroeville; Mark H. Emerson, Murrysville; Paul C. Gaberson, Forest Hills, and Charles D. Bice, Clinton Township, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 31, 1994, Ser. No. 221,630
Int. Cl.[6] G21C *17/00*
U.S. Cl. 376—245 **33 Claims**



29. An online system for diagnosing operability of a reactor coolant pump (RCP) motor operating in a nuclear containment vessel, said system comprising:

sensing means for sensing an operating condition of said RCP motor and producing a corresponding electrical variable;

dam conversion means for converting the electrical variable to a corresponding value;

comparison means for comparing the value to a predetermined baseline value of said RCP motor and producing a corresponding comparison value; and

signalling means for outputting a signal related to a period of predicted operability of said RCP motor in response to the comparison value.

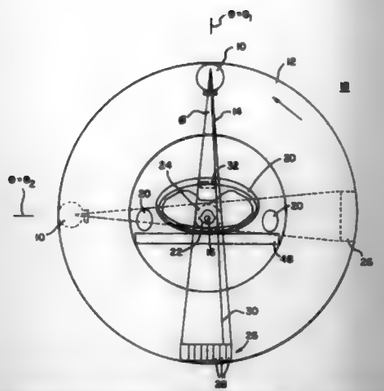
5,485,492

REDUCED FIELD-OF-VIEW CT SYSTEM FOR IMAGING COMPACT EMBEDDED STRUCTURES

Norbert J. Pelc, Los Altos, Calif., assignee to Lunar Corporation, Madison, Wis.

Continuation-in-part of Ser. No. 52,228, Apr. 22, 1993, abandoned, which is a continuation of Ser. No. 860,818, Mar. 31, 1992. This application Mar. 22, 1994, Ser. No. 216,235
Int. Cl.[6] H05G *1/60*
U.S. Cl. 378—5 **4 Claims**

1. A method of generating a tomographic image of an imaged object having a compact structure of a first material contained within a larger body of a second material, the first and second materials having different energy dependent attenuations, comprising the steps of:



(a) collimating the width of a radiation beam so as to illuminate the entire compact structure at a plurality of angles but only portions of the larger body at some of the plurality of angles;
(b) projecting radiation at a first and second energy level through the compact structure;
(c) acquiring a first and second tomographic projection set of attenuations of the x-rays transmitted through the compact structure and intervening portions of the body at the first and second energy at the plurality of angles about the imaged object;
(d) combining the first and second tomographic projection sets to produce a third tomographic projection set dependent substantially on the attenuation only of the compact structure; and
(e) reconstructing an image of the compact structure from the third tomographic projection set.

5,485,493

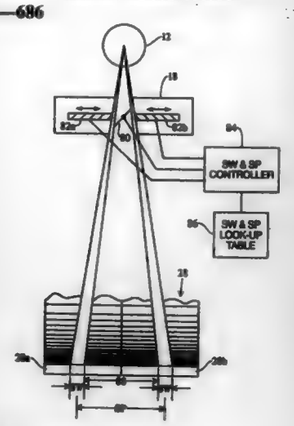
MULTIPLE DETECTOR RING SPIRAL SCANNER WITH RELATIVELY ADJUSTABLE HELICAL PATHS

Dominic J. Heuscher, Aurora; Walter W. Lindstrom, Shaker Heights, and Heang K. Tuy, Chesterland, all of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Continuation-in-part of Ser. No. 139,318, Oct. 19, 1993, Pat. No. 5,396,418, which is a continuation-in-part of Ser. No. 943,411, Sep. 9, 1992, abandoned, and a continuation-in-part of Ser. No. 567,300, Aug. 14, 1990, Pat. No. 5,262,946, which is a continuation-in-part of Ser. No. 260,403, Oct. 20, 1988, Pat. No. 4,965,726, and a continuation-in-part of Ser. No. 438,687, Nov. 17, 1989, Pat. No. 5,276,614. This application Jan. 10, 1994, Ser. No. 179,608

Int. Cl.[6] G06F *159/00*

U.S. Cl. 378—686 **24 Claims**



1. A spiral CT scanner comprising:
an x-ray source for irradiating an examination region with penetrating radiation;
a means for rotating the x-ray source around the examination region;
a subject support for moving a subject through the examination region concurrently with rotation of the radiation source around the examination region;
a plurality of radiation detectors positioned adjacent the examination region along a plurality of parallel arcs for receiving radiation from the radiation source which has traversed the subject;
a collimator for dividing radiation from the x-ray source into at least two parallel fan-beams such that x-rays traverse the subject along at least two generally parallel fan-shaped beams between the source and the detectors, which x-ray fan-beams spiral concurrently around the subject in a longitudinally offset relationship;
a means for adjusting an effective spacing and thickness of the x-ray fan-beams; and
a means for reconstructing output data from the detectors into a volume image representation.

5,485,494

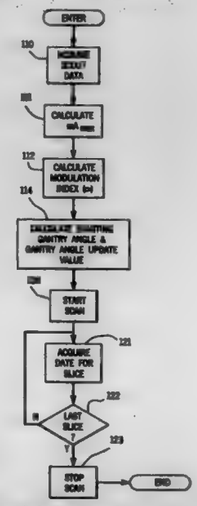
MODULATION OF X-RAY TUBE CURRENT DURING CT SCANNING

Kenneth R. Williams, Muskego; Herbert K. Koehl, Milwaukee, and Jonathan R. Schmidt, Wales, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Aug. 3, 1994, Ser. No. 285,253

Int. Cl.[6] A61B *6/00*

U.S. Cl. 378—16 **6 Claims**



1. A method for modulating the dose of an x-ray beam applied to a patient by an x-ray CT system during a scan, the steps comprising:
calculating a command mA_{max} which determines the maximum dose of the x-ray beam;
storing a waveform table indicative of the desired modulation as a function of an x-ray CT system gantry angle;
periodically during the scan calculating an mA command which controls the dose of the x-ray beam by:
a) determining the current x-ray CT system gantry angle;
b) reading a value from the stored waveform using the x-ray CT system gantry angle as an index into the waveform table; and
c) multiplying the command mA_{max} by the value read from the waveform table; and
outputting the calculated mA command to an x-ray controller which controls the dose of the x-ray beam.

5,485,495

X-RAY MASK, AND EXPOSURE APPARATUS AND DEVICE PRODUCTION USING THE MASK

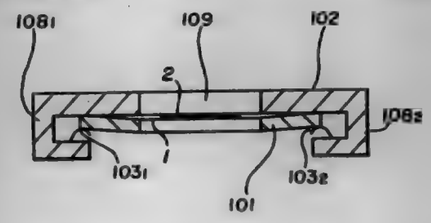
Takeshi Miyachi, Zama; Nobutoshi Mizusawa, Yamato; Shinichi Hara, and Hiroshi Machara, both of Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 32,654, Mar. 17, 1993, abandoned. This application Aug. 8, 1994, Ser. No. 286,984

Claims priority, application Japan, Mar. 31, 1992, 4-077568; Jan. 26, 1993, 5-010994

Int. Cl.[6] G21K *5/00*

U.S. Cl. 378—34 **16 Claims**



1. An X-ray mask, compriaing:
a mask substrate having a transparent portion, said mask substrate having an amount of warp;
a membrane held on the substrate, said membrane having a pattern at a position corresponding to the transparent portion; and
a mask frame for holding said mask substrate such that the amount of warp in said mask substrate is preserved.

5,485,496

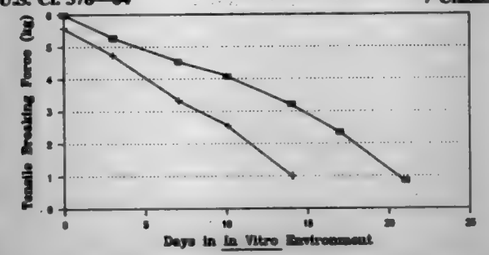
GAMMA IRRADIATION STERILIZING OF BIOMATERIAL MEDICAL DEVICES OR PRODUCTS, WITH IMPROVED DEGRADATION AND MECHANICAL PROPERTIES

Keun-Ho Lee, and Chih-Chang Chu, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Sep. 22, 1994, Ser. No. 310,489

Int. Cl.[6] G21K *5/00*

U.S. Cl. 378—64 **7 Claims**



1. A method for gamma irradiation sterilization of a medical device or product composed of or containing biomaterial that undergoes substantial strength loss during use if subjected to gamma irradiation sterilizing at ambient conditions, said method comprising gamma irradiating said medical device or product in the substantial absence of oxygen while said device is maintained at a temperature ranging from −180° C. to −200° C., thereby to sterilize said device.

5,485,497

OPTICAL ELEMENT AND PROJECTION EXPOSURE APPARATUS EMPLOYING THE SAME

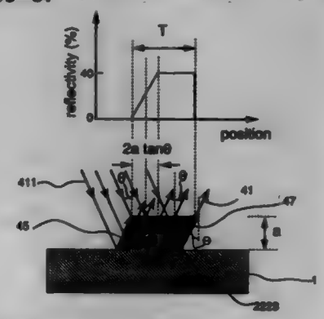
Hiroaki Ofuzai, Kokubunji; Masaaki Ito, Higashi-Murayama; Takashi Soga, Hachioji; Taro Ogawa, Tachikawa; Kozo Mochiji, Tokorozawa, and Eiji Takeda, Koganei, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 974,884, Nov. 12, 1992, abandoned. This application Feb. 14, 1994, Ser. No. 195,047

Claims priority, application Japan, Nov. 12, 1991, 3-295476; Aug. 20, 1992, 4-221237

Int. Cl.[6] G21K *5/00*

U.S. Cl. 378—84 **24 Claims**



1. An optical element, comprising:
a substrate having a surface; and
a reflective member having a predetermined thickness, said reflective member being provided on the substrate surface and including a material for reflecting one of vacuum ultraviolet radiation and X-radiation which is incident to said member, the reflectivity of said reflective member with respect to vacuum ultraviolet radiation and X-radiation being relatively higher than the reflectivity, with respect to vacuum ultraviolet radiation and X-radiation, of said substrate surface;
wherein said member includes a first portion having a first reflectivity to incident vacuum ultraviolet radiation and X-radiation introduced to said member at a finite incidence angle, and a second portion having a second reflectivity to incident vacuum ultraviolet radiation and X-radiation that is smaller than the first reflectivity.

5,485,498

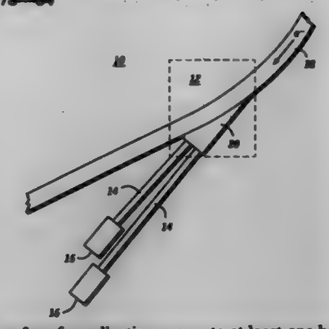
X-RAY INTERFACE AND CONDENSER

Whitson G. Waldo, III, Hutto, Tex.; Eric Brodsky, and France Cerrina, both of Madison, Wis., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 1, 1994, Ser. No. 269,593

Int. Cl.[6] G21K *1/06*

U.S. Cl. 378—84 **4 Claims**



1. An interface for collecting x-rays to at least one beamline, the interface comprising:
a housing including at least one mirrored funnel, said at least one mirrored funnel having a receiving end attached adjacent

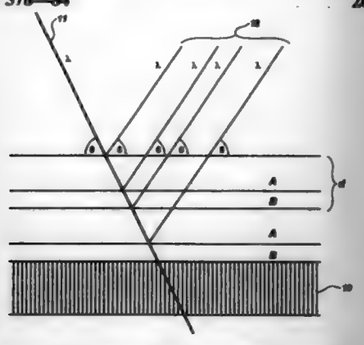
to an x-ray source and an exiting end attached to the at least one beamline, wherein the at least one mirrored funnel comprises a plurality of flat mirrors arranged to partially collimate the x-rays into a parallel beam.

5,485,499

HIGH THROUGHPUT REFLECTIVITY AND RESOLUTION X-RAY DISPERSIVE AND REFLECTIVE STRUCTURES FOR THE 100 EV TO 5000 EV ENERGY RANGE AND METHOD OF MAKING THE DEVICES

Hans K. Pew, Orem, and David D. Allred, Provo, both of Utah, assignors to Moxtek, Inc., Orem, Utah

Filed Aug. 5, 1994, Ser. No. 286,693
Int. Cl.[6] G01T *1/32*
U.S. Cl. 378—84 26 Claims



1. A method for preparing a multilayer reflective device for x-ray radiation within the energy range of 100 eV to 5000 eV, said method comprising the following steps of step a) plus the subsequent steps of b) and c) in any order, followed by step d:

a) selecting a substrate having a smooth surface suitable for receiving a reflective coating operable within the x-ray energy range of 100 eV to 5000 eV;

b) applying over the substrate a thin layer of uranium composition selected from at least one of the group consisting of uranium, uranium compound, and uranium alloy;

c) applying to the layer of uranium composition a thin spacer layer which is optically compatible with the uranium composition to enable reflection of the x-ray radiation; and

d) repeating steps b) and c) sequentially and in uniform pattern to form a multiple layered device.

5,485,500

DIGITAL X-RAY IMAGING SYSTEM AND METHOD

Rika Baba, Kokubunji; Ken Ueda, Ome; Hisatake Yokouchi, Tokyo; Yoichi Onodera, Asaka; Keiji Umetani, Hino, and Masayuki Tsuneoka, Kashiwa, all of, Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Jan. 26, 1994, Ser. No. 186,471
Claims priority, application Japan, Jan. 29, 1993, 5-013310; Jun. 14, 1993, 5-141885
Int. Cl.[6] G21K *5/10*
U.S. Cl. 378—98.2 47 Claims

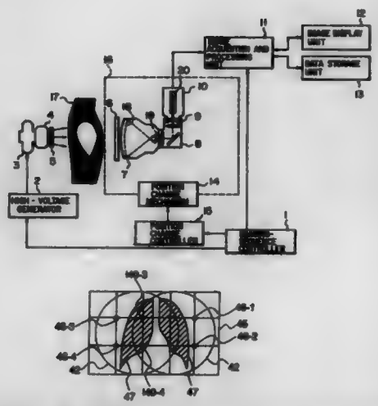
1. A digital X-ray imaging system comprising:

X-ray generator means including an X-ray tube;

X-ray generator controlling means for controlling said X-ray generator means;

X-ray detecting means for detecting an X-ray transmitted through a subject, said X-ray detecting means having an X-ray grid for shielding a scattered X-ray;

signal processing means for acquiring signals from said X-ray detecting means and processing the signals to obtain a digital X-ray images of said X-ray transmitted subject through said subject;



display means for displaying an image of said subject obtained by said signal processing means;

position changing means for changing a relative position between said X-ray detecting means, said subject and said X-ray tube by moving one of said X-ray detecting means and said X-ray tube;

position change controlling means for controlling said position changing means; and

imaging-sequence controlling means for controlling said position change controlling means and said X-ray generator controlling means;

wherein said imaging-sequence controlling means controls to set a plurality of imaging view fields, to set each of a plurality of regions of interest of said subject to generally a central area of an X-ray detecting plane of said X-ray generating means, said X-ray detecting plane being an incident plane of said transmitted X-ray through said subject, and to set at least one imaging view field to contain an intermediate region between said plurality of regions of interest, and said signal processing means corrects a sensitivity non-uniformity, caused by said X-ray generator means and said X-ray detecting means, of each of said digital X-ray images of said plurality of imaging view fields, and joins together a plurality of said digital X-ray images of said plurality of imaging view fields.

5,485,501

METHOD FOR THE OPERATION OF AN AUTOMATIC X-RAY EXPOSURE UNIT

Horst Aichinger, Fuerth, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 10, 1994, Ser. No. 288,043
Claims priority, application Germany, Sep. 10, 1993, 43 30 787.6
Int. Cl.[6] H05G *1/64*
U.S. Cl. 378—98.7 2 Claims

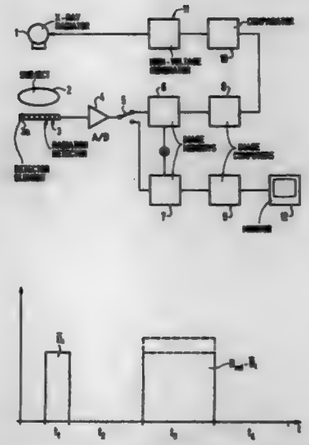
1. A method for operating an automatic x-ray exposure unit having a radiation detector composed of a matrix of detector elements, comprising the steps of:

selecting a predetermined dose which produces a complete exposure at said radiation detector of an examination subject;

during a first time span, activating an x-ray source to emit a first dose pulse by selective adjustment of an x-ray source voltage for dimensioning said first dose pulse so as to be insufficient for generating a complete exposure even with a smallest density of said subject;

during a second time span following said first time span, serially reading out image data from said radiation detector generated as a result of said first dose pulse and storing said image data in a first image memory;

calculating a grayscale value frequency of occurrence distribution of the image data in said first image memory; and



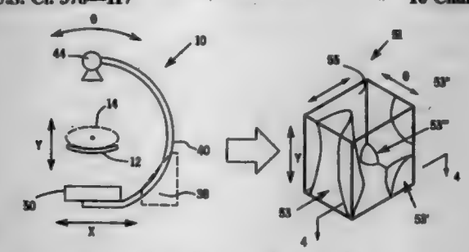
during a third time span following said second time span, generating a primary image of an examination subject dependent on said distribution and storing said primary image in a second image memory, and adding said image in said first image memory to said image in said second image memory to produce a final image.

5,485,502

RADIOGRAPHIC GANTRY WITH SOFTWARE COLLISION AVOIDANCE

Corydon A. Hinton, Monona, and Glenn Szejna, Madison, both of Wis., assignors to Lunar Corporation, Madison, Wis.

Filed Jul. 26, 1994, Ser. No. 280,632
Int. Cl.[6] H05G *1/30*
U.S. Cl. 378—117 10 Claims



3. A multi-axis radiographic system comprising:

(1) a radiation source and detector;

(2) an arm supporting at least one of the radiation source and detector and movable within movement limits to arm positions in at least two dimensions;

(3) a patient support adapted to positioning a patient with respect to the arm;

(4) an electronic computer communicating with the arm to provide movement signals for moving the arm between arm positions, the electronic computer having a memory storing:

(a) a legal space table that relates arm positions, within the movement limits of the arm, to one of a contacting and non-contacting state, the contacting state corresponding to one of movement limits and arm positions where there is a high risk of contact between one of the arm, radiation source and radiation detector, and one of the table and patient, and non-contacting states being other arm positions; and

(b) a program for controlling the computer so as to:

(i) determine a destination arm position to which the arm should be moved;

(ii) determine a legal path through the legal space table from the current arm position to the destination arm position without crossing any arm positions related to the contacting state; and

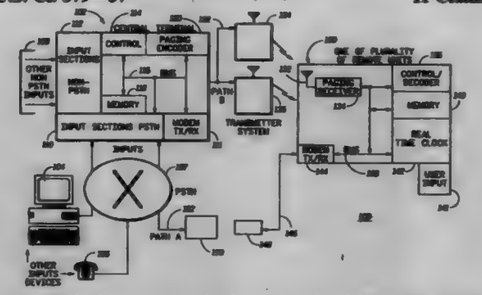
(iii) provide movement signals to the arm to move the arm in along the path to the destination arm position.

5,485,503

METHOD OF REMOTE LAUNCHING APPLICATIONS IN A MESSAGE DELIVERY SYSTEM

Darrell D. Diem, Boynton Beach, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 2, 1993, Ser. No. 100,832
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—57 11 Claims



1. A method in a communication system for delivering messages to a selective call receiver, the method comprising the steps of:

at a first portable selective call receiver:

updating a record in a database in the first portable selective call receiver;

automatically creating a message packet in response to the record updating step, the message packet including message data comprising changes updated to the record and a batch tag to indicate one of a manual and an automatic operating mode;

setting the batch tag in the message data to one of a manual and an automatic operating mode for a message packet; and

sending the message packet to a central paging communication system;

at the central paging communicating system:

receiving the message packet;

coupling destination address information with the message packet to provide a message; and

wireless transmitting the message over a paging communication channel; and

at a second portable selective call receiver:

receiving the message from the paging communication channel;

storing the message packet contained in the message received from the paging communication channel and automatically performing predetermined functions in the second portable selective call receiver in response to the batch tag in the message data from the message packet from the received message indicating an automatic mode for the message packet;

storing the message packet for subsequent manual inspection by a user of the second portable selective call receiver in response to the batch tag in the message data from the message packet from the received message indicating a manual mode for the message packet; and

updating a record in a database in the second portable selective call receiver with the message data from the message packet from the received message.

5,485,504

HAND-HELD RADIOTELEPHONE WITH VIDEO TRANSMISSION AND DISPLAY

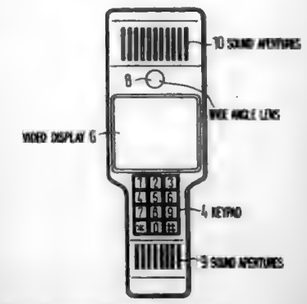
Horst Ohnsorge, Freiberg, Germany, assignor to Alcatel N.V., Amsterdam, Netherlands

Continuation of Ser. No. 913,397, Jul. 15, 1992, abandoned. This application Dec. 30, 1994, Ser. No. 366,429

Claims priority, application Germany, Aug. 7, 1991, 41 26 105.4

Int. Cl.[6] H04M *11/00;* **H04N** *7/14;7/15*

U.S. Cl. 379—58 **15 Claims**



1. A hand-held telephone comprising:

a hand-held housing having a front surface, at least two sound apertures disposed at the front surface and extending through the front surface into the hand-held housing;

at least two electroacoustic transducers mounted within the hand-held housing behind corresponding ones of the at least two sound apertures of the front surface of the hand-held housing and facing away from the hand-held housing;

a keypad mounted in the hand-held housing having keys which are accessible outside of the hand-held housing at the front surface of the hand-held housing;

a liquid crystal display mounted in the hand-held housing and having a display face directed away from the hand-held housing viewable at the front surface of the hand-held housing;

a video camera mounted in the hand-held housing directed away from the hand-held housing in the same direction as the display at the front surface of the hand-held housing; and

electronic circuitry disposed within said hand-held housing and connected to the at least two electroacoustic transducers, the keypad, the display and the video camera, for transmitting and receiving signals with an external telephone network.

5,485,505

APPARATUS AND METHOD FOR REMOTELY INITIATING OPERATION OF A CELLULAR TELEPHONE

Daniel P. Norman, Alpharetta; Richard A. Guidotti, Snellville, and David A. Saitta, Atlanta, all of Ga., assignors to BellSouth Corporation, Atlanta, Ga.

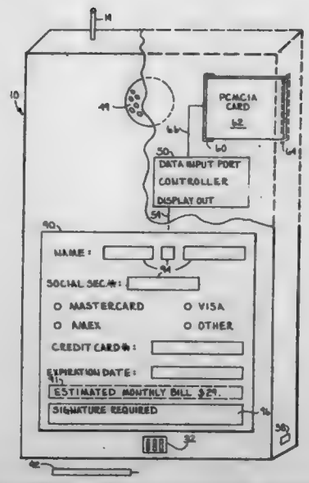
Continuation of Ser. No. 156,514, Nov. 23, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 482,800

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—58 **7 Claims**

1. A cellular telephone for use in a cellular telecommunications network of the type having a customer activation center (CAC), said cellular telephone comprising:

a memory device, said memory device containing first operating instructions which cause a display of first prompts to a user of said cellular telephone, said first prompts being for said user to provide a user name, a user address, and a user credit card number, said memory device further containing second operating instructions which cause a display of second prompts to said user, said second prompts being for instructing said user how to program a valid mobile identification number (MIN) into said cellular telephone, said memory device further containing a dummy MIN for said cellular telephone;



a display for providing said first prompts and said second prompts to said user of said cellular telephone;

an input device for accepting first responses from said user to said first prompts and second responses from said user to said second prompts;

a radio frequency (RF) transmitter for sending said first responses and said dummy MIN to said CAC;

an RF receiver for receiving said valid MIN for said cellular telephone from said CAC; and

a controller connected to said memory device, connected to said input device, connected to said display, connected to said RF receiver and connected to said RF transmitter, for causing said display to provide said first prompts to said user in response to said first operating instructions, for accepting said first responses from said input device, for causing said RF transmitter to send said dummy MIN and said first responses to said CAC, for receiving said valid MIN from said RF receiver, for causing said display to provide said valid MIN to said user, for causing said display to provide said second prompts to said user in response to said second operating instructions, and responsive to said second responses for programming said valid MIN into said cellular telephone.

5,485,506

METHOD FOR DESIGNATING RECORDED MESSAGES

Thomas S. Recht, Highland Park; James F. Goedken, Arlington Heights, and Michael H. Pittelkow, Grayslake, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 5, 1994, Ser. No. 177,667

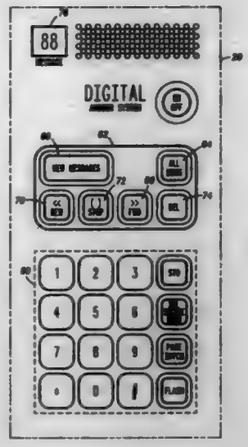
Int. Cl.[6] H04M *1/64*

U.S. Cl. 379—67 **19 Claims**

1. A method for providing a message designation to messages recorded in an answering machine comprising the steps of:

assigning a message designation to each recorded message indicating that a message is new; and

updating the message designation for selected recorded messages upon replay of the recorded messages, wherein the message designation is updated for recorded messages which have been replayed for a predetermined period of time during a playback session.



5,485,507

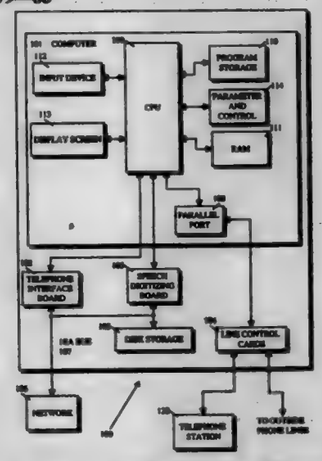
INTEGRATED COMMISSARY SYSTEM

Barry D. Brown, Mesquite, and Paul A. J. Wakefield, Carrollton, both of Tex., assignors to Gateway Technologies, Inc., Carrollton, Tex.

Continuation-in-part of Ser. No. 109,836, Aug. 20, 1993. This application Apr. 12, 1994, Ser. No. 226,665

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—88 **11 Claims**



1. In a premise-based telephone system for connecting calls from a plurality of telephone stations within an institution, a commissary system for automatically processing orders to the commissary of the institution through the telephone stations of the premise based telephone system, the commissary system comprising:

a memory device for storing user status information including a user name, a personal identifier, an account balance and a user class for each user of the commissary system, and commissary inventory information for each item offered by the commissary of the institution;

a processor coupled to the memory device and to a telephone station of the premise based telephone system;

a processor implemented control program for monitoring the telephone station, and responsive to a user entering a commissary telephone number, the control program instructs the processor to compare user status and inventory information with identifier and item selection information, respectively, provided by the user to determine whether authorization criteria are met and to update the user status information and generate a transaction record when authorization criteria are met; and

a message generating device responsive to the processor, for communicating stored user status and commissary information to the user and requesting user identifier and item selection information from the user.

5,485,508

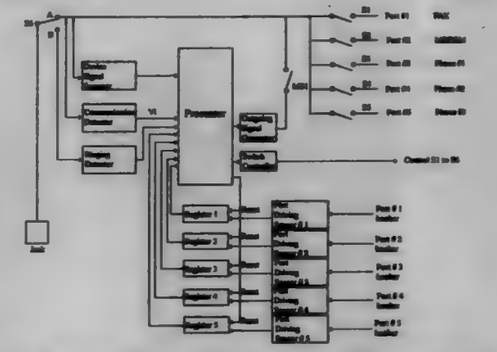
HYBRID COMMUNICATION DEVICES WITH ONE TELEPHONE LINE

Geng Kaung Ho, 1119 Grassmere Dr., Richardson, Tex. 75080

Filed Jul. 19, 1993, Ser. No. 93,600

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—97 **7 Claims**



1. An interface between a single telephone line and telephone devices, consisting both digital devices and voice devices for automatically generating a device signal based on each of the physical position of ports connected to said telephone devices which initiates the phone call, comprising:

a. device signal generator for generating said device signal;

b. several port driving sensors to detect off-hook action of one of said telephone devices;

c. several registers to keep the output of said port driving sensors, for memory of off-hook action of one of said telephone devices;

d. a processor to read the output of said registers and to stimulate said device signal generator to generate said device signal based on the memory of off-hook action of said registers;

e. a communication detector to monitor the existence of communication between sender end and receiver end;

f. port switches to connect to or disconnect said telephone devices with said interface;

g. a switch controller to be triggered by said processor according to the outputs of said register and said communication detector to connect or disconnect said port switches;

h. and outlet switch controlled by said switch controller, to connect said interface to said telephone line and send said device signal to said telephone line.

5,485,509

TELEMETRY DEVICE INCLUDING A DYNAMIC OFF-HOOK DETECTOR

Stewart W. Oliver, Venice, Calif., assignor to Telegenics, Inc., Los Angeles, Calif.

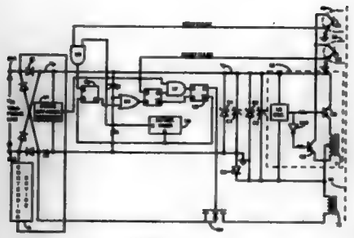
Filed Sep. 29, 1993, Ser. No. 128,865

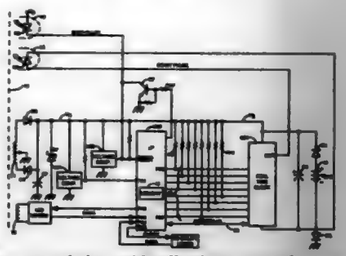
Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—106 **21 Claims**

1. A telemetry device for collecting and transmitting data over a phone line to a central station, said phone line conducting a loop current, said telemetry device comprising:

data collecting means for collecting data at a remote location;





transmitting means, coupled to said collecting means, for transmitting said data over said phone line to said central station during an active state of said device in which said telemetry device seizes the phone line;

voltage deriving means, coupled to said phone line, for deriving a voltage dependent on the loop current of said phone line;

variable load pre-loading means, situated in said telemetry device, for variably loading said telemetry device down during said active state to draw an amount of loop current which is varied until said voltage reaches a first predetermined voltage level, and

voltage drop detecting means, coupled to said voltage deriving means, for detecting when said voltage decreases to a second predetermined voltage level less than said first predetermined voltage level, thus indicating that a contending telephone device coupled to said phone line has come off-hook during said active state.

5,485,510

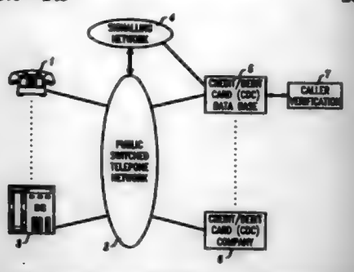
SECURE CREDIT/DEBIT CARD AUTHORIZATION

Raymond O. Colbert, Naperville, Ill., assignor to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 953,418, Sep. 29, 1992. This application Sep. 1, 1994, Ser. No. 300,096

Int. Cl.[6] H04M *17/00;11/00*

U.S. Cl. 379—145 **26 Claims**



13. In a database system for authorizing a credit/debit card (CDC) expenditure, a method for authorizing credit/debit for a purchase of goods or services comprises:

receiving data in the database over a first telecommunications connection from a CDC holder at a first location, the data identifying a specific CDC;

determining whether the CDC is authorized to incur an expenditure;

transmitting an authorization from the database to incur the expenditure over a second telecommunications connection to a vendor at a second location, wherein transmitting the authorization is responsive to a determination that the CDC is authorized to incur the expenditure;

establishing a third telecommunications connection between the vendor and the holder identified by the CDC for specifying goods and services to be purchased; and

wherein the data identifying the CDC is not provided to the vendor.

5,485,511

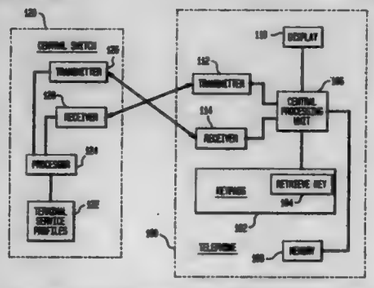
METHOD AND APPARATUS FOR DETERMINING THE TELEPHONY FEATURES ASSIGNED TO A TELEPHONE

David Iglehart, Austin; Robert D. Whittington; Elie A. Jreij, both of Pflugerville; Andrzej Kosciuski, and Leland Lester, both of Austin, all of Tex., assignors to Siemens Rolm Communications Inc., Santa Clara, Calif.

Filed Sep. 8, 1994, Ser. No. 303,100

Int. Cl.[6] H04M *3/42*

U.S. Cl. 379—201 **13 Claims**



1. Apparatus for determining which telephony features are assigned to a telephone within a telephone network having a central switch and a plurality of available telephony features, said apparatus comprising:

feature activation means for sending a plurality of feature activation request signals from the telephone to the central switch, each of said feature activation request signals designating a telephony feature;

a receiver for receiving feature status signals from the central switch, each of said feature status signals indicating whether a feature corresponding to a feature activation signal sent by said feature activation means is assigned to the telephone; and

a processor for generating a list of features assigned to the telephone from said feature status signals received from the central switch.

5,485,512

MNEMONIC AND SYNONYMIC ADDRESSING IN A TELECOMMUNICATIONS SYSTEM

Frank J. Bogart, Boulder; Bruce D. Butterfield, Broomfield; David L. Chavez, Jr., Northglenn; Henry C. Dittmer, Westminster; Frederick R. Fix, Arvada; Larry J. Hardouin, Westminster; Nancy K. Schmidt, Broomfield, and Linda L. Thomson, Westminster, all of Colo., assignors to AT&T Corp., Murray Hill, N.J.

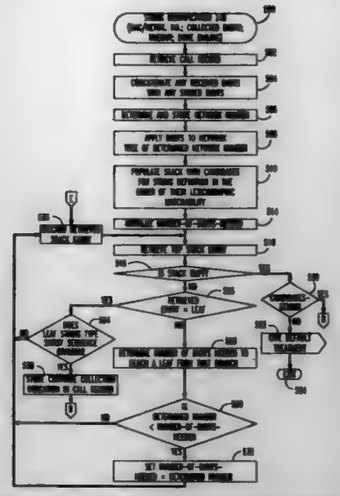
Continuation of Ser. No. 841,159, Feb. 24, 1992, Pat. No. 5,412,714. This application Oct. 17, 1994, Ser. No. 324,819

Int. Cl.[6] H04M *7/00;3/42;3/00*

U.S. Cl. 379—221 **27 Claims**

1. A call-processing arrangement in a telecommunications system having a plurality of endpoints, means for accessing each of the endpoints, and a numbering plan composed of a plurality of defined strings of symbols according to which a selected endpoint is accessed in response to a user providing a sequence of symbols associated with the selected endpoint,

CHARACTERIZED IN THAT:



the numbering plan assigns, to at least some of the endpoints, an address within the telecommunications system that comprises at least one predefined sequence of symbols that includes a string that is included among said defined strings of symbols which string is a member either of a natural human language or of a proper name so that the string has a logical meaning apart from its meaning in serving to access the endpoint, and where the number of symbols in the string is unrestricted within a predetermined range encompassing a plurality of different numbers of symbols such that each symbol in the string falling within the predetermined range is used by the call-processing arrangement in identifying a corresponding endpoint; and

the means for accessing effect establishment of a connection to the corresponding endpoint by using said address of the corresponding endpoint within the telecommunications system.

5,485,513

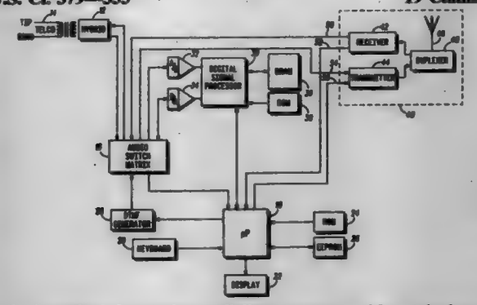
CIRCUIT AND METHOD FOR AUTOMATIC MEMORY DIALING

James F. Goedken, Arlington Heights, and Charles J. Malek, Crystal Lake, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 27, 1993, Ser. No. 113,567

Int. Cl.[6] H04M *1/27*

U.S. Cl. 379—355 **19 Claims**



1. A method for storing a dialing sequence with a telephone device having a keypad for entering digits and a memory for storing digits, said telephone device being adapted to automatically transmitting said dialing sequence when dialing and during a call, said method comprising the steps of:

selecting a location in the memory for storing the dialing sequence;

selecting digits to be stored in the dialing sequence through entry on the keypad;

automatically inserting at least one first pause character in the dialing sequence in response to detecting a far end ringing signal, the at least one first pause character providing a delay until a far end pickup is detected; and

selecting at least one additional digit to be stored in the dialing sequence through entry on the keypad.

5,485,514

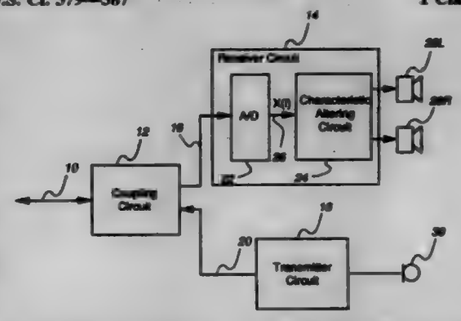
TELEPHONE INSTRUMENT AND METHOD FOR ALTERING AUDIBLE CHARACTERISTICS

Michael E. Knappe, Ottawa, and Brian R. Shelton, Kanata, both of, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Mar. 31, 1994, Ser. No. 220,653

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—387 **1 Claim**



1. A telephone instrument for receiving signals from and for transmitting signals to a telephony apparatus via a telephone line, the telephone instrument comprising:

transmitter means;

a pair of receiver means for use in acoustical association with left and right ears of a user of the telephone instrument;

signal coupling means including signal transmitting means and signal receiving means, the signal transmitting means transmitting signals from the transmitter means to the telephone line, the signal receiving means receiving signals from the telephone line to provide received signals X(i);

a pair of received signal processing means, each for processing the received signals X(i), each received signal processing means including direct path processing means, finite impulse processing means, all-pass signal means and signal summing means;

the direct path processing means for processing the received signals X(i) and providing a direct path output signal which is proportional to the received signals X(i);

the finite impulse processing means for processing the received signals X(i) and providing a finite impulse output signal which is proportional to $\Sigma C(k) \cdot X(i-k)$;

the all-pass signal means for processing the finite impulse output signal and providing an all-pass output signal which is proportional to $\beta(i-M)$;

where in

$\beta(i)=(-g) \cdot X(i)+(1-g^2)\ \alpha(i-N)$, and

$\alpha(i)=X(i)+g \cdot \alpha(i-N)$,

wherein, C(k) represents a sequence of finite impulse response coefficients,

g is a gain coefficient, and

M and N represent delay coefficients;

the signal summing means summing the direct path output signal, the finite impulse output signal and the all-pass output signal and providing a summed signal for operation of the respective one of the pair of receiver means; and

the coefficients in one of the pair of received signal processing means being different from those of the other received signal processing means,

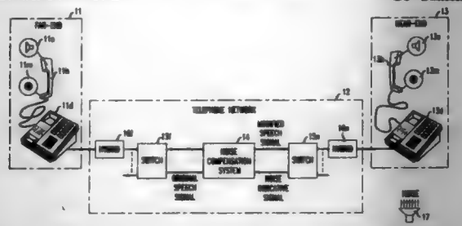
whereby an audible phase characteristic of the summed signal provided by each received signal processing means is altered from the received signals X(i), so that signals audible at one of the pair of the receiver means are at variance with signals audible at the other of the pair of the receiver means.

5,485,515

BACKGROUND NOISE COMPENSATION IN A TELEPHONE NETWORK

Jonathan B. Allen, Mountainside, and Donald J. Youtkus, Scotch Plains, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Dec. 29, 1993, Ser. No. 175,095
Int. Cl.[6] H04M *9/08*
U.S. Cl. 379—391 **16 Claims**



1. A method of processing an original speech signal in a telephone network to produce a modified speech signal, the modified speech signal for use at a destination having background noise thereat, the method comprising the steps of:

receiving from the destination a background-noise-indicative signal indicative of the background noise at the destination;

separating the original speech signal into a plurality of original subband speech signals;

separating the background-noise-indicative signal into a plurality of subband-noise-indicative signals corresponding to the plurality of original subband speech signals;

applying a corresponding subband gain to each original subband speech signal to produce a corresponding plurality of modified subband speech signals, wherein each subband gain is a function of the corresponding subband-noise-indicative signal;

combining the plurality of modified subband speech signals to produce the modified speech signal; and

transmitting the modified speech signal through the telephone network to the destination.

5,485,516

LINE TERMINATION FOR A TELEPHONE LINE

Jörg Hauptmann, Villach, Austria, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 1, 1993, Ser. No. 86,542
Claims priority, application Germany, Jul. 1, 1992, 42 21 567.6
Int. Cl.[6] H04M *9/08*
U.S. Cl. 379—413 **9 Claims**

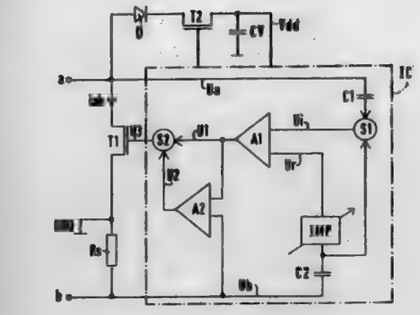
1. A line termination of a telephone line, comprising:

a regulating transistor connected between conductor terminals of a telephone line;

a termination circuit having an amplifier receiving an alternating voltage of the telephone line and a reference voltage and generating an output correcting variable controlling said regulating transistor;

a regulating configuration generating a regulated supply voltage for said termination circuit; and

a regulating circuit receiving the output correcting variable end a conductor voltage for readjusting the conductor voltage of the output correcting variable of said amplifier.

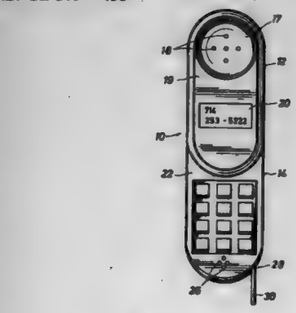


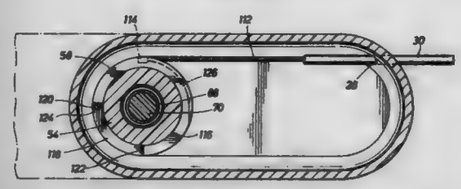
5,485,517

PORTABLE WIRELESS TELEPHONE HAVING SWIVEL CHASSIS

Robert R. Gray, 5225 Memorial Dr., Houston, Tex. 77007

Continuation of Ser. No. 162,757, Dec. 7, 1993, abandoned. This application Apr. 24, 1995, Ser. No. 427,305
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—433 **21 Claims**





1. A portable telephone having a chassis comprising:

(a) a first chassis section defining a rear closure surface;

(b) a second chassis section defining a mating face surface having face-to-face movable relation with said rear closure surface;

(c) said first chassis section having a circular pivot flange projecting axially beyond said rear closure surface and defining an axis for relative pivotal rotation of said first and second chassis sections between a closed position where said rear closure surface and said mating face surface are disposed in intimate juxtaposition defining a compact substantially pocket-sized chassis configuration and being rotatably movable to an open position where said first and second chassis sections are oriented to positions defining an ergonomic telephone configuration for telephone communication, said circular pivot defining a tapered internal pivot flange;

(d) a generally cylindrical connection hub being defined by said second chassis section and having a circular pivot connection groove located externally thereof, said circular tapered internal pivot flange being engaged within said circular pivot connection groove and defining a rotatable connection between said circular pivot flange and said generally cylindrical connection hub;

(e) said circular pivot flange being flexible to permit movement of said circular pivot flange over said generally cylindrical

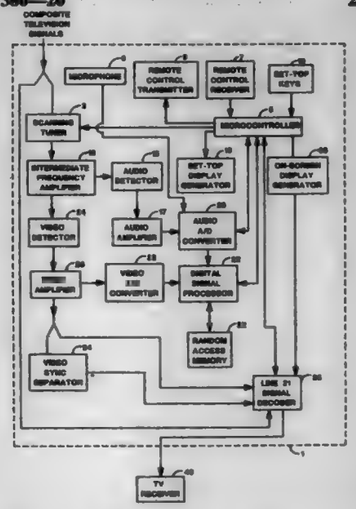
connection hub during assembly of said first and second chassis sections and after assembly retaining said circular pivot flange and said generally cylindrical connection hub in rotational assembly and against relative axial movement.

5,485,518

ELECTRONIC MEDIA PROGRAM RECOGNITION AND CHOICE

Robert M. Hunter, and Frank M. Stewart, both of Bozeman, Mont., assignors to Yellowstone Environmental Science, Inc., Bozeman, Mont.

Filed Sep. 30, 1993, Ser. No. 129,450
Int. Cl.[6] H04N *7/167*
U.S. Cl. 380—20 **20 Claims**



1. A method for electronic media program recognition and choice comprising the steps of

locking out all programs,

scanning available broadcast channels,

inputting at least one program choice to a memory means,

sampling at least one signal of at least one suitable program,

obtaining at least one signature of said at least one suitable program,

storing in the memory means said at least one signature of said at least one suitable program,

scanning a plurality of broadcast channels,

sampling at least one signal of at least one unidentified program,

obtaining at least one signature of said at least one unidentified program,

comparing said at least one signature of at least one unidentified program with at least one signature of at least one suitable program, and

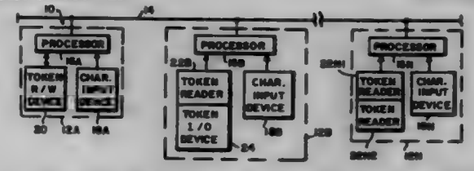
making at least a portion of said suitable program available to a player.

5,485,519

ENHANCED SECURITY FOR A SECURE TOKEN CODE

Kenneth P. Weiss, Newton, Mass., assignor to Security Dynamics Technologies, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 923,085, Jul. 31, 1992, Pat. No. 5,367,572, and a continuation-in-part of Ser. No. 712,186, Jun. 7, 1991, Pat. No. 5,237,614. This application May 25, 1993, Ser. No. 67,517
Int. Cl.[6] H04L *9/32*
U.S. Cl. 380—23 **38 Claims**



33. Apparatus for providing enhanced security for a multibit secure token code which is obtained from a machine readable token, the apparatus comprising:

means included as part of said token for storing a multibit token secret which is related to the secure token code in a predetermined way; and

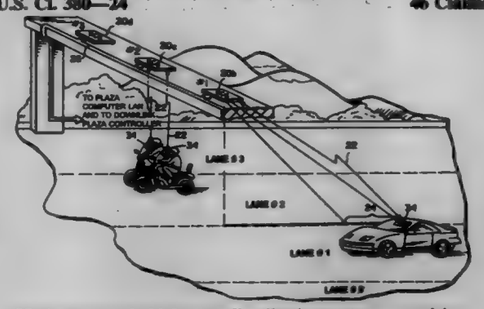
a terminal having a processor, a character input device for said processor and a token reader, an authorized user utilizing said input device to input a multicharacter secret code known to such user into the processor, said token reader reading the stored multibit token secret from a token applied thereto, and said processor utilizing a combining algorithm to combine the secret code and multibit sequence applied thereto to obtain a corresponding secure token code.

5,485,520

AUTOMATIC REAL-TIME HIGHWAY TOLL COLLECTION FROM MOVING VEHICLES

David Chaum, Sherman Oaks, Calif., and Peter L. Hendrick, Jupiter, Fla., assignors to Amtech Corporation, Dallas, Tex.

Filed Oct. 7, 1993, Ser. No. 132,984
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—24 **46 Claims**



23. An automatic highway toll collection system comprising:

a roadside collection station disposed in proximity to at least one respectively corresponding highway lane and having a bi-directional electromagnetic data communication link coupled to a predetermined toll collection zone disposed in proximity to said at least, one respectively corresponding highway lane;

an in-vehicle unit disposed in each of plural vehicles passing along the highway and having a bi-directional electromagnetic data communication link coupled to a predetermined vehicular communication zone that moves with the vehicle and intersects said toll collection zone of the roadside collection station for a limited time period as the vehicle passes along said at least one highway lane;

said in-vehicle units each including a smart card containing encrypted data representing pre-stored increments of money; and

each said roadside collection station and in-vehicle unit including respective data processing circuits connected to its electromagnetic data communication link for effecting at least the following real-time communication and data processing operations during said limited time period:

(a) passing first data from an in-vehicle unit to a roadside collection station to initiate payment of a toll;

(b) calculating toll data at the roadside collection station which is based on said first data and passing from the roadside collection station to the in-vehicle unit second data, including said toll data and unique linkage data linking said second data to said first data; and

(c) debiting the toll from the smart card at the in-vehicle unit and thereafter passing third data from the in-vehicle unit to the roadside collection station including verification data verifying said debiting and unique linkage data linking said third data to said first and second data.

5,485,521

AUDIO MIRROR SPEAKER

Toshihiro Yagisawa, Yokohama; Shoichi Ibaraki, Tokyo; Motokazu Kashida, Musashino, and Kenichi Nagasawa, Kawasaki, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 55,779, May 3, 1993, abandoned, which is a continuation of Ser. No. 641,272, Jan. 15, 1991, abandoned. This application Aug. 8, 1994, Ser. No. 286,915

Claims priority, application Japan, Jan. 23, 1990, 2-013264

Int. Cl.[6] H04R *5/00*

U.S. Cl. 381—24 **21 Claims**



1. An audio mirror speaker, comprising:

a diaphragm mounted in a speaker cabinet; and

an audio mirror having a mirror surface and mounted such that said mirror surface faces said diaphragm, said mirror surface being a flat plane and having a portion at which a recess area is formed, wherein directivity of a sound wave emitted from said diaphragm is controlled by changing a relative position between said diaphragm and said recess area.

5,485,522

SYSTEM FOR ADAPTIVELY REDUCING NOISE IN SPEECH SIGNALS

Torbjön W. Sölve, Cary, and Robert A. Zak, Raleigh, both of N.C., assignors to Ericsson GE Mobile Communications, Inc., Lynchburg, Va.

Filed Sep. 29, 1993, Ser. No. 128,639

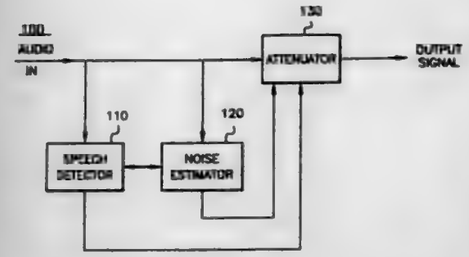
Int. Cl.[6] G10L *3/00*

U.S. Cl. 381—56 **33 Claims**

1. A method of reducing noise in audio signals, comprising:

receiving frames of digitized audio signals which include speech and background noise;

detecting whether the current frame includes speech information;



dynamically determining an attenuation to be applied to the digitized audio signals in accordance with the detection of speech that minimizes the background noise; and

applying the determined attenuation to the digitized audio signals, wherein the determined attenuation is gradually modified from a previously applied attenuation.

5,485,523

ACTIVE NOISE REDUCTION SYSTEM FOR AUTOMOBILE COMPARTMENT

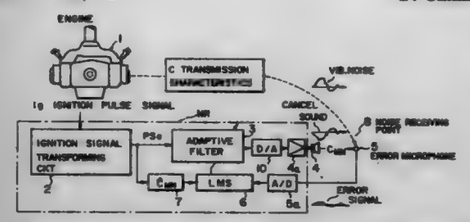
Manpei Tamamura, Oota; Hiroshi Iidaka, Koganei; Kazuyuki Kondo, Oota, and Keitaro Yokota, Hoya, all of, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, both of Tokyo, and Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 16, 1993, Ser. No. 32,057

Claims priority, application Japan, Mar. 17, 1992, 4-060202; Mar. 24, 1992, 4-066338; Apr. 3, 1992, 4-082325; Apr. 3, 1992, 4-082326

Int. Cl.[6] G10K *11/16*

U.S. Cl. 381—71 **24 Claims**



1. A noise reduction system for an automobile compartment, comprising:

pulse generating means for generating a first pulse train in synchronism with rotation of an engine;

engine load detecting means for detecting engine load during operation of an engine;

signal transforming means for transforming said first pulse train to obtain a second pulse train having a frequency spectrum composed of predetermined order components corresponding to the rotation, and for varying an amplitude of said second pulse train according to said detected engine load, so as to generate a primary source signal;

an adaptive filter for synthesizing impulse response in response to said primary source signal to produce a noise cancel signal, said adaptive filter having filter coefficients characterizing said impulse responses;

sound generating means for generating cancel sound corresponding to said noise cancel signal, so as to cancel noise within said compartment;

receiving means for receiving said noise and said cancel sound and for producing an error signal representing the error resulting from interference between said noise and said cancel sound; and

updating means responsive to said error signal for updating said filter coefficients so as to minimize the error between said vibration noise and said cancel sound.

5,485,524

SYSTEM FOR PROCESSING AN AUDIO SIGNAL SO AS TO REDUCE THE NOISE CONTAINED THEREIN BY MONITORING THE AUDIO SIGNAL CONTENT WITHIN A PLURALITY OF FREQUENCY BANDS

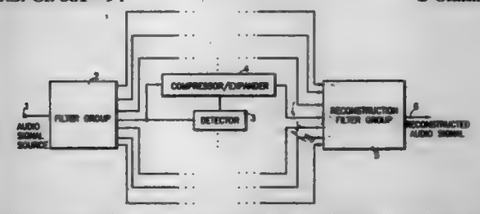
Juha Kuusama, and Aki Mäkivirta, both of Tampere, Finland, assignors to Nokia Technology GmbH, Pforzheim, Germany

Filed Nov. 19, 1993, Ser. No. 154,848

Claims priority, application Finland, Nov. 20, 1992, 925283

Int. Cl.[6] H04B *15/00*

U.S. Cl. 381—94 **2 Claims**



1. A system for processing an audio signal to reduce the noise contained therein, the system comprising a source (1) of an audio signal in electric form, a first filter group (2) for dividing the audio signal into several subband signals in different frequency bands, a detector (3) for each subband signal to detect the audio signal level thereof, and a compressor/expander (4) for compressing/expanding each subband signal on the basis of the detected audio signal level thereof, and a second filter group (5) for combining the compressed/expanded subband signals to generate a reconstructed audio signal (6), wherein the first filter group (2) is arranged to divide the sound frequency range into critical bands, each critical band having a maximum width so as to enable the processing of the signal within each critical band, and wherein the second filter group (5) is arranged to combine the sound in the bands to generate the reconstructed audio signal (6), characterised in that each compressor/expander (4) is arranged to attenuate the signal in its band when the detector (3) associated therewith has detected that the audio signal is missing from said frequency band.

5,485,525

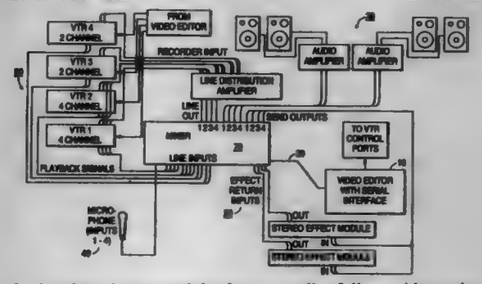
VTR CONFIGURATION OF A MODULAR AUDIO FOLLOW VIDEO MIXER

Michael A. Zampini; Alan Flum, both of Boca Raton; Donald E. Davis, Margate, and Joseph J. Dombrowski, Hollywood, all of Fla., assignors to Sony Corporation, Japan, and Sony Electronics Inc., Park Ridge, N.J.

Filed Sep. 13, 1993, Ser. No. 119,835

Int. Cl.[6] H03G *9/14*

U.S. Cl. 381—119 **15 Claims**



1. A mixer input module for an audio follow video mixer comprising:

input coupling means for supplying at least one audio channel from a multi-channel input device;

configuration select means for assigning the multi-channel input device to the mixer input module, said configuration select means including logic circuit means for providing control signals to couple signals from the assigned multi-channel device with the mixer; and

channel select means for selectively providing an audio channel supplied by the assigned multi-channel device to at least one of N audio signal paths in said mixer;

wherein said configuration select means includes configuration display means for visually indicating the assigned multi-channel device coupled to the mixer input module.

5,485,526

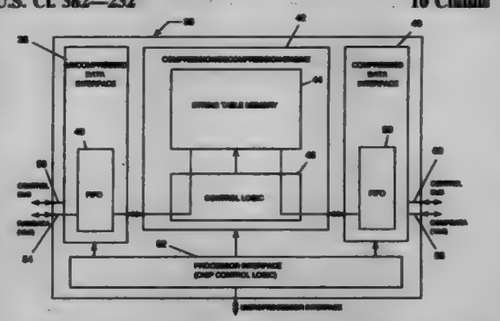
MEMORY CIRCUIT FOR LOSSLESS DATA COMPRESSION/DECOMPRESSION DICTIONARY STORAGE

Jeffrey P. Tobin, Corvallis, Oreg., assignor to Hewlett-Packard Corporation, Palo Alto, Calif.

Continuation of Ser. No. 891,872, Jun. 2, 1992, abandoned. This application Jan. 14, 1994, Ser. No. 183,100

Int. Cl.[6] H03M *7/40*; G06K *9/36*

U.S. Cl. 382—232 **10 Claims**



1. A circuit for use in compressing data character strings according to a dictionary based data compression algorithm, the circuit comprising:

a memory for storing compressed character strings, the memory including:

(a) a data input for receiving OMEGA-K inputs, each OMEGA-K input containing in part a codeword (OMEGA) and in part a data character string (K);

(b) a plurality of storage locations for storing the OMEGA-K inputs as data entries, each storage location having a corresponding memory address;

(c) means for simultaneously comparing an OMEGA-K input received by the data input with every previously stored data entry to determine if the OMEGA-K input matches any of the stored data entries; and

(d) a plurality of match indication outputs each corresponding to one of the plurality of storage locations, each match indication output indicating a match between an OMEGA-K input and the corresponding data entry;

a match address encoder coupled to the match indication outputs of the memory to derive a new codeword (OMEGA') equal to the address of the storage location of the stored data entry that matches the OMEGA-K input; and

input generator means, operatively coupled to receive the new codeword (OMEGA') from the match address encoder, for generating a next OMEGA'-K' input containing in part the new codeword (OMEGA') equal to the address of the storage location of the stored data entry that matches the previous OMEGA-K input and in part a next data character string (K') and for supplying the next OMEGA'-K' input to the data input of the memory.

5,485,527

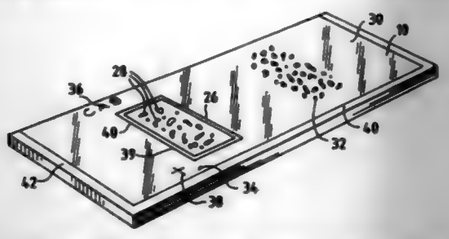
APPARATUS AND METHOD FOR ANALYSES OF BIOLOGICAL SPECIMENS

James W. Bacus, Hinsdale, and Peter S. Oud, Naperville, both of Ill., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 166,913, Dec. 15, 1993, abandoned, which is a continuation of Ser. No. 791,068, Nov. 12, 1991, abandoned, which is a continuation of Ser. No. 99,141, Sep. 21, 1987, Pat. No. 5,109,429, which is a continuation-in-part of Ser. No. 2,711, Nov. 12, 1987, abandoned, which is a continuation-in-part of Ser. No. 794,937, Nov. 4, 1985, Pat. No. 4,741,043. This application Mar. 27, 1995, Ser. No. 411,065

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—128 **15 Claims**



1. A kit for use in quantitation of specimen cell objects on each of a plurality of slide, the kit comprising:

a microscopic slide, the slide including a reference material are, the reference material area containing a reference means for staining, the reference means having predetermined physical characteristics which are detectable after staining;

one or more containers of stain material, the stain material including stain for stain application to the reference means and to specimen cell objects on the plurality of slides, the stain in the containers being in an effective amount to provide an optical density to the reference means after simultaneous staining of the reference means and specimen cell objects so that after the staining, the optical density of the reference means may be compared with an optical density of the specimen cell objects for the quantitation of the specimen cell objects.

5,485,528

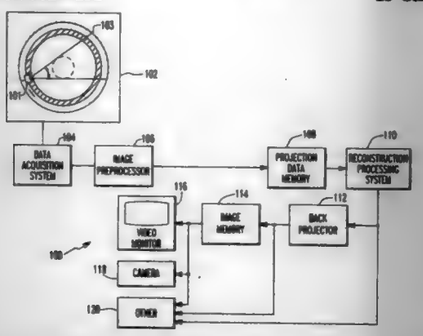
APPARATUS AND METHOD FOR BACK-PROJECTING AN IMAGE

Raymond Horn, Bethesda, Md., and Paul Simoncic, Herndon, Va., assignors to Star Technologies, Inc., Va.

Filed Oct. 15, 1993, Ser. No. 136,260

Int. Cl.[6] G06K *9/00*; G06F *15/00*

U.S. Cl. 382—131 **13 Claims**



1. An apparatus for determining a value of a pixel for a back-projected image generated from a plurality of views of an object comprising:

a plurality of detectors;

a first memory, coupled to the detectors, for holding data for a current one of said plurality of views;

means, coupled to the first memory, for receiving a pair of coordinates, said pair of coordinates corresponding to the pixel;

means, coupled to the receiving means, for scaling the received pair of coordinates to a second coordinate system, the scaling means including a table containing a point value and a slope value of a continuous function;

first means, coupled to the scaling means, for interpolating at least one memory address from the scaled pair of coordinates;

second means, coupled to the first interpolating means, for interpolating a back-projected value for said pixel in the current view from values in said first memory corresponding to said at least one interpolated memory address;

means, coupled to the second interpolating means, for weighting each back-projected value by a value obtained in accordance with the scaling means;

a second memory; and

means coupled to the weighing means and the second interpolating means, for modifying and storing the value of said pixel in a second memory in accordance with the weighted back-projected values.

5,485,529

IMAGE PROCESSING APPARATUS WITH THE ABILITY TO SUPPRESS ISOLATED POINTS

Mitsuru Kurita, and Yoshinori Ikeda, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 936,739, Aug. 31, 1992, abandoned, which is a continuation of Ser. No. 510,462, Apr. 17, 1990, abandoned. This application May 17, 1994, Ser. No. 245,079

Claims priority, application Japan, Apr. 18, 1989, 1-97722; May 10, 1989, 1-117014; May 10, 1989, 1-117015

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—162 **9 Claims**



1. An image processing apparatus comprising:

a) extraction means for extracting an outline of an image represented by input image data;

b) process means for coloring the outline extracted by said extraction means with a finite width; and

c) identifying means for identifying any isolated points in the image; and

d) control means for controlling said process means so that the outline of the image other than any such isolated point in the image is colored, while the outline of any such isolated point is not colored, so that any such isolated point is retained in the image and the outline of any such isolated point is not colored.

5,485,530

METHOD AND APPARATUS FOR MULTI-DIMENSIONAL PHASE FLUORESCENCE LIFETIME IMAGING

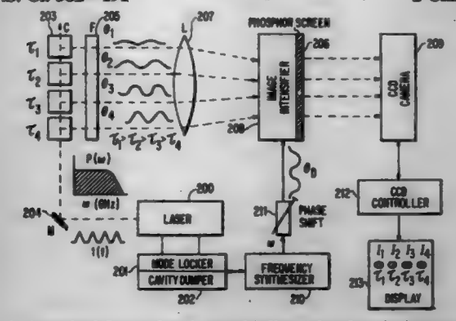
Joseph R. Lakowicz, 9142 Emersons Reach, Columbia, Md. 21045; Klaus W. Berndt, Baltimore; Kazimierz Nowaczyk, Baltimore; Henryk Szmacinski, Baltimore, all of Md., and Michael L. Johnson, Charlottesville, Va., assignors to Joseph R. Lakowicz, Columbia, Md.

PCT No. PCT/US92/00242, § 371 Date Jul. 23, 1993, § 102(e) Date Jul. 23, 1993, PCT Pub. No. WO92/13265, PCT Pub. Date Aug. 6, 1992

Continuation-in-part of Ser. No. 645,525, Jan. 24, 1991, abandoned. This PCT application Jul. 23, 1993, Ser. No. 94,016

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—191 **2 Claims**



1. A method for performing multi-dimensional optical measurements on a subject in a sample containing at least one fluorescent probe, comprising the following steps:

(a) illuminating said fluorescent probe with intensity modulated light at a first wavelength of said probe, said light being intensity modulated at a first frequency and a first phase, to produce secondary light as an excitation emission from said probe, said secondary light being intensity modulated at the first frequency and having a second phase;

(b) generating a gating signal modulated at said first frequency and having a third phase, differing by a first detector phase angle from said first phase;

(c) receiving said secondary light and intensifying said secondary light in response to said gating signal;

(d) generating at least a two dimensional image in response to said intensified secondary light; and

(e) detecting said at least two dimensional image;

(f) repeating, at least once, steps (b), (c), (d) and (e) with a second detector phase angle to produce at least two detected images each of which corresponds to a change between the phase and/or modulation of said secondary light and said intensity modulated light; and

(g) arithmetically processing the detected images to produce a final lifetime image, wherein said final lifetime image is (a) indicative of a value of the fluorescence lifetime of said at least one fluorescent probe and (b) is independent of the amplitude of the emission signal;

wherein said generating step (d) comprises:

(a) generating a first stored picture by setting said detector phase angle to π/2 relative to said first phase, detecting said resultant image and storing said detected image as a first picture;

(b) generating a second stored picture without modulation on said grating signal, detecting said resultant image and storing said detected image as a second picture;

(c) generating a third stored picture by setting said detector phase angle to 0° relative to said first phase, detecting said resultant image and storing said detected image as a third picture;

(d) subtracting said second stored picture from said first stored picture to generate a first intermediate image;

(e) subtracting said second stored picture from said third stored picture to generate a second intermediate image; and

(f) generating the ratio of said first intermediate image and said second intermediate image, said ratio identifying a pixel intensity that is proportional to said first physical property with respect to said second physical property.

5,485,531

CHARACTER-FEATURE EXTRACTION DEVICE

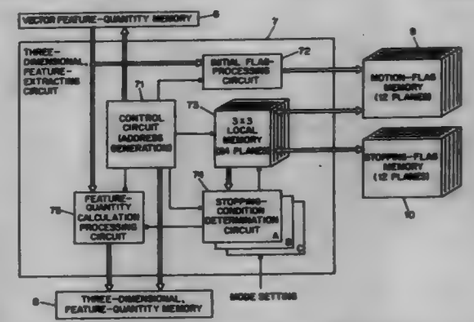
Hitoshi Ichinohe; Yasuo Hongo, and Masatoshi Okada, all of Tokyo, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, and Fuji Facom Corporation, Hino, both of, Japan

Continuation-in-part of Ser. No. 97,866, Jul. 22, 1993, which is a continuation of Ser. No. 285,840, Dec. 19, 1988, abandoned. This application Sep. 17, 1993, Ser. No. 123,750

Claims priority, application Japan, Dec. 17, 1987, 62-317343; Jul. 27, 1988, 63-185497; Sep. 17, 1992, 4-273785

Int. Cl.[6] G06K *9/48*

U.S. Cl. 382—198 **3 Claims**



1. A character-feature extraction device characterized in that boundary features of character patterns are broken down into a plurality of vectors and stored in a plurality of memory regions by vector direction wherein each vector is propagated into a respective direction with picture elements and wherein collisions among the vectors are detected via propagation processing, and wherein collision positions in each vector direction are extracted for the number of propagations to provide three-dimensional pattern features, which comprises:

a motion-flag memory having regions each corresponding to the respective pattern for each vector direction;

a stopping-flag memory having regions corresponding to the patterns for each vector direction;

a means for converting the vector extraction positions on the patterns into flags according to their directions, and storing the flags in corresponding regions of the motion-flag memory;

a means for moving flag values in the motion-flag memory via propagation processing into their respective vector directions;

a means for reading the flag values sequentially from a first address to a final address in the motion-flag memory and in the stopping-flag memory after the propagation processing, and determining whether there are flag values representing the existence of vectors in the flag values of said addresses in the flag memory regions with other vectors having a phase difference of more than 90 degrees, and in addresses of the upper, lower, right, and left parts thereof;

a means for resetting the flag values in said addresses in the region of the motion flag memory, and at the same time, setting the flags in said addresses in the regions of the stopping-flag memory with its vectors in the same direction, if there are vector flag values in said addresses of other flag memory regions; and

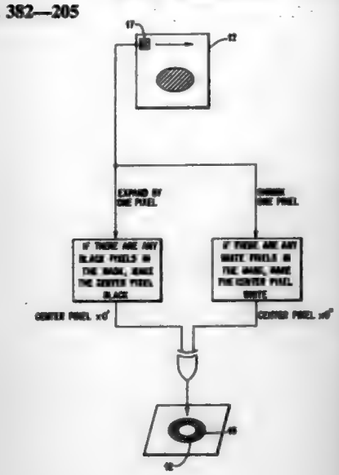
a means for converting the flag values in each stopping-flag memory region and each motion-flag memory region into vector values via determination processing after propagation processing, and outputting the vector values as three-dimensional features.

5,485,532

IMAGE PROCESSING DEVICE AND METHOD THEREOF

Hideshi Ishihara, Noda Takatsuki, Japan, assignor to Omron Corporation, Kyoto, Japan

Filed Sep. 25, 1992, Ser. No. 950,608
Claims priority, application Japan, Sep. 27, 1991, 3-276714
Int. Cl.[6] G06K *9/56*
U.S. Cl. 382—205 **2 Claims**



1. An image processing device for recognizing an image of a given object comprising:

camera means for capturing an image of an object to be inspected, and for generating image signals from said image of said object;

image processing means for receiving said image signals, said image processing means comprising:

pre-processing means for converting said image signals from analog to digital data;

window generating means for generating a window of a reference object, said window generating means comprising:

a gate circuit to open said window generating means during window generation, and to close it during measurement procedure;

a mask scanning circuit adapted to apply a mask with 3×3 pixels arrayed horizontally and vertically to said image obtained from said reference object, and then to apply raster scanning;

an expansion circuit for expanding by one pixel's worth of output data from said mask scanning circuit;

a shrinkage circuit for shrinking by one pixel's worth said output data from said mask scanning circuit;

a difference extraction circuit for calculating an absolute value of the difference between a first input from said expansion circuit and a second input from said shrinkage circuit in order to generate said window positioned between said expanded output data and said shrunken output data;

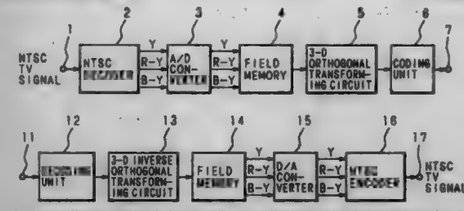
a window memory to store said window; control means for controlling said image processing means; image memory means for storing said image; and measurement means for measuring feature parameters of a portion of said image falling within said window.

5,485,533

METHOD AND APPARATUS FOR ENCODING VIDEO SIGNALS IN 3-D BLOCKS WITHOUT DETECTING IMAGE MOTION

Yoshiko Hatano; Ken Onishi; Yoshinori Asamura; Takashi Itou, and Manabu Tsukamoto, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 712,714, Jun. 10, 1991, abandoned.
This application Apr. 2, 1993, Ser. No. 41,883
Claims priority, application Japan, Jun. 13, 1990, 2-156453; Mar. 12, 1991, 3-046872; May 15, 1991, 3-110028
Int. Cl.[6] G06K *9/36;* **H04N** *7/12*
U.S. Cl. 382—236 **17 Claims**



1. A coding method for coding a digital television signal of an interlaced type used in a television system, said coding method comprising the steps of:

(a) storing a plurality of fields of the interlaced digital television signal as three-dimensional blocks in a memory, each block including a plurality of picture elements formed from a combined plurality of fields image data, picture elements in a horizontal direction of each of a plurality of fields for each block being primary components, picture elements in a vertical direction of each of a plurality of fields for each block being secondary components, picture elements of a plurality of fields for each block having nearly coincidental two-dimensional spatial position being tertiary components;

(b) electronically executing an orthogonal transformation on each constructed three-dimensional block to thereby obtain coefficients to produce a transformation signal;

(c) using a single encoding process to encode the coefficients in the transformation signal to produce a television data signal, thereby reducing redundant information in the transformation signal, without judging whether the digital television signal is a moving or stationary image; and

(d) transmitting the television data signal.

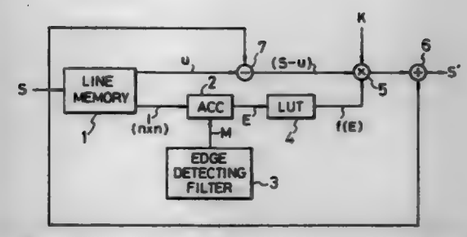
5,485,534

METHOD AND APPARATUS FOR EMPHASIZING SHARPNESS OF IMAGE BY DETECTING THE EDGE PORTIONS OF THE IMAGE

Fumito Takemoto, and Osamu Shimazaki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 864,382, Apr. 6, 1992, which is a continuation of Ser. No. 674,985, Mar. 26, 1991, abandoned. This application Jun. 25, 1993, Ser. No. 81,153
Claims priority, application Japan, Mar. 28, 1990, 2-79664
Int. Cl.[6] G06K *9/36*
U.S. Cl. 382—263 **7 Claims**

1. An image sharpness emphasis apparatus comprising: means for generating a sharp signal which is representative of an image, a line memory output unit, coupled to said generating means, which receives said sharp signal to output an unsharp signal and a matrix signal, an edge detecting filter coupled to said line memory output unit for detecting locations of edges on said image based on said sharp signal, a multiplication accumulating means which multiplies said matrix signal by the output of said edge detecting filter, which represents locations of edges on said image, so as to be accumulated, a subtracting means which calculates a difference signal between said sharp signal and said unsharp signal, a look-up table to be accessed based on the output value of said multiplication



accumulating means, a multiplication means for effecting multiplications between said difference signal, a sharpness coefficient and a function output of said look-up table, and an adder for adding up said sharp signal and the output of said multiplication means so as to be outputted.

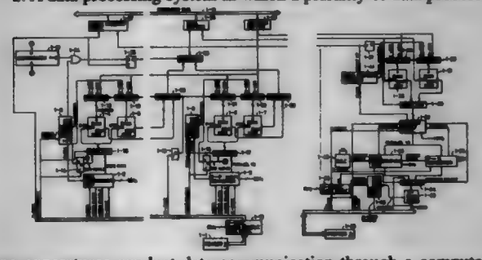
5,485,535

DATA PROCESSING SYSTEM COMPRISING A PLURALITY OF DATA PROCESSING APPARATUS CONDUCTING DATA COMMUNICATIONS THROUGH A BUS LINE

Shinobu Arimoto, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 164,823, Dec. 9, 1993, abandoned, which is a continuation of Ser. No. 933,007, Aug. 21, 1992, abandoned, which is a continuation of Ser. No. 711,103, Jun. 3, 1991, abandoned, which is a continuation of Ser. No. 82,977, Aug. 4, 1987, abandoned, which is a continuation of Ser. No. 14,140, Feb. 12, 1987, abandoned, which is a continuation of Ser. No. 645,161, Aug. 28, 1984, abandoned. This application Jan. 13, 1995, Ser. No. 372,841
Claims priority, application Japan, Aug. 30, 1983, 58-158451; Aug. 30, 1983, 58-158453; Aug. 30, 1983, 58-158455; Aug. 30, 1983, 58-158457
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—305 **12 Claims**

1. A data processing system in which a plurality of data processing apparatuses conduct data communication through a computer bus line, comprising:



receiving means for receiving image data from a communication line external to said data processing system, storing the received image data in a buffer memory, and supplying the received image data in units of a predetermined amount from the buffer memory to the computer bus line;

reader means for reading an image of a document and supplying document image data in units of a predetermined amount to the computer bus line; and

control means for controlling DMA transfer of the received image data and the document image data through the computer bus line on the basis of DMA transfer requests from said receiving means and said reading means,

wherein said control means interrupts the DMA transfer of the received image data supplied by said receiving means when said reading means issues the DMA transfer request during the DMA transfer of the received image data,

then said control means causes the DMA transfer of the predetermined amount of the document image data from said reading means on the basis of the DMA transfer request from said reading means, and

after the DMA transfer of the predetermined amount of the document image data, said control means resumes the DMA transfer of the received image data stored in the buffer memory of said receiving means on the basis of the DMA transfer requests from said receiving means.

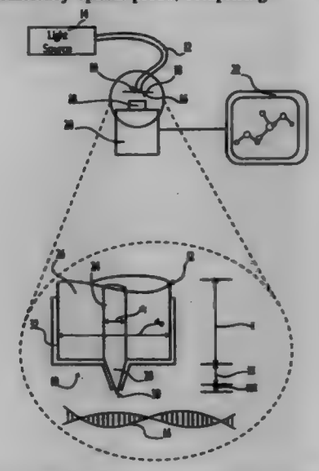
5,485,536

FIBER OPTIC PROBE FOR NEAR FIELD OPTICAL MICROSCOPY

Mohammed N. Islam, Ann Arbor, Mich., assignor to AccuPhotonics, Inc., Ann Arbor, Mich.

Filed Oct. 13, 1994, Ser. No. 322,210
Int. Cl.[6] G02B *6/26;21/00;* **G01N** *23/00*
U.S. Cl. 385—31 **29 Claims**

1. A high efficiency optical probe, comprising:



a fiber optic cable having an inner core and an outer cladding that concentrically encapsulates the inner core, the cable having a proximal end for coupling to a light source and having a distal end which defines a light-emitting probe;

said light-emitting probe having a tapered tip that protrudes longitudinally outwardly from said outer cladding, the tapered tip comprising a portion of said inner core that extends longitudinally beyond the outer cladding;

said tapered tip defining a light-emitting aperture at its tapered extremity, the tip being tapered at an acute angle with respect to the longitudinal axis of the cable;

wherein said acute angle is selected such that light propagating from the cable to the aperture traverses the tapered tip in an evanescent mode for fewer than five optical wavelengths.

5,485,537

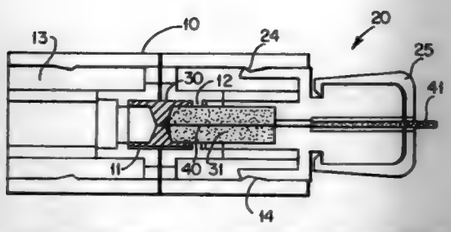
SINGLE CORE OPTICAL FIBER CONNECTOR

Myung-Yung Jeong; Ahn: Seung-Ho; Chun: Oh-Gone, and Tae-Goo Choy, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon-shi, and Korea Telecommunications Authority, Seoul, both of, Rep. of Korea

Filed Nov. 30, 1994, Ser. No. 351,219
Claims priority, application Rep. of Korea, Sep. 10, 1994, 94-22867
Int. Cl.[6] G02B *6/38*
U.S. Cl. 385—60 **3 Claims**

1. A single core optical fiber connector comprising:

an adaptor having an alignment element installing portion at the center within the interior, and having guide projections at the



opposite sides to form a coupling means for receiving plugs including optical fibers from the opposite sides while maintaining the alignment stability of the optical fiber, said adaptor further provided with a hooking portion on the inner circumference of its plug insertion hole;

an alignment element installed in an alignment element installing portion of the adaptor for guiding only the optical fibers so as to form a precision connection; and

a plug for being coupled with the adaptor as the final connecting portion of the optical fibers, said plug having an integrally formed sheath as the final connection portion of the optical fibers for reinforcing the optical fibers, said plug further having a ferrule guide portion for preventing the deformation of said ferrule and for maintaining a proper position for said ferrule, said plug further having a circular optical fiber contact portion for making said sheath uniformly distributed so as to be attached in the form of a snap structure, and said plug further having an adaptor contact portion provided with a hooking projection for being coupled with said hooking portion of said adaptor.

5,485,538

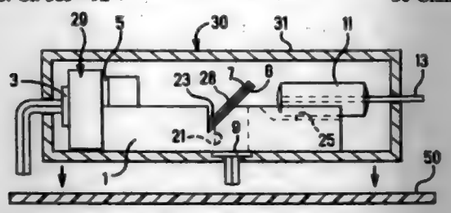
BIDIRECTIONAL WAVELENGTH DIVISION MULTIPLEX TRANSCEIVER MODULE

Terry P. Bowen, Etters; Warren H. Lewis, Elizabethtown, both of Pa., and Richard C. Bergstrom, Morgan Hill, Calif., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 30, 1994, Ser. No. 269,419

Int. Cl.[6] G02B *6/00;6/36*

U.S. Cl. 385—92 **30 Claims**



1. A compact optical transceiver comprising:

a mounting block including at least first and second positioning grooves formed therein;

light generating means, abutting a first end of the mounting block, for generating light of a first wavelength emitted in a direction toward an end face of an optical fiber;

light focusing means, mounted adjacent said light generating means so as to receive the generated light, for receiving and focusing the generated light to the end face of the optical fiber;

beamsplitting means, mounted in the first positioning groove of the mounting block, for receiving and passing the generated light of the first wavelength and for receiving and deflecting light of a second wavelength different from the first wavelength;

detecting means, abutting the mounting block, for receiving and detecting the deflected light of the second wavelength; and

a ferrule, attachable to the optical fiber and supported in the second positioning groove of the mounting block, for holding the optical fiber for said end face thereof to receive the focused light of a first wavelength passed through the beamsplitting means and for outputting light of a second wavelength from the optical fiber to the beamsplitting means.

5,485,539

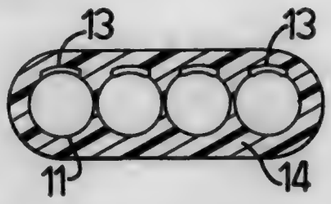
FIBER OPTIC RIBBON CABLE SUBUNIT BEARING PRINTED INFORMATION

Gregory A. Mills, Claremont, N.C., assignor to Siecor Corporation, Hickory, N.C.

Filed Aug. 1, 1994, Ser. No. 283,869

Int. Cl.[6] G02B *6/44*

U.S. Cl. 385—114 **5 Claims**



1. A fiber optic ribbon comprising a plurality of elongated optical fibers aligned side-by-side one to another in a planar array, a figure formed by ink deposited partly on the outer surface of one of said optical fibers and deposited partly on the outer surface of another of said optical fibers, and a transparent coating circumscribing said optical fibers and said inked figure.

5,485,540

OPTICAL WAVEGUIDE DEVICE BONDED THROUGH DIRECT BONDING AND A METHOD FOR FABRICATING THE SAME

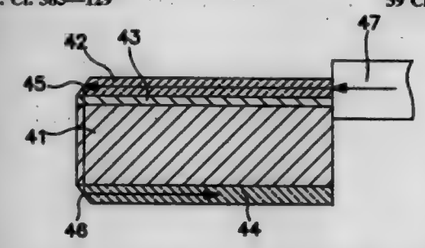
Kazuo Eda, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 153,148, Nov. 15, 1993, abandoned. This application Feb. 14, 1995, Ser. No. 389,070

Claims priority, application Japan, Nov. 16, 1992, 4-304298; Nov. 16, 1992, 4-304299; Nov. 16, 1992, 4-304300

Int. Cl.[6] G02B *6/10*

U.S. Cl. 385—129 **39 Claims**



1. An optical waveguide device comprising a support substrate and a glass substrate directly bonded with the support substrate through at least one of hydrogen bonds and covalent bonds including oxygen, wherein the glass substrate includes an optical waveguide as part thereof.

5,485,541

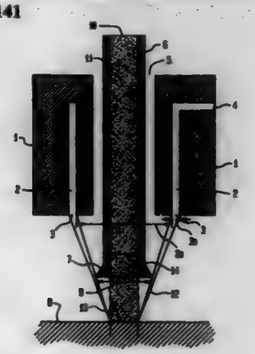
CURED COMPOSITE, PROCESSES AND COMPOSITION

Andrew B. W. Bigley, Jr., Croydon, Pa.; Jeffrey L. Daecher, Sicklerville, N.J.; Norman L. Holy, Penns Park, Pa.; Robert E. Jerman, Chalfont, Pa.; Phelps B. Johnson, Holland, Pa., and William J. Work, Huntington Valley, Pa., assignors to Rohm and Haas Company, Phila., Pa.

Continuation-in-part of Ser. No. 76,039, Jun. 15, 1993, Pat. No. 5,406,641. This application May 9, 1994, Ser. No. 236,381

Int. Cl.[6] G02B *1/04;* B29C *47/88*

U.S. Cl. 385—141 **41 Claims**



1. A process for producing a cured composite comprising the steps of:

a) concurrently and coaxially extruding:

i.) a molten cladding polymer through an annular channel of a coextrusion die to form an extruded tubular cladding, and

ii.) a synthesized crosslinkable core mixture comprising from about 72 to about 99.8 weight percent C_1–C_{18} alkyl acrylate and C_1–C_{18} alkyl methacrylate, through a core mixture delivery tube of the coextrusion die to form an extruded crosslinkable core mixture within the circumference of the extruded tubular cladding;

b) filling and contacting the extruded tubular cladding with the extruded crosslinkable core mixture after exiting the coextrusion die; and

c) curing the crosslinkable core mixture within the tubular cladding after filling and contacting the extruded tubular cladding with the extruded crosslinkable core mixture.

3. A process for producing light pipe comprising the steps of:

a) concurrently and coaxially extruding:

i.) a molten fluoropolymer through an annular channel of a coextrusion die to form an extruded tubular fluoropolymer cladding, and

ii.) a synthesized crosslinkable core mixture comprising from about 72 to about 99.8 weight percent C_1–C_{18} alkyl acrylate and C_1–C_{18} alkyl methacrylate, through a core mixture delivery tube of the coextrusion die to form an extruded crosslinkable core mixture within the circumference of the extruded tubular fluoropolymer cladding;

b) filling and contacting of the extruded tubular fluoropolymer cladding with the extruded crosslinkable core mixture after exiting the coextrusion die; and

c) curing the extruded crosslinkable core mixture within the extruded tubular fluoropolymer cladding wherein the cured extruded crosslinkable core mixture and the extruded tubular fluoropolymer cladding are in substantially complete contact after filling the extruded tubular cladding with the extruded crosslinkable core mixture.

19. A flexible light pipe product by the process of claim 3.

5,485,542

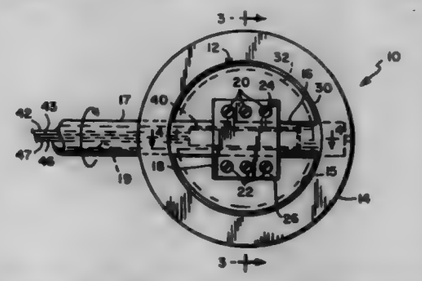
HEATED FLUID CONTROL VALVE WITH ELECTRIC HEATING ELEMENT AND THERMOCOUPLE WIRING DISPOSED IN ROTATABLE SHAFT

Richard D. Ericson, North Andover, Mass., assignor to MKS Instruments, Inc., Andover, Mass.

Filed Jul. 18, 1994, Ser. No. 276,558

Int. Cl.[6] F16K *49/00;* F24H *1/00*

U.S. Cl. 392—474 **29 Claims**



1. Fluid flow control apparatus comprising a fluid passageway comprising a sidewall defining a fluid inlet and a fluid outlet, and control means disposed in said passageway between said inlet and outlet, said control means comprising: (a) thermally conductive, generally rounded flapper plate means adapted to at least partially seal said passageway when oriented in a first direction and to open said passageway for fluid flow when oriented in a second direction; (b) an elongated, thermally conductive, substantially linear support member completely passing laterally through said fluid passageway so as to engage said sidewall at opposite sides thereof so as to permit at least limited rotation about its central, longitudinal axis, at least one of the support member ends being an external end terminating externally of said sidewall; further wherein said support member comprises substantially linear electrical heating and heat monitoring means disposed in the interior of said support member in thermal engagement therewith so as to heat said support member; and (c) fastener means for mounting said plate means along a diametral portion thereof on and in thermal engagement with said support member along substantially the entire length of said support member inside said passageway so as to provide a heat source for said plate means along said entire diametral portion of said plate means.

5,485,543

METHOD AND APPARATUS FOR SPEECH ANALYSIS AND SYNTHESIS BY SAMPLING A POWER SPECTRUM OF INPUT SPEECH

Takashi Aso, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 987,053, Dec. 7, 1992, abandoned, which is a continuation of Ser. No. 490,462, Mar. 8, 1990, abandoned. This application Jun. 8, 1994, Ser. No. 257,429

Claims priority, application Japan, Mar. 13, 1989, 1-60371

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.76 **10 Claims**



1. A method for speech analysis and synthesis comprising the steps of:

sampling a short-period power spectrum of speech input into an apparatus with a sampling frequency to obtain sample points, said sampling frequency being controlled so as to trace a basic frequency of input voiced speech:

applying a cosine polynomial model to the thus obtained sample points to determine a spectrum envelope;

calculating mel cepstrum coefficients from the spectrum envelope; and

effecting speech synthesis utilizing the mel cepstrum coefficients as filter coefficients of a mel logarithmic spectrum approximation filter used for speech synthesis.

5,485,544

HISTORY SENSITIVE HELP CONTROL METHOD AND SYSTEM

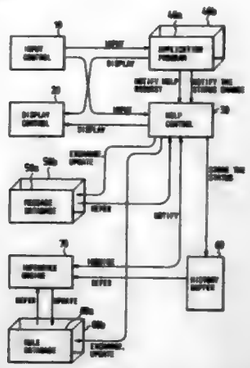
Naomichi Nonaka, Kawasaki; Keiichi Nakane, Yokohama; Tadashi Kuwabara, Yokohama; Hiroyuki Koreeda, Yokohama, and Hideki Kuwamoto, Yokohama, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 15, 1990, Ser. No. 480,672

Claims priority, application Japan, Feb. 17, 1989, 1-36143

Int. Cl.[6] G06F *15/20*

U.S. Cl. 395—12 **17 Claims**



1. In an interactive processing system having a function of outputting a help message, a help control method, comprising the steps of:

storing help messages in a message database;

storing inference rules in a rule database;

obtaining through use of a user program at least a history of past statuses resulting from execution of commands by said user program;

applying inference rules, stored in said rule database, to said history of past statuses for selecting held messages, each of said inference rules being related to a relationship between a status of said user program and a help message to be outputted; and

obtaining, from help messages stored in said message database, a help message selected on the basis of a result of said applying step.

5,485,545

CONTROL METHOD USING NEURAL NETWORKS AND A VOLTAGE/REACTIVE-POWER CONTROLLER FOR A POWER SYSTEM USING THE CONTROL METHOD

Yasuhiro Kojima; Yoshio Izui; Tadahiro Goda, and Sumie Kyomoto, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 899,422, Jun. 17, 1992, abandoned. This application Aug. 26, 1994, Ser. No. 295,072

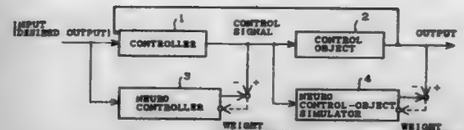
Claims priority, application Japan, Jun. 20, 1991, 3-174735

Int. Cl.[6] G06F *15/20*

U.S. Cl. 395—22 **6 Claims**

1. A control method for controlling a control object by means of a neuro controller made up of a recurrent neural network, said control method comprising the steps of:

connecting said neuro controller in parallel to a control unit having functions for controlling said control object and connecting in parallel to said control object a neuro control-object simulator made up of a recurrent neural network for simulating said control object;



operating said neural network of said neuro controller and a neural network making up said neuro control-object simulator to perform a pre-learning phase so as to make input-output relations of said neuro controller match input-output relations of said control unit, and so as to make in said pre-learning phase input-output relations of said neuro control-object simulator match input-output relations of said control object;

connecting the output and the input of said neuro controller to the input and the output, respectively of said neuro control-object simulator;

operating said neural network of said neuro controller to perform a re-learning phase so as to make the output of said neuro control-object simulator match the input of said neuro controller; and

thereafter connecting said neuro controller to control said control object after completing said re-learning phase and thereafter controlling said control object using only said neuro controller.

5,485,546

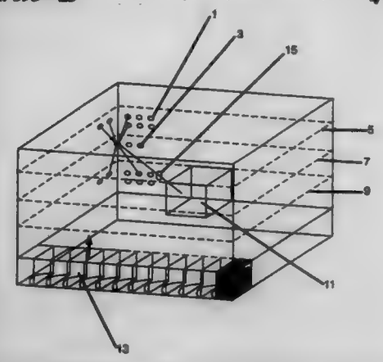
DISCRIMINATION AND TESTING METHODS AND APPARATUS EMPLOYING ADAPTIVELY CHANGING NETWORK BEHAVIOR BASED ON SPATIAL AND HETEROCELLULAR MODIFICATION RULES

Allen I. Rubenstein; Joseph A. Galley; P. Read Montague, and George N. Reeke, all of New York, N.Y., assignors to Neurosciences Research Foundation, Inc., San Diego, Calif.

Continuation of Ser. No. 515,309, Apr. 27, 1990, abandoned. This application Apr. 23, 1992, Ser. No. 873,658

Int. Cl.[6] G06F *15/00;15/18*

U.S. Cl. 395—23 **4 Claims**



1. An apparatus for categorizing objects said apparatus comprising

a neural network having a plurality of cells, each cell comprising memory means for storing a state variable,

said neural network further comprising

a plurality of synaptic junctions, each of said synaptic junctions connecting cells of said network and having memory means for storing a synaptic strength variable and

computer means to modify said synaptic strength variable in accordance with a heterocellular synaptic modification rule that includes both the passage of time and the values of the state variables of said cell and of those other cells having specific spatial locations with respect to said cell in three dimensional space.

5,485,547

RECOGNITION UNIT AND RECOGNIZING AND JUDGING APPARATUS EMPLOYING SAME

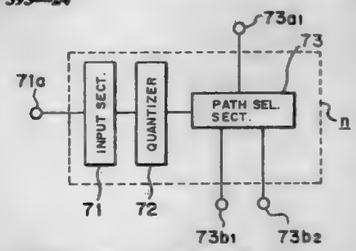
Susumu Maruno, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 700,804, May 16, 1991, Pat. No. 5,265,224. This application Mar. 3, 1993, Ser. No. 25,743

Claims priority, application Japan, May 16, 1990, 2-127286; Jan. 3, 1990, 2-266927

Int. Cl.[6] G06K *9/66;* **G06F** *15/18;15/80*

U.S. Cl. 395—24 **3 Claims**



1. A recognition unit comprising:

a signal input section for receiving a signal to be recognized;

a quantizer for mapping an input data value inputted from said signal input section into a discrete value; and

a path selecting section having at least one path input terminal which is connected to a path output terminal of another recognition unit and at least one path output terminal which is connected to a path input terminal of another recognition unit, said path selecting section making a connection between said path input terminal of said path selecting section and said path output terminal of said path selecting section according to an output of said quantizer.

5,485,548

SIGNAL PROCESSING APPARATUS USING A HIERARCHICAL NEURAL NETWORK

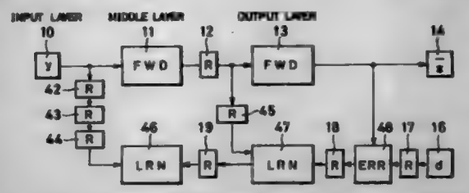
Sugitaka Oteki, Ikeda, and Atsuo Hashimoto, Nishinomiya, both of, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 29, 1993, Ser. No. 99,719

Claims priority, application Japan, Aug. 1, 1992, 4-225034

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—27 **5 Claims**



5. A signal processing apparatus using a hierarchical neural network composed of neuron model cells, comprising:

a plurality of process counters, corresponding to an input layer, a middle layer and an output layer respectively, for controlling a forward process and a learning process,

a plurality of forward process registers for storing forward process start states,

a plurality of forward process comparators for respectively comparing values of said registers with values of said process counters,

a plurality of learning process registers for storing learning process start states of said input, middle and output layers,

a plurality of learning process comparators for respectively comparing values of said learning process registers with values of said process counters, and

means for activating each of said plurality of forward process registers for storing the forward process start state of a corresponding one of a said input, middle, and output layers to store a state for starting the learning process of each of said layers and giving a common process execution signal commonly to all of the layers when executing said process,

wherein each of said plurality of process counters counts in response to said common learning process execution signal, each of said plurality of forward process comparators generates a forward process execution signal, corresponding to one of said input, middle and output layers, for starting the forward process when the value of the process counter corresponding to said one layer is equal to or greater than the register for storing a forward process start state corresponding to said one layer, and said learning process register generates a learning process execution signal, corresponding to one of said input, middle and output layers, for starting the learning process when the value of the process counter corresponding to said one layer is equal to or greater than the value of the register for storing the learning process start state corresponding to said one layer.

5,485,549

METHOD AND SYSTEM FOR A PRODUCTION SYSTEM

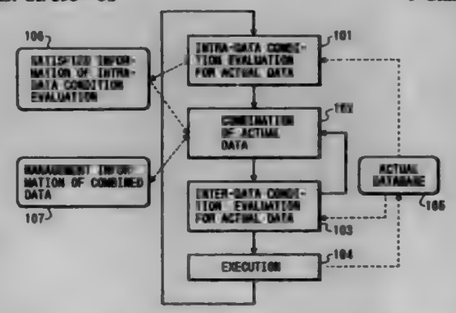
Seiji Sakaguchi, Yokohama; Hiroshi Keike, Machida, and Hiroshi Tomita, Yokohama, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 36,183

Claims priority, application Japan, Mar. 26, 1992, 4-068095

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—51 **9 Claims**



7. A processing method for a production system comprising a rule base for storing rules having conditions and conclusions, an actual database for storing fact data, and a processor, the processing method comprising the steps of:

designating a plurality of the rules, fact data to be combined with the designated rules, and at least a conflict resolution strategy for resolving conflicts between instantiations obtained by combining said of rules with said fact data;

checking, through said processor, whether a condition part of each of said designated rules meets with one of the designated fact data;

storing the designated fact data, when the fact data meets with the checked rule;

generating through said processor, a combination of the stored fact data to said plurality of rules, in accordance with an order given by the designated conflict resolution strategy;

checking the fact data in said combination, in inter-rule conditions of said rules;

stopping the checking of the fact data, at a first success of said checking process;

generating an instantiation corresponding to the first success, as an instantiation to be executed; and

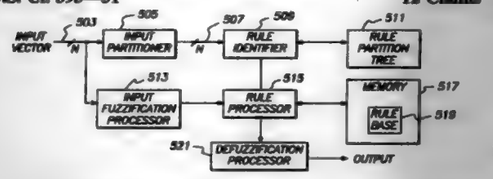
executing through said processor, a conclusion part corresponding to the generated instantiation.

5,485,550

METHOD AND APPARATUS FOR FUZZY LOGIC RULE EXECUTION

John C. Dalton, San Francisco, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 95,987, Jul. 23, 1993, abandoned.
This application Jan. 17, 1995, Ser. No. 370,521
Int. Cl.[6] G06F 9/44
U.S. Cl. 395—51 12 Claims



1. A fuzzy logic system for processing a vector of signals, comprising:

input means for inputting the vector of signals;

an electronic memory having stored therein a rule partition table;

rule identifier means, coupled to the input means and the electronic memory, for using the vector of signals to access a corresponding location in the rule partition table, and retrieving therefrom an identifier of a subset of fuzzy rules that are preselected to be applied to the corresponding vector of signals; and

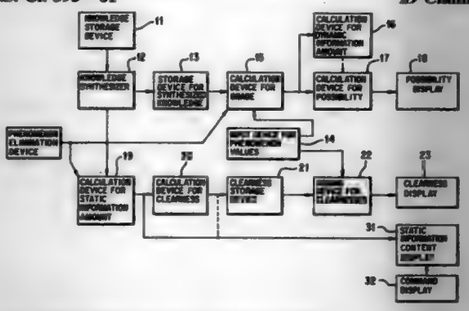
rule processing means, coupled to the input means and to the rule identifier means, for applying each fuzzy rule identified by the retrieved identifier to the vector of signals to produce a processed vector of signals.

5,485,551

FUZZY INFERENCE DEVICE

Hideji Ejima, Kyoto, and Taiji Yoshikawa, Nagaokakyo, both of, Japan, assignors to Omron Corporation, Kyoto, Japan

Filed Jul. 26, 1991, Ser. No. 736,635
Claims priority, application Japan, Jul. 26, 1990, 2-196260; Jul. 26, 1990, 2-196261
Int. Cl.[6] G05B 13/00
U.S. Cl. 395—61 29 Claims



10. A fuzzy inference apparatus comprising:

a storage device for storing, prior to the use of said inference apparatus, rules defining relationships between phenomenon and a plurality of conclusions;

a calculating device coupled to said storage device for calculating a static information amount of said phenomenon using said stored rules, said static information amount indicating the degree to which a membership function for a phenomenon has a discriminable conclusion;

an output device for outputting said static information amount in relation to each said rule in descending order;

a clearness calculating device coupled to said storage device for determining a clearness of each phenomenon with respect to each respective conclusion using said static information amounts; and

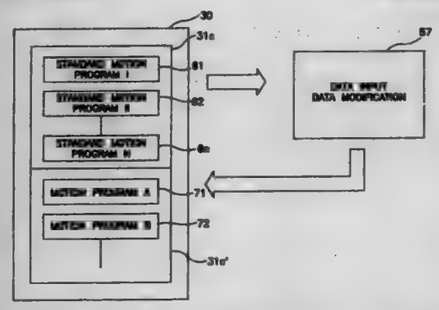
a summing device for summing said clearness to determine the clearness of phenomena for which data have actually been input and the clearness of each said conclusion.

5,485,552

METHOD OF CREATING A ROBOT MOTION PROGRAM

Tohru Mizuno, Tama; Tatsuo Karakama; Ryo Nihei, both of Oshino, and Takenobu Miura, Hino, all of, Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

Continuation of Ser. No. 917,150, Aug. 10, 1992, abandoned.
This application Jul. 11, 1994, Ser. No. 272,637
Claims priority, application Japan, Dec. 18, 1990, 4-411481
Int. Cl.[6] G05B 19/42
U.S. Cl. 395—99 10 Claims



1. A method of creating a robot motion program using one of a plurality of standard motion programs previously created, said method comprising the steps of:

(a) storing the previously created standard motion programs for robot operation into a storage device, with different identification symbols attached to each of the standard motion programs;

(b) reading out a specified standard motion program from among the standard motion programs stored in the storage device by a selective key input operation for one of the identification symbols on a display screen;

(c) assigning, on the display screen, data inputting columns for plural input items relating to only position data and speed data on the specified standard motion program selected in said step (b), then displaying, in first ones of the data inputting columns, previously created data suitable for the first ones of the data inputting columns, and displaying nothing in second ones of the data inputting columns waiting for new data from an operator;

(d) modifying, if necessary, ones of the suitable data displayed in the first ones of the data inputting columns by overwriting thereon updated data by key operation, and inputting the new data in the second ones of the data inputting columns waiting for the new data; and

(e) applying the position data and speed data, input in the data inputting columns, to the specified standard motion program selected in said step (b), and storing the standard motion program along with the applied position data and speed data as the robot motion program.

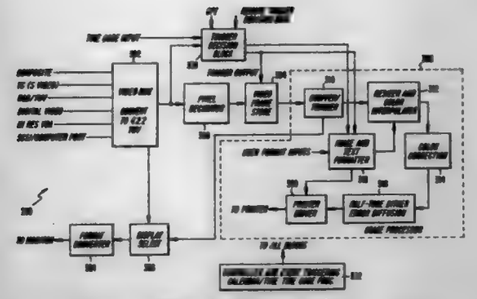
5,485,553

METHOD AND APPARATUS FOR MANAGING AND INITIATING VIDEO CAPTURE AND PRINTING

Albert W. Kovalick, Santa Clara, and Gregory E. Lowitz, Redwood City, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 29, 1993, Ser. No. 143,046
Int. Cl.[6] G06F 15/00; H04N 5/84
U.S. Cl. 395—106 16 Claims

1. Method for processing an input video data stream comprising the steps of:



receiving the input video data stream; and

automatically controlling processing of at least a portion of a video frame in response to a predetermined condition of the input video data stream, said step of automatically controlling further including at least one of the steps of:

controlling storage of said at least a portion of said video frame as a printable video image when a predetermined time interval has elapsed during receipt of said input video data stream;

controlling storage of said at least a portion of said video frame as said printable video image by comparing at least portions of at least two frames of said input video data stream;

comparing said at least a portion of said video frame to at least a portion of a pre-stored reference video frame to detect a match between said video frame and said reference video frame; and

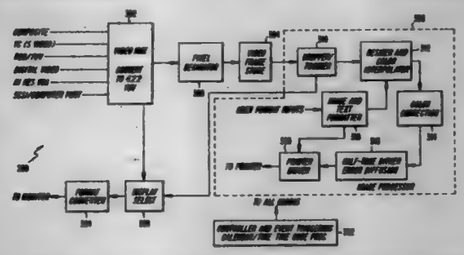
controlling storage of said at least a portion of said video frame as said printable video image upon detecting an audio signal associated with said video frame.

5,485,554

METHOD AND APPARATUS FOR PROCESSING AN IMAGE IN A VIDEO PRINTING APPARATUS

Gregory E. Lowitz, Redwood City, and Albert W. Kovalick, Santa Clara, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 29, 1993, Ser. No. 143,049
Int. Cl.[6] G03G 15/01
U.S. Cl. 395—116 19 Claims



1. Method for processing an input video data stream comprising steps of:

selecting and storing at least portions of plural frames of the input video data stream in a memory as printable image data;

processing said selected at least portions of the plural frames to correlate said at least portions of the frames to said input video data stream using at least one identifier, wherein said identifier includes an index which correlates at least one of said selected portions of said frames to a sequential location within said incoming video data stream and an image sequence identifier which identifies a reordered print sequence within which said stored portions of said video frames are to be printed, said identifier being stored with said at least one of said selected portions of the frames for retrieving said at least one of said portions of said frames from said memory; and

printing said at least one of said selected plural frames in said reordered print sequence in accordance with a print format.

5,485,555

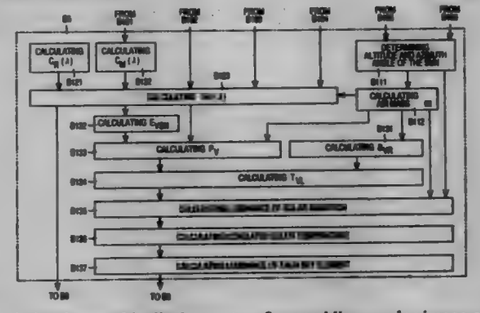
Patent Not Issued For This Number

5,485,556

GRAPHIC DISPLAY DEVICE FOR PROVIDING COLOR IMAGE OF AN OBJECT, BASED ON RADIATIONS INCIDENT UPON THE OBJECT, AND LIGHT REFLECTING CHARACTERISTICS OF THE OBJECT

Atsushi Takagi; Junji Nagasaka, both of Toyota; Yoshinori Ogata, Okazaki, and Hitoshi Takaoka, Nagoya, all of, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Continuation of Ser. No. 734,793, Jul. 23, 1991, abandoned.
This application Aug. 19, 1994, Ser. No. 293,114
Claims priority, application Japan, Jul. 31, 1990, 2-204508
Int. Cl.[6] G06T 15/50
U.S. Cl. 395—126 7 Claims



1. A color graphic display system for providing a color image of an object having a surface, comprising:

profile-data memory means for storing profile data associated with a profile of said object;

luminance-data measuring means for actually measuring luminance values of sun and elements of sky at different positions on earth at which said object is to be placed;

luminance-data memory means for storing sets of luminance data representative of said actually measured luminance values of the sun and said elements of the sky;

relationship memory means for storing relationship data representative of a predetermined relationship between said luminance values and a correlated color temperature;

spectral-distribution-data generating means for determining values of said correlated color temperature corresponding to said luminance values actually measured at said different positions on earth, based on said luminance data and according to said predetermined relationship, said spectral-distribution-data generating means determining, based on the determined values of said correlated color temperature, spectral-distribution data representative of spectral distributions of incident radiations incident upon said object at said different positions;

display data generating means for generating display data based on said profile data stored in said profile-data memory means, and said spectral distribution of the incident radiations incident upon said object; and

a color graphic display for providing a color image of said object based on said display data.

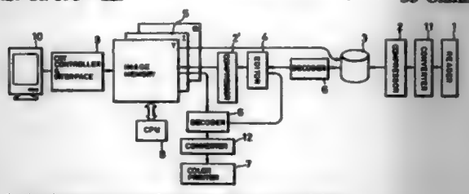
5,485,557
IMAGE PROCESSING APPARATUS

Mamoru Sato, Tokyo; Hidefumi Osawa, Urawa, and Naoto Kawamura, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 506,550, Apr. 6, 1990, abandoned, which is a continuation of Ser. No. 940,395, Dec. 11, 1986, abandoned. This application Apr. 1, 1994, Ser. No. 221,450

Int. Cl.[6] G06F *15/64*

U.S. Cl. 395—129 **35 Claims**



1. An image processing apparatus comprising:

memory means for storing encoded image data representing a frame of an image;

decoding means for decoding the encoded image data read out from said memory means;

generating means for generating area data representing a partial area of the image represented by image data provided from said decoding means; and

process means for extracting or erasing, from the image data provided from said decoding means, the image data corresponding to the partial area of the image in accordance with the area data generated by said generating means,

wherein a shape of the partial area represented by the area data generated by said generating means corresponds to the image represented by the image data provided from said decoding means.

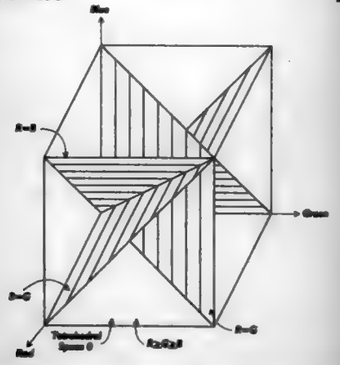
5,485,558
METHOD AND SYSTEM FOR DISPLAYING COLOR ON A COMPUTER OUTPUT DEVICE USING DITHERING TECHNIQUES

David N. Weise, Kirkland, and H- Gunter Zieber, Bellevue, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed May 22, 1990, Ser. No. 527,491

Int. Cl.[6] G06T *17/00*

U.S. Cl. 395—131 **24 Claims**



1. A method in a computer system for generating a dither pattern to represent a color having an RGB value, an RGB value representing red, green, and blue intensity levels that comprise the color, the dither pattern having a plurality of pels, each pel for selectably setting to one of a plurality of active colors, the active colors representing possible color setting for the pels, each RGB value representing a point in a three-dimensional coordinate system, the coordinate system having a plurality of non-overlapping tetrahedral spaces, each tetrahedral space having four vertices, each vertex corresponding to an active color, the method comprising the steps of:

designating one tetrahedral space as being a mapping tetrahedral space;

designating an RGB value for which a dither pattern is to be generated;

mapping the designated RGB value to the mapping tetrahedral space from an original tetrahedral space containing the designated RGB value wherein the mapped RGB value is in the same position relative to the vertices of the mapping tetrahedral space as the designated RGB value is relative to the vertices of the original tetrahedral space;

determining four active colors whose corresponding RGB values are closest to the mapped RGB value;

determining a number of pels in the dither pattern to set to each determined active color proportionally based on the distance between the RGB value corresponding to the determined active color and the mapped RGB value;

mapping the determined active colors to the original tetrahedral space; and

setting the pels in the dither pattern to the mapped active colors based on the determined number of pels for each active color.

5,485,559
PARALLEL GRAPHICS PROCESSOR WITH GRAPHICS COMMAND DISTRIBUTOR AND COMMAND SEQUENCING METHOD

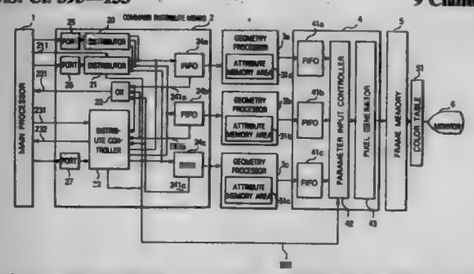
Toru Sakaibara, Kawasaki; Ryoichi Takamatsu, and Hideyuki Hara, both of Hitachi, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 10, 1991, Ser. No. 712,934

Claims priority, application Japan, Jun. 13, 1990, 2-152816; May 15, 1991, 3-110122

Int. Cl.[6] G06T *1/00*

U.S. Cl. 395—133 **9 Claims**



1. A graphic display apparatus for display of a graphic on the basis of a series of graphic commands including attribute commands which designate states of the graphic attributes and primitive commands which define graphics to be displayed, comprising:

means for generating the series of graphic commands including discrimination data for allocating to a fetch target;

means including a plurality of processing means for processing a graphic in parallel on a basis of the series of graphic commands and outputting geometry data, the respective processing means dividing the primitive commands of the series of graphic commands in units of a command and outputting the geometry data;

command distributing means having a plurality of input ports for receiving the attribute commands and the primitive commands from the generating means on the basis of the discrimination data, and distributing primitive commands to any one processing means which has the lightest load of the graphic processing and outputting to all the processing means at least those of the attribute commands which the processing means uses; and

image generating means for arranging the geometry data comprising the output of said graphic processing means along the sequence of the corresponding series of graphic commands and for generating the image data on the basis of discrimination data.

5,485,560
DISPLAYING METHOD AND SYSTEM FOR DISPLAYING AN OBJECT BY DESIGNATING A STATE OF DISPLAY OF THE OBJECT

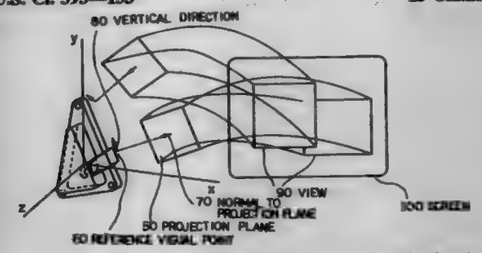
Tomotoshi Ishida; Shunsuke Minami; Yasumasa Kawashima; Hiroshi Arai, all of Ibaraki; Takeo Yamada, Tokyo, and Shigeru Arai, Kanagawa, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 948,257

Claims priority, application Japan, Sep. 20, 1991, 3-241961

Int. Cl.[6] G06T *17/00*

U.S. Cl. 395—133 **25 Claims**



2. A drawing information processing method wherein drawing information of objects to-be-displayed are saved, and wherein a selected object to-be-displayed whose information is included in said drawing information is displayed on a display screen, said method comprising the steps of:

saving a plurality of sets of display method data, each set of display method data for stipulating a display state in which a user assembled drawing of an object to-be-displayed is to be displayed, said each set of display method data being stored in corresponding relation with one set of display object data;

selecting at least one set of said plurality of sets of display method data saved, in order to select a desired display method of presenting the display of the object to-be-displayed; and

displaying said object to-be-displayed in accordance with the selected display method data;

wherein said display method data contains display object data which specifies said object to-be-displayed, display direction data which designates an attitude of display of said object to-be-displayed, and screen position data which specifies a position of said object to-be-displayed on said display screen.

5,485,561
METHOD OF AND APPARATUS FOR REPLACING REGION OF INTEREST

Miyuki Iizuka; Akira Shiba, and Isamu Yamada, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 28, 1994, Ser. No. 281,606

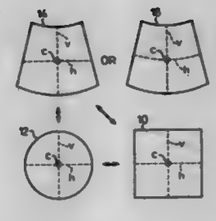
Claims priority, application Japan, Aug. 13, 1993, 5-201377

Int. Cl.[6] G06T *15/00*

U.S. Cl. 395—133 **14 Claims**

14. An apparatus for replacing a first region of interest with a second region of interest having a different shape than the first region of interest, common variables between the first region of interest and the second region of interest correspond to the shape of the first region of interest and to the shape of the second region of interest, the shape of the second region of interest being defined by values of shape variables related to the common variables by predetermined relationships for replacing a respective shape with a different shape, the apparatus comprising:

a display screen;



means for displaying the first region of interest on the display screen;

means for selecting the second region of interest;

means for determining values of the common variables;

means for calculating values of shape variables from the values of the common variables; and

means for displaying the second region of interest on the display screen in place of the first region of interest, the second region of interest having a shape defined by the calculated values of the shape variables.

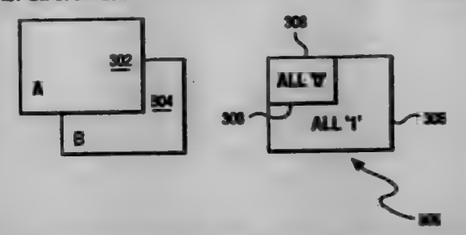
5,485,562
SYSTEM AND METHOD FOR CLIPPING PIXELS DRAWN IN ONE OF PLURALITY OF WINDOWS IN A COMPUTER GRAPHICS SYSTEM

Chandrasekhar Narayanaswami, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 14, 1993, Ser. No. 121,139

Int. Cl.[6] G06T *15/30*

U.S. Cl. 395—134 **6 Claims**



2. A system for clipping graphic images in a graphics system having a processor, display device and memory, wherein the graphic images are written to a frame buffer in said memory and displayed in one of a plurality of windows on the display device, the system comprising:

means for allocating a window clipping buffer from said memory;

means for initializing said window clipping buffer to a first value;

means for determining regions of said one window that are obscured by others of said plurality of windows;

means for writing a second value to said window clipping buffer only in areas of said window clipping buffer corresponding to one or more portions of said one window that are visible;

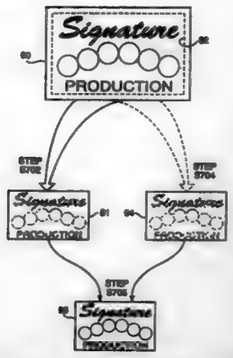
means for testing said window clipping buffer before writing graphic image data to said frame buffer and writing said graphic image data only if said buffer indicates a visible region.

5,485,563

SYSTEM FOR SCALING COMPUTERIZED IMAGES

Clay Fisher, Palo Alto, Calif., assignor to Canon Information Systems, Inc., Costa Mesa, Calif.

Filed Sep. 30, 1993, Ser. No. 128,774
Int. Cl.[6] G06F *15/62*
U.S. Cl. 395—139 49 Claims



1. Method for building a scaled image of an original comprising the steps of:

scaling a first portion of the original so as to form a first image whose size is the target size of the scaled image;

scaling a second portion of the original so as to form a second image whose size is also the target size of the scaled image, the second portion overlapping the first portion; and

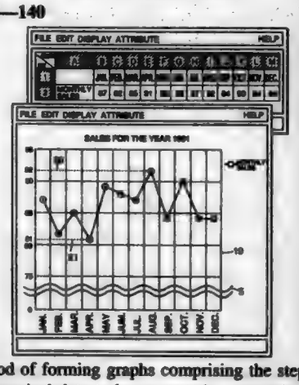
combining the first and second images to form the scaled image.

5,485,564

METHOD AND APPARATUS FOR FORMING A GRAPHICAL DISPLAY OF DATA AND FOR OMITTING A RANGE OF DATA WITHIN THE GRAPH

Ayako Miura, Midorigaoka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1993, Ser. No. 53,686
Claims priority, application Japan, May 8, 1992, 4-141975
Int. Cl.[6] G06T *11/00*
U.S. Cl. 395—140 18 Claims



1. A method of forming graphs comprising the steps of:

storing numerical data to be presented as a graph;

determining an omission-range, which is a range of data to be omitted from presentation in the graph;

determining display positions for the stored numerical data on a two-part display range comprising two display ranges, which are disposed on either side of the omission-range; and

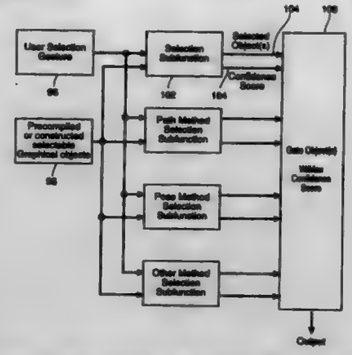
forming a graph corresponding to the stored numerical data on the two-part display-range, with the two-display-ranges divided by an omission mark, based on the display positions determined in the step of determining display positions.

5,485,565

GESTURAL INDICATORS FOR SELECTING GRAPHIC OBJECTS

Eric Saund, San Carlos; Thomas P. Moran, and Craig D. Becker, both of Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 4, 1993, Ser. No. 101,645
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—142 14 Claims



1. A display editing system for selecting one image object from a plurality of image objects for editing, comprising

first means for entering a plurality of image objects on a display surface,

second means responsive to each entered object for creating and storing a first characteristic descriptor representative of said object, said first characteristic descriptor including the general shape and location on the display surface of said object,

third means for entering a selection gesture for selecting at least one of said objects,

fourth means responsive to said selection gesture for creating and storing a second characteristic descriptor representative of said selection gesture, said second characteristic descriptor including the general shape and location on the display surface of said selection gesture,

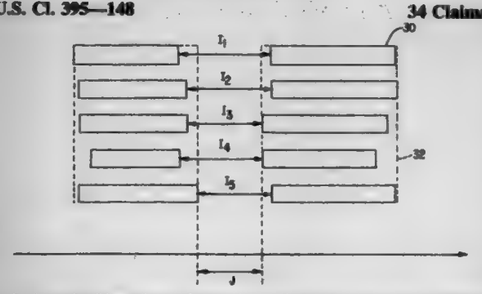
fifth means for choosing the one of said first characteristic descriptors which is most similar in general shape and location to that of said second characteristic descriptor, thereby selecting said one image object.

5,485,566

METHOD OF FINDING COLUMNS IN TABULAR DOCUMENTS

M. Armon Rahgozar, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 29, 1993, Ser. No. 143,097
Int. Cl.[6] G06F *17/25*
U.S. Cl. 395—148 34 Claims



1. A method locating columns in a tabular document comprising the steps of:

determining space intervals between word fragments;

intersecting the space intervals to form intersection intervals, the space intervals also intersecting with previously formed intersection intervals to form additional intersection intervals;

ranking the space intervals and the intersection intervals according to a frequency of intersection between the space intervals and the intersection intervals; and

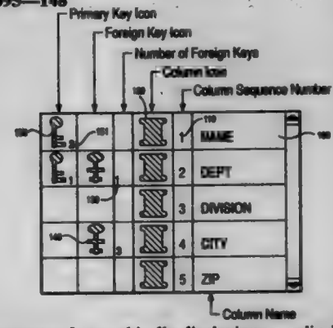
selecting space intervals and intersection intervals based on the ranking.

5,485,567

ICONIC TABLE OF DATABASE INFORMATION

Kenneth R. Banning; George P. Erwin-Grotsky; Shih-Gong Li; Alejandra Sanchez-Frank, and Theodore Shrader, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 803,876, Dec. 9, 1991. This application Sep. 15, 1994, Ser. No. 306,902
Int. Cl.[6] G06F *15/40*
U.S. Cl. 395—148 7 Claims



1. An apparatus for graphically displaying on a display information of a plurality of vertical columns in at least one table of a database, comprising:

(a) means for accessing a data structure in memory containing the information for each of the columns and generating icons representative of the information, wherein at least one of the icons represents a primary key having values uniquely identifying a single horizontal row of the plurality of vertical columns in the table;

(b) means for displaying the icons on the display; and

(c) means for placing alphanumeric representations of the information on the display, wherein at least one alphanumeric representation represents a number of the foreign keys that one of the columns belongs to.

5,485,568

STRUCTURED IMAGE (SI) FORMAT FOR DESCRIBING COMPLEX COLOR RASTER IMAGES

Dennis L. Venable, Rochester; Michael R. Campanelli, Webster; William A. Fuss, Rochester; James E. Bollman, Williamson, all of N.Y.; Takashi Nagao, Kanagawa, Japan; Toshiya Yamada, Kanagawa, Japan, and Kazuya Yamada, Kanagawaf, Japan, assignors to Xerox Corporation, Stamford, Conn., and Fuji Xerox Company, Ltd., Tokyo, Japan

Filed Oct. 8, 1993, Ser. No. 133,422
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—155 30 Claims

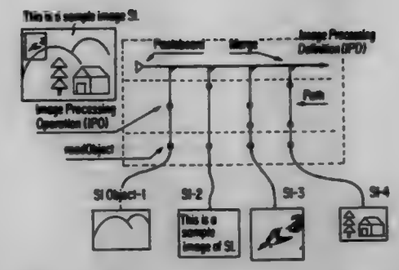
1. An electronic structured image generator, comprising:

means for generating a representation of at least one raster image using at least one output structured image capable of being displayed and printed, said at least one output structured image being generated as a result of performing at least one image processing operation on at least one structured image object;

means for constructing and displaying at least one structured image, said structured image comprising a pasteboard having at least one image attribute, said pasteboard representing a frame onto which said at least one structured image object is rendered, and a structured image definition that describes a structured image formation process used to generate said at least one structured image, said structured image definition including at least one interconnected image processing operation performed on said at least one structured image object and merged to form said at least one output structured image;

means for controlling said generating means and for controlling said constructing and displaying means to form and modify said structured image definition including said at least one image attribute of said pasteboard, wherein said means for generating at least one output structured image in response to the structured image definition, including said at least one image attribute of said pasteboard, generated by said structured image constructing and displaying means is controlled by said means for controlling so as to generate said at least one output structured image; and

means for at least one of displaying and printing said at least one output structured image in response to at least one of computer program instructions and operator inputted commands.

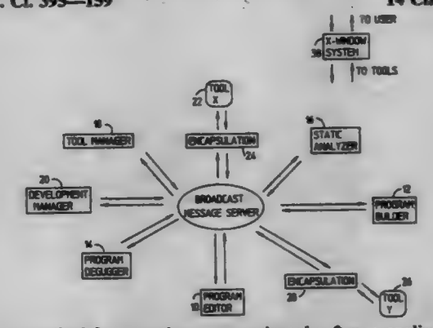


5,485,569

METHOD AND APPARATUS FOR MONITORING DISPLAY SCREEN EVENTS IN A SCREEN-ORIENTED SOFTWARE APPLICATION TOO

Jason Goldman, and Byron T. Jennings, Jr., both of Ft. Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 963,786, Oct. 20, 1992, abandoned. This application May 4, 1994, Ser. No. 238,197
Int. Cl.[6] G06F *17/50*
U.S. Cl. 395—159 14 Claims



1. A method for operating screen-oriented software application tool in a computer-aided software development system, said software development system including an electronic digital computer and computer software for operating said computer, said computer software comprising a user interface, an operating system, an interface program and one or more software development tools for performing predefined software development tasks, said computer executing said interface program for performing said method, comprising:

controlling communication between said software development tools and said screen-oriented application tool, said screen-oriented application tool containing a representation of a display screen comprising a two-dimensional character array and a text output cursor, said screen-oriented application tool not being designed for operation with a graphical user interface and having outputs consisting of printable text and special codes for controlling the display screen by positioning the text output cursor, writing characters to the two-dimensional character array, and clearing characters from the two-dimensional character array;

monitoring said outputs of said application tool and detecting in said outputs the occurrence of a predefined application tool event in a predefined region of said representation of said display screen, said predefined application tool event comprising said text output cursor entering or exiting said predefined region; and

generating a trigger in response to detecting in said outputs of said application tool the occurrence of said predefined application tool event within said predefined region, including the text output cursor entering or exiting said predefined region.

5,485,570

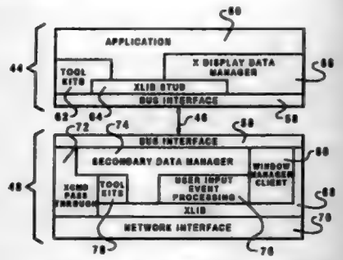
DISPLAY STATION CONTROLLER

Leah J. H. Busboom; Trent L. Clausen, both of Oronoco; Stephen T. Eagen, Rochester; Harvey G. Kiel, Rochester; Robert J. Manulik, Rochester; Michael E. Plute, Rochester; Jeffrey E. Remfert, Rochester, and Raymond F. Romon, Oronoco, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 662,092, Feb. 28, 1991, abandoned. This application Jun. 28, 1994, Ser. No. 267,322

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—161 **16 Claims**



1. A method for performing input/output between an application executing on a computer system and a graphics display terminal connected to the computer system by a local area network, comprising the steps of:

executing the application on a central processor;

within the application, generating output which is not in a form capable of driving a graphics terminal;

when output is generated by the application, communicating such output to a separate display controller processor within the computer system over a computer system bus;

on said display controller processor, executing graphics display routines for translating generated output into a form capable of driving a graphics terminal;

communicating translated output from the display controller processor to a graphics terminal, over the local area network, for display;

when input is generated at the graphics terminal, communicating the generated input to the display controller processor over the local area network;

on the display controller processor, translating generated input to a form capable of communication to the application; and

communicating the translated input to the central processor, over the computer system bus, for use by the application.

5,485,571

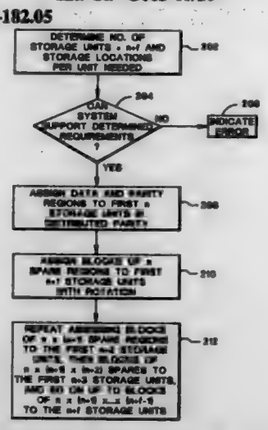
METHOD AND APPARATUS FOR PROVIDING DISTRIBUTED SPARING WITH UNIFORM WORKLOAD DISTRIBUTION IN FAILURES

Jaishankar M. Menon, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1993, Ser. No. 173,441

Int. Cl.[6] G06F *11/20*

U.S. Cl. 395—182.05 **12 Claims**



1. In a computer system having a plurality of storage units in which data and parity information is stored and retrieved under control of a controller so as to comprise a redundant storage unit array with distributed sparing such that the controller executes a rebuild process in response to a failure of a storage unit and thereby reconstructs the data and parity information with no loss of information, wherein the controller stores the data and parity information into regions comprising equal-sized address areas, a predetermined number of regions equal to a number n comprises a parity group having n−1 data regions and one parity region, from which parity information to be stored in the parity region is produced for the rebuild process, a method or operating the controller comprising the steps of:

(A) determining if the number of storage units under control of the controller is equal to a number (n+f), wherein f is a maximum predetermined number of storage unit failures that will be permitted to occur with no loss of information, and providing an error indication if it is not;

(B) determining if the number of regions per storage unit is equal to a multiple of a number $[n\times(n+1)\times(n+2)\times \ldots \times(n+f)]$ and providing an error indication if it is not;

(C) storing the parity and data information across the storage units in a read-write-modify process such that the parity and data information is stored in parity regions and data regions, respectively, in accordance with a storage pattern defined by the steps of

(1) assigning the data regions and parity regions to storage locations of the first n storage units according to a distributed parity pattern until all regions of the first n storage units are assigned, and

(2) repeatedly making an assignment of spare regions across the storage units in blocks of $n\times(n+1)\times(n+2)\times \ldots \times(n+f-j)$ regions, where j=f, f−1, f−2, . . . , 3, 2, 1 such that the blocks of spare regions are assigned with rotation to the n+i storage unit with each repeated assignment, where i=1, 2, 3, . . . , f, until all regions of the n+f storage units are assigned; and

(D) storing and retrieving data and parity information from the storage units with the read-write-modify process in accordance with the storage pattern, whereby the data, parity, and spare regions are distributed such that the read-write-modify process workload will be equally distributed among the storage units during the storing and retrieving of information before, during, and after the rebuild process.

5,485,572

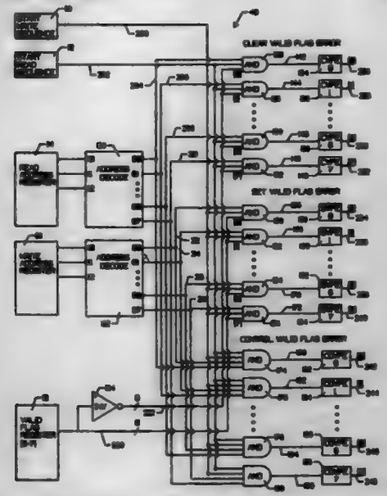
RESPONSE STACK STATE VALIDATION CHECK

Michael R. Overley, Maple Grove, Minn., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Apr. 26, 1994, Ser. No. 233,383

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—182.19 **5 Claims**



3. An apparatus for checking integrity of a write operation of a memory device by controlling a read and a write pointer, the memory device being readable via a read operation, the memory device having a plurality of storage locations for storing a plurality of data elements, a corresponding data element stored in a particular one of the plurality of storage locations of the memory device being valid if a prior write operation is performed on the particular one of the plurality of storage locations and no later read operation is performed on the particular one of the plurality of storage locations, the apparatus comprising:

a. a memory controller coupled to the memory device for controlling the read and the write operation by controlling the read and write pointers;

b. first determining circuit coupled to said memory controller for determining whether the memory controller is performing a write operation on the particular one of the plurality of storage locations of the memory device when the particular one of the plurality of storage locations contains valid data;

c. the first determining circuit having a valid flag register coupled to the memory device, the valid flag register having a plurality of bits wherein each bit corresponds to a particular one of the plurality of storage locations in the memory device, the write operation of a said particular one of the plurality of storage location within the memory device by the memory controller sets the corresponding particular one of the plurality of bits in the valid flag register indicating valid data is contained therein;

d. the first determining circuit having a logic circuit coupled to said valid flag register and to the memory controller for determining whether the memory controller is performing a write operation on the particular one of the plurality of storage locations of the memory device that contains valid data therein;

e. the logic circuit having a write address register coupled to the memory controller for storing a write address pointer, the write address pointer identifies a particular one of the plurality of storage locations within the memory device;

f. the logic circuit having a write address decoder coupled to the write address register for decoding the write address pointer into a plurality of decode lines wherein each of the plurality of decode lines corresponds to one of the plurality of storage locations within the memory device;

g. the logic circuit having a start-write-sequence line provided by the memory controller, the memory controller asserting the start-write-sequence line whenever a write sequence is started;

h. the logic circuit having a plurality of and-gates, each and-gate corresponding to one of the plurality of storage locations in the memory device, each of said plurality of and-gates AND together said start-write-sequence signal, the corresponding bit within the valid flag register, and the corresponding write address decode line; and

i. the logic circuit having a set-valid-flag-error register having a plurality of bits, each of the plurality of bits of the set-valid-flag-error register corresponds to one of said plurality of and-gates and is attached thereto.

5,485,573

METHOD AND APPARATUS FOR ASSISTING IN THE DETERMINATION OF THE SOURCE OF ERRORS IN A MULTI-HOST DATA BASE MANAGEMENT SYSTEM

Rajeev P. Tandon, Blaine, Minn., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Jul. 16, 1993, Ser. No. 92,679

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.01 **7 Claims**

5. In a multi-host data processing system having a first host processor and a second host processor, each having a memory, mass storage coupled to each of the host processors for long term storage of data, and a record lock processor for providing message passing between the coupled host processors, the multi-host data processing system further including a first data base management system operable on the first host processor, and a second data base management system operable on the second host processor, wherein the first and second data base management systems provide distributed processing of transactions against a data base which is accessible to application programs on each of the host processors, a method for assisting in determining an error source in a multi-host data base management system comprising the steps of:

(a) detecting an error condition in the first data base management system by the first data base management system;

(b) classifying said error condition into either a first error class, a second error class, or a third error class, wherein said first error class, said second error class, and said third error class indicate levels of severity of said error condition;

(c) notifying a user of said error condition if said error condition is within said first error class;

(d) automatically sending notification of said error condition to the second data base management system if said error condition is in said second error class or said third error class;

(e) upon detection of said error condition, saving to a first file on the mass storage all portions of the memory on the first host processor that are utilized by the first data base management system if said error condition is in either said second error class or said third error class, whereby said first file is available for analysis after said portions of the memory are subsequently changed;

(f) aborting the first data base management system if said error condition is in said third error class;

(g) automatically saving to a second file on the mass storage all portions of the memory on the second host processor that are utilized by the second data base management system upon receipt of notification of said error condition if said error condition is in said second error class or said third error class, whereby said second file is available for analysis after said portions of the memory are subsequently changed; and

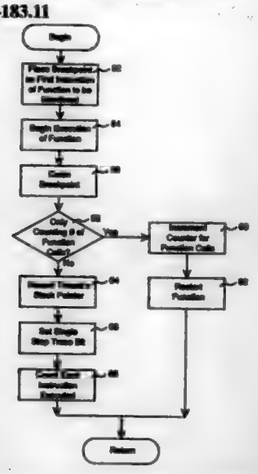
(h) automatically aborting the second data base management system if said error condition is in said third error class.

5,485,574

OPERATING SYSTEM BASED PERFORMANCE MONITORING OF PROGRAMS

William J. Bolosky, Issaquah, and Richard F. Rashid, Woodinville, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Nov. 4, 1993, Ser. No. 147,645
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—183.11 **22 Claims**



1. In a data processing system having a processor that runs at a system level or a user level when executing instructions and a storage mechanism for storing an operating system that includes a kernel, a method comprising the steps of:

providing a facility in the kernel of the operating system for counting instructions executed by the processor and a user level monitoring program for monitoring the instructions counted by the facility;

executing a section of code on the processor without recompiling the section of code to embellish the code for profiling;

using the facility in the kernel of the operating system to count the number of instructions executed when the section of code on the processor; and

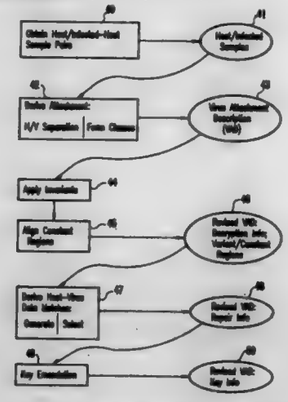
reporting the count of the number of instructions executed to the user level monitoring program.

5,485,575

AUTOMATIC ANALYSIS OF A COMPUTER VIRUS STRUCTURE AND MEANS OF ATTACHMENT TO ITS HOSTS

David M. Chess, Mohegan Lake; Jeffrey O. Kephart, Yorktown Heights, and Gregory B. Sorkin, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 21, 1994, Ser. No. 342,949
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—183.14 **23 Claims**



1. A method for automatically deriving verification and removal information for a function-preserving transformation of computer data from a set of untransformed data samples and corresponding transformed data samples, comprising the steps of:

obtaining a set of "sample pairs", each sample pair consisting of a transformed data sample and a corresponding original, untransformed data sample;

locating one or more fragments of each original data sample within a corresponding transformed data sample to obtain a generalized description, applicable to each of the sample pairs, of locations of fragments of each original data sample and locations of new data regions added by the function-preserving transformation that applies to each of the sample pairs;

matching new data regions added by the function-preserving transformation across different samples to obtain a description of portions of the new data regions that are "invariant" across different samples;

locating within other, variable portions of the new data regions any data from an original data sample embedded there;

generating a prescription for verifying with high confidence that any given data sample has resulted from an application of the function-preserving transformation; and

generating a prescription for restoring a data sample that has been transformed by the function-preserving transformation to a form functionally equivalent to that prior to the transformation.

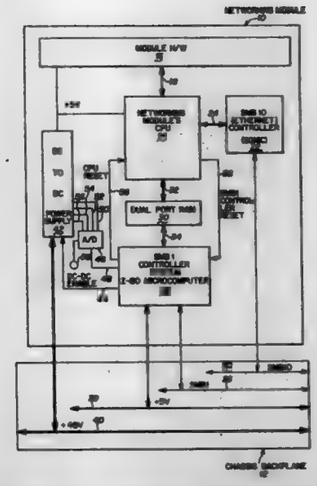
5,485,576

CHASSIS FAULT TOLERANT SYSTEM MANAGEMENT BUS ARCHITECTURE FOR A NETWORKING

Brendan Fee, 34 Pemberton Rd., Nashua, N.H. 03036, and Chris Oliver, 10 Stanley's Pond Dr., Rochester, N.H. 03869-4954

Filed Jan. 28, 1994, Ser. No. 188,033
Int. Cl.[6] G06F *11/20*; H04L *29/14*;*12/40*
U.S. Cl. 395—185.09 **21 Claims**

1. In a networking chassis including a plurality of plug-in networking modules, each module having a processor for processing data, a first system management bus coupled to each networking module, and a second system management bus coupled to each



networking module, a fault-tolerant communication and control system disposed on each networking module, comprising:

a primary path for transmission of communication and control information that controls the networking module, the primary path including a first microprocessor controller coupled between the first system management bus and the processor; and

a secondary path for transmission of the communication and control information including a second microprocessor controller and a dual-port memory, the second microprocessor controller coupled to the second system management bus and to one port of the dual-port memory, the other port of the dual-port memory being coupled to the processor;

wherein upon failure of the primary path, the secondary path is used to transmit the communication and control information.

5,485,577

METHOD AND APPARATUS FOR INCREMENTAL DELIVERY OF ACCESS RIGHTS

Mark K. Eyer, San Diego, and Paul Moroney, Olivenhain, both of Calif., assignors to General Instrument Corporation of Delaware, Chicago, Ill.

Filed Dec. 16, 1994, Ser. No. 358,340
Int. Cl.[6] H04L *9/00*
U.S. Cl. 395—188.01 **8 Claims**

1. A method for incrementally delivering authenticated access rights to an access control processor, comprising the steps of:

dividing data defining said access rights into a plurality of subgroups;

transmitting said subgroups to said processor as authenticated data in a plurality of messages;

deriving a current cryptographic key using the authenticated data contained in a current message upon receipt of said current message by said processor;

storing each of said subgroups in a corresponding storage bank of said processor, each of said storage banks having a validity designation associated therewith for said cryptographic key;

comparing said current cryptographic key to a cryptographic key from a prior message under which subgroups stored in said storage banks were authenticated to determine if the keys match;

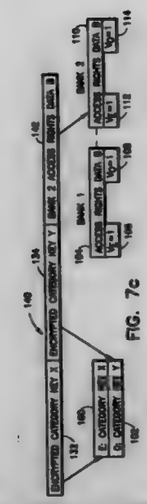


FIG. 7c

if said keys match, setting the validity designation for the matching key to a valid state for each storage bank that is storing data authenticated by said current message, without changing the matching keys' validity designation for any other storage bank; and

if said keys do not match, setting the validity designation for the current cryptographic key to a valid state for each storage bank that is storing data authenticated by said current message and setting the unmatching keys' validity designation for all other storage banks to an invalid state;

wherein access under the current cryptographic key is limited to that provided by access rights contained in storage banks having a validity designation for said current cryptographic key in a valid state.

5,485,578

TOPOLOGY DISCOVERY IN A MULTIPLE-RING NETWORK

Paul Sweazey, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Mar. 8, 1993, Ser. No. 27,714
Int. Cl.[6] H01J *13/00*
U.S. Cl. 395—200.11 **12 Claims**

1. A method for discovering the topology of a network including



a first communication ring having a first bridge node and a source leaf node, a second communication ring having a second bridge node and a target node, comprising the steps of

placing a first ping symbol on said first communication ring, said ping symbol having an N field, a source field, a target field, and a hop field, said N field containing an integer enumerating a number of bridges that may be crossed before an echo symbol is returned to said source leaf node, said source field of said first ping symbol containing a first identification number for said source node, said target field of said first routing symbol containing a second identification number for said first bridge node on said first communication ring, and said hop field of said first routing symbol containing a third identification number for said target leaf node,

placing a first echo symbol on said second communication ring, said echo symbol having an echo field, a source field, a target field, and a hop field, said echo field containing a number representing a type of echo, said source field of said first echo

symbol containing a fourth identification number for said target node, said target field of said first echo symbol containing a fifth identification number for said second bridge node on said second communication ring, and said hop field of said first echo symbol containing a sixth identification number for said source leaf node.

5,485,579

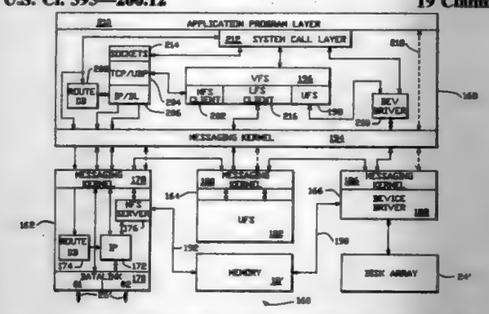
MULTIPLE FACILITY OPERATING SYSTEM ARCHITECTURE

David Hitz, Sunnyvale; Allan Schwartz, Saratoga; James Lau, Cupertino, and Guy Harris, Mountain View, all of Calif., assignors to Auspex Systems, Inc., Santa Clara, Calif.

Continuation of Ser. No. 875,585, Apr. 28, 1992, abandoned, which is a continuation of Ser. No. 404,885, Sep. 8, 1989, abandoned. This application Apr. 8, 1994, Ser. No. 225,356

Int. Cl.[5] G06F *13/00;15/163*

U.S. Cl. 395—200.12 **19 Claims**



1. A server system architecture providing for the transfer of server data in response to client requests, said architecture comprising:

a) host processor means for executing an operating system, said operating system iccluding a plurality of components including an operating system kernel portion, a first messaging component and first instantiations of a communications component, a filesystem component, and a storage access component;

b) communications processor means for executing a communications control program, said communications control program including a first subset of said operating system including a second messaging component and a second instantiation of said communications component;

c) filesystem processor means for executing a filesystem control program, said filesystem control program including a second subset of said operating system including a third messaging component and a second instantiation of said filesystem component; and

d) storage processor means for executing a storage access control program, said storage access control program including a third subset of said operating system including a fourth messaging component and a second instantiation of said storage access component,

where said first, second and third subsets of said operating system are exclusive of said operating system kernel portion and where said second, third and fourth messaging components each include means for sending and receiving messages with another of said second, third and fourth messaging components.

5,485,580

CIRCUIT FOR DETECTING TRANSMISSION BUS'S ABNORMALITY AND FOR CONTROLLING OUTPUT DRIVERS IN A COMPLEMENTARY SIGNAL TRANSMISSION DEVICE

Kazuyoshi Takai; Hironori Kawahara; Masaaki Saji, and Yukio Ono, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

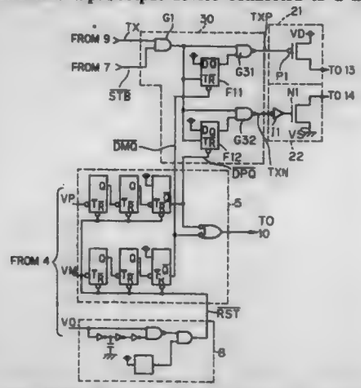
Filed Oct. 29, 1993, Ser. No. 143,104

Claims priority, application Japan, Dec. 25, 1992, 4-346447; Apr. 2, 1993, 5-076842

Int. Cl.[6] H03K *19/00;19/003;19/0175*

U.S. Cl. 395—220.2 **29 Claims**

1. A two-wire input/output device connected to a first and a



second transmission lines on which a first and a second signals with phases opposite to each other are transmitted, respectively, comprises:

(a) a first and a second driver circuits for supplying said first and second signals to said first and second transmission lines, respectively;

(b) an input circuit receiving said first and second signals for generating a first comparison signal obtained by comparing said first signal and a predetermined potential, a second comparison signal obtained by comparing said second signal and said predetermined potential and a third comparison signal obtained by comparing said first signal and said second signal;

(c) a reset circuit receiving said third comparison signal for generating a reset signal which is activated when said first and second transmission lines are normal;

(d) an abnormality detecting circuit receiving said first and second comparison signals and said reset signal for generating a first and a second error signals which are activated when an abnormality occurs on one of said first and second transmission lines, respectively; and

(e) an output control circuit receiving input data on which said first and second signals are based and said first and second error signals for stopping driving of said first and second driver circuits respectively when one of said first and second error signals is active and driving said first and second driver circuits according to said input data when said first and second error signals are inactive.

5,485,581

SPEECH CODING METHOD AND SYSTEM

Toshiki Miyano, and Kazunori Ozawa, both of Tokyo, Japan, assignors to NEC Corporation, Japan

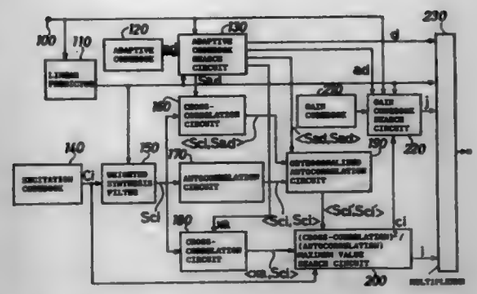
Filed Feb. 26, 1992, Ser. No. 841,827

Claims priority, application Japan, Feb. 26, 1991, 3-103263

Int. Cl.[6] G10L *9/16;9/14;9/08*

U.S. Cl. 395—2.32 **2 Claims**

1. A speech coding system for encoding an input speech signal into coded speech sequence, comprising:



a linear predictive analyzer for receiving an input speech signal divided into frames of a fixed interval and finding a spectrum parameter of the input speech signal;

an adaptive codebook representing adaptive code vectors;

an adaptive codebook search circuit for searching said adaptive codebook based on said spectrum parameter and said input speech signal, for selecting a selected adaptive code vector and for outputting the selected adaptive code vector, a selected delay corresponding the selected adaptive code vector, a second synthesis signal synthesized from said selected adaptive code vector and said spectrum parameter, and a difference signal between said input speech signal and the second synthesis signal;

an excitation codebook representing excitation codevectors;

means for generating first synthesis signals by using each of said excitation code vectors and said spectrum parameter;

a first cross-correlation circuit for calculating first cross-correlation between said second synthesis signal and each of said first synthesis signals;

an autocorrelation circuit for calculating autocorrelation of said first synthesis signals;

a second cross-correlation circuit for calculating second cross-correlation between said first synthesis signals and said difference signal;

an orthogonalized autocorrelation circuit for calculating orthogonalized autocorrelation by using said first cross-correlation and said autocorrelation;

searching circuit for calculating normalized values for each of said excitation code vector and determining an excitation code vector index corresponding to a maximum among said normalized values, wherein said normalized values are obtained by using said orthogonalized autocorrelation and said second cross-correlation;

a gain code search circuit for searching said gain codebook based on said input speech signal, said selected adaptive code vector, said spectrum parameter and said excitation code vector index and outputting a gain code vector index;

a multiplexer for multiplexing said selected delay, said spectrum parameter, said gain code vector index and said excitation code vector index and outputting a resultant sequence as said coded speech sequence.

5,485,582

TRANSFER CONTROL UNIT, PROCESSOR ELEMENT AND DATA TRANSFERRING METHOD

Ichiro Okabayashi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 1, 1993, Ser. No. 11,698

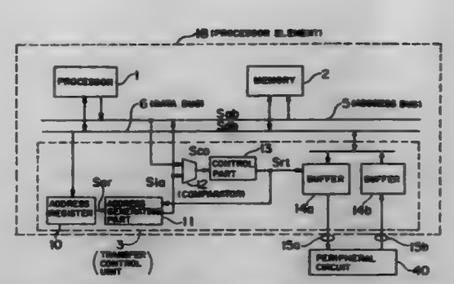
Claims priority, application Japan, Feb. 3, 1992, 4-017354; Jan. 7, 1993, 5-001151

Int. Cl.[6] H01J *1/00*

U.S. Cl. 395—250 **8 Claims**

1. A transfer control unit which receives an address signal and a data signal from a first external unit via an address bus and a data bus, respectively, to transfer them to a second external unit, comprising:

a buffer for temporarily storing data;



an address register for being written to, from the first external unit via the data bus;

an address generating part, connected to the address register, for sequentially generating addresses of a memory in accordance with a written value of the address register;

a comparator for comparing an address generated in the address generating part with an address inputted from the first external unit via the address bus to output a coincidence signal when the addresses coincide with each other; and

a controller, connected to the comparator, the buffer and the address generating part, for commanding the buffer to store the inputted data from the first external unit via the data bus and commanding the address generating part to proceed to a next address upon receipt of the coincidence signal output by the comparator,

wherein said first external unit and said second external unit are external to said transfer control unit.

5,485,583

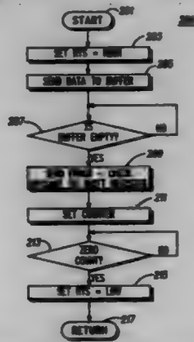
SYSTEM FOR CONTROLLING DATA TRANSFER BY SETTING AND DECREMENTING A COUNTER BASED ON THE NUMBER OF ERROR CORRECTION BITS AND TRANSFER BIT RATE RESPECTIVELY

Howard L. Cunningham, Huntsville, and Robert J. Hanby, Athens, both of Ala., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 20, 1992, Ser. No. 933,439

Int. Cl.[6] G06F *11/00;11/08;11/30*

U.S. Cl. 395—845 **20 Claims**



1. In an arrangement of a terminal coupled to a modem via a channel including a request to send ("RTS") signal having a HIGH state and a LOW state, the modem coupled to a facility; the terminal including a buffer arranged for sending data bits contained therein to a shift register, the shift register arranged for forming an output bit stream, and a counter; the modem having a data transmission bit rate, the modem further including a modulator arranged for forming modulated data bits based on the output bit stream, a gate arranged for applying the modulated data bits to the facility under control of the RTS signal for data transmission, a clock arranged for generating a clock signal coupled to the shift register, the counter, and the modulator, the counter arranged for counting

downwards in value based on the clock signal, a method for controlling the RTS signal, the method comprising the steps of:

(a) enabling the gate for data transmission by setting the RTS signal to HIGH;

(b) sending data bits to the buffer;

(c) determining when the buffer becomes empty;

(d) when the buffer becomes empty:

(d1) forming an error-check message having a first predetermined number of bits;

(d2) sending the error-check message to the shift register;

(d3) forming a second predetermined number based on the first predetermined number; and,

(d4) sending the second predetermined number to the counter;

(e) decrementing the counter at a frequency based on the bit rate:

(f) determining when the counter reaches zero; and,

(g) when the counter reaches zero, disabling the gate for data transmission by setting the RTS signal to LOW.

5,485,584

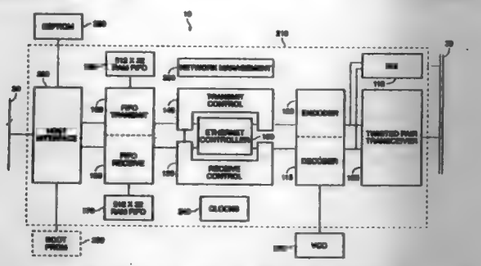
APPARATUS FOR SIMULATING A STACK STRUCTURE USING A SINGLE REGISTER AND A COUNTER TO PROVIDE TRANSMIT STATUS IN A PROGRAMMED I/O ETHERNET ADAPTER WITH EARLY INTERRUPTS

Richard Hausman, Soquel; Paul W. Sherer; James P. Rivers, both of Sunnyvale; Cynthia Zikmund, Boulder Creek; Glenn W. Connery, Sunnyvale; Niles E. Strohl, Tracy, and Richard S. Reid, Mountain View, all of Calif., assignors to 3Com Corporation, Santa Clara, Calif.

Division of Ser. No. 907,946, Jul. 2, 1992, Pat. No. 5,412,782. This application Jan. 17, 1995, Ser. No. 374,491

Int. Cl.[6] G06F *13/00;13/32*

U.S. Cl. 395—842 **3 Claims**



1. An electronic register stack structure for providing, for each of a plurality of actions, a condition represented by a predetermined number of condition flags, wherein said actions may have, upon completion, one of a first condition and at least one alternate condition, wherein a condition of one action at a time is currently accessible from said register stack structure, wherein the currently accessible condition may be removed from said register stack structure so as to make accessible a condition of a remaining action by popping said register stack structure, wherein storing conditions of said actions is halted upon an action having one of said at least one alternate condition, said register stack structure comprising:

a) a condition register comprising said predetermined number of condition flags;

b) a counter register;

c) means for storing a condition for a new action to said register stack structure by modifying contents of said condition register as necessary to indicate said condition of said new action and incrementing said counter register, wherein said counter indicates whether said currently accessible condition is to be said condition of said new action or a condition of a remaining action;

d) means for providing said currently accessible condition by

i) if said counter indicates that said currently accessible condition is to be said condition of said new action, providing contents of said condition register, and

ii) if said counter indicates that said currently accessible condition is to be a condition of a remaining action, providing said first condition; and

e) means for popping said register stack structure by decrementing said counter.

5,485,585

PERSONAL COMPUTER WITH ALTERNATE SYSTEM CONTROLLER AND REGISTER FOR IDENTIFYING ACTIVE SYSTEM CONTROLLER

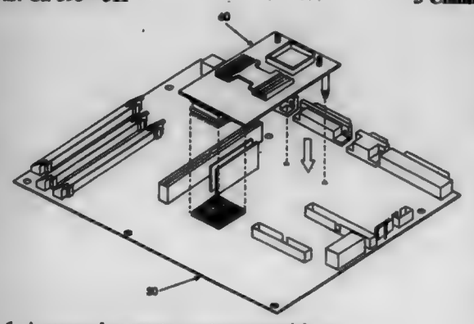
Duy Q. Huynh, Boca Raton; Kim V. Lam, Lake Worth, and Loc T. Tran, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 18, 1992, Ser. No. 947,856

The portion of the term of this patent subsequent to Jan. 4, 2011, has been disclaimed.

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—311 **5 Claims**



1. A personal computer system comprising:

a high speed local processor data bus;

an input/output data bus;

a microprocessor coupled directly to said local processor bus;

a connector coupled directly to said local processor bus for accommodating reception of an alternate system controller;

only one of (a) said microprocessor and (b) an alternate system controller accommodated in said connector functioning as an active system controlling processor over any defined interval of time;

a register coupled to said local processor bus for receiving and retaining status information regarding which of (a) said microprocessor and (b) an alternate system controller accommodated in said connector is said active system controlling processor over any defined interval of time, said register being accessible to said active system controller; and

a bus interface controller coupled directly to said local processor bus and directly to said input/output data bus for providing communications between said local processor bus and said input/output data bus, said bus interface controller providing for transferring system control between said microprocessor and an alternate system controller accommodated in said connector.

5,485,586

QUEUE BASED ARBITRATION USING A FIFO DATA STRUCTURE

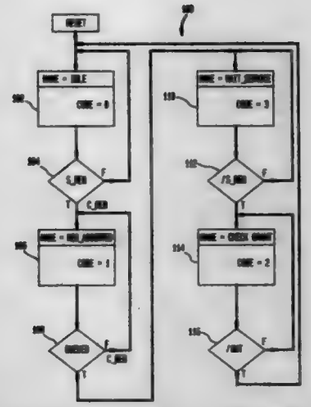
David L. A. Brash; Neal A. Crook, both of Berkshire, England, and John M. Leuthall, Galway, Ireland, assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 819,187, Jan. 10, 1992, abandoned. This application Apr. 5, 1994, Ser. No. 222,580

Int. Cl.[6] G06F *13/36*

U.S. Cl. 395—292 **8 Claims**

6. A method of allocating access to a common resource to one of N devices, comprising the steps of:



receiving an access request from each of the N devices seeking access to the common resource;

storing all access requests received at the same time in a buffer;

prioritizing the access requests stored in the buffer in accordance with a preselected prioritization scheme;

storing the prioritized access requests in a first-in, first-out ("FIFO") data structure in the order of highest priority access request to lowest priority access request;

monitoring access to the common resource to determine when the common resource is available for accessing by one of the N devices, the step of monitoring comprising determining when none of the N devices is accessing the common resource; and

upon determining that the common resource is available for accessing by one of the N devices, retrieving the access request from the first-in, first-out data structure that has been stored for the longest period of time, granting the one of the devices that generated the retrieved access request access to the common resource, and clearing the retrieved access request from the first-in, first-out data structure.

5,485,587

DATA PROCESSOR CALCULATING BRANCH TARGET ADDRESS OF A BRANCH INSTRUCTION IN PARALLEL WITH DECODING OF THE INSTRUCTION

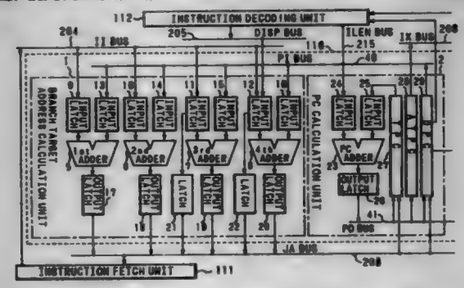
Masahito Matsuo, and Toyohiko Yoshida, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1993, Ser. No. 10,085

Claims priority, application Japan, Feb. 7, 1992, 4-022695

Int. Cl.[6] G06F *9/28;9/32*

U.S. Cl. 395—375 **6 Claims**



1. A data processor for processing a first branch instruction which includes a first operation code field and a first branch displacement field and branches to an address obtained by adding a value of said first branch displacement field to its address, and a second branch instruction which includes a second operation code field and a second branch displacement field different from said first displacement field, and branches to an address obtained by adding a value of said second branch displacement field to its address, comprising:

a memory for storing instructions;

an instruction fetch unit for fetching the instructions from said memory;

an instruction decoding unit for decoding the instructions fetched by said instruction fetch unit and outputting a decoded result;

an instruction execution unit for executing the instructions on the basis of the said decoded result inputted from said instruction decoding unit;

a program counter for holding an address of the instruction being decoded in said instruction decoding unit; and

a branch target address calculation unit including

first adding means for calculating a first address in parallel with decoding of a first instruction in said instruction decoding unit, by adding a value of the first branch displacement field of said first instruction inputted from said instruction fetch unit, and an address of said first instruction inputted from said program counter, said first adding means starting calculation of said first address before said first instruction is identified as said first branch instruction,

second adding means for calculating a second address in parallel with decoding of said first instruction in said instruction decoding unit, by adding a value of the second branch displacement field of said first instruction inputted from said instruction fetch unit, and an address of said first instruction inputted from said program counter, said second adding means starting calculation of said second address before said first instruction is identified as said second branch instruction, and

transferring means for selectively transferring said first and second address to said instruction fetch unit in accordance with a part of said decoded result of said first instruction, said transferring means transferring said first address when said first instruction is said first branch instruction, and transferring said second address when said first instruction is said second branch instruction, wherein

said instruction fetch unit fetches an instruction of said first address when said first instruction is said first branch instruction, and fetches an instruction of said second address when said first instruction is said second branch instruction.

5,485,588

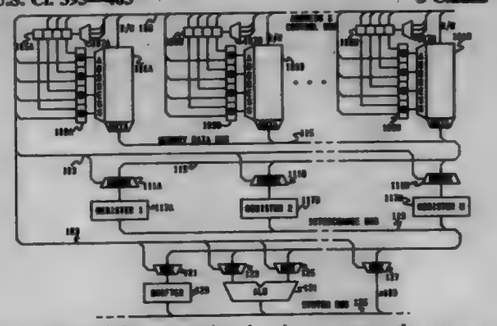
MEMORY ARRAY BASED DATA REORGANIZER

Shanker Singh, Morgan Hill, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1992, Ser. No. 995,400

Int. Cl.[6] G06F *12/00;13/00*

U.S. Cl. 395—405 **3 Claims**



1. A method for rearranging data in a memory, the memory comprising a plurality of separately addressable memory modules, said method comprising steps of:

setting a plurality of modification values, one modification value associated with each memory module;

supplying an address to the memory;

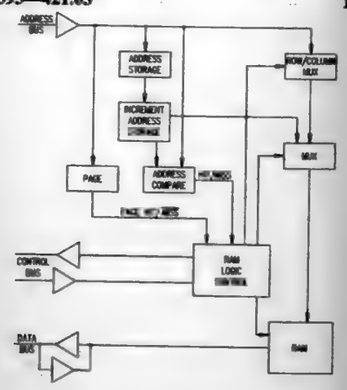
modifying the supplied address by each modification value;
accessing data from each memory module by an associated modified address;
changing the plurality of modification values such that each supplied address is re-modified; and
writing said accessed data back to the memory at new locations according to the re-modified addresses.

5,485,589

PREDICTIVE ADDRESSING ARCHITECTURE

Thomas J. Kocis, and Anthony K. Patterson, both of Austin, Tex., assignors to Dell USA, L.P., Austin, Tex.

Continuation of Ser. No. 815,459, Dec. 31, 1991, abandoned.
This application Jul. 22, 1994, Ser. No. 278,720
Int. Cl.[6] G06F *12/02;13/00*
U.S. Cl. 395—421.03 15 Claims



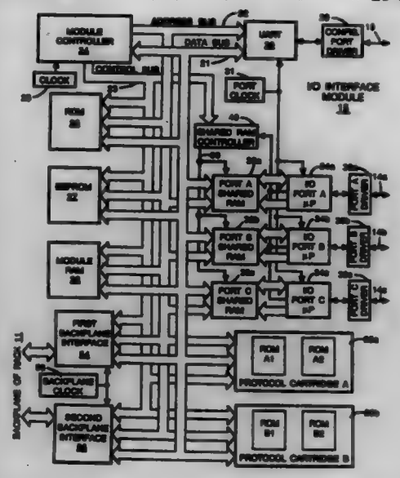
1. A memory subsystem, comprising:
bus interface logic, connected to and configured to read from and write to a first bus which includes a plurality of data lines and a plurality of address lines;
an address bus;
a memory device having a plurality of externally accessible contacts for address, data and control signals, wherein said externally accessible contacts for said address signals are coupled to said address bus; said memory device requiring a predetermined minimum setup and hold time for reliable reception of each successively received address;
a memory controller circuit, operatively connected to said lines of said first bus and to said contacts of said memory device, and configured to receive addresses from said address lines of said first bus and to conditionally supply addresses to said memory device on said address bus;
and wherein, in at least a first mode of operation, when said memory controller circuit receives signals corresponding to a given address from said first bus, said memory controller circuit supplies said given address to said memory device on said address bus for approximately said predetermined minimum setup and hold time, and then immediately increments said given address to produce a predicted address and supplies said predicted address to said memory device on said address bus; and, as soon as said memory controller circuit receives signals corresponding to a next address from said first bus, said memory controller circuit compares said next address with said predicted address, and, if said next address differs from said predicted address, said memory controller circuit immediately begins to supply said next address to said memory device on said address bus.

5,485,590

PROGRAMMABLE CONTROLLER COMMUNICATION INTERFACE MODULE WHICH IS CONFIGURABLE BY A REMOVABLE MEMORY CARTRIDGE

Craig S. Hyatt, Pewaukee; Gary A. Turek, Menomonee Falls; Richard J. Molus, Sr., Greenfield, and Emmanuel G. D. Hostrin, Mukwonago, all of Wis., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Jan. 8, 1990, Ser. No. 461,865
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—442 20 Claims



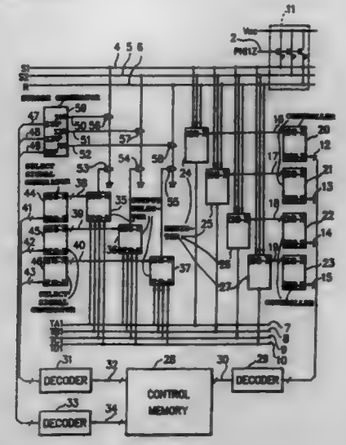
1. An interface module for coupling a serial communication link to a programmable controller in which data is transmitted over the communication link using a defined communication protocol, said interface module comprising:
means for connecting a communication link to said interface module:
a processor means for executing a program which controls the transfer of data between said interface module and the communication link according to the defined communication protocol;
a first memory means for storing the program and data for the processor means;
a memory cartridge that is removable without having to disassemble the interface module, said memory cartridge storing a program for said processor means which program defines the communication protocol;
means for electrically interconnecting said processor means, said first memory means, said means for connecting and said memory cartridge; and
means for transferring the contents of said memory cartridge into said first memory means.

5,485,591

MICROPROCESSOR WHEREIN THE NUMBER OF REGISTER OUTPUT SIGNAL LINER CONNECTED TO THE BUSES ARE REDUCED REDUCING THE LOAD CAPACITY OF THE BUSES

Yasuaki Kuroda, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 17, 1993, Ser. No. 18,870
Claims priority, application Japan, Feb. 17, 1992, 4-029369
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—800 1 Claim



1. A microprocessor comprising:
a plurality of dynamic buses each chargeable and dischargeable to have data established thereon;
a precharge circuit for precharging the plurality of buses in response to a first clock signal
a plurality of first switches connected to a common electrode having a ground level, each of said first switches being operable to open and close in response to one of a plurality of first operation signals inputted thereto;
a plurality of second switches each of which is connected between a respective one of the plurality of buses and a respective one of the first switches and is operable to open and close in response to one of a plurality of second operation signals inputted thereto;
a first signal generating means for generating said plurality of second operation signals and selectively outputting the same to the second switches in synchronism with a second clock signal;
a plurality of wiring electrodes;
a plurality of registers each of which is connected at an input side thereof to a respective one of said plurality of buses for latching data therefrom in response to one of a plurality of first select signals inputted to said register and is connected at an output side thereof to a respective one of said plurality of wiring electrodes for clocking out thereon the latched data in response to a third clock signal;
a second signal generating means for generating said plurality of first select signals and selectively outputting the same to the plurality of registers in synchronism with the second clock signal;
a plurality of selectors each of which is connected at an input side thereof to a respective one of said plurality of wiring electrodes for receiving therefrom said clocked out data in response to one of a plurality of second select signals inputted to the selector and is connected at an output side thereof to a respective one of the plurality of first switches for outputting thereto the received data as said one of said plurality of first operation signals;
a third signal generating means for generating said plurality of second select signals and selectively outputting the same to said plurality of selectors in response to said third clock signal; and
a control means for controlling said first, second and third signal generating means in synchronism with said first clock signal.

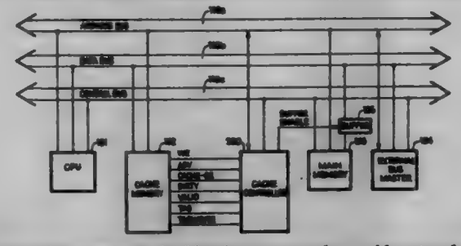
5,485,592

WRITE BACK CACHE CONTROLLER METHOD AND APPARATUS FOR USE IN A SYSTEM HAVING A CPU WITH INTERNAL CACHE MEMORY

Tim Y. T. Lau, Vancouver, Canada, assignor to Video Technology Computers, Ltd., Tai Po, Hong Kong

Continuation-in-part of Ser. No. 864,535, Apr. 7, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 90,517
Int. Cl.[6] G06F *13/18*
U.S. Cl. 395—470 5 Claims

1. A cache controller apparatus for controlling an external write back cache memory and arbitrating a system bus, said system bus containing a data bus, an address bus and a control bus, which link together devices in a system including,



a microprocessor unit containing an internal cache memory having a write back mode of operation, the microprocessor unit being connected directly to the system bus,
an external cache memory connected directly on the data bus, said external cache memory storing a plurality of cache lines, each of said cache lines containing data, one or more validity bits and one or more dirty bits, said one or more validity and dirty bits indicating a status for said each of said cache lines,
a main memory connected directly to the system bus,
one or more external bus masters each capable of direct memory access and each being connected directly to the system bus, said cache controller apparatus comprising:
means for determining said status of one of said plurality of cache lines in said external cache memory selected An response to a memory access command, said determining means connected to said system bus and said external cache memory, said determining means serving to determine if said memory access command necessitates an external cache write-back cycle;
means for maintaining said status information for each of said plurality of cache lines, such that said determining means may determine current status of any of said plurality of cache lines;
means for servicing said memory access request when said external cache write-back cycle is not necessary, said servicing means connected to said external cache memory serving to control the reading and writing operations of said external cache memory;
means for directing said external cache write-back cycle by writing one or more of said plurality of cache lines from said external cache memory to said main memory, said write-back directing means serving to simulate said memory access command controlled by said microprocessor unit;
means for monitoring said system bus for said memory access commands issued by one of said one or more external bus masters, said monitoring means further causing said microprocessor unit to perform an internal cache inquiry; and
means for temporarily transferring mastership of said system bus from said one of said one or more external bus masters to said microprocessor unit, such that said microprocessor unit can

perform a microproccessor write-back cycle, said means for temporarily transferring mastership further including means for causing said one of said at least one external bus master to remain in a wait state until said microprocessor writes said data to said main memory.

5,485,593

DATA STRUCTURE ACCESS CONTROL CIRCUIT AND METHOD UTILIZING TAG BITS INDICATING ADDRESS MATCH AND MEMORY FULLNESS CONDITIONS

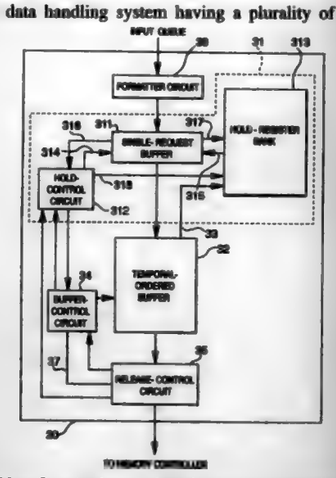
Brian N. Baker, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Continuation of Ser. No. 680,448, Apr. 4, 1991, abandoned. This application Mar. 3, 1994, Ser. No. 205,333

Int. Cl.[6] G06F *13/18*

U.S. Cl. 395—200.08 **3 Claims**

1. In a data handling system having a plurality of processors



each capable of accessing a shared memory containing discrete data structures, a method of controlling the exclusive access to a data structure within the shared memory by only one of the processors at a time, the method comprising the steps of:

(a) storing a plurality of addresses in a memory bank, each address being a starting address of a data structure and corresponding to an open atmosphere;

(b) comparing the starting address of a requested data structure with the plurality of stored addresses, a match corresponding to an open semaphore for the requested data structure;

(c) setting a first tag bit in a designated bit field associated with the starting address of the requested data structure thereby tagging the memory request to indicate the presence of an open semaphore if the starting address of the requested data structure matches an address in the memory bank;

(d) setting a second tag bit in an other designated bit field associated with the starting address of the requested data structure to indicate a full bank of stored addresses if a semaphore is required for the requested data structure;

(e) unsetting the first tag bit of the starting address corresponding to any requested data structures if no semaphore is required for that requested data structure and if no open semaphore for that requested data structure exists within the memory bank;

(f) storing the tagged starting addresses of requested data structures in a temporal ordered buffer;

(g) granting memory access in an ordered manner to any of the buffered requests whose starting addresses are stored in the temporal ordered buffer, any request being granted only if neither of the tag bits associated therewith is set;

(h) storing the starting address residing within the temporal ordered buffer in the memory bank and unsetting the first and second tag bits of the starting address within the temporal ordered buffer for the corresponding request if a semaphore is required and if the memory bank is not full and if no open semaphore exists within the memory bank for the requested data structure;

(i) unsetting the first tag bit of the starting address corresponding to any request within the temporal ordered buffer if no semaphore is required for that request and if no open semaphore exists within the memory bank; and

(j) repeating steps (g).

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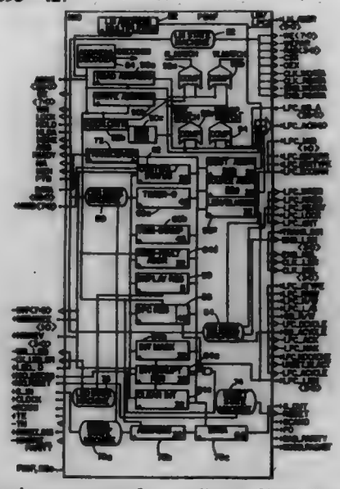
APPARATUS AND METHOD USING AN ATOMIC FETCH AND ADD FOR ESTABISHING TEMPORARY OWNERSHIP OF A COMMON SYSTEM RESOURCE IN A MUTIPROCESSOR DATA PROCESSING SYSTEM

David J. Foster, White Plains, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 17, 1992, Ser. No. 917,246

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—427 **10 Claims**



1. A circuit arrangement for coupling to Signal lines of a data processor, said signal lines comprising a processor address bus and a processor data bus, said circuit arrangement coupling said signal lines to an interface circuit that couples the data processor to a system memory means through a system bus comprising a system address bus and a system data bus, said circuit arrangement

means for executing an atomic fetch and add cycle to a location within said system memory means; said executing means comprising,

first register means coupled to said processor address bus for storing an address received from the data processor, the address specifying a location within the system memory means wherein the data processor is to store a predetermined value;

second register means coupled to said processor data bus for storing a predetermined value received from the data processor;

third register means coupled to said processor data bus for storing a content of a location that is read from the system memory means, the location being specified by the address that is stored within said first register means; and

control means having an input responsive to the data processor storing at least one of an address within said first register means and a predetermined value within said second register means, said control means further comprising a plurality of control outputs coupled to said first, second and third register means, said control means further comprising,

means for requesting a locked read cycle to a location within the system memory means that is specified by an address stored within the first register mean;

means, responsive to a return of data read from the location specified by the address, for storing the returned data within the third register means;

means for combining the predetermined value that is stored within the second register means with the returned data to produce a combined value; and

means for requesting a locked write cycle to the location within the system memory means that is specified by the address stored within the first register means for storing the combined value into the location.

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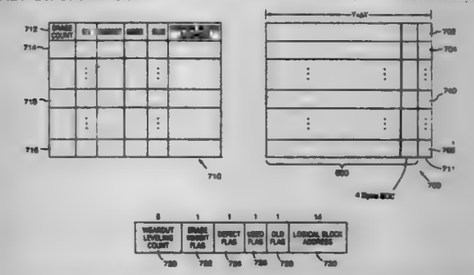
FLASH MEMORY MASS STORAGE ARCHITECTURE INCORPORATING WEAR LEVELING TECHNIQUE WITHOUT USING CAM CELLS

Mahmud Assar, Morgan Hill; Petro Estakhri, Pleasonton; Siamack Nemazie, and Mahmood Mozaffari, both of San Jose, all of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 37,893, Mar. 26, 1993, and Ser. No. 38,668, Mar. 26, 1993, Pat. No. 5,388,083. This application Oct. 4, 1993, Ser. No. 131,495

Int. Cl.[6] G06F *12/02;12/14*

U.S. Cl. 395—430 **15 Claims**



I. A non-volatile semiconductor mass storage device comprising:

a. a plurality of non-volatile data blocks, wherein each one of the plurality of non-volatile data blocks is selectively programmable and erasable and further wherein only those of the plurality of non-volatile data blocks that contain no data can be programmed;

b. a plurality of non-volatile information blocks for storing status information, each of said plurality of non-volatile information blocks directly corresponding to an appropriate one of the plurality of non-volatile data blocks, each of said plurality of non-volatile information blocks including a first flag which is indicative that a corresponding appropriate one of the plurality of non-volatile data blocks has been programmed, and further wherein an address of each one of a plurality of logical blocks corresponds to a physical address of the appropriate one of the plurality of non-volatile data blocks;

c. a comparator coupled to the plurality of non-volatile information blocks for determining whether any unprogrammed one of the plurality of non-volatile data blocks remain;

d. a controller coupled to the comparator for setting a first flag;

e. the controller for periodically erasing all of the plurality of non-volatile data blocks having first flags which are set;

f. a storage programmer for storing a logical block address associated with each one of the plurality of non-volatile data blocks within an appropriate one of the plurality of non-volatile information blocks forming a stored logical block address, whereby an erase cycle is not needed each time an updated block replaces a superseded data block; and

g. means for reading the non-volatile semiconductor mass storage device, comprising means for coupling a desired logical block address to the non-volatile semiconductor mass storage device and means for sequentially comparing the desired logical block address to each of the stored logical block addresses.

5,485,596

ABNORMALITY DIAGNOSTIC SYSTEM FOR EVAPORATIVE FUEL-PROCESSING SYSTEM OF INTERNAL COMBUSTION ENGINE FOR VEHICLES

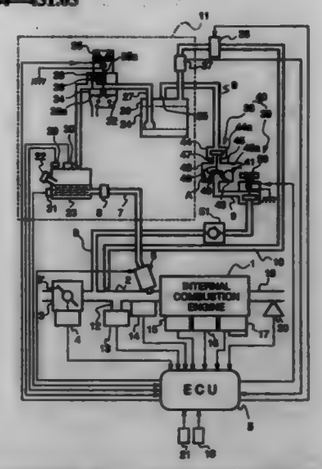
Hisashi Igarashi; Masataka Chikamatsu; Hiroshi Maruyama, and Masayoshi Yamazaka, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1993, Ser. No. 20,831

Claims priority, application Japan, Mar. 2, 1992, 4-080485

Int. Cl.[6] F02M *33/02*

U.S. Cl. 364—431.03 **11 Claims**



1. In an abnormality diagnostic system for an evaporative fuel-processing system for an internal combustion engine installed in a vehicle and having an intake system, and a fuel tank, the system comprising an evaporative emission-control system including a canister having an air inlet port provided therein, an evaporative fuel-guiding passage extending between said fuel tank and said canister, a purging passage extending between said canister and said intake system of said engine, and a first control valve arranged across said purging passage,

the improvement comprising:

pressure detecting means for detecting pressure within said evaporative emission control system;

negatively pressurizing means for bringing said evaporative emission control system into a predetermined negatively pressurized state;

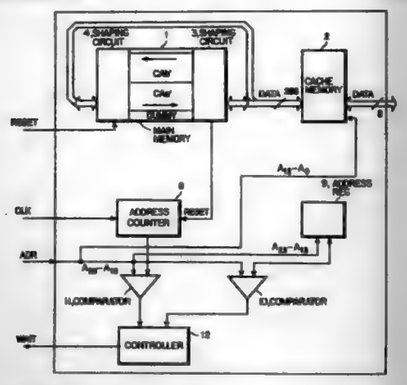
external diagnostic means provided externally of said engine, said external diagnostic means being humanly operable for diagnosing operating conditions of said engine, said external diagnostic means for generating a command signal for carrying out an abnormality diagnosis of said evaporative emission control system when said engine is in a predetermined operating condition suitable for said abnormality diagnosis of said evaporative emission control system; and

abnormality determining means responsive to said command signal from said external diagnostic means, for determining whether there is an abnormality in said evaporative emission control system based upon an output from said pressure detecting means, which output is obtained when said evaporative emission control system has been brought into said predetermined negatively pressurized state, when said engine is in said predetermined operation condition.

5,485,597
A CCD ARRAY MEMORY DEVICE ACHIEVING HIGH SPEED ACCESSING BY WRITING AND READING DATA THROUGH A CACHE MEMORY

Makoto Yamamoto, Tokyo, Japan, assignor to Yozan Inc., Tokyo, Japan

Filed May 6, 1993, Ser. No. 57,780
Claims priority, application Japan, May 12, 1992, 4-146552
Int. Cl.[6] G06F *12/00;13/00*
U.S. Cl. 395—437 6 Claims



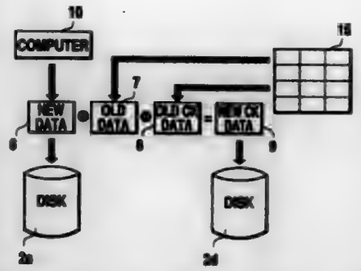
1. A memory device comprising:
i) a plurality of CCD arrays, each array having a plurality of cells for storing data as electrical charges:
ii) a transmission clock for causing charges stored in cells in said plurality of CCD arrays to be successively shifted between said cells;
iii) a shaping circuit for shaping data on a first end of at least one of said plurality of CCD arrays;
iv) a feedback line for feeding shaped data back to a second end of a first one of said plurality CCD arrays;
v) a cache memory for storing row addresses, each row address corresponding to one of said plurality of CCD arrays;
vi) an address counter for designating a location of data in one of said plurality of CCD arrays as a column address by counting said transmission clock;
vii) an address register for registering a column address of data stored in said cache memory;
viii) one or more first comparators for comparing said column address in said address register with a new address and generating a first comparator output;
ix) a second comparator for comparing said new address and a count value of said address counter and generating a second comparator output; and
x) a controller for generating a wait signal in response to said first comparator output and said second comparator output, said wait signal indicating that data corresponding to said new address is not present in said cache memory and suspending operation of said memory device until said data corresponding to said new address is transferred to said cache memory.

5,485,598
REDUNDANT DISK ARRAY (RAID) SYSTEM UTILIZING SEPARATE CACHE MEMORIES FOR THE HOST SYSTEM AND THE CHECK DATA

Rika Kashima; Shunichiro Nakamura; Harumi Minemura; Katsumi Shiono; Masahiro Higuchi; Mikio Yoshimori, and Takayuki Hayakawa, all of Kamakura, Japan, assignors to Nitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1993, Ser. No. 53,100
Claims priority, application Japan, May 13, 1992, 4-120883; Jul. 22, 1992, 4-195004
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—182.04 30 Claims

1. A memory device with a redundant disk array, comprising:

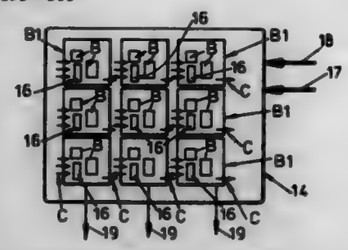


redundant disk array means having a plurality of data storage means for storing data and a check data storage means for storing check data;
processing means for accessing the redundant disk array means;
first cache memory means for storing old data corresponding to portions of data stored in the redundant disk array means;
second cache memory means for storing the old data of the first cache memory means when the old data of the first cache memory means are renewed with new data;
third cache memory means for storing old check data corresponding to the old data stored in the second cache memory means when the old data of the first cache memory means are renewed;
arithmetic means for producing new check data from the new data, the old data stored in the second cache memory means and the old check data stored in the third cache memory means; and
control means for allowing the storing of the new data into the plurality of data storage means and the new check data into the check data storage means in the redundant disk array means.

5,485,599
METHOD AND APPARATUS FOR SIMULATION OF A PHYSICAL PROCESS

George J. Milne, and William P. Cockshott, both of Glasgow, Scotland, assignors to The University of Strathclyde, Glasgow, Scotland

PCT No. PCT/GB90/01841, § 371 Date May 28, 1992, § 102(e) Date May 28, 1992, PCT Pub. No. WO91/08560, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 27, 1990, Ser. No. 852,225
Claims priority, application United Kingdom, Dec. 1, 1989, #9272B1
Int. Cl.[6] G06F *15/60;17/00*
U.S. Cl. 395—500 9 Claims



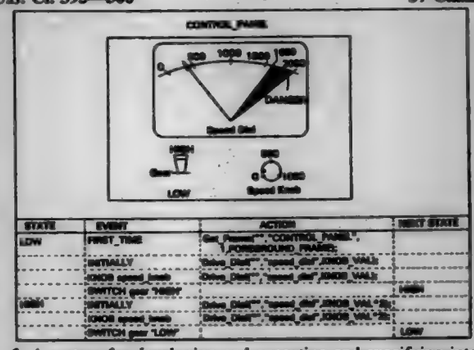
1. An apparatus for simulating a spatially-extended physical process a complete spatial extent of which is made up of a number of localities each defined by parameters of the process, the apparatus comprising:
a plurality of multi-state sequential digital logic circuits each configured to represent a respective locality of a process so that possible states of each said circuits represent possible states of pertaining parameters;
means for interconnecting at least those said circuits representing localities having mutual interaction;

means for initially establishing each logic circuit in an known state;
means for pulsing at least one of said circuits to cause circuits of the array to evolve through at least some of their possible states; and
means for intermittently determining the states of at least some of said circuits to provide a measure of the corresponding states of the parameters of the physical process;
wherein each of said configured digital logic circuits is implemented by a universal sequential digital logic circuit having means adapted to configure the pertaining universal circuit to have a desired sequential behavior to represent the parameters of a particular locality.

5,485,600
COMPUTER MODELLING SYSTEM AND METHOD FOR SPECIFYING THE BEHAVIOR OF GRAPHICAL OPERATOR INTERFACES

Eugene R. Joseph, Montreal, Canada, and Michael Trachtman, Eugene, Oreg., assignors to Virtual Prototypes, Inc., Montreal, Canada

Filed Nov. 9, 1992, Ser. No. 972,779
Int. Cl.[6] G06F *17/50*
U.S. Cl. 395—500 37 Claims

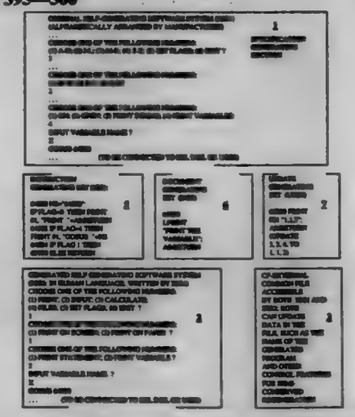


1. A system for developing and executing and specifying interactive visual applications wherein dynamic data are mapped into coherently animated virtual objects and operator interaction facilities are provided to interact with the objects on the display, the system comprising:
a central processing unit responsive to operator control signals for deriving address and control signals;
a random access memory for providing instructions to said central processing unit in response to said address signals from said central processing unit;
a non-volatile storage medium for supplying said instructions to said random access memory in response to said control signals from said central processing unit;
a graphics display device responsive to said control signals from said central processing unit for displaying the objects; and
operator input means for supplying said operator control signals to said central processing unit, said operator control signals including positional and alphanumeric components, said operator input means including:
(i) a locator/trigger device for supplying said positional signals to the central processing unit, and
(ii) a data entry device for supplying said alphanumeric signals to said central processing unit;
said instructions including at least one functional module for defining operations of said central processing unit and including:
(i) an object editor module responsive to said operator control signals for deriving the virtual objects by relating a graphical appearance of said virtual objects to a behavior of said objects during execution by the system;
(ii) an integration editor module responsive to said operator control signals for mapping ones of the virtual objects into names of variables, the contents of memory locations of said random access memory corresponding to said named variables, said named variables being used for redrawing the virtual objects on the graphics display to reflect changes in the contents of the memory locations associated with said named variables and said named variables further supplying graphic access to data in response to said positional signals from said locator/trigger device and to screen locations of said virtual objects,
(iii) an execution facility for redrawing ones of said virtual objects in response to at least one of: (i) dynamic data stored in said random access memory and (ii) operator control signals, the execution facility further being responsive to predetermined logic specification data;
(a) said logic specification data specifying sets of events and corresponding reactions which should occur in response to the respective events, a respective origin of the event, a state of the system wherein said state is a state in a finite state machine model of the system, wherein each of said events originating from at least one of (A) ones of said objects, (B) a system clock signal, (C) control signals from said central processing unit, (D) messages from other computer systems, or (E) changes in the contents of the named variables;
(b) said logic specification data further specifying the next state that the system should transition to after an event is received;
(c) said logic specification data further specifying the reactions that occur under control of the logic specification, ones of which affect ones of the objects displayed on the display device; and
a state table editor responsive to said operator control signals for defining said logic specification by specifying:
(1) system states;
(2) events to be recognized in respective ones of said states;
(3) actions to be taken in response to respective ones of said events and states; and
(4) next states to be entered in response to respective ones of said events and states.

5,485,601
COMPLETELY AUTOMATED AND SELF-GENERATING SOFTWARE SYSTEM

Hugh Ching, P.O. Box 461, Berkeley, Calif. 94701

Continuation-in-part of Ser. No. 882,672, May 14, 1992, abandoned. This application Apr. 21, 1994, Ser. No. 232,450
Int. Cl.[6] G06F *17/50*
U.S. Cl. 395—500 4 Claims



1. A completely automated, technology-independent, non-obsolescent, self-generating software, firmware, and/or hardware system or cell, which can self-generate equally complex systems or cells, comprising:
an initial program generator made of an instruction generating set appended to an initial specification generating section, specification files, which record the exact keystrokes inputted

when answering, preferably human-language, tree-structured multiple-choice and text questions posed by said program generator;

means for generating said initial program generators, said instruction generating set, a null set, a document generating set, an update generating set for updating specification files to the said initial program generator, and an external common file, when the corresponding said specification files are fed into said initial program generator;

means for automatically creating new specification generating sections, program generators, document generating sets, updating generating sets, common files by said initial program generator;

means for self-generation of program generators, thus, allowing users to modify the generators according to their own desires, in particular, making the generators to communicate with users in their native human languages;

means for semi-conserved self-generation with the aid of external common files by self-generating program generators;

means for automatically appending said null set, said instruction generating set, document generating sets, and update generating sets to program generators;

means for automatically switching among different computing levels; and

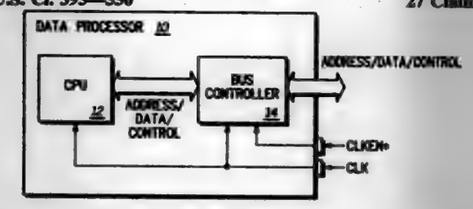
means for multiple pass program generation from multi-level specification files and for documentation and update of multi-level specification files.

5,485,602

INTEGRATED CIRCUIT HAVING A CONTROL SIGNAL FOR IDENTIFYING COINCIDING ACTIVE EDGES OF TWO CLOCK SIGNALS

William B. Ledbetter, Jr., Austin, Tex.; Daniel M. McCarthy, Phoenix, Ariz., and James G. Gay, Pflugerville, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 27, 1993, Ser. No. 172,985
Int. Cl.[6] G06F *1/04*
U.S. Cl. 395—550 27 Claims



1. An integrated circuit having at least one terminal coupled to a bus, the integrated circuit comprising:

a terminal for receiving a clock signal, the clock signal having a plurality of active clock edges; and

a terminal for receiving a clock qualifier signal, the clock qualifier signal being asserted to indicate at least one active clock edge in the plurality of active clock edges, wherein the at least one active dock edge in the plurality of active clock edges is used to indicate when the integrated circuit is to perform at least one bus operation external to the integrated circuit,

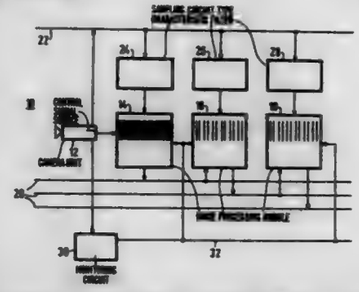
wherein the integrated circuit has some terminals which are qualified by the clock qualifier signal to perform bus operations and other terminals which function independently from the clock qualifier signal.

5,485,603

PIPELINE SYSTEM WHICH PAUSES PROCESSING OF ALREADY INPUT DATA DURING DEAD TIME INTERVALS AT THE SYSTEM INPUT

Geert Nijholt, and Eric H. J. Persoon, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 526,852, May 21, 1990, abandoned.
This application Apr. 17, 1995, Ser. No. 425,302
Claims priority, application Netherlands, Jul. 14, 1989, 8901825
Int. Cl.[6] G06F *1/04*
U.S. Cl. 395—550 10 Claims



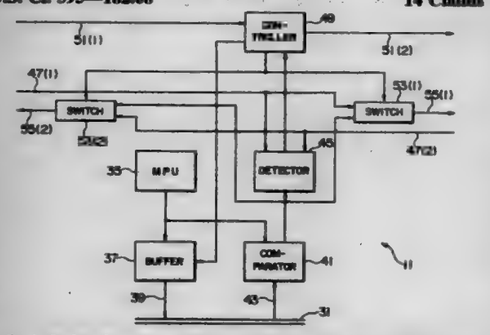
9. A method of processing successive groups of data units, separated by time slots, in a pipeline structure comprising: controlling said processing with at least one control signal which occurs in synchronism with the groups of data units as they appear at a point at, or upstream of, an input to the pipeline structure, in a manner that all processing of data units which have already reached the input to the pipeline structure is stopped during occurrences of the time slots at said point while the control signal is absent.

5,485,604

FAULT TOLERANT COMPUTER SYSTEM COMPRISING A FAULT DETECTOR IN EACH PROCESSOR MODULE

Hiroaki Miyoshi; Yasuhiko Mizushima; Makoto Ohtsuka, and Hiroki Hihara, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 4, 1993, Ser. No. 145,647
Claims priority, application Japan, Nov. 6, 1992, 4-296942
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—182.08 14 Claims



1. A fault tolerant computer system comprising at least three central processor modules connected to a bus as a primary module and first and second adjacent modules, wherein each module of said primary and said first and said second adjacent modules comprises:

a controllable central processor unit connected to said bus for producing a processor output signal and for controllably transferring said processor output signal as a controlled output signal to said bus, the controllable central processor unit of said primary module producing said processor output signal as a local processor signal;

a comparator connected to the controllable central processor unit of said each module and to said bus for producing a comparator output signal, the comparator of said primary module being supplied with the local processor output signal and with the controlled output signal as a single output signal from one of said first and said second adjacent modules to compare said local processor signal with said single output signal and to produce said comparator output signal as a local comparator signal representative of whether said local processor signal is coincident or incoincident with said single output signal; and

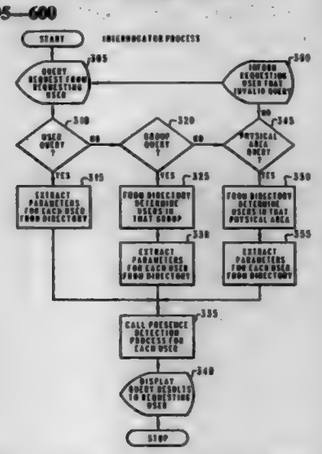
an isolating unit connected to the comparator of said each module, the isolating unit of said primary module isolating said primary module from said fault tolerant computer system by connecting isolating units of said first and said second adjacent modules with the isolating unit of said primary module bypassed when the isolating unit of said primary module confirms a fault in said primary module.

5,485,605

METHOD OF AND APPARATUS FOR PROVIDING A GROUP QUERY

William J. Johnson, Flower Mound; Robert S. Keller, Grapevine; George C. Manthuruthil, Coppell, and Marvin L. Williams, Lewisville, all of Tex., assignors to International Business Machines Corp., Armonk, N.Y.

Filed May 1, 1992, Ser. No. 878,287
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 9 Claims



1. A method of providing a group query, wherein a group is a collection of users sharing a common characteristic, comprising the steps of:

selecting a common characteristic;

extracting from a table a group of users sharing the common characteristic and extracting from the table information relating to the group; and

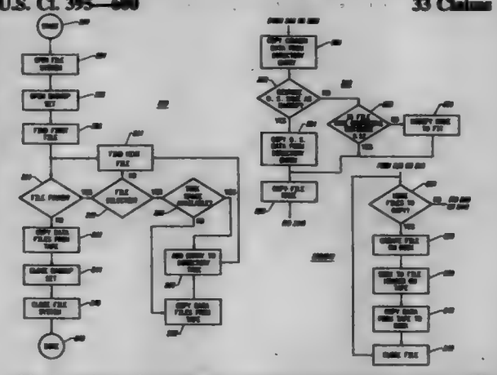
generating a query based on the group of users and based on the information relating to the group of users, wherein the query relates to a user's current physical presence.

5,485,606

SYSTEM AND METHOD FOR STORING AND RETRIEVING FILES FOR ARCHIVAL PURPOSES

Christopher W. Midgley, Ypsilanti; Richard S. Hesseltine, and Mark L. Weaver, both of Ann Arbor, all of Mich., assignors to Conner Peripherals, Inc., San Jose, Calif.

Continuation of Ser. No. 377,729, Jul. 10, 1989, abandoned.
This application Jun. 24, 1992, Ser. No. 905,083
Int. Cl.[6] G06F *15/20*
U.S. Cl. 395—600 33 Claims



33. A method of operating a computer system to recover a file which has been retrieved from a storage medium by a different computer having a second and different operating system, said computer system having only a first operating system, said file including information specific to said second operating system, information non-specific to the second operating system and information which identifies said method including the steps of:

examining said file to identify the second operating system;

determining if the second operating system is compatible with said first operating system;

retrieving said file if the second operating system is compatible with said first operating system; and

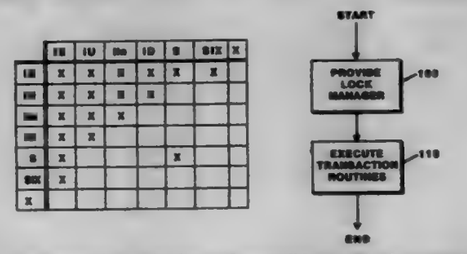
retrieving only said information which is not specific to the second operating system if said first operating system is not compatible with said second operating system.

5,485,607

CONCURRENCY-CONTROL METHOD AND APPARATUS IN A DATABASE MANAGEMENT SYSTEM UTILIZING KEY-VALUED LOCKING

David B. Lomet, Westford, Mass., and Russell J. Green, Edinburgh, Scotland, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Feb. 5, 1993, Ser. No. 14,188
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 30 Claims



1. For managing a database of accessible records that contain resources of first and second types, each of a plurality of the resources of the second type being uniquely associated with a respective resource of the first type, and for providing accesses to the resources in response to implementing instructions of user-requested transactions, a method comprising the steps of:

A) providing a lock manager characterized by a predetermined compatibility matrix that indicates, for a plurality of composite lock modes, which pairs of the composite lock modes are compatible with each other, the lock manager maintaining a lock table that identifies locked database resources and the composite lock modes in which they are locked, receiving lock requests that designate resources and composite lock modes in which those resources are to be locked, and responding to the lock requests by generating compatibility indications that indicate whether the lock modes designated by the lock requests are compatible in accordance with the compatibility matrix with the lock modes of locks acquired by other transactions on the database resources that the lock requests designate; and

B) executing a plurality of transaction routines for performing respective transactions, each transaction routine comprising instructions that implement database-access operations, associated with respective database accesses, that apply lock requests to the lock manager and perform the associated database accesses only if the compatibility indications generated by the lock manager in response to the lock requests are positive, the resource identifiers in the lock requests being so mapped from the resources of the first and second types that each resource of the second type is mapped to a resource identifier the same as that to which the resource of the first type associated therewith is mapped, the database-access operations implemented by the instructions of the plurality of transaction routines including a set of operations that includes a plurality of operations of which each requires locks both on at least one resource of the first type and on the resource of the second type with which it is associated, the lock requests applied to the lock manager by the instructions that implement such a transaction's operations requesting, in the absence of an already existing lock acquired by the given transaction, a composite lock whose mode is associated with constituent first-resource-type and second-resource-type lock modes whose compatibility sets within a set of constituent lock modes would be sufficient to maintain serializability if the constituent first-resource-type and second-resource-type lock modes individually locked the resources of the first and second resource types, respectively, on which that operation requires locks, a given composite lock mode being compatible with another composite lock mode if and only if the constituent first-resource-type and second-resource-type lock modes associated with the given composite lock mode are respectively compatible with the first-resource-type and second-resource-type lock modes associated with that other composite lock mode.

5,485,608

METHODS AND APPARATUS FOR UPDATING INFORMATION IN A COMPUTER SYSTEM USING LOGS AND STATE IDENTIFIERS

David B. Lomet, Westford, Mass.; Peter M. Spiro, Nashua, N.H.; Ashok M. Joshi, Nashua, N.H.; Ananth Raghavan, Nashua, N.H., and Tirumanjanam K. Rangarajan, Nashua, N.H., assignors to Oracle Corporation, Redwood Shores, Calif.

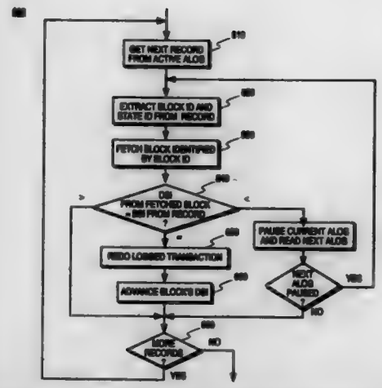
Continuation of Ser. No. 546,454, Jul. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 549,183, Jun. 29, 1990, abandoned. This application Apr. 14, 1994, Ser. No. 227,491

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—600 **28 Claims**

1. In a computer system including a plurality of nodes and a non-volatile storage medium, a method of managing updates to information stored in said non-volatile storage medium, said method comprising the steps of:

obtaining control of a selected section of a plurality of sections of said non-volatile storage medium;



extracting a first state identifier associated with said selected section, said first state identifier having a value corresponding to a state of said selected section before modification;

selecting a selected log from a plurality of logs, said plurality of logs having information concerning updates to be made to said plurality of sections, said selected log having an associated second state identifier corresponding to said first state identifier;

updating information in said selected section in accordance with an action specified in said selected log;

modifying said first state identifier to be a value corresponding to a state of said selected section alter being updated in accordance with said action specified in said selected log; and

releasing control of said selected section.

5,485,609

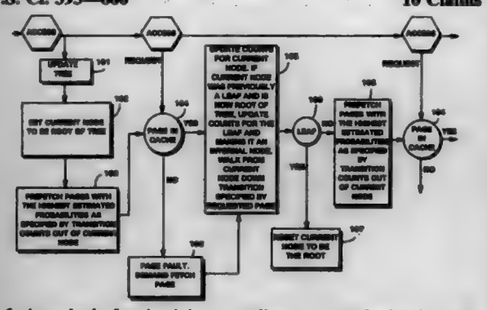
ONLINE BACKGROUND PREDICTORS AND PREFETCHERS FOR LOCALITY MANAGEMENT

Jeffrey S. Vitter, Durham, N.C.; Kenneth M. Curewitz, Milford, Mass., and P. Krishnan, Durham, N.C., assignors to Brown University Research Foundation, Providence, R.I.

Filed May 20, 1994, Ser. No. 246,600

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—600 **10 Claims**



1. A method of maintaining a predictor or a prefetcher in cache comprising,

constructing the predictor, using a sequence of recent user page requests and a data compression algorithm, in the form of a tree having a root, transitions, nodes and leaves,

placing said root of the tree in a page and maintaining the page in cache,

placing every node of the tree in at most one cache page,

maintaining some of said node pages in cache in accordance with a replacement heuristic, and maintaining the remaining node pages in a secondary memory,

fetching a node page not in cache from said secondary memory when it is required, and

replacing a node page in cache with said fetched node page in accordance with said replacement heuristic,

wherein said replacing a node page in cache is in accordance with a least recently used heuristic.

5,485,610

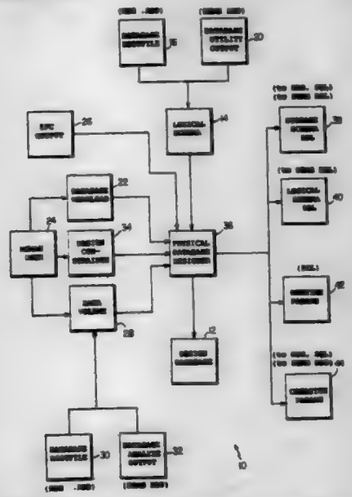
PHYSICAL DATABASE DESIGN SYSTEM

Michael E. Gioielli, Chelmsford, Mass., and James Ravan, Nashua, N.H., assignors to Oracle Corporation, Redwood Shores, Calif.

Continuation of Ser. No. 106,149, Aug. 13, 1993, abandoned, which is a continuation of Ser. No. 485,376, Feb. 26, 1990, abandoned. This application Aug. 19, 1994, Ser. No. 292,575

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—600 **5 Claims**



1. A process implemented by a computer system for generating a physical design for a database, the database to include data records and index records, the index records to access data stored in the data records, comprising:

retrieving a set of expert rules from a memory of the computer system;

accepting a logical schema as input, said logical schema to describe a logical arrangement of the database;

accepting a data volume definition as input, said data volume definition to describe an amount of data to be stored in the database;

defining a plurality of first operations, each first operation of said plurality of first operations to access the data of the database;

accepting a first workload description as input, said first workload description to specify a first workload for each first operation of said plurality of first operations;

grouping selected first operations of said plurality of first operations into a plurality of second operations, each second operation including at least one first operation, and each first operation being grouped in at least one second operation;

accepting a second workload description as input, said second workload description to specify a second workload for each second operation of said plurality of second operations;

grouping selected second operations of said plurality of second operations into a plurality of third operations, each third operation including at least one second operation, and each second operation being grouped in at least one third operation;

accepting a third workload description as input, said third workload description to specify a third workload for each third operation of said plurality of third operations;

selectively applying said set of expert rules to said logical schema and said data volume description and said first workload description and said second workload description and said third workload description to generate the physical design of the database, the physical design to specify how the data will be physically stored in the data records and how the data records are accessed by the index records.

5,485,611

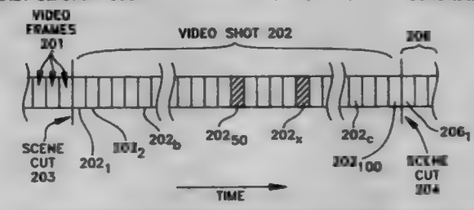
VIDEO DATABASE INDEXING AND METHOD OF PRESENTING VIDEO DATABASE INDEX TO A USER

Brian Astle, Phoenix, Ariz., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 30, 1994, Ser. No. 366,807

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—600 **35 Claims**



1. A computer-implemented method for generating a video database index for indexing a video database comprising a plurality of video frames, the video database index comprising a plurality of index frames, wherein each video frame within the video database has a unique location within the video database, the method comprising the steps of:

(a) transmitting the video frames of the video database to a processor; and

(b) generating with the processor the index frames of the video database index in accordance with the amount of change occurring in images depicted by the video frames of the video database;

wherein:

each of the index frames represents a unique video sequence of a plurality of video sequences that constitute the video database;

each video sequence comprises a sequence of video frames of the video database; and

each video sequence has a unique location within the video database.

5,485,612

METHOD AND APPARATUS FOR ASSIGNING PROCESSORS IN PARALLEL COMPUTER SYSTEM

Hiroshi Ota, Tokyo; Kousuke Sakoda, Hino; Tetuso Saito, Zama; Eiichiro Maeda, Hitachi, and Toshiyuki Yamamoto, Kawasaki, all of, Japan, assignors to Hitachi, Ltd.; Hitachi Microcomputer System Ltd., both of Tokyo, and Hitachi Nuclear Engineering Co., Ltd., Ibaraki, all of, Japan

Filed Feb. 4, 1992, Ser. No. 830,673

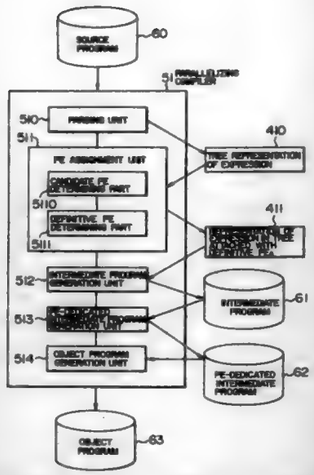
Claims priority, application Japan, Feb. 13, 1991, 3-019749

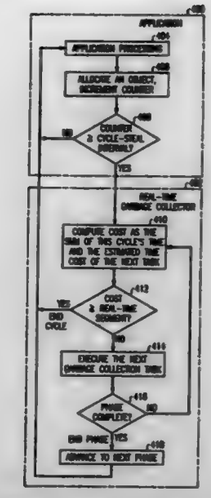
Int. Cl.[6] G06F *13/00;7/38*

U.S. Cl. 395—650 **6 Claims**

5. In a computer system comprising a plurality of processors each having a local memory, an apparatus for assigning said plurality of processors to execute a plurality of operations involved in executing an expression stated by using a plurality of operands stored previously in said local memories in precedence to execution of said expression which includes said plurality of operations and said plurality of operands, said apparatus comprising:

means for representing said expression to be executed in form of a tree having a plurality of leaf nodes corresponding to said operands and interior nodes corresponding to said plurality of operations, respectively and means for assigning a processor having a local memory which stores an operand represented by a leaf node to said lead node;





means for tracing said tree in a bottom-up fashion to determine in accordance with a majority method a set of candidate processors to be assigned to execute an operation of each of the interior nodes, from among processors which are assigned to children nodes of said each interior node, said majority method having a rule that a processor which is most frequently assigned to the children nodes of said each interior node is determined as a candidate processor;

means for determining definitively a root processor to be assigned to a root node of the interior node of said tree by arbitrarily selecting said root processor from the candidate processors determined for said root node when a plurality of candidate processors are determined for said root node; and

means for tracing said tree in a top-down fashion to determine definitively at each of the interior nodes one processor of the candidate processors determined for said each interior node to execute the operation for said each interior node,

(i) when a processor assigned to a parent node of said each interior node is contained in a set of candidate processors of said each interior node, the processor assigned to said parent node is selected as the processor to be assigned to said each interior node; and

(ii) when the processor assigned to the parent node of said each interior node is not contained in the set of the candidate processors of said each interior node, a one processor of the candidate processors of said each interior node is arbitrarily selected to be definitively assigned to said each interior node.

5,485,613

METHOD FOR AUTOMATIC MEMORY RECLAMATION FOR OBJECT-ORIENTED SYSTEMS WITH REAL-TIME CONSTRAINTS

Steven L. Engelstad, Lisle; Keith F. Falck, and James E. Vandendorpe, both of Naperville, all of Ill., assignors to AT&T Corp., Murray Hill, N.J.

Continuation-in-part of Ser. No. 750,797, Aug. 27, 1991, abandoned. This application Mar. 17, 1994, Ser. No. 210,107

Int. Cl.[6] G06F *17/00*

U.S. Cl. 395—650 **31 Claims**

1. A method for effecting recovery of memory resources for use by a digital data processing system, said digital data processing system comprising a computer, said digital data processing system performing real-time operations, said digital data processing system including a limited amount of memory, wherein said digital data processing system performs said real-time operations by sending ones of a plurality of messages to selected ones of a plurality of objects, said plurality of objects being allocated when needed for a specific functionality of said real-time operations and wherein a portion of said limited amount of memory is assigned to each object as said object is allocated, each of said plurality of objects being referenced when at least one other object may send a message to the object, ones of said plurality of objects becoming unreferenced when that object's functionality is no longer needed by the referencing object, said plurality of objects being stored in memory in a time-ordered sequence according to when they were allocated, and each of said plurality of objects being either marked or unmarked, wherein each of said plurality of objects is initially unmarked, said method executing in said computer as a program comprising the steps of:

a. determining a dynamically growing condemned region of said memory by selecting a first object from said time-ordered plurality of objects as a beginning of said condemned region of said memory, said condemned region of said memory including all objects allocated after said first object;

b. marking all objects within said condemned region of said memory that are referenced from any of said time-ordered plurality of objects that were allocated prior to said first object;

c. marking objects within said condemned region of memory that are referenced from all objects within said condemned region of memory that are marked in accordance with step b;

d. determining as a last object of said condemned region of memory a most recently allocated object, so that said condemned region includes all objects allocated between said first object and said last object, and so that no object allocated later in time than said last object is included in said condemned region; and

e. deallocating memory resources, for use in allocating new objects in said limited amount of memory, associated with unmarked objects within said condemned region of memory;

wherein each of said steps a through e comprises one or more cycles of operation, each of said cycles comprises one or more tasks, each task comprises a short, uninterruptible operation of said recovery process, wherein the latency of each task is deterministic, each pair of adjacent cycles is separated by performance of said real-time operations, and execution of each cycle is limited to a predefined fine-grained time period without replicating objects.

5,485,614

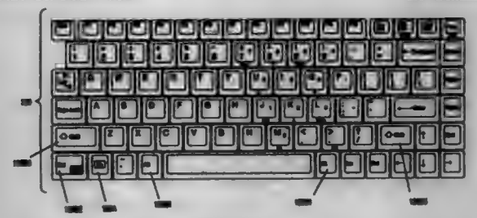
COMPUTER WITH POINTING DEVICE MAPPED INTO KEYBOARD

Thomas J. Kocis, and Philip D. Chidester, both of Austin, Tex., assignors to Dell USA, L.P., Austin, Tex.

Continuation of Ser. No. 813,379, Dec. 23, 1991, abandoned. This application Jul. 21, 1994, Ser. No. 278,690

Int. Cl.[6] H01H *13/70*

U.S. Cl. 361—680 **20 Claims**



1. A computer system comprising:

at least one central processing unit (CPU) having a plurality of inputs, said CPU being configured to recognize a first combination of input signals as a keystroke interrupt and to recognize a second combination of input signals as a pointing-device interrupt;

a keyboard, having an array of binary keys including a special function key and a plurality of pointer keys; and

processor means, operatively connecting said keyboard to said CPU, to detect keystrokes of said keyboard and to drive said inputs of said CPU, said processor means enabling said keyboard to operate in a keyboard mode and in a pointing-device mode in which said pointer keys are used to enter pointing information, said keyboard normally operating in said keyboard mode and being actuated to said pointing-device mode responsive to actuation of said special function key, said processor means being configured and programmed such that in response to actuation of any key or combination of keys thereof while said keyboard is in said keyboard mode, said processor means drives said first combination of input signals to said CPU, and in response to actuation of one or more of said binary keys or one or more pointer keys while said keyboard is in said pointing-device mode, said processor means drives said second combination of input signals to said CPU, wherein said one or more of said binary keys emulates one or more buttons of a pointing device and said pointing keys emulate directional movement of a pointing device.

5,485,615

SYSTEM AND METHOD OF INTERACTIVELY DEVELOPING DESIRED COMPUTER PROGRAMS BY USING PLURALITY OF TOOLS WITHIN A PROCESS DESCRIBED IN GRAPHICAL LANGUAGE

Einar Wennmyr, Haninge, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jun. 10, 1992, Ser. No. 896,659

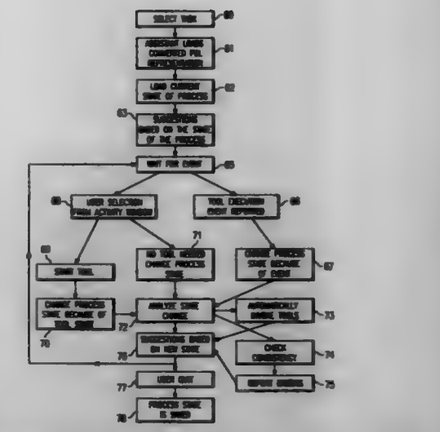
Int. Cl.[6] G06F *15/40*

U.S. Cl. 395—700 **14 Claims**

1. A method of interactively developing computer programs on an interactive system comprising the steps of:

describing in an descriptive language a process using a graphical language illustrating steps necessary to develop said computer program, the descriptive language executable on the interactive system, said process having a plurality of potential states and defining a plurality of steps necessary to develop a desired computer program, and including a specification for each state of the process of at least one responsive action to be taken in developing the desired computer program; and

executing the process by said interactive system to interactively develop the desired computer program, the step of executing including the steps of:



generating an event indicative of the taking of an action by one of a plurality of tools in the development of the desired computer program;

updating of said state of said process to reflect said received event;

analyzing said updated state of said process;

deciding in accordance with the specification of the executing process and the analysis of its updated state at least one suggestion of a responsive procedure to be taken by the tools in developing said computer program; and

compiling said procedure into the computer program comprising executable code.

5,485,616

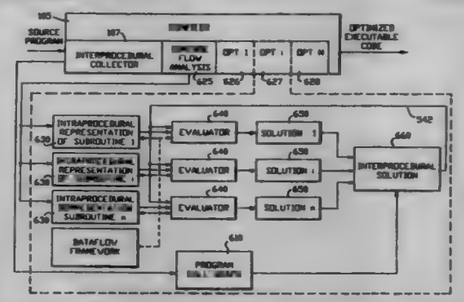
USING PROGRAM CALL GRAPHS TO DETERMINE THE MAXIMUM FIXED POINT SOLUTION OF INTERPROCEDURAL BIDIRECTIONAL DATA FLOW PROBLEMS IN A COMPILER

Michael G. Burke, Yonkers, N.Y.; Paul R. Carini, Sherman, Conn., and Jong-Deok Choi, Mount Kisco, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 12, 1993, Ser. No. 135,199

Int. Cl.[6] G06F *9/44*

U.S. Cl. 395—700 **9 Claims**



1. In a computer processor executing a computer compiler, a computer implemented method performed by the computer compiler for determining the Maximum Fixed Point interprocedural solution of an interprocedural bidirectional data flow problem for a computer program application comprising the steps of:

a. constructing a Program Call Graph of the computer program application, the Program Call Graph having a plurality of Program Call Graph nodes and edges, each Program Call Graph node representing a routine in the computer program application and each Program Call Graph edge connecting two Program Call Graph nodes, a calling Program Call Graph node and a called Program Call Graph node, the Program Call

Graph edge having a direction from the calling Program Call Graph node to the called Program Call Graph node;

b. constructing an intraprocedural representation for each Program Call Graph node, the intraprocedural representation being a flow graph with one or more Intraprocedural Flow Graph nodes, each Intraprocedural Flow Graph node representing a program statement that is able to change a data flow solution, each Intraprocedural Flow Graph having one entry node, one exit node, a call site node for each of zero or more call sites in the routine, and a return point associated with each call site;

c. in the flow graph in each Program Call Graph node, initializing an entry node value for the entry node and an exit node value for the exit node, the entry node value and the exit node value being interprocedural values that represent an interim fixed point interprocedural solution for the routine represented by the Program Call Graph node;

d. for each Program Call Graph node in the Program Call Graph, determining an interim intraprocedural solution by means of a data flow analysis method, the interim intraprocedural solution including a new exit node value at the exit node and a new call site value at each of the call sites, and substituting the new exit node value for the exit node value and the new call site values for the respective call site values;

e. determining a new interim fixed point interprocedural solution for each of the Program Call Graph nodes in topological order in the Program Call Graph by interprocedurally propagating the new exit node value from the exit node to the call site return point of each of the calling Program Call Graph nodes calling the Program Call Graph node interprocedurally propagating the new call site values from the Program Call Graph node call sites to each of the entry nodes of the called program Call Graph nodes called by the Program Call Graph node; and

f. if any interprocedural values have been modified by the iteration performed by step e, then going to step d; otherwise selecting the current interprocedural values as the Maximum Fixed Point interprocedural solution.

5,485,617

METHOD AND SYSTEM FOR DYNAMICALLY GENERATING OBJECT CONNECTIONS

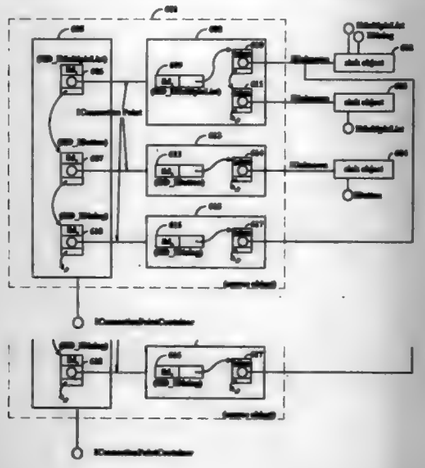
David S. Stutz, Redmond, and Christopher A. Zimmerman, Bellevue, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Dec. 13, 1993, Ser. No. 166,976

Int. Cl.[6] G06F 9/44

U.S. Cl. 395—700 **45 Claims**

1. A method in a computer system for generating an object



connection between a source object and a sink object, the sink object having an instance of an interface that serves as a notification interface for receiving communications from the source object, the notification interface having an associated interface identifier, the source object having instances of a connection point interface, the method comprising the steps of:

receiving a request having an indication of the interface identifier associated with the notification interface of the sink object;

selecting an instance of the connection point interface from among the instances of the connection point interface of the source object, wherein the selection of the instance is based upon the interface identifier indicated in the received request;

sending a reference to the selected connection point interface instance

receiving, through the selected connection point interface instance, a request to connect the source object and the sink object, the request having a reference to the notification interface instance of the sink object; and

storing the reference to the notification interface instance, wherein the source object communicates with the sink object using the stored reference to the notification interface instance.

5,485,618

METHODS AND INTERFACE FOR BUILDING COMMAND EXPRESSIONS IN A COMPUTER SYSTEM

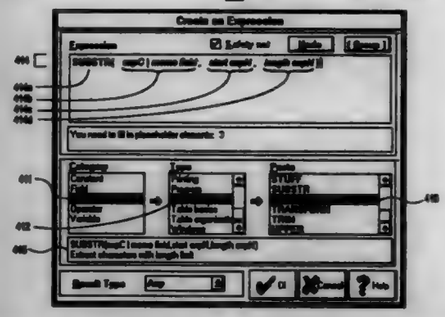
Kenneth W. Smith, Aptos, Calif., assignor to Borland International, Inc., Scotts Valley, Calif.

Filed Dec. 15, 1993, Ser. No. 167,713

Int. Cl.[6] G06F 9/45

U.S. Cl. 395—700 **30 Claims**

1. In a computer system for processing expressions entered by a



user, the expressions comprising a plurality of tokens which evaluate to a result, said plurality of tokens including at least one operator token and at least one operand token, a method for assisting the user with correctly creating an expression, the method comprising:

(a) storing a set of rules specifying valid relationships between adjacent tokens;

(b) receiving user input for placing at least one token in said expression being created;

(c) determining validity of said expression being created by applying at least one of said set of rules to adjacent ones of said at least one token;

(d) if said expression being created is determined not to be valid in step (c), automatically modifying said expression so that validity of said expression being created is maintained; and

(e) if modifying said expression in step (d) results in at least one addition or deletion of tokens from said expression being created, repeating steps (c) and (d) for all said at least one addition or deletion of tokens.

5,485,619

ARRAY VARIABLE TRANSFORMATION SYSTEM EMPLOYING SUBSCRIPT TABLE MAPPING TO SCALAR LOOP INDICES

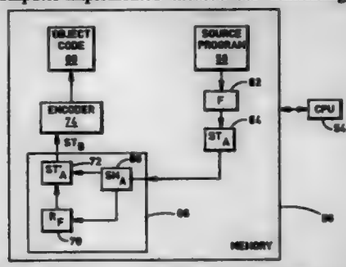
Michael Lal; John L. Ng, and Jin-Fan Shaw, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1993, Ser. No. 174,746

Int. Cl.[6] G06F 9/44;9/40

U.S. Cl. 395—700 **10 Claims**

1. A computer-implemented method for translating an array



variable function F in a source program to obtain executable object code, said array variable function F providing in one or more enclosing DO-loops the transformation of a first array variable A having one or more subscripts $\{a_i\}$ into a second array variable B=F(A) having one or more subscripts $\{b_i\}$, wherein i is a non-zero positive integer, said method comprising the steps of:

creating a subscript table ST_A relating said subscripts $\{a_i\}$ to said enclosing DO-loops for said first array variable A;

(b) transforming said subscript table ST_A according to a first transform operator to create a subscript map SM_A relating an enclosing DO-loops to a plurality of final scalarized DO-loops;

(c) transforming said subscript map SM_A according to a mapping rule R_F to create a new subscript map SM'_A; and

(d) combining said new subscript map SM'_A and said subscript table ST_A to create a new subscript table ST'_A relating said subscripts $\{a_i\}$ to said plurality of final scalarized DO-loops, wherein said new subscript table ST'_A represents a final subscript table ST_B relating said subscripts $\{b_i\}$ to said plurality of final scalarized DO-loops for said second array variable B.

5,485,620

INTEGRATED CONTROL SYSTEM FOR INDUSTRIAL AUTOMATION APPLICATIONS

Ahmad Sadre, Solon; Donald F. Baechtel, Lyndhurst, and Mark S. Graber, Streetsboro, all of Ohio, assignors to Automation System and Products, Inc., Chagrin Falls, Ohio

Filed Feb. 25, 1994, Ser. No. 201,751

Int. Cl.[6] G06F 9/44

U.S. Cl. 395—700 **18 Claims**

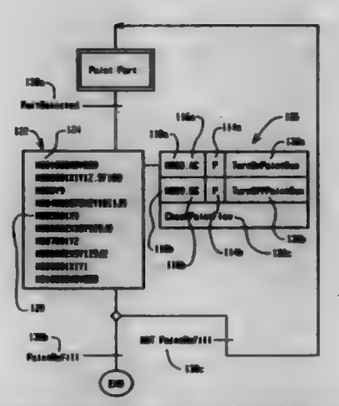
1. An apparatus for the development and execution of an application program having at least one sequential program for controlling at least one sequential machine function and having at least one continuous program for controlling at least one continuous machine function, said apparatus comprising:

means for producing the application program in the form of a diagram, said means for producing including:

means for producing at least one step box having therein a sequential program including one or more sequential program statements, each sequential program statement including a sequential program statement label, and

means for producing at least one action box having therein at least one continuous program identifier for identifying a continuous program, each continuous program identifier associated with at least one sequential program statement label, each said action box associated with one of said at least one step boxes;

execution means for executing said application program; and



means for linking said at least one step box and said at least one action box for producing said application program.

5,485,621

INTERACTIVE METHOD OF USING A GROUP SIMILARITY MEASURE FOR PROVIDING A DECISION ON WHICH GROUPS TO COMBINE

Robert W. Schwanke, North Brunswick, N.J., assignor to Siemens Corporate Research, Inc., Princeton, N.J.

Continuation of Ser. No. 72,355, Jun. 3, 1993, abandoned, which is a continuation of Ser. No. 698,638, May 10, 1991, abandoned. This application Apr. 6, 1994, Ser. No. 224,884

Int. Cl.[6] G06F 9/44

U.S. Cl. 395—700 **1 Claim**

1. A computer-implemented method of using a group similarity measure, for interaction with an analyst, on a plurality of groupie, wherein each of said groups contains software features that can be compared to software features in other groups, said method comprising the following steps:

(a) computing a similarity value between pairs of said groups, using said similarity measure to identify at least one similar pair of groups;

(b) storing said similar pair of groups as computed by said similarity measure; and advancing to step (d) if the similarity value is zero;

(c) determining whether said similar pair can be accepted, as follows:

if the similarity value for said pair is not zero, set the pair aside and repeat step (c);

c1) comparing said pair to a predetermined set of pairs identified as a never-list, if a never-list pair on the never-list is embedded in said pair being compared, that is, said pair being compared is a superset of a corresponding group in the never-list pair, set said pair aside, and repeat step (c);

c2) comparing said pair to a predetermined set of groups identified as a suspension list, if a group in said pair is on the suspension list, set this pair aside, and repeat step (c);

c3) determining whether the two groups associated with said pair have different labels, wherein said labels are compared to a listing of labels on a same-label list, whereby if one of the groups associated with said pair is on the same-label list, set this pair aside and repeat step (c);

c4) if (none of the rules above) steps c1, c2 and c3 do not apply, and said pair has a combined group size less than or equal to a predetermined minimum group size: merge the two groups associated with said pair into a single new group;

c5) label the new group with a label previously associated with the larger of the two groups associated with said pair; go back to step (a);

c6) if said new group is greater than a predetermined maximum automatic group size, skip to step (d);

c7) if said new group is greater than a predetermined maximum automatic group size, set this pair aside, and repeat step (c);

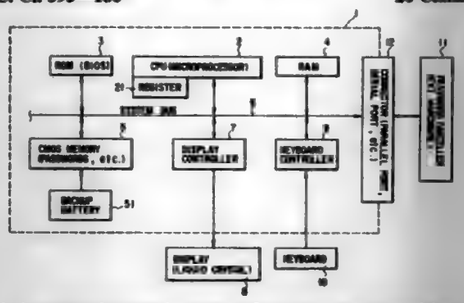
(d) display said pair of groups on a screen and display a group having a similarity value closest to said pair; and also display said pair, a group having label that is most similar to each of the two grgups associated with said pair.

5,485,622

PASSWORD PROCESSING SYSTEM FOR COMPUTER

Masayo Yamaki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 25, 1992, Ser. No. 950,589
Claims priority, application Japan, Jan. 11, 1991, 3-264085
Int. Cl.[6] G06F *1/00;12/14*
U.S. Cl. 395—186 **26 Claims**



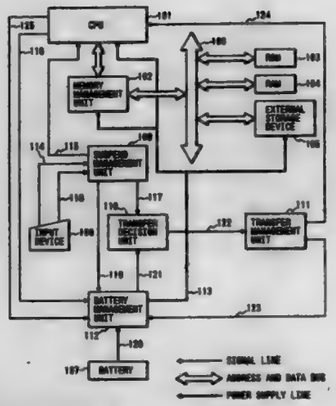
1. A password processing system for a computer, comprising:
first storing means for storing a password necessary for the operation of the system;
querying means to query a user for a response to a password challenge;
second storing means coupled to said first storing means for storing a first program by which whether or not a computer can be started in accordance with a concurrence between the stored password and the response from the user;
third storing means for storing a second program by which the stored password can be discarded or ignored;
first program executing means coupled to said first storing means and said second storing means for executing the first program stored in said second storing means based on the password stored in said first storing means;
connecting means for removably connecting a password bypass device to the password processing system;
providing means, coupled to said third storing means, for providing a password canceling data in response to a connection of the password bypass device by said connecting means; and
second program executing means for executing the second program stored in said third storing means, so as to discard or ignore the password stored in said first storing means when the password cancelling data is provided by said providing means, thereby allowing the computer to start regardless of the password; and wherein said first and second executing means are coupled to said computer.

5,485,623

INFORMATION PROCESSOR HAVING HIGH SPEED AND SAFETY RESUME SYSTEM

Yoshiki Kurokawa, Chigasaki; Kiyokazu Nishioka, Odawara; Hideki Kamimaki, Yokohama, and Yoshifumi Atarashi, Owariasahi, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 3, 1994, Ser. No. 205,708
Claims priority, application Japan, Mar. 10, 1993, 5-049419; Apr. 5, 1993, 5-078161
Int. Cl.[6] G06F *1/26*
U.S. Cl. 395—182.2 **11 Claims**



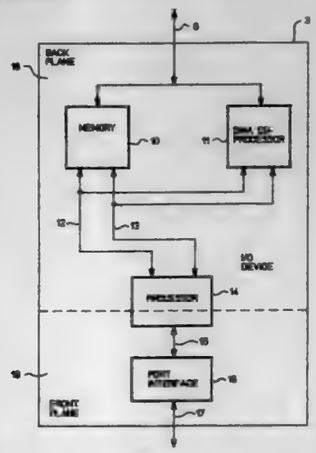
1. An information processor operating on power supplied from battery comprising:
a central processing unit;
a memory management means;
a random access memory;
a read only memory;
a data storage means for holding stored data even if no power is supplied;
an input means for inputting commands;
a battery for supplying power;
a battery management means for receiving power from said battery, for supplying the power selectively to said central processing unit said memory management means, said random access memory, said read only memory, said data storage means, and said input means, and for sending a battery Low signal when the power of said battery becomes insufficient;
a suspend management unit for sending a suspend transaction interrupt signal and a suspend status signal indicating that said information processor is in a suspended state at present when a suspend command is inputted from said input means and for sending a battery management signal for resume when a resume command is inputted from said input means;
a transfer decision unit for generating a transfer transaction trigger signal on the basis of said battery Low signal sent from said battery management means and said suspend status signal sent from said suspend management unit; and
a transfer management unit for sending a battery management signal for transfer to said battery management means and furthermore a transfer transaction interrupt signal to said central processing unit when said transfer transaction trigger signal sent from said transfer decision unit is received,
wherein when said suspend command for suspending the processing of said information processor is given to said suspend management unit from said input means, said suspend management unit sends said suspend transaction interrupt signal to said central processing unit, and said central processing unit having received said suspend transaction interrupt signal stops a job which is in execution at that time and stores data which exists in the central processing unit itself at that time in said random access memory, and thereafter said central processing unit sends a battery management signal for suspend transaction to said battery management means, and said battery management means having received said battery management signal for suspend transaction stops supply of power to said central processing unit, said memory management means, said read only memory, and said data storage means, and accordingly said information processor shifts to said suspended state, and
wherein if said battery power becomes insufficient when said information processor is in said suspended state, said battery management means sends a battery Low signal to said transfer decision unit, and said transfer decision unit sends a transfer transaction trigger signal to said transfer management unit on the basis of said battery Low signal and said suspend status signal which is sent from said suspend management unit already, and said transfer management unit sends a battery management signal for transfer to said battery management means and furthermore a transfer transaction interrupt signal to said central processing unit according to said transfer transaction trigger signal, and said battery management means having received said battery management signal for transfer supplies power to said central processing unit, said memory management means, said read only memory, and said data storage means again, and said central processing unit which is has been started accordingly transfers the data having been stored in said random access memory into said data storage means which can save stored data even if no power is supplied in response to said transfer transaction interrupt signal sent from said transfer management unit.

5,485,624

CO-PROCESSOR MONITORING ADDRESS GENERATED BY HOST PROCESSOR TO OBTAIN DMA PARAMETERS IN THE UNUSED PORTION OF INSTRUCTIONS

Joe H. Steinmetz, Rocklin, and Eric G. Tausbeck, Citrus Heights, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 717,448, Jun. 19, 1991, abandoned. This application Jul. 1, 1994, Ser. No. 269,970
Int. Cl.[6] G06F *15/163*
U.S. Cl. 395—775 **19 Claims**



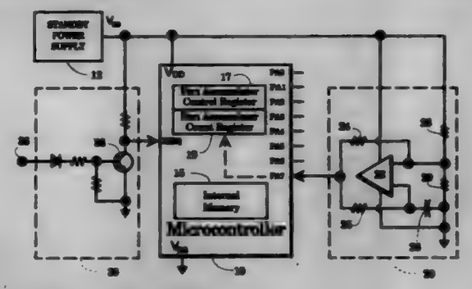
1. A method for obtaining parameters for a co-processor from data accessed by a primary processor from a local memory, the method comprising the steps of:
(a) monitoring, by the co-processor, of addresses generated by the primary processor, the addresses being for accessing memory locations within the local memory;
(b) upon detecting a pre-determined bit pattern within an address generated by the primary processor, accessing, by the co-processor, a parameter within a portion of data addressed by the primary processor, the portion of the data being unused by the primary processor, the co-processor accessing the data as the data is transferred from the local memory to the primary processor, wherein the co-processor is used to perform DMA between an interface card and a host computer, the parameters describe a DMA transaction and the parameters are loaded by the co-processor into DMA registers, the primary processor, the co-processor and the local memory all residing within the interface card.

5,485,625

METHOD AND APPARATUS FOR MONITORING EXTERNAL EVENTS DURING A MICROPROCESSOR'S SLEEP MODE

Gregory T. Gumkowski, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 29, 1992, Ser. No. 906,180
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—800 **7 Claims**



1. An integrated circuit processor
comprising, in combination,
means for executing an instruction to cause said processor to enter a sleep mode during which the operation of the processor is suspended to conserve power,
a reset terminal for receiving an externally produced reset signal,
means within said processor for terminating said sleep mode in response to the receipt of said reset signal,
an input port, and
an accumulator operable during said sleep mode for counting external event signals applied to said input port,
an arrangement for monitoring external conditions occurring during said sleep mode, said arrangement comprising, in combination,
means responsive to a sleep mode initiating signal for initializing said accumulator to a predetermined state and thereafter causing said processor to enter said sleep mode,
a signal source connected to supply a sequence of external event signals to said input port during said sleep mode,
a source of a reset signal connected to said reset terminal for terminating said sleep mode, and
means for processing the value stored in said accumulator at the termination of said sleep mode.

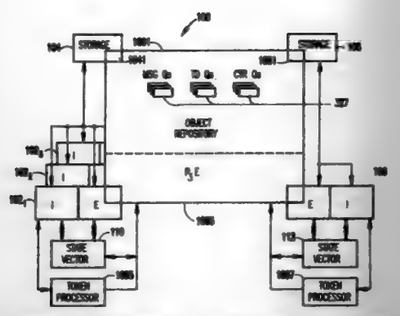
5,485,626

ARCHITECTURAL ENHANCEMENTS FOR PARALLEL COMPUTER SYSTEMS UTILIZING ENCAPSULATION OF QUEUING ALLOWING SMALL GRAIN PROCESSING

Francis D. Lawlor, Austin, Tex.; Jerald E. Leitherer, Port Ewen, and David B. Rolfe, West Hurley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 3, 1992, Ser. No. 970,729
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—650 **8 Claims**

1. A small grain facility for controlling the execution of and communication between interacting computer program processes in a parallel computer system, comprising:
object repository means for storing communication resources including a plurality of message data structures used to store and pass messages between said computer program processes, a plurality of thread dispatching data structures used to store process and program information about a state of said computer program processes, and a plurality of counter data structures used to store counts of occurrences of events within the stages of dispatching and completion of operations of said



computer program processes, said object repository means not being addressable by any of said computer program processes;

parallel execution unit means communicating with said object repository means for executing operation functions of said message data structures, said thread dispatching data structures, and said counter data structures; and

token processor means, connected to said object repository means, responsive to a request in a computer program process for generating a token,

said token capable of being shared by a plurality of said computer program processes,

said token controlling said parallel execution unit to manage communication resources of said parallel computer system by allowing said computer program process access to said communication resources when said token includes a valid context, and

said token processor means being responsive to a request in a computer program process for associating said computer program process to said token.

5,485,627

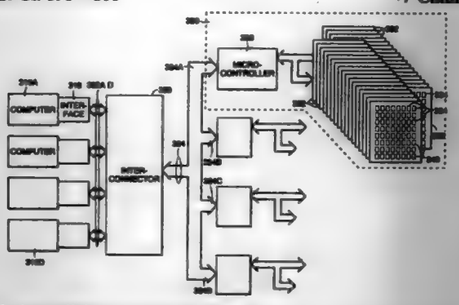
PARTITIONABLE MASSIVELY PARALLEL PROCESSING SYSTEM

W. Daniel Hillis, Cambridge, Mass., assignor to Thinking Machines Corporation, Cambridge, Mass.

Division of Ser. No. 725,395, Jul. 1, 1991, Pat. No. 5,175,865, which is a continuation of Ser. No. 380,757, Jul. 17, 1989, abandoned, which is a continuation of Ser. No. 924,090, Oct. 28, 1986, abandoned. This application Dec. 28, 1992, Ser. No. 997,992

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—800 **7 Claims**



1. A parallel computer comprising:

A. a plurality of processing elements each for processing data in response to commands, each processing element generating a global signal in response to selected conditions during processing, said processing elements further generating messages for transmission to other processing elements in response to selected commands, each message including an address of a destination processing element to receive the message;

B. an interconnection network for receiving messages from the processing elements and for transferring them to destination processing elements in response to their respective addresses;

C. plurality of host computers each for generating commands for controlling the processing of data and the generation of messages by the processing elements; and

D. an interconnector including:

i. a command distribution portion connected to said hosts and said processing elements, said command distribution portion being controlled to selectively establish one or more processing element partitions each comprising a selected disjoint plurality of said processing elements and to further selectively assign a said host computer to a processing element partition, said command distribution portion enabling commands from the host computer assigned to the processing element partition to control the processing elements of the processing element partition while the processing element partition is established; and

ii. a global signal combiner portion for generating, for each processing element partition, a combined global signal representative of the global signals from the processing elements comprising the processing element partition and enabling the combined global signal to be provided to control processing by the processing elements.

5,485,628

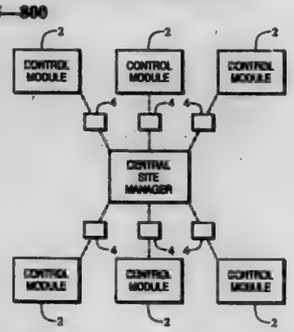
RENEWAL MANAGEMENT SYSTEM

Jay S. Clements, 307 N. Louise, Atlanta, Cass County, Tex. 75551

Filed Jun. 23, 1993, Ser. No. 79,948

Int. Cl.[6] G06F *7/08*

U.S. Cl. 395—800 **4 Claims**



1. A system enabling a central location to control a time interval for actuation of a switch at a plurality of remote locations having control modules, comprising;

a central site controller at the central location for generating a set of programming instructions to provide switch actuation at a remote location after a predetermined period of time and to provide actuation and control of a plurality of progressive alarm modes at the remote location;

portable means for receiving and storing the set of programming instructions generated by the central site controller, and including means for enabling to enable transfer of the set of programming instructions to the plurality of remote locations; and

a plurality of control modules at the plurality of remote locations receiving a set of programming instructions from said portable means and responsive to the set of programming instructions generated by the central site controller for controlling the actuation of a switch at any of the remote locations upon expiration of the predetermined period of time and for controlling actuation of the plurality of progressive alarm modes prior to the expiration of the predetermined period of time, each of the plurality of control modules comprising,

means for reading the set of programming instructions from the portable means for storing;

processing means for generating operating signals in response to the set of programming instructions read by the means for reading;

means connected to the processing means for storing programming instructions for the control module;

means for monitoring the predetermined period of time, said means for monitoring including means for timing time periods between the progressive alarm modes; and

means responsive to the operating signals for actuation of the switch at the remote location,

wherein each alarm mode is activated successively and having programmable time periods between each successive alarm mode.

5,485,629

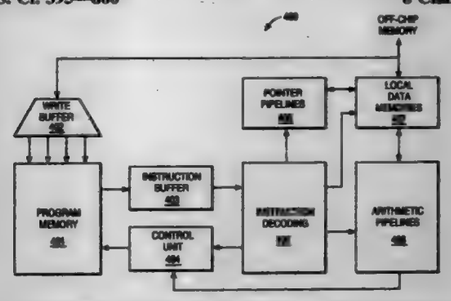
METHOD AND APPARATUS FOR EXECUTING CONTROL FLOW INSTRUCTIONS IN A CONTROL FLOW PIPELINE IN PARALLEL WITH ARITHMETIC INSTRUCTIONS BEING EXECUTED IN ARITHMETIC PIPELINES

Carole Dulong, Saratoga, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 7,833, Jan. 22, 1993, abandoned. This application Jan. 30, 1995, Ser. No. 381,146

Int. Cl.[6] G06F *9/38*

U.S. Cl. 395—800 **6 Claims**



1. A processor for executing pattern recognition routines in a computer system comprising:

an instruction decoder to decode a plurality of pattern recognition instructions, wherein each of said plurality of instructions comprises a Very Long Instruction Word (VLIW) containing at least one control flow instruction for flow control for said pattern recognition routines and at least one arithmetic instruction for data computations corresponding to said pattern recognition routines, and further wherein said at least one control flow instruction is independent of said at least one arithmetic instruction;

a control flow instruction execution pipeline coupled to said instruction decoder to receive and execute only said at least one control flow instruction decoded by and received from said instruction decoder to control flow of said pattern recognition routines, wherein the control flow instruction execution pipeline comprises:

a control register to store data required when executing said at least one control flow instruction; and

an arithmetic operator coupled to said control register to perform arithmetic operations on said data in accordance with said at least one control flow instruction, such that said control flow instruction execution pipeline executes said plurality of decoded control flow instructions in parallel and separately from said at least one arithmetic instruction;

an arithmetic instruction execution pipeline independent of said control flow instruction execution pipeline and coupled to said instruction decoder to receive and execute only said at least one arithmetic instruction decoded by and received from said instruction decoder, wherein execution of said at least one control flow instruction and said at least one arithmetic instruction for said each of said plurality of instructions overlap, such that execution of instructions in VLIW is independent and in parallel in separate pipelines; and

a program memory for storing said plurality of instructions and a program counter to maintain the location in said program memory of said plurality of instructions being executed, and further wherein the control flow instruction execution pipeline controls said program counter, such that said program counter maintains the execution location in said program memory during decoding and execution of said plurality of instructions.

5,485,630

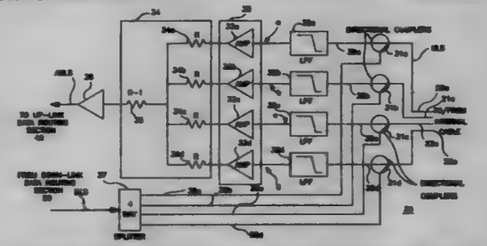
AUDIO/VIDEO DISTRIBUTION SYSTEM

Xinoyang Lee, New York, N.Y., and Steve Lam, Cranbury, N.J., assignors to Panasonic Technologies, Inc., Princeton, N.J.

Filed Mar. 31, 1994, Ser. No. 221,091

Int. Cl.[6] H04N *7/10*; H04H *1/00*

U.S. Cl. 455—4.1 **11 Claims**



1. A signal distribution subsystem adapted for use in a Node "0" device within a Coaxial Bus network that includes a plurality of internal cables coupled to a source of up-link signals located within a first frequency band, the up-link signals including audio/video signals and control channel signals, the distribution subsystem comprising:

active input section means including a plurality of amplifiers and a plurality of filters, each amplifier coupled to a respective filter thereby forming an amplifier-filter pair, each amplifier-filter pair coupled to a respectively different one of the plurality of internal cables for individually filtering and amplifying the respective up-link signals provided by the plurality of cables and for combining the up-link signals;

block converting means coupled to the active input section means for receiving and converting the audio-video signals from the first frequency band to a second frequency band, and for transmitting the converted signals to the active input section means;

control channel regenerator means coupled to the active input section means for: (1) receiving the control channel signal, (2) generating a down-link control channel signal, and (3) transmitting the down-link control channel signal to the active input section means, wherein the converted signals and the down-link control channel signals are transmitted to the internal cables by the active input section means.

5,485,631

MANIFOLD ANTENNA STRUCTURE FOR REDUCING REUSE FACTORS

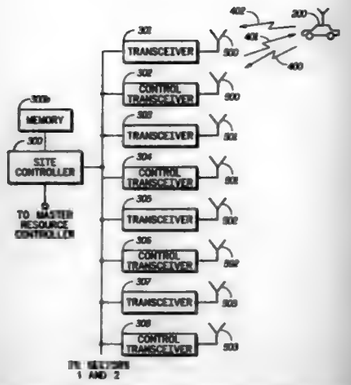
Eugene J. Bruckert, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 659,779, Feb. 22, 1991, abandoned. This application Apr. 14, 1993, Ser. No. 48,558

Int. Cl.[6] H04Q *7/36*

U.S. Cl. 455—33.3 **2 Claims**

1. An apparatus for improving signal quality of a signal communicated on a communication resource within a communication



system between a communication unit located within a service coverage area of a base site of a plurality of base sites within the communication system and the base site, such apparatus comprising:

A) means for sectorizing each service coverage area of the plurality of service coverage areas into substantially identical, orientation specific patterns of at least three sectors;

B) means for assigning at least some resources of the plurality of resources to each sector of the at least three sectors in a substantially identical, orientation specific pattern among the service coverage areas;

C) means for dividing each sector into at least four partially overlapping subsectors, inclusive of the sector, with each subsector substantially covered by a directional antenna; and

D) means for providing communication access on a randomly selected resource of the at least some resources assigned to the sector to an at least one communication unit located within a subsector through the directional antenna, of the at least four directional antennas, covering the subsector in which a signal is received from the at least one communication unit.

5,485,632

METHOD FOR INITIATING AND DETERMINING SIMULCAST TRANSMISSION OF A MESSAGE

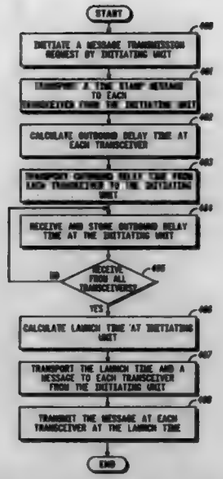
Richard Ng, Palatine; Mark L. Shaughnessy, Algonquin, and Gary W. Grube, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 23,536, Feb. 26, 1993. This application May 28, 1993, Ser. No. 69,045

Int. Cl.[6] H04B *1/00*

U.S. Cl. 455—51.2 **5 Claims**

1. In a simulcast communication system that includes a plurality of sites, a time reference, at least two transceivers, a plurality of communication units, a call processing controller, and an external network gateway, wherein each site of the plurality of sites includes at least one receiver or a transceiver of the at least two transceivers, wherein the plurality of sites are operably linked together, to the call processing controller, and to the external network gateway by a non-star topology digital communication network, and wherein the external network gateway operably couples the simulcast communication system to an external communication system, a method for simulcast transmission of a message and simulcast transmission of a subsequent responsive message, the method comprises the steps of;



a) initiating a message transmission request by a first initiating unit, wherein the first initiating unit is one of a set of the external network gateway, the call processing controller, a transceiver of the at least two transceivers, and a receiver of the at least one receiver in each site;

b) at the first initiating unit, upon receiving a call assignment, transporting a first time stamp message to each of the at least two transceivers via the non-star topology digital communication network;

c) upon receiving the first time stamp message, calculating, by the at least two transceivers, a first outbound delay time, wherein the first outbound delay time is based on the first time stamp message and time when the first time stamp message was received;

d) transporting, by each of the at least two transceivers, the first outbound delay time to the first initiating unit;

e) upon receiving the first outbound delay time from each of the at least two transceivers, calculating, by the first initiating unit, a first launch time based on the first outbound delay time from each of the at least two transceivers;

f) transporting, by the first initiating unit, the first launch time and the message to the at least two transceivers, via the non-star topology digital communication network, wherein the at least two transceivers transmit the message at the first launch time;

g) upon completion of transporting the message, by the first initiating unit, initiating a subsequent responsive message transmission request by a second initiating unit, wherein the second initiating unit is one of a set of the external network gateway, the call processing controller a transceiver of the at least two transceivers, a receiver of the at least one receiver in each site, and wherein the second initiating unit is different than the first initiating unit;

h) at the second initiating unit, upon receiving a subsequent responsive call assignment, transporting a second time stamp message to each of the at least two transceivers via the non-star topology digital communication network;

i) upon receiving the second time stamp message, calculating, by the at least two transceivers, a second outbound delay time, wherein the second outbound delay time is based on the second time stamp message and time when the second time stamp message was received;

j) transporting, by each of the at least two transceivers, the second outbound delay time to the second initiating unit;

k) upon receiving the second outbound delay time from each of the at least two transceivers, calculating, by the second initiating unit, a second launch time based on the second outbound delay time from each of the at least two transceivers; and

l) transporting, by the second initiating unit, the second launch time and the subsequent responsive message to the at least two transceivers, via the non-star topology digital communication network, wherein the at least two transceivers transmit the subseouent responsive message at the second launch time.

5,485,633

METHOD FOR TRANSMITTING A MESSAGE TO MULTIPLE COMMUNICATION UNITS

James J. Burke, 501 Lacy, Streamwood, Ill. 60107; John W. Maher, 2845 Boerderij Way, Woodstock, Ill. 60098, and William A. Thompson, 644 Patton Dr., Buffalo Grove, Ill. 60089

Filed Jun. 1, 1993, Ser. No. 69,795

Int. Cl.[6] H04B *7/26*

U.S. Cl. 455—51.2 **7 Claims**

1. In a communication system comprising a plurality of communication units, a limited number of communication resources, a plurality of broadcast units that transceive the limited number of communication resources, and a communication resource controller that allocates the limited number of communication resources among the plurality of communication units, a method for transmitting at least one message, the method comprising the steps of:

a) identifying communication units of the plurality of communication units to receive the at least one message;

b) identifying, by the communication resource controller, a set of broadcast units of the plurality of broadcast units, wherein each broadcast unit of the set of broadcast units is needed to transmit the at least one message;

c) storing, by the communication resource controller, identities of the set of broadcast units;

d) identifying, by the communication resource controller, non-contending broadcast units and contending broadcast units of the set of broadcast units based on contention information and an order in which the identities of the set of broadcast units were stored;

e) storing, by the communication resource controller, identification of each of the contending broadcast units;

f) transmitting, by the non-contending broadcast units, the at least one message at a substantially identical time; and

g) transmitting, by each of the contending broadcast units, the at least one message when, based on the contention information, contention for the contending broadcast units has been alleviated.

5,485,634

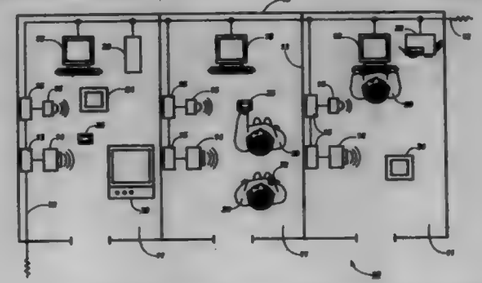
METHOD AND SYSTEM FOR THE DYNAMIC SELECTION, ALLOCATION AND ARBITRATION OF CONTROL BETWEEN DEVICES WITHIN A REGION

Mark D. Weiser, Palo Alto; Richard J. Goldstein, San Francisco; Roy Want; Brent B. Welch, both of Mountain View; Scott A. Elred, Redwood City; David A. Maltz, Mountain View; William N. Schilit, Palo Alto, and Marvin M. Theimer, Mountain View, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 14, 1993, Ser. No. 166,478

Int. Cl.[6] H04B *1/38;17/00*

U.S. Cl. 455—53.1 **2 Claims**



2. A system for servicing requests for resources by mobile controllers, said system comprising

a plurality of stationary resources and a mobile resources present within a partitioned communication cell,

at least one mobile controller movable into the partitioned communication cell, the mobile controller having a control signal mechanism for generating control request signals to control the stationary resources or the mobile resources, with the range of said control request signals substantially limited to the partitioned communication cell, and

a room agent for receiving and acting upon said control request signals, with the room agent dynamically determining availability of both mobile resources entering and exiting said partitioned communication cell and stationary resources present in said partitioned communication cell, the room agent being configured to grant said control request signals from said mobile controller for utilization of mobile and stationary resources located within the partitioned communication cell in accordance with predetermined contextual attributes defined within the partitioned communication cell.

5,485,635

CHANGING A CALL IDENTIFIER FOR CALL TERMINATION IN A DIGITAL TDMA RADIO SYSTEM

Tapio Paavonen, Saarijärvi, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

PCT No. PCT/FI94/00012, § 371 Date Sep. 12, 1994, § 102(e) Date Sep. 12, 1994, PCT Pub. No. WO94/16533, PCT Pub. Date Jul. 21, 1994

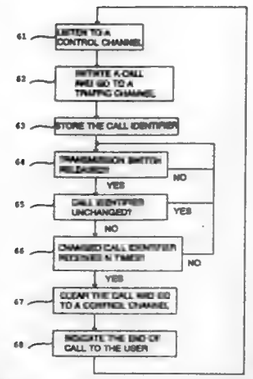
PCT Filed Jan. 11, 1994, Ser. No. 302,787

Claims priority, application Finland, Jan. 11, 1993, 930096

Int. Cl.[6] H04B *7/26;* H04Q *7/30;7/32*

U.S. Cl. 455—54.1 **10 Claims**

1. A call control method in a digital TDMA radio system



comprising mobile radio stations and a fixed radio network with base stations, each of said base stations having at least one carrier for conveying control channels and traffic channels in TDMA time slots, said method comprising steps of:

commanding a mobile station to a traffic channel for a call by signalling performed on a control channel at the beginning of the call,

commanding the mobile station through the traffic channel to terminate the call and to leave the traffic channel at the end of the call,

characterized by steps of:

assigning a call identifier for the call to be established,

sending the call identifier intermittently on the traffic channel during the call,

commanding the mobile station to terminate the call and to leave the traffic channel by changing said call identifier sent on the traffic channel at the end of the call.

DESIGN PATENTS

GRANTED JAN. 16, 1996

ERRATA

For CLASS	See PATENT NO.
D03–208	D366,229

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16
1996
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DESIGNS

JANUARY 16, 1996

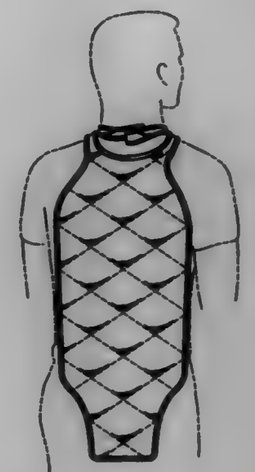
366,131
SEPARABLE MITTEN
Penelope A. Smith, P.O. Box 224, Lemont, Pa. 16851, and Christian S. Elfrig, Knobelsdorffstr. 44, 14059 Berlin, Germany
Filed Feb. 17, 1995, Ser. No. 35,851
Claims priority, application Germany, Nov. 2, 1994, M9408552.8
Term of patent 14 years
U.S. Cl. D2—622



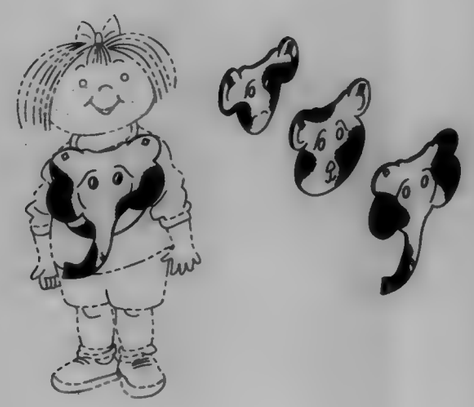
366,132
JACKET
Mary E. Paulson, 2128 St. Charles, Portland, Tex. 78374-2644
Filed Nov. 25, 1994, Ser. No. 31,390
Term of patent 14 years
U.S. Cl. D2—750



366,133
BACK VEST
Paul McLea, 215 Schermerhorn St., Schenectady, N.Y. 12304-4777
Filed Oct. 7, 1994, Ser. No. 26,969
Term of patent 14 years
U.S. Cl. D2—861



366,134
DETACHABLE HID ENSEMBLE
Lois H. Kolligian, 1255 Black Rd., Hamilton, Ohio 45013
Filed Sep. 30, 1994, Ser. No. 29,240
Term of patent 14 years
U.S. Cl. D2—862



366,135
SPORTS SHOE
Charles A. Henderson, Jr., 3359 Foxgate Dr., Memphis, Tenn. 38115, and Gheric E. Bruce, P.O. Box 5034, West Memphis, Ark. 72303
Filed Sep. 3, 1993, Ser. No. 12,527
Term of patent 14 years
U.S. Cl. D2—902



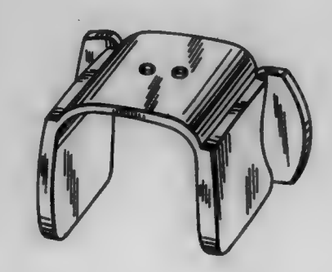
366,136
SKI BOOT
Josef Löcker, and Wolfgang Skerbinjek, both of Voitsberg, Austria, assignors to Koflach Sport Gesellschaft m.b.H. & Co. KG, Austria
Filed Jun. 2, 1994, Ser. No. 23,875
Claims priority, application Austria, Dec. 2, 1993, 3753/93
Term of patent 14 years
U.S. Cl. D2—904



366,137
BOOT FOR ROLLER-SKATES
Ting-Hsing Chen, Tainan, Taiwan, Prov. of China, assignor to Far Great Plastics Industrial Co., Ltd., Tainan, Taiwan, Prov. of China
Filed Jan. 27, 1995, Ser. No. 34,110
Term of patent 14 years
U.S. Cl. D2—904



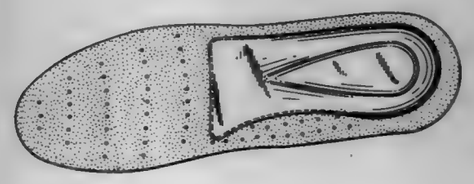
366,138
ARTICLE CARRIER ATTACHABLE TO FOOTWEAR
Alan J. Solo, 1835 Burnett St., Brooklyn, N.Y. 11229
Filed Nov. 4, 1994, Ser. No. 30,696
Term of patent 14 years
U.S. Cl. D2—946



366,139
SHOE SOCK LINING
Norman H. Finn, Newton, Mass., assignor to AmAsia International, Ltd., Burlington, Mass.
Filed Jun. 29, 1994, Ser. No. 25,310
Term of patent 14 years
U.S. Cl. D2—961



366,140
SHOE SOCK LINING
Norman H. Finn, Newton, Mass., assignor to AmAsia International, Ltd., Burlington, Mass.
Filed Jun. 29, 1994, Ser. No. 25,311
Term of patent 14 years
U.S. Cl. D2—961



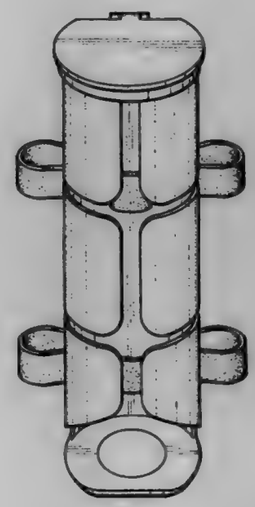
366,141
SHOE UPPER
Peter von Conta, Newton, Mass., assignor to The Rockport Company, Inc., Marlboro, Mass.
Filed Jan. 31, 1995, Ser. No. 34,242
Term of patent 14 years
U.S. Cl. D2—970



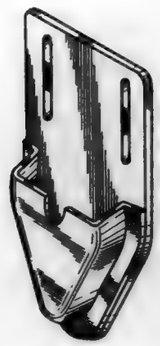
366,142
DEER HUNTER'S URINAL BAG
Jeffery E. Becker, 336 L R.D. #3, Hanover, Pa. 17331
Filed Apr. 22, 1994, Ser. No. 21,720
Term of patent 14 years
U.S. Cl. D3—221



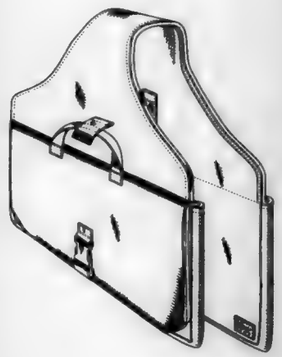
366,143
TENNIS BALL CARRIER
Eri Guzman, c/o Guzman & Company Santa Cruz Medical Building No. 73, Suite 214, Bayamon, Puerto Rico
Filed Sep. 30, 1994, Ser. No. 29,196
Term of patent 14 years
U.S. Cl. D3—221



366,144
CHALK LINE HOLSTER
Antonio D. Alves, 100 Pear St., Palmyra, N.J. 08065
Filed Sep. 14, 1994, Ser. No. 28,400
Term of patent 14 years
U.S. Cl. D3—228



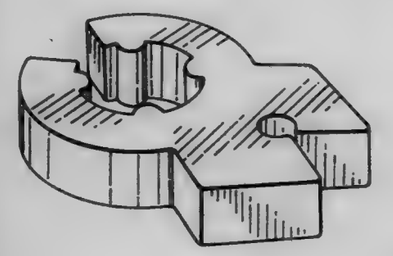
366,145
UTILITY BAG
Gregory P. Hankins, 3808 Beechwood Dr., Lee's Summit, Mo. 64064, and Albert L. Hankins, 13613 E. 41st Ter., Independence, Mo. 64055
Filed May 17, 1994, Ser. No. 23,077
Term of patent 14 years
U.S. Cl. D3—231



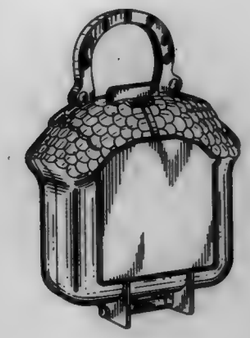
366,146
COMBINED HUNTING LICENSE HOLDER WITH PEN
Robert V. Bertrand, P.O. Box 158, Drasco, Ark. 72530
Filed Jan. 13, 1993, Ser. No. 3,665
Term of patent 14 years
U.S. Cl. D3—249



366,147
FISHING ROD CONNECTOR
Arnold Marks, St. Catharines, Canada, assignor to Maritime Innovations Inc., St. Catharines, Canada
Filed Sep. 22, 1994, Ser. No. 28,754
Term of patent 14 years
U.S. Cl. D3—260



366,148
CASE
Risa Hope, Mt. Kisco, N.Y., assignor to Sky Kids Inc., Cresskill, N.J.
Filed Dec. 15, 1994, Ser. No. 32,235
Term of patent 14 years
U.S. Cl. D3—271



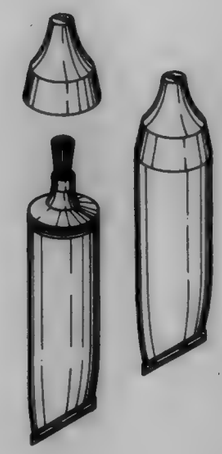
366,149
PAGER ACCESSORY BELT HOOK LANYARD
Andrea L. Garza, Lake Worth, Fla.; Gary Prokop, Wheaton, and David Pacchini, Chicago, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 27, 1994, Ser. No. 30,331
Term of patent 14 years
U.S. Cl. D3—328



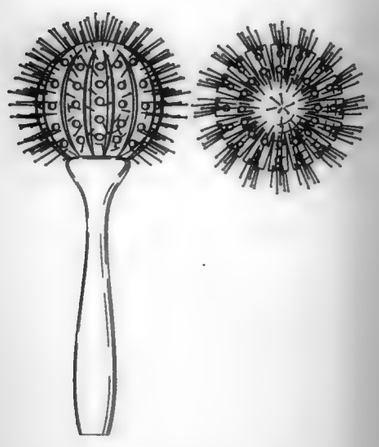
366,150
COMBINED PAINTBRUSH AND PAINT CAN OPENER
Dale R. Suchomel, 1710 Pennsylvania Ave., Sun Prairie, Wis. 53590
Filed Oct. 12, 1993, Ser. No. 14,067
Term of patent 14 years
U.S. Cl. D4—116



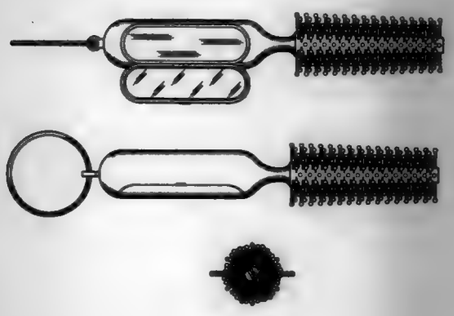
366,151
COMBINED TUBE DISPENSER, BRUSH AND CAP
Dan Norris, Country Rd. 5290 #3, Farmington, N.M. 87401
Filed Jun. 30, 1994, Ser. No. 25,353
Term of patent 14 years
U.S. Cl. D4—116



366,152
VENTED HAIRBRUSH
Sabrina S. Denebeim, 260 Avila St., San Francisco, Calif. 94123
Filed Jul. 15, 1994, Ser. No. 25,915
The portion of the term of this patent subsequent to Jan. 2, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D4—128



366,153
MINATURE HAIRBRUSH
Bernice M. Stoller, 1640 Pfingsten Rd., Northbrook, Ill. 60062
Filed Aug. 5, 1994, Ser. No. 26,805
Term of patent 14 years
U.S. Cl. D4—128



366,154
WILLOW CAMOUFLAGE PATTERN FOR TEXTILES
Rodney G. Bick, P.O. Box 174, Batchtown, Ill. 62006, and James F. Pluester, Rte. 1, Hardin, Ill. 62047
Filed Feb. 21, 1995, Ser. No. 35,148
Term of patent 14 years
U.S. Cl. D5—32



366,155
ENLARGED SHOULDER ATTACHMENT FOR GARMENT HANGER
Diana G. Fogle, 1854 Renoir Ave., Davis, Calif. 95616
Filed Dec. 19, 1994, Ser. No. 32,468
Term of patent 14 years
U.S. Cl. D6—328



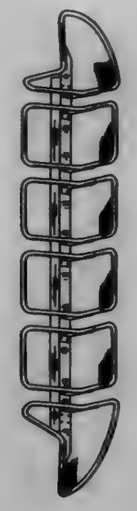
366,156
LAWN SWING
Martin Babcock, 2214 Tower Ct., Woodbury, Minn. 55125, and George Knutsen, 10051 Kerry Ct., Hugo, Minn. 55038
Filed Jan. 18, 1995, Ser. No. 33,716
Term of patent 14 years
U.S. Cl. D6—346



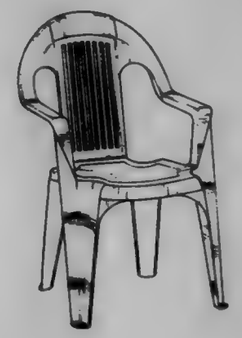
366,157
MUSICAL ROCKING CHAIR
Emma L. Moses, 10641 Satinwood, and Carol D. McGuire, 618 Palms Bay Ct., #114, both of Orlando, Fla. 32825
Continuation of Ser. No. 18,560, Feb. 9, 1994, abandoned. This application Jan. 17, 1995, Ser. No. 33,562
Term of patent 14 years
U.S. Cl. D6—348



366,158
SEAT
Heinz Wirth, Aalen-Oberalfingen, Germany, assignor to Eisen- und Drahtwerk Erlau Aktiengesellschaft, Aalen, Germany
Filed Jul. 19, 1993, Ser. No. 10,839
Claims priority, application Germany, Jan. 19, 1993, 93 00 355.2
Term of patent 14 years
U.S. Cl. D6—362



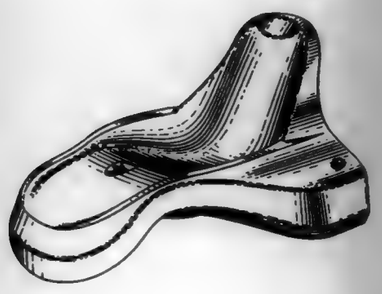
366,159
CHAIR
Saul Sagol, Ramat HaSharon, Israel, assignor to Keter Plastic Ltd, Herzlyia, Israel
Filed Sep. 1, 1994, Ser. No. 27,982
Claims priority, application Israel, Mar. 3, 1994, 22287
Term of patent 14 years
U.S. Cl. D6—370



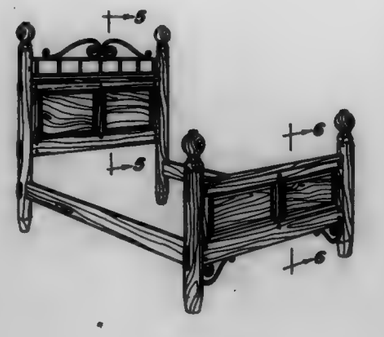
366,160
SEAT
Guy A. Walters, III, High Point, and Avis E. Tobin, Jr., Thomasville, both of N.C., assignors to Thomasville Furniture Industries, Inc., Thomasville, N.C.
Filed Oct. 20, 1994, Ser. No. 29,998
Term of patent 14 years
U.S. Cl. D6—370



366,161
FLOATING CHAIR
Pierre Arcouette, R.R. 3, Rte. 243, Mansonville, Quebec, Canada
Filed Oct. 18, 1994, Ser. No. 29,825
Term of patent 14 years
U.S. Cl. D6—375



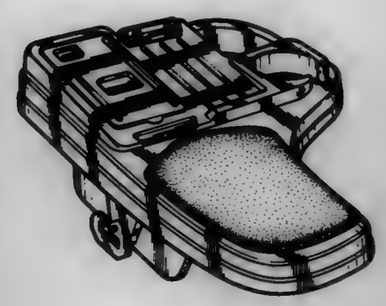
366,162
BED
Michael J. Paus, High Point, N.C., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Mar. 25, 1994, Ser. No. 20,441
Term of patent 14 years
U.S. Cl. D6—393



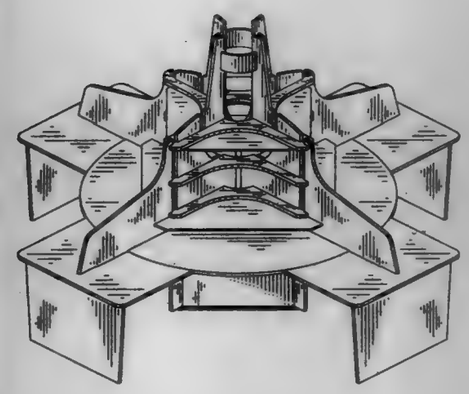
366,163
PLANT STAND
Claudio S. Ribeiro, 458 - 6th St., Garden Apartment, Brooklyn, N.Y. 11215
Filed Jan. 30, 1995, Ser. No. 34,200
Term of patent 14 years
U.S. Cl. D6—403



366,164
PORTABLE DESK FOR USE IN A VEHICLE
Carl B. McKee, 29971 Homedale, New Hudson, Mich. 48165
Filed Aug. 23, 1994, Ser. No. 27,510
Term of patent 14 years
U.S. Cl. D6—406



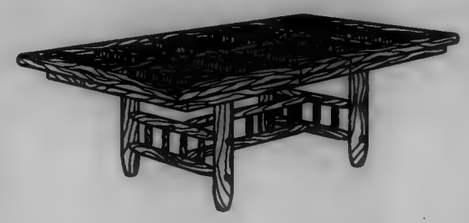
366,165
MULITIPLE STUDY MODULE
Philip Holsinger, Pittsburg; John Bero, Frontenac, and Ron Moran, Pittsburg, all of Kans., assignors to Pitsco, Inc., Pittsburg, Kans.
Filed Mar. 20, 1995, Ser. No. 36,514
Term of patent 14 years
U.S. Cl. D6—421



366,166
SIDEBOARD
Guy A. Walters, III, High Point, and Avis E. Tobin, Jr., Thomasville, both of N.C., assignors to Thomasville Furniture Industries, Inc., Thomasville, N.C.
Filed Oct. 20, 1994, Ser. No. 29,983
Term of patent 14 years
U.S. Cl. D6—447



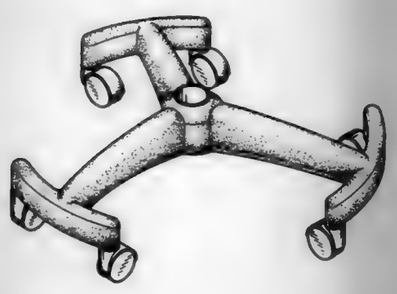
366,167
TABLE
Michael J. Paus, High Point, N.C., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Mar. 25, 1994, Ser. No. 20,494
Term of patent 14 years
U.S. Cl. D6—480



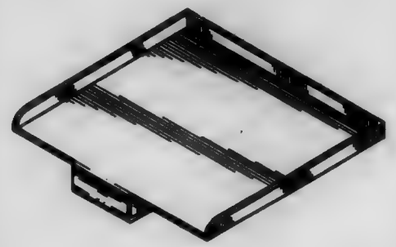
366,168
TABLE
Michael J. Paus, High Point, N.C., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Mar. 24, 1994, Ser. No. 20,398
Term of patent 14 years
U.S. Cl. D6—488



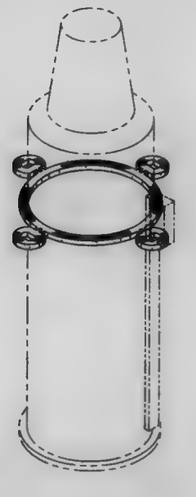
366,169
PEDESTAL BASE FOR A CHAIR
Ching-Feng Huang, No. 42-4, Mintsu Rd., Hsinying City, Tainan Hsien, Taiwan, Prov. of China
Filed Dec. 12, 1994, Ser. No. 32,017
Term of patent 14 years
U.S. Cl. D6—498



366,170
TRAY TABLE FOR A DECK
Charles E. Temple, 1073 Stafford Rd., Apt. 1 South, Tiverton, R.I. 02878
Filed Sep. 26, 1994, Ser. No. 28,596
Term of patent 14 years
U.S. Cl. D6—511



366,171
TOOTHBRUSH HOLDING DEVICE FOR A TOOTHPASTE CANISTER
Mark A. Green, 3729 Greymont Dr., San Jose, Calif. 95136
Filed Jan. 30, 1995, Ser. No. 34,208
Term of patent 14 years
U.S. Cl. D6—534



366,172
HEX KEYS HOLDING CASE
François P. Quirin, Meudon, France, assignor to FACOM, Morangis, France
Filed Mar. 24, 1994, Ser. No. 20,310
Term of patent 14 years
U.S. Cl. D6—553



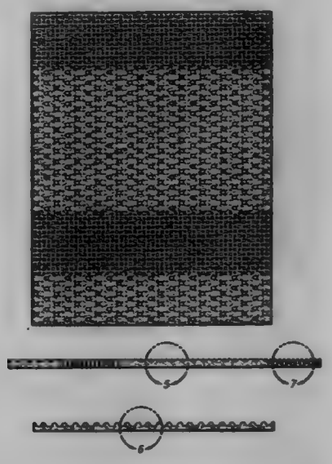
366,173
CURTAIN VALANCE
Udo Oknakowski, Vorariberg, Austria, assignor to Bandex Bandweberei Gesellschaft m.b.H., Vorariberg, Austria
Continuation of Ser. No. 12,824, Sep. 10, 1993, Pat. No. Des. 360,553. This application Oct. 5, 1994, Ser. No. 29,406
Claims priority, application Austria, Mar. 25, 1993, 952/93
Term of patent 14 years
U.S. Cl. D6—579



366,174
VERTICAL BLIND SLAT
Kyle R. Knuteson, Madison, Wis., assignor to Springs Window Fashions Division, Inc., Middleton, Wis.
Filed Oct. 20, 1994, Ser. No. 29,953
Term of patent 14 years
U.S. Cl. D6—580



366,175
MATTRESS CUSHION
Vincenzo A. Bonaddio, Rancho Santa Margarita, and Feyyaz O. Baskent, Newport Beach, both of Calif., assignors to Foamex L.P., Linwood, Pa.
Filed Nov. 30, 1994, Ser. No. 31,515
Term of patent 14 years
U.S. Cl. D6—596



366,176
DECORATIVE PILLOW
Ann Gish, 3529 Old Conejo Rd. #117, Newbury Park, Calif. 91320
Filed Nov. 22, 1994, Ser. No. 31,325
Term of patent 14 years
U.S. Cl. D6—601

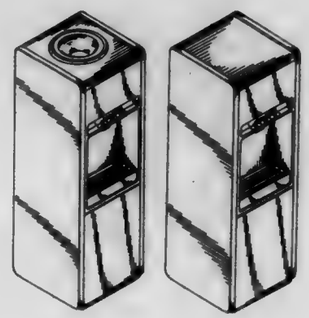


366,177
GROUND PAD
William F. Dean, Wichita Falls, Tex., assignor to Robert S. Scheurer, Wichita Falls, Tex.
Filed Dec. 6, 1994, Ser. No. 31,777
Term of patent 14 years
U.S. Cl. D6—605

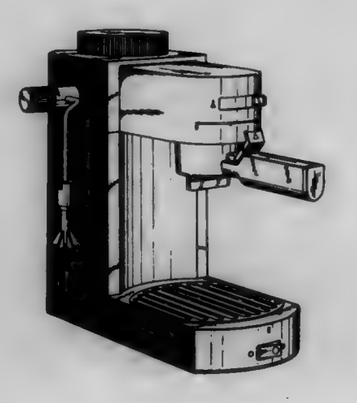
366,178
UTENSIL
Jay A. Edwards, Chicago, Ill.; Edmund A. Weaver, Racine, Wis., and Anne C. Bucher, Palatine, Ill., assignors to Kraft Foods, Inc., Northfield, Ill.
Filed Mar. 20, 1995, Ser. No. 36,400
Term of patent 14 years
U.S. Cl. D7—644



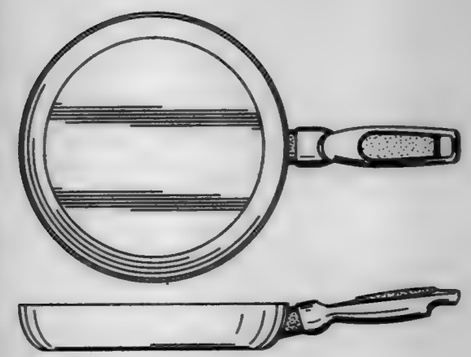
366,179
BEVERAGE DISPENSING CABINET
Jon W. Hauser, II, Geneva, and Ronald C. Katz, Hinsdale, both of Ill., assignors to Elkay Manufacturing Company, Oak Brook, Ill.
Filed Feb. 28, 1994, Ser. No. 19,300
Term of patent 14 years
U.S. Cl. D7—307



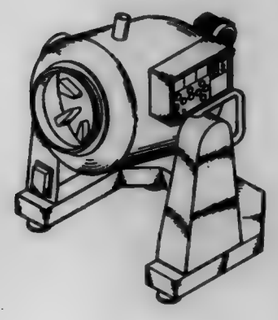
366,180
ESPRESSO-MACHINE
Ludwig Littmann, Kronberg, Germany, assignor to Braun Aktiengesellschaft, Kronberg, Germany
Filed Jul. 19, 1994, Ser. No. 26,081
Claims priority, application WIPO, Feb. 3, 1994, DM/028604
Term of patent 14 years
U.S. Cl. D7—309



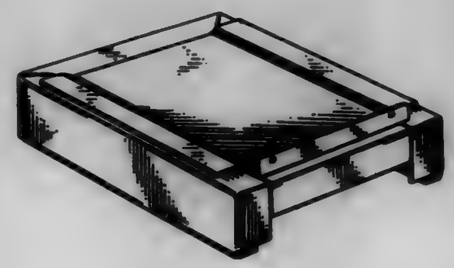
366,181
FRYING-PAN
Gil-Francois Rossiaud, Annecy, France, assignor to Tefal S.A., Rumilly, France
Filed Jun. 6, 1994, Ser. No. 23,986
Claims priority, application France, Dec. 10, 1993, 936478
Term of patent 14 years
U.S. Cl. D7—361



366,182
AGITATOR FOR FRIED FOOD
Chin-Yan Hsieh, No. 97, Lane 211, Neiwei Rd., Kaohsiung District, Kaohsiung City, Taiwan, Prov. of China
Filed Nov. 15, 1994, Ser. No. 31,223
Term of patent 14 years
U.S. Cl. D7—376



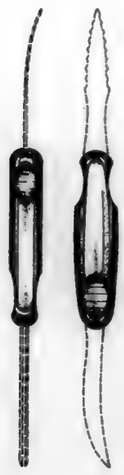
366,183
SPACER FOR BEVERAGE BREWING APPARATUS
Ivan Sinclair, 53 La Cresta Rd., Orinda, Calif. 94563
Filed May 3, 1994, Ser. No. 22,329
Term of patent 14 years
U.S. Cl. D7—388



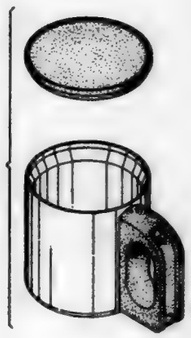
366,184
HANDLE FOR KITCHEN UTENSILS
Karl-Erich Koch, Cham, Switzerland, assignor to AMC International ALFA Metalcraft Corporation AG, Switzerland
Filed Jan. 27, 1994, Ser. No. 18,038
Claims priority, application Hague Agreement, Aug. 5, 1993, DMA/002250
Term of patent 14 years
U.S. Cl. D7—395



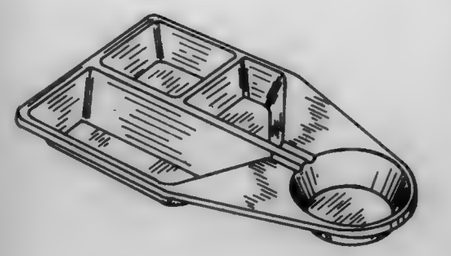
366,185
FRUIT KNIFE HANDLE
Gunnar Lie, 9309 Olympic View Dr., Edmonds, Wash. 98020
Filed Nov. 15, 1994, Ser. No. 31,239
Term of patent 14 years
U.S. Cl. D7—401.2



366,186
CUP WITH LID
Rikiya Kato, Tokyo, Japan, assignor to Nippon Sanso Corporation, Tokyo, Japan
Filed Sep. 15, 1994, Ser. No. 28,579
Term of patent 14 years
U.S. Cl. D7—536



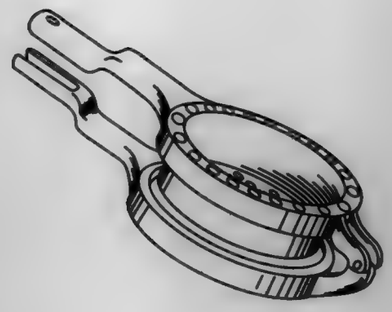
366,187
FOOD TRAY
Jan M. Van Den Kieboom, 9023 Glenwood Dr., Greendale, Wis. 53129
Filed Aug. 10, 1994, Ser. No. 26,959
Term of patent 14 years
U.S. Cl. D7—553



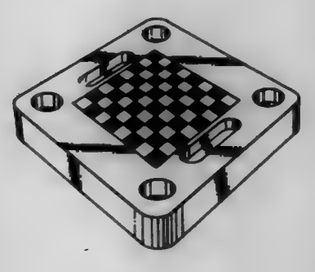
366,188
COMBINED HOLDER AND PRESS FOR TEA-BAGS
Roger Norenberg, Lillmosevägen 12, S-663 42 Skoghall, Sweden
Filed Sep. 9, 1994, Ser. No. 28,252
Claims priority, application Sweden, Mar. 16, 1994, 94-0615
Term of patent 14 years
U.S. Cl. D7—666



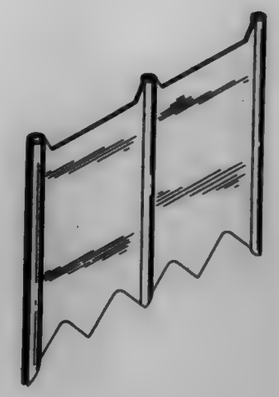
366,189
DRAINING PRESS FOR CANNED GOODS
David Bidlack, R.R. #1, Box 41A, Ulster, Pa. 18850
Filed Sep. 19, 1994, Ser. No. 28,658
Term of patent 14 years
U.S. Cl. D7—666



366,190
FLOATING BEVERAGE TRAY
Curt Vance, 8624-172 Street, Edmonton, Alberta, Canada, and Shannon MacDonald, R.R.1 St. Albert, Alberta, Canada
Filed Sep. 15, 1994, Ser. No. 28,449
Term of patent 14 years
U.S. Cl. D7—708



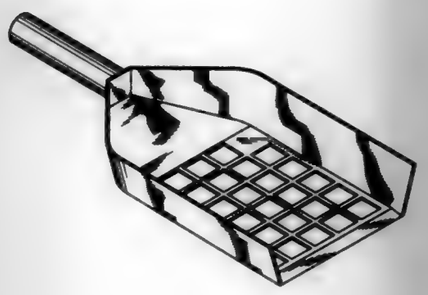
366,191
LAWN EDGE
G. Thomas Gay, 3275 Georgian Ct., Erie, Pa. 16506
Filed Jan. 24, 1994, Ser. No. 17,871
Term of patent 14 years
U.S. Cl. D8—1



366,192
POLYMER INJECTION WAND
Levant G. Dunning, 8621 Coolwoods Way, Sacramento, Calif. 95828, and Ardith A. Dunning, 200 Cappucino Way, Sacramento, Calif. 95838
Filed Dec. 16, 1994, Ser. No. 32,364
Term of patent 14 years
U.S. Cl. D8—2



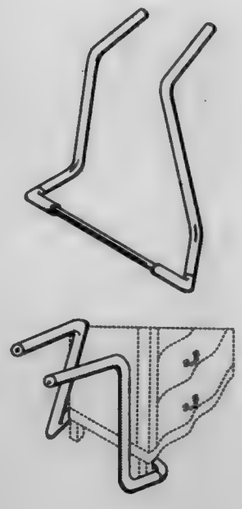
366,193
EMBER SIFTER
Jack W. Ozburn, 30205 Sunny Slope, Box 4, Sanger, Calif. 93657
Filed Jul. 18, 1994, Ser. No. 25,945
Term of patent 14 years
U.S. Cl. D8—10



366,194
BULB CHANGER
Arthur W. Seefeldt, 1385 E. Tobacnoir St., Kaukauna, Wis. 54130
Filed Nov. 14, 1994, Ser. No. 30,951
Term of patent 14 years
U.S. Cl. D8—14



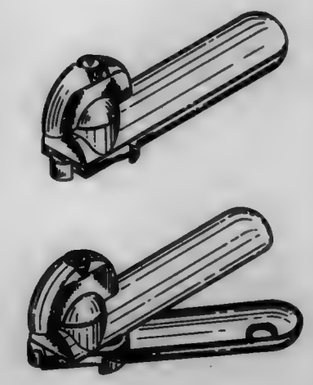
366,195
FURNITURE MOVER
Lawrence J. Hammond, and Nancy E. Hammond, both of 31 Brescia Blvd., Highland, N.Y. 12528
Filed Nov. 21, 1994, Ser. No. 31,280
Term of patent 14 years
U.S. Cl. D8—14



366,196
INSULATION HANDLER
Nick Guia, and Margaret B. Guia, both of 18652 Bert Rd., Riverside, Calif. 92508
Filed Dec. 1, 1994, Ser. No. 31,647
Term of patent 14 years
U.S. Cl. D8—14



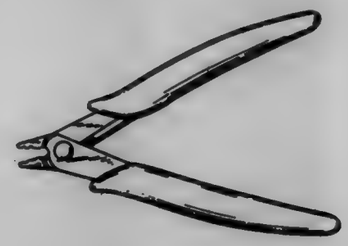
366,197
CAN OPENER
Douglas M. Lalb, Kissimmee, Fla., assignor to Dart Industries, Inc., Deerfield, Ill.
Filed Dec. 12, 1994, Ser. No. 31,978
Term of patent 14 years
U.S. Cl. D8—41



366,198
CORKSCREW
Douglas M. Lalb, Kissimmee, Fla., assignor to Dart Industries, Inc., Deerfield, Ill.
Filed Dec. 12, 1994, Ser. No. 32,036
Term of patent 14 years
U.S. Cl. D8—42



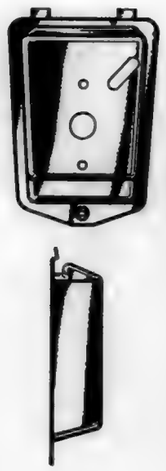
366,199
CRIMPING PLIERS
W. Scott Bartky, Chicago, Ill., assignor to Ari Imports, Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 187,709, Jan. 27, 1994, Pat. No. 5,426,843, which is a continuation-in-part of Ser. No. 3,321, Jan. 12, 1993, abandoned. This application Jul. 22, 1994, Ser. No. 26,215
Term of patent 14 years
U.S. Cl. D8—52



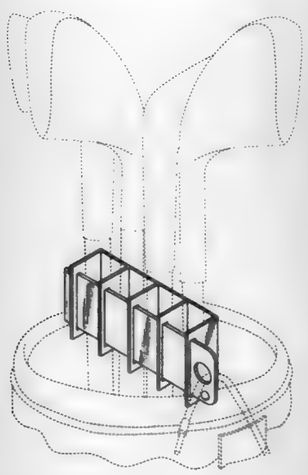
366,200
COMBINED TOOL HANDLE AND TOOL HANDLE WEDGE
Ciro Di Vittorio, Fremont, Calif., assignor to James V. Mattucci, Campbell, Calif.
Continuation-in-part of Ser. No. 668,178, Mar. 12, 1991, Pat. No. 5,152,629. This application May 6, 1992, Ser. No. 878,895
Term of patent 14 years
U.S. Cl. D8—107



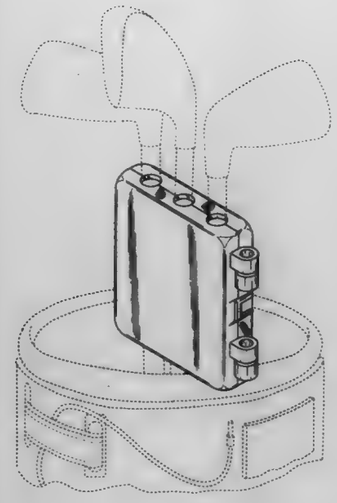
366,201
LOCKER HANDLE WITH INTEGRAL DOOR PULL
Krishan K. Saini, Collegeville, and Bruce A. Brebner, Jr, Levittown, both of Pa., assignors to Penco Products, Inc., Oaks, Pa.
Filed Dec. 19, 1994, Ser. No. 32,429
Term of patent 14 years
U.S. Cl. D8—300



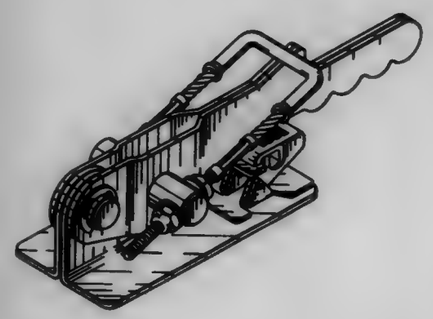
366,202
LOCKING DEVICE FOR GOLF CLUBS
Thomas Murphy, 716 Princeton Blvd. #27, Lowell, Mass. 01851
Filed Jan. 6, 1995, Ser. No. 33,188
Term of patent 14 years
U.S. Cl. D8—333



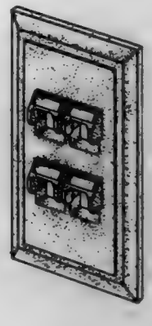
366,203
DEVICE FOR LOCKING GOLF CLUBS
Thomas Murphy, 113 Elm St., Stoneham, Mass. 02180
Filed Jan. 12, 1995, Ser. No. 33,405
Term of patent 14 years
U.S. Cl. D8—333



366,204
HANDLE OPERATED DRAW LATCH ASSEMBLY WITH LOCKABLE SAFETY CATCH
Lee S. Weinerman, Medina, and Arthur J. Kuminski, Parma, both of Ohio, assignors to The Eastern Company, Cleveland, Ohio
Filed Apr. 25, 1995, Ser. No. 37,952
Term of patent 14 years
U.S. Cl. D8—338



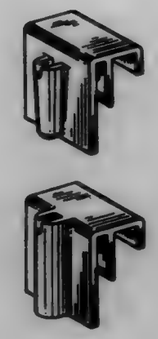
366,205
FACE PLATE INCLUDING ICON DISPLAY UNIT(S)
Jaime R. Arnett, Fishers, and W. John Denkmann, Cicero, both of Ind., assignors to AT&T Corp., Murray Hill, N.J.
Filed Oct. 11, 1994, Ser. No. 30,431
Term of patent 14 years
U.S. Cl. D8—353



366,206
DESIGN FOR A SHOWER CURTAIN RING
Timothy A. Hegan, Jr., Fairfield, Conn., and Robert M. Huff, Clark, N.J., assignors to Springs Industries, Inc., Fort Mill, S.C.
Filed Sep. 30, 1994, Ser. No. 29,250
Term of patent 14 years
U.S. Cl. D8—367



366,207
STORE DISPLAY BRACKET
David G. Thompson, Toledo, Ohio, assignor to Valley Plastic Co., Ltd., Perrysburg, Ohio
Filed Feb. 15, 1995, Ser. No. 34,897
Term of patent 14 years
U.S. Cl. D8—373



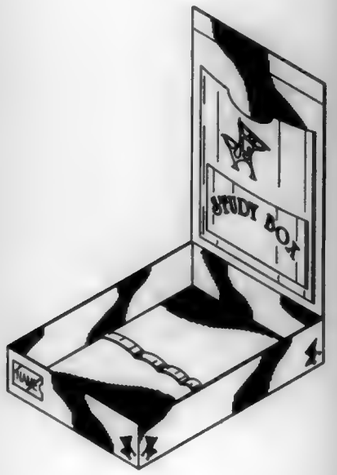
366,208
BACK SUPPORT BRACKET FOR BUTTERFLY CHAIRS
Anthony W. Merchlewitz, Fairbault, Minn., assignor to Lake Country Sales, Inc., Elysian, Minn.
Filed Mar. 21, 1994, Ser. No. 28,135
Term of patent 14 years
U.S. Cl. D8—382



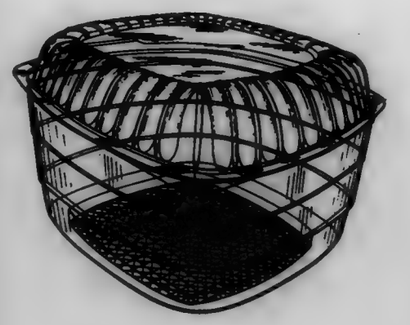
366,209
BOTTLE
Lee K. Farlander, 4211 W. Platt St., Tampa, Fla. 33609; Larry W. Seymour, 1479 St. Andrews Dr., Broomfield, Colo. 80020, and Terrance E. Rhodes, 4590 Peak View, Erie, Colo. 80516
Filed Mar. 9, 1995, Ser. No. 35,925
Term of patent 14 years
U.S. Cl. D9—307



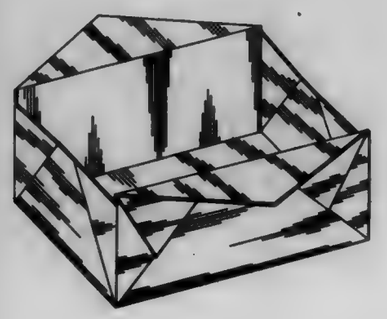
366,210
BOX STYLE CONTAINER
Stanley J. McConner, 5907 N. Placita Del Conde, Tucson, Ariz. 85718
Filed Dec. 5, 1994, Ser. No. 31,741
Term of patent 14 years
U.S. Cl. D9—423



366,211
CONTAINER
John C. Buff, Jupiter, Fla., and Joseph C. Cruz, Ontario, Canada, assignors to Associated Packaging Enterprises, Inc., Kitchener, Canada
Filed Oct. 24, 1994, Ser. No. 30,221
Term of patent 14 years
U.S. Cl. D9—425



366,212
CONTAINER
Eric Jones, 219 Bard Ave., Staten Island, N.Y. 10310
Continuation-in-part of Ser. No. 874,390, Apr. 27, 1992, Pat. No. 5,314,112. This application Feb. 18, 1994, Ser. No. 18,987
Term of patent 14 years
U.S. Cl. D9—433



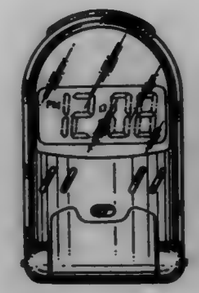
366,213
BOTTLE
Francois Bompard, Issy Les Moulineaux, France, assignor to Laboratories De Biologie Vegetale Yves Rocher, France
Filed Jun. 14, 1994, Ser. No. 24,412
Claims priority, application France, Mar. 31, 1994, 94 1884
Term of patent 14 years
U.S. Cl. D9—503



366,214
BOTTLE
Norton J. Cooper, Philadelphia, Pa., assignor to Clabum International Incorporated, Wilmington, Del.
Filed Feb. 13, 1995, Ser. No. 34,836
Term of patent 14 years
U.S. Cl. D9—520



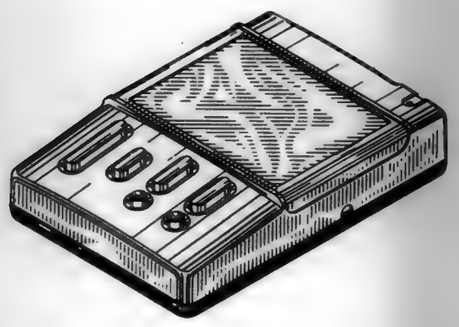
366,215
TRAVEL CLOCK
Cheng F. W. George, Shin Fai Terrace, and Yu P. Hop, Kwai Chung, both of, Hong Kong, assignors to Tomar Electronics Ltd., Quarry Bay, Hong Kong
Filed May 10, 1994, Ser. No. 22,956
Claims priority, application United Kingdom, Nov. 18, 1993, 2035118
Term of patent 14 years
U.S. Cl. D10—18



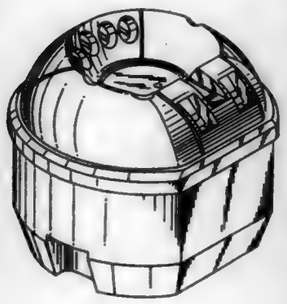
366,216
WRISTWATCH
Giovanni Bulgari, Rome, Italy, assignor to Gianni Bulgari, S.p.A., Rome, Italy
Filed Sep. 7, 1993, Ser. No. 12,596
Claims priority, application WIPO, Mar. 9, 1993, DMA/ 902661
Term of patent 14 years
U.S. Cl. D10—39



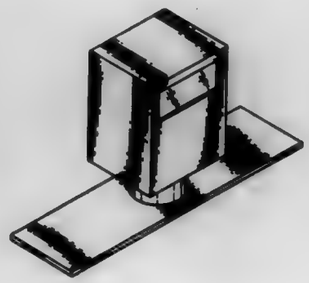
366,217
PORTABLE TIME TRACKING AND LOGGING APPARATUS
James P. Dudley, Sacramento, and Kyle D. Fields, El Dorado Hills, both of Calif., assignors to Stratos Industries, Inc., Shingle Springs, Calif.
Filed Oct. 26, 1994, Ser. No. 30,306
Term of patent 14 years
U.S. Cl. D10—46



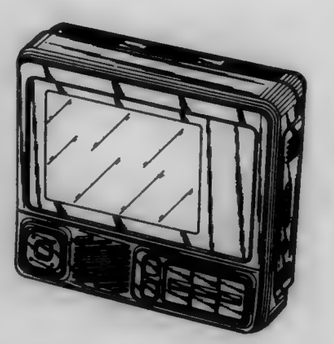
366,218
TEMPERATURE TRANSMITTER HOUSING
Timothy D. Price, Chichester, and Paul A. Freeman, Bognor Regis, both of, England, assignors to Rosemount Inc., Eden Prairie, Minn.
Filed Dec. 23, 1994, Ser. No. 33,869
Term of patent 14 years
U.S. Cl. D10—52



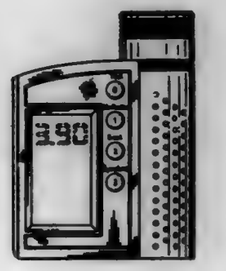
366,219
RADIAL AXIS ANGLE INDICATOR
Leuden L. Bodtker, 94213 River Rd., Junction City, Oreg. 97448-9415
Filed Jan. 19, 1995, Ser. No. 33,749
Term of patent 14 years
U.S. Cl. D10—65



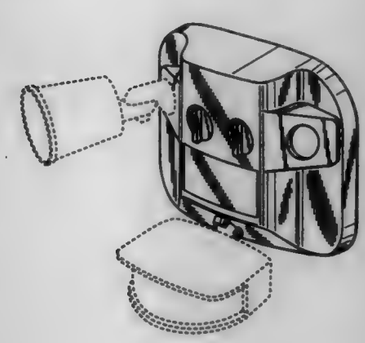
366,220
HANDHELD POSITION DETECTING AND INDICATING RECEIVER
Masaharu Sakamoto, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 24, 1995, Ser. No. 36,652
Term of patent 14 years
U.S. Cl. D10—65



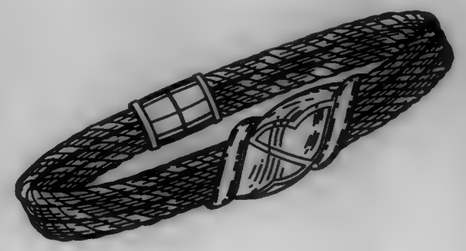
366,221
PEAK FLOW METER
Tom Cadera, Hoechberg, Germany, assignor to Erich Jaeger GmbH, Hoechberg, Germany
Filed Apr. 14, 1995, Ser. No. 37,512
Claims priority, application Germany, Dec. 16, 1994, 94 09 856.5
Term of patent 14 years
U.S. Cl. D10—96



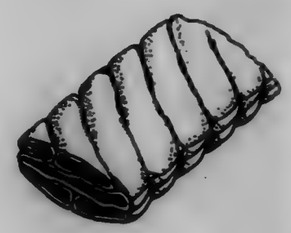
366,222
MOUNTING PLATE FOR PASSIVE INFRARED MOTION DETECTOR WITH LIGHT FIXTURE
Donald R. Sandell, San Jose, and Wade Lee, Lafayette, both of Calif., assignors to Larry C. Y. Lee, Hayward, Calif.
Filed May 13, 1994, Ser. No. 22,859
Term of patent 14 years
U.S. Cl. D10—106



366,223
BRACELET
Henri Samuel, Paris, France, assignor to Fred, S.A., Paris, France
Filed Mar. 22, 1994, Ser. No. 20,306
Claims priority, application Hague Agreement, Sep. 22, 1993, DM/027,491
Term of patent 14 years
U.S. Cl. D11—3



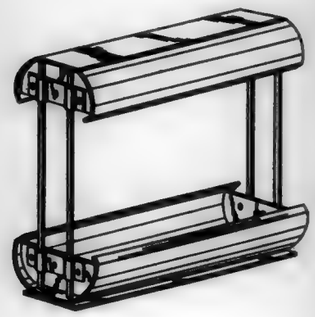
366,224
JEWELRY CHAIN
Luca Scortecci, and Marco Stocchi, both of Castiglion Fibocchi, Italy, assignors to S.I.L.O S.P.A. Societa' Italiana Lavorazione Oro, Castiglion Fibocchi, Italy
Filed Oct. 7, 1994, Ser. No. 29,504
Claims priority, application Hague Agreement, Jan. 4, 1994, DMA/002,998
Term of patent 14 years
U.S. Cl. D11—6



366,225
JEWELRY PENDANT
John Riegle, 3550 Watt Ave., Suite 140, Sacramento, Calif. 95821
Filed Nov. 8, 1994, Ser. No. 30,809
Term of patent 14 years
U.S. Cl. D11—81



366,226
PLANTER WITH BUILT-IN OVERHEAD GROW LIGHT
Craig E. Foster, 2400 Little Fox Ln., Vienna, Va. 22181
Filed Feb. 27, 1995, Ser. No. 35,381
Term of patent 14 years
U.S. Cl. D11—144



366,227
FLOWER POT COVER
Donald E. Weder, and Joseph G. Stracter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, and a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Dec. 16, 1991, Ser. No. 807,504
The portion of the term of this patent subsequent to Apr. 9, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164



366,228
FLOWER POT COVER
Donald E. Weder, and Joseph G. Stracter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Dec. 16, 1991, Ser. No. 809,078
The portion of the term of this patent subsequent to Nov. 14, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164



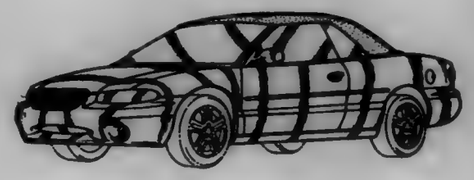
366,229
KEY HOUSING
Trevor Barnett, Grange-o-Sands, England, assignor to Astro General Corp., Taiwan, Prov. of China
Filed Oct. 25, 1994, Ser. No. 30,288
Claims priority, application United Kingdom, Sep. 13, 1994, 2041777
Term of patent 14 years
U.S. Cl. D3—208



366,230
SLIDER FOR SLIDE FASTENERS
Tsunetaka Aoki, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Apr. 29, 1994, Ser. No. 22,094
Claims priority, application Japan, Jan. 29, 1993, 5-33849
The portion of the term of this patent subsequent to Jan. 9, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—221



366,231
AUTOMOBILE BODY
Lance R. Wagner, Lake Orion; Robert S. Ackerman, West Bloomfield; Joel Baccus, Shelby, and John E. Crain, Birmingham, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Mar. 23, 1994, Ser. No. 28,305
Term of patent 14 years
U.S. Cl. D12—92



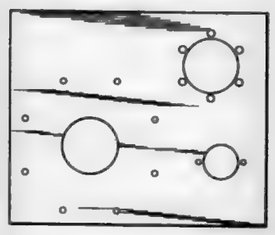
366,232
AUTOMOBILE TIRE
Toshiaki Ueda, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Sep. 8, 1994, Ser. No. 28,157
Claims priority, application Japan, Mar. 8, 1994, 6-6823
Term of patent 14 years
U.S. Cl. D12—146



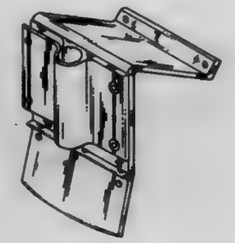
366,233
TIRE TREAD
Timothy J. Lassan, Kent, and Timothy F. Robinson, North Canton, both of Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio
Filed Dec. 20, 1993, Ser. No. 16,600
Term of patent 14 years
U.S. Cl. D12—147



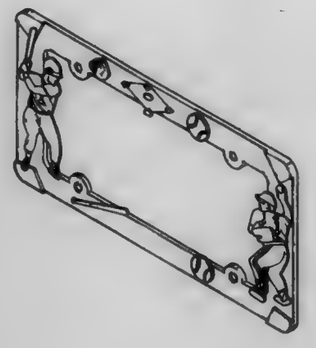
366,234
DRIVE TRAIN MOUNT
James D. McCusker, 176 Williamson Rd., Bergenfield, N.J. 07621
Filed Oct. 26, 1994, Ser. No. 30,298
Term of patent 14 years
U.S. Cl. D12—159



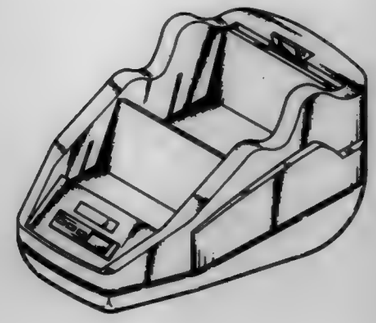
366,235
MIRROR MOUNTING BRACKET
William P. Schmidt, 21080 Woodruff, Rockwood, Mich. 48173, and Franklin D. Hutchinson, 28080 Bell Rd., New Boston, Mich. 48164
Continuation-in-part of Ser. No. 92,516, Jul. 16, 1993, which is a continuation-in-part of Ser. No. 843,508, Feb. 28, 1992, Pat. No. 5,301,916, which is a continuation-in-part of Ser. No. 419,213, Oct. 10, 1989, Pat. No. 5,106,049. This application Jul. 27, 1994, Ser. No. 26,414
Term of patent 14 years
U.S. Cl. D12—187



366,236
LICENSE PLATE FRAME
Min L. Chu, Tainan, Taiwan, Prov. of China, assignor to Guan Kuen Enterprise Corp., Tainan, Taiwan, Prov. of China
Filed Nov. 3, 1994, Ser. No. 30,644
Term of patent 14 years
U.S. Cl. D12—193



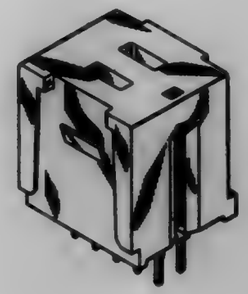
366,237
BATTERY CHARGERS
Wen-Kuan Yang, 3 fl., No. 529, Chung-Cheng Rd., Hsin-Tien City, Taipei Hsien, Taiwan, Prov. of China
Filed Sep. 8, 1994, Ser. No. 28,247
Term of patent 14 years
U.S. Cl. D13—108



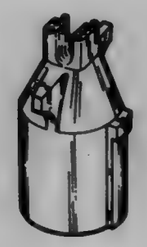
366,238
PORTABLE RADIO BATTERY ELIMINATOR
Stanley J. Zydek, 1600 Glen Lake Rd., Hoffman Estates, Ill. 60195; Michelle S. Clochesi, 4614 Streng Rd., Crystal Lake, Ill. 60014; Krishna R. Devineni, 900 Ponderosa Ln., Barrington, Ill. 60010, and Peter Janko, 18719 River Rd., Marengo, Ill. 60152
Continuation of Ser. No. 12,116, Aug. 23, 1993, abandoned. This application Mar. 2, 1995, Ser. No. 35,562
Term of patent 14 years
U.S. Cl. D13—110



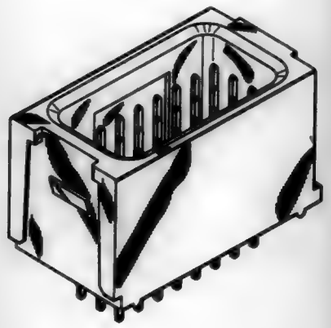
366,239
PARALLEL MOUNTING HYBRID MODULAR ELECTRICAL POWER CONNECTOR
Larry D. Eaton, Fremont, Calif., assignor to TVM, Inc., Fremont, Calif.
Filed Sep. 22, 1994, Ser. No. 28,810
Term of patent 14 years
U.S. Cl. D13—146



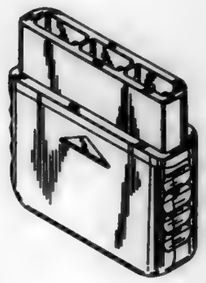
366,240
TRAILER PLUG ADAPTER
John H. Kittridge, 45217 Highland Rd., Waterford, Mich. 48320
Filed Dec. 2, 1994, Ser. No. 31,678
Term of patent 14 years
U.S. Cl. D13—146



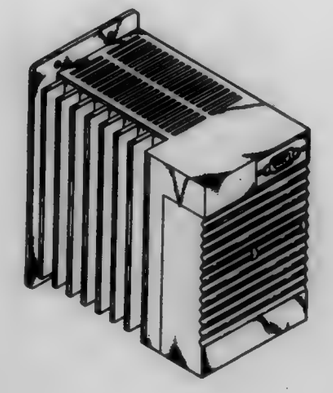
366,241
PERPENDICULAR MOUNTING HYBRID MODULAR ELECTRICAL SIGNAL CONNECTOR
Larry D. Eaton, Fremont, Calif., assignor to TVM, Inc., Fremont, Calif.
Filed Sep. 22, 1994, Ser. No. 28,809
Term of patent 14 years
U.S. Cl. D13—147



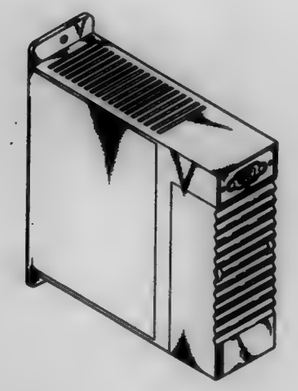
366,242
CONNECTOR
Teiyu Goto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 4, 1994, Ser. No. 30,142
Claims priority, application Japan, May 7, 1994, 6-12896
Term of patent 14 years
U.S. Cl. D13—147



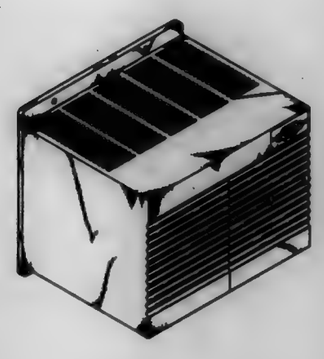
366,243
SERVOMOTOR DRIVE CONTROLLER
Junichi Kurokawa; Takeshi Majima; Katsuyoshi Nakano, and Hiromichi Kawashima, all of Ise, Japan, assignors to Shinko Electric Co., Ltd., Tokyo, Japan
Filed Jan. 5, 1995, Ser. No. 33,126
Claims priority, application Japan, Jul. 7, 1994, 6-20218
Term of patent 14 years
U.S. Cl. D13—162



366,244
SERVOMOTOR DRIVE CONTROLLER
Junichi Kurokawa; Takeshi Majima; Katsuyoshi Nakano, and Hiromichi Kawashima, all of Ise, Japan, assignors to Shinko Electric Co., Ltd., Tokyo, Japan
Filed Jan. 5, 1995, Ser. No. 33,128
Claims priority, application Japan, Jul. 7, 1994, 6-20217
Term of patent 14 years
U.S. Cl. D13—162



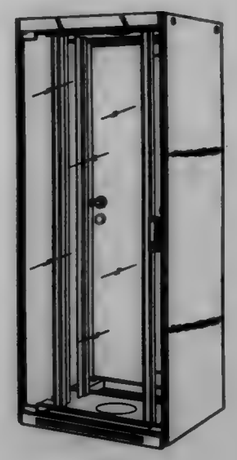
366,245
SERVOMOTOR DRIVE CONTROLLER
Junichi Kurokawa; Takeshi Majima; Katsuyoshi Nakano, and Hiromichi Kawashima, all of Ise, Japan, assignors to Shinko Electric Co., Ltd., Tokyo, Japan
Filed Jan. 5, 1995, Ser. No. 33,132
Claims priority, application Japan, Jul. 7, 1994, 6-20219
Term of patent 14 years
U.S. Cl. D13—162



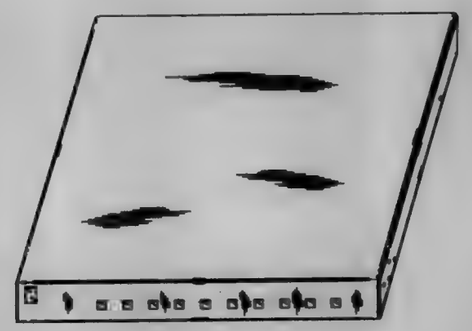
366,246
FRONT PANEL FOR ENCLOSING ELECTRONIC CIRCUIT PACKS
Robert F. Sinek, Lakewood, and Thomas J. McClaughry, Hoffman Estates, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 24, 1994, Ser. No. 19,158
Term of patent 14 years
U.S. Cl. D13—177



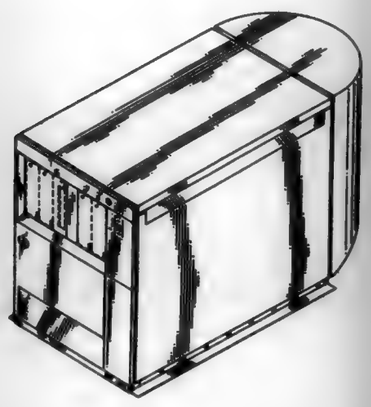
366,247
HOUSING FOR ELECTRICAL AND/OR ELECTRONIC EQUIPMENT
Paul Mansra, Karlsbad, and Hans-Martin Schwenk, Straubenhardt, both of, Germany, assignors to Schroff GmbH, Straubenhardt, Germany
Filed Sep. 14, 1994, Ser. No. 28,398
Claims priority, application Germany, Mar. 23, 1994, 94 02 242.5
Term of patent 14 years
U.S. Cl. D13—184



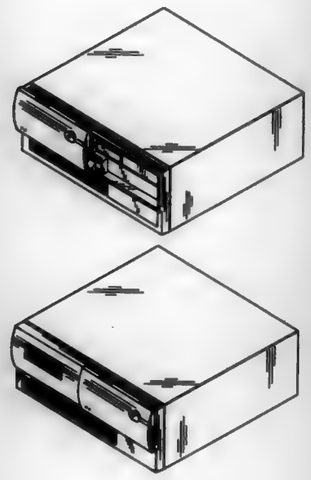
366,248
ENCLOSURE FOR AN ELECTRONIC APPARATUS
Wayne F. Owens, Pearl River, N.Y., assignor to American Dynamics, Orangeburg, N.Y.
Filed Dec. 2, 1994, Ser. No. 31,676
Term of patent 14 years
U.S. Cl. D13—184



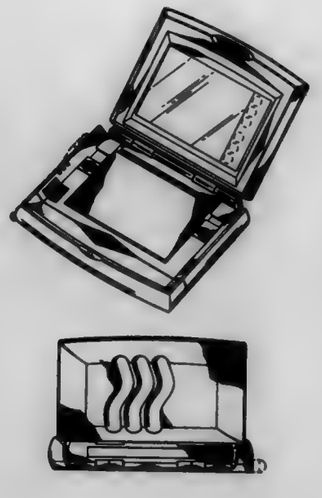
366,249
DATA PROCESSING SYSTEM
David W. Hill, and Tim K. Murphy, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 3, 1994, Ser. No. 22,288
Term of patent 14 years
U.S. Cl. D14—100



366,250
PERSONAL COMPUTER CABINET
Brian J. Connors; Tristan A. Merino, both of Austin, Tex., and Kurtis T. Sakai, Long Beach, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 21, 1995, Ser. No. 35,078
Term of patent 14 years
U.S. Cl. D14—100



366,251
PERSONAL WIRELESS COMMUNICATOR
Roman P. Rak, Delta, and William E. Fenton, Port Coquitlam, both of, Canada, assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 14, 1994, Ser. No. 30,893
Term of patent 14 years
U.S. Cl. D14—106



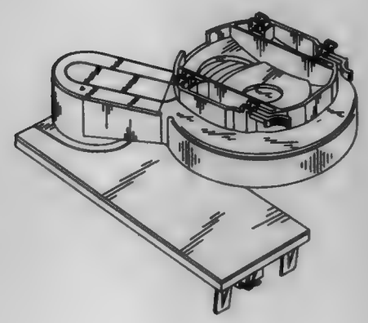
366,252
LAPTOP COMPUTER
Richard F. Nelson, Butte, Mont.; Steve G. Miggels, Wyckoff, N.J., and Henry J. Mack, Jr., Levittown, Pa., assignors to AT&T Global Information Solutions Company, Dayton, Ohio
Filed Feb. 23, 1995, Ser. No. 35,276
Term of patent 14 years
U.S. Cl. D14—106



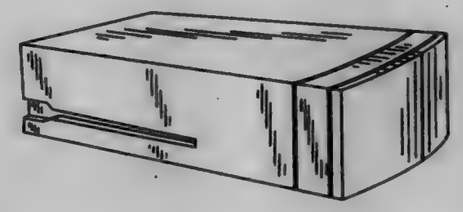
366,253
DISPLAY MONITOR
Hyunsoo Hong, Cordova, Tenn., assignor to Brother International Corporation, Somerset, N.J.
Filed Dec. 30, 1994, Ser. No. 32,876
Term of patent 14 years
U.S. Cl. D14—113



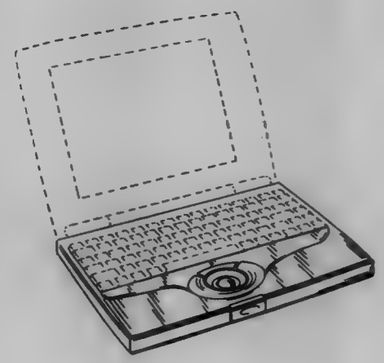
366,254
COMPUTER MONITOR SUPPORT ARM
Robert C. Lynch, Cary; Kevin H. Myers, Durham; Ronald A. Smith, Apex; William L. Talley, Raleigh, all of N.C., and Edward R. Veals, Pawleys Island, S.C., assignors to International Business Machines Corp., Armonk, N.Y.
Filed May 27, 1993, Ser. No. 8,863
Term of patent 14 years
U.S. Cl. D14—114



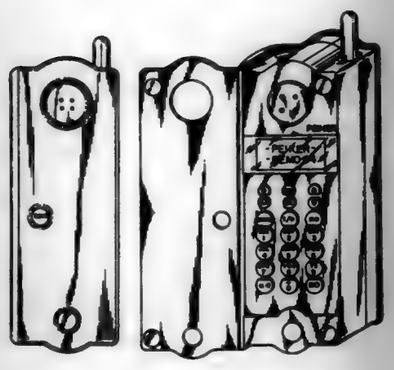
366,255
INSERTABLE MASS STORAGE MODULE
Michael A. Mihalik, Beaverton, and Kim S. Porter, Portland, both of Oreg., assignors to Quantum Corporation, Milpitas, Calif.
Continuation of Ser. No. 198,630, Feb. 18, 1994. This application Aug. 18, 1994, Ser. No. 27,326
Term of patent 14 years
U.S. Cl. D14—114



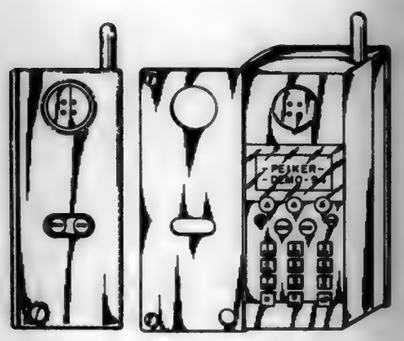
366,256
KEYBOARD WITH TRACKBALL POINTING DEVICE
Christian C. Landry, Harvard; Robert T. Faranda, Acton; Michele Bovio, Boston, and Mark J. Foster, Acton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Dec. 6, 1994, Ser. No. 31,817
Term of patent 14 years
U.S. Cl. D14—115



366,257
MOBILE PHONE
Simon Fraser, Zell am See-Thumersbach, and Ferdinand A. Porsche, Gries, both of, Austria, assignors to Porsche Design GmbH, Zell Am See, Austria
Filed Sep. 14, 1994, Ser. No. 28,395
Claims priority, application Switzerland, Mar. 14, 1994, 121304
Term of patent 14 years
U.S. Cl. D14—138



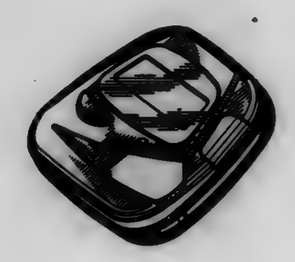
366,258
MOBILE PHONE
Simon Fraser, Zell am See-Thumersbach, and Ferdinand Porsche, Gries, both of, Austria, assignors to Porsche Design GmbH, Zell Am See, Austria
Filed Sep. 14, 1994, Ser. No. 28,396
Claims priority, application Switzerland, Jul. 21, 1994, 121624
Term of patent 14 years
U.S. Cl. D14—138



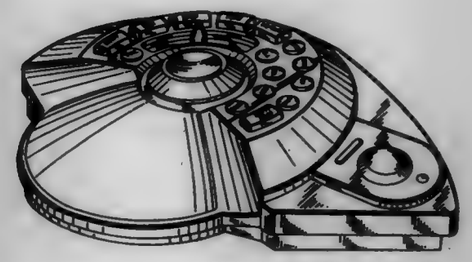
366,259
PORTABLE RADIOTELEPHONE
Katsuhiro Yamaguchi, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Apr. 20, 1995, Ser. No. 37,803
Term of patent 14 years
U.S. Cl. D14—138



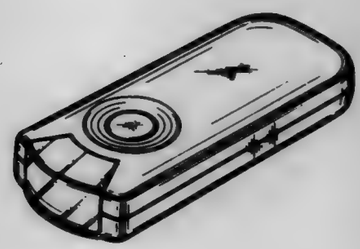
366,260
SELECTIVE CALL RECEIVER
Moo H. Hon, Kulai Johor, Malaysia; Chong H. Choy, and Tuck S. Loke, both of Singapore, Singapore, assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 9, 1994, Ser. No. 28,288
Term of patent 14 years
U.S. Cl. D14—191



366,261
CONTROLLER FOR VIDEO EDITING
Robeen L. Splane, Jr., Granada Hills; Herbert H. Dow, Chatsworth; William P. Debley, Jr., North Hills; Sean M. Montgomery, Santa Barbara; Anthony Schmitz, North Hollywood; Andrew H. Maltz, Sherman Oaks, and Donald Kravitz, Los Angeles, all of Calif., assignors to Editex Digital Systems, Inc., Glendale, Calif.
Filed Nov. 1, 1994, Ser. No. 30,537
Term of patent 14 years
U.S. Cl. D14—217



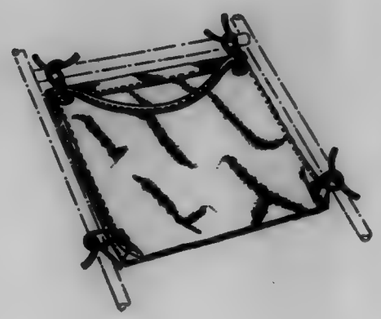
366,262
REMOTE CONTROLLER FOR CAMERA
Toshiya Inaba, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 22, 1994, Ser. No. 25,194
Claims priority, application Japan, Jan. 25, 1994, 6-1285
Term of patent 14 years
U.S. Cl. D14—218



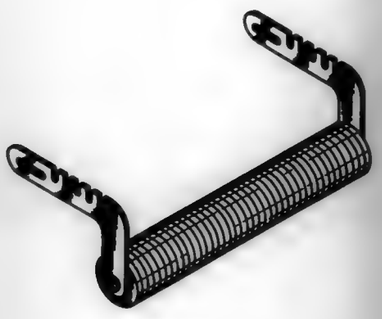
366,263
KEY SET FOR A UNIVERSAL REMOTE CONTROL
Paul V. Darbee, Santa Anna, Calif., and Frank A. O'Donnell, Clearwater, Fla., assignors to Universal Electronics Inc., Twinsburg, Ohio
Continuation-in-part of Ser. No. 908,251, Jul. 2, 1992, Pat. No. Des. 342,259, and a continuation-in-part of Ser. No. 14,783, Oct. 29, 1993, Pat. No. Des. 354,490. This application Sep. 9, 1994, Ser. No. 28,217
Term of patent 14 years
U.S. Cl. D14—218



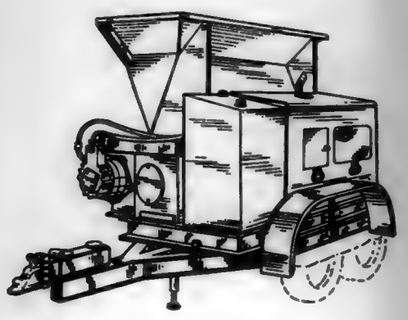
366,264
LAWN MOWER BAG
Philip C. Eberlin, Chicago Heights, Ill., assignor to Woodwork Restoration, Inc., Chicago Heights, Ill.
Filed Jan. 7, 1994, Ser. No. 17,207
Term of patent 14 years
U.S. Cl. D15—17



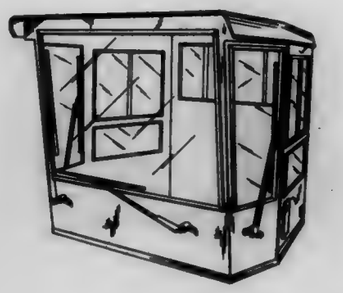
366,265
CUTLENGTH ADJUSTING DEVICE FOR A LAWNMOWER
Teresa A. Landon, 222 Manzanita Ct., and Richard Donahue, 314 Minter St., both of Bagdad, Ariz. 86321
Filed Jan. 10, 1994, Ser. No. 17,219
Term of patent 14 years
U.S. Cl. D15—17



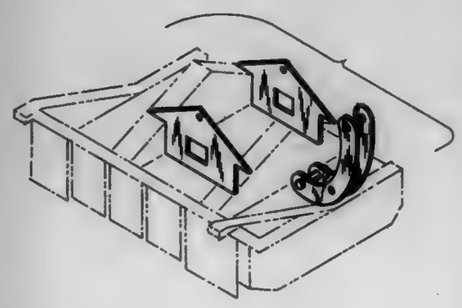
366,266
PORTABLE SHREDDING MACHINE
Leonard Blair, Malvern, and Frank Cizek, Bala Cynwyd, both of Pa., assignors to Concept Products, Bryn Mawr, Pa.
Filed Jan. 24, 1994, Ser. No. 17,792
Term of patent 14 years
U.S. Cl. D15—27



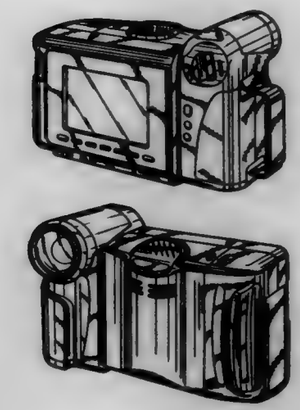
366,267
CAB FOR VEHICLE
Louis L. Lepoix, Baden-Baden, Germany, assignor to Schmidt Engineering & Equipment, Inc., New Berlin, Wis.
Filed Apr. 6, 1994, Ser. No. 20,996
Term of patent 14 years
U.S. Cl. D15—30



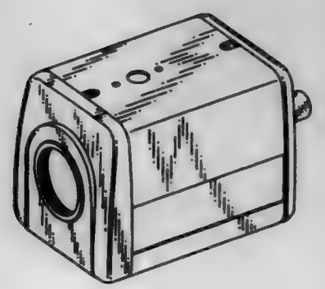
366,268
ADAPTER FOR A BRUSH CUTTER
William P. Bryan, III, Tifton, Ga., assignor to Utilco, Inc., Tifton, Ga.
Filed Mar. 24, 1995, Ser. No. 36,650
Term of patent 14 years
U.S. Cl. D15—199



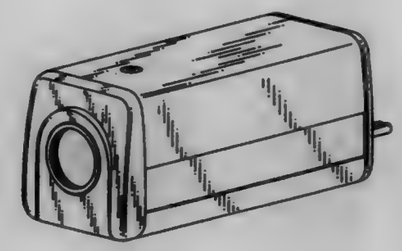
366,269
COMBINED MONITOR VIDEO TAPE RECORDER AND VIDEO CAMERA
Hiroshi Ohi; Seiji Kurokawa, and Katsunori Kuno, all of Tochigi, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Apr. 17, 1995, Ser. No. 37,530
Claims priority, application Japan, Dec. 9, 1994, 6-37808
Term of patent 14 years
U.S. Cl. D16—202



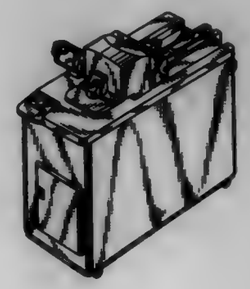
366,270
SURVEILLANCE CAMERA BODY
Fumio Hasegawa, Nagoya, Japan, assignor to Elmo Company Limited, Japan
Filed Feb. 24, 1995, Ser. No. 35,308
Claims priority, application Japan, Aug. 26, 1994, 6-25711
Term of patent 14 years
U.S. Cl. D16—283



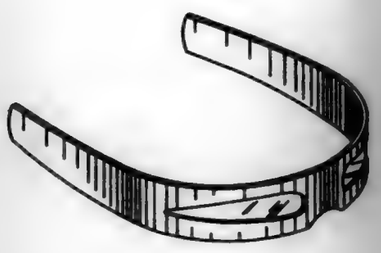
366,271
SURVEILLANCE CAMERA BODY
Fumio Hasegawa, Nagoya, Japan, assignor to Elmo Company Ltd., Japan
Filed Feb. 27, 1995, Ser. No. 35,582
Claims priority, application Japan, Aug. 26, 1994, 6-25712
Term of patent 14 years
U.S. Cl. D16—203



366,272
COMBINED PHOTOGRAPHIC PRINTER AND FILM PROCESSOR
Eiichi Okamoto; Hiroyuki Sakai, and Kazuki Nakajima, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 21, 1994, Ser. No. 32,558
Claims priority, application Japan, Jul. 8, 1994, 6-28384
Term of patent 14 years
U.S. Cl. D16—246



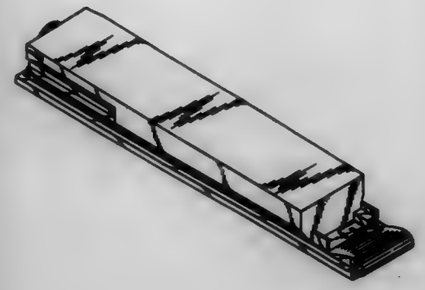
366,273
SUNGLASSES
Ann I. Rucker, 2009 Hawthorne St., Greensboro, N.C. 27408
Filed Jul. 27, 1994, Ser. No. 26,405
Term of patent 14 years
U.S. Cl. D16—306



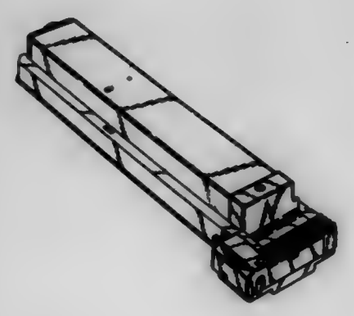
366,274
COMBINED SUNGLASSES AND VISOR
Wen-Te Wang, No. 246-1, Kang-Kou, Kang-Kou Tsun, An-Ting Hsiang, Tainan Hsien, Taiwan, Prov. of China
Filed Feb. 16, 1995, Ser. No. 34,958
Term of patent 14 years
U.S. Cl. D16—310



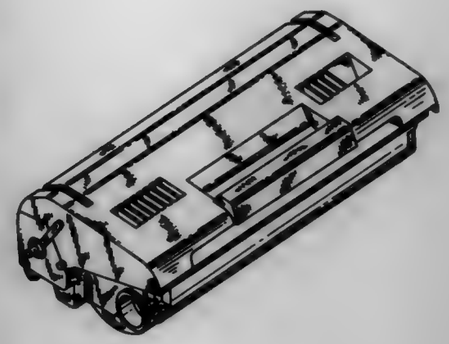
366,275
TONER CARTRIDGE
Susumu Komaki, Kobe, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan
Filed Jul. 6, 1994, Ser. No. 25,184
Claims priority, application Japan, Jan. 11, 1994, 6-334
Term of patent 14 years
U.S. Cl. D18—43



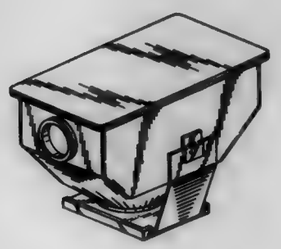
366,276
TONER CARTRIDGE
Koichi Yasuda, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan
Filed Sep. 8, 1994, Ser. No. 28,161
Claims priority, application Japan, Mar. 11, 1994, 6-6392
Term of patent 14 years
U.S. Cl. D18—43



366,277
IMAGING CARTRIDGE
Taiji Kawamura, Sakai, Japan, assignor to Minolta Co., Ltd., Osaka, Japan
Filed Sep. 22, 1994, Ser. No. 28,587
Claims priority, application Japan, Mar. 23, 1994, 6-7763
Term of patent 14 years
U.S. Cl. D18—43



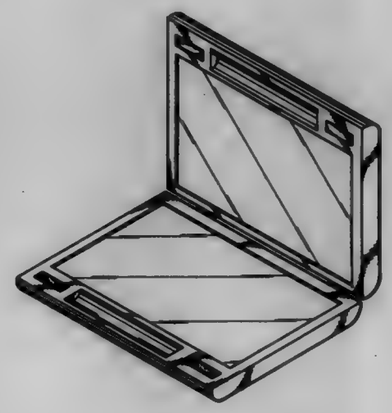
366,278
TONER CARTRIDGE
Takashi Nagashima, Habikino, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan
Filed Sep. 27, 1994, Ser. No. 28,975
Claims priority, application Japan, Apr. 15, 1994, 6-10859
Term of patent 14 years
U.S. Cl. D18—43



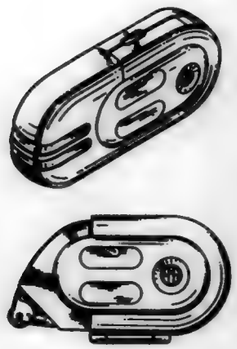
366,279
MARKER
Scott W. Voorhees, Woodbridge, Va., assignor to Inventure Development Corporation, Woodbridge, Va.
Filed Dec. 19, 1994, Ser. No. 32,411
Term of patent 14 years
U.S. Cl. D19—36



366,280
LUMINOUS DRAWING SURFACE AND NIGHT LIGHT
Darryl R. Henderson, 7443 Little Pond Ct., Orlando, Fla. 32810
Filed Mar. 17, 1995, Ser. No. 36,307
Term of patent 14 years
U.S. Cl. D19—52



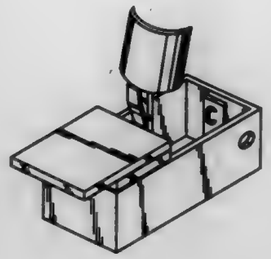
366,281
TRANSFER TAPE HOLDER
Yutaka Sakanishi, and Kiyofumi Hayashi, both of Osaka, Japan, assignors to Fuji Copian Co., Ltd., Osaka, Japan
Filed Nov. 17, 1993, Ser. No. 15,463
Claims priority, application Japan, May 21, 1993, 5-14733
Term of patent 14 years
U.S. Cl. D19—69



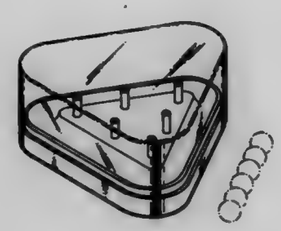
366,282
PENCIL HOLDING CLIP
William E. Adams, Portersville, Pa., assignor to Adams Mfg. Corp., Portersville, Pa.
Filed Mar. 3, 1994, Ser. No. 19,462
Term of patent 14 years
U.S. Cl. D19—83



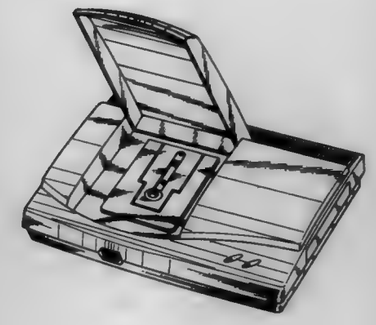
366,283
PAINTBALL MINE
Brett A. Fernandez, 266 S. Jefferson St., Montpelier, Ind. 47359
Filed Dec. 1, 1994, Ser. No. 31,639
Term of patent 14 years
U.S. Cl. D21—2



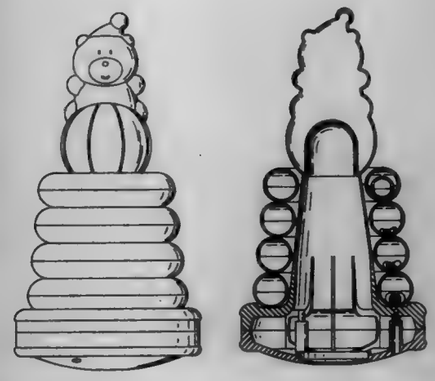
366,284
GAME BOARD WITH TRANSPARENT COVER
Dennis E. Binkley, 1546 NW. Woodbine Way, Seattle, Wash. 98177
Filed Jul. 8, 1994, Ser. No. 25,699
Term of patent 14 years
U.S. Cl. D21—20



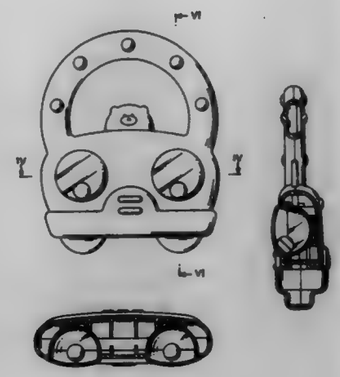
366,285
VIDEO GAME MACHINE
Chikako Tada, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 1, 1994, Ser. No. 31,912
Claims priority, application Japan, Jun. 1, 1994, 6-16136
Term of patent 14 years
U.S. Cl. D21—48



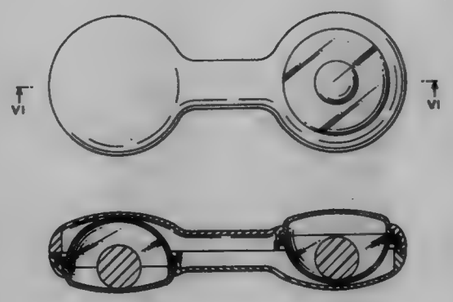
366,286
STACKING TOY
Moriya Kino, Yokohama, Japan, assignor to Royal Co., Ltd., Japan
Filed Dec. 30, 1994, Ser. No. 32,852
Term of patent 14 years
U.S. Cl. D21—59



366,287
RATTLE
Moriya Kino, Yokohama, Japan, assignor to Royal Co., Ltd., Japan
Filed Dec. 30, 1994, Ser. No. 32,848
Term of patent 14 years
U.S. Cl. D21—65



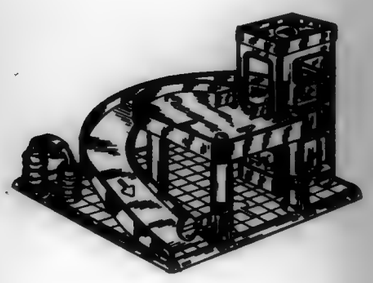
366,288
RATTLE
Moriya Kino, Yokohama, Japan, assignor to Royal Co., Ltd., Japan
Filed Dec. 30, 1994, Ser. No. 32,854
Term of patent 14 years
U.S. Cl. D21—65



366,289
YO-YO
Charles H. Newcomer, P.O. Box 134, Grants Pass, Oreg. 97526
Filed Oct. 17, 1994, Ser. No. 29,847
Term of patent 14 years
U.S. Cl. D21—99



366,290
TOY GARAGE
Michel Dieudonne, 3 Rue Delezay, Saint Laurent en Grandvaux, France
Filed Dec. 8, 1993, Ser. No. 16,110
Claims priority, application Hague Agreement, Jun. 8, 1993, DM/026369
Term of patent 14 years
U.S. Cl. D21—118



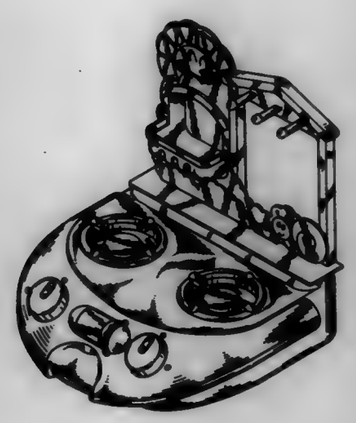
366,291
TOY WASHBASIN
Chin-Long Yang, No 48, Lane 502, Wen Shyan Rd., Tainan, Taiwan, Prov. of China
Filed Dec. 13, 1994, Ser. No. 32,269
Term of patent 14 years
U.S. Cl. D21—121



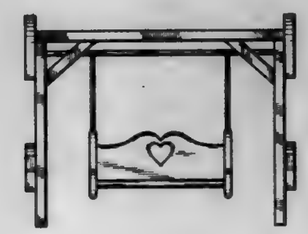
366,292
TOY KITCHENETTE
Alain Monneret, Voiteur, France, assignor to Monneret Jouets, Lons-Le-Saunier, France
Filed Sep. 13, 1994, Ser. No. 28,357
Claims priority, application Hague Agreement, Mar. 29, 1994, DM/029 171
Term of patent 14 years
U.S. Cl. D21—122



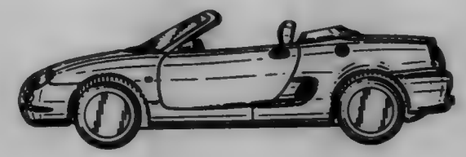
366,293
TOY GAS SET
Chin-Long Yang, No. 48, Lane 502, Wen Shyan Rd., Tainan, Taiwan, Prov. of China
Filed Dec. 13, 1994, Ser. No. 32,268
Term of patent 14 years
U.S. Cl. D21—122



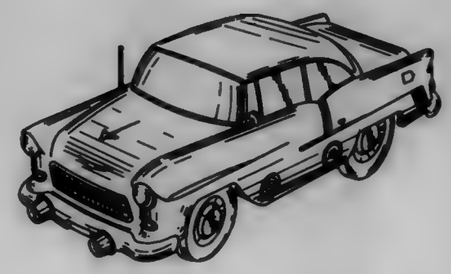
366,294
DOLL SWING
Diana S. Blake, Rd #154, Titusville, Pa. 16354
Filed Jul. 25, 1994, Ser. No. 26,398
Term of patent 14 years
U.S. Cl. D21—123



366,295
TOY VEHICLE
Gerard G. McGovern, Coventry, England, assignor to Rover Group Limited, Birmingham, England
Filed Feb. 9, 1995, Ser. No. 34,641
Claims priority, application United Kingdom, Aug. 12, 1994, 2040975
Term of patent 14 years
U.S. Cl. D21—136



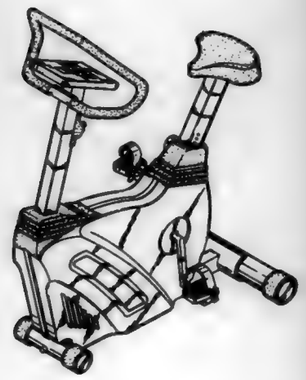
366,296
REMOTE CONTROL MODEL CAR
Joseph R. Novak, P.O. Box 15, Morrisstown, Pa. 15463
Filed Feb. 13, 1995, Ser. No. 34,754
Term of patent 14 years
U.S. Cl. D21—136



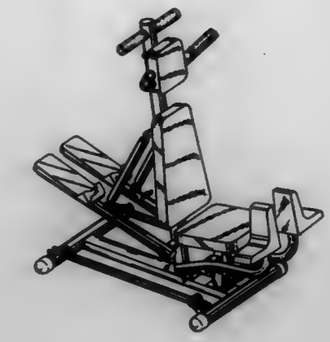
366,297
FINGER PUPPET
Hobart Ford, 62 Ballard Ranch Rd., Weaverville, N.C. 28787, assignor to Hobart Ford, Weaverville, N.C., and Regina Marscheider, Virginia Beach, Va.
Filed Apr. 1, 1994, Ser. No. 20,759
Term of patent 14 years
U.S. Cl. D21—153



366,298
EXERCISE BIKE
Mu-Chuan Wu, No. 462-7, Chung Shan Road, Hsi Kang Hsiang, Tainan Hsien, Taiwan, Prov. of China
Filed Oct. 18, 1994, Ser. No. 29,888
Term of patent 14 years
U.S. Cl. D21—194



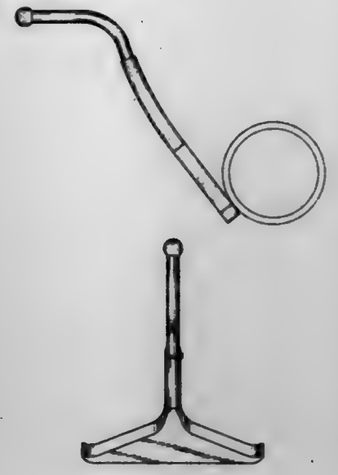
366,299
MULTI-PURPOSE PHYSICAL EXERCISER
Michael Hung, 9-16 Nan Kan Hsin, Nan Kan, Lu Chu Hsiang, Tao Yuan County, Taiwan, Prov. of China
Filed Jul. 5, 1994, Ser. No. 25,503
Term of patent 14 years
U.S. Cl. D21—195



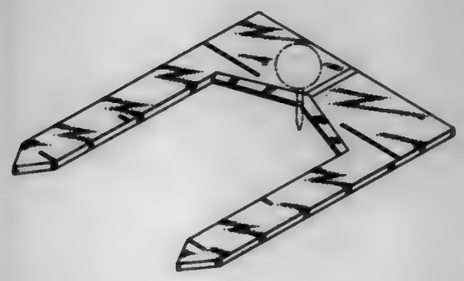
366,300
WRIST EXERCISER
Joseph Velucci, 5643 Doores Dr., Holiday, Fla. 34690
Filed Jul. 15, 1994, Ser. No. 26,021
Term of patent 14 years
U.S. Cl. D21—198



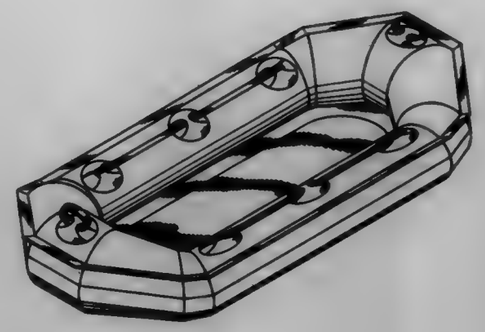
366,301
HOOP ROLLER
Phirman J. Crawford, 502 Franklin St., Cleburne, Tex. 76031
Filed Dec. 1, 1994, Ser. No. 31,649
Term of patent 14 years
U.S. Cl. D21—210



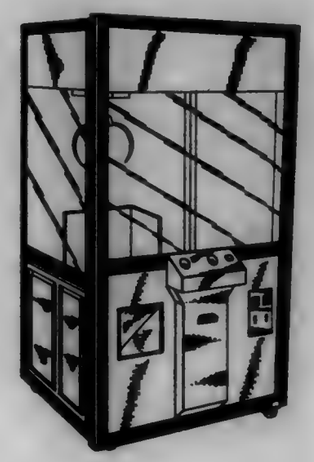
366,302
GOLF SWING ALIGNMENT MAT
Richard O. Marsh, 2204 Camborne Dr., Modesto, Calif. 95356; George M. Kramer, 1932 Temescal Dr., Modesto, Calif. 95355, and Kenneth T. Ockey, 441 Anouville, Modesto, Calif. 95354
Filed Nov. 14, 1994, Ser. No. 30,895
Term of patent 14 years
U.S. Cl. D21—234



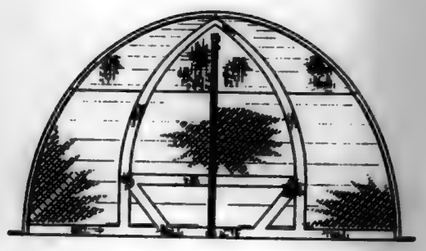
366,303
WATER RIDE WITH SPLASH GUARD
Dale Polley, Buda, and David Hotz, New Braunfels, both of Tex., assignors to Canyon Manufacturing Company, Manchaca, Tex.
Filed Dec. 27, 1994, Ser. No. 32,741
Term of patent 14 years
U.S. Cl. D21—237



366,304
SKILL CRANE CABINET
Michael W. Lewis, San Juan Capistrano, Calif., assignor to Minion Crane Service, Inc., Anaheim, Calif.
Filed Mar. 21, 1995, Ser. No. 34,993
Term of patent 14 years
U.S. Cl. D21—240



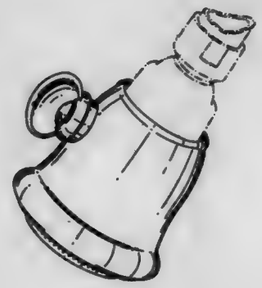
366,305
DOME SCREENED TENT
Marcia A. Roehler, 4025-120th St., Estherville, Iowa 51334
Filed Jul. 25, 1994, Ser. No. 26,344
Term of patent 14 years
U.S. Cl. D21—253



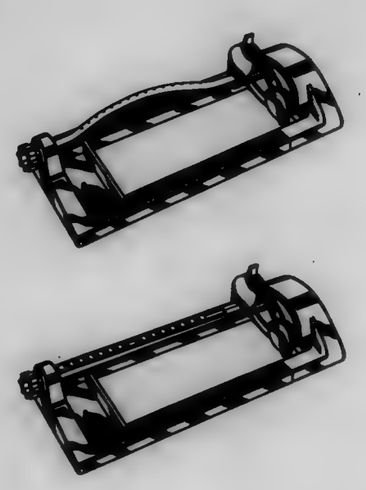
366,306
FISH GAFF
James Gord, and Richard Cole, both of Sandwich, Ill., assignors to Gord Industrial Plastics, Inc., Sandwich, Ill.
Filed Aug. 15, 1994, Ser. No. 27,146
Term of patent 14 years
U.S. Cl. D22—134



366,307
SHOWERHEAD
Frederic C. Doughty, S. Pasadena, and Darren M. Mark, Castaic, both of Calif., assignors to Emhart Inc., Newark, Del.
Filed Jan. 25, 1995, Ser. No. 33,983
Term of patent 14 years
U.S. Cl. D23—213



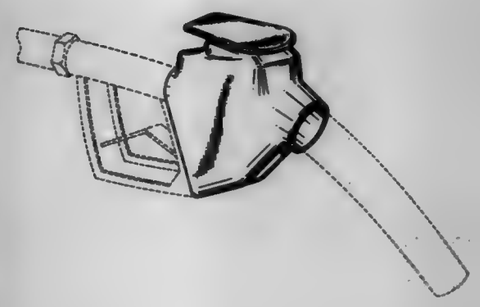
366,308
OSCILLATING SPRINKLER
Sidney J. Goodman, Paramus, N.J., and Sergio G. Simonetti, Westport, Conn., assignors to Melnor, Inc., Winchester, Va.
Filed Dec. 27, 1994, Ser. No. 32,733
Term of patent 14 years
U.S. Cl. D23—216



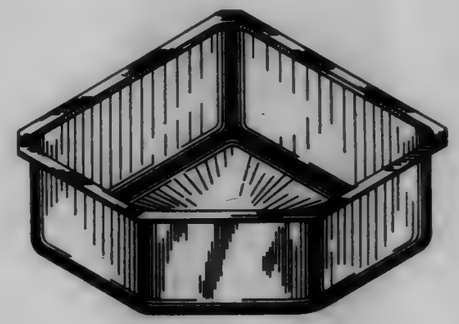
366,309
SHOWER HEAD
So-Mei Huang, Taichung Hsien, Taiwan, Prov. of China, assignor to Chien Chuen Plastic Co., Ltd., Taichung Hsien, Taiwan, Prov. of China
Filed Jan. 4, 1995, Ser. No. 33,052
Term of patent 14 years
U.S. Cl. D23—223



366,310
MESSAGE DISPLAY SADDLE FOR A FUEL DISPENSING NOZZLE
Michael J. Fell, 541 Ramblewood Dr., Bryn Mawr, Pa. 19010
Filed Nov. 18, 1994, Ser. No. 31,120
Term of patent 14 years
U.S. Cl. D23—227



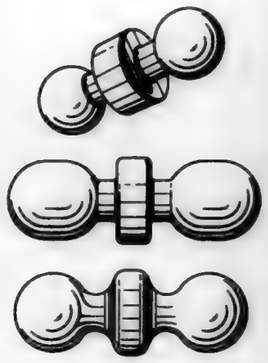
366,311
SINK
Thomas A. Bonnell, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 19, 1994, Ser. No. 17,659
The portion of the term of this patent subsequent to Jan. 9, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—288



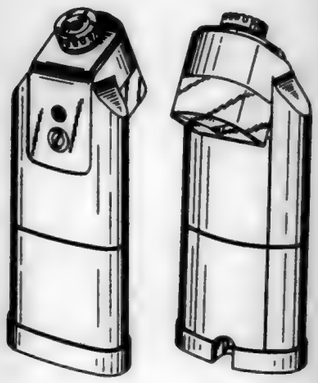
366,312
GOOSE IN FLIGHT AIR FRESHENER
Herbert S. Clayton, 702A 15th St. South, Arlington, Va. 22202
Filed Oct. 24, 1994, Ser. No. 30,234
Term of patent 14 years
U.S. Cl. D23—367



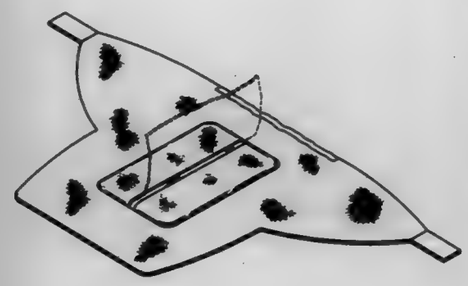
366,313
EAR PLUG
Ward B. Krause, 10518 Ni River Dr., Spotsylvania, Va. 22553
Filed Jul. 21, 1994, Ser. No. 26,203
The portion of the term of this patent subsequent to Nov. 21, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—106



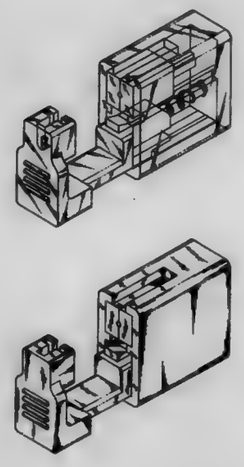
366,314
NEBULIZER
Masaru Kaizaki, Nara; Shigeru Makita, Kamigyo, and Takao Terada, Takatsuki, all of, Japan, assignors to Omron Corporation, Kyoto, Japan
Filed Aug. 19, 1994, Ser. No. 27,367
Term of patent 14 years
U.S. Cl. D24—110



366,315
COMBINATION DISPOSABLE DIAPER AND BUILT IN WIPES POCKET
Bianca A. Oransky, 634 Lewis Rd., San Jose, Calif. 95111
Filed May 2, 1994, Ser. No. 22,145
Term of patent 14 years
U.S. Cl. D24—126



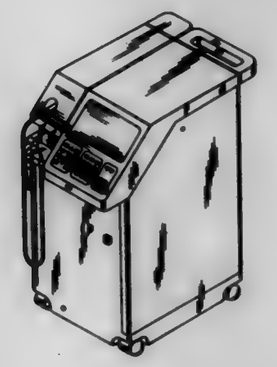
366,316
EAR PIERCER
Vladimir Reil, 30524 Ganado Dr., Rancho Palos Verdes, Calif. 90274
Filed Aug. 29, 1994, Ser. No. 27,756
Term of patent 14 years
U.S. Cl. D24—146



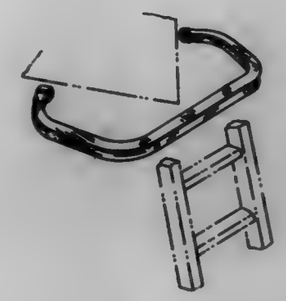
366,317
MEDICAL ELECTRODE
Jens Axelgaard, 329 W. Aviation Rd., Fallbrook, Calif. 92028-3227
Filed Jul. 18, 1994, Ser. No. 26,050
Term of patent 14 years
U.S. Cl. D24—168



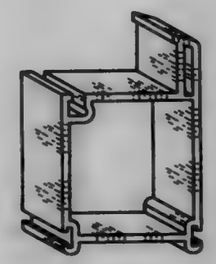
366,318
COMBINED DENTAL AND SURGICAL LASER
Matjaž Lukač, Ljubljana; Alojz Cimerman, Velike Lašče; Karolj Nemeš; Marjan Kunstelj, both of Ljubljana, and Roman Debeljak, Smlednik, all of, Slovenia, assignors to Iskra Elektrooptika Ljubljana d.d., Ljubljana, Slovenia
Filed Mar. 4, 1994, Ser. No. 19,550
Claims priority, application Slovenia, Sep. 7, 1993, M-9350128
Term of patent 14 years
U.S. Cl. D24—177



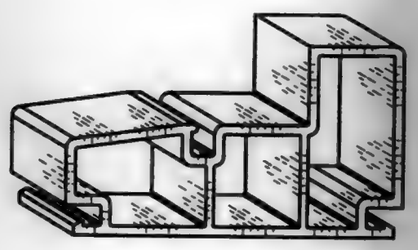
366,319
CORNER LADDER STABILIZER
Steven J. Sheftel, Marstons Mills, Mass., assignor to American Manufacturing Company, Inc., Allentown, Pa.
Filed Apr. 28, 1994, Ser. No. 22,029
Term of patent 14 years
U.S. Cl. D25—68



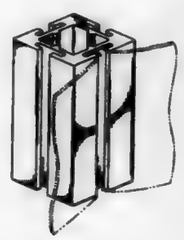
366,320
WINDOW COMPONENT EXTRUSION
Sam S. Hosseini, Bellevue, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Apr. 15, 1994, Ser. No. 21,360
Term of patent 14 years
U.S. Cl. D25—124



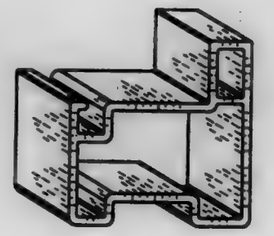
366,321
WINDOW COMPONENT EXTRUSION
Jeffrey R. Franson, Kent, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Apr. 26, 1994, Ser. No. 21,917
Term of patent 14 years
U.S. Cl. D25—124



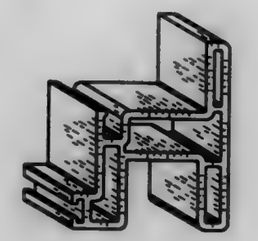
366,322
MULTI-PURPOSE STRUCTURAL MEMBER OF ANY LENGTH
Raymond J. Palermo, 3412 Kingsbere Trace, Marietta, Ga. 30062
Filed Aug. 19, 1994, Ser. No. 27,376
Term of patent 14 years
U.S. Cl. D25—124



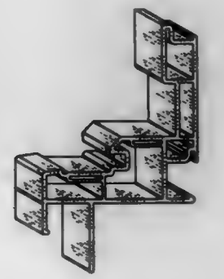
366,323
WINDOW COMPONENT EXTRUSION
Robert A. Schrader, Puyallup, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Sep. 13, 1994, Ser. No. 28,379
Term of patent 14 years
U.S. Cl. D25—124



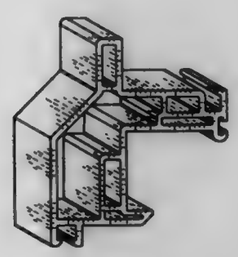
366,324
WINDOW COMPONENT EXTRUSION
Teresa A. Oliver, Kent, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Oct. 26, 1994, Ser. No. 30,304
Term of patent 14 years
U.S. Cl. D25—124



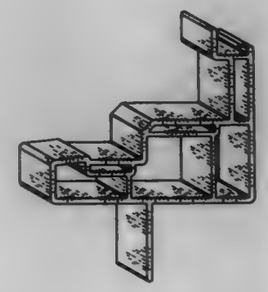
366,325
WINDOW COMPONENT EXTRUSION
Robert A. Schrader, Puyallup, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Jan. 9, 1995, Ser. No. 33,261
Term of patent 14 years
U.S. Cl. D25—124



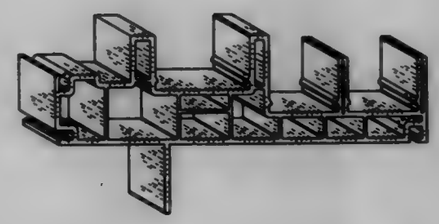
366,326
WINDOW COMPONENT EXTRUSION
Robet A. Schrader, Puyallup, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Jan. 9, 1995, Ser. No. 33,262
Term of patent 14 years
U.S. Cl. D25—124



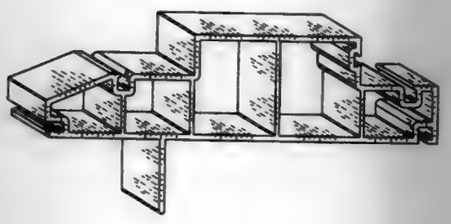
366,327
WINDOW COMPONENT EXTRUSION
Robert A. Schrader, Puyallup, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Jan. 9, 1995, Ser. No. 33,263
Term of patent 14 years
U.S. Cl. D25—124



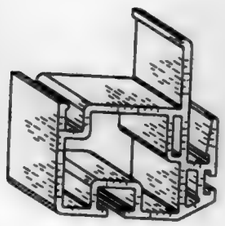
366,328
WINDOW COMPONENT EXTRUSION
Teresa A. Oliver, Kent, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Jan. 9, 1995, Ser. No. 33,264
Term of patent 14 years
U.S. Cl. D25—124



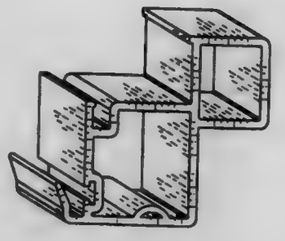
366,329
WINDOW COMPONENT EXTRUSION
Teresa A. Oliver, Kent, Wash., assignor to Mikron Industries, Kent, Wash.
Filed May 31, 1995, Ser. No. 39,446
Term of patent 14 years
U.S. Cl. D25—124



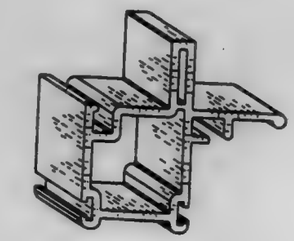
366,330
WINDOW COMPONENT EXTRUSION
Jeffrey R. Franson, Kent, Wash., assignor to Mikron Industries, Kent, Wash.
Filed May 31, 1995, Ser. No. 39,447
Term of patent 14 years
U.S. Cl. D25—124



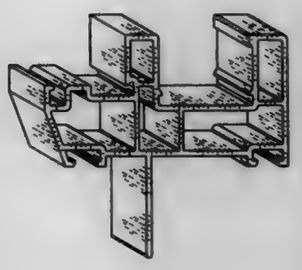
366,331
WINDOW COMPONENT EXTRUSION
Lorane C. Goss, Jr., Slippery Rock, Pa., assignor to Mikron Industries, Kent, Wash.
Filed May 31, 1995, Ser. No. 39,566
Term of patent 14 years
U.S. Cl. D25—124



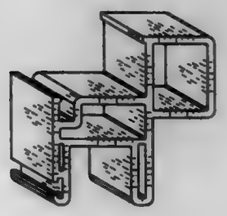
366,332
WINDOW COMPONENT EXTRUSION
Teresa A. Oliver, Kent, Wash., assignor to Mikron Industries, Kent, Wash.
Filed May 31, 1995, Ser. No. 39,567
Term of patent 14 years
U.S. Cl. D25—124



366,333
WINDOW COMPONENT EXTRUSION
Jeffrey R. Franson, Kent, Wash., assignor to Mikron Industries, Kent, Wash.
Filed May 31, 1995, Ser. No. 39,572
Term of patent 14 years
U.S. Cl. D25—124



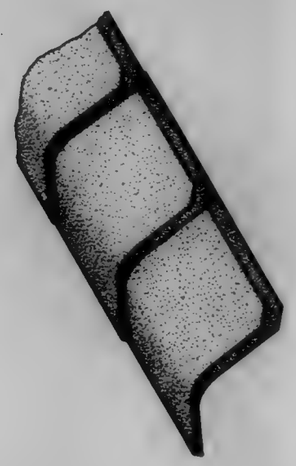
366,334
WINDOW COMPONENT EXTRUSION
Lorane C. Goss, Jr., Slippery Rock, Pa., assignor to Mikron Industries, Kent, Wash.
Filed May 31, 1995, Ser. No. 39,616
Term of patent 14 years
U.S. Cl. D25—124



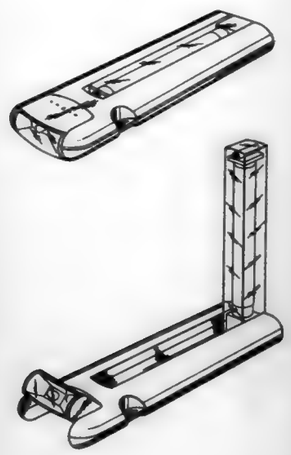
366,335
DESIGN FOR A TAB PORTION OF A SHINGLE
Michael J. Noone, Wayne, and Kermit E. Stahl, North Wales, both of Pa., assignors to CertainTeed Corporation, Valley Forge, Pa.
Filed Jun. 16, 1992, Ser. No. 902,271
Term of patent 14 years
U.S. Cl. D25—139



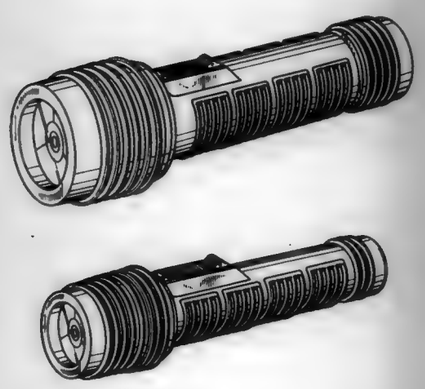
366,336
SHINGLE ARRAY
Michael J. Noone, Wayne, and Kermit E. Stahl, North Wales, both of Pa., assignors to CertainTeed Corporation, Valley Forge, Pa.
Division of Ser. No. 902,271, Jun. 16, 1992. This application Feb. 24, 1995, Ser. No. 35,311
Term of patent 14 years
U.S. Cl. D25—139



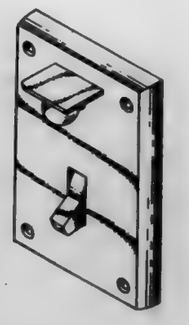
366,337
ADJUSTABLE MULTIPURPOSE LANTERN
Se K. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Continuation of Ser. No. 16,729, Dec. 22, 1993, abandoned. This application Jan. 19, 1995, Ser. No. 33,739
Claims priority, application United Kingdom, Aug. 11, 1993, 2033086
Term of patent 14 years
U.S. Cl. D26—44



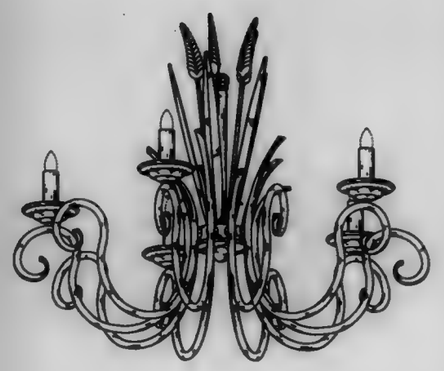
366,338
FLASHLIGHT
Kevin S. Garrity, Madison, Conn., assignor to Garrity Industries, Inc., Madison, Conn.
Filed May 25, 1994, Ser. No. 23,492
Term of patent 14 years
U.S. Cl. D26—49



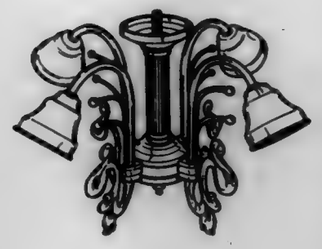
366,339
COMBINED ELECTRICAL SWITCH AND BATTERY POWERED NIGHT LIGHT
Travis Waller, Box 685, Granite, Okla. 73545
Filed Mar. 28, 1994, Ser. No. 20,486
Term of patent 14 years
U.S. Cl. D26—51



366,340
CHANDELIER
David H. Porter, Chagrin Falls, Ohio, assignor to The L.D. Kichler Co., Cleveland, Ohio
Filed Oct. 11, 1994, Ser. No. 29,562
Term of patent 14 years
U.S. Cl. D26—81



366,341
LIGHTING FIXTURE FOR CEILING FAN
Shieh-Shi Lin, Taipei, Taiwan, Prov. of China, assignor to Sunlit Industry Co., Ltd., Taiwan, Prov. of China
Filed Sep. 16, 1994, Ser. No. 28,528
Term of patent 14 years
U.S. Cl. D26—84



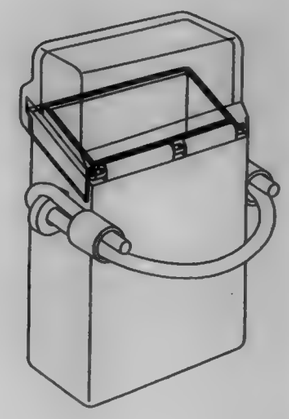
366,342
TABLE LAMP BASE
David H. Porter, Chagrin Falls, and Libbe A. Milicia, Garfield Heights, both of Ohio, assignors to The L.D. Kichler Co., Cleveland, Ohio
Filed Oct. 11, 1994, Ser. No. 29,470
Term of patent 14 years
U.S. Cl. D26—101



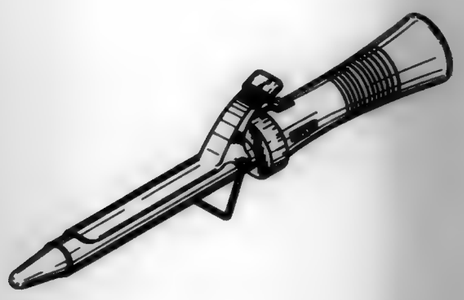
366,343
LAMP SHADE
Winston Hsu, Taichung, Taiwan, Prov. of China, assignor to Bright Yin Huey Co., Ltd., Taichung, Taiwan, Prov. of China
Filed Sep. 22, 1994, Ser. No. 28,900
Term of patent 14 years
U.S. Cl. D26—133



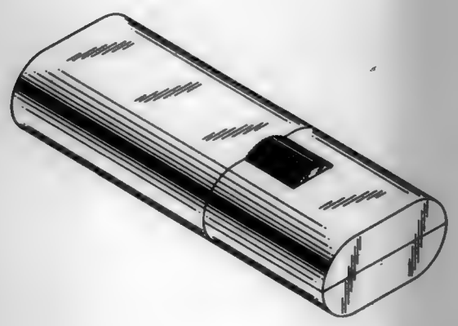
368,344
WATERPROOF CIGARETTE CASE
Kevin Mak, 136 Crestwood Dr., Warren, N.J. 07059
Filed May 2, 1994, Ser. No. 22,224
Term of patent 14 years
U.S. Cl. D27—186



366,345
POWER CURLING IRON
Daniel A. Valente, 30 Baybridge Dr., Queensbury, N.Y. 12804
Filed Nov. 1, 1994, Ser. No. 30,108
Term of patent 14 years
U.S. Cl. D28—35



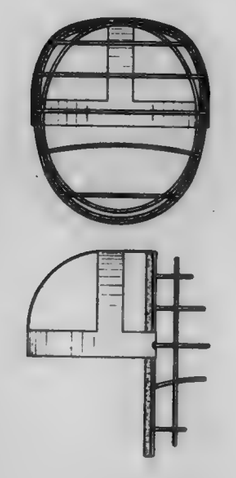
366,346
MASCARA CASE
Salvatore J. Accolese, Edison, N.J., assignor to Charbelle Ltd., Los Angeles, Calif.
Filed Aug. 11, 1994, Ser. No. 27,183
Term of patent 14 years
U.S. Cl. D28—76



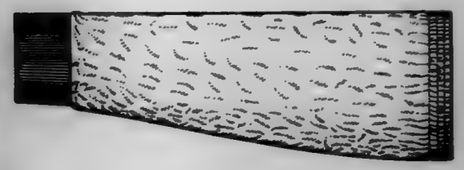
366,347
PROTECTIVE HEAD COVER
D. Jean Avey, Rte. 1, Box 98, Albert, Kans. 67511
Filed Sep. 7, 1993, Ser. No. 12,652
Term of patent 14 years
U.S. Cl. D29—106



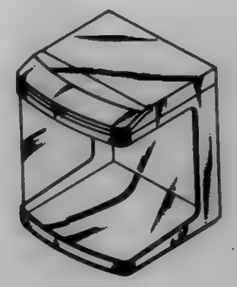
366,348
PLASTIC SOCCER PROTECTION MASK
Preston L. Boone, Rte. 5, Box 50, Kinston, N.C. 28501
Filed Sep. 15, 1994, Ser. No. 28,438
Term of patent 14 years
U.S. Cl. D29—111



366,349
ARM PROTECTOR
Ronald W. Barney, 5522 Middlecoff, Huntington Beach, Calif. 92647
Filed Jun. 4, 1993, Ser. No. 9,053
Term of patent 14 years
U.S. Cl. D29—120



366,350
AQUARIUM TANK
Minoru Ichikawa, Tokyo, Japan, assignor to Nimo Industry Co., Ltd., Tokyo, Japan
Filed Dec. 10, 1993, Ser. No. 16,225
Term of patent 14 years
U.S. Cl. D30—101



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1182
ISS
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1996
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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16th DAY OF JANUARY, 1996

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.C.T. Partnership, Ltd.: *See*—
Crawford, Paul; and Gafford, James, 5,484,533, Cl. 210-660.000.

A. Rifkin Co.: *See*—
Koivites, Albert; Cohn, Robert J.; and Angeloni, Paul J., 5,483,916, Cl. 116-173.000.

ABB Management AG: *See*—
Tecchio, Piero, 5,484,972, Cl. 218-70.000.
Zimmermann, Hans, 5,485,050, Cl. 310-260.000.

Abbott Laboratories: *See*—
Al-Razzak, Laman A.; Marsh, Kenneth C.; Manning, Lourdes P.; and Kaul, Dilip, 5,484,801, Cl. 514-365.000.
Bouma, Stanley R.; Joseph, Jeffrey L.; Marshall, Ronald L.; and Laffler, Thomas G., 5,484,699, Cl. 435-5.000.
Dellaria, Joseph F.; Basha, Anwer; Black, Lawrence A.; Chernesky, Linda J.; and Lee, Wendy, 5,484,786, Cl. 514-256.000.
Hochlowski, Jill E.; Jackson, Marianna; Kadam, Sunil K.; Karwowski, James P.; and McAlpine, James B., 5,484,799, Cl. 514-345.000.

Abe, Hiroomi; Fujii, Takeshi; Yamamoto, Masashi; Nishio, Takeyoshi; and Nomura, Takao, to Sumitomo Chemical Company, Limited; and Toyota Jidosha Kabushiki Kaisha. Thermoplastic polypropylene resin composition. 5,484,824, Cl. 523-436.000.

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Abe, Takao, to Shin-Etsu Handotai Co., Ltd. Semiconductor device with optical waveguides to achieve signal transmission using optical means. 5,485,021, Cl. 257-84.000.

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Abensfelder, Guenter; Grantz, Helmut; and Odebrecht, Wolfgang, to Mercedes-Benz AG. Device for air-conditioning the passenger compartment and for cooling the drive system of electric vehicles. 5,483,807, Cl. 62-435.000.

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Adachi, Kazuyoshi: *See*—
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Adermann, David A.; and Dean, Anthea. Protective camera housing and optical system for use in destructive environment. 5,485,237, Cl. 354-[illegible]5.000.

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Ando, Etuo, to Ando Seisakujo Co., Ltd. Fluid cylinder. 5,483,796, Cl. 60-560.000.

Ando, Makoto: *See—*
Kasashima, Masahiko; Nanao, Nobuyuki; Takeguchi, Kouichirou; Akashi, Kazuo; Suzuki, Yoshiaki; Ando, Makoto; and Yamanaka, Yuji, 5,485,073, Cl. 320-15.000.

Ando Seisakujo Co., Ltd.: *See—*
Ando, Etuo, 5,483,796, Cl. 60-560.000.

Andoh, Hisashi: *See—*
Maeda, Yoshihiro; Ikuta, Isao; Andoh, Hisashi; Nagai, Munichi; Kaieh, Yoshimi; Sato, Yoshio; Tauboi, Nobuyoshi; and Minemura, Hiroyuki, 5,484,686, Cl. 430-270.130.

Andreasson, Bengt. Method and device for the control and regulation of the stretch of a running web. 5,485,386, Cl. 364-471.000.

Andreussi, Piero: *See—*
Garbassi, Fabio; Biagini, Paolo; Andreussi, Piero; and Lugli, Gabriele, 5,484,897, Cl. 534-15.000.

Andrews, Dana: *See—*
Tepman, Avi; Grunes, Howard; and Andrews, Dana, 5,484,011, Cl. 165-1.000.

Angeles Group, Inc.: *See—*
Kelly, Ray G.; Turnbough, Sharon A.; Tarnakvage, Diane; and Blocker, Douglas L., 5,483,904, Cl. 108-156.000.

Angell, C. Austen; Xu, Kang; and Liu, Changle, to state of Arizona, acting for Arizona State University, Arizona Board of Regents, a body corporate of the . Lithium ion conducting ionic electrolytes. 5,484,670, Cl. 429-199.000.

Angeloni, Paul J.: *See—*
Kolvites, Albert; Cohn, Robert J.; and Angeloni, Paul J., 5,483,916, Cl. 116-173.000.

Anoszko, Thomas J., to Research Products Corporation. Appliance mounting system. 5,484,125, Cl. 248-201.000.

Antel Optronics, Inc.: *See—*
Chu, Ching; and VanderWindt, Mike, 5,485,264, Cl. 356-73.100.

Anton Piller GmbH & Co. KG: *See—*
Canders, Wolf-Ruediger; Heidt, Joachim; and Zellmann, Norbert, 5,485,045, Cl. 310-156.000.

Aaltila, Jari; Gustafson, Jukka; Heimikari, Matti; Linja, Jukka; and Vaihinen, Matti, to Kvaerner Masa-Yards Oy. Spherical LNG-tank and a production method for such a tank. 5,484,098, Cl. 228-184.000.

Anvari, Kioomars, to Aval Communications Inc. Feed-forward power amplifier system with adaptive control and control method. 5,485,120, Cl. 330-151.000.

Anzen Motor Co., Ltd.: *See—*
Fukuda, Yutaka; and Minagawa, Kenji, 5,483,824, Cl. 73-125.000.

Aoki, Eiichiro; and Maruyama, Kazunori, to Yamaha Corporation. Automatic arrangement apparatus including backing part production. 5,484,957, Cl. 84-635.000.

Aoki, Haruni; Ogawa, Kimiaki; and Morisawa, Tohei, to Asahi Kogaku Kogyo Kabushiki Kaisha. Fill-in light emitting apparatus and still video camera. 5,485,201, Cl. 348-223.000.

Aoki, Naohiko: *See—*
Yamazato, Hisao; Tani, Naoki; Aoki, Naohiko; Kashihara, Jyunzou; and Uramoto, Yasunari, 5,485,397, Cl. 364-492.000.

Aoki, Nobuaki: *See—*
Nomura, Hiroshi; Sato, Norio; and Aoki, Nobuaki, 5,485,315, Cl. 359-701.000.

Aoyama, Yasutada; Takada, Hiroyuki; Hayashi, Koichi; Chaya, Norio; and Nishikawa, Hiroshi, to Brother Kogyo Kabushiki Kaisha; and Xing Inc. Image processor for producing even field video data based on odd field video data. 5,485,218, Cl. 348-447.000.

Aphex Systems, Ltd.: *See—*
Wernbach, Dean, 5,485,077, Cl. 323-286.000.

Apple Computer, Inc.: *See—*
Dalton, John C., 5,485,550, Cl. 395-51.000.
Opreacu, Florin; and Van Brunt, Roger W., 5,485,458, Cl. 370-85.200.
Schoenwald, David S.; and Forge, Charles O., 5,485,076, Cl. 323-225.000.
Sweazey, Paul, 5,485,578, Cl. 395-200.110.
Van Brunt, Roger W.; and Opreacu, Florin A., 5,485,488, Cl. 375-257.000.

Applied Immune Sciences, Inc.: *See—*
Clark, Brian, 5,484,852, Cl. 525-333.600.

Applied Materials, Inc: *See—*
Blackburn, Greg; Johnson, Donald L.; McGovern, Richard; and Rossoza, Yan, 5,484,486, Cl. 118-728.000.

Applied Materials, Inc.: *See—*
Tepman, Avi; Grunes, Howard; and Andrews, Dana, 5,484,011, Cl. 165-1.000.

Aquarium Systems, Inc.: *See—*
Mowka, Edmund J., Jr., 5,484,525, Cl. 210-169.000.

Arai, Akihiro; and Tatsuiya, Hisashi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera. 5,485,236, Cl. 354-195.110.

Arai, Hiroshi: *See—*

Ishida, Tomotoshi; Minami, Shunsuke; Kawashima, Yasumasa; Arai, Hiroshi; Yamada, Takeo; and Arai, Shigeru, 5,485,560, Cl. 395-133.000.

Arai, Shigeru: *See*—
Ishida, Tomotoshi; Minami, Shunsuke; Kawashima, Yasumasa; Arai, Hiroshi; Yamada, Takeo; and Arai, Shigeru, 5,485,560, Cl. 395-133.000.

Arai, Tatsuo: *See*—
Koyachi, Noriho; Adachi, Hironori; and Arai, Tatsuo, 5,484,031, Cl. 180-8.100.

Aramaki, Toshiya, to NEC Corporation. Packet switching system capable of reducing a delay time for each packet. 5,485,457, Cl. 370-60.000.

Aranyi, Ernie, to United States Surgical Corporation. Handle for surgical instruments. 5,483,952, Cl. 600-131.000.

Arashima, Teruo: *See*—
Ishinaga, Hiroyuki; Sugitani, Hiroshi; Masuda, Kazuaki; Kasamoto, Masami; Suzuki, Seiji; Kashino, Toshio; Kawai, Jun; Okazaki, Takeshi; Arashima, Teruo; and Kamiyama, Yuji, 5,485,186, Cl. 347-65.000.

Nakagomi, Hiroshi; Arashima, Teruo; Maeoka, Kunihiko; Ohba, Takashi; Kawai, Jun; Abe, Tsutomu; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; Kimura, Makiko; Kashino, Toshio; Saikawa, Hideo; Karita, Seiichiro; and Orikasa, Tsuyoshi, 5,485,184, Cl. 347-63.000.

Araya, Junji: *See*—
Yano, Hideyuki; Araya, Junji; Hashimoto, Norio; Kugoh, Harumi; Shibuya, Takashi; and Furuya, Tadashi, 5,485,248, Cl. 355-206.000.

Arbanas, Glenn A.: *See*—
Williams, Bruce H.; Arbanas, Glenn A.; and Greeff, Roy E., 5,485,484, Cl. 375-376.000.

Arbit, Ehud: *See*—
DiResta, Gene R.; Lee, Jongbin; and Arbit, Ehud, 5,484,399, Cl. 604-21.000.

Archambault, Marc-Antoine: *See*—
Forget, Robert; Hibchen, Kurt; Parenteau, Robert; Daoût, Robert; Beaumont, Francois; Chagnon, Yves; Lefebvre, Bernard; and Archambault, Marc-Antoine, 5,485,436, Cl. 369-36.000.

Archer, Michael P., to EOS Corporation. Resonant power converter for changing the magnitude of a DC voltage. 5,485,362, Cl. 363-24.000.

Arechaga, Alfonso: *See*—
Dutto, Ivo; and Arechaga, Alfonso, 5,485,388, Cl. 364-473.000.

Arghavani, Zahra: *See*—
Akhavan-Tafti, M. Hashem; and Arghavani, Zahra, 5,484,556, Cl. 252-700.000.

Arimoto, Shinobu, to Canon Kabushiki Kaisha. Data processing system comprising a plurality of data processing apparatus conducting data communications through a bus line. 5,485,535, Cl. 382-305.000.

Armogan, Lloyd; Schober, Christina M.; and Valley, Steven P., to Honeywell Inc. Method of hermetically sealing a plastic connector. 5,483,743, Cl. 29-883.000.

Armstrong, Glen D.: *See*—
Heerze, Louis D.; and Armstrong, Glen D., 5,484,773, Cl. 514-23.000.

Arnaud, Georges; and Jacques, Claude, to Auxilec. Self-synchronous motor and electrical traction system using a self-synchronous motor. 5,485,064, Cl. 318-139.000.

Arndt, Kenneth A.: *See*—
Sharpe, Richard J.; Arndt, Kenneth A.; Galli, Stephen L.; Meltzer, Peter C.; Razdan, Raj K.; and Sard, Howard P., 5,484,788, Cl. 514-275.000.

Arntzen, Charles J.: *See*—
Lau, Dominic M.-K.; and Arntzen, Charles J., 5,484,719, Cl. 435-172.300.

Arrow International Investment Corporation: *See*—
Fleck, Philip B., 5,484,419, Cl. 604-171.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Niino, Masahiko; and Ibe, Sadao, 5,484,567, Cl. 264-328.100.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Aoki, Haruzo; Ogawa, Kimiaki; and Morisawa, Tahei, 5,485,201, Cl. 348-223.000.

Arai, Akihiro; and Tatamiya, Hisashi, 5,485,236, Cl. 354-195.110.

Nomura, Hiroshi; Sato, Norio; and Aoki, Nobuaki, 5,485,315, Cl. 359-701.000.

Sato, Osamu; Nakano, Satoshi; Hirai, Isamu; Kitazawa, Toshiyuki; Sensui, Takayuki; Yamamoto, Masato; Yamanaka, Toshimasa; Shishikura, Takenao; and Takahashi, Akio, 5,485,242, Cl. 354-442.000.

Shimizu, Hitoshi, 5,485,200, Cl. 348-207.000.

Shindo, Osamu, 5,485,403, Cl. 364-559.000.

Shindo, Osamu, 5,485,404, Cl. 364-559.000.

Asai, Naohito: *See*—
Noguchi, Hiromichi; Asai, Naohito; and Suga, Yuko, 5,484,823, Cl. 522-92.000.

Asai, Takeshi: *See*—
Nakamura, Kozo; Yokosuka, Yasushi; Kozima, Yasuyuki; Takaoka, Kazuhiko; Yamamoto, Kagehiro; and Asai, Takeshi, 5,485,287, Cl. 358-426.000.

Asajima, Mikio: *See*—
Suto, Kenichiro; Asajima, Mikio; and Higaki, Koichi, 5,484,759, Cl. 503-227.000.

ASAMI Corporation: *See*—
Kikuchi, Hiromichi; Hideshima, Yoshinori; and Tanji, Keisuke, 5,483,713, Cl. 5-502.000.

Asamura, Yoshinori: *See*—
Hatano, Yoshiko; Onishi, Ken; Asamura, Yoshinori; Itou, Takashi; and Tsukamoto, Manabu, 5,485,533, Cl. 382-236.000.

Asano, Kazuo: *See*—
Wada, Yasuo; and Asano, Kazuo, 5,485,406, Cl. 364-560.000.

Asanuma, Takamitsu: *See*—
Katoh, Kenji; Inoue, Tokuta; Nohira, Hidetaka; Nakanishi, Kiyoshi; Iguchi, Satoshi; Kihara, Tetsuro; Gotoh, Masato; Asanuma, Takamitsu; Okano, Hiroshi; Harada, Jun; Takeshima, Shinichi; Sugiyama, Masahiko; Sakurai, Shigenori; Ohkubo, Kenji; and Murachi, Mikio, 5,483,795, Cl. 60-276.000.

Asea Brown Boveri AB: *See*—
Maléus, Börje; and Tjernqren, Jan, 5,485,137, Cl. 337-295.000.

Asgari, Hamidreza, to Koninklijke PTT Nederland N.V. ATM cell detector. 5,485,461, Cl. 370-94.200.

Ashtaputre, Sunil V.: *See*—
Brasen, Daniel R.; and Ashtaputre, Sunil V., 5,485,396, Cl. 364-491.000.

ASICS Corporation: *See*—
Kataoka, Akira; Inohara, Masanobu; Tsukita, Ryuichi; Suma, Toshio; and Saito, Kiyobiro, 5,483,760, Cl. 36-134.000.

Ashtiani, Ronald A.; Hunt, Catherine B.; Prasad, Keshava A.; Hall, Corrina A. B.; Hickman, Mark S.; Cleveland, Lance; and Allen, William J., to Hewlett-Packard Company. Inking for color-inkjet printers, using non-integral drop averages, media varying inking, or more than two drops per pixel. 5,485,180, Cl. 347-15.000.

Asko, Inc.: *See*—
Dempsey, Martin J., 5,483,812, Cl. 72-252.500.

ASM Japan, K.K.: *See*—
Kyogoku, Mitsusuke, 5,484,483, Cl. 118-719.000.

Aso, Takashi, to Canon Kabushiki Kaisha. Method and apparatus for speech analysis and synthesis by sampling a power spectrum of input speech. 5,485,543, Cl. 395-2.760.

Assar, Mahmud; Estakhri, Petro; Nemazie, Siamack; and Mozaffari, Mahmood, to Cirrus Logic, Inc. Flash memory mass storage architecture incorporating wear leveling technique without using cam cells. 5,485,595, Cl. 395-430.000.

Astashov, Vytchesaly: *See*—
Akopov, Ernest; Astashov, Vytchesaly; Tvorogov, Nikolai; and Udalov, Sergei, 5,484,451, Cl. 606-139.000.

Astle, Brian, to Intel Corporation. Video database indexing and method of presenting video database index to a user. 5,485,611, Cl. 395-600.000.

Asulab S.A.: *See*—
Grupp, Joachim; and Poli, Jean-Charles, 5,484,205, Cl. 374-142.000.

AT&T Corp.: *See*—
Allen, Jonathan B.; and Youtkus, Donald J., 5,485,515, Cl. 379-391.000.

Bogart, Frank J.; Butterfield, Bruce D.; Chavez, David L., Jr.; Dittner, Henry C.; Fix, Frederick R.; Hardouin, Larry J.; Schmidt, Nancy K.; and Thomson, Linda L., 5,485,512, Cl. 379-221.000.

Colbert, Raymond O., 5,485,510, Cl. 379-145.000.

Engelstad, Steven L.; Faick, Keith F.; and Vandendorpe, James E., 5,485,613, Cl. 395-650.000.

Haas, Zygmunt, 5,485,298, Cl. 359-139.000.

Segen, Jakub, 5,484,966, Cl. 178-18.000.

Vellanki, Mahesh K., 5,483,884, Cl. 101-129.000.

Atarashi, Yoshifumi: *See*—
Kurokawa, Yoshiki; Nishioka, Kiyokazu; Kamimaki, Hideki; and Atarashi, Yoshifumi, 5,485,623, Cl. 395-182.200.

Atkins, Harriette: *See*—
Wartenberg, Mark F.; Atkins, Harriette; Reamey, Robert H.; Welsh, Laurence; Strain, James; Wójtowicz, Janusz; Montoya, Wayne; Drzaic, Paul S.; Havens, John; Tomita, Akira; and Lau, Aldrich N. K., 5,484,552, Cl. 252-299.500.

Atkinson, Robert; Keith, Peter; Ellis, Louis G.; Schmaltz, Dale; and Robinson, David, to SciMed Life Systems, Inc. Intravascular catheter and method for use thereof. 5,484,409, Cl. 604-96.000.

Aucagne, Jean: *See*—
Bompard, Bruno; Aucagne, Jean; and Lapresle, Bernard, 5,484,642, Cl. 428-166.000.

Ancoin, B. Michael: *See*—
Russell, B. Don; Ancoin, B. Michael; and Bonner, Carl L., 5,485,093, Cl. 324-522.000.

Ausdemoore, Robert M.; and Freid, Wilbert B., to General Electric Company. Cooling system for a divergent section of a nozzle. 5,484,105, Cl. 239-127.300.

Auspex Systems, Inc.: *See*—
Hitz, David; Schwartz, Allan; Lau, James; and Harris, Guy, 5,485,579, Cl. 395-200.120.

Austin, Jared A.: *See*—
Lickfield, Deborah K.; Berman, Mark H. S.; Hyslop, Robert F.; Oleszczuk, Andrew R.; Gessner, Scott L.; and Austin, Jared A., 5,484,645, Cl. 428-198.000.

Automated Label Systems Company: *See*—
Lerner, Hershey; and Liebhart, Dana J., 5,483,783, Cl. 53-399.000.

Automation System and Products, Inc.: *See*—
Sadre, Ahmad; Baechtel, Donald F.; and Graber, Mark S., 5,485,620, Cl. 395-700.000.

Auxilec: *See*—
Arnaud, Georges; and Jacques, Claude, 5,485,064, Cl. 318-139.000.

Avacon, S.A.: *See*—
Dutto, Ivo; and Arechaga, Alfonso, 5,485,388, Cl. 364-473.000.

Aval Communications Inc.: *See*—
Anvari, Kiomars, 5,485,120, Cl. 330-151.000.

Avid Marketing, Inc.: *See*—
Yoakum, Jay F.; and Wooldridge, Sammy E., 5,484,403, Cl. 604-59.000.

Avitan, Shimon, to Aditan, Inc. Electrical supply safety plug. 5,485,340, Cl. 361-43.000.

Awad, Aziz C.; and Smith, Denise M., to Board of Trustees operating Michigan State University. Method for reduction of cholesterol in egg materials. 5,484,624, Cl. 426-614.000.

Axis USA, Inc.: *See*—
Santandrea, Luciano; Lombardi, Massimo; and Amato, Salvatore, 5,484,114, Cl. 242-7.030.

Sbalchiero, Federico; Luciani, Sabatino; and Rossi, Alessandro, 5,484,976, Cl. 219-110.000.

Ayers, Curtis W.: *See*—
Dickens, Larry M.; Haynes, Howard D.; and Ayers, Curtis W., 5,483,833, Cl. 73-583.000.

Azuma, Kunihiko, to NEC Corporation. Oscillation circuit having a current-controlled phase shift circuit. 5,485,128, Cl. 331-135.000.

Azumatani, Yasushi: *See*—
Hamasaka, Hiroshi; Satoh, Isao; Fukushima, Yoshihisa; Takagi, Yuji; and Azumatani, Yasushi, 5,485,439, Cl. 369-47.000.

Baasner, Bernd: *See*—
Marhold, Albrecht; Baasner, Bernd; and Lieb, Folker, 5,484,953, Cl. 549-362.000.

Baba, Kenji, to NEC Corporation. Ion laser generator. 5,485,478, Cl. 372-37.000.

Baba, Rika; Ueda, Ken; Yokouchi, Hisatake; Onodera, Yoichi; Umetani, Keiji; and Tsuneoka, Masayuki, to Hitachi Medical Corporation. Digital x-ray imaging system and method. 5,485,500, Cl. 378-98.200.

Babcock & Wilcox Company, The: *See*—
Downs, William, 5,484,535, Cl. 210-724.000.

Drew, Douglas R.; Paul, Michael A.; and Stubbs, V. Edward, III, 5,484,219, Cl. 403-57.000.

Holmes, Michael J., 5,484,107, Cl. 239-427.500.

Babcock, Douglas J.: *See*—
Letang, Dennis M.; Babcock, Douglas J.; and Weisman, S. Miller, II, 5,483,927, Cl. 123-41.120.

Babirad, Stefan A.: *See*—
George, Billy L.; Babirad, Stefan A.; and Penny, Delmon H., 5,484,477, Cl. 106-499.000.

Bach, Volker: *See*—
Loeffler, Hermann; Lamm, Gunther; Bach, Volker; Lange, Arno; Reichelt, Helmut; and Rothmaier, Herbert, 5,484,460, Cl. 8-638.000.

Bacher, Kurt: *See*—
Schulze, Joerg; Schlueter, Harald; Bacher, Kurt; Schrott, Wolfgang; and Kromm, Erich, 5,484,457, Cl. 8-543.000.

Bachmann, Michel: *See*—
Braunschweiler, Reto; and Bachmann, Michel, 5,484,444, Cl. 606-108.000.

Bachner, Jerry G.; and Worrell, A. S., to Nimco Corporation. Method and apparatus for attaching a spout to a container. 5,484,374, Cl. 493-87.000.

Bacon, Kinney C.: *See*—
Banker, Robert O.; Hayashi, Michael T.; and Bacon, Kinney C., 5,485,221, Cl. 348-563.000.

Bacas, James W.; and Oud, Peter S., to Becton Dickinson and Company. Apparatus and method for analyses of biological specimens. 5,485,527, Cl. 382-128.000.

Badellino, Michael M.: *See*—
Buckman, Robert F., Jr.; and Badellino, Michael M., 5,484,391, Cl. 601-135.000.

Bae, You H., to MacroMed, Inc. pH and temperature sensitive terpolymers for oral drug delivery. 5,484,610, Cl. 424-487.000.

Baechtel, Donald F.: *See*—
Sadre, Ahmad; Baechtel, Donald F.; and Graber, Mark S., 5,485,620, Cl. 395-700.000.

Baehr, Bernd-Dieter; von Delden, Hildegard; and Lillotte, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien. Composition and process for treating textile materials. 5,484,453, Cl. 8-111.000.

Baggio, Giorgio: *See*—
Gorza, Roberto; Baggio, Giorgio; and Battistella, Mirco, 5,483,758, Cl. 36-119.000.

Bahn, Itsuki, to Kabushikigaisha Sekogiken. Reluctance-type motor and a rotor for a reluctance-type high-speed motor. 5,485,047, Cl. 310-166.000.

Bailey, Philip E.: *See*—
Dick, Richard J.; Fulton, Nancy J.; Pfau, James P.; Bailey, Philip E.; and Booton, John D., 5,484,825, Cl. 524-35.000.

Bailey, Ronald L., to Young Dental Manufacturing Company, Inc. Dental prophylaxis tool and angle using it. 5,484,284, Cl. 433-125.000.

Bajuk, Stanislav P.; O'Grady, David S.; and Smith, Edward T., to International Business Machines Corporation. Method of making a rim-type phase-shift mask. 5,484,672, Cl. 430-5.000.

Baker, Brian N., to Northern Telecom Limited. Data structure access control circuit and method utilizing tag bits indicating address match and memory fullness conditions. 5,485,593, Cl. 395-200.080.

Baker, Frank K.: *See*—
Lage, Craig S.; Baker, Frank K.; Hayden, James D.; and Cooper, Kent J., 5,485,420, Cl. 365-154.000.

Baker, Gordon M.: *See*—
Mazzoleni, Giancarlo; and Baker, Gordon M., 5,483,821, Cl. 73-82.000.

Baker Hughes Incorporated: *See*—
Coon, Robert J., 5,484,017, Cl. 166-117.500.

Baker, Stephen F., to Garlock Inc. Flowing arch expansion joint using PEP liner bonded to fiberglass fabric layer and reinforced with plurality of fabric plies covered with elastomeric outer layer. 5,484,173, Cl. 285-229.000.

Baker, Steven G.: *See*—
Quiachon, Dinah B.; Sterman, Wesley D.; Williams, Ronald G.; Dillow, David C.; and Baker, Steven G., 5,484,418, Cl. 604-167.000.

Baldwin Filters, Inc.: *See*—
Brown, Gene W.; Calcaterra, Farrell F.; and Sleicher, Daniel, 5,484,466, Cl. 55-498.000.

Baldwin Hardware Corporation: *See*—
Moyzan, Stephen R., III; and Sugg, Rolin W., 5,484,663, Cl. 428-627.000.

Ballard Power System Inc.: *See*—
Buswell, Richard F.; Cohen, Ronald; Clausi, Joseph V.; Leavitt, Stanley L.; and Watkins, David S., 5,484,577, Cl. 422-211.000.

Ballard Power Systems Inc.: *See*—
Gibb, Peter; Voss, Henry H.; Schlosser, Wolfgang; and Pow, Eric G., 5,484,666, Cl. 429-34.000.

Balzano, Quirino: *See*—
Verma, Vikram; Yao, Nina J.; and Balzano, Quirino, 5,485,166, Cl. 343-744.000.

Ban, Keiji: *See*—
Morishita, Hiroki; Nakamura, Hiroshi; Eki, Makoto; Makiura, Yoshinori; Otsuka, Masao; Tagachi, Kazushiro; and Ban, Keiji, 5,485,247, Cl. 355-205.000.

Band-It-Idex, Inc.: *See*—
Marelin, Miklos; Jansen, George; and Hansen, Hans R., 5,483,998, Cl. 140-93.400.

Brando Chemical Industries, Ltd.: *See*—
Fujiwara, Akinori; and Hata, Katsuhiko, 5,484,497, Cl. 156-110.100.

Banker, Robert O.; Hayashi, Michael T.; and Bacon, Kinney C., to Scientific-Atlanta, Inc. Subscription television system and terminal for enabling simultaneous display of multiple services. 5,485,221, Cl. 348-563.000.

Banning, Kenneth R.; Erwin-Grotsky, George P.; Li, Shih-Gong; Sanchez-Frank, Alejandro; and Shrader, Theodore, to International Business Machines Corporation. Iconic table of database information. 5,485,567, Cl. 395-148.000.

Baran, John S.: *See*—
Hanson, Gunnar J.; and Baran, John S., 5,484,811, Cl. 514-489.000.

Hanson, Gunnar J.; and Baran, John S., 5,484,812, Cl. 514-489.000.

Baranetz, Oleg N.; and Lysy, Leonid. Compact display for animating polarized images. 5,485,309, Cl. 359-485.000.

Barbazza, Piero. Annular structure meant for pieces of real jewelry and cheap jewelry, particularly for rings. 5,483,808, Cl. 63-15.500.

Bardyne, Inc.: *See*—
Fitch, Ernest C., Jr.; and Hong, Ing T., 5,484,383, Cl. 494-48.000.

Barmag AG: *See*—
Jenke, Dietmar; Majusi, Josef; and Wuhken, Winfried, 5,484,370, Cl. 492-4.000.

Barmore, Charles R.; and Bull, Christopher, to W.R. Grace & Co.-Conn. Method of detecting the permeability of an object to oxygen. 5,483,819, Cl. 73-38.000.

Barnes, Keith D.; Kamhi, Victor M.; and Diehl, Robert E. Haloalkylthio, -sulfinyl and -sulfonyl arylpyrrole insecticidal and acaricidal agents. 5,484,807, Cl. 514-424.000.

Barney, Scott: *See*—
Hilliard, Wesley P.; and Barney, Scott, 5,484,465, Cl. 48-76.000.

Barrett, Robert: *See*—
Albrecht, Thomas; Tortonese, Marco; and Barrett, Robert, 5,483,822, Cl. 73-105.000.

Barron, Michael L.: *See*—
Czachor, Robert P.; and Barron, Michael L., 5,483,792, Cl. 60-39.310.

Barrow, Stephen R.: *See*—
Slavcheff, Craig S.; and Barrow, Stephen R., 5,484,597, Cl. 424-401.000.

Bartochevichi, Y. E.: *See*—
Cho, Won T.; Kim, Wan S.; Kim, Myung K.; Park, Jin K.; Kim, Hak R.; Rhee, Sang K.; Domracheva, A. G.; Panichkina, T. B.; Saburoba, L. A.; Nobikoba, L. M.; and Bartochevichi, Y. E., 5,484,712, Cl. 435-78.000.

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Baus, Ulf; and Reuther, Wolfgang, 5,484,938, Cl. 548-335.100.

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Schulze, Joerg; Schlueter, Harald; Bacher, Kurt; Schrott, Wolfgang; and Kromm, Erich, 5,484,457, Cl. 8-543.000.

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Patterson, Jimmy L., 5,484,817, Cl. 521-116.000.

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Prissok, Frank; Lehrich, Friedhelm; Lehr, Gerhard; Glinka, Aleksander; and Harrop, Douglas J., 5,484,827, Cl. 524-86.000.

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Telser, Thomas; Werther, Heinz-Ulrich; and Zuerger, Manfred, 5,484,684, Cl. 430-253.000.

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Dick, Richard J.; Fulton, Nancy J.; Pfau, James P.; Bailey, Philip E.; and Booton, John D., 5,484,825, Cl. 524-35.000.

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Gorza, Roberto; Baggio, Giorgio; and Battistella, Mirco, 5,483,758, Cl. 36-119.000.

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Mahlberg, Hans-Peter; Fuchs, Heinz W.; Rechberg, Reinhard; Bauer, Lothar; Lemme, Werner; Strusch, Wolfgang; Tedsen, Thi; Schleiermacher, Herbert; and Wahnschaffe, Jürgen, 5,483,928, Cl. 123-41.420.

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Sahli, Richard M.; and Baumgartner, Deborah S., 5,484,667, Cl. 429-100.000.

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Wong, Joseph; and Levine, Irwin B., 5,484,406, Cl. 604-87.000.

Bayer AG: *See*—
Linde, Günter; and Eitel, Manfred, 5,484,481, Cl. 106-712.000.
Wittman, Dieter; Schoeps, Jochen; Beicher, Horst; Piejko, Karl-Erwin; and Weirauch, Kurt, 5,484,846, Cl. 525-67.000.
Wood, Louis L.; and Calton, Gary J., 5,484,860, Cl. 525-432.000.

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Marhold, Albrecht, 5,484,932, Cl. 546-346.000.
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Baylor College of Medicine: *See*—
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Velan, George M.; Huson, Gale W.; and Beach, John R., 5,483,837, Cl. 73-865.000.

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Schnaars, Daniel R.; and Beard, Jean-André, 5,484,207, Cl. 383-67.000.

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Siddall, Jonathan H.; and Beaudoin, Daniel A., 5,484,862, Cl. 526-88.000.

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Forget, Robert; Hibchen, Kurt; Pareateau, Robert; Daoûst, Robert; Beaumont, Francois; Chagnon, Yves; Lefebvre, Bernard; and Archambault, Marc-Antoine, 5,485,436, Cl. 369-36.000.

Bechtel, Richard D.: *See*—
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Beck, Erhard: *See*—
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Beck, Martin H.; Rollend, George F.; and Muszynski, John H., to Hoover Universal, Inc. Self-standing polyester containers for carbonated beverages. 5,484,072, Cl. 215-375.000.

Beck, Paul. Adjustable endless belt for use in power transmission. 5,484,342, Cl. 474-254.000.

Becker, Craig D.: *See*—
Saund, Eric; Moran, Thomas P.; and Becker, Craig D., 5,485,565, Cl. 395-142.000.

Becker, Earl J. Animal call. 5,484,320, Cl. 446-418.000.

Becker, Otmar: *See*—
Nass, Peter; Becker, Otmar; Kristen, Klaus; Weinberg, Waldemar; Borens, Manfred; Leroux, Roland; and Thürk, Jürgen, 5,484,467, Cl. 65-33.400.

Beckman Instruments, Inc.: *See*—
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Becton Dickinson and Company: *See*—
Bacus, James W.; and Ord, Peter S., 5,485,527, Cl. 382-128.000.
Benson, Carl L.; and Kosinski, Anthony J., 5,483,973, Cl. 128-760.000.
Stevens, Timothy A., 5,484,731, Cl. 435-305.300.

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DeWeerd, Kim A.; and Bedard, Donna L., 5,484,729, Cl. 435-262.500.

Bedard, Zetta. Nail polish base and method. 5,484,586, Cl. 424-61.000.

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Beghini, Eric: *See*—
Caillaut, Claude; Bonnin, Christophe; Houdayer, Christophe; Rigaux, Christian; Berges, Martha; Beghini, Eric; Defossez, Marc; and Message, Olivier, 5,484,213, Cl. 384-486.000.

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Rudnic, Edward M.; McCarty, John A.; and Beleznuik, George W., 5,484,608, Cl. 424-468.000.

Belhamici, Rachid: *See*—
D'Agostino, Guy; and Belhamici, Rachid, 5,483,991, Cl. 137-514.000.

Bell, Emily T.: *See*—
Mercer, James W., Jr.; Bell, Emily T.; and Shih, Wayne K., 5,484,632, Cl. 428-35.700.

Bellocq, Jean-Pierre: *See*—
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BellSouth Corporation: *See*—
Norman, Daniel P.; Guidotti, Richard A.; and Saitta, David A., 5,485,505, Cl. 379-58.000.

Beloit Technologies, Inc.: *See*—
Bielagus, Joseph B., 5,484,238, Cl. 414-412.000.
Boivin, Robert M.; Nadarajah, Ravindran; Rude, John E.; and Zimmerman, Kenneth J., 5,483,753, Cl. 34-242.000.

Belt, L. Carl: *See*—
Jacobsen, William M. W., Jr.; Belt, L. Carl; and De Pass, Ernest, 5,484,501, Cl. 156-209.000.

Ben-Arie, Yaron: *See*—
Shtayer, Ronen; Eliyahu, Roni; Shvager, Yehuda; and Ben-Arie, Yaron, 5,485,456, Cl. 370-60.000.

Benner, Carl L.: *See*—
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Bennett, Clayton; Sullivan, Alan; and Sullivan, Paul, to Forfax. Dental floss device. 5,483,982, Cl. 132-323.000.

Bennett, David. Wrist-carriable protective sprayer. 5,484,085, Cl. 222-175.000.

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Szymanski, Thomas; Rolando, Steven A.; Gough, David M.; and Bennett, Gerald S., 5,484,757, Cl. 502-439.000.

Bennett, Richard B., III: *See*—
Cha, Jin K.; and Bennett, Richard B., III, 5,484,925, Cl. 546-90.000.

Benson, Carl L.; and Kosinski, Anthony J., to Becton, Dickinson and Company. Needle stopper and needle removal device. 5,483,973, Cl. 128-760.000.

Benz, Erwin; Burk, Gerhard; Schwuchow, Norbert; Trost, Werner; and Deibler, Martin, to Mercedes-Benz AG. Motor vehicle and process for production thereof. 5,484,034, Cl. 180-312.000.

Berdan, Karl, to Pebra GmbH Paul Braun. Blow-out vent valve. 5,484,278, Cl. 425-533.000.

Berdich, Edward C.: *See*—
Detwiler, Timothy P.; Detwiler, Charles G., Jr.; Berdich, Edward C.; and Draper, Peter M., 5,484,311, Cl. 440-61.000.

Berg, Charles J., Jr.; Muckenfuhs, Delmar R.; Maxam, William P., Jr.; Byrd, Alan E.; and Chang, John A., to Procter & Gamble Company, The. Sanitary napkin wrapper and adhesive tab construction for the same. 5,484,636, Cl. 428-40.000.

Bergemont, Albert, to National Semiconductor Corporation. Method of making increased-density flash EPROM that requires less area to form the metal bit line-to-drain contacts. 5,484,741, Cl. 437-43.000.

Berger, Harald; Dragesser, Norbert; Heumueller, Rudolf; Schaetzer, Erich; and Wagner, Manfred, to Hoechst Aktiengesellschaft. Reactor for carrying out chemical reactions. 5,484,573, Cl. 422-128.000.

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Berghager, Hans A. P.: *See*—
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Bergstrom, Richard C.: *See*—
Bowen, Terry P.; Lewis, Warren H.; and Bergstrom, Richard C., 5,485,538, Cl. 385-92.000.

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Bogoshian, Gregory V.; and Berkes, John S., 5,485,254, Cl. 355-253.000.

Berman, Mark H. S.: *See*—
Lickfield, Deborah K.; Berman, Mark H. S.; Hyslop, Robert F.; Oleszczuk, Andrew R.; Gessner, Scott L.; and Austin, Jared A., 5,484,645, Cl. 428-198.000.

Berndt, Klaus W.: *See*—
Lakowicz, Joseph R.; Berndt, Klaus W.; Nowaczyk, Kazimierz; Szmacinski, Henryk; and Johnson, Michael L., 5,485,530, Cl. 382-191.000.

Berrios, Joseph E. Pivoting auxiliary blade apparatus for lawn mower. 5,483,787, Cl. 56-10.100.

Bershteyn, Mikhail, to Mitsubishi Electric Research Laboratories, Inc. System for testing of digital integrated circuits. 5,485,471, Cl. 371-27.000.

Bertani, Marco: *See*—
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Bertieri, Fiorenza. Hair coloring comb. 5,483,979, Cl. 132-114.000.

Bertoluzzi, Renitia J.; Jackson, Robert T.; and Weitzel, Stephen D., to Intel Corporation; and International Business Machine Corp. Integrated dynamic power dissipation control system for very large scale integrated (VLSI) chips. 5,485,127, Cl. 331-69.000.

Bertrand Faure France: *See*—
Mordell, Pierre G. R.; and Jandouin, Paul J. G., 5,483,853, Cl. 74-665.BGD.

Bertsch, John E.; Mann, Randy W.; Nowak, Edward J.; and Tong, Minh H., to International Business Machines Corporation. Fabrication test circuit and method for signalling out-of-spec resistance in integrated circuit structure. 5,485,095, Cl. 324-537.000.

Betensky, Ellis I., to Polaroid Corporation. Zoom lens systems. 5,485,313, Cl. 359-689.000.

Beth Israel Hospital Association: *See*—
Sharpe, Richard J.; Arndt, Kenneth A.; Galli, Stephen J.; Meltzer, Peter C.; Razdan, Raj K.; and Sard, Howard P., 5,484,788, Cl. 514-275.000.

Beutler, Bruce H.: *See*—
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Bevins, Earl. Box handling system. 5,484,380, Cl. 493-480.000.

Bexten, Daniel P.: *See*—
Shannon, Larry S.; Welch, David W.; and Bexten, Daniel P., 5,485,049, Cl. 310-248.000.

Beyers, Gerald W. Hand operated channel notching tool and method of notching. 5,483,746, Cl. 30-229.000.

Bi, Chao; Chang, Kuan-Teck; and Low, Teck-Seng. Method and apparatus for establishing a reference current for use in operating a synchronous motor. 5,485,071, Cl. 318-700.000.

Bi-Link Metal Specialties: *See*—
Ziberna, Frank, 5,483,857, Cl. 83-104.000.

Biagini, Paolo: *See*—
Garbassi, Fabio; Biagini, Paolo; Andreussi, Piero; and Lugli, Gabriele, 5,484,897, Cl. 534-15.000.

Bic Corporation: *See*—
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Bice, Charles D.: *See*—
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Bielagus, Joseph B., to Beloit Technologies, Inc. Refuse bag opening device. 5,484,238, Cl. 414-412.000.

Bien, Fritz; Gersh, Michael; Goldstein, Neil; and Lee, Jamine, to Spectral Sciences Inc. Multi-pass optical cell species concentration measurement system. 5,485,276, Cl. 356-437.000.

Bierhuizen, Marti F. A.: *See*—
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Bierman, Tracy A.: *See*—
Stute, Robert A.; Galloway, F. Houston; Medelius, Pedro J.; Swindle, Robert W.; and Bierman, Tracy A., 5,485,142, Cl. 340-506.000.

Biermann, Manfred: *See*—
Kuehne, Norbert; Biermann, Manfred; Jacobs, Jochen; and Behler, Ansgar, 5,484,531, Cl. 210-653.000.

Biesmans, Guy L. J. G.: *See*—
De Vos, Rik; and Biesmans, Guy L. J. G., 5,484,818, Cl. 521-123.000.

Bigley, Andrew B. W., Jr.; Daecher, Jeffrey L.; Holy, Norman L.; Jerman, Robert E.; Johnson, Phelps B.; and Work, William J., to Rohm and Haas Company. Cured composite, processes and composition. 5,485,541, Cl. 385-141.000.

Bila, Vincent J.: *See*—
Oman, David D.; Bila, Vincent J.; Haney, James L.; Folmsbee, Gary E.; Koch, Rooney R.; Stilley, Randall D.; and Waters, Larry T., 5,483,986, Cl. 137-1.000.

Billings, Donald. Non-tactual facilitation support system. 5,484,124, Cl. 248-118.000.

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Binkley, Jesse A. Textile sizes containing ultrafine-sized aqueous polymeric dispersions. 5,484,840, Cl. 524-501.000.

Bio-Mega/Boehringer Ingelheim Research Inc.: *See*—
Beaulieu, Pierre L.; Déziel, Robert; and Moss, Neil, 5,484,771, Cl. 514-18.000.

Biochemie Gesellschaft m.b.H.: *See*—
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Biogen, Inc.: *See*—
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Bioaca, Adolfo C.: *See*—
Drevillon, Bernard; and Bioaca, Adolfo C., 5,485,271, Cl. 356-345.000.

BioTime, Inc.: *See*—
Waitz, Harold D.; Sternberg, Hal; Segall, Paul E.; and Cohen, Bruce, 5,484,417, Cl. 604-165.000.

Bird, Colin R.; Ray, John A.; and Schuch, Wolfgang W., to Zeneca Limited. DNA clone encoding an ethylene-forming enzyme, constructs, plant cells and plants based thereon. 5,484,906, Cl. 536-23.600.

Bird, Thomas G. C., to Imperial Chemical Industries PLC; and ICI Pharma. Heterocyclene derivatives. 5,484,805, Cl. 514-422.000.

Birioukov, Ivan W.; and Usmanov, Hasan G., to Hackforth GmbH & Co. KG. Articulated coupling. 5,484,339, Cl. 464-69.000.

Biscay, Pierre; Farrando, Alain J.; Joubert, Philippe D.; Martin, Jean-Bernard; and Vignau, Hubert H., to Turbomeca. System for regulating air supply conditions of a turbo shaft machine. 5,484,261, Cl. 415-151.000.

Bisel, Neal O. Chop saw table. 5,484,003, Cl. 144-287.000.

Bishop, Robert P.: *See*—
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Bissell Inc.: *See*—
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BJ Services Company, U.S.A.: *See*—
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Bjorner, Johannes A. S.; and Smith, Steven L., to United Parcel Service of America, Inc. Optical path equalizer. 5,485,263, Cl. 356-4.010.

Björnasoa, Aegir. Arrangement for a filter for the purification of oil. 5,484,523, Cl. 210-130.000.

Black, Lawrence A.: *See*—
Dellaria, Joseph F.; Basha, Anwer; Black, Lawrence A.; Chernesky, Linda J.; and Lee, Wendy, 5,484,786, Cl. 514-256.000.

Blackburn, Brian K.: *See*—
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Blackburn, Greg; Johnson, Donald L.; McGovern, Richard; and Rozenzon, Yan, to Applied Materials, Inc. Quick release process kit. 5,484,496, Cl. 118-728.000.

Blais, Edmund J.: *See*—
Helms, Jeffrey H.; Blais, Edmund J.; and Cheung, Mo-Fung, 5,484,838, Cl. 524-496.000.

Blakeley, Anthony; Konicek, Timothy S.; Horiban, Gregory E.; and Sherman, William D., to Sundstrand Corporation. Support strut for ram air driven turbine. 5,484,120, Cl. 244-54.000.

Blanchard Marketing Services Limited: *See*—
Collins, Brian; and Blanchard, Michael J., 5,485,099, Cl. 324-439.000.

Blanchard, Michael J.: *See*—

Collins, Brian; and Blanchard, Michael J., 5,485,099, Cl. 324-439.000.

Blanchard, Richard A.: *See*—
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Blank, Robert G.; Mogavero, Annabelle; and Seabrook, Alexander, to American Home Products Corporation. Lipid-based liquid medicinal composition. 5,484,800, Cl. 514-365.000.

Blanton, Thomas N.: *See*—
Leiestal, Mark; Christian, Paul A.; Shalhoub, Ibrahim M.; and Blanton, Thomas N., 5,484,694, Cl. 430-530.000.

Blase, Michael; Kelly, Luke E.; Meek, Steven K.; Langeland, Brenda K.; and Norwood, Richard L., to Bissell Inc. Combination vacuum cleaner and water extractor power foot. 5,483,726, Cl. 15-321.000.

Blasnik, William; and Coonradt, Robert A. Liquid container within retractable straw. 5,484,080, Cl. 220-708.000.

Blehert, Michael L.; Geyer, Robert A.; and Wilmo, Michael S., to Tennant Company. Floor scrubbing machine having impact energy absorption. 5,483,718, Cl. 15-50.300.

Bleyman, Oleg I.: *See*—
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Failli, Amedeo A.; Bleyman, Oleg I.; Kao, Wenling; and Abou-Gharbia, Magid A., 5,484,791, Cl. 514-291.000.

Bliss, Gary S.: *See*—
Pawloski, James C.; Bliss, Gary S.; and Siemon, Ronald L., 5,484,052, Cl. 198-803.010.

Bloch, Ricardo A.: *See*—
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Blocker, Douglas L.: *See*—
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Blomquist, Michael L., to SIMS Deltec, Inc. Pump simulation apparatus. 5,485,408, Cl. 364-578.000.

Blue, Clarence D.: *See*—
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Blythe, John L.: *See*—
Tedders, Walker L., Jr.; and Blythe, John L., 5,484,504, Cl. 156-433.000.

BMC Industries, Inc.: *See*—
Deibler, Dean T.; Ratz, Thomas; Takach, Peter L.; and Thoms, Roland, 5,484,074, Cl. 216-12.000.

Board of Governors of Wayne State University: *See*—
Pryor, Roger W., 5,483,920, Cl. 117-106.000.

Board of Regents The University of Texas: *See*—
Fuchs, Ingbert E., 5,483,697, Cl. 2-161.700.

Board of Regents, The University of Texas System, The: *See*—
Goldblum, Randall M.; and Rajaraman, Srinivasan, 5,484,707, Cl. 435-7.920.
Wallace, Sidney; Yang, David; Wallace, Michael; Li, Chun; and Kuang, Li-Ren, 5,484,584, Cl. 424-129.000.

Board of Supervisors of Louisiana State University and Agricultural and Mechanical College: *See*—
Rice, Richard G., 5,484,532, Cl. 210-656.000.

Board of Trustees operating Michigan State University: *See*—
Awad, Aziz C.; and Smith, Denise M., 5,484,624, Cl. 426-614.000.

Bochumer Eisenhutte Heintzmann GmbH & Co. KG: *See*—
Domanski, Lothar; and Podjadtke, Rudi, 5,484,130, Cl. 248-354.300.

Bock, Allyn P.; Kelly, Stephen V.; McLaughlin, Samuel L.; and Weller, Brian R., to Caterpillar Inc. Sealed articulated piston. 5,483,869, Cl. 92-159.000.

Bodenheimer, Joseph S.: *See*—
Voskoboinik, Moses; Baumberg, Israel; and Bodenheimer, Joseph S., 5,485,355, Cl. 362-84.000.

Bodick, Neil C.; Bymaster, Franklin P.; Offen, Walter W.; and Shannon, Harlan E., to Eli Lilly and Company. Method for treating anxiety. 5,484,794, Cl. 514-305.000.

Boehringer Mannheim GmbH: *See*—
Hoenes, Joachim; and Uskrig, Volker, 5,484,708, Cl. 435-14.000.

Boeing Company, The: *See*—
Duncan, Michael J.; Fetzer, Barry A.; Geithman, Glenn A.; Rickter, Arthur P.; and Uyehara, Clyde T., 5,485,084, Cl. 324-225.000.

Boer, Edward: *See*—
Crawford, John; and Boer, Edward, 5,483,779, Cl. 52-645.000.

Bogart, Frank J.; Butterfield, Bruce D.; Chavez, David L., Jr.; Dittner, Henry C.; Fix, Frederick R.; Hardouin, Larry J.; Schmidt, Nancy K.; and Thomson, Linda L., to AT&T Corp. Mnemonic and synonymic addressing in a telecommunications system. 5,485,512, Cl. 379-221.000.

Bogdahn, Manfred, to Bogdahn-Technik GmbH. Brake mechanism for retractable animal leash assembly. 5,483,926, Cl. 119-796.000.

Bogdahn-Technik GmbH: *See*—
Bogdahn, Manfred, 5,483,926, Cl. 119-796.000.

Bogorad, Lev: *See*—
Watson, Douglas R.; Bogorad, Lev; Lombardi, Albert; Neiger, Benjamin; Rivera, Lester; Justiniano, Joseph G.; and Alama, Zvi, 5,485,058, Cl. 315-194.000.

Bogoshian, Gregory V.; and Berkes, John S., to Xerox Corporation. Metering blade for single-component magnetic developer in a xerographic apparatus. 5,485,254, Cl. 355-253.000.

Bogue, Elaine B.: *See*—
Seymour, Raymond K.; and Bogue, Elaine B., 5,485,134, Cl. 335-132.000.

Boigenzahn, Jeffrey F.: *See*—
Anderson, Todd B.; Boigenzahn, Jeffrey F.; Stephenson, John J.; and Warner, Amy L., 5,485,323, Cl. 360-78.080.

Boivin, Robert M.; Nadarajah, Ravindran; Rude, John E.; and Zimmerman, Kenneth J., to Beloit Technologies, Inc. Resilient rotary dryer seal. 5,483,753, Cl. 34-242.000.

Bolanos, Henry: *See*—
Green, David T.; Bolanos, Henry; Heaton, Lisa W.; Alzri, Mark E.; and Sater, Ghaleb A., 5,484,095, Cl. 227-181.100.

Bolkenius, Frank: *See*—
Grisar, J. Martin; Petty, Margaret A.; and Bolkenius, Frank, 5,484,810, Cl. 514-456.000.

Bollman, James E.: *See*—
Venable, Dennis L.; Campanelli, Michael R.; Fuss, William A.; Bollman, James E.; Nagao, Takashi; Yamada, Toshiya; and Yamada, Kazuya, 5,485,568, Cl. 395-155.000.

Bolosky, William J.; and Rashid, Richard F., to Microsoft Corporation. Operating system based performance monitoring of programs. 5,485,574, Cl. 395-183.110.

Bolton, Jeffrey S.; Kalyanaraman, Ramos; Schilling, Steven L.; and Blue, Clarence D., to Bayer Corporation. Process for preparing polyamines for lighter color polyisocyanate based foam. 5,484,819, Cl. 521-155.000.

Bolz, Alfred, to Alfred Bolz GmbH & Co. KG. Transfer closure valve for filling and emptying containers. 5,484,004, Cl. 141-346.000.

Bombardelli, Ezio, to Indena S.p.A. Derivatives of non-steroidal anti-inflammatory, analgesic and/or antipyretic substances, their use and pharmaceutical formulations containing them. 5,484,833, Cl. 424-449.000.

Bompard, Bruno; Aucagne, Jean; and Lapreale, Bernard, to Brochier S.A. Textile material useful for producing composite laminated articles by injection molding. 5,484,642, Cl. 428-166.000.

Bonham, James A., to Minnesota Mining and Manufacturing Company. Migration-resistant halomethyl-1,3,5-triazine photoinitiator. 5,484,919, Cl. 544-193.100.

Bonifaci, Luigi: *See*—
Albanesi, Mario; and Bonifaci, Luigi, 5,484,077, Cl. 220-404.000.

Bonn, Heinz, to Eberhard Hoesch & Söhne GmbH, Verfahrens- und Anlagentechnik. Membrane plate for plate filter presses. 5,484,526, Cl. 210-229.000.

Bonnia, Christophe: *See*—
Caillaut, Claude; Bonnia, Christophe; Houdayer, Christophe; Rigaux, Christian; Berges, Martha; Beghini, Eric; Defossez, Marc; and Message, Olivier, 5,484,213, Cl. 384-486.000.

Bostempi, Luigi. Two-stage electrostatic filter with extruded modular components particularly for air recirculation units. 5,484,473, Cl. 96-65.000.

Boone, David A.: *See*—
Smith, Douglas G.; Joseph, Aaron W.; Boone, David A.; Borchers, Robert E.; and Burgess, Ernest M., 5,485,402, Cl. 364-566.000.

Boston, John D.: *See*—
Dick, Richard J.; Fulton, Nancy J.; Pfau, James P.; Bailey, Philip E.; and Boston, John D., 5,484,825, Cl. 524-35.000.

Borchers, Robert E.: *See*—
Smith, Douglas G.; Joseph, Aaron W.; Boone, David A.; Borchers, Robert E.; and Burgess, Ernest M., 5,485,402, Cl. 364-566.000.

Borens, Manfred: *See*—
Nass, Peter; Becker, Otmar; Kristen, Klaus; Weinberg, Waldemar; Borens, Manfred; Leroux, Roland; and Thürk, Jürgen, 5,484,467, Cl. 65-33.400.

Borgman, Randall W.: *See*—
Pierce, Paul M.; and Borgman, Randall W., 5,483,903, Cl. 108-147.000.

Boring, Richard J. Adjustable striking bag support apparatus. 5,484,364, Cl. 482-87.000.

Borland International, Inc.: *See*—
Smith, Kenneth W., 5,485,618, Cl. 395-700.000.

Born, Daniel A.; Lavoie, Alvin C.; and Emmons, William D., to Rohm and Haas Company. Air curing polymer composition. 5,484,849, Cl. 525-167.500.

Bortoli, Giulio: *See*—
Corain, Luciano; Novella, Marco; and Bortoli, Giulio, 5,483,997, Cl. 139-194.000.

Bosch, Anthony: *See*—
Strunk, Louis M.; Bosch, Anthony; and Kruhmin, Ted, 5,484,652, Cl. 428-251.000.

Bosch-Siemens Hausgeraete GmbH: *See*—
Heyder, Reinhard, 5,483,756, Cl. 34-601.000.

Bosnyak, Robert J.: *See*—
Drost, Robert J.; Murata, David M.; Bosnyak, Robert J.; Santoro, Mark R.; and Tavrow, Lee S., 5,485,106, Cl. 326-66.000.

Boughner, John W.: *See*—
Lux, Jeffrey P.; Boughner, John W.; and Dulzo, Joseph R., 5,484,353, Cl. 477-169.000.

Boulet, Jean: *See*—
Amaudric du Chaffaut, Benoit; and Boulet, Jean, 5,483,987, Cl. 137-2.000.

Bouma, Stanley R.; Joseph, Jeffrey L.; Marshall, Ronald L.; and Laffler, Thomas G., to Abbott Laboratories. Nucleotide sequences useful as type specific probes, PCR primers and LCR probes for the amplification and detection of human papilloma virus, and related kits and methods. 5,484,699, Cl. 435-5.000.

Bovy, Philippe R.; Reitz, David B.; and Manning, Robert E., to G.D. Searle & Co. N-substituted N-(α-triazolyl-tolyl)pyrrole compounds for treatment of circulatory disorders. 5,484,937, Cl. 548-266.200.

Bowen, Terry P.; Lewis, Warren H.; and Bergstrom, Richard C., to Whitaker Corporation, The . Bidirectional wavelength division multiplex transceiver module. 5,485,538, Cl. 385-92.000.

Boyd, Donald B.; Hauser, Kenneth L.; Lifer, Sherryl L.; Marshall, Winston S.; Palkowitz, Alan D.; Pfeifer, William; Reel, Jon K.; Simon, Richard L.; Steinberg, Mitchell I.; Takeuchi, Kumiko; Thrasher, K. Jeff; and Whiteside, Celia A., to Eli Lilly and Company. Angiotensin II antagonists. 5,484,780, Cl. 514-94.000.

Boyd, Thomas J., to Electric Power Research Institute, Inc. Method for preheating fly ash. 5,484,476, Cl. 106-405.000.

Bozanic, Larry M., to Ford Motor Company. UV-hard coat transfer. 5,484,502, Cl. 156-235.000.

BP Chemicals (HITCO), Inc.: *See*—
Strunk, Louis M.; Bosch, Anthony; and Kruhmin, Ted, 5,484,652, Cl. 428-251.000.

BPB Industries Public Limited Company: *See*—
Bradshaw, John J., 5,484,200, Cl. 366-15.000.

Bradford, Curtis V., to Metricom, Inc. Method and apparatus for measuring electrical parameters using a differentiating current sensor and a digital integrator. 5,485,393, Cl. 364-483.000.

Bradshaw, John J., to BPB Industries Public Limited Company. Mixer. 5,484,200, Cl. 366-15.000.

Braithwaite, Norman S. Sheet folding method. 5,484,378, Cl. 493-356.000.

Brake And Clutch Industries Australia Pty, Ltd.: *See*—
Wang, Nui, 5,484,042, Cl. 188-106.00A.

Brandao, Ruy L.: *See*—
Maneeur, Arezki; Weist, William C.; Brandao, Ruy L.; and Hermann, Phillip R., 5,485,156, Cl. 342-77.000.

Brandon, Ronald E. Steam turbine bell seals. 5,484,260, Cl. 415-134.000.

Brandt, Arnold W.; Jones, Thomas E., III; and Bucciarelli, Robert B., to Ford Motor Company. Method and apparatus for detecting ionic current in the ignition system of an internal combustion engine. 5,483,818, Cl. 73-35.010.

Branly, Keith; Gaggero, James M.; Low, Chel W.; and Lamb, Cathy S., to Micro Flo Company. Disbrotician bait. 5,484,587, Cl. 424-84.000.

Brasen, Daniel R.; and Ashtaputre, Sunil V., to VLSI Technology, Inc. Symbolic routing guidance for wire networks in VLSI circuits. 5,485,396, Cl. 364-491.000.

Brash, David L. A.; Crook, Neal A.; and Leathall, John M., to Digital Equipment Corporation. Queue based arbitration using a FIFO data structure. 5,485,586, Cl. 395-292.000.

Braun Aktiengesellschaft: *See*—
Rebordosa, Antonio; and Golob, Jürgen, 5,483,848, Cl. 74-371.000.

Braun, Klaus; and Steigenberger, Ulrich, to Alcatel N.V. Optical receiver with signal splitter. 5,485,302, Cl. 359-189.000.

Braunschweiler, Reto; and Bachmann, Michel, to Schneider (Europe) A.G. Device for the implantation of self-expanding endoprostheses. 5,484,444, Cl. 606-108.000.

Bresser Optik GmbH & Co. KG: *See*—
Kim, Byung-Sun, 5,485,307, Cl. 359-421.000.

Breton, Marcel P.; and Nobes, Geoffrey A. R., to Xerox Corporation. Micellar-based ink compositions. 5,484,475, Cl. 106-20.00C.

Bridgestone Corporation: *See*—
Morehart, Christine L.; and Ravagnani, Frederick J., 5,484,005, Cl. 152-564.000.

Briegel, Wolfgang: *See*—
Terzi, Paul; Briegel, Wolfgang; Cermak, Dieter; and Schulze, Michael, 5,484,539, Cl. 210-774.000.

Briggs, Keith O.; Perez, John J.; and Taylor, Gregory A., to Sony Corporation; and Sony Electronics Inc. Dual purpose cleaning tray for lot box cleaning machine. 5,483,983, Cl. 134-58.00R.

Brigham Young University: *See*—
Smith, Craig C., 5,485,395, Cl. 364-485.000.

Bright, Edward J.: *See*—
Tran, Mai-Loan; Bright, Edward J.; and Taylor, Attalee S., 5,483,737, Cl. 29-747.000.

Briskman, Robert D.; Seavey, John M.; and Medeiros, Paul, to CD Radio Inc. Radio frequency broadcasting systems and methods using two low-cost geosynchronous satellites and hemispherical coverage antennas. 5,485,485, Cl. 375-200.000.

Bristol-Myers Squibb Company: *See*—
Basset, Paul; Bellocq, Jean-Pierre; and Chambon, Pierre, 5,484,726, Cl. 435-7.400.

British Aerospace PLC: *See*—
Miller, Lee D., 5,485,301, Cl. 359-181.000.

British Telecommunications public limited company: *See*—
Healey, Peter; and Smith, David, 5,485,296, Cl. 359-112.000.

Brochier S.A.: *See*—
Bompard, Bruno; Aucagne, Jean; and Lapreale, Bernard, 5,484,642, Cl. 428-166.000.

Broderick, Ifeanyi C.: *See*—
Usifer, Douglas A.; and Broderick, Ifeanyi C., 5,484,864, Cl. 526-301.000.

Brodsky, Eric: *See*—
Waldo, Whitson G., III; Brodsky, Eric; and Corrina, Franco, 5,485,498, Cl. 378-84.000.

Bromley, Robert L.: *See*—
Fleenor, Richard P.; and Bromley, Robert L., 5,484,435, Cl. 606-46.000.

Bronicki, Lucien Y.: *See*—
Rigal, Meir; Karas, Amir; Nathan, Abe; Rifner, Yechiel; Amir, Nadav; Bronicki, Lucien Y.; and Granianni, Moshe, 5,483,797, Cl. 60-641.200.

Bronowicki, Raymond A., to Marbec, Inc. Clothes hamper with rotatable partitions and insert therefore. 5,484,078, Cl. 220-531.000.

Brooker, Donald D.: *See*—
Vaong, Dinh-Cuong; Brooker, Donald D.; Falsetti, James S.; and Wolfenberger, James K., 5,484,554, Cl. 252-373.000.

Brooks, David R.; and Murdoch, Graham A., to Magellan Corporation (Australia) Pty. Ltd. Communication device and method(s). 5,485,154, Cl. 342-44.000.

Brooks, Steven E.: *See*—
Kumar, Rajendra; Brooks, Steven E.; and Gallo, Michael J., 5,484,989, Cl. 235-435.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Aoyama, Yasutada; Takada, Hiroyuki; Hayashi, Koichi; Chaya, Norio; and Nishikawa, Hiroshi, 5,485,218, Cl. 348-447.000.
Seo, Keiji; and Miki, Takashi, 5,483,880, Cl. 101-125.000.

Brothers, Lance E., to Halliburton Company. High temperature set retarded cement compositions and methods. 5,484,478, Cl. 106-696.000.

Brown, Barry D.; and Wakefield, Paul A. J., to Gateway Technologies, Inc. Integrated commissary system. 5,485,507, Cl. 379-88.000.

Brown, David; and Lipman, John M., to Lotus Cars Ltd. Differential unit. 5,484,348, Cl. 475-248.000.

Brown, Gene W.; Calcaterra, Farrell F.; and Sleicher, Daniel, to Baldwin Filters, Inc. Air filter element with radial seal sealing gasket. 5,484,466, Cl. 55-498.000.

Brown, J. Martin, to Leland Stanford Junior University, The Board of Trustees of the . Method of treating a mammal having a solid tumor susceptible to treatment with cisplatin. 5,484,612, Cl. 424-649.000.

Brown, J. Michael: *See*—
Hart, Paul R.; and Brown, J. Michael, 5,484,488, Cl. 134-22.130.

Brown University Research Foundation: *See*—
Vitter, Jeffrey S.; Carewitz, Kenneth M.; and Krishnan, P., 5,485,609, Cl. 395-600.000.

Browning, Jeffrey L.: *See*—
Wallner, Barbara P.; Pepinsky, R. Blake; and Browning, Jeffrey L., 5,484,711, Cl. 435-69.200.

Bruchmann, Bernd; Minges, Roland; and Schade, Christian, to BASF Aktiengesellschaft. Process for the preparation of isocyanates containing uretdione groups by using imidazole group containing polymeric catalysts. 5,484,916, Cl. 540-202.000.

Bruckert, Eugene J., to Motorola, Inc. Manifold antenna structure for reducing reuse factors. 5,485,631, Cl. 455-33.300.

Bruckner Trockentechnik GmbH & Co.: *See*—
Greesen, Harry, 5,483,754, Cl. 34-478.000.

Bruker Analytische Messtechnik GmbH: *See*—
Westphal, Michael; and Laukien, Günther, 5,485,088, Cl. 324-320.000.

Brukhart, Louis P.: *See*—
Isaksen, Cathy L.; Brukhart, Louis P.; and Kluese, Franklin A., Jr., 5,484,505, Cl. 156-470.000.

Brunaud, Jacques, to Eurocopter France. Aircraft sighting system. 5,483,865, Cl. 89-41.210.

Brunswick Corporation: *See*—
Karls, Michael A.; and Lindgren, Daniel R., 5,484,264, Cl. 416-204.00R.

Bryant, Aubrey: *See*—
Whitney, Robert L; Simmering, Lisa C.; O'Nan, Glenn S.; Bryant, Aubrey; and Reed, Steven F., 5,484,300, Cl. 439-207.000.

Bryant, Henry U.; Callinan, George J.; Dodge, Jeffrey A.; Fahey, Kennan J.; Jones, Charles D.; Lagor, Charles W.; and Muehl, Brian S., to Eli Lilly and Company. Naphthyl compounds, intermediates, processes, compositions, and method of inhibiting restenosis. 5,484,795, Cl. 514-319.000.

Bryant, Henry U.; Callinan, George J.; Dodge, Jeffrey A.; Fahey, Kennan J.; Jones, Charles D.; Lagor, Charles W.; and Muehl, Brian S., to Eli Lilly and Company. Naphthyl compounds, intermediates, processes, compositions, and method of inhibiting aortal smooth muscle cell proliferation. 5,484,796, Cl. 514-319.000.

Bryant, Henry U.; Callinan, George J.; Dodge, Jeffrey A.; Fahey, Kennan J.; Jones, Charles D.; Lagor, Charles W.; and Muehl, Brian S., to Eli Lilly and Company. Naphthyl compounds, intermediates, processes, compositions, and method for inhibiting endometrosis. 5,484,797, Cl. 514-319.000.

Bryant, Henry U.; Callinan, George J.; Dodge, Jeffrey A.; Fahey, Kennan J.; and Jones, Charles D., to Eli Lilly and Company. Benzothiopene compounds, compositions, and method of inhibiting restenosis. 5,484,798, Cl. 514-324.000.

Bucciarelli, Robert B.: *See*—
Brandt, Arnold W.; Jones, Thomas E., III; and Bucciarelli, Robert B., 5,483,818, Cl. 73-35.010.

Buchanan, Robert A.; Stults, Jeffrey S.; and Spoon, Ronald F., to Occidental Chemical Corporation. Polyimides containing fluorine. 5,484,879, Cl. 528-353.000.

Buckman, Robert F., Jr.; and Badellino, Michael M. Direct manual cardiac compression method. 5,484,391, Cl. 601-135.000.

Budinski, Kenneth G.: *See*—
Ghosh, Syamal K.; Hopkins, Roy O.; Budinski, Kenneth G.; and Kohler, Mark S., 5,484,629, Cl. 427-255.000.

Buhlke, Dennis, to Monfort, Inc. Method and device for hot fat trimming. 5,484,331, Cl. 452-134.000.

Bulk Handling Systems, Inc.: *See*—

Clark, Brian K.; and Miller, Roy R., 5,484,247, Cl. 414-412.000.

Bull, Christopher: *See*—
Barmore, Charles R.; and Bull, Christopher, 5,483,819, Cl. 73-38.000.

Burgess, Ernest M.: *See*—
Smith, Douglas G.; Joseph, Aaron W.; Boone, David A.; Borchers, Robert E.; and Burgess, Ernest M., 5,485,402, Cl. 364-566.000.

Burk, Gerhard: *See*—
Benz, Erwin; Burk, Gerhard; Schwachow, Norbert; Trost, Werner; and Deibler, Martin, 5,484,034, Cl. 180-312.000.

Burke, David C.: *See*—
Guaraldi, Glenn A.; and Burke, David C., 5,484,212, Cl. 384-462.000.

Burke, Dennis W.; Petersen, Thomas; Krueger, David; and Baya, Rodney L., to Zimmer, Inc. Alignment guide for use in orthopaedic surgery. 5,484,446, Cl. 606-87.000.

Burke, James J.; Maher, John W.; and Thompson, William A. Method for transmitting a message to multiple communication units. 5,485,633, Cl. 455-51.200.

Burke, Michael G.; Carini, Paul R.; and Choi, Jong-Deok, to International Business Machines Corporation. Using program call graphs to determine the maximum fixed point solution of interprocedural bidirectional data flow problems in a compiler. 5,485,616, Cl. 395-700.000.

Burke, Phillip C., to Devices for Vascular Intervention, Inc. Motor drive unit with torque control circuit. 5,485,042, Cl. 310-47.000.

Burnaman, Earl W. Form decking apparatus for bridges. 5,483,716, Cl. 14-73.000.

Burns, Carmen D., to Staktek Corporation. High density lead-on-package fabrication method and apparatus. 5,484,959, Cl. 174-524.000.

Burns, James E.; David, Morgan W. A.; and Dorricott, Martin R., to Sony United Kingdom Limited. Motion compensated video signal processing by interpolation of correlation surfaces and apparatus for doing the same. 5,485,224, Cl. 348-699.000.

Burns, Matthew M., to SciMed Life Systems, Inc. Insertless catheter. 5,484,408, Cl. 604-96.000.

Burri, Michel: *See*—
Renard, Pascal; and Burri, Michel, 5,483,817, Cl. 73-2.000.

Burstein, Orlando; Machado, Sebastião; A.; and Fontes, Umberto J., to Helmeister, Mário Sérgio. Device for the automatic control of vehicular brake systems on hills. 5,484,044, Cl. 188-353.000.

Busboom, Leah J. H.; Clausen, Trent L.; Eagen, Stephen T.; Kiel, Harvey G.; Manalik, Robert J.; Plute, Michael E.; Remfert, Jeffrey B.; and Roman, Raymond F., to International Business Machines Corporation. Display station controller. 5,485,570, Cl. 395-161.000.

Bushman, Cidny A.: *See*—
Lampropoulos, Fred P.; Young, Richard L.; Bushman, Cidny A.; and Lampropoulos, Bryan R., 5,483,999, Cl. 141-86.000.

Bussin, George N. Vehicle obstacle detector and alarm system. 5,485,140, Cl. 340-436.000.

Bussler, Brett H.; Hakes, Harrison R.; and Mayonado, David J., to Monsanto Company. Herbicide antidotes as safeners for reducing phytotoxicity resulting from synergistic interaction between herbicides and other pesticides. 5,484,760, Cl. 504-103.000.

Buswell, Richard F.; Cohen, Ronald; Ciani, Joseph V.; Leavitt, Stanley L.; and Watkins, David S., to Ballard Power System Inc. Catalytic hydrocarbon reformer with enhanced internal heat transfer mechanism. 5,484,577, Cl. 422-211.000.

Butler, Neal R.; and Lasser, Marvin E., to Loral Infrared & Imaging Systems, Inc. Two dimensional transducer integrated circuit. 5,483,963, Cl. 128-661.010.

Butterfield, Bruce D.: *See*—
Bogart, Frank J.; Butterfield, Bruce D.; Chavez, David L., Jr.; Dittner, Henry C.; Fix, Frederick R.; Hardouin, Larry J.; Schmidt, Nancy K.; and Thomson, Linda L., 5,485,512, Cl. 379-221.000.

Buyach, Hans-Josef: *See*—
Langer, Reinhard; Buyach, Hans-Josef; and Wagner, Paul, 5,484,576, Cl. 422-211.000.
Szablikowski, Klaus; Buyach, Hans-Josef; and Klausener, Alexander, 5,484,903, Cl. 536-18.600.

Bymaster, Franklin P.: *See*—
Bodick, Neil C.; Bymaster, Franklin P.; Offen, Walter W.; and Shannon, Harlan E., 5,484,794, Cl. 514-305.000.

Byrd, Alan E.: *See*—
Berg, Charles J., Jr.; Mackenfuhs, Delmar R.; Maxam, William P., Jr.; Byrd, Alan E.; and Chang, John A., 5,484,636, Cl. 428-40.000.

C.R. Bard, Inc.: *See*—
Drainville, Nancy; and Felix, Augustus, 5,484,428, Cl. 604-319.000.
Risbon, Michael L., 5,484,385, Cl. 600-16.000.
Weinstein, Martin J.; and Intoccia, Alfred P., 5,484,474, Cl. 96-209.000.

Cabletron Systems, Inc.: *See*—
Dobbins, Kurt; Andlauer, Phil; Oliver, Chris; Parker, Tom; Grimes, Andy; Nutbrown, Bruce; Hullette, Dan; Dev, Roger; and Jeffords, Jason, 5,485,455, Cl. 370-60.000.

Cadaret, Patrick M.; and Dernovshek, Joseph F., to Rockwell International Corporation. Composite brake piston with internal cushion and stop. 5,484,041, Cl. 188-73.370.

Caden, Jeffrey A.; and Wolke, Mark. Low fat food product. 5,484,622, Cl. 426-555.000.

Cadman, Gary R., to Scully Signal Company. Method and apparatus for testing overfill protection devices. 5,485,401, Cl. 364-551.010.

Caesar, Julian C.: *See*—
Pitt, Alan R.; Caesar, Julian C.; Gibson, Dennis; Wear, Trevor J.; Young, David J.; and King, Scott A., 5,484,695, Cl. 430-546.000.

Cahill, Sean S., to Yazaki Meter Co., Ltd. Method for forming a semiconductor sensor. 5,484,745, Cl. 437-63.000.

Cahoon, John M.; Kam, Jack L.; Huang, Nai Z.; and Roski, James P., to Lubrizol Corporation, The . Sulfurized overbased compositions. 5,484,542, Cl. 252-18.000.

Cai, Chunsheng: *See*—
Huang, Pao-Ter; Cai, Chunsheng; Janik, Jaroslav; Lecko, John H.; and Morton, James S., 5,484,049, Cl. 198-460.300.

Cai, Dongwei; Desmond, Richard; Shi, Yao-Jun; Tschaen, David M.; and Verhoeven, Thomas R., to Merck & Co., Inc. Process of making spirocycles and analogs thereof. 5,484,923, Cl. 546-17.000.

Caillaut, Claude; Bonnin, Christophe; Houdayer, Christophe; Rigaux, Christian; Berges, Martha; Beghini, Eric; Defossez, Marc; and Message, Olivier, to SKF France. Rolling-contact bearing equipped with a sealing device for passage of fluid. 5,484,213, Cl. 384-486.000.

Calcaterra, Farrell F.: *See*—
Brown, Gene W.; Calcaterra, Farrell F.; and Sleicher, Daniel, 5,484,466, Cl. 55-498.000.

Caldwell, Donald L. Self-cleaning paint brush. 5,483,721, Cl. 15-160.000.

Callihoo, Brian. Speed indicator for marine vehicles. 5,483,828, Cl. 73-187.000.

Calton, Gary J.: *See*—
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Shank, James D., 5,484,325, Cl. 451-38.000.

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Deitz, Rolf; and Tzikas, Athanassios, 5,484,898, Cl. 534-612.000.
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Pickering, Thomas R.; Bayley, Denise R.; and Ciccarelli, Roger N., 5,484,678, Cl. 430-110.000.

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Turecek, John; and Ciupak, Richard, 5,483,875, Cl. 108-51.300.

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Busboom, Leah J. H.; Clausen, Trent L.; Eagen, Stephen T.; Kiel, Harvey G.; Manulik, Robert J.; Plute, Michael E.; Remfert, Jeffrey E.; and Rosson, Raymond F., 5,485,570, Cl. 395-161.000.

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Rouzeval, André; and Viel, Christian, 5,484,010, Cl. 164-433.000.

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El-Sherbeini, Mohamed; and Clemas, Joseph A., 5,484,724, Cl. 435-193.000.

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Ashland, Ronald A.; Hunt, Catherine B.; Prasad, Keshava A.; Hall, Corrina A. E.; Hickman, Mark S.; Cleveland, Lance; and Allen, William J., 5,485,180, Cl. 347-15.000.

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Scheffer, Terry J.; and Clifton, Benjamin R., 5,485,173, Cl. 345-100.000.

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Donaldson, Dean S.; Williams, Darren T.; and Campbell, William W., 5,484,167, Cl. 283-67.000.

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Noble, Raymond C.; and Cocchi, Massimo, 5,484,611, Cl. 424-570.000.

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Vellucci, Dominic J., Jr.; Mason, Charles R.; Cochran, Stuart A.; Coleman, Edward C.; and Nayyar, Dalip K., 5,484,616, Cl. 426-242.000.

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Milne, George J.; and Cockshott, William P., 5,485,599, Cl. 395-500.000.

Cocuzza, Anthony J.; Hobbs, Frank W., Jr.; Zagursky, Robert J.; and Strauss, Neil A., to Du Pont de Nemours, E. I., and Company. Method for sequencing DNA using biotin-strepavidin conjugates to facilitate the purification of primer extension products. 5,484,701, Cl. 435-6.000.

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Waitz, Harold D.; Sternberg, Hal; Segall, Paul E.; and Cohen, Bruce, 5,484,417, Cl. 604-165.000.

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Kolvites, Albert; Cohn, Robert J.; and Angeloni, Paul J., 5,483,916, Cl. 116-173.000.

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Coleman Cassiners Limited: *See*—
Turecek, John; and Ciupak, Richard, 5,483,875, Cl. 108-51.300.

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Collins, Brian; and Blanchard, Michael J., to Blanchard Marketing Services Limited. Sensing method and device. 5,485,099, Cl. 324-439.000.

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Colombier, Christian; Dinson, Jean-Pierre; and Cuer, Jean-Pierre, to Elf Atochem S.A. Metal/metalloid nitride/carbide ceramic powders prepared by flash pyrolysis. 5,484,751, Cl. 501-87.000.

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Hochstrate, Paul M.; and Gamache, Michael E., 5,483,766, Cl. 42-75.000.

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Rogers, Kevin P.; and Simeneen, Christine, 5,484,492, Cl. 148-437.000.

Comau S.p.A.: *See*—
Scarzello, Osvaldo, 5,484,369, Cl. 483-56.000.

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Sothman, Donald J., 5,484,067, Cl. 211-87.000.

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Concepcion-Diaz, Abelardo, 5,484,287, Cl. 434-128.000.

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Conlan, Joseph: *See*—
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Kronheim, Shirley R.; March, Carl J.; Conlon, Paul J., III; and Hopp, Thomas P., 5,484,887, Cl. 530-351.000.

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Fleenor, Richard P.; and Bromley, Robert L., 5,484,435, Cl. 606-46.000.

Conner, Howard D.: *See*—
Owensby, Joseph E.; Conner, Howard D.; and Dobbins, Frederick A., 5,483,784, Cl. 53-459.000.

Conner Peripherals, Inc.: *See*—
Midgley, Christopher W.; Hunsche, Richard S.; and Weaver, Mark L., 5,485,606, Cl. 395-600.000.

Connery, Glenn W.: *See*—
Hausman, Richard; Sherer, Paul W.; Rivers, James P.; Zikmund, Cynthia; Connery, Glenn W.; Strohl, Niles E.; and Reid, Richard S., 5,485,584, Cl. 395-842.000.

Connor, Patrick J.: *See—*
Przybylski, Gerald W.; Connor, Patrick J.; and Peters, David W., 5,484,541, Cl. 252-17.000.

Connors, Charles W., Jr.: *See—*
Soofi, Madjid; Irwin, James S.; and Connors, Charles W., Jr., 5,484,138, Cl. 266-281.000.

Conrad, Lucas J.; and White, Jackie L., to R. J. Reynolds Tobacco Company. Tobacco expansion processes and apparatus. 5,483,977, Cl. 131-291.000.

Converex, Inc.: *See—*
Marschke, Carl R., 5,484,499, Cl. 156-193.000.

Convers, Ronald J., to Du Pont de Nemours, E. I., and Company. Ink jet printhead with improved durability. 5,485,181, Cl. 347-63.000.

Conwed Fibers, a division of Leucadia, Inc.: *See—*
Jacobsen, William M. W., Jr.; Belt, L. Carl; and De Pass, Ernest, 5,484,501, Cl. 156-209.000.

Cook, Donald E. Glass shearing apparatus. 5,484,109, Cl. 241-73.000.

Cook Incorporated: *See—*
Melker, Richard J.; Gearen, Peter F.; Miller, Gary J.; DeBruyne, Michael P.; and Molitor, Lisa, 5,484,442, Cl. 606-79.000.

Cook, John E.: *See—*
Perry, Paul D.; and Cook, John E., 5,483,942, Cl. 123-520.000.

Cook, Scott: *See—*
Martin, Eugene G.; and Cook, Scott, 5,484,333, Cl. 452-182.000.

Coon, Robert J., to Baker Hughes Incorporated. Whipstock assembly for a sleeved casing. 5,484,017, Cl. 166-117.500.

Coonradt, Robert A.: *See—*
Blasnik, William; and Coonradt, Robert A., 5,484,080, Cl. 220-708.000.

Cooper, Eugene R.: *See—*
Ruddy, Stephen B.; McIntire, Gregory L.; Roberts, Mary E.; Douty, Brent D.; and Cooper, Eugene R., 5,484,585, Cl. 424-9.450.

Cooper, Guy F., to United States of America, Navy. Aerosol dispensing apparatus for dispensing a medicated vapor into the lungs of a patient. 5,483,953, Cl. 128-200.220.

Cooper Industries, Inc.: *See—*
Johnson, Stephen P.; Hassler, Stephen P.; and Lapp, John, 5,485,136, Cl. 337-168.000.
Wood, Peter C., 5,484,056, Cl. 206-349.000.

Cooper, Kent J.: *See—*
Lage, Craig S.; Baker, Frank K.; Hayden, James D.; and Cooper, Kent J., 5,485,420, Cl. 365-154.000.

Copper, John M.; and Richter, John M., to MicroMed Systems, Inc. Hand held computer input apparatus and method. 5,485,171, Cl. 345-160.000.

Corain, Luciano; Novella, Marco; and Bortoli, Giulio, to Nuovopignone - Industrie Meccaniche e Fonderia S.p.A. Blade type weft brake for a shuttleless loom. 5,483,997, Cl. 139-194.000.

Cordis Corporation: *See—*
Inderbitzen, Mark; and Martinez, Susana, 5,484,411, Cl. 604-96.000.

Cornell Research Foundation, Inc.: *See—*
Compton, Richard C.; and York, Robert A., 5,485,164, Cl. 343-700.0MS.
Lee, Keun-Ho; and Chu, Chih-Chang, 5,485,496, Cl. 378-64.000.
Nasrallah, June B.; Nasrallah, Mikhaeil E.; and Stein, Joshua, 5,484,905, Cl. 536-23.600.

Correa, Norbert: *See—*
Horak, Dieter; Fabeljie, Uwe; Stiller, Joachim; Engelhardt, Dietmar; Correa, Norbert; Vautz, Petra; Muck, Arnold; and Wirtz, Ulrich, 5,484,116, Cl. 242-35.60R.

Corrion, Steven G.; and Foxworth, Donald E., to TRW Vehicle Safety Systems Inc. Seat belt retractor lock. 5,484,190, Cl. 297-476.000.

Cothern, Terry D. Safety device for ladders. 5,484,036, Cl. 182-107.000.

Cottencesu, Jean-Philippe; and Chevillon, Gérard, to Celsa L.G. (Societe Anonyme). Blood filtering device having a catheter with longitudinally variable rigidity. 5,484,424, Cl. 604-282.000.

Couffet, Claude; Hellegouarc'h, Jean; Prost, Gérard; and Uring, Jean C., to Celes. Device for protecting and cooling the poles of an electromagnetic inductor. 5,485,483, Cl. 373-154.000.

Courtaulds Fibres (Holdings) Ltd.: *See—*
Urwin, Philip J.; and Jack, Iain R., 5,484,508, Cl. 162-28.000.

Coutts, Graeme F.; and Edwards, Jeffrey C., to Exploration & Production Services (North Sea) Ltd. Tubing test valve. 5,484,022, Cl. 166-336.000.

Coveney, Donal J.: *See—*
Doran, Henry J.; and Coveney, Donal J., 5,484,931, Cl. 546-310.000.

Cowan, Kenneth M., to Shell Oil Company. Remedial wellbore sealing with unsaturated monomer system. 5,484,020, Cl. 166-295.000.

Cowan, Michael G.: *See—*
Nunes, James A.; and Cowan, Michael G., 5,484,152, Cl. 280-282.000.

Crabbé, Emmanuel F.; Jenkins, Keith A.; and Snare, Jeffrey L., to International Business Machines Corporation. On-chip ground plane for semiconductor devices to reduce parasitic signal propagation. 5,485,029, Cl. 257-501.000.

Crabtree, William M. Table top advertising display. 5,484,638, Cl. 428-67.000.

Cragoe, Alex E.: *See—*
Frederickson, Michael D.; Kertis, Stephen T.; Mearig, Joel A.; Cragoe, Alex E.; and Carpenter, Frank, 5,485,392, Cl. 364-477.000.

Craig, Franklin J.: *See—*
Weder, Donald E.; and Craig, Franklin J., 5,484,562, Cl. 264-40.100.

Craggle, Richard. Device to apply, hold, and measure cricoid pressure during endotracheal intubation or cricothyroidotomies, or other medical airway procedures. 5,483,974, Cl. 128-774.000.

Crawford, John; and Boer, Edward, to Exposystems, Inc. Header frame for a display system. 5,483,779, Cl. 52-645.000.

Crawford, Paul; and Gafford, James, to A.C.T. Partnership, Ltd. Method for the stabilization and detoxification of waste material. 5,484,533, Cl. 210-660.000.

Craze, David J., to Ezarc Pty., Ltd. Process for extracting vapor from a gas stream. 5,483,801, Cl. 62-5.000.

Creatura, John A.: *See—*
Cunningham, Michael F.; Mahabadi, Hadi K.; Smith, Thomas W.; and Creatura, John A., 5,484,681, Cl. 430-137.000.

Creelman, Kevin; and Jacobs, Terry G. Mogul skiing simulating device. 5,484,363, Cl. 482-71.000.

Crews, Alvin D., Jr.: *See—*
Condon, Michael E.; Crews, Alvin D., Jr.; and Manfredi, Mark C., 5,484,762, Cl. 504-261.000.

Critikon, Inc.: *See—*
Sloane, Thomas E., Jr.; and Altman, Zinovy, 5,484,422, Cl. 604-272.000.

Crivello, James V., to Polyset Company, Inc. Process for selective monoaddition to silanes containing two silicon-hydrogen bonds and products thereof. 5,484,950, Cl. 549-215.000.

Crook, Neal A.: *See—*
Brash, David L. A.; Crook, Neal A.; and Leuthall, John M., 5,485,586, Cl. 395-292.000.

Crouse, Helen C.: *See—*
Kelly, Cliff; Crouse, Helen C.; and Hoel, Per, 5,485,349, Cl. 361-690.000.

CSEM Centre Suisse d'Electronique et de Microtechnique SA - Recherche et Developpement: *See—*
Caerveny, Stefan; Dijkstra, Evert; and von Kaenel, Vincent, 5,485,116, Cl. 327-537.000.

Caerveny, Stefan; Dijkstra, Evert; and von Kaenel, Vincent, to CSEM Centre Suisse d'Electronique et de Microtechnique SA - Recherche et Developpement. Power diverting circuit. 5,485,116, Cl. 327-537.000.

Cuccio, Allen; and Hagerman, John, to Maxtor Corporation. HDD carrying case. 5,484,063, Cl. 206-722.000.

Cuer, Jean-Pierre: *See—*
Colombier, Christian; Disson, Jean-Pierre; and Cuer, Jean-Pierre, 5,484,751, Cl. 501-87.000.

Cullen, Michael J.; Marzouic, Robert M.; Ulrey, Joseph N.; Sbascinig, Richard W.; Weyburne, Michael A.; and Mingo, Paul C., to Ford Motor Company. Method and apparatus for maintaining temperatures during engine fuel cutoff modes. 5,483,941, Cl. 123-481.000.

Cullinan, George J.: *See—*
Bryant, Henry U.; Cullinan, George J.; Dodge, Jeffrey A.; Fahey, Kennan J.; Jones, Charles D.; Lugar, Charles W.; and Muehl, Brian S., 5,484,796, Cl. 514-319.000.

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Cummins, Brad L., to Honeywell Inc. Turbidity sensor with a light aperture arrangement of two openings formed in two parallel plates. 5,485,013, Cl. 250-574.000.

Cunningham, Howard L.; and Hanby, Robert J., to Motorola, Inc. System for controlling data transfer by setting and decrementing a counter based on the number of error correction bits and transfer bit rate respectively. 5,485,583, Cl. 395-845.000.

Cunningham, Michael F.; Mahabadi, Hadi K.; Smith, Thomas W.; and Creatura, John A., to Xerox Corporation. Conductive composite particles and processes for the preparation thereof. 5,484,681, Cl. 430-137.000.

Cunningham, Michael F.: *See—*
Tripp, Carl P.; Veregin, Richard P. N.; Cunningham, Michael F.; Enright, Thomas E.; and McDougall, Maria V., 5,484,675, Cl. 430-106.000.

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Vitter, Jeffrey S.; Curewitz, Kenneth M.; and Krishnan, P., 5,485,609, Cl. 395-600.000.

Curry, Douglas N., to Xerox Corporation. Hyperacuity printer architecture. 5,485,289, Cl. 358-448.000.

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Priddy, Dennis G.; and Cymbalski, Robert S., 5,484,999, Cl. 235-494.000.

Czachor, Robert P.; and Barron, Michael L., to General Electric Company. Turbine frame stiffening rails. 5,483,792, Cl. 60-39.310.

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Cheng, Dean, 5,484,303, Cl. 439-345.000.

Daecher, Jeffrey L.: *See—*
Bigley, Andrew B. W., Jr.; Daecher, Jeffrey L.; Holy, Norman L.; Jerman, Robert E.; Johnson, Phelps B.; and Work, William J., 5,485,541, Cl. 385-141.000.

Daewoo Electronics Co., Ltd.: *See—*
Lim, Heetae, 5,483,989, Cl. 137-268.000.

Dage, Richard C.: *See—*
Flynn, Gary A.; French, John F.; and Dage, Richard C., 5,484,783, Cl. 514-214.000.

D'Agostino, Guy; and Belhamici, Rachid, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.". Valve with self-centering seat. 5,483,991, Cl. 137-514.000.

Dahlen, Neal J.: *See—*
Mark, John G.; Tazartes, Daniel A.; Ebner, Robert E.; Dahlen, Neal J.; and Datta, Nibir K., 5,485,273, Cl. 356-350.000.

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Suto, Kenichiro; Asajima, Mikio; and Higaki, Koichi, 5,484,759, Cl. 503-227.000.

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Okabayashi, Norio; Kawasaki, Motohiro; and Takahashi, Kazushi, 5,484,324, Cl. 451-28.000.

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Franke, Uwe; Hahn, Stefan; and Suissa, Avshalom, 5,485,378, Cl. 364-424.050.

Dainippon Ink and Chemicals, Inc.: *See—*
Takada, Morio; and Kakizawa, Yasutoshi, 5,484,882, Cl. 528-361.000.

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Kanesaki, Hiroyuki; Saika, Tetsuyuki; and Mikami, Masafumi, 5,484,872, Cl. 528-73.000.

Daley, Robert, to Fujitsu Limited. Optical transmitter and power setting method in optical transmitters for use in optical networks. 5,485,300, Cl. 359-180.000.

Dalto, Michael. Temperature regulated specimen transporter. 5,483,799, Cl. 62-3.700.

Dalton, John C., to Apple Computer, Inc. Method and apparatus for fuzzy logic rule execution. 5,485,550, Cl. 395-51.000.

D'Ambrosio, Anthony. Garment waistband construction. 5,483,702, Cl. 2-237.000.

Damley, Robert L., to TA Instruments, Inc. Mechanical cooling system. 5,484,204, Cl. 374-10.000.

Dana Corporation: *See—*
Kaplan, Martin; and Senak, Peter, Jr., 5,485,046, Cl. 310-166.000.

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Tedder, Thomas F.; and Engel, Pablo, 5,484,892, Cl. 530-388.730.

Dan-Harry, Dawari D. High frequency, high density power conversion system. 5,485,365, Cl. 363-132.000.

Daoûst, Robert: *See—*
Forget, Robert; Hibchen, Kurt; Pareseau, Robert; Daoûst, Robert; Beaumont, Francois; Chagnon, Yves; Lefebvre, Bernard; and Archambault, Marc-Antoine, 5,485,436, Cl. 369-36.000.

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Zandian, Said; and Rheingold, Leo J., 5,485,183, Cl. 347-41.000.

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Dempsey, Martin J., to Asko, Inc. Roll apparatus for reducing work. 5,483,812, Cl. 72-252.500.
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DiMatteo, Frank J. Female athletic protective system. 5,483,705, Cl. 2-406.000.
Dingle, Joseph, Sr. Removable suspenders holder. 5,483,728, Cl. 24-707.600.
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Fisher, Clay, to Canon Information Systems, Inc. System for scaling computerized images. 5,485,563, Cl. 395-139.000.
Fisher, Simon. Animal packing dummy. 5,484,290, Cl. 434-225.000.
Fitch, Ernest C., Jr.; and Hong, Ing T., to Bardyne, Inc. Orbital separator for separating more dense and less dense components of a mixture having a controllable discharge passageway. 5,484,383, Cl. 494-48.000.
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Flynn, Gary A.; French, John F.; and Dage, Richard C., to Merrell Dow Pharmaceuticals Inc. Hypocholesterolemic, antiatherosclerotic and hypotriglyceridemic mercaptoacetylamide and benzazapine derivatives. 5,484,783, Cl. 514-214.000.
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Flynn, Richard M.; Grenfell, Mark W.; Klink, Frank W.; and Vitcak, Daniel R., to Minnesota Mining and Manufacturing Company. Azeotropic compositions containing perfluorinated cycloaminoether. 5,484,489, Cl. 134-42.000.
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Fogarty, William W.; and Friday, Phillip M. Vehicle service ramp. 5,483,715, Cl. 14-69.500.
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DeMay, Karl F., 5,484,102, Cl. 229-132.000.
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Ames, John C., 5,484,507, Cl. 156-644.100.
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Caron, Richard W., 5,483,829, Cl. 73-198.000.
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Gao, Guilian, 5,484,979, Cl. 219-121.640.
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Gumkowski, Gregory T., 5,485,625, Cl. 395-800.000.
Hamburg, Douglas R.; Husak, Philip W.; Meyer, Daniel L.; and Whittier, Steven R., 5,483,946, Cl. 123-686.000.
Helms, Jeffrey H.; Blais, Edmund J.; and Cheung, Mo-Pung, 5,484,838, Cl. 524-496.000.
Hipp, Mark E., 5,485,135, Cl. 336-96.000.
Peters, Edward W., 5,483,943, Cl. 123-527.000.
Rao, V. Durga N., 5,484,662, Cl. 428-553.000.
Singleton, Robert W.; and McCann, Donald R., 5,484,039, Cl. 188-2.000.
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Bennett, Clayton; Sullivan, Alan; and Sullivan, Paul, 5,483,982, Cl. 132-323.000.
Forge, Charles O.: *See*—
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Forget, Robert; Hibchen, Kurt; Parenteau, Robert; Daoûst, Robert; Beaumont, Francois; Chagnon, Yves; Lefebvre, Bernard; and Archambault, Marc-Antoine, to National Film Board of Canada. System and method for accessing information on stored optical discs. 5,485,436, Cl. 369-36.000.
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Fortune, Geoffrey J.; Liebherr, Erwin R. O., deceased; and Liebherr, by Helga L. A., executrix. Dual function lock mechanism. 5,484,177, Cl. 292-140.000.
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Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,484,360, Cl. 482-37.000.
Foster, David J., to International Business Machines Corporation. Apparatus and method using an atomic fetch and add for establishing temporary ownership of a common system resource in a mutiprocessor data processing system. 5,485,594, Cl. 395-427.000.
Foster, L. Dale; and Reeder, Ryan A., to Hill-Rom Company, Inc. Low air loss mattress with rigid internal bladder and lower air pallet. 5,483,709, Cl. 5-81.100.
Foster, Mark W., to Physical Optics Corporation. Surface plasmon resonance sensor and methods for the utilization thereof. 5,485,277, Cl. 356-445.000.
Foster, Stephen J.: *See*—
Whitehead, Robert E.; Evans, Evan J.; and Foster, Stephen J., 5,485,081, Cl. 324-158.100.
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Corrion, Steven G.; and Foxworth, Donald E., 5,484,190, Cl. 297-476.000.
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Mailloux, Robert J.; Franchi, Peter R.; and Tobin, Harvey E., 5,485,158, Cl. 342-165.000.
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Franco, James L., Sr. Beverage bottle and golf cart mounting apparatus. 5,484,128, Cl. 248-311.200.
Frasetzki, Manfred, to Siemens Aktiengesellschaft. Method and apparatus for treating hard dental substances. 5,484,283, Cl. 433-116.000.
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Franke-Polz, Eric M., to National Steel Corporation. Method and apparatus for performing cap earing test. 5,485,387, Cl. 364-472.000.
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Fredrickson, Lisa, to International Business Machines Corporation. Trellis codes with algebraic constraints for input restricted partial response channels. 5,485,472, Cl. 371-43.000.
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Yang, Danny D. L.; and Freeman, Jay D., 5,485,333, Cl. 360-113.000.
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Rodriguez, Michael; Vivian, Bonnie B.; and Freeman, Shirley K., 5,484,401, Cl. 604-28.000.
Freid, Wilbert B.: *See*—
Ausdenmoore, Robert M.; and Freid, Wilbert B., 5,484,105, Cl. 239-127.500.
Frejd, George W.: *See*—
Carroll, Frank E.; and Frejd, George W., 5,484,217, Cl. 403-2.000.
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Mahlberg, Hans-Peter; Fuchs, Heinz W.; Rechberg, Reinhard; Bauer, Lothar; Lemme, Werner; Strusch, Wolfgang; Tedsen, Thi; Schleiermacher, Herbert; and Wahnschaffe, Jürgen, 5,483,928, Cl. 123-41.420.

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Ichinohe, Hitoshi; Hongo, Yasuo; and Okada, Masatoshi, 5,485,531, Cl. 382-198.000.
Kitamura, Shoji; and Shindo, Yoichi, 5,485,479, Cl. 372-43.000.
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Tamamura, Manpei; Iidaka, Hiroshi; Kondo, Kazuyuki; and Yokota, Keitaro, 5,485,523, Cl. 381-71.000.

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Hashimoto, Hiroshi; Satake, Masaki; Murayama, Yuichiro; and Ohta, Tsutomu, 5,484,661, Cl. 428-522.000.
Ito, Wataru; and Shimura, Kazuo, 5,485,371, Cl. 364-413.230.
Iwakura, Ken; Wakata, Yuichi; Matsumoto, Hirotaka; and Totsuka, Mikio, 5,484,682, Cl. 430-138.000.
Mitsui, Akio; and Takizawa, Hiroo, 5,484,692, Cl. 430-505.000.
Sanda, Akihiro, 5,484,251, Cl. 414-731.000.
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Takemoto, Fumito; and Shimazaki, Osamu, 5,485,534, Cl. 382-263.000.
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Venable, Dennis L.; Campanelli, Michael R.; Fuss, William A.; Bollman, James E.; Nagao, Takashi; Yamada, Toshiya; and Yamada, Kazuya, 5,485,568, Cl. 395-155.000.

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Nakagawa, Eigo; Yamada, Norikazu; and Ikeda, Chikako, 5,485,206, Cl. 348-301.000.
Uehara, Yasuhiro; and Kusumoto, Yasuhiro, 5,485,259, Cl. 355-284.000.

Fujii, Hajime: *See—*
Kikuchi, Yasushi; Ochiai, Tetsuo; Shirokawa, Takashi; and Fujii, Hajime, 5,484,836, Cl. 524-495.000.

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Seto, Yoshiaki; Miyauchi, Masayuki; and Fujii, Takanobu, 5,484,993, Cl. 235-437.000.

Fujii, Takashi: *See—*
Hirose, Akira; Fujii, Takashi; Sugiyama, Yoshihide; Uotani, Kunihiro; and Hyoudou, Fumitaka, 5,484,143, Cl. 271-293.000.

Fujii, Takeshi: *See—*
Abe, Hiroomi; Fujii, Takeshi; Yamamoto, Masashi; Nishio, Takeyoshi; and Nomura, Takao, 5,484,824, Cl. 523-436.000.

Fujii, Tomoaki: *See—*
Tsumura, Masahiro; Tashima, Masao; Miyasita, Hiromi; Takeda, Haruhiko; and Fujii, Tomoaki, 5,484,854, Cl. 525-486.000.

Fujikawa, Takashi: *See—*
Kimura, Isao; and Fujikawa, Takashi, 5,484,075, Cl. 216-27.000.

Fujimaru, Masayoshi: *See—*
Tsukashima, Keiichi; Nakajima, Masashi, deceased; Fujimaru, Masayoshi; and Suzuki, Kenji, 5,484,949, Cl. 549-13.000.

Fujimura, Yoshiichi; and Matsuoka, Shizutaka, to Takata Corporation. Seat belt retractor. 5,484,118, Cl. 272-384.200.

Fujinami, Yasushi; and Yonemitsu, Jun, to Sony Corporation. Apparatus and method for producing downwards compatible video signals with increased vertical resolution, and apparatus for reproducing and displaying same. 5,485,280, Cl. 358-335.000.

Fujita, Akitaka: *See—*
Hayashi, Mitsutoshi; Fujita, Akitaka; Nagashima, Shingo; Kurashina, Minoru; Kajiyama, Makoto; and Uno, Hideki, 5,484,232, Cl. 405-184.000.

Fujita, Satoshi; Kagiyama, Naoto; and Momiyama, Masayoshi, to Aisin Seiki Kabushiki Kaisha. Method for assaying nucleic acids using naphthol derivative phosphate. 5,484,700, Cl. 435-6.000.

Fujita, Tetsuji: *See—*
Egawa, Motoji; and Fujita, Tetsuji, 5,485,332, Cl. 360-103.000.

Fujita, Yuuji; and Mizuishi, Kenichi, to Hitachi, Ltd. Semiconductors substrate having wiring conductors at a first main surface electrically connected to plural pins at a second main surface. 5,485,039, Cl. 257-774.000.

Fujitsu Limited: *See—*
Daley, Robert, 5,485,300, Cl. 359-180.000.
Endoh, Chihiro; and Tada, Toshihiko, 5,485,094, Cl. 324-537.000.
Furumochi, Kazuto, 5,485,117, Cl. 327-538.000.
Hiratsuka, Yoshiaki, 5,484,012, Cl. 165-40.000.
Iizuka, Miyuki; Shiba, Akira; and Yamada, Isamu, 5,485,561, Cl. 395-133.000.
Kawamura, Shouichi, 5,485,424, Cl. 365-200.000.
Kitahara, Kuninori; Ohtsuka, Nobuyuki; and Ozeki, Masashi, 5,484,664, Cl. 428-641.000.
Murashita, Kimitaka; and Noda, Tsugio, 5,485,213, Cl. 348-415.000.
Shiba, Akira, 5,483,962, Cl. 128-660.050.
Suzuki, Yasuhiro, 5,485,175, Cl. 395-156.000.
Uno, Hiroei; and Hakamatani, Takao, 5,485,446, Cl. 369-75.100.
Watanabe, Keiji; Oikawa, Akira; Fukuyama, Shun-ichi; Yamagami, Masaaki; and Namiki, Takahisa, 5,484,687, Cl. 430-296.000.
Yao, Mitsuyoshi; and Ueda, Kohichi, 5,485,414, Cl. 364-766.000.

Fujiura, Ryuji: *See—*
Mochida, Isao; Fujiura, Ryuji; Kojima, Takashi; and Sakamoto, Hitoshi, 5,484,520, Cl. 208-22.000.

Fujiura, Yoshitsugu: *See—*
Yamada, Tomoo; and Fujiura, Yoshitsugu, 5,484,302, Cl. 439-326.000.

Fujiwara, Akinori; and Hata, Katsuhiko, to Bando Chemical Industries, Ltd. Process of bonding aromatic polyamide fibers to rubber compounds. 5,484,497, Cl. 156-110.100.

Fujiwara, Michio: *See—*
Kawajiri, Kazuhiko; Suganami, Takuya; Honda, Tetsuya; Sugimoto, Teruo; and Fujiwara, Michio, 5,483,802, Cl. 62-6.000.

Fujiwara, Toru; Itoh, Yoshinori; and Tomobuchi, Masato, to Tsubakimoto Chain Co. Toothed belt for power transmission and manufacturing method. 5,484,341, Cl. 474-205.000.

Fukada, Shinichi: *See—*
Shimizu, Masato; Kobayashi, Fumiaki; Akahori, Yoshio; and Fukada, Shinichi, 5,483,874, Cl. 100-50.000.

Fukaya, Sueo, to Sumitomo Heavy Industries, Ltd. Compact gear reducer for rotation through an angle in either directions. 5,484,345, Cl. 475-162.000.

Fukuda, Minoru; and Bierhuizen, Marti F. A., to La Jolla Cancer Research Foundation. Expression of the developmental I antigen by a cloned human cDNA encoding a member of a β-1,6-N-acetylglucosaminyltransferase gene family. 5,484,590, Cl. 424-94.500.

Fukuda, Yutaka; and Minagawa, Kouji, to Anzen Motor Co., Ltd. Vehicle performance inspection apparatus and vehicle performance inspection method. 5,483,824, Cl. 73-125.000.

Fukui, Yorikazu: *See—*
Otsuki, Toshiaki; Murakami, Kunihiko; and Fukui, Yorikazu, 5,485,069, Cl. 318-570.000.

Fukukawa, Mitsuo: *See—*
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,484,227, Cl. 404-84.100.

Fukumaga, Yasuyuki: *See—*
Kita, Hideki; Nakamura, Akira; Fukumaga, Yasuyuki; and Katafuchi, Toshinobu, 5,485,251, Cl. 355-215.000.

Fukushima, Kiyoshi: *See—*
Ogawa, Atsushi; Ozawa, Yoshio; Hirata, Toshimichi; Kawai, Tsuyoshi; Fukushima, Kiyoshi; and Toyoshima, Masashi, 5,483,804, Cl. 62-153.000.

Fukushima, Yoshihisa: *See—*
Hamasaka, Hiroshi; Satoh, Isao; Fukushima, Yoshihisa; Takagi, Yuji; and Azumatani, Yasushi, 5,485,439, Cl. 369-47.000.

Fukutome, Akihito: *See—*
Shibayama, Takao; Maekawa, Keiichiro; Uzuyama, Kimitake; Maruo, Masaru; Fukutome, Akihito; Nakazono, Yoshiharu; and Matsumoto, Yoshimichi, 5,483,823, Cl. 73-118.100.

Fukuyama, Shun-ichi: *See—*
Watanabe, Keiji; Oikawa, Akira; Fukuyama, Shun-ichi; Yamagami, Masaaki; and Namiki, Takahisa, 5,484,687, Cl. 430-296.000.

Fuller, Edward N.; and Linkner, Herbert L., Jr., to Kelsey-Hayes. Single channel best effort anti-lock brake system. 5,484,193, Cl. 303-113.100.

Fulton, Anne J.: *See—*
Johnson, Alan J.; and Fulton, Anne J., 5,484,890, Cl. 530-383.000.

Fulton, Nancy J.: *See—*
Dick, Richard J.; Fulton, Nancy J.; Pfau, James P.; Bailey, Philip E.; and Booton, John D., 5,484,825, Cl. 524-35.000.

Funahashi, Toshikazu; Ogisu, Yasuhiko; Kato, Mamoru; Takahashi, Shigeyuki; and Uemura, Toshiya, to Toyoda Gosei Co., Ltd. Resin products and process for producing the same. 5,484,516, Cl. 205-50.000.

Funakura, Teruhiko; and Higashino, Naomi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor integrated circuit with internal compensation for changes in time delay. 5,485,114, Cl. 327-262.000.

Funamizu, Yoshihiro: *See—*
Kamei, Masafumi; Suzuki, Yoshiyuki; Hasegawa, Shizuo; Ichikawa, Hiroyuki; Funamizu, Yoshihiro; Itoh, Akio; and Abe, Yoshinori, 5,485,288, Cl. 358-530.000.

Furhmann, Kirsten; Wischnat, Alf-Eric; Schulz, Thomas; and Hoffmeister, Michael, to Engelhard Process Chemicals GmbH. Adsorbents composed of inorganic oxides modified with organic dyes. 5,484,454, Cl. 8-523.000.

Furukawa, Hideo: *See—*
Ishikawa, Hiroshi; Furukawa, Hideo; Shimizu, Masatoshi; and Nakauchi, Norio, 5,484,350, Cl. 477-97.000.

Furukawa, Masamichi; and Sone, Takurou, to Yamaha Corporation. Display device for a compact disc player and a compact disc. 5,485,442, Cl. 369-47.000.

Furumochi, Kazuto, to Fujitsu Limited. Power circuit and semiconductor device including the same. 5,485,117, Cl. 327-538.000.

Furuno Electric Company, Limited: *See—*
Kitabatake, Asao; Tamaoka, Naozumi; Ueda, Hitoshi; and Wada, Kenichi, 5,485,169, Cl. 343-765.000.

Furuya, Junichi: *See—*
Namba, Toshio; Osaki, Masanobu; and Furuya, Junichi, 5,483,940, Cl. 123-497.000.

Furuya, Tadashi: *See—*
Yano, Hideyuki; Araya, Junji; Hashimoto, Norio; Kugoh, Harumi; Shibuya, Takashi; and Furuya, Tadashi, 5,485,248, Cl. 355-206.000.

Fuss, William A.: *See—*
Venable, Dennis L.; Campanelli, Michael R.; Fuss, William A.; Bollman, James E.; Nagao, Takashi; Yamada, Toshiya; and Yamada, Kazuya, 5,485,568, Cl. 395-155.000.

Futatsuya, Tomoshi: *See—*
Kobayashi, Shinichi; Nakayama, Takeshi; Miyawaki, Yoshikazu; Futatsuya, Tomoshi; and Terada, Yasushi, 5,485,421, Cl. 365-189.050.

Fuzetti, Vagner: *See—*
Diniz, Milton E.; and Fuzetti, Vagner, 5,484,305, Cl. 439-421.000.

G. D. Searle & Co.: *See—*
Abood, Norman A.; Flynn, Daniel L.; Laneman, Scott A.; Nosal, Roger; and Schretzman, Lori A., 5,484,946, Cl. 548-543.000.
Bovy, Philippe R.; Reitz, David B.; and Manning, Robert E., 5,484,937, Cl. 548-266.200.
Hanson, Gunnar J.; and Baran, John S., 5,484,811, Cl. 514-489.000.
Hanson, Gunnar J.; and Baran, John S., 5,484,812, Cl. 514-489.000.

Gaa, Peter C.: *See—*
Swisher, Robert G.; Gaa, Peter C.; and Kasunic, James W., 5,484,656, Cl. 428-378.000.

Gaalswyk, Mark K. Low friction gauge wheel rim liner. 5,483,907, Cl. 111-167.000.

Gabbard, Mark E., to Wheaton Inc. Method of manufacture of a partially laminated rubber closure. 5,484,566, Cl. 264-250.000.

Gaberson, Paul C.: *See—*
Salnick, Richard E.; Emerson, Mark H.; Gaberson, Paul C.; and Bice, Charles D., 5,485,491, Cl. 376-245.000.

Gafford, James: *See—*
Crawford, Paul; and Gafford, James, 5,484,533, Cl. 210-660.000.

Gaggero, James M.: *See—*
Brasly, Keith; Gaggero, James M.; Lew, Chel W.; and Lamb, Cathy S., 5,484,587, Cl. 424-84.000.

Gagner, William E.: *See—*
Thompson, Alex; and Gagner, William E., 5,483,747, Cl. 30-254.000.

Gagnon, Hubert: *See—*
Pernicka, Martin P.; Isabelle, Paul; and Gagnon, Hubert, 5,483,699, Cl. 2-9.000.

Gailus, Mark W.: *See—*
McNamara, David M.; Provencher, Daniel B.; Stokoe, Philip T.; Howard, William E.; and Gailus, Mark W., 5,484,310, Cl. 439-608.000.

Galion Holding Company: *See—*
Horning, Larry D.; Grubaugh, Eugene R.; Pfeifer, Thomas E.; and Johnson, Carroll R., 5,484,246, Cl. 414-409.000.

Gallagher, Peter T.; Hicks, Terence A.; and Owton, William M., to Lilly Industries Limited. Pharmaceutical compounds. 5,484,935, Cl. 548-233.000.

Galley, Joseph A.: *See—*
Rubenstein, Allen I.; Galley, Joseph A.; Montague, P. Read; and Reeke, George N., 5,485,546, Cl. 395-23.000.

Galli, Stephen L.: *See—*
Sharpe, Richard J.; Arndt, Kenneth A.; Galli, Stephen L.; Meltzer, Peter C.; Razdan, Raj K.; and Sard, Howard P., 5,484,788, Cl. 514-275.000.

Gallo, Michael J.: *See—*
Kumar, Rajendra; Brooks, Steven E.; and Gallo, Michael J., 5,484,989, Cl. 235-435.000.

Gallone, Fiorenzo, to T.M.T. Transmissioni Meccaniche Torino S.r.l. Sliding block with adjustable track positioning. 5,484,210, Cl. 384-49.000.

Galloway, F. Houston: *See—*
Stute, Robert A.; Galloway, F. Houston; Medelius, Pedro J.; Swindle, Robert W.; and Bierman, Tracy A., 5,485,142, Cl. 340-506.000.

Galloway, Ronny N.: *See—*
Mawby, Terry P.; and Galloway, Ronny N., 5,484,306, Cl. 439-441.000.

Galvin, William J. Remote control holder and illuminator. 5,485,359, Cl. 362-109.000.

Gamache, Michael E.: *See—*
Hochstrate, Paul M.; and Gamache, Michael E., 5,483,766, Cl. 42-75.030.

Gamo, Masao, to Murata Mfg. Co., Ltd. Electrical device provided with three terminals. 5,484,962, Cl. 174-261.000.

Gao, Guilian, to Ford Motor Company. Laser soldering process employing an energy absorptive coating. 5,484,979, Cl. 219-121.640.

Garbassi, Fabio; Biagini, Paolo; Andreussi, Piero; and Lugli, Gabriele, to Enichem Elastomeri S.r.l. Organometallic complexes of lanthanides and their use in the polymerization of unsaturated monomers. 5,484,897, Cl. 534-15.000.

Garlock Inc.: *See—*
Baker, Stephen F., 5,484,173, Cl. 285-229.000.

Garrett, Thomas M.; and Gruzins, Indulis, to MCP Industries, Inc. Modified polyurethane including silica and method of masufacture thereof. 5,484,832, Cl. 524-261.000.

Gardwaite, Jay; Hotchkiss, Kenneth; Woodward, Arthur B.; Lee, Brian; Lewis, Walter C.; and Orbeta, Ferdinand E., to Leviton Manufacturing Co., Inc. Flush mounted telephone jack. 5,484,307, Cl. 439-535.000.

Garvelink, Lee: *See—*
Van Order, Kim L.; Garvelink, Lee; Van Vuren, Rick A.; De Jong, Jerry M.; and Ramon, Alex C., 5,484,186, Cl. 296-97.500.

Gass, Raymond; and Ruhlmann, André, to Alcatel N.V. System and method of communication between circuit mode communication installation core units. 5,485,454, Cl. 370-58.300.

Gasser, Iago; and Himmerle, Hermann, to Julius Blum Gesellschaft m.b.H. Guide rail assembly for drawers. 5,484,199, Cl. 312-334.330.

Gastec N.V.: *See—*
van der Veen, Geuko, 5,483,948, Cl. 126-91.00R.

Gates Rubber Company, The: *See—*
Stuemky, Robert M., 5,483,852, Cl. 74-665.0GA.

Gateway Technologies, Inc.: *See—*
Brown, Barry D.; and Wakefield, Paul A. J., 5,485,507, Cl. 379-88.000.

Gautherot, Daniel: *See—*
Fillod, Maurice; and Gautherot, Daniel, 5,484,215, Cl. 400-120.180.

Gautier, David, to Vesuvius France S.A. Ball and socket joint for interconnecting a ceramic roller to a bearing. 5,484,371, Cl. 492-16.000.

Gay, James G.: *See—*
Ledbetter, William B., Jr.; McCarthy, Daniel M.; and Gay, James G., 5,485,602, Cl. 395-550.000.

GBC Scientific Equipment Pty. Ltd.: *See—*
Grey, Ronald G.; Davenport, Clive T.; and Huberts, John T., 5,485,267, Cl. 356-307.000.

GE Plastics Japan: *See—*
Sakashita, Takeshi; Shimoda, Tomoaki; Kishimura, Kotaro; and Uchimura, Shuichi, 5,484,875, Cl. 528-198.000.

GE Plastics, Japan, Ltd.: *See—*
Ishiwa, Kenichi; and Itoi, Hideyuki, 5,484,874, Cl. 528-196.000.

GE Yokogawa Medical Systems, Ltd.: *See—*
Amemiya, Shinichi; Jibiki, Takao; and Nishii, Sumio, 5,483,964, Cl. 128-661.090.

Gearen, Peter F.: *See—*
Melker, Richard J.; Gearen, Peter F.; Miller, Gary J.; DeBruyne, Michael P.; and Molitor, Lisa, 5,484,442, Cl. 606-79.000.

Geiser, Georg: *See—*
Heintz, Frieder; Winner, Hermann; and Geiser, Georg, 5,485,381, Cl. 364-426.040.

Geithman, Glenn A.: *See—*
Duncan, Michael J.; Fetzer, Barry A.; Geithman, Glenn A.; Ricker, Arthur P.; and Uyehara, Clyde T., 5,485,084, Cl. 324-225.000.

GenCorp Inc.: *See—*
Kildune, Joseph S., 5,483,890, Cl. 101-401.100.

Genentech, Inc.: *See—*
Lasky, Laurence A.; Imai, Yasuyuki; Rosen, Steven D.; and Singer, Mark S., 5,484,891, Cl. 530-387.300.
Wurm, Florian M.; and Jordan, Martin, 5,484,720, Cl. 435-172.300.

General Devices Co., Inc.: *See—*
Hansen, Carl E.; and Hobbs, James D., 5,484,197, Cl. 312-334.120.

General Electric Company: *See—*
Ausdenmoore, Robert M.; and Freid, Wilbert B., 5,484,105, Cl. 239-127.300.
Czachor, Robert P.; and Barron, Michael L., 5,483,792, Cl. 60-39.310.
DeWeerd, Kim A.; and Bedard, Donna L., 5,484,729, Cl. 435-262.500.
Edelstein, William A.; Ibea, Icko T.; Mueller, Otward M.; Uzgiris, Egidijus E.; and Roemer, Peter B., 5,484,985, Cl. 219-772.000.
Feldman, Sandra F., 5,485,269, Cl. 356-318.000.
Flood, Gary M.; and Johnson, David M., 5,484,330, Cl. 451-540.000.
Gonzalez, Raphael A.; and Kelly, Ronald W., 5,484,971, Cl. 200-279.000.
Greskovich, Charles D.; Minnear, William P.; O'Clair, Chester R.; Gurmen, Erdogan O.; and Riedner, Robert J., 5,484,750, Cl. 501-86.000.
Isburgh, Anne M.; and Lee, Ching-Pang, 5,484,258, Cl. 415-115.000.
Nagaraj, Bangalore A.; Weil, Antoinette E.; and Devitt, John W., 5,484,263, Cl. 415-200.000.
Nicoll, Robert A.; and Vdoviak, John W., 5,483,794, Cl. 60-261.000.
Pratt, Vanon D.; Whitney, Eric J.; and Scheidt, Wilbur D., 5,484,980, Cl. 219-121.650.
Santos, Esteban; Sailer, Hanns P.; Singer, Paul H.; and Purkayastha, Indrajit, 5,485,343, Cl. 361-115.000.
Seymour, Raymond K.; and Bogue, Elaine D., 5,485,134, Cl. 335-132.000.
Singh, Jogender; Schell, Jerry D.; and Young, William R., 5,484,665, Cl. 428-661.000.
Smits, Hendrikus J. E.; van der Meer, Roelof; and Grootheis, Adelbert H. L., 5,484,858, Cl. 525-393.000.
Weinstein, Barry; Koshoffer, John M.; and Moyer, Roy E., 5,483,793, Cl. 60-261.000.
Williams, Kenneth R.; Koehl, Herbert K.; and Schmidt, Jonathan R., 5,485,494, Cl. 378-16.000.

General Instrument Corp.: *See—*
Heuvel, William V., 5,484,097, Cl. 228-123.100.

General Instrument Corporation of Delaware: *See—*
Eyer, Mark K.; and Moroney, Paul, 5,485,577, Cl. 395-188.010.

General Motors Corporation: *See—*
Lux, Jeffrey P.; Boughner, John W.; and Dulzo, Joseph R., 5,484,353, Cl. 477-169.000.

Vukovich, William J.; and Koenig, Melissa M., 5,484,354, Cl. 477-174.000.
Weber, John C.; and Edwards, Bobby, 5,484,561, Cl. 264-46.400.

General Signal Corporation: *See*—
Freud, Paul J.; and Jakob, Clarissa G., 5,485,270, Cl. 356-336.000.

Genesco Inc.: *See*—
Silverman, Jeffrey N., 5,483,759, Cl. 36-137.000.

Gentry, Scott B.: *See*—
Mazur, Joseph F.; Blackburn, Brian K.; and Gentry, Scott B., 5,484,166, Cl. 280-735.000.

George, Billy L.; Babirad, Stefan A.; and Penny, Delmon H., to Minnesota Mining and Manufacturing Company. Coating composition, granules coated with same, and method of reducing dust generation. 5,484,477, Cl. 106-499.000.

George, Philip B.; and Horwath, Gregory T. Removable piton climbing aid and method of using. 5,484,132, Cl. 248-231.900.

Gerber, Gerhard: *See*—
Scheiffele, Ekkehard; Gerber, Gerhard; Siems, Werner; and Werner, Andreas, 5,484,605, Cl. 424-451.000.

Gerber Systems Corporation: *See*—
Wolfson, Lawrence S.; Cenedella, Philip W.; and Conlan, Joseph, 5,484,139, Cl. 271-3.000.

Gerroir, Paul J.: *See*—
Hor, Ah-Mee; Allen, Charles G.; and Gerroir, Paul J., 5,484,674, Cl. 430-059.000.

Gerstbach, John E.; and Hayashi, Masayuki, to International Business Machines Corporation. Ring oscillator circuit having output with fifty percent duty cycle. 5,485,126, Cl. 331-57.000.

Gersh, Michael: *See*—
Bien, Fritz; Gersh, Michael; Goldstein, Neil; and Lee, Jamine, 5,485,276, Cl. 356-437.000.

Gessner, Scott L.: *See*—
Lickfield, Deborah K.; Berman, Mark H. S.; Hyslop, Robert F.; Oleszczuk, Andrew R.; Gessner, Scott L.; and Austin, Jared A., 5,484,645, Cl. 428-198.000.

Gevorgian, Abraham, to Gevorgian, Alexis M.; and Gevorgian, Artin V. Disposable medical syringe with safety protection. 5,484,413, Cl. 604-110.000.

Gevorgian, Alexis M.: *See*—
Gevorgian, Abraham, 5,484,413, Cl. 604-110.000.

Gevorgian, Artin V.: *See*—
Gevorgian, Abraham, 5,484,413, Cl. 604-110.000.

Geyer, Robert A.: *See*—
Blebert, Michael L.; Geyer, Robert A.; and Wilmo, Michael S., 5,483,718, Cl. 15-50.300.

GHM Industries, Inc.: *See*—
Fayard, Vincent, 5,483,729, Cl. 26-15.00R.

Ghosh, Syamal K.; Hopkins, Roy O.; Budinski, Kenneth G.; and Kohler, Mark S., to Eastman Kodak Company. Coating apparatus and method. 5,484,629, Cl. 427-255.000.

Gibb, Peter; Voss, Henry H.; Schlosser, Wolfgang; and Pow, Eric G., to Ballard Power Systems Inc. Electrochemical fuel cell stack with compression mechanism extending through interior manifold headers. 5,484,666, Cl. 429-34.000.

Gibbons, Delmar. Body vacuum. 5,484,427, Cl. 604-313.000.

Gibson, Danuta: *See*—
Pitt, Alan R.; Caesar, Julian C.; Gibson, Danuta; Wear, Trevor J.; Young, David J.; and King, Scott A., 5,484,695, Cl. 430-546.000.

Gica & Vermee, L.P.: *See*—
Gics, Paul W., 5,484,984, Cl. 219-734.000.

Gics, Paul W., to Gica & Vermee, L.P. Ovenable food package including a base with depending leg member and a plurality of raised portions and associated food packages. 5,484,984, Cl. 219-734.000.

Giebel, Michael; Speck, Steven; Love, Randy A.; and Teufel, Rainer B., to Sunbeam Corporation. Grill hood. 5,483,947, Cl. 126-41.00R.

Giesbrecht, Ken; and Gudmundsson, Stefan, to Technopac, Inc. Apparatus for packaging articles. 5,483,786, Cl. 53-570.000.

Giguere, Michael B. Golf club practice swing weight. 5,484,156, Cl. 273-194.000.

Gilat, Shlomo: *See*—
Adam, Dan; Vitsnudel, Ilia; Gilat, Shlomo; and Sideman, Samuel, 5,483,968, Cl. 128-696.000.

Gilbert, Gregory N.: *See*—
Tomek, Martin L.; and Gilbert, Gregory N., 5,483,895, Cl. 102-312.000.

Gilbert, Keith: *See*—
Kirk, William; Affeldt, Henry A.; Gilbert, Keith; and Lerew, David, 5,483,871, Cl. 99-516.000.

Gilbertson, James R.: *See*—
Skow, Lynn R.; Moore, Arthur R.; and Gilbertson, James R., 5,485,325, Cl. 360-91.000.

Gilead Sciences, Inc.: *See*—
Froehler, Brian; and Jones, Robert J., 5,484,908, Cl. 536-24.310.

Giles, William O., Sr. Method for preparing hamburger patties. 5,484,625, Cl. 426-646.000.

Gilhousen, Klein S.; Padovani, Roberto; and Weaver, Lindsay A., Jr., to QUALCOMM Incorporated. Method and apparatus for controlling transmission power in a CDMS cellular mobile telephone system. 5,485,486, Cl. 375-205.000.

Gillis, Herbert R., to Imperial Chemical Industries, PLC. Isocyanate reactive blends and internal mould release compositions. 5,484,829, Cl. 524-92.000.

Gilman, Jeffrey W.: *See*—
Lichtenhan, Joseph D.; Gilman, Jeffrey W.; and Feher, Frank J., 5,484,867, Cl. 528-9.000.

Gilmond, Dan G. Automatic pressurized adjustable solution dispenser. 5,484,106, Cl. 239-317.000.

Gilmore, Charles P., Jr.; and Johnson, Dale R., to Gilmore Transportation Services, Inc. Coupling for heavy-duty machine. 5,484,250, Cl. 414-723.000.

Gilmore Transportation Services, Inc.: *See*—
Gilmore, Charles P., Jr.; and Johnson, Dale R., 5,484,250, Cl. 414-723.000.

Gioielli, Michael E.; and Ravan, James, to Oracle Corporation. Physical database design system. 5,485,610, Cl. 395-600.000.

Gitteas, Timothy E.; Nowotarski, Mark S.; and Digiacamo, Frank A., to Praxair Technology, Inc. Underbead weld shield method and apparatus. 5,484,973, Cl. 219-74.000.

Gittings, Darin, to Advanced Cardiovascular Systems, Inc. Coaxial cable vascular access system for use in various needles. 5,484,416, Cl. 604-164.000.

GKN Automotive AG: *See*—
Frank, Michael; Stall, Eugen; and Rickell, Robert, 5,484,033, Cl. 180-345.000.

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Godoroja, Andrei, 5,485,463, Cl. 370-95.100.

Glenn, John V. Independently-powdered bumper cart. 5,484,030, Cl. 180-6.200.

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Middle, George H.; and Glennon, William D., 5,484,060, Cl. 206-438.000.

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Gupta, Sarbari; and Gligor, Virgil D., 5,485,409, Cl. 395-186.000.

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Glovan, Ronald J.; Tierney, John C.; McLean, Leroy L.; and Johnson, Lawrence L., to MSE, Inc. Self-locking threaded fasteners. 5,484,244, Cl. 411-424.000.

Glover, Gary H.: *See*—
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GNB Battery Technologies Inc.: *See*—
Sahli, Richard M.; and Baumgartner, Deborah S., 5,484,667, Cl. 429-100.000.

Gocho, Tomohiro: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,484,227, Cl. 404-84.100.

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Recht, Thomas S.; Goedken, James F.; and Pittelkow, Michael H., 5,485,506, Cl. 379-67.000.

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Maeda, Takeo; Gojohbori, Hiroshi; and Tsunashima, Yoshitaka, 5,485,034, Cl. 257-592.000.

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Padawer, Jacques; and Goldberg, Robert M., 5,484,121, Cl. 244-134.000.

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Doherty, Darrell, 5,483,897, Cl. 104-135.000.

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Golding, Andrew R.; Schabes, Yves; and Roche, Emmanuel, to Mitsubishi Electric Research Laboratories, Inc. System for underlying spelling recovery. 5,485,372, Cl. 364-419.080.

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Lee, Dong H., 5,485,216, Cl. 348-443.000.
Park, Jong S., 5,485,217, Cl. 348-445.000.

Goldstein, Neil: *See*—
Bien, Fritz; Gersh, Michael; Goldstein, Neil; and Lee, Jamine, 5,485,276, Cl. 356-437.000.

Goldstein, Richard J.: *See*—
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Golnabi, Habibollah, to VLSI Technology, Inc. Versatile reconfigurable matrix based built-in self-test processor for minimizing fault grading. 5,485,467, Cl. 371-22.500.

Golob, Jürgen: *See*—
Rebordosa, Antonio; and Golob, Jürgen, 5,483,848, Cl. 74-371.000.

Gonzalez, Raphael A.; and Kelly, Ronald W., to General Electric Company. Electrical contact having a precious metal extrusion extending from a contact surface. 5,484,971, Cl. 200-279.000.

Goolsbee, James A. System for the recovery of oil and catalyst from a catalyst/oil mix. 5,484,201, Cl. 366-15.000.

Gorza, Roberto; Baggio, Giorgio; and Battistella, Mirco, to Nordica S.p.A. Securing device for sports shoes. 5,483,758, Cl. 36-119.000.

Gosteli, Jacques: *See*—
Griffiths, Gareth; Imwinkelried, René; and Gosteli, Jacques, 5,484,939, Cl. 548-343.100.

Goto, Daisaku, to NGK Insulators, Ltd. Method for manufacturing a long non-ceramic insulator in mold longitudinally shorter than the insulator. 5,484,564, Cl. 264-219.000.

Goto, Eiji: *See*—
Matsumoto, Shoji; Matsuda, Masanori; Goto, Eiji; Nishida, Akinori; and Hori, Takeshi, 5,485,344, Cl. 361-225.000.

Goto, Fumio: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,484,227, Cl. 404-84.100.

Goto, Ryuji; and Noguchi, Koji, to Hitachi Metals, Ltd. Magnetic brush developing method. 5,484,680, Cl. 430-122.000.

Goto, Takahiro, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,484,690, Cl. 430-435.000.

Gotoda, Katsuhiko; Inada, Hisanobu; Shoji, Susumu; Shiba, Katsuya; Tsukuda, Yasunori; and Nakamura, Masanari, to Star Micronics Co., Ltd. Electrophotographic apparatus with freely openable upper and lower housings. 5,485,244, Cl. 355-200.000.

Gotoh, Masao: *See*—
Katoh, Kenji; Inoue, Tokuta; Nohira, Hidetaka; Nakanishi, Kiyoshi; Iguchi, Satoshi; Kihara, Tetsuro; Gotoh, Masato; Asanuma, Takamitsu; Okano, Hiroshi; Harada, Jun; Takeshima, Shinichi; Sugiyama, Masahiko; Sakurai, Shigenori; Ohkubo, Kenji; and Murachi, Mikio, 5,483,795, Cl. 60-276.000.

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Gottkehaskamp, Ludger: *See*—
Oechsle, Dietmar; Baur, Wolfgang; and Gottkehaskamp, Ludger, 5,484,620, Cl. 426-422.000.

Gotz, Klaus-Peter; Schwan, Rainer; and Feldmeier, Günter, to Whitaker Corporation, The . Data communications outlet kit. 5,484,308, Cl. 439-536.000.

Goubeaux, Carl E.: *See*—
Cartmell, Robert L.; and Goubeaux, Carl E., 5,484,434, Cl. 606-37.000.

Gough, David M.: *See*—
Szymanski, Thomas; Rolando, Steven A.; Gough, David M.; and Bennett, Gerald S., 5,484,757, Cl. 502-439.000.

Gourley, Glenn R.; and Kreamer, Bill L., to Wisconsin Alumni Research Foundation. Aerosol containment system. 5,484,202, Cl. 366-120.000.

Graber, Mark S.: *See*—
Sadre, Ahmad; Baechtel, Donald F.; and Graber, Mark S., 5,485,620, Cl. 395-700.000.

Graham, D. Scott. Child-proof closure with syringe-tip connector. 5,484,070, Cl. 215-223.000.

Grant, Francine S.; Fang, Lawrence Y.; John, Varghese; and Thorsett, Eugene D. Substituted 3-indolyl-5-pyrazolone compounds. 5,484,940, Cl. 548-364.700.

Grantz, Helmut: *See*—
Abenfelder, Guenter; Grantz, Helmut; and Odebrecht, Wolfgang, 5,483,807, Cl. 62-435.000.

Grassianni, Moshe: *See*—
Rigal, Meir; Karas, Amir; Nathan, Aba; Rifner, Yechiel; Amir, Naday; Bronicki, Lucien Y.; and Grassianni, Moshe, 5,483,797, Cl. 60-641.200.

Graves, Larry R.: *See*—
Kennedy, Thomas D.; Malarkey, Michael O.; and Graves, Larry R., 5,484,653, Cl. 428-290.000.

Gravier, Robert A., to Allan Block Corporation. Method of forming concrete retaining wall block. 5,484,236, Cl. 405-286.000.

Gray Automotive Products Company: *See*—
Francis, Richard T., 5,484,134, Cl. 254-2.00B.

Gray, Robert R. Portable wireless telephone having swivel chassis. 5,485,517, Cl. 379-433.000.

Gray, Stephen L., to W. R. Grace & Co.-Conn. Method for application of smoke color to inside of bag and apparatus therefor. 5,484,001, Cl. 141-114.000.

Great Lakes Chemical Corp.: *See*—
Wang, Jin-liang; and Favstritsky, Nicolai A., 5,484,839, Cl. 524-533.000.

Greeff, Roy E.: *See*—
Williams, Bruce H.; Arbanas, Glenn A.; and Greeff, Roy E., 5,485,484, Cl. 375-376.000.

Green, Andrew W.: *See*—
Emerson, David; and Green, Andrew W., 5,484,226, Cl. 404-84.050.

Green, David T.; Bolanos, Henry; Heaton, Lisa W.; Alani, Mark E.; and Sater, Ghaleb A., to United States Surgical Corporation. Apparatus for endoscopically applying staples individually to body tissue. 5,484,095, Cl. 227-181.100.

Green, Joseph H., to Greenco Mfg. Corporation. Braking apparatus for a rodless piston actuated reciprocating carriage. 5,483,868, Cl. 92-88.000.

Green, Russell J.: *See*—
Lornet, David B.; and Green, Russell J., 5,485,607, Cl. 395-600.000.

Greenbaum, Joseph J., to Ford Motor Company. Accelerator pedal system performance measurement apparatus. 5,483,825, Cl. 73-132.000.

Greenberg, Craig B.; Maxey, Jay A.; and Owens, Kevin M., to Texas Instruments Incorporated. Metastable tolerant latach. 5,485,112, Cl. 372-198.000.

Greenco Mfg. Corporation: *See*—
Green, Joseph H., 5,483,868, Cl. 92-88.000.

Greenlaw, Robert T.; and Kornblith, Jeffrey S., to United States of America, Navy. Ice penetrating hot point. 5,484,027, Cl. 175-18.000.

Greenmaster Industrial Corp.: *See*—
Wang, Leao; and Wu, Peter, 5,484,358, Cl. 482-9.000.

Greenwood, E. Chris, to United Incrests, Inc. Device for forming a skirt and method. 5,483,712, Cl. 5-493.000.

Gregg, David P., to Discovision Associates. Shock-resistant, electrostatically actuated pick-up for optical recording and playback. 5,485,437, Cl. 369-44.140.

Gregory, Jay D. Logalert. 5,485,141, Cl. 340-457.000.

Gregory, Peter; Reynolds, Stephen J.; and White, Raymond L., to Zeneca Limited. Sulphonated manganese phthalocyanines and compositions thereof. 5,484,915, Cl. 540-131.000.

Greive, Martin, to Heidelberger Druckmaschinen AG. Device for actuating lateral sheet guides in rotary printing presses. 5,483,888, Cl. 101-232.000.

Grenfell, Mark W.: *See*—
Flynn, Richard M.; Grenfell, Mark W.; Klink, Frank W.; and Vitcak, Daniel R., 5,484,489, Cl. 134-42.000.

Gresens, Harry, to Bruckner Trockentechnik GmbH & Co. Method and apparatus for the heat treatment of a continuously moving length of textile material. 5,483,754, Cl. 34-478.000.

Greskovich, Charles D.; Minnear, William P.; O'Clair, Chester R.; Gurmen, Erdogan O.; and Riedner, Robert J., to General Electric Company. Transparent polycrystalline garnets. 5,484,750, Cl. 501-86.000.

Grey, Ronald G.; Davenport, Clive T.; and Huberts, John T., to GBC Scientific Equipment Pty. Ltd. Zeeman effect spectrometer having high-speed electromagnetic switching capability. 5,485,267, Cl. 356-307.000.

Grider, Duane M.: *See*—
Kerstein, Scott M.; Simmons, Stephen C.; Dunn, Brett A.; and Grider, Duane M., 5,483,936, Cl. 123-425.000.

Griffith, James E., to Halliburton Company. Method for cementing in a formation subject to water influx. 5,484,019, Cl. 166-293.000.

Griffiths, Gareth; Imwinkelried, René; and Gosteli, Jacques, to Lonza Ltd. 2-substituted 5-chloroimidazoles. 5,484,939, Cl. 548-343.100.

Grimes, Andy: *See*—
Dobbins, Kurt; Andlauer, Phil; Oliver, Chris; Parker, Tom; Grimes, Andy; Nutbrown, Bruce; Hullette, Dan; Dev, Roger; and Jeffords, Jason, 5,485,455, Cl. 370-60.000.

Grimm, Thomas M.: *See*—
Sydor, Robin M.; and Grimm, Thomas M., 5,484,392, Cl. 602-5.000.

Grinding & Sizing Co., Inc.: *See*—
Rose, Ron A., 5,484,028, Cl. 175-72.000.

Grinnell, Brian W., to Eli Lilly and Company. Methods of inhibiting cell-cell adhesion. 5,484,808, Cl. 514-443.000.

Grisar, J. Martin; Petty, Margaret A.; and Bolkenius, Frank, to Merrell Dow Pharmaceuticals Inc. Tissue protective tocopherol analogs. 5,484,810, Cl. 514-456.000.

Grisoni, Serge: *See*—
Achard, Daniel; Grisoni, Serge; Malleron, Jean-Luc; Peyronel, Jean-Francois; and Tabart, Michel, 5,484,804, Cl. 514-414.000.

Grob & Co. Akt: *See*—
Mettler, Franz, 5,483,996, Cl. 139-91.000.

Groeblacher, Hans, to Mikron Industries. Method of and apparatus for the cooling of extruded plastic profiles or sections. 5,484,557, Cl. 264-37.000.

Groothuis, Adelbert H. L.: *See*—
Smits, Hendrikus J. E.; van der Meer, Roelof; and Groothuis, Adelbert H. L., 5,484,858, Cl. 525-393.000.

Grosch, Peter T. Adjustable work surface for computer stations. 5,483,902, Cl. 108-143.000.

Grosshauser, Heinrich K., to Koenig & Bauer Aktiengesellschaft. Paper guide for web-fed press. 5,483,887, Cl. 101-181.000.

Grot, Walther G., to Du Pont de Nemours, E. I., and Company. Process for sealing membrane in electrochemical cell. 5,484,503, Cl. 156-333.000.

Groves, Lyle W.; Groves, Martha R.; and Hamtil, John D. Sound indicative leveling apparatus. 5,483,748, Cl. 33-366.000.

Groves, Martha R.: *See—*
Groves, Lyle W.; Groves, Martha R.; and Hamtil, John D., 5,483,748, Cl. 33-366.000.

Grubaugh, Eugene R.: *See—*
Horning, Larry D.; Grubaugh, Eugene R.; Pfeifer, Thomas E.; and Johnson, Carroll R., 5,484,246, Cl. 414-409.000.

Grubbs, Donald K.; and Valente, Peter E., III, to Aluminum Company of America. Filler material containing an anion substituted hydrotalcite. 5,484,583, Cl. 423-420.200.

Grube, Gary W.: *See—*
Ng, Richard; Shaughnessy, Mark L.; and Grube, Gary W., 5,485,632, Cl. 455-51.200.

Gruber, Patrick R.; Kolstad, Jeffrey J.; Ryan, Christopher M.; Hall, Eric S.; and Eichen Conn, Robin S., to Cargill, Inc. Melt-stable amorphous lactide polymer film and process for manufacturing thereof. 5,484,881, Cl. 528-354.000.

Grunes, Howard: *See—*
Tepman, Avi; Grunes, Howard; and Andrews, Dana, 5,484,011, Cl. 165-1.000.

Grupp, Joachim; and Poli, Jean-Charles, to Asulab S.A. Temperature indicator and watch provided with such a temperature indicator. 5,484,205, Cl. 374-142.000.

Gruzins, Indulis: *See—*
Garrett, Thomas M.; and Gruzins, Indulis, 5,484,832, Cl. 524-261.000.

Gu, Sono, to Canon Kabushiki Kaisha. Image forming apparatus having tone correcting function. 5,485,191, Cl. 347-131.000.

Guaraldi, Glenn A.; and Burke, David C., to Heidelberg Druckmaschinen AG. Method of lubricating printing cyclinder bearings. 5,484,212, Cl. 384-462.000.

Gudmundsson, Stefan: *See—*
Giesbrecht, Ken; and Gudmundsson, Stefan, 5,483,786, Cl. 53-570.000.

Guerra, John M., to Polaroid Corporation. Method for making flexible transducers for use with photon tunneling microscopes. 5,484,558, Cl. 264-1.240.

Guibaud, Jean-Marc: *See—*
Yamawaki, Koichi; Dumontier, Franck; Peters, Mike; and Guibaud, Jean-Marc, 5,484,155, Cl. 273-164.100.

Guidotti, Richard A.: *See—*
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Guillon, Michel: *See—*
Roffman, Jeffrey H.; Poling, Timothy R.; Guillon, Michel; and Menezes, Edgar V., 5,485,228, Cl. 351-161.000.

Gumkowski, Gregory T., to Ford Motor Company. Method and apparatus for monitoring external events during a microprocessor's sleep mode. 5,485,625, Cl. 395-800.000.

Gummerson, Elwyn W. Laterally movable grass cutting mower attachmeat. 5,483,789, Cl. 56-15.500.

Gupta, Harish C., to Illinois Tool Works Inc. Workpiece-contacting probe for fastener-driving tool for fastening lath to substrate. 5,484,094, Cl. 227-8.000.

Gupta, Sarbari; and Gligor, Virgil D., to International Business Machines Corporation. Automated penetration analysis system and method. 5,485,409, Cl. 395-186.000.

Gurmen, Erdogan O.: *See—*
Greskovich, Charles D.; Minnear, William P.; O'Clair, Chester R.; Gurmen, Erdogan O.; and Riedner, Robert J., 5,484,750, Cl. 501-86.000.

Gustafson, Per: *See—*
Östlund, Åke; Oskarsson, Ulf; Gustafson, Per; and Åkesson, Leif, 5,484,468, Cl. 75-236.000.

Gustafsson, Jukka: *See—*
Anttila, Jari; Gustafsson, Jukka; Heinäkari, Matti; Linja, Jukka; and Vaihinen, Matti, 5,484,098, Cl. 228-184.000.

Guth, Christian; and Stehlin, Albert, to Ciba-Geigy Corporation. Aqueous, storable wetting agent which is low-foaming in application. 5,484,553, Cl. 252-351.000.

Gutierrez, Antonio: *See—*
Chandler, John E.; Gutierrez, Antonio; Ryer, Jack; Yoneto, Yasuhiko; Bloch, Ricardo A.; Watts, Raymond F.; and Lundberg, Robert D., 5,484,543, Cl. 252-51.50A.

Guttag, Karl M.; Simpson, Richard; and Walsh, Brendan, to Texas Instruments Incorporated. Three input arithmetic logic unit forming the sum of a first input anded with a first boolean combination of a second input and a third input plus a second boolean combination of the second and third inputs. 5,485,411, Cl. 364-716.000.

Gutu, Mihail-Dan: *See—*
Dejneko, Andrej D.; Skorochodov, Wladimir N.; Kozar, Sergej L.; Lepekin, Wladilen S.; Schumilow, Wladimir P.; Gutu, Mihail-Dan; Riedesel, Udo; and Rogowsky, Heinz F., 5,484,513, Cl. 204-129.100.

Guzik, Chris: *See—*
Nicholls, Peter; Kinyon, Robert; Skaistis, Jeff; Johnson, Steve; Locker, Andy; Guzik, Chris; and Howard, Scott, 5,485,369, Cl. 364-401.000.

Gysling, Henry J.: *See—*
Moore, Christopher P.; VanSlyke, Steven A.; and Gysling, Henry J., 5,484,922, Cl. 546-7.000.

H.M. Electronics, Inc.: *See—*
Kutz, Donald A.; and DeSantis, Philip J., 5,484,668, Cl. 291-121.000.

Haas, Zygmunt, to AT&T Corp. Optical packet synchronization circuit. 5,485,298, Cl. 359-139.000.

Haber, Terry M.; Smedley, William H.; and Foster, Clark B. Continuous rope climb exerciser. 5,484,360, Cl. 482-37.000.

Hackenberg, Bernhard, to Landsberger Bandweberei GmbH & Co KG. Process for manufacturing a prefabricated bow. 5,484,496, Cl. 156-70.000.

Hackforth GmbH & Co. KG: *See—*
Birioukov, Ivan W.; and Usmanov, Hasan G., 5,484,339, Cl. 464-69.000.

Haddock, Robert M. M. Mounting device for building surfaces. 5,483,772, Cl. 52-25.000.

Hae Sung Engineering Co., Ltd.: *See—*
Ra, Jong O.; Lim, Joon Y.; and Yoo, Wan M., 5,484,344, Cl. 475-59.000.
Ra, Jong O.; Lim, Joon Y.; and Yoo, Wan M., 5,484,349, Cl. 475-275.000.

Hafslund Nycomed Bioreg AS: *See—*
Laerum, Ole D., 5,484,770, Cl. 514-17.000.

Hagerman, John: *See—*
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Hagiwara, Hideo: *See—*
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Hague, Brian: *See—*
Stanley, Theodore H.; and Hague, Brian, 5,484,602, Cl. 424-440.000.

Hahn, Stefan: *See—*
Franke, Uwe; Hahn, Stefan; and Suissa, Avshalom, 5,485,378, Cl. 364-424.050.

Hailey, Charles D. Method and apparatus for forming a window in a subsurface well conduit. 5,484,021, Cl. 166-297.000.

Haisma, Jan: *See—*
Postma, Lambertus; Haisma, Jan; Ruigrok, Jacobus J. M.; and Somers, Gerardus H. J., 5,483,735, Cl. 29-603.000.

Hakamatani, Takao: *See—*
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Hakes, Harrison R.: *See—*
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Hakotani, Masahiro: *See—*
Hayakawa, Yuzo; and Hakotani, Masahiro, 5,484,276, Cl. 425-343.000.

Hale, Darryl F., to United States of America, Army. Apparatus and method for homogenizing plastic explosives. 5,483,862, Cl. 86-21.000.

Hall, Corrina A. E.: *See—*
Askeland, Ronald A.; Hunt, Catherine B.; Prasad, Keshava A.; Hall, Corrina A. E.; Hickman, Mark S.; Cleveland, Lance; and Allen, William J., 5,485,180, Cl. 347-15.000.

Hall, Donald M. Load bearing beam having corrosion resistant cladding. 5,483,782, Cl. 52-730.100.

Hall, Eric S.: *See—*
Gruber, Patrick R.; Kolstad, Jeffrey J.; Ryan, Christopher M.; Hall, Eric S.; and Eichen Conn, Robin S., 5,484,881, Cl. 528-354.000.

Hall, John C.: *See—*
Julow, Jay K.; DeRegnaucourt, Robert A.; and Hall, John C., 5,483,855, Cl. 82-1.110.

Hall, Lance S. Apparatus for detecting when birds are in a birdhouse. 5,483,922, Cl. 119-23.000.

Halliburton Company: *See—*
Brothers, Lance E., 5,484,478, Cl. 106-696.000.
Cavender, Travis W.; and Murphey, Joseph R., 5,484,018, Cl. 166-291.000.
Griffith, James E., 5,484,019, Cl. 166-293.000.
Onan, David D.; Bila, Vincent J.; Haney, James L.; Folmsbee, Gary E.; Koch, Ronney R.; Stilley, Randall D.; and Watters, Larry T., 5,483,986, Cl. 137-1.000.
Surjaatmadja, Jim B.; and Helton, Timothy W., 5,484,016, Cl. 166-104.000.
Tomek, Martin L.; and Gilbert, Gregory N., 5,483,895, Cl. 102-312.000.

Hamasaka, Hiroshi; Satoh, Isao; Fukushima, Yoshihisa; Takagi, Yuji; and Azumatani, Yasushi, to Matsushita Electric Industrial Co., Ltd. Method for recording/reproducing information and apparatus therefor. 5,485,439, Cl. 369-47.000.

Hamaura, Masahide: *See—*
Sobajima, Yoshihiro; Kinoshita, Satoru; and Hamaura, Masahide, 5,484,835, Cl. 524-494.000.

Hamburg, Douglas R.; Husak, Philip W.; Meyer, Daniel L.; and Whittier, Steven R., to Ford Motor Company. Engine control system with rapid catalyst warm-up. 5,483,946, Cl. 123-686.000.

Hämmerle, Hermann: *See—*
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Hammersmark, Dan J.: *See—*
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Hammond, Marlys: *See—*
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Hamtil, John D.: *See—*
Groves, Lyle W.; Groves, Martha R.; and Hamtil, John D., 5,483,748, Cl. 33-366.000.

Han, Tae-Hyeon: *See—*
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Healey, Peter; and Smith, David, to British Telecommunications public limited company. Monitor unit for monitoring an optical waveguide. 5,485,296, Cl. 359-112.000.

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Kuehne, Norbert; Biermann, Manfred; Jacobs, Jochen; and Behler, Ansgar, 5,484,531, Cl. 210-653.000.

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Herbstman, Sheldon, to Texaco Inc. Low sulfur diesel fuel composition with anti-wear properties. 5,484,462, Cl. 44-334.000.

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Nolan, Timothy F.; and Stubbs, Brian M., 5,484,952, Cl. 549-329.000.

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Davis, Guy M.; Herklotz, Jack F.; and Lizenby, Kevin J., 5,483,876, Cl. 100-207.000.

Hermann, Phillip R.: *See*—
Manseur, Arezki; Weist, William C.; Brandao, Ruy L.; and Hermann, Phillip R., 5,485,156, Cl. 342-77.000.

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Friesen, Heinz-Jürgen; and Hermentin, Peter, 5,484,722, Cl. 435-188.000.

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Naieni, Shahrokh A.; Herron, Carlisle M.; and Hanser, Thomas R., 5,484,896, Cl. 530-504.000.

Heuer, Horst: *See*—
Jadamus, Haas; Schmidt, Friedrich G.; and Heuer, Horst, 5,484,848, Cl. 525-105.000.

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Berger, Harald; Dragesser, Norbert; Heumueller, Rudolf; Schaetzer, Erich; and Wagner, Manfred, 5,484,573, Cl. 422-128.000.

Heuscher, Dominic J.; Lindstrom, Walter W.; and Tuy, Heang K., to Picker International, Inc. Multiple detector ring spiral scanner with relatively adjustable helical paths. 5,485,493, Cl. 378-686.000.

Heuvel, William V., to General Instrument Corp. Fabrication of hybrid semiconductor devices. 5,484,097, Cl. 228-123.100.

Hewlett-Packard Company: *See*—
Askeland, Ronald A.; Hunt, Catherine B.; Prasad, Keshava A.; Hall, Corrina A. E.; Hickman, Mark S.; Cleveland, Lance; and Allen, William J., 5,485,180, Cl. 347-15.000.
Goldman, Jason; and Jennings, Byron T., Jr., 5,485,569, Cl. 395-159.000.
Hoberock, Tim M.; and Huffman, John W., 5,483,889, Cl. 101-232.000.
Kovalick, Albert W.; and Lowitz, Gregory E., 5,485,553, Cl. 395-106.000.
Lowitz, Gregory E.; and Kovalick, Albert W., 5,485,554, Cl. 395-116.000.
Steinmetz, Joe H.; and Tausheck, Eric G., 5,485,624, Cl. 395-775.000.

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Stephens, Charles S., 5,485,090, Cl. 324-433.000.
Tobin, Jeffrey P., 5,485,526, Cl. 382-232.000.

Heyder, Reinhard, to Bosch-Siemens Hausgeraete GmbH. Clothes dryer with horizontally rotatably supported drum. 5,483,756, Cl. 34-601.000.

Hibchen, Kurt: *See*—
Forget, Robert; Hibchen, Kurt; Parenteau, Robert; Daoûst, Robert; Beaumont, Francois; Chagnon, Yves; Lefebvre, Bernard; and Archambault, Marc-Antoine, 5,485,436, Cl. 369-36.000.

Hibino, Hideo: *See*—
Yokouma, Norikazu; Kazami, Kazuyuki; Hibino, Hideo; and Yamazaki, Youichi, 5,485,233, Cl. 354-106.000.

Hibino, Katsuhiko, to Nippondenso Co., Ltd. Radar system detecting plural obstacles and measuring distance based on full gain and automatic gain control. 5,485,155, Cl. 342-70.000.

Hickman, Mark S.: *See*—
Askeland, Ronald A.; Hunt, Catherine B.; Prasad, Keshava A.; Hall, Corrina A. E.; Hickman, Mark S.; Cleveland, Lance; and Allen, William J., 5,485,180, Cl. 347-15.000.

Hicks, Terence A.: *See*—
Gallagher, Peter T.; Hicks, Terence A.; and Owton, William M., 5,484,935, Cl. 548-253.000.

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Okado, Chihiro; and Hideshima, Makoto, 5,485,341, Cl. 361-98.000.

Hideshima, Yoshinori: *See*—
Kikuchi, Hiromichi; Hideshima, Yoshinori; and Taaji, Keisuke, 5,483,713, Cl. 5-502.000.

Higaki, Koichi: *See*—
Suto, Kenichiro; Asajima, Mikio; and Higaki, Koichi, 5,484,759, Cl. 503-227.000.

Higashimura, Hideyuki; Ohbe, Yoshitaka; Okada, Akihiko; Ohashi, Kazutoshi; Matsui, Ryuhei; and Kriyama, Shigeki, to Sumitomo Chemical Company, Limited; and Mitsubishi Chemical Corporation. Polyphenylene ether resin composition. 5,484,831, Cl. 524-257.000.

Higashino, Naomi: *See*—
Funakura, Teruhiko; and Higashino, Naomi, 5,485,114, Cl. 327-262.000.

Higeta, Akira; Odagawa, Kazuyoshi; and Sasaki, Shinichi, to Canon Kabushiki Kaisha. Process cartridge frame, process cartridge and image forming apparatus. 5,485,249, Cl. 355-210.000.

Highland Supply Corporation: *See*—
Weder, Donald E.; and Craig, Franklin J., 5,484,562, Cl. 264-40.100.

Higuchi, Masahiro: *See*—
Kashima, Rika; Nakamura, Shunichiro; Minemura, Harumi; Shiono, Katsumi; Higuchi, Masahiro; Yoshimori, Mikio; and Hayakawa, Takayuki, 5,485,598, Cl. 395-182.040.

Hihara, Hiroki: *See*—
Miyoshi, Hiroaki; Mizushima, Yasuhiko; Ohtsuka, Makoto; and Hihara, Hiroki, 5,485,604, Cl. 395-182.080.

Hikosaka, Yasumi: *See*—
Hayashi, Akihiro; Yoshimura, Kazuhiro; Murakami, Yasuhisa; and Hikosaka, Yasumi, 5,485,231, Cl. 351-243.000.

Hilfiker, William K.; and Taylor, Thomas P. Retaining wall system. 5,484,235, Cl. 405-284.000.

Hill, Peter D.: *See*—
McKendree, Francis S.; Wright, Dexter V.; Hill, Peter D.; and Sattinger, Stanley S., 5,484,969, Cl. 181-142.000.

Hill, Raymond J.: *See*—
Leighton, Sam R.; and Hill, Raymond J., 5,483,944, Cl. 123-531.000.

Hill-Rom Company, Inc.: *See*—
Foster, L. Dale; and Reeder, Ryan A., 5,483,709, Cl. 5-81.100.

Hilliard, Wesley P.; and Barney, Scott, to Emery Recycling Corporation. Apparatus for municipal waste gasification. 5,484,465, Cl. 48-76.000.

Hillis, W. Daniel, to Thinking Machines Corporation. Partitionable massively parallel processing system. 5,485,627, Cl. 395-800.000.

Hills, Robert R.; and Nichols, Henry R., to Resource Technology Services, Inc. Checkwriting point of sale system. 5,484,988, Cl. 235-379.000.

Hinnen, Hans R.: *See*—
Marelin, Miklos; Jansen, George; and Hinnen, Hans R., 5,483,998, Cl. 140-93.400.

Hinter, Werner: *See*—
Horn, Klaus; Liagnau, Jürgen; Schütze, Gerald; and Hinter, Werner, 5,484,688, Cl. 430-311.000.

Hinton, Corydon A.; and Szejna, Glenn, to Lunar Corporation. Radiographic gantry with software collision avoidance. 5,485,502, Cl. 378-117.000.

Hioki, Takanori: *See*—
Tsukahara, Jiro; Hioki, Takanori; and Nakamura, Koki, 5,484,683, Cl. 430-201.000.

Hipp, Mark E., to Ford Motor Company. Ignition coil assembly filled with resinous material. 5,485,135, Cl. 336-96.000.

Hirai, Atsuto: *See*—
Ueda, Masahide; Izumi, Tomoo; Yamasaki, Hiroyuki; Hirai, Atsuto; Matsuura, Masahiko; Sano, Eiichi; Terasaka, Yoshihisa; Yamada, Masami; and Yoshida, Satoshi, 5,485,257, Cl. 359-272.000.

Hirai, Isamu: *See*—
Sato, Osamu; Nakano, Satoshi; Hirai, Isamu; Kitazawa, Toshiyuki; Sensui, Takayuki; Yamamoto, Masato; Yamanaka, Toshimasa; Shishikura, Takenao; and Takahashi, Akio, 5,485,242, Cl. 354-442.000.

Hirai, Toshiro: *See*—
Sasaki, Mitsuo; and Hirai, Toshiro, 5,485,377, Cl. 364-424.050.

Hirai, Yutaka; Osada, Yoshiyuki; Nakagiri, Takashi; and Hatanaka, Katsunori, to Canon Kabushiki Kaisha. Semiconductor device including a thin film transistor and a wiring portion having the same layered structure as and being integral with a source region or drain region of the transistor. 5,485,020, Cl. 257-59.000.

Hiraki, Toshiyuki; and Hata, Masayuki, to Mitsubishi Denki Kabushiki Kaisha. Associative memory. 5,485,418, Cl. 365-49.000.

Hirano, Satoshi; and Shinozaki, Hirofumi, to Kabushiki Kaisha TOPCON. Laser beam survey instrument having a tiltable laser beam axis and tilt detectors. 5,485,266, Cl. 356-249.000.

Hirano, Yoshihiro; and Ozaki, Atsushi, to Shin-Etsu Handotai Company, Ltd. Semiconductor ingot machining method. 5,484,326, Cl. 451-41.000.

Hiraoka, Toshie: *See*—
Ikeda, Akira; Tanimura, Yasuhiro; Nakatsugawa, Naoki; Tanaka, Masaaki; Konishi, Hiroshige; Hiraoka, Toshie; Nishio, Shinji; and Kawahira, Hiroto, 5,484,570, Cl. 422-1.000.

Hirata, Koji; Yoshida, Takahiko; Yoshikawa, Hiroki; Muranaka, Masayuki; Osawa, Atsuo; and Matuda, Yutaka, to Hitachi, Ltd. Rear-projection type image display apparatus and rear-projection type screen. 5,485,308, Cl. 359-457.000.

Hirata, Toshimichi: *See*—
Ogawa, Atsushi; Ozawa, Yoshio; Hirata, Toshimichi; Kawai, Tsuyoshi; Fukushima, Kiyoshi; and Toyoshima, Masashi, 5,483,804, Cl. 62-153.000.

Hiratani, Kenji: *See*—
Hirose, Hiroshi; Hiratani, Kenji; and Kimijima, Masashi, 5,484,140, Cl. 271-175.000.

Hiratsuka, Yoshiaki, to Fujitsu Limited. Electronic apparatus having cooling system. 5,484,012, Cl. 165-40.000.

Hiroi, Kazuo, to Kabushiki Kaisha Toshiba. Process control apparatus. 5,485,367, Cl. 364-160.000.

Hiroki, Masaaki: *See*—
Yamazaki, Shunpei; Mase, Akira; Hiroki, Masaaki; Takemura, Yasuhiko; Zhang, Hongyong; and Uochi, Hideki, 5,485,019, Cl. 257-57.000.

Hironaka, Keitaro: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Pukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshua; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,484,227, Cl. 404-84.100.

Hirose, Akira; Fujii, Takashi; Sugiyama, Yoshihide; Uotani, Kunihiro; and Hyoudou, Fumitaka, to Ricoh Company Ltd. Sheet sorting and storing apparatus. 5,484,143, Cl. 271-293.000.

Hirose, Hiroshi; Hiratani, Kenji; and Kimijima, Masashi, to Ricoh Company, Ltd. Catch type sheet tray for an image forming apparatus. 5,484,140, Cl. 271-175.000.

Hirose, Yoshio; and Matsumoto, Kenji, to TEAC Corp. Device for loading and ejecting recording medium requiring pushing of recording medium for ejecting the medium. 5,485,330, Cl. 360-99.060.

Hirschenbain, Aviv. Device for equalizing pressure across the cardrum of divers. 5,483,975, Cl. 128-864.000.

Hirst, R.: *See*—
Ford, M. Barnecut; and Hirst, R., 5,484,293, Cl. 434-432.000.

Hisanaga, Tetsuo; and Kajita, Tetsuya, to Yamatake-Honeywell Co., Ltd. Remote data read system. 5,485,150, Cl. 340-870.020.

Hitachi Chemical Co., Ltd.: *See*—
Tai, Seiji; Hayashi, Nobuyuki; Kamijima, Koichi; Katayoee, Mitsuo; Akimoto, Takayuki; Hayashida, Shigeru; Hagiwara, Hideo; Era, Susumu; Kobayashi, Setsuo; and Mukoh, Akio, 5,484,685, Cl. 540-452.000.

Hitachi Device Engineering & Co., Ltd.: *See*—
Itoh, Osamu; Kondo, Katsumi; Kikuchi, Naoki; and Madokoro, Hitomi, 5,485,295, Cl. 359-73.000.

Hitachi Engineering Co., Ltd.: *See*—
Nakamura, Kozo; Yokosuka, Yasushi; Kozima, Yasuyuki; Takaoka, Kazuhiko; Yamamoto, Kagehiro; and Asai, Takeshi, 5,485,287, Cl. 358-426.000.

Hitachi Koki Co., Ltd.: *See*—
Mitsuya, Teruaki, 5,485,260, Cl. 355-290.000.

Hitachi, Ltd.: *See*—
Fujita, Youji; and Mizuishi, Kenichi, 5,485,039, Cl. 257-774.000.
Hirata, Koji; Yoshida, Takahiko; Yoshikawa, Hiroki; Muranaka, Masayuki; Osawa, Atsuo; and Matuda, Yutaka, 5,485,308, Cl. 359-457.000.
Irie, Takashi; Mitsui, Yasuhiro; Mizokami, Kazuaki; and Kuriyama, Katsumi, 5,485,016, Cl. 250-288.000.
Ishida, Tomotoshi; Minami, Shunsuke; Kawashima, Yasumasa; Arai, Hiroshi; Yamada, Takeo; and Arai, Shigeru, 5,485,560, Cl. 395-133.000.
Isono, Yukihiro; Saito, Makoto; Adachi, Kazuyoshi; Yumoto, Masato; and Takakura, Akio, 5,483,734, Cl. 29-603.000.
Itoh, Osamu; Kondo, Katsumi; Kikuchi, Naoki; and Madokoro, Hitomi, 5,485,295, Cl. 359-73.000.
Iwai, Hidetoshi; Muranaka, Masaya; Nasu, Takumi; and Sukegawa, Shunichi, 5,485,425, Cl. 365-200.000.
Kurokawa, Yoshiki; Nishioka, Kiyokazu; Kamimaki, Hideki; and Atarashi, Yoshifumi, 5,485,623, Cl. 395-182.200.
Maeda, Yoshihito; Ikuta, Isao; Andoh, Hisashi; Nagai, Masaichi; Kasoh, Yoshimi; Sato, Yoshio; Tsuboi, Nobuyoshi; and Minemura, Hiroyuki, 5,484,686, Cl. 430-270.130.
Mitsuya, Teruaki, 5,485,260, Cl. 355-290.000.
Nakamura, Kozo; Yokosuka, Yasushi; Kozima, Yasuyuki; Takaoka, Kazuhiko; Yamamoto, Kagehiro; and Asai, Takeshi, 5,485,287, Cl. 358-426.000.
Nonaka, Naomichi; Nakane, Keiichi; Kuwabara, Tadashi; Koreeda, Hiroyuki; and Kuwamoto, Hideki, 5,485,544, Cl. 395-12.000.
Ogawa, Kensuke; and Allam, Jeremy, 5,485,018, Cl. 257-24.000.
Oizumi, Hiroaki; Ito, Masaaki; Soga, Takashi; Ogawa, Taro; Mochiji, Kozo; and Takeda, Eiji, 5,485,497, Cl. 378-84.000.
Okamoto, Yoshihiko, 5,484,671, Cl. 430-5.000.
Ota, Hiroshi; Sakoda, Kousuke; Saito, Tetsuo; Maeda, Eiichiro; and Yamamoto, Toshiyuki, 5,485,612, Cl. 395-650.000.
Sakaguchi, Seiji; Koike, Hiroshi; and Tomita, Hiroshi, 5,485,549, Cl. 395-51.000.
Sakaibara, Toru; Takamatsu, Ryoichi; and Hara, Hideyuki, 5,485,559, Cl. 395-133.000.
Tai, Seiji; Hayashi, Nobuyuki; Kamijima, Koichi; Katayose, Mitsuo; Akimoto, Takayuki; Hayashida, Shigeru; Hagiwara, Hideo; Era, Susumu; Kobayashi, Setsuo; and Mukoh, Akio, 5,484,685, Cl. 540-432.000.
Takaku, Yutaka; and Ishii, Toshio, 5,485,374, Cl. 364-424.030.

Hitachi Medical Corporation: *See*—
Baba, Rika; Ueda, Ken; Yokouchi, Hisatake; Onodera, Yoichi; Umetani, Keiji; and Tsuneoka, Masayuki, 5,485,500, Cl. 378-98.200.

Hitachi Metals, Ltd.: *See*—
Goto, Ryuji; and Noguchi, Koji, 5,484,680, Cl. 430-122.000.
Nawata, Ryosaku; Date, Kenji; and Hattori, Toshiyuki, 5,484,372, Cl. 492-58.000.

Hitachi Microcomputer System Ltd.: *See*—
Ota, Hiroshi; Sakoda, Kousuke; Saito, Tetsuo; Maeda, Eiichiro; and Yamamoto, Toshiyuki, 5,485,612, Cl. 395-650.000.

Hitachi Nuclear Engineering Co., Ltd.: *See*—
Ota, Hiroshi; Sakoda, Kousuke; Saito, Tetsuo; Maeda, Eiichiro; and Yamamoto, Toshiyuki, 5,485,612, Cl. 395-650.000.

Hitachi Tokyo Electronics Co., Ltd.: *See*—
Irie, Takashi; Mitsui, Yasuhiro; Mizokami, Kazuaki; and Kuriyama, Katsumi, 5,485,016, Cl. 250-288.000.

Hitz, David; Schwartz, Allan; Lau, James; and Harris, Guy, to Auspex Systems, Inc. Multiple facility operating system architecture. 5,485,579, Cl. 395-200.120.

Hiuke, Tadashi; Inoue, Yasokazu; and Soga, Hiroshi, to Sandoz Ltd. Dyeing methods to produce deep dyeings with phthalocyanine dyes. 5,484,456, Cl. 8-543.000.

Ho, Geng Kaung. Hybrid communication devices with one telephone line. 5,485,508, Cl. 379-97.000.

Hoang, Eric: *See*—
Lyon, Jose A.; Cheng, Tony; Reipold, Anthony M.; and Hoang, Eric, 5,485,466, Cl. 371-22.300.

Hoarty, W. Leo, to ICTV, Inc. Carousel display. 5,485,197, Cl. 348-7.000.

Hobbs, Frank W., Jr.: *See*—
Cocuzza, Anthony J.; Hobbs, Frank W., Jr.; Zagursky, Robert J.; and Straus, Neil A., 5,484,701, Cl. 435-6.000.

Hobbs, James D.: *See*—
Hansen, Carl E.; and Hobbs, James D., 5,484,197, Cl. 312-334.120.

Hoberock, Tim M.; and Huffman, John W., to Hewlett-Packard Company. Automatic media size detector. 5,483,889, Cl. 101-232.000.

Hochlowski, Jill E.; Jackson, Marianna; Kadam, Sunil K.; Karwowski, James P.; and McAlpine, James B., to Abbott Laboratories. Antifungal dorrigocin derivatives. 5,484,799, Cl. 514-345.000.

Hochstrate, Paul M.; and Gamache, Michael E., to Colt's Manufacturing Company Inc. Combined handgrip and trigger guard for a firearm. 5,483,766, Cl. 42-75.030.

Hock, Christopher; Rink, Linda M.; and Hatt, Wesley L., to Morton International, Inc. Pyrotechnic inflator for an air bag. 5,483,896, Cl. 102-530.000.

Hoechst Aktiengesellschaft: *See*—
Berger, Harald; Dragesser, Norbert; Heumueller, Rudolf; Schaetzer, Erich; and Wagner, Manfred, 5,484,573, Cl. 422-128.000.
Murschall, Ursula; Peiffer, Herbert; and Schloegl, Gunter, 5,484,633, Cl. 428-35.700.
Russ, Werner H.; Tappe, Horst; and Schumacher, Christian, 5,484,458, Cl. 8-549.000.
Staendeke, Horst, 5,484,830, Cl. 524-101.000.
Vonken, Hub A. G.; and op den Buysch, Jan, 5,484,649, Cl. 428-220.000.

Hoechst Celanese Corporation: *See*—
Helmling, Walter, 5,484,459, Cl. 8-549.000.
Kelley, Larry C., 5,484,455, Cl. 8-539.000.

Hoeganaes Corporation: *See*—
Rutz, Howard G.; and Luk, Sidney, 5,484,469, Cl. 75-252.000.

Hoel, Per: *See*—
Kelly, Cliff; Crouse, Helen C.; and Hoel, Per, 5,485,349, Cl. 361-690.000.

Hoenes, Joachim; and Unkrig, Volker, to Boehringer Mannheim GmbH. Method for the colorimetric determination of an analyte with a PQQ-dependent dehydrogenase. 5,484,708, Cl. 435-14.000.

Hoffman, Gilbert A.: *See*—
Elkind, Bob; and Hoffman, Gilbert A., 5,485,199, Cl. 348-180.000.

Hoffman, Ronald J., to Ryobi Outdoor Products Inc. Method of making an angle gear drive. 5,483,733, Cl. 29-463.000.

Hoffmann, Donald: *See*—

Chang, John C. H.; and Hoffmann, Donald, 5,484,169, Cl. 283-67.000.

Hoffmann-La Roche Inc.: *See*—
Kelly, Stephen; and Schadt, Martin, 5,484,551, Cl. 252-299.670.

Hoffmeister, Michael: *See*—
Furhmann, Kirsten; Wischnat, Alf-Eric; Schulz, Thomas; and Hoffmeister, Michael, 5,484,454, Cl. 8-523.000.

Hogan, Patrick J.: *See*—
Doracht, John P.; and Hogan, Patrick J., 5,484,111, Cl. 241-197.000.

Hogan, Sherman D. Art framing mat. 5,483,762, Cl. 40-158.100.

Hogarth, Harold P.; and Hogarth, Wayne E. Molded article and method and apparatus for making same. 5,484,498, Cl. 156-189.000.

Hogarth, Wayne E.: *See*—
Hogarth, Harold P.; and Hogarth, Wayne E., 5,484,498, Cl. 156-189.000.

Hogetsu, Akihiko: *See*—
Sasaki, Takashi; Harada, Hiroyuki; and Hogetsu, Akihiko, 5,484,512, Cl. 204-129.000.

Hoh, Manfred, to Vereinigte Kunststoffwerke GmbH. Press-through foil for press-through packaging. 5,484,631, Cl. 428-2.000.

Holden, Edward S. Fluid flow connector and gauge assembly. 5,483,838, Cl. 73-861.610.

Holden, Paul; and Sandbank, Barry M., to Smith & Nephew plc. Percutaneous anaesthesia. 5,484,603, Cl. 424-447.000.

Hollmann, Joerg W.; and Devenyi, Gabor, to Hughes Aircraft Company. Optical fiber quadrant detector having a sensor head with intermixed receiving and transmitting optical fibers. 5,485,007, Cl. 250-227.280.

Holloway, Marvin E.: *See*—
Macaluso, Virgil J.; Holloway, Marvin E.; and Albright, John J., 5,484,574, Cl. 422-171.000.

Holmberg, Douglas A. Ventilated enclosure. 5,484,335, Cl. 454-250.000.

Holmes, Michael J., to Babcock & Wilcox Company, The . Three-fluid atomizer. 5,484,107, Cl. 239-427.500.

Holmquist, Ralph E., to Eaton Corporation. Variable rate locking differential with pyrolitic-carbon friction clutch. 5,484,347, Cl. 475-231.000.

Hologic, Inc.: *See*—
Steiger, Peter; and Weiss, Howard P., 5,483,960, Cl. 128-653.100.

Holy, Norman L.: *See*—
Bigley, Andrew B. W., Jr.; Daecher, Jeffrey L.; Holy, Norman L.; Jerman, Robert E.; Johnson, Phelps B.; and Work, William J., 5,485,541, Cl. 385-141.000.

Holzer, David. Gelatin production. 5,484,888, Cl. 530-355.000.

Honda Giken Kogyo K.K.: *See*—
Oshima, Yoshikazu; and Ogawa, Ken, 5,483,938, Cl. 123-478.000.
Seki, Yasunari; Sato, Toshihiko; Iida, Naoki; and Iwata, Yoichi, 5,485,382, Cl. 364-431.050.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Igarashi, Hisashi; Chikamatsu, Masataka; Maruyama, Hiroshi; and Yamanaka, Masayoshi, 5,485,596, Cl. 364-431.030.
Ishikawa, Hiroshi; Furukawa, Hideo; Shimizu, Masatoshi; and Nakauchi, Norio, 5,484,350, Cl. 477-97.000.
Nakazawa, Yasushi; Kitamura, Katsuhiro; Oku, Yasunori; and Enomoto, Masatoshi, 5,484,981, Cl. 219-121.720.
Ogawa, Ken; Oshima, Yoshikazu; Ebara, Yasunori; Machida, Kei; and Kato, Atsushi, 5,483,935, Cl. 123-421.000.
Shibeyama, Takao; Maekawa, Keiichiro; Uzuyama, Kimitake; Maruo, Masaru; Fukutome, Akihito; Nakazono, Yoshiharu; and Matsumoto, Yoshimichi, 5,483,823, Cl. 73-118.100.
Takasuka, Yoshitaka; Kimura, Yasuyuki; and Kato, Akira, 5,485,380, Cl. 364-426.030.

Honda Motor Company Ltd.: *See*—
De Pous, Olivier; and Horlaville, Gérard, 5,484,515, Cl. 204-425.000.

Honda, Tetsuya: *See*—
Kawajiri, Kazuhiko; Suganami, Takuya; Honda, Tetsuya; Sugimoto, Teruo; and Fujiwara, Michio, 5,483,802, Cl. 62-6.000.

Honeywell Inc.: *See*—
Armogan, Lloyd; Schober, Christina M.; and Valley, Steven P., 5,483,743, Cl. 29-883.000.
Cummins, Brad L., 5,485,013, Cl. 250-574.000.
Foreman, Donald S., 5,483,842, Cl. 73-862.392.
Maurer, D. Joseph, 5,483,994, Cl. 138-31.000.
Robinder, Ronald C., 5,485,293, Cl. 359-59.000.

Hong, Chung I.; West, Charles R.; and Chu, Chung K., to Health Research, Inc.; and University of Georgia Research Foundation, Inc. Nucleoside 5'-diphosphate conjugates of ether lipids. 5,484,911, Cl. 536-26.220.

Hong, Gary, to United Microelectronics Corporation. Method for fabricating a stacked capacitor for dynamic random access memory cell. 5,484,744, Cl. 437-52.000.

Hong, Ing T.: *See*—
Fitch, Ernest C., Jr.; and Hong, Ing T., 5,484,383, Cl. 494-48.000.

Hongo, Yasuo: *See*—
Ichinohe, Hitoshi; Hongo, Yasuo; and Okada, Masatoshi, 5,485,531, Cl. 382-198.000.

Hoover, Donald L., to American Linc Corporation. Apparatus and method for forming coils of yarn and for heat setting the same. 5,483,730, Cl. 28-269.000.

Hoover, Herbert C., Jr.: *See*—
Hanna, Michael G., Jr.; Hoover, Herbert C., Jr.; and Peters, Leona C., 5,484,596, Cl. 424-277.100.

Hoover, John W.: *See*—
Thomas, Daniel L.; Hoover, John W.; and Marracino, Charles R., 5,484,262, Cl. 415-178.000.

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Robertson, John A.; and Vaughn, Ken R., 5,484,099, Cl. 228-176.000.
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Schofield, Peter R.; Watson, John M.; Scott, Kieran F.; Rolfe, Barry G.; Djordjevic, Michael A.; Kuempel, Peter L.; and Innes, Roger W., 5,484,718, Cl. 435-172.300.
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Meyer, Edwin R.; Naimpally, Saiprasad V.; Phillips, Larry; and Inoue, Shuji, 5,485,215, Cl. 348-423.000.
Inoue, Soichi: *See*—
Wenzhi, Hu, 5,484,733, Cl. 436-161.000.
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Astle, Brian, 5,485,611, Cl. 395-600.000.
Bauer, Mark E.; Frary, Kevin W.; and Talreja, Sanjay S., 5,485,422, Cl. 365-168.000.
Bertoluzzi, Renitia J.; Jackson, Robert T.; and Weitzel, Stephen D., 5,485,127, Cl. 331-69.000.
Dulong, Carole, 5,485,629, Cl. 395-800.000.
Kuzma, Andrew, 5,485,211, Cl. 348-409.000.

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Mawby, Terry P.; and Galloway, Ronny N., 5,484,306, Cl. 439-441.000.

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Kukler, Ronald, 5,484,104, Cl. 239-87.000.

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Hatfield, Raymond, Jr., 5,484,170, Cl. 283-79.000.

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Anderson, Todd B.; Boigenzahn, Jeffrey F.; Stephenson, John J.; and Warner, Amy L., 5,485,323, Cl. 360-78.080.
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Bertsch, John E.; Mann, Randy W.; Nowak, Edward J.; and Tong, Minh H., 5,485,095, Cl. 324-537.000.
Burke, Michael G.; Carini, Paul R.; and Choi, Joog-Deok, 5,485,616, Cl. 395-700.000.
Busboom, Leah J. H.; Clausen, Trent L.; Eagen, Stephen T.; Kiel, Harvey G.; Manulik, Robert J.; Plute, Michael E.; Remfert, Jeffrey E.; and Romon, Raymond F., 5,485,570, Cl. 395-161.000.
Chainer, Timothy J.; Sohn, Wayne J.; and Yarmchuk, Edward J., 5,485,322, Cl. 360-51.000.
Chess, David M.; Kephart, Jeffrey O.; and Sorkin, Gregory B., 5,485,575, Cl. 395-183.140.
Chu, Shao-Fu S.; Hsieh, Chang-Ming; Hsu, Louis L. C.; Kim, Kyong-Min; and Mei, Shaw-Ning, 5,484,738, Cl. 437-33.000.
Crabbé, Emmanuel F.; Jenkins, Keith A.; and Snare, Jeffrey L., 5,485,029, Cl. 257-501.000.
Felde, Steven L.; and Shelley, Kenneth R., 5,484,055, Cl. 206-387.100.
Foster, David J., 5,485,594, Cl. 395-427.000.
Fredrickson, Lisa, 5,485,472, Cl. 371-43.000.
Gersbach, John E.; and Hayashi, Masayuki, 5,485,126, Cl. 331-57.000.
Gupta, Sarbari; and Gligor, Virgil D., 5,485,409, Cl. 395-186.000.
Henshaw, Susan F.; and Redpath, Sarah D., 5,485,174, Cl. 345-123.000.
Huynh, Duy Q.; Lam, Kim V.; and Tran, Loc T., 5,485,585, Cl. 395-311.000.
Johnson, William J.; Keller, Robert S.; Manthuruthil, George C.; and Williams, Marvin L., 5,485,605, Cl. 395-600.000.
Lai, Michael; Ng, John L.; and Shaw, Jin-Fan, 5,485,619, Cl. 395-700.000.
Lawlor, Francis D.; Leitherer, Jerald E.; and Rolfe, David B., 5,485,626, Cl. 395-650.000.
Menon, Jaishankar M., 5,485,571, Cl. 395-182.050.
Narayanaswami, Chandrasekhar, 5,485,562, Cl. 395-134.000.
Paranjape, Sushama M.; and Quintana, Fernando, 5,485,476, Cl. 371-47.100.
Schepis, Dominic J.; Srikrishnan, Kris V.; Subbanna, Seshadri; and Tejwani, Manu J., 5,485,032, Cl. 257-530.000.
Singh, Shanker, 5,485,588, Cl. 395-405.000.
Verkuil, Roger L., 5,485,091, Cl. 324-455.000.

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Priddy, Dennis G.; and Cymbalski, Robert S., 5,484,999, Cl. 235-494.000.

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Harmon, Thomas D., 5,485,338, Cl. 360-133.000.

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Chang, Victor; Chang, Oscar; and Campo, Mauricio, 5,483,840, Cl. 73-861.710.

Intoccia, Alfred P.: *See*—
Weinstein, Martin J.; and Intoccia, Alfred P., 5,484,474, Cl. 96-209.000.

Iosub, Heinrich: *See*—
Orbach, Yair; Iosub, Heinrich; and Orian, Effi, 5,485,487, Cl. 375-258.000.

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Zambounis, John S.; Hao, Zhimin; and Iqbal, Abul, 5,484,943, Cl. 548-453.000.

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Irwin, James S.: *See*—
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Isaac, Ragy; Fedrigon, Richard; and Hudyma, Edward. Control system and method for automatically identifying webs in a printing press. 5,483,893, Cl. 101-485.000.

Isabelle, Paul: *See*—
Pernicka, Martin P.; Isabelle, Paul; and Gagnon, Hubert, 5,483,699, Cl. 2-9.000.

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Isburgh, Anne M.; and Lee, Ching-Pang, to General Electric Company. Turbine airfoil with convectively cooled double shell outer wall. 5,484,258, Cl. 415-115.000.

Ishibashi, Yoshiyuki: *See*—
Ikemoto, Chikahide; and Ishibashi, Yoshiyuki, 5,483,719, Cl. 15-104.940.

Ishida, Hiroshi; and Hashizume, Masahiro, to Mita Industrial Co., Ltd. Electrifying device for an image forming apparatus. 5,485,252, Cl. 355-219.000.

Ishida, Kenji; and Deguchi, Takashi, to Konica Corporation. Solid processing composition for silver halide photographic light-sensitive materials. 5,484,691, Cl. 430-458.000.

Ishida, Tomotoshi; Minami, Shunsuke; Kawashima, Yasumasa; Arai, Hiroshi; Yamada, Takeo; and Arai, Shigeru, to Hitachi, Ltd. Displaying method and system for displaying an object by designating a state of display of the object. 5,485,560, Cl. 395-133.000.

Ishida, Tsutomu: *See*—
Yamashita, Wataru; Okawa, Yuichi; Tamai, Shoji; Matsuo, Mitsunori; Ishida, Tsutomu; Yamaguchi, Keizaburo; and Yamaguchi, Akihiro, 5,484,880, Cl. 528-353.000.

Ishihara, Hideshi, to Omron Corporation. Image processing device and method thereof. 5,485,532, Cl. 382-205.000.

Ishihara, Mitsuhira: *See*—
Nagai, Takaji; Sawauchi, Toshiki; and Ishihara, Mitsuhira, 5,484,322, Cl. 451-5.000.

Ishii, Akio: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,484,227, Cl. 404-84.100.
Suzuki, Fumio; Shimada, Junichi; Koike, Nobuaki; Nakamura, Joji; Shioazaki, Shizuo; Ichikawa, Shunji; Ishii, Akio; and Nonaka, Hiromi, 5,484,920, Cl. 544-268.000.

Ishii, Kazuyoshi: *See*—
Satomura, Seiichiro; Yamazaki, Katuya; and Ishii, Kazuyoshi, 5,485,433, Cl. 369-13.000.

Ishii, Toshio: *See*—
Takaku, Yutaka; and Ishii, Toshio, 5,485,374, Cl. 364-424.030.

Ishikawa, Hiroshi; Furukawa, Hideo; Shimizu, Masatoshi; and Nakauchi, Norio, to Honda Giken Kogyo Kabushiki Kaisha. Control system for vehicle automatic transmission. 5,484,350, Cl. 477-97.000.

Ishimoto, Shigeru; Matuyama, Yasuhiko; and Maejima, Hideo, to Sony Magnescale Inc. Interpolation device for scale arrangement. 5,485,407, Cl. 364-577.000.

Ishimoto, Zenichi, to Nikko Co., Ltd. Radio-controlled track vehicles. 5,484,321, Cl. 446-433.000.

Ishinaga, Hiroyuki; Sugitani, Hiroshi; Masuda, Kazuaki; Kasamoto, Masami; Suzuki, Seiji; Kashino, Toshio; Kawai, Jun; Okazaki, Takeshi; Arashima, Teruo; and Kamiyama, Yuji, to Canon Kabushiki Kaisha. Ink jet recording apparatus with efficient and reliable ink supply. 5,485,186, Cl. 347-65.000.

Ishiwa, Kenichi; and Itoi, Hideyuki, to GE Plastics, Japan, Ltd. Polycarbonate resin compositions. 5,484,874, Cl. 528-196.000.

Ishizu, Kyoji: *See*—
Murata, Kenji; Sonohara, Kazuo; Ito, Susumu; Ishizu, Kyoji; and Emura, Tokuo, 5,485,394, Cl. 364-483.000.

Islam, Mohammed N., to AccuPhotonics, Inc. Fiber optic probe for near field optical microscopy. 5,485,536, Cl. 385-31.000.

Isomae, Kazuro, to Nikki-Universal Co., Ltd.; and Petroleum Energy Center. Hydrodesulfurization catalyst and preparation thereof. 5,484,756, Cl. 502-314.000.

Isono, Yukihiro; Saito, Makoto; Adachi, Kazuyoshi; Yumoto, Masato; and Takakura, Akio, to Hitachi, Ltd. Method for producing thin film magnetic head. 5,483,734, Cl. 29-603.000.

Isuzu Ceramics Research Institute Co., Ltd.: *See*—
Kawamura, Hideo, 5,483,933, Cl. 123-254.000.

Itatsu, Makoto, to Nissan Motor Co. Ltd. Spot welding apparatus. 5,484,975, Cl. 219-86.700.

Ito, Fujihiro: *See*—
Matsuda, Toru; Ito, Fujihiro; Kusano, Yutaka; Makino, Kenji; and Hasegawa, Koyo, 5,485,435, Cl. 369-13.000.

Ito, Masaaki: *See*—
Oizumi, Hiroaki; Ito, Masaaki; Soga, Takashi; Ogawa, Taro; Mochiji, Kozo; and Takeda, Eiji, 5,485,497, Cl. 378-84.000.

Ito, Susumu: *See*—
Murata, Kenji; Sonohara, Kazuo; Ito, Susumu; Ishizu, Kyoji; and Emura, Tokuo, 5,485,394, Cl. 364-483.000.

Ito, Tomokazu; and Sugiyama, Akihiko, to NEC Corporation. Jitter-compensated sampling phase control apparatus. 5,485,113, Cl. 327-234.000.

Ito, Wataru; and Shimura, Kazuo, to Fuji Photo Film Co., Ltd. Method for forming energy subtraction radiaton images, and method and apparatus for smoothing radiation images. 5,485,371, Cl. 364-413.230.

Itoh, Akio: *See*—
Kamei, Masafumi; Suzuki, Yoshiyuki; Hasegawa, Shizuo; Ichikawa, Hiroyuki; Funamizu, Yoshihiro; Itoh, Akio; and Abe, Yoshinori, 5,485,288, Cl. 358-530.000.

Itoh, Akira; Fudoo, Eiji; and Kawamura, Masayuki, to Sumitomo Wiring Systems, Ltd. Terminal crimping method and crimp terminal used therefor. 5,484,961, Cl. 174-84.00C.

Itoh, Nobuki, to Matsushita Electric Industrial Co., Ltd. Magneto-optical element and optical magnetic field sensor. 5,485,079, Cl. 324-96.000.

Itoh, Osamu; Kondo, Katsumi; Kikuchi, Naoki; and Madokoro, Hitomi, to Hitachi, Ltd.; and Hitachi Device Engineering & Co., Ltd. Liquid crystal display apparatus having driving voltage to enable light of many wavelengths to take a same sign along one axis of a poincare sphere. 5,485,295, Cl. 359-73.000.

Itoh, Yoshinori: *See*—
Fujiwara, Toru; Itoh, Yoshinori; and Tomobuchi, Masato, 5,484,341, Cl. 474-205.000.

Itoi, Hideyuki: *See*—
Ishiwa, Kenichi; and Itoi, Hideyuki, 5,484,874, Cl. 528-196.000.

Itou, Takashi: *See*—
Hatano, Yoshiko; Onishi, Ken; Asamura, Yoshinori; Itou, Takashi; and Tsukamoto, Manabu, 5,485,533, Cl. 382-236.000.

ITT Automotive Europe GmbH: *See*—
Reinartz, Hans-Dieter; and Beck, Erhard, 5,484,194, Cl. 303-116.200.

Ivan, Chad J.: *See*—
Stein, Douglas J.; Peters, Frederick M.; Kelly, James R.; and Ivan, Chad J., 5,483,845, Cl. 73-865.300.

Iwai, Hidetoshi; Muranaka, Masaya; Nasu, Takumi; and Sukegawa, Shunichi, to Hitachi, Ltd.; and Texas Instruments Incorporated. Semiconductor memory device having redundant column and operation method thereof. 5,485,425, Cl. 365-200.000.

Iwakura, Ken; Wakata, Yuichi; Matsumoto, Hirotaka; and Totsuka, Mikio, to Fuji Photo Film Co., Ltd. Light-sensitive bistrihalomethyl-s-triazine compound and photopolymerizable composition containing same. 5,484,682, Cl. 430-138.000.

Iwama, Kiyokazu: *See*—
Gotoh, Taiji; Yamamoto, Hidetoshi; Iwama, Kiyokazu; and Yamada, Kiyoshi, 5,484,174, Cl. 285-382.200.

Iwasaki, Hitoshi; Ohsawa, Yuichi; and Kondoh, Reiko, to Kabushiki Kaisha Toshiba. Ferromagnetic film. 5,484,491, Cl. 148-313.000.

Iwasaki, Kazuo; Yamashita, Chiaki; Mesri, Shahram; and Iwasaki, Yoshio. Diet composition comprising gymnema inodrum and a method for suppressing the absorption of saccharides. 5,484,593, Cl. 424-195.100.

Iwasaki, Yoshio: *See*—
Iwasaki, Kazuo; Yamashita, Chiaki; Mesri, Shahram; and Iwasaki, Yoshio, 5,484,593, Cl. 424-195.100.

Iwata, Yasunobu, to Mitsubishi Denki Kabushiki Kaisha. Sequence controller including error correction and method therefor. 5,485,366, Cl. 364-140.000.

Iwata, Yoichi: *See*—
Seki, Yasunari; Sato, Toshihiko; Iida, Naoki; and Iwata, Yoichi, 5,485,382, Cl. 364-431.050.

Izui, Yoshio: *See*—
Kojima, Yasuhiro; Izui, Yoshio; Goda, Tadahiro; and Kyomoto, Sumie, 5,485,545, Cl. 395-22.000.

Izumi Products Company: *See*—
Izumi, Shunji, 5,483,745, Cl. 30-43.600.

Izumi, Shunji, to Izumi Products Company. Electric shaver. 5,483,745, Cl. 30-43.600.

Izumi, Tomoo: *See*—
Ueda, Masahide; Izumi, Tomoo; Yamasaki, Hiroyuki; Hirai, Atsuto; Matsuura, Masahiko; Sano, Eiichi; Terasaka, Yoshihisa; Yamada, Masami; and Yoshida, Satoshi, 5,485,257, Cl. 359-272.000.

J. M. Ney Company, The: *See*—
Klein, Arthur S.; and Smith, Edward F., III, 5,484,569, Cl. 420-503.000.

J. M. Voith Gesellschaft M. B. H.: *See*—
Fehringer, Rudolf, 5,485,072, Cl. 318-723.000.

Jachimowicz, Karen E.: *See*—
Lebby, Michael S.; and Jachimowicz, Karen E., 5,485,318, Cl. 359-811.000.

Jack, Iain R.: *See*—
Urwin, Philip J.; and Jack, Iain R., 5,484,508, Cl. 162-28.000.

Jackson, Allen G.: *See*—
LeClair, Steven R.; Pao, Yoh-han; Westhoven, Timothy E.; Al-Kamhawi, Hilmi N.; Chen, C. L. Philip; Jackson, Allen G.; and Chemaly, Adel C., 5,485,390, Cl. 364-474.240.

Jackson, Marianna: *See*—
Hochlowski, Jill E.; Jackson, Marianna; Kadam, Sunil K.; Karwowski, James P.; and McAlpine, James B., 5,484,799, Cl. 514-345.000.

Jackson, Robert T.: *See*—
Bertoluzzi, Renitia J.; Jackson, Robert T.; and Weitzel, Stephen D., 5,485,127, Cl. 331-69.000.

Jacobs, Jochen: *See*—
Kuehne, Norbert; Biermann, Manfred; Jacobs, Jochen; and Behler, Ansgar, 5,484,531, Cl. 210-653.000.

Jacobs, Mark C.: *See*—
Liken, Peter A.; Jacobs, Mark C.; and Van Nortwick, Monte E., 5,485,078, Cl. 324-76.120.

Jacobs, Terry G.: *See*—
Creelman, Kevin; and Jacobs, Terry G., 5,484,363, Cl. 482-71.000.

Jacobsen, William M. W., Jr.; Belt, L. Carl; and De Pass, Ernest, to Conwed Fibers, a division of Leucadia, Inc. Method of manufacturing an improved wood fiber mat for soil applications. 5,484,501, Cl. 156-209.000.

Jacobson, Vincent C.: *See*—
Warrior, Jogesh; Jacobson, Vincent C.; Orth, Kelly M.; and Tielens, Craig R., 5,485,400, Cl. 364-550.000.

Jacques, Claude: *See*—
Arnaud, Georges; and Jacques, Claude, 5,485,064, Cl. 318-139.000.

Jadamus, Hans; Schmidt, Friedrich G.; and Heuer, Horst, to Huels Aktiengesellschaft. Process for the production of a composite article of a polyamide and an elastomer. 5,484,848, Cl. 525-105.000.

Jaeger, Robert B.: *See*—
Sherman, Richard A.; Schultz, Darald R.; Salvay, Steven H.; Jaeger, Robert B.; Davis, Patrick H.; and Hanson, George E., 5,484,991, Cl. 235-472.000.

Jaffa, David, to Precision Screen Machines, Inc. Screen adjustment and reset device for printing apparatus and the like. 5,483,882, Cl. 101-128.000.

Jaffe, David H.; Johnson, Hoke S., III; and Eidler, Chris W., to MTI Technology Corporation. Method and apparatus for scheduling access to a CSMA communication medium. 5,485,147, Cl. 340-825.500.

Jagenberg Papiertechnik GmbH: *See*—
Claassen, Ernst, 5,484,256, Cl. 414-790.800.
Leineweber, Heinz, 5,483,885, Cl. 101-169.000.

Jäger, Ulrich: *See*—
Kemper, Fritz E.; Reich, Wolfgang; Jäger, Ulrich; and Korona, Eckhard, 5,484,850, Cl. 525-286.000.

Jahn, Todd C. H. Releasable suction handle for beverage containers. 5,484,081, Cl. 220-759.000.

Jain, Faquir; and Cheung, Siu K., to University of Connecticut, The . Multiple quantum well birefringent spatial light modulator. 5,485,014, Cl. 257-21.000.

Jain, Rakesh; Schleigh, William R.; and Stewart, Robert C., to Eastman Kodak Company. Photographic elements containing 2-equivalent pyrazolone magenta dye forming couplers and fade reducing compounds. 5,484,696, Cl. 430-551.000.

Jakob, Clarissa G.: *See*—
Freud, Paul J.; and Jakob, Clarissa G., 5,485,270, Cl. 356-336.000.

James, Dean B. Exothermic compositions and container for heating food. 5,483,949, Cl. 126-263.050.

Jang, Hyun-Soon: *See*—
Lee, Si-Yeol; Jang, Hyun-Soon; and Kim, Myung-Ho, 5,485,426, Cl. 365-203.000.

Jang, In-aik; and Yamamura, Nobuyuki, to Samsung Electronics Co., Ltd. Method for manufacturing liquid crystal display device. 5,484,627, Cl. 427-58.600.

Janik, Jaroslav: *See*—
Huang, Pao-Ter; Cai, Chunsheng; Janik, Jaroslav; Lecko, John H.; and Morton, James S., 5,484,049, Cl. 198-460.300.

Janik, Leon P.; and Maxwell, M. Craig, to Stanadyne Automotive Corp. Module for filter assembly base. 5,484,527, Cl. 210-232.000.

Janome Sewing Machine Co., Ltd.: *See*—
Shimizu, Masato; Kobayashi, Fumiaki; Akahori, Yoshio; and Fukada, Shinichi, 5,483,874, Cl. 100-50.000.

Jansen, Bernhard: *See*—
Weider, Richard; Scholl, Thomas; Köhler, Burkhard; and Jansen, Bernhard, 5,484,857, Cl. 525-388.000.

Jansen, George: *See*—
Marelia, Miklos; Jansen, George; and Hinnen, Hans R., 5,483,998, Cl. 140-93.400.

Janssen, Jozef T. A.; and Van Genechten, Theodorus J. M., to U.S. Philips Corporation. Medical apparatus with cables extending between rotatable parts. 5,483,957, Cl. 128-630.000.

Jarrett, Noel: *See*—
Young, David K.; Setzer, William C.; Koch, Francis P.; Rapp, Robert A.; Pryor, Michael J.; and Jarrett, Noel, 5,484,493, Cl. 148-437.000.

Jatco Corporation: *See*—
Yamauchi, Yasuhiro, 5,483,850, Cl. 74-606.00R.

Jaudouin, Paul J. G.: *See*—
Moradell, Pierre G. R.; and Jaudouin, Paul J. G., 5,483,853, Cl. 74-665.0GD.

Javidi, Bahram: *See*—
Horner, Joseph L.; Javidi, Bahram; and Walkup, John F., 5,485,312, Cl. 359-561.000.

Jeffords, Jason: *See*—
Dobbins, Kurt; Asdlauer, Phil; Oliver, Chris; Parker, Tom; Grimes, Andy; Nutbrown, Bruce; Hullette, Dan; Dev, Roger; and Jeffords, Jason, 5,485,455, Cl. 370-60.000.

Jen, Hsing G.: *See*—
Amleshi, Perrouz; Jen, Hsing G.; MacPherson, William; and Tice, Lee D., 5,485,144, Cl. 340-629.000.

Jennings, Byron T., Jr.: *See*—
Goldman, Jason; and Jennings, Byron T., Jr., 5,485,569, Cl. 395-159.000.

Jenke, Dietmar; Majsai, Josef; and Wubken, Winfried, to Barmag AG. Rotatably supported roll. 5,484,370, Cl. 492-4.000.

Jenkins, Jeffrey A., to TRW Vehicle Safety Systems Inc. Vehicle occupant restraint apparatus. 5,484,163, Cl. 280-728.200.

Jenkins, Jeffrey A.; and Kelley, Scott A., to TRW Vehicle Safety Systems Inc. Air bag module. 5,484,165, Cl. 280-728.200.

Jenkins, Keith A.: *See*—

Crabbé, Emmanuel F.; Jenkins, Keith A.; and Snare, Jeffrey L., 5,485,029, Cl. 257-501.000.

Jennings, Alfred R., Jr.: *See*—
Canman, William L.; and Jennings, Alfred R., Jr., 5,484,231, Cl. 405-128.000.

Jeong, Myung-Yung; Ahn: Seung-Ho; Chun: Oh-Gone; and Choy, Tae-Goo, to Electronics and Telecommunications Research Institute; and Korea Telecommunications Authority. Single core optical fiber connector. 5,485,537, Cl. 385-60.000.

Jerman, Robert E.: *See*—
Bigley, Andrew B. W., Jr.; Daecher, Jeffrey L.; Holy, Norman L.; Jerman, Robert E.; Johnson, Phelps B.; and Work, William J., 5,485,541, Cl. 385-141.000.

JET, Inc.: *See*—
MacLaren, David S.; and Tang, Nianfa, 5,484,524, Cl. 210-151.000.

Jezequel, Pierre H.: *See*—
Mignot, Andre G. E.; and Jezequel, Pierre H., 5,484,697, Cl. 430-569.000.

Jibiki, Takao: *See*—
Amemiya, Shinichi; Jibiki, Takao; and Nishii, Sumio, 5,483,964, Cl. 128-661.090.

Johansson, Jerzy K., to Visual Security Visec Aktiebolag. Security cabinet with display window. 5,483,905, Cl. 109-79.000.

John, Varghese: *See*—
Grant, Francine S.; Fang, Lawrence Y.; John, Varghese; and Thorsett, Eugene D., 5,484,940, Cl. 548-364.700.

Johns, Herbert L., to Zircoa Inc. Apparatus and process for manufacturing balls made of a ceramic material. 5,484,559, Cl. 264-9.000.

Johnson, Alan J.; and Fulton, Anne J. Antihemophilic factor stabilization. 5,484,890, Cl. 530-383.000.

Johnson & Johnson Medical, Inc.: *See*—
Stilwell, Reginald L.; Whitmore, Elaine J.; and Saferstein, Lowell G., 5,484,913, Cl. 536-57.000.

Johnson & Johnson Vision Products, Inc.: *See*—
Molock, Frank F.; Nunez, Ivan M.; and Ford, James D., 5,484,863, Cl. 526-301.000.
Roffman, Jeffrey H.; Poling, Timothy R.; Guillon, Michel; and Menezes, Edgar V., 5,485,228, Cl. 351-161.000.

Johnson, Bryan: *See*—
Decoopman, Carl; and Johnson, Bryan, 5,483,720, Cl. 15-119.200.

Johnson, Carroll R.: *See*—
Horning, Larry D.; Grubaugh, Eugene R.; Pfeifer, Thomas E.; and Johnson, Carroll R., 5,484,246, Cl. 414-409.000.

Johnson, Dale R.: *See*—
Gilmore, Charles P., Jr.; and Johnson, Dale R., 5,484,250, Cl. 414-723.000.

Johnson, David L.; Kostek, Sergio; and Norris, Andrew, to Schlumberger Technology Corporation. Measurement of nonlinear formation parameters using sonic borehole tool. 5,485,431, Cl. 367-30.000.

Johnson, David M.: *See*—
Flood, Gary M.; and Johnson, David M., 5,484,330, Cl. 451-540.000.

Johnson, Donald L.: *See*—
Blackburn, Greg; Johnson, Donald L.; McGovern, Richard; and Rozenzon, Yan, 5,484,486, Cl. 118-728.000.

Johnson, Hoke S., III: *See*—
Jaffe, David H.; Johnson, Hoke S., III; and Eidler, Chris W., 5,485,147, Cl. 340-825.500.

Johnson, J. M.: *See*—
Kuhn, Damon; and Johnson, J. M., 5,483,929, Cl. 123-90.100.

Johnson, John L., to United States of America, Army. Lightweight binocular telescope. 5,485,305, Cl. 359-407.000.

Johnson, John R., to Reilly Industries. Triethylenediamine and bicyclic amidine based catalysts and use in thermosettable compositions. 5,484,873, Cl. 528-91.000.

Johnson, Kent H. Conformed frame apparatus for handling loads involved in arbor rigging procedures. 5,484,253, Cl. 414-787.000.

Johnson, Lawrence L.: *See*—
Glovan, Ronald J.; Tierney, John C.; McLean, Leroy L.; and Johnson, Lawrence L., 5,484,244, Cl. 411-424.000.

Johnson, Michael L.: *See*—
Lakowicz, Joseph R.; Berndt, Klaus W.; Nowaczyk, Kazimierz; Szmacinski, Henryk; and Johnson, Michael L., 5,485,530, Cl. 382-191.000.

Johnson, Phelps B.: *See*—
Bigley, Andrew B. W., Jr.; Daecher, Jeffrey L.; Holy, Norman L.; Jerman, Robert E.; Johnson, Phelps B.; and Work, William J., 5,485,541, Cl. 385-141.000.

Johnson, Richard F.: *See*—
Miller, Leslie A.; McCall, Thomas J., Jr.; Marquiss, Samuel A.; Smith, Douglas H.; and Johnson, Richard F., 5,483,843, Cl. 73-864.230.

Johnson, Stephen P.; Hassler, Stephen P.; and Lapp, John, to Cooper Industries, Inc. Load break disconnecting device with solid arc suppression means. 5,485,136, Cl. 337-168.000.

Johnson, Steve: *See*—
Nicholls, Peter; Kinyon, Robert; Skaistis, Jeff; Johnson, Steve; Locker, Andy; Guzik, Chris; and Howard, Scott, 5,485,369, Cl. 364-401.000.

Johnson, William J.; Keller, Robert S.; Manthuruthil, George C.; and Williams, Marvin L., to International Business Machines Corp. Method of and apparatus for providing a group query. 5,485,605, Cl. 395-600.000.

Jomar International, Ltd.: *See*—
Martin, Joseph R., 5,483,990, Cl. 137-318.000.

Jonas, Gerhard: *See*—
Ohlendorf, Wolfgang; Batz, Michael; Moretto, Hans-Heinrich; Schmidt, Peter; and Jonas, Gerhard, 5,484,511, Cl. 203-41.000.

Jones, Arthur A.; and Sencil, Philip, to MedX Corporation. Leg press exercise machine. 5,484,365, Cl. 482-97.000.

Jones, Charles D.: *See*—
Bryant, Henry U.; Cullinan, George J.; Dodge, Jeffrey A.; Fahey, Kennan J.; Jones, Charles D.; Lugar, Charles W.; and Muehl, Brian S., 5,484,795, Cl. 514-319.000.
Bryant, Henry U.; Cullinan, George J.; Dodge, Jeffrey A.; Fahey, Kennan J.; Jones, Charles D.; Lugar, Charles W.; and Muehl, Brian S., 5,484,796, Cl. 514-319.000.
Bryant, Henry U.; Cullinan, George J.; Dodge, Jeffrey A.; Fahey, Kennan J.; Jones, Charles D.; Lugar, Charles W.; and Muehl, Brian S., 5,484,797, Cl. 514-319.000.
Bryant, Henry U.; Cullinan, George J.; Dodge, Jeffrey A.; Fahey, Kennan J.; and Jones, Charles D., 5,484,798, Cl. 514-324.000.

Jones, Christopher S.: *See*—
Saravia, Heber; Jones, Christopher S.; and Nelson, Charles L., 5,484,402, Cl. 604-35.000.

Jones, Jeffrey D.: *See*—
Donlan, Fraser P., Jr.; Hare, David D.; Jones, Jeffrey D.; Miller, Thomas L.; Moore, Ronald J.; and Nelson, Richard F., 5,483,984, Cl. 134-122.000.

Jones, Kenneth W.; and Flannagan, Stephen T., to Motorola Inc. ECL differential multiplexing circuit. 5,485,110, Cl. 327-99.000.

Jones, Kevan P., to Northern Telecom Limited. Communications system. 5,485,299, Cl. 359-179.000.

Jones, Robert J.: *See*—
Froehler, Brian; and Jones, Robert J., 5,484,908, Cl. 536-24.310.

Jones, Thomas E., III: *See*—
Brandt, Arnold W.; Jones, Thomas E., III; and Bucciarelli, Robert B., 5,483,818, Cl. 73-35.010.

Jordan, Martin: *See*—
Wurm, Florian M.; and Jordan, Martin, 5,484,720, Cl. 435-172.300.

Joseph, Aaron W.: *See*—
Smith, Douglas G.; Joseph, Aaron W.; Boone, David A.; Borchess, Robert E.; and Burgess, Ernest M., 5,485,402, Cl. 364-566.000.

Joseph, Eugene R.; and Trachtman, Michael, to Virtual Prototypes, Inc. Computer modelling system and method for specifying the behavior of graphical operator interfaces. 5,485,600, Cl. 395-500.000.

Joseph, Jeffrey L.: *See*—
Bouma, Stanley R.; Joseph, Jeffrey L.; Marshall, Ronald L.; and Laffler, Thomas G., 5,484,699, Cl. 435-5.000.

Joshi, Ashok M.: *See*—
Lomet, David B.; Spiro, Peter M.; Joshi, Ashok M.; Raghavan, Ananth; and Rangarajan, Tirumanjanam K., 5,485,608, Cl. 395-600.000.

Joshi, Sharad: *See*—
McLaughlin, Paul D.; Joshi, Sharad; Syad, Azhar; and Simon, John, 5,483,976, Cl. 128-885.000.

Jöst GmbH & Co., KG: *See*—
Kreft, Manfred; and Klutz, Hans-Joachim, 5,483,752, Cl. 34-164.000.

Joubert, Philippe D.: *See*—
Biscay, Pierre; Farrando, Alain J.; Joubert, Philippe D.; Martin, Jean-Bernard; and Vignau, Hubert H., 5,484,261, Cl. 415-151.000.

Joulia, Gerard, to L'Oreal. Receptacle with deformable flexible wall, of the bottle, pouch or tube type. 5,484,083, Cl. 222-107.000.

Jreij, Elie A.: *See*—
Iglehart, David; Whittington, Robert D.; Jreij, Elie A.; Koscinski, Andrzej; and Lester, Leland, 5,485,511, Cl. 379-201.000.

JTM Industries, Inc.: *See*—
Styron, Robert W., 5,484,480, Cl. 106-706.000.

Juengst, Stefan; Kotter, Stefan; Bastian, Hartmuth; Huettinger, Roland; and Heider, Juergen, to Patent-Treuhand-Gesellschaft F. Elektrische Gluehlampen mbH. Method for producing a metal-halide discharge lamp with a ceramic discharge vessel. 5,484,315, Cl. 445-26.000.

Julius Blum Gesellschaft m.b.H.: *See*—
Gasser, Ingo; and Hämmerle, Hermann, 5,484,199, Cl. 312-334.330.

Julow, Jay K.; DeRegnaucourt, Robert A.; and Hall, John C., to Dayton Walther Corporation. Method for final balancing a brake drum. 5,483,855, Cl. 82-1.110.

Jun, Hae S.: *See*—
Ihm, Dae W.; Lee, Myung S.; Jun, Hae S.; Lee, Chang S.; Jung: Sung G.; and Woo, Seong I., 5,484,861, Cl. 525-450.000.

Jung: Sung G.: *See*—
Ihm, Dae W.; Lee, Myung S.; Jun, Hae S.; Lee, Chang S.; Jung: Sung G.; and Woo, Seong I., 5,484,861, Cl. 525-450.000.

Junkalor GmbH Dessau: *See*—
Horvath, Stefan; Schmidt, Karl; Schommer, Henry; and Fiedler, Gerhard, 5,484,265, Cl. 417-32.000.

Junqueras Guerre, Joaquin. Non-fillable stopper. 5,484,084, Cl. 222-147.000.

Justiniano, Joseph G.: *See*—
Watson, Douglas R.; Bogorad, Lev; Lombardi, Albert; Neiger, Benjamin; Rivera, Lester; Justiniano, Joseph G.; and Aluma, Zvi, 5,485,058, Cl. 315-194.000.

Kabushiki Kaisha Ask Ken Kyusho: *See*—
Kunito, Mitsuhiro, 5,484,233, Cl. 405-240.000.

Kabushiki Kaisha Iseki Kaihatsu Koki: *See*—
Hayashi, Mitsutoshi; Fujita, Akitaka; Nagashina, Shingo; Kurashina, Minoru; Kajiyama, Makoto; and Uno, Hideki, 5,484,232, Cl. 405-184.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Kuma, Masaaki, 5,484,352, Cl. 477-125.000.
Ooenoki, Toshiyuki; and Otani, Toshiro, 5,483,750, Cl. 33-534.000.

Kabushiki Kaisha Sega Enterprises: *See*—
Ohara, Makoto; Tomizawa, Hirotsugu; and Sugiura, Shinichirou, 5,485,176, Cl. 345-173.000.

Kabushiki Kaisha Shinkawa: *See*—
Mochida, Tooru; Terakado, Yoshimitsu; and Hayashi, Hijiri, 5,485,063, Cl. 318-34.000.
Yamazaki, Nobuto; and Kumazawa, Shinichi, 5,485,398, Cl. 364-506.000.

Kabushiki Kaisha TOPCON: *See*—
Hirano, Satoshi; and Shinozaki, Hirofumi, 5,485,266, Cl. 356-249.000.

Kabushiki Kaisha Toshiba: *See*—
Hiroi, Kazuo, 5,485,367, Cl. 364-160.000.
Ihara, Hisanori; and Nozaki, Hidetoshi, 5,484,658, Cl. 428-428.000.
Inoue, Nobuhiro; Sasaki, Katsunari; Nose, Toshiro; and Hatate, Yoshio, 5,485,193, Cl. 347-206.000.
Iwasaki, Hitoshi; Ohsawa, Yuichi; and Kondoh, Reiko, 5,484,491, Cl. 148-313.000.
Kasashima, Masahiko; Nanao, Nobuyuki; Takeguchi, Kouichirou; Akashi, Kazuo; Suzuki, Yoshiaki; Ando, Makoto; and Yamanaka, Yuji, 5,485,073, Cl. 320-15.000.
Maeda, Takeo; Gojobbori, Hiroshi; and Tsunashima, Yoshitaka, 5,485,034, Cl. 257-592.000.
Matsuda, Tadashi, 5,485,022, Cl. 257-133.000.
Mori, Takashi; and Ichikawa, Fumitoshi, 5,485,075, Cl. 323-207.000.
Ogaki, Takeshi; and Takeda, Yoshiko, 5,485,368, Cl. 364-191.000.
Okado, Chihiro; and Hideshima, Makoto, 5,485,341, Cl. 361-98.000.
Ono, Yoshitaka, 5,485,429, Cl. 365-222.000.
Takagi, Shiro, 5,485,475, Cl. 371-404.000.
Takahashi, Minoru; Yoshimi, Makoto; and Shigyo, Naoyuki, 5,485,028, Cl. 257-347.000.
Yamaga, Kenichi; Mikata, Yuichi; and Yamamoto, Akihito, 5,484,484, Cl. 118-719.000.
Yamaguchi, Shinichi; and Doi, Sachio, 5,484,536, Cl. 210-741.000.
Yamaki, Masayo, 5,485,622, Cl. 395-186.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Ikeda, Hayato; Nakai, Tatsuya; Yokomachi, Naoya; and Yokoi, Masanobu, 5,483,867, Cl. 92-71.000.

Kabushikigaisha Sekogiken: *See*—
Baba, Itsuki, 5,485,047, Cl. 310-166.000.

Kadam, Sunil K.: *See*—
Hochlowski, Jill E.; Jackson, Marianna; Kadam, Sunil K.; Karwowski, James P.; and McAlpine, James B., 5,484,799, Cl. 514-345.000.

Kadlecek, David G.: *See*—
Smitterberg, Dean W.; Nachtrab, William R., Jr.; Kadlecek, David G.; and Beutler, Bruce H., 5,483,856, Cl. 83-23.000.

Kado, Hisao; and Nakakita, Yasukazu, to Sapporo Breweries Limited. Method for preparing an antitumor dextran using a dextran synthetase from *Lactobacillus confusus*. 5,484,715, Cl. 435-103.000.

Kaeriyama, Toshiyuki, to Texas Instruments, Inc. Support posts for micromechanical devices. 5,485,304, Cl. 359-291.000.

Kaestner, Ralf; Rittinger, Stefan; Puessler, Peter; and Rieber, Norbert, to BASF Aktiengesellschaft. Preparation of 3(5)-methylpyrazoles. 5,484,941, Cl. 548-373.100.

Kagata, Hiroshi; Kato, Junichi; Inoue, Tatsuya; Kameyama, Ichiro; and Nishimoto, Keiji, to Matsushita Electric Industrial Co., Ltd. Dielectric ceramic compositions. 5,484,753, Cl. 501-136.000.

Kageyama, Atsuhisa: *See*—
Yamaguchi, Kazunari; and Kageyama, Atsuhisa, 5,485,223, Cl. 348-622.000.

Kageyama, Bunji; Nakae, Masanori; and Yagi, Shigeo, to Shionogi & Co., Ltd. Norbornane type ester hydrolase from *Acetobacter pasteurianus*. *5,484,725, Cl. 435-197.000.*

Kagiyama, Junji: *See*—
Watanabe, Kazuyuki; Kagiyama, Junji; and Kamiya, Masakazu, 5,484,338, Cl. 464-68.000.

Kagiyama, Naoto: *See*—
Fujita, Satoshi; Kagiyama, Naoto; and Momiyama, Masayoshi, 5,484,700, Cl. 435-6.000.

Kaihori, Hirotsugu: *See*—
Terada, Tomoyuki; and Kaihori, Hirotsugu, 5,485,389, Cl. 364-474.200.

Kajita, Tetsuya: *See*—
Hisanaga, Tetsuo; and Kajita, Tetsuya, 5,485,150, Cl. 340-870.020.

Kajiyama, Makoto: *See*—
Hayashi, Mitsutoshi; Fujita, Akitaka; Nagashina, Shingo; Kurashina, Minoru; Kajiyama, Makoto; and Uno, Hideki, 5,484,232, Cl. 405-184.000.

Kakizawa, Yasutoshi: *See*—
Takada, Morio; and Kakizawa, Yasutoshi, 5,484,882, Cl. 528-361.000.

Kaldor, Stephen W.: *See*—
Dressman, Bruce A.; Fritz, James E.; Hammond, Marlys; Hornback, William J.; Kaldor, Stephen W.; Kalish, Vincent J.; Munroe, John E.; Reich, Siegfried H.; Tatlock, John H.; Shepherd, Timothy A.; and Rodriguez, Michael J., 5,484,926, Cl. 546-114.000.

Kalish, Vincent J.: *See*—
Dressman, Bruce A.; Fritz, James E.; Hammond, Marlys; Hornback, William J.; Kaldor, Stephen W.; Kalish, Vincent J.; Munroe, John E.; Reich, Siegfried H.; Tatlock, John H.; Shepherd, Timothy A.; and Rodriguez, Michael J., 5,484,926, Cl. 546-114.000.

Källström, Ulf, to Sweden On Line AB. Multiple channel decoding device for TV systems. 5,485,198, Cl. 348-11.000.

Kalyanaraman, Ramon: *See*—
Bolton, Jeffrey S.; Kalyanaraman, Ramon; Schilling, Steven L.; and Blue, Clarence D., 5,484,819, Cl. 521-155.000.

Kamada, Kensuke: *See*—
Oda, Masaharu; Kamada, Kensuke; and Kubo, Takatoshi, 5,484,494, Cl. 148-561.000.

Kamei, Kazuaki: *See*—
Watanabe, Souichi; Takahashi, Sadao; and Kamei, Kazuaki, 5,483,738, Cl. 29-748.000.

Kamei, Masafumi; Suzuki, Yoshiyuki; Hasegawa, Shizuo; Ichikawa, Hiroyuki; Funamizu, Yoshihiro; Itoh, Akio; and Abe, Yoshinori to Canon Kabushiki Kaisha. Image processing apparatus for converting a color image into a pattern image with a synthesized gradation image increasing in density closer to contour portions of the pattern image. 5,485,288, Cl. 358-530.000.

Kameyama, Ichiro: *See*—
Kagata, Hiroshi; Kato, Junichi; Inoue, Tatsuya; Kameyama, Ichiro; and Nishimoto, Keiji, 5,484,753, Cl. 501-136.000.

Kambi, Victor M.: *See*—
Barnes, Keith D.; Kambi, Victor M.; and Diehl, Robert E., 5,484,807, Cl. 514-424.000.

Kamijima, Koichi: *See*—
Tai, Seiji; Hayashi, Nobuyuki; Kamijima, Koichi; Katayose, Mitsuo; Akimoto, Takayuki; Hayashida, Shigeru; Hagiwara, Hideo; Era, Susumu; Kobayashi, Setsuo; and Mukoh, Akio, 5,484,685, Cl. 540-452.000.

Kamimaki, Hideki: *See*—
Kurokawa, Yoshiki; Nishioka, Kiyokazu; Kamimaki, Hideki; and Atarashi, Yoshifumi, 5,485,623, Cl. 395-182.200.

Kamiya, Masakazu: *See*—
Watanabe, Kazuyuki; Kagiyama, Junji; and Kamiya, Masakazu, 5,484,338, Cl. 464-68.000.

Kamiyama, Yuji: *See*—
Ishinaga, Hiroyuki; Sugitani, Hiroshi; Masuda, Kazuaki; Kasamoto, Masami; Suzuki, Seiji; Kashino, Toshio; Kawai, Jun; Okazaki, Takeshi; Arashima, Teruo; and Kamiyama, Yuji, 5,485,186, Cl. 347-85.000.

Kamp, Dennis R.: *See*—
Randall, Kent A.; Ziegelmuller, Francisco L.; Kamp, Dennis R.; Sonnenberg, Sven; and Rimmi, Donald S., 5,485,256, Cl. 355-271.000.

Kamura, Hitoshi; and Tamura, Yasuki, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Control system for lean-burn internal combustion engine. 5,483,939, Cl. 123-492.000.

Kanada, Tokio: *See*—
Oinoue, Hiroshi; and Kanada, Tokio, 5,485,445, Cl. 369-56.000.

Kanatani, Hirotoshi: *See*—
Ikeya, Yukinobu; Kanatani, Hirotoshi; Nakajima, Kaoru; and Mitsuhashi, Hiroshi, 5,484,595, Cl. 424-195.100.

Kanaya, Koichi: *See*—
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuyuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,485,246, Cl. 355-202.000.

Kanbara, Teruhisa; and Tsubaki, Yuichiro, to Matsushita Electric Industrial Co., Ltd. Electrolyte for driving electrolytic capacitor and the electrolytic capacitor. 5,485,346, Cl. 361-504.000.

Kane, Nathan R.; and Slocum, Alexander H., to Massachusetts Institute of Technology. Elastically supported self-compensating flow restrictors for optimizing hydrostatic bearing performance. 5,484,208, Cl. 384-12.000.

Kaneko, Akira; Iguchi, Norikazu; Hayashida, Takahiro; Takeshita, Torao; and Shinohara, Yoshio, to Mitsubishi Denki Kabushiki Kaisha. Position commanding method and apparatus. 5,485,065, Cl. 318-270.000.

Kaneko, Kiyoshi: *See*—
Yanagisawa, Ryozo; Tanaka, Atsushi; Yoshimura, Yuichiro; Kaneko, Kiyoshi; Kobayashi, Katsuyuki; and Tokioka, Masaki, 5,484,967, Cl. 178-19.000.

Kaneko, Yoji, to Canon Kabushiki Kaisha. Image transmitting apparatus for transmitting color image data in a color transmitting mode or a monochromatic transmitting mode. 5,485,283, Cl. 358-518.000.

Kanematsu, Toshio: *See*—
Ueda, Michio; Kawamura, Seizo; Kanematsu, Toshio; Mihara, Masamitsu; and Hashimoto, Takayuki, 5,484,377, Cl. 493-316.000.

Kanesaki, Hiroyuki; Saika, Tetsuyuki; and Mikami, Masafumi, to Daiso Co., Ltd. Cyclic sulfide compound, polymerizable compositions for optical products and optical products formed thereof. 5,484,872, Cl. 528-73.000.

Kang, Jin-Young: *See*—
Ryun, Byung-Ryul; Han, Tae-Hyeon; Lee, Soo-Min; Cho, Deok-Ho; Lee, Seong-Hearn; and Kang, Jin-Young, 5,484,737, Cl. 437-31.000.

Kanoh, Yoshiaki; Tachiiri, Yoshikazu; and Ogawa, Kazuo, to Aisin Seiki Kabushiki Kaisha. Vehicle height control System. 5,484,162, Cl. 280-711.000.

Kansai Electric Power Co., Inc., The: *See*—
Murata, Kenji; Sonohara, Kazuo; Ito, Susumu; Ishizu, Kyoji; and Emura, Tokuo, 5,485,394, Cl. 364-483.000.

Kao, Wenling: *See*—
Failli, Amedeo A.; Bleyman, Oleg I.; Kao, Wenling; and Abou-Gharbia, Magid A., 5,484,790, Cl. 514-291.000.
Failli, Amedeo A.; Bleyman, Oleg I.; Kao, Wenling; and Abou-Gharbia, Magid A., 5,484,791, Cl. 514-291.000.

Kapadia, Neville D.: *See—*
Campbell, Ross E.; and Kapadia, Neville D., 5,484,340, Cl. 474-101.000.

Kaplan, Martin; and Senak, Peter, Jr., to Dana Corporation. Variable reluctance electric motor. 5,485,046, Cl. 310-166.000.

Karakama, Tatsuo: *See—*
Mizuno, Tohru; Karakama, Tatsuo; Nihei, Ryo; and Miura, Takenobu, 5,485,552, Cl. 395-99.000.

Karas, Amir: *See—*
Rigal, Meir; Karas, Amir; Nathan, Aba; Rifner, Yechiel; Amir, Nadav; Bronicki, Lucien Y.; and Grassianni, Moshe, 5,483,797, Cl. 60-641.200.

Karita, Seiichiro: *See—*
Nakagomi, Hiroshi; Arashima, Teruo; Maeoka, Kunihiko; Ohba, Takashi; Kawai, Jun; Abe, Tsutomu; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; Kimura, Makiko; Kashino, Toshio; Saikawa, Hideo; Karita, Seiichiro; and Orikasa, Tsuyoshi, 5,485,184, Cl. 347-63.000.

Karls, Michael A.; and Lindgren, Daniel R., to Brunswick Corporation. Torsionally twisting propeller drive sleeve and adapter. 5,484,264, Cl. 416-204.00R.

Karn, Jack L.: *See—*
Cahoon, John M.; Karn, Jack L.; Huang, Nai Z.; and Roski, James P., 5,484,542, Cl. 252-18.000.

Karsten, Robert A.; and Strawbridge, Jon P., to Everbrite, Inc. Device for displaying pictures in sequence. 5,483,765, Cl. 40-505.000.

Karsunky, Ulrich: *See—*
Mallo, Paul; Fietier, Isabelle; and Karsunky, Ulrich, 5,484,843, Cl. 524-804.000.

Karwowski, James P.: *See—*
Hochlowski, Jill E.; Jackson, Marianna; Kadam, Sunil K.; Karwowski, James P.; and McAlpine, James B., 5,484,799, Cl. 514-345.000.

Kasamoto, Masami: *See—*
Ishinaga, Hiroyuki; Sugitani, Hiroshi; Masuda, Kazuaki; Kasamoto, Masami; Suzuki, Seiji; Kashino, Toshio; Kawai, Jun; Okazaki, Takeshi; Arashima, Teruo; and Kamiyama, Yuji, 5,485,186, Cl. 347-65.000.

Katashima, Masahiko; Nanno, Nobuyuki; Takeguchi, Kouichirou; Akashi, Kazuo; Suzuki, Yoshiaki; Ando, Makoto; and Yamanaka, Yuji, to Kabushiki Kaisha Toshiba. Personal computer for performing charge and switching control of different types of battery packs. 5,485,073, Cl. 320-15.000.

Kashida, Motokazu: *See—*
Yagisawa, Toshihiro; Ibaraki, Shoichi; Kashida, Motokazu; and Nagasawa, Kenichi, 5,485,521, Cl. 381-24.000.

Kashihara, Jyunzou: *See—*
Yamazato, Hisao; Tani, Naoki; Aoki, Naohiko; Kashihara, Jyunzou; and Uramoto, Yasunari, 5,485,397, Cl. 364-492.000.

Kashima Oil Co., Ltd.: *See—*
Tsumura, Masahiro; Tashima, Masao; Miyasita, Hiromi; Takeda, Haruhiko; and Fujii, Tomoaki, 5,484,854, Cl. 525-486.000.

Kashima, Rika; Nakamura, Shunichiro; Minemura, Harumi; Shiono, Katsumi; Higuchi, Masahiro; Yoshimori, Mikio; and Hayakawa, Takayuki, to Nitsubishi Denki Kabushiki Kaisha. Redundant disk array (raid) system utilizing separate cache memories for the host system and the check data. 5,485,598, Cl. 395-182.040.

Kashimura, Noboru; Sakoh, Harumi; Nakamura, Kazushige; Amamiya, Shoji; Kasuya, Takashige; Tsuji, Haruyuki; Yamagami, Masaaki; and Ikezue, Tatsuya, to Canon Kabushiki Kaisha. Electrophotographic apparatus with photosensitive member having surface layer of binder resin and fluoro and/or silicon compound particles. 5,485,250, Cl. 355-211.000.

Kashino, Toshio: *See—*
Ishinaga, Hiroyuki; Sugitani, Hiroshi; Masuda, Kazuaki; Kasamoto, Masami; Suzuki, Seiji; Kashino, Toshio; Kawai, Jun; Okazaki, Takeshi; Arashima, Teruo; and Kamiyama, Yuji, 5,485,186, Cl. 347-65.000.
Nakagomi, Hiroshi; Arashima, Teruo; Maeoka, Kunihiko; Ohba, Takashi; Kawai, Jun; Abe, Tsutomu; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; Kimura, Makiko; Kashino, Toshio; Saikawa, Hideo; Karita, Seiichiro; and Orikasa, Tsuyoshi, 5,485,184, Cl. 347-63.000.

Kashiwa, Takuo: *See—*
Nakahara, Kazuhiko; and Kashiwa, Takuo, 5,485,130, Cl. 333-104.000.

Kashiwagi, Kenryo: *See—*
Ohta, Yasuhiro; Umemoto, Masaru; and Kashiwagi, Kenryo, 5,484,048, Cl. 198-397.000.

Kasiske, W. Charles: *See—*
Koetter, Frank J.; and Kasiske, W. Charles, 5,485,190, Cl. 347-130.000.

Kasper, James J.: *See—*
Langhenry, Edwin F.; Perin, Bruce, Jr.; and Kasper, James J., 5,484,960, Cl. 174-74.00R.

Kasunic, James W.: *See—*
Swisher, Robert G.; Gaa, Peter C.; and Kasunic, James W., 5,484,656, Cl. 428-378.000.

Kasuya, Takashige: *See—*
Kashimura, Noboru; Sakoh, Harumi; Nakamura, Kazushige; Amamiya, Shoji; Kasuya, Takashige; Tsuji, Haruyuki; Yamagami, Masaaki; and Ikezue, Tatsuya, 5,485,250, Cl. 355-211.000.

Katafuchi, Toshinobu: *See—*
Kita, Hideki; Nakamura, Akira; Fukunaga, Yasuyuki; and Katafuchi, Toshinobu, 5,485,251, Cl. 355-215.000.

Katakura, Takaaki; Mouri, Hidemasa; and Nakamuta, Minoru, to Taiho Industries Co., Ltd. Apparatus for collecting medical test specimens. 5,484,572, Cl. 422-101.000.

Kataoka, Akira; Inohara, Masanobu; Tsukita, Ryuichi; Suma, Toshio; and Saito, Kiyohiro, to ASICS Corporation. Hard plate for spiked track shoes. 5,483,760, Cl. 36-134.000.

Katayama, Shinji, to Chlorine Engineers Corp., Ltd. Electrolyzer. 5,484,514, Cl. 204-255.000.

Katayose, Mitsuo: *See—*
Tai, Seiji; Hayashi, Nobuyuki; Kamijima, Koichi; Katayose, Mitsuo; Akimoto, Takayuki; Hayashida, Shigeru; Hagiwara, Hideo; Era, Susumu; Kobayashi, Setsuo; and Mukoh, Akio, 5,484,685, Cl. 540-452.000.

Kato, Akira: *See—*
Takasuka, Yoshitaka; Kimura, Yasuyuki; and Kato, Akira, 5,485,380, Cl. 364-426.030.

Kato, Atsushi: *See—*
Ogawa, Ken; Oshima, Yoshikazu; Ehara, Yasunori; Machida, Kei; and Kato, Atsushi, 5,483,935, Cl. 123-421.000.

Kato, Chiaki: *See—*
Ikeda, Kenichi; Ueyama, Shin'ichi; Endo, Katsutoshi; and Kato, Chiaki, 5,484,934, Cl. 548-213.000.

Kato, Junichi: *See—*
Kagata, Hiroshi; Kato, Junichi; Inoue, Tatsuya; Kameyama, Ichiro; and Nishimoto, Keiji, 5,484,753, Cl. 501-136.000.

Kato, Mamoru: *See—*
Funahashi, Toshikazu; Ogizu, Yasuhiko; Kato, Mamoru; Takahashi, Shigeyuki; and Uemura, Toshiya, 5,484,516, Cl. 205-50.000.

Kato, Takeshi; and Shida, Yasushi, to Takeda Chemical Industries, Ltd. Tri-higher alkyl tin azide and its use. 5,484,955, Cl. 552-4.000.

Katoh, Kenji; Inoue, Tokuta; Nohira, Hidetaka; Nakanishi, Kiyoshi; Iguchi, Satoshi; Kihara, Tetsuro; Gotoh, Masato; Asanuma, Takamitsu; Okano, Hiroshi; Harada, Jun; Takeshima, Shinichi; Sugiyama, Masahiko; Sakurai, Shigenori; Ohkubo, Kenji; and Murachi, Mikio, to Toyota Jidosha Kabushiki Kaisha. Exhaust purification device of internal combustion engine. 5,483,795, Cl. 60-276.000.

Katoh, Yoshimi: *See—*
Maeda, Yoshihito; Ikuta, Isao; Andoh, Hisashi; Nagai, Masaichi; Katoh, Yoshimi; Sato, Yoshio; Tsuboi, Nobuyoshi; and Minemura, Hiroyuki, 5,484,686, Cl. 430-270.130.

Katsumata, Ryoichi; and Kino, Kuniki, to Kyowa Hakko Kogyo Co., Ltd. Process for producing L-tryptophan by a Corynebacterium strain having decreased phosphoenolpyruvate carboxylase activity. 5,484,716, Cl. 435-108.000.

Katsumata, Toru: *See—*
Sasaki, Ichiro; Teraoka, Takao; Ohshima, Junji; Katsumata, Toru; and Sato, Koichi, 5,484,845, Cl. 525-64.000.

Kaufmann, Christine M.; Murschell, Dale L.; Nollen, Dennis A.; Saracino, Anthony R.; and Trentacosta, Joseph D., to Du Pont de Nemours, E. I., and Company. Method for forming structural panels having a core with thermoplastic resin facings. 5,484,500, Cl. 156-198.000.

Kaul, Dilip: *See—*
Al-Razzak, Laman A.; Marsh, Kennan C.; Manning, Lourdes P.; and Kaul, Dilip, 5,484,801, Cl. 514-365.000.

Kawada, Yasuo: *See—*
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masshiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuyuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,485,246, Cl. 355-202.000.

Kawahara, Hironori: *See—*
Takai, Kazuyoshi; Kawahara, Hironori; Saji, Masaaki; and Ono, Yukio, 5,485,580, Cl. 395-220.200.

Kawahira, Hiroto: *See—*
Ikeda, Akira; Tanimura, Yasuhiro; Nakatsugawa, Naoki; Tanaka, Masaaki; Konishi, Hiroshige; Hiraoka, Toshie; Nishio, Shinji; and Kawahira, Hiroto, 5,484,570, Cl. 422-1.000.

Kawai, Jun: *See—*
Ishinaga, Hiroyuki; Sugitani, Hiroshi; Masuda, Kazuaki; Kasamoto, Masami; Suzuki, Seiji; Kashino, Toshio; Kawai, Jun; Okazaki, Takeshi; Arashima, Teruo; and Kamiyama, Yuji, 5,485,186, Cl. 347-65.000.
Nakagomi, Hiroshi; Arashima, Teruo; Maeoka, Kunihiko; Ohba, Takashi; Kawai, Jun; Abe, Tsutomu; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; Kimura, Makiko; Kashino, Toshio; Saikawa, Hideo; Karita, Seiichiro; and Orikasa, Tsuyoshi, 5,485,184, Cl. 347-63.000.

Kawai, Tsuyoshi: *See—*
Ogawa, Atsushi; Ozawa, Yoshio; Hirata, Toshimichi; Kawai, Tsuyoshi; Fukushima, Kiyoshi; and Toyoshima, Masashi, 5,483,804, Cl. 62-153.000.

Kawajiri, Kazuhiko; Suganami, Takuya; Honda, Tetsuya; Sugimoto, Teruo; and Fujiwara, Michio, to Mitsubishi Denki Kabushiki Kaisha. Vuilleumier heat pump. 5,483,802, Cl. 62-6.000.

Kawakami, Yukichira; and Shiiki, Zenya, to Kureha Kagaku Kogyo K.K. Production process for aromatic thioether ketone/thioether sulfone copolymers. 5,484,876, Cl. 528-226.000.

Kawakita, Kouji: *See—*
Nakatani, Seiichi; Hatakeyama, Akihito; Kawakita, Kouji; Sogou, Hirishi; Ogawa, Tatsuo; and Kojima, Tamao, 5,484,647, Cl. 428-209.000.

Kawakita, Takashi: *See—*

Suzuki, Fumio; Kuroda, Takeshi; Kawakita, Takashi; Kitamura, Shigeto; and Manabe, Haruhiko, 5,484,924, Cl. 546-82.000.

Kawamoto, Tadasu: *See—*
Nagai, Shigekazu; Kawamoto, Tadasu; and Inaba, Teruo, 5,484,051, Cl. 198-750.700.

Kawamura, Hideo, to Isuzu Ceramics Research Institute Co., Ltd. Combustion chamber structure for diesel engines. 5,483,933, Cl. 123-254.000.

Kawamura, Katsuhiko: *See—*
Kobayashi, Masato; Matsuno, Osamu; Kishimoto, Youichi; and Kawamura, Katsuhiko, 5,483,945, Cl. 123-674.000.

Kawamura, Kiyoshi; and Motoya, Kondo, to Yamaha Corporation. Keyboard instrument equipped with durable hammer stopper for selectively producing acoustic sounds and synthesized sounds. 5,483,861, Cl. 84-719.000.

Kawamura, Masayuki: *See—*
Itoh, Akira; Fudoo, Eiji; and Kawamura, Masayuki, 5,484,961, Cl. 174-84.00C.

Kawamura, Naoto: *See—*
Sato, Mamoru; Osawa, Hidefumi; and Kawamura, Naoto, 5,485,557, Cl. 395-129.000.

Kawamura, Seizo: *See—*
Ueda, Michio; Kawamura, Seizo; Kanematsu, Toshio; Mihara, Masamitsu; and Hashimoto, Takayuki, 5,484,377, Cl. 493-316.000.

Kawamura, Shouichi, to Pujitsu Limited. Semiconductor memory and redundant-address writing method. 5,485,424, Cl. 365-200.000.

Kawamura, Tateki: *See—*
Sakamoto, Kazunori; Kawamura, Tateki; and Kondoh, Yutaka, 5,483,846, Cl. 74-2.000.

Kawasaki, Motohiro: *See—*
Okabayashi, Norio; Kawasaki, Motohiro; and Takahashi, Kazushi, 5,484,324, Cl. 451-28.000.

Kawashima, Yasumasa: *See—*
Ishida, Tomotoshi; Minami, Shunsuke; Kawashima, Yasumasa; Arai, Hiroshi; Yamada, Takeo; and Arai, Shigeru, 5,485,560, Cl. 395-133.000.

Kawate, Keith W.: *See—*
Lukasiewicz, Stanley J.; Bishop, Robert P.; Southworth, Robert O.; and Kawate, Keith W., 5,485,345, Cl. 361-283.300.

Kawneer Company, Inc.: *See—*
Redman, Ronald E., 5,483,775, Cl. 52-204.620.

Kaye, Wilbur: *See—*
Pentoney, Stephen L., Jr.; and Kaye, Wilbur, 5,484,571, Cl. 422-82.080.

Kazami, Kazuyuki: *See—*
Yokonuma, Norikazu; Kazami, Kazuyuki; Hibino, Hideo; and Yamazaki, Youichi, 5,485,233, Cl. 354-106.000.

Kazmierczak, Frederick F.: *See—*
Dunfield, John C.; Kloeppel, Klaus; Pelstring, Robert M.; Macleod, Donald J.; Raffetto, Michael; and Kazmierczak, Frederick F., 5,485,331, Cl. 360-99.080.

KB Alloys, Inc.: *See—*
Young, David K.; Setzer, William C.; Koch, Francis P.; Rapp, Robert A.; Pryor, Michael J.; and Jarrett, Noel, 5,484,493, Cl. 148-437.000.

Kebo, Reynold S.: *See—*
Kiunke, Paul C.; Hatfield, Dean C., Jr.; and Kebo, Reynold S., 5,485,306, Cl. 359-419.000.

Keintzel, Günter; Schmitz-Goeb, Manfred; and Fricker, Hans W., to L. & C. Steinmüller GmbH. Solar device with an air receiver and air return. 5,483,950, Cl. 126-680.000.

Keith, Peter: *See—*
Atkinson, Robert; Keith, Peter; Ellis, Louis G.; Schmaltz, Dale; and Robinson, David, 5,484,409, Cl. 604-96.000.

Kelemen, Bradley D.: *See—*
Radwan, Hatem R.; and Kelemen, Bradley D., 5,485,328, Cl. 360-98.000.

Keller, Robert S.: *See—*
Johnson, William J.; Keller, Robert S.; Manthuruthil, George C.; and Williams, Marvin L., 5,485,605, Cl. 395-600.000.

Kelley, Larry C., to Hoechst Celanese Corporation. Cationic dyeable nylon dyed with vinyl sulfone dyes to give overdye fastness. 5,484,455, Cl. 8-539.000.

Kelley, Scott A.: *See—*
Jenkins, Jeffrey A.; and Kelley, Scott A., 5,484,165, Cl. 280-728.200.

Kelly, Cliff; Crouse, Helen C.; and Hoel, Per, to Siemens Medical Systems, Inc. Heat-dissipating electronic apparatus for use at a patient's bedside. 5,485,349, Cl. 361-690.000.

Kelly, James R.: *See—*
Stein, Douglas J.; Peters, Frederick M.; Kelly, James R.; and Ivan, Chad J., 5,483,845, Cl. 73-865.300.

Kelly, Luke E.: *See—*
Blase, Michael; Kelly, Luke E.; Meek, Steven K.; Langeland, Brenda K.; and Norwood, Richard L., 5,483,726, Cl. 15-321.000.

Kelly, Patrick J.; and Goerss, Stephan J. Magnetic field digitizer for stereotactic surgery. 5,483,961, Cl. 128-653.100.

Kelly, Ray G.; Turnbough, Sharon A.; Taraskavage, Diane; and Blocker, Douglas L., to Angeles Group, Inc. Light weight table structures. 5,483,904, Cl. 108-156.000.

Kelly, Ronald W.: *See—*
Gonzalez, Raphael A.; and Kelly, Ronald W., 5,484,971, Cl. 200-279.000.

Kelly, Stephen; and Schadt, Martin, to Hoffmann-La Roche Inc. Substituted phenyl 4-[(E)-alk-2-enoyloxy]benzoates. 5,484,551, Cl. 252-299.670.

Kelly, Stephen V.: *See—*
Bock, Ailyn P.; Kelly, Stephen V.; McLaughlin, Samuel L.; and Weller, Brian R., 5,483,869, Cl. 92-159.000.

Kelsey-Hayes: *See—*
Fuller, Edward N.; and Liakner, Herbert L., Jr., 5,484,193, Cl. 303-113.100.

Kelsey Hayes Company: *See—*
Kremer, Maria T., 5,485,379, Cl. 364-426.020.

Kemmler, Manfred, to Litef GmbH. Fiber optic interferometer with wavelength-stabilized light source. 5,485,274, Cl. 356-350.000.

Kempter, Fritz E.; Reich, Wolfgang; Jäger, Ulrich; and Koroas, Eckhard, to BASF Aktiengesellschaft. Copolymers crosslinkable by a free radical method. 5,484,850, Cl. 525-286.000.

Kench, Stanley F., III: *See—*
Mullen, Stephen J.; and Kench, Stanley F., III, 5,484,640, Cl. 428-119.000.

Kenin, Michael: *See—*
Reuschle, Patricia D.; Kenin, Michael; Possio, John E.; and Szostek, Joseph M., 5,485,255, Cl. 355-225.000.

Keniston, Scott E., to U.S. Currency Protection Corp. Security dye pack having flexible heat-resistant chemical pouch. 5,485,143, Cl. 340-568.000.

Kennedy, Thomas D.; Malarkey, Michael O.; and Graves, Larry R., to Herbert Malarkey Roofing Company. Fire resistant mat. 5,484,653, Cl. 428-290.000.

Kenney, Malcolm E.; Oleinick, Nancy L.; Rihter, Boris D.; and Li, Ying-Syi, to University Hospitals of Cleveland. Phthalocyanine photosensitizers for photodynamic therapy and methods for their use. 5,484,778, Cl. 514-63.000.

Kephart, Jeffrey O.: *See—*
Chess, David M.; Kephart, Jeffrey O.; and Sorkin, Gregory B., 5,485,575, Cl. 395-183.140.

Kepler, Gust C.: *See—*
Dean, Lance L.; and Kepler, Gust C., 5,484,159, Cl. 273-424.000.

Kerstein, Scott M.; Simmons, Stephen C.; Duns, Brett A.; and Grider, Duane M. Spark knock detection system for an internal combustion engine. 5,483,936, Cl. 123-425.000.

Kertis, Stephen T.: *See—*
Fredericksos, Michael D.; Kertis, Stephen T.; Mearig, Joel A.; Cragoe, Alex E.; and Carpenter, Frank, 5,485,392, Cl. 364-477.000.

Kessler, Matthew J.: *See—*
Menchetti, Robert J.; and Kessler, Matthew J., 5,483,777, Cl. 52-481.100.

Kettler, Daniel J.: *See—*
Kuhn, John B.; Kettler, Daniel J.; and Stricker, David K., 5,483,790, Cl. 56-17.500.

Keutgens, Paul J.: *See—*
Mackay, Jeffrey L.; Keutgens, Paul J.; and Forsell, Eric A., 5,485,044, Cl. 310-90.000.

Keyser, Thomas R., to AlliedSignal Inc. Active matrix electroluminescent display having increased brightness and method for making the display. 5,485,055, Cl. 313-505.000.

Khan, Shafig A. Substantially pure steroidogenesis inducing protein and uses thereof. 5,484,767, Cl. 514-2.000.

Khyber Technologies Corporation: *See—*
Kumar, Rajendra; Brooks, Steven E.; and Gallo, Michael J., 5,484,989, Cl. 235-435.000.

Ki Beom Kwon, Ki Beom: *See—*
Cho, Won T.; Kim, Wan S.; Kim, Myung K.; Park, Jin K.; Kim, Hak R.; Rhee, Sang K.; Domracheva, A. G.; Panichkina, T. B.; Saburoba, L. A.; Nobikoba, L. M.; and Bartochevichi, Y. E., 5,484,712, Cl. 435-78.000.

Kiehl, Oliver, to Siemens Aktiengesellschaft. Circuit configuration for adjusting the quadrature-axis current component of a push-pull output stage. 5,485,123, Cl. 330-264.000.

Kiel, Harvey G.: *See—*
Busboom, Leah J. H.; Clausen, Trent L.; Eagen, Stephen T.; Kiel, Harvey G.; Manulik, Robert J.; Plute, Michael E.; Remfert, Jeffrey E.; and Romon, Raymond F., 5,485,570, Cl. 395-161.000.

Kiewert, Eva; Pioch, Lothar; Seiter, Wolfgang; and Wichelhaus, Winfried, to Henkel Kommanditgesellschaft auf Aktien. Low-foam scouring powder. 5,484,548, Cl. 252-179.170.

Kihara, Tetsuro: *See—*
Katoh, Kenji; Inoue, Tokuta; Nohira, Hidetaka; Nakanishi, Kiyoshi; Iguchi, Satoshi; Kihara, Tetsuro; Gotoh, Masato; Asanuma, Takamitsu; Okano, Hiroshi; Harada, Jun; Takeshima, Shinichi; Sugiyama, Masshiko; Sakurai, Shigenori; Ohkubo, Kenji; and Murachi, Mikio, 5,483,795, Cl. 60-276.000.

Kiji, Akio, to Mitsubishi Denki Kabushiki Kaisha. Digital integrating circuit device. 5,485,415, Cl. 364-786.000.

Kikuchi, Hironsichi; Hideshima, Yoshinori; and Tanji, Keisuke, to ASAMI Corporation. Method of fabric-to-fabric bonding and seamless quilt formed thereby. 5,483,713, Cl. 5-502.000.

Kikuchi, Naoki: *See—*
Itoh, Osamu; Kondo, Katsumi; Kikuchi, Naoki; and Madokoro, Hitomi, 5,485,295, Cl. 359-73.000.

Kikuchi, Toshihiro; Maruyama, Akio; Ohtani, Noriko; Nagahara, Shin; Tanaka, Hisami; Sakakibara, Teigo; and Tanaka, Takakazu, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member. 5,484,673, Cl. 430-58.000.

Kikuchi, Yasuhei; Hatori, Mitsuaki; and Tsuyuki, Satoshi, to Usui Kokusai Sangyo Kaisha Ltd. Fluid clutch. 5,484,045, Cl. 192-58.400.

Kikuchi, Yasushi; Ochiai, Tetsuo; Shirokawa, Takashi; and Fujii, Hajime, to Yokohama Rubber Co., Ltd., The . Rubber composition for tire tread. 5,484,836, Cl. 524-495.000.
Kikuchi, Yoshihiro: *See*—
Saigo, Tsuyoshi; Koseki, Takeo; Kikuchi, Yoshihiro; and Hatanaka, Takashi, 5,485,399, Cl. 364-525.000.
Kildune, Joseph S., to GenCorp Inc. Direct applied embossing casting methods. 5,483,890, Cl. 101-401.100.
Kim, Byung-Sun, to Bresser Optik GmbH & Co. KG. Binoculars. 5,485,307, Cl. 359-421.000.
Kim, Dal H.: *See*—
Yeon, Kyu J.; Kim, Je H.; Choi, Kyung E.; Kim, Dal H.; and Lee, Ki H., 5,484,785, Cl. 514-254.000.
Kim, Hak R.: *See*—
Cho, Won T.; Kim, Wan S.; Kim, Myung K.; Park, Jin K.; Kim, Hak R.; Rhee, Sang K.; Domracheva, A. G.; Panichkina, T. B.; Saburoba, L. A.; Nobikoba, L. M.; and Bartochevichi, Y. E., 5,484,712, Cl. 435-70.000.
Kim, Je H.: *See*—
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Kim, Kyong-Min: *See*—
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Kim, Myung K.: *See*—
Cho, Won T.; Kim, Wan S.; Kim, Myung K.; Park, Jin K.; Kim, Hak R.; Rhee, Sang K.; Domracheva, A. G.; Panichkina, T. B.; Saburoba, L. A.; Nobikoba, L. M.; and Bartochevichi, Y. E., 5,484,712, Cl. 435-70.000.
Kim, Myung-Ho: *See*—
Lee, Si-Yeol; Jang, Hyun-Soon; and Kim, Myung-Ho, 5,485,426, Cl. 365-203.000.
Kim, Wan S.: *See*—
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Kim, Young R., to Pacific Precision Metals, Inc. Medicine cabinet with relocatable cantilever shelves. 5,484,196, Cl. 312-242.000.
Kimberly-Clark Corporation: *See*—
Vukos, John P.; and Meirowitz, Randy E., 5,484,429, Cl. 604-385.100.
Kimijima, Masashi: *See*—
Hirose, Hiroshi; Hiratani, Kenji; and Kimijima, Masashi, 5,484,140, Cl. 271-175.000.
Kimura, Atsushi; Nishimoto, Yoshifumi; Tanaka, Hideki; Seki, Hiroyuki; Harada, Toshiaki; Okamura, Yoshitaka; and Yamamoto, Shinji, to Canon Kabushiki Kaisha. Supporting device for a vibration driven actuator. 5,484,216, Cl. 400-319.000.
Kimura, Isao; and Fujikawa, Takashi, to Canon Kabushiki Kaisha. Method of manufacturing ink jet recording head. 5,484,075, Cl. 216-27.000.
Kimura, Katsuji, to NEC Corporation. MOS transconductance amplifier having squaring circuit for LSI implementation. 5,485,119, Cl. 330-253.000.
Kimura, Makiko: *See*—
Nakagomi, Hiroshi; Arashima, Teruo; Maeoka, Kunihiko; Obba, Takashi; Kawai, Jun; Abe, Tsutomu; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; Kimura, Makiko; Kashino, Toshio; Saikawa, Hideo; Karita, Seiichiro; and Orikasa, Tsuyoshi, 5,485,184, Cl. 347-63.000.
Kimura, Mitsuru: *See*—
Shibuya, Akinobu; and Kimura, Mitsuru, 5,485,352, Cl. 361-771.000.
Kimura, Shiro, to Torc Seimitsu Industries, Ltd.; Kimura, Shiro; and Munekuni, Hideki. Reaction vessel for preventing evaporation and a method thereof. 5,484,734, Cl. 436-176.000.
Kimura, Yasuyuki: *See*—
Takasuka, Yoshitaka; Kimura, Yasuyuki; and Kato, Akira, 5,485,380, Cl. 364-426.030.
Kinder, Dale J.: *See*—
Hartman, Micheal O.; Kinder, Dale J.; Rainey, Randy E.; Helmich, Arthur R.; and Willis, Daniel E., 5,484,510, Cl. 202-162.000.
King, Gregory S.: *See*—
Haywood, Gerald A.; King, Gregory S.; and Sansone, Anthony J., 5,484,241, Cl. 410-154.000.
King, John E.: *See*—
Ahmed, Sohail; King, John E.; and May, Kevin M., 5,484,259, Cl. 415-119.000.
King, Leonard T.; Nelmida, Leo; and Estrada, Frank, to Komax Systems Inc. Mixing device. 5,484,203, Cl. 366-337.000.
King, Michael H. Military chess game. 5,484,157, Cl. 273-260.000.
King, Scott A.: *See*—
Pitt, Alan R.; Caesar, Julian C.; Gibson, Danus; Wear, Trevor J.; Young, David J.; and King, Scott A., 5,484,695, Cl. 430-546.000.
King, Theodore I., II; and Basaj, Barbara L., to Smith & Nephew Roylan, Inc. System for therapeutic exercise and evaluation. 5,484,355, Cl. 482-4.000.
King, Timothy P.; and Walsh, Stacy, to K2 Development Corporation. Apparatus for removing cork and stoppering structure from pressurized bottle. 5,483,854, Cl. 81-3.400.
Kinnebrew, Stephen, to United States of America, Army. Device for measuring lateral deformations in material test specimens. 5,483,836, Cl. 73-795.000.
Kino, Kuniki: *See*—
Katsumata, Ryoichi; and Kiso, Kuniki, 5,484,716, Cl. 435-108.000.
Kinoshita, Satoru: *See*—
Sobajima, Yoshihiro; Kinoshita, Satoru; and Hamaura, Masahide, 5,484,835, Cl. 524-494.000.
Kinoshita, Shoji: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keizaro; and Ogoshi, Yasuhiro, 5,484,227, Cl. 404-84.100.
Kinoshita, Takashi: *See*—
Nakajima, Masayoshi; Kinoshita, Takashi; Hasegawa, Arata; and Onaka, Yoshiaki, 5,484,343, Cl. 474-266.000.
Kinyon, Robert: *See*—
Nicholls, Peter; Kinyon, Robert; Skaistis, Jeff; Johnson, Steve; Locker, Andy; Guzik, Chris; and Howard, Scott, 5,485,369, Cl. 364-401.000.
Kipp, Jim: *See*—
Scharf, Mike; Finley, Mike; Veillon, Joe; Kipp, Jim; Dudar, Tom; Owens, Jim; and Ogle, Jim, 5,484,431, Cl. 604-403.000.
Kiriyama, Tetsuro; and Ueno, Mahito, to Mitutoyo Corporation; and Mitsubishi Denki Kabushiki Kaisha. Data output encoder having resetting mechanism. 5,485,468, Cl. 364-560.000.
Kirk, William; Affeldt, Henry A.; Gilbert, Keith; and Lerew, David, to Sunkist Growers, Inc. Apparatus for spray washing fruit in a brush bed. 5,483,871, Cl. 99-516.000.
Kishi, Yoshio; Noshiro, Teruhito; Noguchi, Masato; and Takahashi, Hiroaki, to Sony Corporation. Optical disk mastering apparatus having two data transferring rates for recording and monitoring. 5,485,448, Cl. 369-99.000.
Kishimoto, Tokihiko: *See*—
Nagahara, Takaya; and Kishimoto, Tokihiko, 5,485,192, Cl. 347-209.000.
Kishimoto, Youichi: *See*—
Kobayashi, Masato; Matsuno, Osamu; Kishimoto, Youichi; and Kawamura, Katsuhiko, 5,483,945, Cl. 123-674.000.
Kishimura, Kotaro: *See*—
Sakashita, Takeshi; Shimoda, Tomoaki; Kishimura, Kotaro; and Uchimura, Shuichi, 5,484,875, Cl. 528-198.000.
Kita, Hideki; Nakamura, Akira; Fukunaga, Yasuyuki; and Katafuchi, Toshinobu, to Mita Industrial Co., Ltd. Cleaning device for an electrostatic charger. 5,485,251, Cl. 355-215.000.
Kitabatake, Asao; Tamaoka, Naozumi; Ueda, Hitoshi; and Wada, Kenichi, to Furuno Electric Company, Limited. Antenna orienting apparatus for vehicles. 5,485,169, Cl. 343-765.000.
Kitahara, Kuninori; Ohtsuka, Nobuyuki; and Ozeki, Masashi, to Fujitsu Limited. Hetero-epitaxially grown compound semiconductor substrate. 5,484,664, Cl. 428-641.000.
Kitamura, Katsuhiro: *See*—
Nakazawa, Yasushi; Kitamura, Katsuhiro; Oku, Yasunori; and Enomoto, Masatoshi, 5,484,981, Cl. 219-121.720.
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Suzuki, Fumio; Kuroda, Takeshi; Kawakita, Takashi; Kitamura, Shigeto; and Manabe, Haruhiko, 5,484,924, Cl. 546-82.000.
Kitamura, Shoji; and Shindo, Yoichi, to Fuji Electric Co., Ltd. Semiconductor laser device encapsulated in a transparent resin layer. 5,485,479, Cl. 372-43.000.
Kitaoka, Naoki: *See*—
Miura, Kosho; and Kitaoka, Naoki, 5,485,238, Cl. 354-289.120.
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Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuyuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,485,246, Cl. 355-202.000.
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Sato, Osamu; Nakano, Satoshi; Hirai, Isamu; Kitazawa, Toshiyuki; Sensui, Takayuki; Yamamoto, Masato; Yamanaka, Toshimasa; Shishikura, Takenao; and Takahashi, Akio, 5,485,242, Cl. 354-442.000.
Kitchin, Irene W. Surface piercing sheet reminer. 5,484,126, Cl. 248-217.300.
Kiunke, Paul C.; Hatfield, Dean C., Jr.; and Kebo, Reynold S., to Hughes Aircraft Company. Wide field of view multi-telescope optical multiplexed sensor. 5,485,306, Cl. 359-419.000.
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Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuyuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,485,246, Cl. 355-202.000.
Klaene, Franklin A., Jr.: *See*—
Isaksen, Cathy L.; Brukhart, Louis P.; and Klaene, Franklin A., Jr., 5,484,505, Cl. 156-470.000.
Klatt, Dennis. Grain seeder loader. 5,484,249, Cl. 414-523.000.
Klausener, Alexander: *See*—
Szablikowski, Klaus; Buyach, Hans-Josef; and Klausener, Alexander, 5,484,903, Cl. 536-18.600.
Klein, Arthur S.; and Smith, Edward F., III, to J. M. Ney Company, The . Silver palladium alloy. 5,484,569, Cl. 420-503.000.
Kleinerman, Marcos Y. Fiber optic lasers and amplifiers. 5,485,480, Cl. 372-6.000.
Klindt, Holger: *See*—
Aechter, Burckhard; Freking, Benno; and Klindt, Holger, 5,485,432, Cl. 367-88.000.
Klink, Frank W.: *See*—

Flynn, Richard M.; Grenfell, Mark W.; Klisk, Frank W.; and Vitcak, Daniel R., 5,484,489, Cl. 134-42.000.
Klockner-Humboldt-Deutz AG: *See*—
Mahlberg, Hans-Peter; Fuchs, Heinz W.; Rechberg, Reinhard; Bauer, Lothar; Lemme, Werner; Strusch, Wolfgang; Tedsen, Thi; Schleiermacher, Herbert; and Wahnschaffe, Jürgen, 5,483,928, Cl. 123-41.420.
Kloeppel, Klaus: *See*—
Dunfield, John C.; Kloeppel, Klaus; Peistring, Robert M.; Macleod, Donald J.; Raffetto, Michael; and Kazmierczak, Frederick F., 5,485,331, Cl. 360-99.080.
Klutz, Hans-Joachim: *See*—
Kreft, Manfred; and Klutz, Hans-Joachim, 5,483,752, Cl. 34-164.000.
Knapp, Alan G.: *See*—
Shannon, John M.; and Knapp, Alan G., 5,485,177, Cl. 345-182.000.
Knappe, Michael E.; and Shelton, Brian R., to Northern Telecom Limited. Telephone instrument and method for altering audible characteristics. 5,485,514, Cl. 379-387.000.
Knights, Ellen E.: *See*—
Hedberg, Goran J.; and Knights, Ellen E., 5,484,978, Cl. 219-121.590.
Knowles, Carl H.: *See*—
Wilz, David M.; Rockstein, George B.; Knowles, Carl H.; and Naylor, Charles A., 5,484,992, Cl. 235-472.000.
Knuth, Henricus M., to Medtronic, Inc. Sacral lead anchoring system. 5,484,445, Cl. 606-129.000.
Knutsen, Lars J. S.: *See*—
Lau, Jesper; Knutsen, Lars J. S.; Sheardown, Malcolm; and Hansen, Anker J., 5,484,774, Cl. 514-46.000.
Ko, Jos; and Hsue, Chen-Chie, to United Microelectronics Corporation. Self-aligned anti-punchthrough implantation process. 5,484,743, Cl. 437-44.000.
Ko Shin Electric and Machinery Co., Ltd.: *See*—
Chen, Tony, 5,483,858, Cl. 83-464.000.
Ko, Thomas S. Y., to Enzacor Properties Limited. Therapeutic compositions and methods. 5,484,609, Cl. 424-470.000.
Kobayashi, Fumiaki: *See*—
Shimizu, Masato; Kobayashi, Fumiaki; Arahori, Yoshio; and Fukada, Shinichi, 5,483,874, Cl. 100-50.000.
Kobayashi, Hideki, to Dow Corning Toray Silicone Co., Ltd. Organic silicon alternating copolymer and its manufacturing method. 5,484,868, Cl. 528-15.000.
Kobayashi, Katsuyuki: *See*—
Yanagisawa, Ryozo; Tanaka, Atsushi; Yoshimura, Yuichiro; Kaneko, Kiyoshi; Kobayashi, Katsuyuki; and Tokioka, Masaki, 5,484,967, Cl. 178-19.000.
Kobayashi, Kenji; and Yoshida, Akimaro, to Canon Kabushiki Kaisha. Image forming apparatus in which images are stored in an external memory. 5,485,245, Cl. 355-202.000.
Kobayashi, Masao; Matsuno, Osamu; Kishimoto, Youichi; and Kawamura, Katsuhiko, to Nissan Motor Co., Ltd. Air/fuel ratio control system for engine. 5,483,945, Cl. 123-674.000.
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Tai, Seiji; Hayashi, Nobuyuki; Kamijima, Koichi; Katayose, Mitsuo; Akimoto, Takayuki; Hayashida, Shigeru; Hagiwara, Hideo; Ira, Susumu; Kobayashi, Setsuo; and Mukoh, Akio, 5,484,685, Cl. 540-452.000.
Kobayashi, Shinichi; Nakayama, Takeshi; Miyawaki, Yoshikazu; Futatsuya, Tomoshi; and Terada, Yasushi, to Mitsubishi Denki Kabushiki Kaisha. Non-volatile semiconductor memory device incorporating data latch and address counter for page mode programming. 5,485,421, Cl. 365-189.050.
Kobayashi, Yasuhiro: *See*—
Umetsu, Shinjiro; and Kobayashi, Yasuhiro, 5,485,146, Cl. 340-825.440.
Kobayashi, Yoji; Nishina, Yasuhide; and Miyao, Shuichi, to Shin-Etsu Chemical Co., Ltd. Method for producing single-crystal silicon by chemical vapor deposition and method for fractional determination of ultratrace elements present in chlorosilanes as starting materials and single-crystal silicon produced. 5,483,918, Cl. 117-84.000.
Kobrinetz, Anthony: *See*—
Singer, Martin H.; Tell, Daniel; and Kobrinetz, Anthony, 5,485,163, Cl. 342-457.000.
Koch, Francis P.: *See*—
Young, David K.; Setzer, William C.; Koch, Francis P.; Rapp, Robert A.; Pryor, Michael J.; and Jarrett, Noel, 5,484,493, Cl. 148-437.000.
Koch, Rooney R.: *See*—
Oman, David D.; Bila, Vincent J.; Haney, James L.; Folmsbee, Gary E.; Koch, Rooney R.; Stilley, Randall D.; and Watters, Larry T., 5,483,986, Cl. 137-1.000.
Kocis, Thomas J.; and Patterson, Anthony K., to Dell USA, L.P. Predictive addressing architecture. 5,485,589, Cl. 395-421.030.
Kocis, Thomas J.; and Chidester, Philip D., to Dell USA, L.P. Computer with pointing device mapped into keyboard. 5,485,614, Cl. 361-680.000.
Kodama, Kazuo; Tsuda, Toru; and Takahashi, Kazutomo, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Method for production of aqueous dispersion of long-chain alkyl graft polymer and aqueous release agent. 5,484,841, Cl. 524-589.000.
Kodaso, Toru, to Mitutoyo Corporation. Caliper gauge. 5,483,751, Cl. 33-811.000.
Koehl, Herbert K.: *See*—
Williams, Kenneth R.; Koehl, Herbert K.; and Schmidt, Jonathan R., 5,485,494, Cl. 378-16.000.
Koenig & Bauer Aktiengesellschaft: *See*—
Grosshauser, Heinrich K., 5,483,887, Cl. 101-181.000.
Hauer, Horst-Walter, 5,483,886, Cl. 101-181.000.
Stiel, Jürgen A., 5,483,892, Cl. 101-477.000.
Koenig, Larry E. Modular sheet shredder. 5,484,112, Cl. 241-236.000.
Koenig, Melissa M.: *See*—
Vukovich, William J.; and Koenig, Melissa M., 5,484,354, Cl. 477-174.000.
Koetzer, Frank J.; and Kasiske, W. Charles, to Eastman Kodak Company. Printhead writer assembly engageable with a web image member. 5,485,190, Cl. 347-130.000.
Kogut, James R., to United Technologies Corporation. Automatically balanced and tested bridge measurement circuit, and method. 5,485,100, Cl. 324-610.000.
Köhler, Burkhard: *See*—
Weider, Richard; Scholl, Thomas; Köhler, Burkhard; and Jansen, Bernhard, 5,484,857, Cl. 525-388.000.
Kohler, Mark S.: *See*—
Ghosh, Syamal K.; Hopkins, Roy O.; Budinski, Kenneth G.; and Kohler, Mark S., 5,484,629, Cl. 427-255.000.
Kohlpaintner, George; Kugler, Kurt; Radmanic, Stjepan; Wittal, Roland; and Nowak, Manfred, to Webasto Karosseriesysteme GmbH. Openable vehicle roof with a flexible screen to cover a visible gap on the side. 5,484,184, Cl. 296-217.000.
Kobtoku, Yasuhiko: *See*—
Waku, Yoshiharu; Obtsubo, Hideki; and Kobtoku, Yasuhiko, 5,484,752, Cl. 501-127.000.
Koike, Hiroshi: *See*—
Sakaguchi, Seiji; Koike, Hiroshi; and Tomita, Hiroshi, 5,485,549, Cl. 395-51.600.
Koike, Nobuaki: *See*—
Suzuki, Fumio; Shimada, Junichi; Koike, Nobuaki; Nakamura, Joji; Shioazaki, Shizuo; Ichikawa, Shunji; Ishii, Akio; and Nonaka, Hiromi, 5,484,920, Cl. 544-268.000.
Koito Manufacturing Co., Ltd.: *See*—
Yamashita, Masayasu; and Toda, Atsushi, 5,485,059, Cl. 315-307.000.
Koivukunnas, Pekka; Kuosa, Harri; Tuomela, Jussi; Ellilä, Markku; and Tani, Mikko, to Valmet Paper Machinery Inc. Method in calendering of a paper web and a calender that makes use of the method. 5,483,873, Cl. 100-38.000.
Koizumi, Ryoichi: *See*—
Takayanagi, Yoshiaki; Saito, Asao; Koizumi, Ryoichi; and Nagatomo, Akira, 5,485,182, Cl. 347-17.000.
Kojima, Takashi: *See*—
Mochida, Isao; Fujiura, Ryuji; Kojima, Takashi; and Sakamoto, Hitoshi, 5,484,520, Cl. 208-22.000.
Kojima, Tamao: *See*—
Nakatani, Seiichi; Hatakeyama, Akihito; Kawakita, Kouji; Segou, Hirobi; Ogawa, Tatsuo; and Kojima, Tamao, 5,484,647, Cl. 428-209.000.
Kojima, Toshiharu, to Mitsubishi Denki Kabushiki Kaisha. Delayed detection type demodulator. 5,484,987, Cl. 329-306.000.
Kojima, Toshiharu, to Mitsubishi Denki Kabushiki Kaisha. Delayed detection type demodulator. 5,485,108, Cl. 327-8.000.
Kojima, Yasuhiro; Izui, Yoshio; Goda, Tadahiro; and Kyomoto, Sumie, to Mitsubishi Denki Kabushiki Kaisha. Control method using neural networks and a voltage/reactive-power controller for a power system using the control method. 5,485,545, Cl. 395-22.000.
Kolomayets, George: *See*—
Skowronski, Richard E.; Lantz, Kenneth F.; Leon, Tomas F., deceased; Alexander, Donald J.; Kolomayets, George; Adams, Vincent C.; Szymczak, Eugene B.; Minnich, Edward W.; and Totzke, Wade K., 5,484,362, Cl. 482-54.000.
Kolstad, Jeffrey J.: *See*—
Gruber, Patrick R.; Kolstad, Jeffrey J.; Ryan, Christopher M.; Hall, Eric S.; and Eichen Coen, Robin S., 5,484,881, Cl. 528-354.000.
Kolvites, Albert; Cohn, Robert J.; and Angeloni, Paul J., to A. Riffkin Co. Flag display device. 5,483,916, Cl. 116-173.000.
Komatsu, Takahiko: *See*—
Yamashita, Masashi; Ohno, Norihiro; Tobyama, Tetsuyuki; Kubo, Eiichi; Komatsu, Takahiko; and Kouso, Yoshinos, 5,484,141, Cl. 271-227.000.
Komax Systems Inc.: *See*—
King, Leonard T.; Nelmida, Leo; and Estrada, Frank, 5,484,203, Cl. 366-337.000.
Komuro, Hirokazu: *See*—
Sueoka, Masabu; Shibaca, Makoto; and Komuro, Hirokazu, 5,485,185, Cl. 347-64.000.
Kondo, Hiroatsu: *See*—
Ueda, Hiroyuki; Yamada, Yasuaki; Ozawa, Toshiaki; Nakajima, Hiroharu; and Kondo, Hiroatsu, 5,484,214, Cl. 400-63.000.
Kondo, Katsumi: *See*—
Itoh, Osamu; Kondo, Katsumi; Kikuchi, Naoki; and Madokoro, Hitomi, 5,485,295, Cl. 359-73.000.
Kondo, Kazuyuki: *See*—
Tamamura, Manpei; Iidaka, Hiroshi; Kondo, Kazuyuki; and Yokota, Keizaro, 5,485,523, Cl. 381-71.000.
Kondo, Yasuhiro: *See*—
Tamaki, Satoshi; Ikkai, Yasufumi; and Kondo, Yasuhiro, 5,485,375, Cl. 364-424.030.
Kondoh, Reiko: *See*—
Iwasaki, Hitoshi; Ohsawa, Yuichi; and Kondoh, Reiko, 5,484,491, Cl. 148-313.000.

Kondoh, Yutaka: *See*—
Sakamoto, Kazunori; Kawamura, Taeki; and Kondoh, Yutaka, 5,483,846, Cl. 74-2.000.
Konica Corporation: *See*—
Ishida, Kenji; and Deguchi, Takashi, 5,484,691, Cl. 430-458.000.
Konicek, Timothy S.: *See*—
Blakeley, Anthony; Konicek, Timothy S.; Horihan, Gregory E.; and Sherman, William D., 5,484,120, Cl. 244-54.000.
Koninklijke PTT Nederland N.V.: *See*—
Asgari, Hamidreza, 5,485,461, Cl. 370-94.200.
Konishi, Hiroshige: *See*—
Ikeda, Akira; Tanimura, Yasuhiro; Nakatsugawa, Naoki; Tanaka, Masaaki; Konishi, Hiroshige; Hiraoka, Toshie; Nishio, Shinji; and Kawahira, Hiroto, 5,484,570, Cl. 422-1.000.
Korea Advanced Institute of Science & Technology: *See*—
Ihm, Dae W.; Lee, Myung S.; Jun, Hae S.; Lee, Chang S.; Jung: Sung G.; and Woo, Seong I., 5,484,861, Cl. 525-450.000.
Korea Telecommunication Authority: *See*—
Ryu, Byung-Ryul; Han, Tae-Hyeon; Lee, Soo-Min; Cho, Deok-Ho; Lee, Seong-Hearn; and Kang, Jin-Young, 5,484,737, Cl. 437-31.000.
Korea Telecommunications Authority: *See*—
Jeong, Myung-Yung; Ahn: Seung-Ho; Chun: Oh-Gone; and Choy, Tae-Goo, 5,485,537, Cl. 385-60.000.
Koreeda, Hiroyuki: *See*—
Nonaka, Naomichi; Nakane, Keiichi; Kuwabara, Tadashi; Koreeda, Hiroyuki; and Kuwamoto, Hideki, 5,485,544, Cl. 395-12.000.
Korhonen, Hannu: *See*—
Rantanen, Rauno; Lummila, Markku; and Korhonen, Hannu, 5,484,482, Cl. 118-203.000.
Kornblith, Jeffrey S.: *See*—
Greenlaw, Robert T.; and Kornblith, Jeffrey S., 5,484,027, Cl. 175-18.000.
Körner, Reinhard: *See*—
Schwab, Ekkehard; Veitch, Ronald J.; Körner, Reinhard; Pfannebecker, Emil; and Höppner, Bernd, 5,484,628, Cl. 427-215.000.
Korona, Eckhard: *See*—
Kempter, Fritz E.; Reich, Wolfgang; Jäger, Ulrich; and Korona, Eckhard, 5,484,850, Cl. 525-286.000.
Koros, Gabriel: *See*—
Koros, Tibor; and Koros, Gabriel, 5,484,441, Cl. 606-79.000.
Koros, Tibor; and Koros, Gabriel. Rongeur surgical instrument. 5,484,441, Cl. 606-79.000.
Kort, Leland B.: *See*—
Clark, Randall J.; Marjanski, George C.; and Kort, Leland B., 5,483,813, Cl. 72-334.000.
Kortekaas, Cornelis: *See*—
Van Kemenade, Johannus T. F.; and Kortekaas, Cornelis, 5,485,054, Cl. 313-440.000.
Kosciuski, Andrzej: *See*—
Iglehart, David; Whittington, Robert D.; Jreij, Elie A.; Kosciuski, Andrzej; and Lester, Leland, 5,485,511, Cl. 379-201.000.
Koseki, Takeo: *See*—
Saigo, Tsuyoshi; Koseki, Takeo; Kikuchi, Yoshihiro; and Hatanaka, Takashi, 5,485,399, Cl. 364-525.000.
Koshina, Hizuru: *See*—
Okuno, Hiromi; Koshina, Hizuru; and Hasegawa, Katsuaki, 5,484,669, Cl. 429-194.000.
Koshoffer, John M.: *See*—
Weinstein, Barry; Koshoffer, John M.; and Moyer, Roy E., 5,483,793, Cl. 60-261.000.
Kosinski, Anthony J.: *See*—
Benson, Carl L.; and Kosinski, Anthony J., 5,483,973, Cl. 128-760.000.
Kostek, Sergio: *See*—
Johnson, David L.; Kostek, Sergio; and Norris, Andrew, 5,485,431, Cl. 367-30.000.
Kotani, Takuya: *See*—
Tsuchida, Takayasu; Murakami, Yutaka; Nishimoto, Yoshitaka; and Kotani, Takuya, 5,484,714, Cl. 435-100.000.
Kothmeier, Georg: *See*—
Dietz, Xaver; and Kothmeier, Georg, 5,483,830, Cl. 73-226.000.
Kotter, Stefan: *See*—
Juengst, Stefan; Kotter, Stefan; Bastian, Hartmuth; Huettinger, Roland; and Heider, Juergen, 5,484,315, Cl. 445-26.000.
Kotwal, Rangnath A.; Obayomi, Jacob S.; Ruzicka, Henry J.; and Waterman, William F., to AlliedSignal Inc. Turboprop with impeller inlet strake. 5,483,791, Cl. 60-39.310.
Koumatsu, Seiji; and Abe, Kimihiro, to Yazaki Corporation. Inertia locking-type waterproof connector. 5,484,301, Cl. 439-271.000.
Kounev, Zheko V., to Maple Leaf Farms, Inc. Apparatus and method for microbiological decontamination of poultry. 5,484,615, Cl. 426-238.000.
Kouno, Yoshinou: *See*—
Yamashita, Masashi; Ohno, Norihiro; Tohyama, Tetsuyuki; Kubo, Eiichi; Komatsu, Takahiko; and Kouno, Yoshinou, 5,484,141, Cl. 271-227.000.
Kovach, Joseph A., to Eaton Corporation. Method and apparatus for simultaneously grinding a workpiece with first and second grinding wheels. 5,484,327, Cl. 451-49.000.
Kovalick, Albert W.; and Lowitz, Gregory E., to Hewlett-Packard Company. Method and apparatus for managing and initiating video capture and printing. 5,485,553, Cl. 395-106.000.
Kovalick, Albert W.: *See*—
Lowitz, Grégory E.; and Kovalick, Albert W., 5,485,554, Cl. 395-116.000.
Koyachi, Noriho; Adachi, Hironori; and Arai, Tatsuo, to Agency of Industrial Science and Technology; and Ministry of International Trade and Industry. Leg structure for walking robot. 5,484,031, Cl. 180-8.100.
Koyama, Osamu, to Canon Kabushiki Kaisha. Method and apparatus for optically recording and/or reproducing information. 5,485,438, Cl. 369-44.280.
Koyo Seiko Co., Ltd.: *See*—
Nishimoto, Mitsuhiko; Matsuoka, Hirofumi; and Amako, Hiroki, 5,485,067, Cl. 318-466.000.
Tokumoto, Yoshitomo; and Sano, Osamu, 5,484,346, Cl. 475-185.000.
Kozar, Sergej L.: *See*—
Dejneko, Andrej D.; Skorochodov, Wladimir N.; Kozar, Sergej L.; Lepekin, Wladilen S.; Schumilow, Wladimir P.; Gutu, Mihail-Dan; Riedesel, Udo; and Rogowsky, Heinz F., 5,484,513, Cl. 204-129.100.
Kozima, Yasuyuki: *See*—
Nakamura, Kozo; Yokosuka, Yasushi; Kozima, Yasuyuki; Takaoka, Kazuhiko; Yamamoto, Kagehiro; and Asai, Takeshi, 5,485,287, Cl. 358-426.000.
Kraft Foods, Inc.: *See*—
Vellucci, Dominic J., Jr.; Mason, Charles R.; Cochran, Stuart A.; Coleman, Edward C.; and Nayyar, Dalip K., 5,484,616, Cl. 426-342.000.
Kramer, Ole: *See*—
Andersen, Carl E.; and Kramer, Ole, 5,484,635, Cl. 428-40.000.
Kramer, Robert W., to United Technologies Corporation. Rotary drum fluid/liquid separator with energy recovery means. 5,484,521, Cl. 210-86.000.
Kramling, Franz; Charrue, Herve; Weber, Frederic; Letemps, Bernard; and Didelot, Claude, to Saint-Gobain Vitrage International. Glazing pane and method for its production. 5,484,657, Cl. 428-426.000.
Kranz, Hans-Werner: *See*—
Hecht, Franz; Kurze, Bernd; Heutschel, Mona; Schinn, Volker; Weichselbaum, Thomas; and Kranz, Hans-Werner, 5,485,350, Cl. 361-692.000.
Krapp, Michael; and Henning, Georg, to BASF Aktiengesellschaft. Isoindolineazo pigments. 5,484,901, Cl. 534-741.000.
Kreamer, Bill L.: *See*—
Gourley, Glenn R.; and Kreamer, Bill L., 5,484,202, Cl. 366-120.000.
Krebs, Rodney H.: *See*—
Pacciano, Andrew B.; Hopkins, Ronald N.; Krebs, Rodney H.; Neumann, James L.; and Ohanian, Oscar K., 5,483,894, Cl. 102-293.000.
Kreft, Manfred; and Klutz, Hans-Joachim, to Jöst GmbH & Co., KG; and Rheinbraun AG. Device for heating or cooling bulk materials, particularly for lignite preheating. 5,483,752, Cl. 34-164.000.
Kremer, Maria T., to Kelsey Hayes Company. Method and system for detecting the proper functioning of an ABS control unit utilizing substantially identical programmed microprocessors. 5,485,379, Cl. 364-426.020.
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Seidl, Lon D., 5,483,898, Cl. 108-3.000.
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Strunk, Louis M.; Bosch, Anthony; and Kruhmin, Ted, 5,484,652, Cl. 428-251.000.
Kryszewski, Randy K. Combination book cassette. 5,484,054, Cl. 206-232.000.
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Kubli, Ronald N. Elastic anchor rope. 5,483,911, Cl. 114-230.000.
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Kuboniwa, Osamu, to NEC Corporation. Multiplier utilizing the booth algorithm. 5,485,413, Cl. 364-760.000.
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Kubota Corporation: *See*—
Nakamoto, Akira; Takada, Shiro; and Mori, Takuji, 5,483,820, Cl. 73-1.00C.
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Yano, Hideyuki; Araya, Jusji; Hashimoto, Norio; Kugoh, Harumi; Shibuya, Takashi; and Furuya, Tadashi, 5,485,248, Cl. 355-206.000.
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Kuhn, Damon; and Johnson, J. M., to Kuhn-Johnson Design Group, Inc. Reciprocating valve actuator device. 5,483,929, Cl. 123-90.100.
Kühn, Hans-Robert; Läufer, Engelbert; and Rutschmann, Richard, to Deutsche Thomson-Brandt GmbH. Signalization of types of defects of an optical information carrier. 5,485,444, Cl. 369-54.000.
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Kukler, Ronald, to Interlocking Buildings Pty Ltd. Fuel injector pressurized by engine cylinder compression. 5,484,104, Cl. 239-87.000.
Kulka, Harvey J.; and Schramm, John H., to Computer Methods Corporation. Active integrated circuit transponder and sensor apparatus for sensing and transmitting vehicle tire parameter data. 5,483,827, Cl. 73-146.500.
Kuma, Masaaki, to Kabushiki Kaisha Komatsu Seisakusho. Switch for detecting operation of control valve spool. 5,484,352, Cl. 477-125.000.
Kumar, Jayant: *See*—
Mandal, Braja K.; Tripathy, Sukant K.; Huang, Jan-Chan; and Kumar, Jayant, 5,484,821, Cl. 522-26.000.
Kumar, Promod: *See*—
Shah, Dinesh O.; Kumar, Promod; and Pillai, Vinod K., 5,484,766, Cl. 505-441.000.
Kumar, Rajendra; Brooks, Steven E.; and Gallo, Michael J., to Khyber Technologies Corporation. Card reading terminal having protective shield for input port thereof. 5,484,989, Cl. 235-435.000.
Kumazawa, Shinichi: *See*—
Yamazaki, Nobuto; and Kumazawa, Shinichi, 5,485,398, Cl. 364-506.000.
Kun, Ernest; and Mendeleyev, Jerome, to Octamer, Incorporated. 5-iodo-6-amino-6-nitroso-1,2-benzopyrones useful as cytostatic and antiviral agents. 5,484,951, Cl. 549-285.000.
Kung, Hsiang-fu: *See*—
Lee-Huang, Sylvia; Huang, Philip L.; Nara, Peter L.; Chen, Hao-Chia; Kung, Hsiang-fu; Huang, Peter; Huang, Henry I.; and Huang, Paul L., 5,484,889, Cl. 530-379.000.
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Kunito, Mitsuhiro, to Kabushiki Kaisha Ask Ken Kyusho. Excavator and a method of forming a modified ground in an earthen foundation with the use of the same. 5,484,233, Cl. 405-240.000.
Kuosa, Harri: *See*—
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Kupietzky, Michael. Distributor for alcoholic beverages. 5,484,002, Cl. 141-237.000.
Kuragaki, Akira; and Shiroyama, Shigeru, to Mitsubishi Denki Kabushiki Kaisha. Brush device having a pair of U-shaped attaching pieces and tap accommodating holes. 5,485,048, Cl. 310-239.000.
Kurashina, Minoru: *See*—
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Kurbikoff, Peter A.: *See*—
Mowry, Thomas E.; and Kurbikoff, Peter A., 5,484,295, Cl. 439-66.000.
Kureha Kagaku Kogyo K.K.: *See*—
Kawakami, Yukichira; and Shiiki, Zenya, 5,484,876, Cl. 528-226.000.
Kurita, Mitsuru; and Ikeda, Yoshinori, to Canon Kabushiki Kaisha. Image processing apparatus with the ability to suppress isolated points. 5,485,529, Cl. 382-162.000.
Kuriyama, Katsumi: *See*—
Irie, Takashi; Mitsui, Yasuhiro; Mizokami, Kazuaki; and Kuriyama, Katsumi, 5,485,016, Cl. 250-288.000.
Kuroda, Hideyuki: *See*—
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Kuroda, Masayoshi; and Oda, Masataka, to Minolta Co., Ltd. Image forming apparatus. 5,485,261, Cl. 355-319.000.
Kuroda, Takeshi: *See*—
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Kuroda, Yasuaki, to NEC Corporation. Microprocessor wherein the number of register output signal liner connected to the buses are reduced reducing the load capacity of the buses. 5,485,591, Cl. 395-800.000.
Kurokawa, Yoshiki; Nishioka, Kiyokazu; Kaminaki, Hideki; and Atarashi, Yoshifumi, to Hitachi, Ltd. Information processor having high speed and safety resume system. 5,485,623, Cl. 395-182.200.
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Hecht, Franz; Kurze, Bernd; Heutschel, Mona; Schinn, Volker; Weichselbaum, Thomas; and Kranz, Hans-Werner, 5,485,350, Cl. 361-692.000.
Kusada, Yosuke, to Nikon Corporation. Focus detecting device having light distribution detection. 5,485,003, Cl. 250-201.800.
Kusaka, Yosuke, to Nikon Corporation. Focus detecting apparatus. 5,485,001, Cl. 250-201.800.
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Kusano, Masahiro: *See*—
Oike, Mitsuru; Kusano, Masahiro; and Sato, Osamu, 5,485,376, Cl. 364-424.050.
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Matsuda, Toru; Ito, Fujihiro; Kusano, Yutaka; Makino, Kenji; and Hasegawa, Koyo, 5,485,435, Cl. 369-13.000.
Kushnir, Yosif, to Dollins Tool, Inc. Nozzle construction for a triple stack molding arrangement. 5,484,275, Cl. 425-190.000.
Kusumoto, Yasuhiro: *See*—
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Kutsche, Thomas: *See*—
Wolf, Fritz; Kutsche, Thomas; and Röder, Manfred, 5,485,417, Cl. 364-424.010.
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Shima, Motohiko; Okamura, Masatoshi; and Kutsukake, Jin, 5,484,058, Cl. 206-387.100.
Kutz, Donald A.; and DeSantis, Philip J., to H.M. Electronics, Inc. Universally adaptable battery charger connector and method of using same. 5,484,668, Cl. 291-121.000.
Kuusama, Juha; and Mäkivirta, Aki, to Nokia Technology GmbH. System for processing an audio signal so as to reduce the noise contained therein by monitoring the audio signal content within a plurality of frequency bands. 5,485,524, Cl. 381-94.000.
Kuwabara, Tadashi: *See*—
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Kuwano, Kouichi: *See*—
Moriyama, Makoto; Kuwano, Kouichi; and Tochizawa, Ikuo, 5,484,560, Cl. 264-483.000.
Kuzma, Andrew, to Intel Corporation. Multiple encoder output buffer apparatus for differential coding of video information. 5,485,211, Cl. 348-409.000.
Kvaerner Masa-Yards Oy: *See*—
Antila, Jari; Gustafsson, Jukka; Heinäkari, Matti; Linja, Jukka; and Vaihinen, Matti, 5,484,098, Cl. 228-184.000.
Kyees, Melvin. Cold plate and method of making same. 5,484,015, Cl. 165-168.000.
Kyogoku, Mitsusuke, to ASM Japan, K.K. Thermal treatment apparatus. 5,484,483, Cl. 118-719.000.
Kyomoto, Sumio: *See*—
Kojima, Yasuhiro; Izui, Yoshio; Goda, Tadahiro; and Kyomoto, Sumio, 5,485,545, Cl. 395-22.000.
Kyowa Hakko Kogyo Co., Ltd.: *See*—
Katsumata, Ryoichi; and Kino, Kuniki, 5,484,716, Cl. 435-108.000.
Suzuki, Fumio; Shimada, Junichi; Koike, Nobuaki; Nakamura, Joji; Shiozaki, Shizuo; Ichikawa, Shunji; Ishii, Akio; and Nonaka, Hiromi, 5,484,920, Cl. 544-268.000.
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King, Timothy P.; and Walsh, Stacy, 5,483,854, Cl. 81-3.400.
L. & C. Steinmüller GmbH: *See*—
Keinzel, Günter; Schmitz-Goeb, Manfred; and Fricker, Hans W., 5,483,950, Cl. 126-680.000.
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Fukuda, Minoru; and Bierhuizen, Marti F. A., 5,484,590, Cl. 424-94.500.
Reed, John C.; Miyashita, Toshiyuki; Harigai, Masayoshi; and Hanada, Motoi, 5,484,710, Cl. 435-69.100.

Labinal Components and Systems, Inc.: *See—*
Hopfer, Albert N.; and Allard, Edward M., 5,485,351, Cl. 361-704.000.

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Daubie, Christophe; Legrand, Jean-Jacques; and Pemberton, Clive, 5,484,921, Cl. 544-361.000.

Lacey, Brian C.; and Collins, David F., to Unisys Corporation. Backplane driver circuit. 5,485,107, Cl. 326-86.000.

Ladd, Douglas; and Quirk, John K. Oilwell spill containment. 5,484,024, Cl. 166-369.000.

Laerum, Ole D., to Hafslund Nycomed Bioreg AS. Peptide compounds which inhibit the proliferation of epidermal or epithelial stem cells. 5,484,770, Cl. 514-17.000.

Laffler, Thomas G.: *See—*
Bouma, Stanley R.; Joseph, Jeffrey L.; Marshall, Ronald L.; and Laffler, Thomas G., 5,484,699, Cl. 435-5.000.

Lage, Craig S.; Baker, Frank K.; Hayden, James D.; and Cooper, Kent J., to Motorola, Inc. Static-random-access memory cell and an integrated circuit having a static-random-access memory cell. 5,485,420, Cl. 365-154.000.

Lagomarsino, Paul A.: *See—*
Aldrete, Michael T.; and Lagomarsino, Paul A., 5,484,131, Cl. 248-577.000.

Lai, Michael; Ng, John L.; and Shaw, Jin-Fan, to International Business Machines Corporation. Array variable transformation system employing subscript table mapping to scalar loop indices. 5,485,619, Cl. 395-700.000.

Lakowicz, Joseph R.; Berndt, Klaus W.; Nowaczyk, Kazimierz; Szmacinski, Henryk; and Johnson, Michael L., to Lakowicz, Joseph R. Method and apparatus for multi-dimensional phase fluorescence lifetime imaging. 5,485,530, Cl. 382-191.000.

Lam, Dominic M.-K.; and Arntzen, Charles J., to Edible Vaccines, Inc. Vaccines produced and administered through edible plants. 5,484,719, Cl. 435-172.300.

Lam, Kim V.: *See—*
Huynh, Duy Q.; Lam, Kim V.; and Tran, Loc T., 5,485,585, Cl. 395-311.000.

Lam, Steve: *See—*
Lee, Xiaoyang; and Lam, Steve, 5,485,630, Cl. 455-4.100.

Lamb, Cathy S.: *See—*
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Pirkle, William H.; Welch, Christopher J.; and Lamm, Bo R., 5,484,530, Cl. 210-635.000.

Lamm, Gunther: *See—*
Loeffler, Hermann; Lamm, Gunther; Bach, Volker; Lange, Arno; Reichelt, Helmut; and Rothmaier, Herbert, 5,484,460, Cl. 8-638.000.

Lampman, David A.: *See—*
Morich, Michael A.; Petropoulos, Labros; and Lampman, David A., 5,485,087, Cl. 324-318.000.

Lampropoulos, Bryan R.: *See—*
Lampropoulos, Fred P.; Young, Richard L.; Bushman, Cidny A.; and Lampropoulos, Bryan R., 5,483,999, Cl. 141-86.000.

Lampropoulos, Fred P.; Young, Richard L.; Bushman, Cidny A.; and Lampropoulos, Bryan R., to Merit Medical Systems, Inc. Waste collection system for containment and disposal of contaminated fluids. 5,483,999, Cl. 141-86.000.

Landphair, Donald K.; and Luxon, Gary D., to Deere & Company. Locking row marker hydraulic cylinders in retracted transport condition. 5,484,025, Cl. 172-311.000.

Landsberger Bandweberei GmbH & Co KG: *See—*
Hackenberg, Bernhard, 5,484,496, Cl. 156-70.000.

Laneman, Scott A.: *See—*
Abood, Norman A.; Flynn, Daniel L.; Laneman, Scott A.; Nosal, Roger; and Schretzman, Lori A., 5,484,946, Cl. 548-543.000.

Lange, Arno: *See—*
Loeffler, Hermann; Lamm, Gunther; Bach, Volker; Lange, Arno; Reichelt, Helmut; and Rothmaier, Herbert, 5,484,460, Cl. 8-638.000.

Lange, Louis G., III; and Spilburg, Curtis A. Pancreatic cholesterol esterase inhibitor. 5,484,777, Cl. 514-54.000.

Langeland, Brenda K.: *See—*
Blase, Michael; Kelly, Luke E.; Meek, Steven K.; Langeland, Brenda K.; and Norwood, Richard L., 5,483,726, Cl. 15-321.000.

Langenbeck, Keith A. Pneumatic conveyor apparatus having air deflectors. 5,484,237, Cl. 406-86.000.

Langer, Alexander G. Method and apparatus for locating fish. 5,483,767, Cl. 43-4.000.

Langer, Reinhard; Buysch, Hans-Josef; and Wagner, Paul, to Bayer Aktiengesellschaft. Fixed bed reactors having a short catalyst bed in the direction of flow. 5,484,576, Cl. 422-211.000.

Langhenry, Edwin F.; Perin, Bruce, Jr.; and Kasper, James J., to Watteredge-Uniflex Inc. Water cooled kickless cable and method. 5,484,960, Cl. 174-74.00R.

Lanning, John M., to Manitowoc Company, Inc., The . Process for self-disassembling a crawler crane. 5,484,069, Cl. 212-270.000.

Lantz, Kenneth F.: *See—*
Skowronski, Richard E.; Lantz, Kenneth F.; Leon, Tomas F., deceased; Alexander, Donald J.; Kolomayets, George; Adams, Vincent C.; Szymczak, Eugene B.; Minnich, Edward W.; and Totzke, Wade K., 5,484,362, Cl. 482-54.000.

Lapp, John: *See—*
Johnson, Stephen P.; Hassler, Stephen P.; and Lapp, John, 5,485,136, Cl. 337-168.000.

Lapresle, Bernard: *See—*
Bompard, Bruno; Aucagne, Jean; and Lapresle, Bernard, 5,484,642, Cl. 428-166.000.

LaRosa, Richard, to Hazeltine Corporation. Local ground plane for high frequency circuits. 5,485,036, Cl. 257-691.000.

Larrabee, Robert D.; and Marchisando, Jay F., to United States of America, Commerce. Non-contact measurement of linewidths of conductors in semiconductor device structures. 5,485,080, Cl. 324-158.100.

Larsen, Charles E.; Pinchuk, Leonard; and Weldon, Thomas D., to Namic Caribe, Inc. Method for making a medical catheter. 5,484,565, Cl. 264-230.000.

Larson, James R.: *See—*
Spiewak, John W.; and Larson, James R., 5,484,679, Cl. 430-115.000.

Larsson, Leif M.: *See—*
Wahlman, Jan S. R.; Berghager, Hans A. P.; and Larsson, Leif M., 5,485,453, Cl. 370-16.000.

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Sand, Bruce J., 5,484,432, Cl. 606-5.000.

Lasky, Laurence A.; Imai, Yasuyuki; Rosen, Steven D.; and Singer, Mark S., to Genentech, Inc.; and University of California, The Regents of the . Selectin ligands. 5,484,891, Cl. 530-387.300.

Lasser, Marvin E.: *See—*
Butler, Neal R.; and Lasser, Marvin E., 5,483,963, Cl. 128-661.010.

Lau, Aldrich N. K.: *See—*
Wartenberg, Mark F.; Atkins, Harriette; Reamey, Robert H.; Welsh, Laurence; Strain, James; Wójtowicz, Janusz; Montoya, Wayne; Drzaic, Paul S.; Havens, John; Tomita, Akira; and Lau, Aldrich N. K., 5,484,552, Cl. 252-299.500.

Lau, James: *See—*
Hitz, David; Schwartz, Allan; Lau, James; and Harris, Guy, 5,485,579, Cl. 395-200.120.

Lau, Jesper; Knutsen, Lars J. S.; Sheardown, Malcolm; and Hansen, Anker J., to Novo Nordisk A/S. 2, N^6-disubstituted adenosines, tri-O-ester derivatives and their pharmaceutical compositions to treat ischemias. 5,484,774, Cl. 514-46.000.

Lau, Sai-Kwing; and McMurtry, Carl H., to Carborundum Company, The . Aluminum nitride-coated silicon carbide fiber. 5,484,655, Cl. 428-367.000.

Lau, Tim Y. T., to Video Technology Computers, Ltd. Write back cache controller method and apparatus for use in a system having a CPU with internal cache memory. 5,485,592, Cl. 395-470.000.

Läufer, Engelbert: *See—*
Kühn, Hans-Robert; Läufer, Engelbert; and Rutschmann, Richard, 5,485,444, Cl. 369-54.000.

Laukien, Günther: *See—*
Westphal, Michael; and Laukien, Günther, 5,485,088, Cl. 324-320.000.

Lavanish, Jerome M.: *See—*
Patel, Bomi P.; and Lavanish, Jerome M., 5,484,802, Cl. 514-390.000.

Lavoie, Alvin C.: *See—*
Bors, Daniel A.; Lavoie, Alvin C.; and Emmons, William D., 5,484,849, Cl. 525-167.500.

Lawlor, Francis D.; Leitherer, Jerald E.; and Rolfe, David B., to International Business Machines Corporation. Architectural enhancements for parallel computer systems utilizing encapsulation of queuing allowing small grain processing. 5,485,626, Cl. 395-650.000.

Lax, Ronald G.: *See—*
Edwards, Stuart D.; Sharkey, Hugh R.; Lundquist, Ingemar H.; Lax, Ronald G.; Strul, Bruno; and Stern, Roger A., 5,484,400, Cl. 604-22.000.

Leader Industries, Inc.: *See—*
Pernicka, Martin P.; Isabelle, Paul; and Gagnon, Hubert, 5,483,699, Cl. 2-9.000.

Leavitt, Stanley L.: *See—*
Buswell, Richard F.; Cohen, Ronald; Clausi, Joseph V.; Leavitt, Stanley L.; and Watkins, David S., 5,484,577, Cl. 422-211.000.

Lebby, Michael S.; and Jachimowicz, Karen E., to Motorola, Inc. Dual image manifestation apparatus with integrated electro-optical package. 5,485,318, Cl. 359-811.000.

Lecko, John H.: *See—*
Huang, Pao-Ter; Cai, Chunsheng; Janik, Jaroslav; Lecko, John H.; and Morton, James S., 5,484,049, Cl. 198-460.300.

LeClair, Steven R.; Pao, Yoh-han; Westhoven, Timothy E.; Al-Kamhawi, Hilmi N.; Chen, C. L. Philip; Jackson, Allen G.; and Chemaly, Adel C., to United States of America, Air Force. Inductive-deductive process design for machined parts. 5,485,390, Cl. 364-474.240.

Ledbetter, William B., Jr.; McCarthy, Daniel M.; and Gay, James G., to Motorola, Inc. Integrated circuit having a control signal for identifying coinciding active edges of two clock signals. 5,485,602, Cl. 395-550.000.

Leduc, Pierre, to U.S. Philips Corporation. Lateral transistor having a particular emitter structure. 5,485,033, Cl. 257-578.000.

Lee, Brian: *See—*
Garthwaite, Jay; Hotchkiss, Kenneth; Woodward, Arthur B.; Lee, Brian; Lewis, Walter C.; and Orbeta, Ferdinand E., 5,484,307, Cl. 439-535.000.

Lee, Chang S.: *See—*
Ihm, Dae W.; Lee, Myung S.; Jun, Hae S.; Lee, Chang S.; Jung: Sung G.; and Woo, Seong I., 5,484,861, Cl. 525-450.000.

Lee, Cheng-Jyh: *See—*
Kung, Hsiang-Peng; Chang, Yao-Tsung; Lee, Cheng-Jyh; Pan, Rong-Shiun; and Huang, Chia-Hui, 5,484,837, Cl. 524-495.000.

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Isburgh, Anne M.; and Lee, Ching-Pang, 5,484,258, Cl. 415-115.000.

Lee, Dong H., to Goldstar Co., Ltd. Video format conversion apparatus for high definition television. 5,485,216, Cl. 348-443.000.

Lee, Pang-Liang, to Yuh Jou Co., Ltd. Adjustable roller skate structure. 5,484,149, Cl. 280-11.260.

Lee, Foo-Ming: *See—*
Lin, Vincent M. S.; and Lee, Foo-Ming, 5,485,214, Cl. 348-416.000.

Lee, Jamine: *See—*
Bien, Fritz; Gersh, Michael; Goldstein, Neil; and Lee, Jamine, 5,485,276, Cl. 356-437.000.

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Rantanen, Rauno; Lummila, Markku; and Korhonen, Hannu, 5,484,482, Cl. 118-203.000.
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Hinton, Corydon A.; and Szejna, Glenn, 5,485,502, Cl. 378-117.000.
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Wiener, Scott A.; and Rossman, Phillip J., 5,483,965, Cl. 128-661.030.
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Landphair, Donald K.; and Luxon, Gary D., 5,484,025, Cl. 172-311.000.
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MacLaren, David S.; and Tang, Niaafa, to JET, Inc. Wastewater treatment apparatus. 5,484,524, Cl. 210-151.000.
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Dunfield, John C.; Kloeppel, Klaus; Pelstring, Robert M.; Macleod, Donald J.; Raffetto, Michael; and Kazmierczak, Frederick F., 5,485,331, Cl. 360-99.080.
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Meyer, Craig H.; and Macovski, Albert, 5,485,086, Cl. 324-307.000.
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Bae, You H., 5,484,610, Cl. 424-487.000.

Mader, Gerald E., to Von Duprin, Inc. Failsafe electric locking lever trim. 5,484,179, Cl. 292-336.300.

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Miyachi, Takeshi; Mizusawa, Nobutoshi; Hara, Shinichi; and Maehara, Hiroshi, 5,485,495, Cl. 378-34.000.

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Ishimoto, Shigeru; Matsuyama, Yasuhiko; and Maejima, Hideo, 5,485,407, Cl. 364-577.000.

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MAG Instrument, Inc.: *See*—
Maglica, Anthony, 5,485,360, Cl. 362-158.000.

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Brooks, David R.; and Murdoch, Graham A., 5,485,154, Cl. 342-44.000.

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Burke, James J.; Maher, John W.; and Thompson, William A., 5,485,633, Cl. 455-51.200.

Mahlberg, Hans-Peter; Fuchs, Heinz W.; Rechberg, Reinhard; Bauer, Lothar; Lemme, Werner; Strusch, Wolfgang; Tedsen, Tai; Schleiermacher, Herbert; and Wahnschaffe, Jürgen, to Klockner-Humboldt-Duetz AG. Liquid cooled internal combustion engine. 5,483,928, Cl. 123-41.420.

Maier, Karl, to MTU Motoren - Und Turbinen-Union Muenchen GmbH. Device for sealing a gap between components of groups of components. 5,484,014, Cl. 165-159.000.

Mailloux, Robert J.; Franchi, Peter R.; and Tobin, Harvey E., to United States of America, Air Force. Linear near field test facility and process. 5,485,158, Cl. 342-165.000.

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Wong, Stephen; Mukherjee, Satyendranath; and Majid, Naveed, 5,485,292, Cl. 327-56.000.

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Jenke, Dietmar; Majsai, Josef; and Wubken, Winfried, 5,484,370, Cl. 492-4.000.

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Matsuda, Toru; Ito, Fujihiro; Kusano, Yutaka; Makino, Kenji; and Hasegawa, Koyo, 5,485,435, Cl. 369-13.000.

Makino, Tsunehiro: *See*—
Ejiri, Seishi; Shinada, Yasuyuki; Shimamura, Yasuhito; Ryuka, Akihiro; Makino, Tsunehiro; and Chishima, Hideaki, 5,485,286, Cl. 358-296.000.

Makiura, Yoshinori: *See*—
Morishita, Hiroki; Nakamura, Hiroaki; Eki, Makoto; Makiura, Yoshinori; Otsuka, Masao; Taguchi, Kazushiro; and Bae, Keiji, 5,485,247, Cl. 355-205.000.

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Kuusama, Juha; and Mäkivirta, Aki, 5,485,524, Cl. 381-94.000.

Malarkey, Michael O.: *See*—
Kennedy, Thomas D.; Malarkey, Michael O.; and Graves, Larry R., 5,484,653, Cl. 428-290.000.

Malek, Charles J.: *See*—
Goedken, James F.; and Malek, Charles J., 5,485,513, Cl. 379-355.000.

Maléus, Börje; and Tjerngren, Jan, to Asea Brown Boveri AB. Method for manufacturing a fuse and a fuse made by that method. 5,485,137, Cl. 337-295.000.

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Spitz, Roger; Patin, Maryse; and Malinge, Jean, 5,484,754, Cl. 502-169.000.

Malinowski, Leo; and Evans, Terrance R., to MascoTech Automotive Systems Group, Inc. Vehicle cargo organizer. 5,484,091, Cl. 224-542.000.

Malleron, Jean-Luc: *See*—
Achard, Daniel; Grisoni, Serge; Malleron, Jean-Luc; Peyronel, Jean-Francois; and Tabart, Michel, 5,484,804, Cl. 514-414.000.

Malling, Jesper: *See*—
Ulf, Rothman; and Malling, Jesper, 5,484,461, Cl. 29-623.500.

Mallo, Paul; Fietier, Isabelle; and Karsunky, Ulrich, to Societe Francaise Hoechst. Thickening water-in-oil dispersions, their preparation process and their use in textile printing. 5,484,843, Cl. 524-804.000.

Maltz, David A.: *See*—
Weiser, Mark D.; Goldstein, Richard J.; Want, Roy; Welch, Brent B.; Elrod, Scott A.; Maltz, David A.; Schilit, William N.; and Theimer, Marvin M., 5,485,634, Cl. 455-53.100.

Malugade, Dilip; and Wessel, Mark A., to Ametek, Inc., Plymouth Products Division. Bag filter system with multifilter adaptability. 5,484,529, Cl. 210-448.000.

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Reichel, Klaus T., 5,483,891, Cl. 101-415.100.

Manabe, Haruhiko: *See*—
Suzuki, Fumio; Kuroda, Takeshi; Kawakita, Takashi; Kitamura, Shigeto; and Manabe, Haruhiko, 5,484,924, Cl. 546-82.000.

Mandal, Braja K.; Tripathy, Sukant K.; Huang, Jan-Chan; and Kumar, Jayant, to University of Lowell. Photocrosslinked second order nonlinear optical polymers. 5,484,821, Cl. 522-26.000.

Mandl, Roland: *See*—
Wisspeintner, Karl; and Mandl, Roland, 5,485,082, Cl. 324-202.000.

Manfredi, Mark C.: *See*—
Condon, Michael E.; Crews, Alvin D., Jr.; and Manfredi, Mark C., 5,484,762, Cl. 504-261.000.

Manitowoc Company, Inc., The: *See*—
Lanning, John M., 5,484,069, Cl. 212-270.000.

Mänken, Udo: *See*—
Vellmer, Carl H.; and Mänken, Udo, 5,484,974, Cl. 219-85.220.

Mann, Alfred E.: *See*—
Schulman, Joseph H.; and Mann, Alfred E., 5,484,404, Cl. 604-66.000.

Mann, Allan, to Mann Industries, Inc. Artificial leather composite material and method for producing same. 5,484,646, Cl. 428-198.000.

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Mann, Randy W.: *See*—
Bertsch, John E.; Mann, Randy W.; Nowak, Edward J.; and Tong, Minh H., 5,485,095, Cl. 324-537.000.

Mannesmann Aktiengesellschaft a Corp. of The Federal Republic of Germany: *See*—
Unewisse, Heinz; and Foering, Herbert, 5,484,172, Cl. 285-175.000.

Manning, Lourdes P.: *See*—
Al-Razzak, Laman A.; Marsh, Kennan C.; Manning, Lourdes P.; and Kaul, Dilip, 5,484,801, Cl. 514-365.000.

Manning, Robert E.: *See*—
Bovy, Philippe R.; Reitz, David B.; and Manning, Robert E., 5,484,937, Cl. 548-266.200.

Manseur, Arezki; Weist, William C.; Brandao, Ruy L.; and Hermann, Phillip R., to AlliedSignal Inc. Antenna stabilization error correction system for radar. 5,485,156, Cl. 342-77.000.

Manthuruthil, George C.: *See*—
Johnson, William J.; Keller, Robert S.; Manthuruthil, George C.; and Williams, Marvin L., 5,485,605, Cl. 395-600.000.

Manulik, Robert J.: *See*—
Busboom, Leah J. H.; Clausen, Trent L.; Eagen, Stephen T.; Kiel, Harvey G.; Manulik, Robert J.; Plute, Michael E.; Remfert, Jeffrey E.; and Romon, Raymond F., 5,485,570, Cl. 395-161.000.

Maple Leaf Farms, Inc.: *See*—
Kounev, Zheko V., 5,484,615, Cl. 426-238.000.

Marbac, Inc.: *See*—
Bronovicki, Raymond A., 5,484,078, Cl. 220-531.000.

March, Carl J.: *See*—
Kronheim, Shirley R.; March, Carl J.; Conlon, Paul J., III; and Hopp, Thomas P., 5,484,887, Cl. 530-351.000.

Marchiando, Jay F.: *See*—
Larrabee, Robert D.; and Marchiando, Jay F., 5,485,080, Cl. 324-158.100.

Marelin, Miklos; Jansen, George; and Hinsen, Hans R., to Band-It-Idex, Inc. Anchoring of a band buckle in a band clamp. 5,483,998, Cl. 140-93.400.

Marhold, Albrecht, to Bayer Aktiengesellschaft. Halogenation processes in advantageous solvents, and novel bistrifluoromethylpolyfluoroalkoxybenzenes. 5,484,932, Cl. 546-346.000.

Marhold, Albrecht; Baasner, Bernd; and Lieb, Folker, to Bayer Aktiengesellschaft. O-phenylenediamines containing fluoroalkyl(ene) groups. 5,484,953, Cl. 549-362.000.

Marinoni, Mario, to Societa Italiana Progetti S.r.l. Door or window mountings. 5,483,770, Cl. 49-388.000.

Marjanski, George C.: *See*—
Clark, Randall J.; Marjanski, George C.; and Kort, Leland B., 5,483,813, Cl. 72-334.000.

Mark IV Transportation Products Corporation: *See*—
Zweili, Marc, 5,483,769, Cl. 49-118.000.

Mark, John G.; Tazartes, Daniel A.; Ebner, Robert E.; Dahlen, Neal J.; and Datta, Nibir K., to Litton Systems, Inc. Ring laser gyroscope enhanced resolution system. 5,485,273, Cl. 356-350.000.

Marquip, Inc.: *See*—
Smitterberg, Dean W.; Nachtrab, William R., Jr.; Kadlecek, David G.; and Beutler, Bruce H., 5,483,856, Cl. 83-23.000.

Marquiss, Samuel A.: *See*—
Miller, Leslie A.; McCall, Thomas J., Jr.; Marquiss, Samuel A.; Smith, Douglas H.; and Johnson, Richard F., 5,483,843, Cl. 73-864.230.

Marracino, Charles R.: *See*—
Thomas, Daniel L.; Hoover, John W.; and Marracino, Charles R., 5,484,262, Cl. 415-178.000.

Marra, Robert C., to Amkor Electronics, Inc. Semiconductor device having a thermal dissipator and electromagnetic shielding. 5,485,037, Cl. 257-712.000.

Marschke, Carl R., to Converex, Inc. Method and apparatus for laying up laminates of adhesive backed sheets. 5,484,499, Cl. 156-193.000.

Marsh, Charles H.: *See*—
Liu, Ming; and Marsh, Charles H., 5,485,465, Cl. 395-182.020.

Marsh, Kennan C.: *See*—
Al-Razzak, Laman A.; Marsh, Kennan C.; Manning, Lourdes P.; and Kaul, Dilip, 5,484,801, Cl. 514-365.000.

Marshall, Ronald L.: *See*—
Bouma, Stanley R.; Joseph, Jeffrey L.; Marshall, Ronald L.; and Laffler, Thomas G., 5,484,699, Cl. 435-5.000.

Marshall, Winston S.: *See*—
Boyd, Donald B.; Hauser, Kenneth L.; Lifer, Sherryl L.; Marshall, Winston S.; Palkowitz, Alan D.; Pfeifer, William; Reel, Jon K.; Simon, Richard L.; Steinberg, Mitchell I.; Takeuchi, Kumiko; Thrasher, K. Jeff; and Whitesitt, Celia A., 5,484,780, Cl. 514-94.000.

Martin, Eugene G.; and Cook, Scott, to Foodcraft Equipment Company. Loader for breast processor. 5,484,333, Cl. 452-182.000.

Martin, James H. Presettable indexed adjustable dose dispenser. 5,484,088, Cl. 222-402.200.

Martin, Jean-Bernard: *See*—
Biscay, Pierre; Farrando, Alain J.; Joubert, Philippe D.; Martin, Jean-Bernard; and Vignau, Hubert H., 5,484,261, Cl. 415-151.000.

Martin, Joseph R., to Jomar International, Ltd. In-line valve for insertion in a pressurized fluid flow line. 5,483,990, Cl. 137-318.000.

Martin Marietta Energy Systems, Inc.: *See*—
Casada, Donald A., 5,483,841, Cl. 73-862.193.
Dickens, Larry M.; Haynes, Howard D.; and Ayers, Curtis W., 5,483,833, Cl. 73-583.000.
Tyndall, Richard L.; and Vass, Arpad, 5,484,730, Cl. 435-264.000.

Martinez, Ralph E. Weight set having means to prevent rotation of the weights on the bar. 5,484,367, Cl. 482-107.000.

Martinez, Susana: *See*—
Inderbitzen, Mark; and Martinez, Susana, 5,484,411, Cl. 604-96.000.

Marton, Sylvia: *See*—
Racz, Istvan; and Marton, Sylvia, 5,484,776, Cl. 514-54.000.

Maruno, Susumu, to Matsushita Electric Industrial Co., Ltd. Recognition unit and recognizing and judging apparatus employing same. 5,485,547, Cl. 395-24.000.

Maruo, Masaru: *See*—
Shibayama, Takao; Maekawa, Keiichiro; Uzuyama, Kimitake; Maruo, Masaru; Fukutome, Akihito; Nakazono, Yoshiharu; and Matsumoto, Yoshimichi, 5,483,823, Cl. 73-118.100.

Maruyama, Akio: *See*—
Kikuchi, Toshihiro; Maruyama, Akio; Ohtani, Noriko; Nagahara, Shin; Tanaka, Hisami; Sakakibara, Teigo; and Tanaka, Takakazu, 5,484,673, Cl. 430-58.000.

Maruyama, Hiroshi: *See*—
Igarashi, Hisashi; Chikamatsu, Masataka; Maruyama, Hiroshi; and Yamanaka, Masayoshi, 5,485,596, Cl. 364-431.030.

Maruyama, Kazunori: *See*—
Aoki, Eiichiro; and Maruyama, Kazunori, 5,484,957, Cl. 84-635.000.

Marzonie, Robert M.: *See*—
Cullen, Michael J.; Marzonie, Robert M.; Ulrey, Joseph N.; Sbaschnig, Richard W.; Weyburne, Michael A.; and Mingo, Paul C., 5,483,941, Cl. 123-481.000.

Masaki, Kazumi, to Hayashibara, Ken. Hammer-like tool for relieving stiffness in the neck and shoulder. 5,484,386, Cl. 601-21.000.

Maschinenfabrik Sulzer-Burckhardt AG: *See*—
Lehmann, Markus, 5,483,992, Cl. 137-516.210.

MascoTech Automotive Systems Group, Inc.: *See*—
Malinowski, Leo; and Evans, Terrance R., 5,484,091, Cl. 224-542.000.

Mase, Akira: *See*—
Yamazaki, Shunpei; Mase, Akira; Hiroki, Masaaki; Takemura, Yasuhiko; Zhang, Hongyong; and Uochi, Hideki, 5,485,019, Cl. 257-57.000.

Mastakow, William H., to AK Technology, Inc. Method of making homogeneous thermoplastic semi-conductor chip carrier package. 5,483,740, Cl. 29-827.000.

Mason, Charles R.: *See*—
Vellucci, Dominic J., Jr.; Mason, Charles R.; Cochran, Stuart A.; Coleman, Edward C.; and Nayyar, Dalip K., 5,484,616, Cl. 426-242.000.

Massachusetts Institute of Technology: *See*—
Chick, Richard W., 5,485,118, Cl. 330-54.000.
Dionne, Gerald F.; and Oates, Daniel E., 5,484,765, Cl. 505-210.000.
Kane, Nathan R.; and Slocum, Alexander H., 5,484,208, Cl. 384-12.000.
Lim, Jae S.; and Monta, Peter A., 5,485,210, Cl. 348-409.000.

Mastromattei, Tonino. Measurement calculator. 5,485,410, Cl. 364-705.010.

Masuda, Kazuaki: *See*—
Ishinaga, Hiroyuki; Sugitani, Hiroshi; Masuda, Kazuaki; Kasamoto, Masami; Suzuki, Seiji; Kashino, Toshio; Kawai, Jun; Okazaki, Takeshi; Arashima, Teruo; and Kamiyama, Yuji, 5,485,186, Cl. 347-63.000.
Nakagomi, Hiroshi; Arashima, Teruo; Maeoka, Kunihiko; Obba, Takashi; Kawai, Jun; Abe, Tsutomu; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; Kimura, Makiko; Kashino, Toshio; Saikawa, Hideo; Karita, Seiichiro; and Orikasa, Tsuyoshi, 5,485,184, Cl. 347-63.000.

Masuyama, Yukiei: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryozi; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,484,227, Cl. 404-84.100.

Mathwich, Bruce: *See*—
Golden, Scott; and Mathwich, Bruce, 5,484,135, Cl. 254-134.3FT.

Matsuda, Masanori: *See*—
Matsumoto, Shoji; Matsuda, Masanori; Goto, Eiji; Nishida, Akinori; and Hori, Takeshi, 5,485,344, Cl. 361-225.000.

Matsuda, Tadashi, to Kabushiki Kaisha Toshiba. High switching speed IGBT. 5,485,022, Cl. 257-133.000.

Matsuda, Toru; Ito, Fujihiro; Kusano, Yutaka; Makino, Kenji; and Hasegawa, Koyo, to Canon Kabushiki Kaisha. Magnetic field generator in which an end face of a magnetic material member projects from man end face of magnetic field generating cores. 5,485,435, Cl. 369-13.000.

Matsui, Ryuhei: *See*—
Higashimura, Hideyuki; Ohbe, Yoshitaka; Okada, Akihiko; Obashi, Kazutoshi; Matsui, Ryuhei; and Kriyama, Shigeki, 5,484,831, Cl. 524-257.000.

Matsumoto, Hirotaka: *See*—
Iwakura, Ken; Wakata, Yuichi; Matsumoto, Hirotaka; and Totsuka, Mikio, 5,484,682, Cl. 430-138.000.

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Hirose, Yoshio; and Matsumoto, Kenji, 5,485,330, Cl. 360-99.060.

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Itoh, Nobuki, 5,485,079, Cl. 324-96.000.
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Kanbara, Teruhisa; and Tsuboki, Yuichiro, 5,485,346, Cl. 361-504.000.
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Tamaki, Satoshi; Ikkai, Yasufumi; and Kondo, Yasuhiro, 5,485,375, Cl. 364-424.030.
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Cuccio, Allen; and Hagerman, John, 5,484,063, Cl. 206-722.000.
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Janik, Leon P.; and Maxwell, M. Craig, 5,484,527, Cl. 210-232.000.
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Teich, Daniel E.; and Sokn, Erick L., 5,484,175, Cl. 292-80.000.
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McClure, David C., to SGS-Thomson Microelectronics, Inc. Multiple clocked dynamic sense amplifier. 5,485,430, Cl. 365-233.000.
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McCoy, D. Barry, to Northeast Orthotics and Prosthetics. Apparatus for forming a scoliosis brace. 5,484,393, Cl. 602-6.000.
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Palfreyman, Michael G.; McDonald, Ian Alexander; Salituro, Francesco G.; and Schwarcz, Robert, 5,484,814, Cl. 514-564.000.
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Lindsay, William E., 5,484,277, Cl. 425-388.000.
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Tripp, Carl P.; Veregin, Richard P. N.; Cunningham, Michael F.; Enright, Thomas E.; and McDougall, Maria V., 5,484,675, Cl. 430-106.000.
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McInerney, James M.; and Norman, Mitch E. Roller skate lighting system. 5,484,164, Cl. 280-112.000.
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McLean, Linsey. Dietary system high in oil intake for the treatment of obesity and for the lowering of saturated fats. 5,484,623, Cl. 426-601.000.
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McNeilly, Peter J.; and Trzcinski, Martin E., to Eastman Kodak Company. Sync stripper circuit. 5,485,220, Cl. 348-525.000.
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Garrett, Thomas M.; and Gruzins, Indulis, 5,484,832, Cl. 524-261.000.
McTaggart, Stephen I. Apparatus for combining audio and visual indicia. 5,484,292, Cl. 434-317.000.
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Meister, Jack B. Impact sensor for vehicle safety restraint system. 5,485,041, Cl. 307-10.100.
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Flynn, Gary A.; Preach, John F.; and Dage, Richard C., 5,484,783, Cl. 514-214.000.
Grisar, J. Martin; Petty, Margaret A.; and Bolkenius, Frank, 5,484,810, Cl. 514-456.000.
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Minemura, Harumi: *See*—
Kashima, Rika; Nakamura, Shunichiro; Minemura, Harumi; Shiono, Katsumi; Higuchi, Masahiro; Yoshimori, Mikio; and Hayakawa, Takayuki, 5,485,598, Cl. 395-182.040.
Minemura, Hiroyuki: *See*—
Maeda, Yoshihito; Ikuta, Isao; Andoh, Hisashi; Nagai, Masaichi; Katoh, Yoshimi; Sato, Yoshio; Tsuboi, Nobuyoshi; and Minemura, Hiroyuki, 5,484,686, Cl. 430-270.130.
Minges, Roland: *See*—
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Mingo, Paul C.: *See*—
Cullen, Michael J.; Marzonie, Robert M.; Ulrey, Joseph N.; Sbaschnig, Richard W.; Weyburne, Michael A.; and Mingo, Paul C., 5,483,941, Cl. 123-481.000.
Ministry of International Trade and Industry: *See*—
Koyachi, Noriho; Adachi, Hironori; and Arai, Tatsuo, 5,484,031, Cl. 180-8.100.
Minnear, William P.: *See*—
Greskovich, Charles D.; Minnear, William P.; O'Clair, Chester R.; Gurmen, Erdogan O.; and Riedner, Robert J., 5,484,750, Cl. 501-86.000.
Minnesota Mining and Manufacturing Company: *See*—
Bonham, James A., 5,484,919, Cl. 544-193.100.
Flynn, Richard M.; Grenfell, Mark W.; Klink, Frank W.; and Vicak, Daniel R., 5,484,489, Cl. 134-42.000.
George, Billy L.; Babirad, Stefan A.; and Penny, Delmon H., 5,484,477, Cl. 106-499.000.
Skow, Lynn R.; Moore, Arthur R.; and Gilbertson, James R., 5,485,325, Cl. 360-91.000.
Tollefson, Dale T., 5,484,117, Cl. 242-345.200.
Valsecchi, Alberto; and Farooq, Omar, 5,484,693, Cl. 430-529.000.
Minnich, Edward W.: *See*—
Skowronski, Richard E.; Lantz, Kenneth F.; Leon, Tomas F., deceased; Alexander, Donald J.; Kolomayets, George; Adams, Vincent C.; Szymczak, Eugene B.; Minnich, Edward W.; and Totzke, Wade K., 5,484,362, Cl. 482-54.000.
Minns, Richard A., to Polaroid Corporation. Process and composition for cladding optic fibers. 5,484,822, Cl. 522-35.000.
Minoda, Hidenori, to Sharp Kabushiki Kaisha. High-speed data dubbing method. 5,485,447, Cl. 369-84.000.
Minolta Co., Ltd.: *See*—
Kuroda, Masayoshi; and Oda, Masataka, 5,485,261, Cl. 355-319.000.
Ueda, Masahide; Izumi, Tomoo; Yamasaki, Hiroyuki; Hirai, Atsuto; Matsuura, Masahiko; Sano, Eiichi; Terasaka, Yoshihisa; Yamada, Masami; and Yoshida, Satoshi, 5,485,257, Cl. 359-272.000.
Minor, Barbara H.; Chisolm, Tuneen E. C.; and Shealy, Glenn S., to Du Pont de Nemours, E. I., and Company. Refrigerant compositions including an acylic fluoroether. 5,484,546, Cl. 252-67.000.
Mispreuve, Henri L. S. A.; Waddington, Simon; and Tribelhorn, Ulrich, to Dow Chemical Company, The . Polyurethane foam for packaging applications. 5,484,820, Cl. 521-174.000.
Mita Industrial Co., Ltd.: *See*—
Ishida, Hiroshi; and Hashizume, Masahiro, 5,485,252, Cl. 355-219.000.
Kita, Hideki; Nakamura, Akira; Fukunaga, Yasuyuki; and Katafuchi, Toshinobu, 5,485,251, Cl. 355-215.000.
Matsumoto, Shoji; Matsuda, Masanori; Goto, Eiji; Nishida, Akinori; and Hori, Takeshi, 5,485,344, Cl. 361-225.000.
Morishita, Hiroki; Nakamura, Hiroaki; Eki, Makoto; Makiura, Yoshinori; Otsuka, Masao; Taguchi, Kazushiro; and Ban, Keiji, 5,485,247, Cl. 355-205.000.
Mitchell, David S.: *See*—
Willacy, Steven J.; and Mitchell, David S., 5,483,851, Cl. 74-606.00R.
Mitekura, Yoshihiro: *See*—
Hayashi, Masayuki; Mitekura, Yoshihiro; Kazaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuyuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,485,246, Cl. 355-202.000.
Mitsubishi Chemical Corporation: *See*—
Higashimura, Hideyuki; Obbe, Yoshitaka; Okada, Akihiko; Ohashi, Kazutoshi; Matsui, Ryuhei; and Kriyama, Shigeki, 5,484,831, Cl. 524-257.000.
Sasaki, Koshi; Ohara, Hidehiko; and Imaki, Naoshi, 5,484,651, Cl. 428-224.000.
Sobajima, Yoshihiro; Kinoshita, Satoru; and Hamaura, Masahide, 5,484,835, Cl. 524-494.000.
Mitsubishi Chemical MKV Company: *See*—
Oshima, Masabumi; and Yamamori, Masaji, 5,484,844, Cl. 524-521.000.
Mitsubishi Corporation: *See*—
Sasaki, Takashi; Harada, Hiroyuki; and Hogetsu, Akihiko, 5,484,512, Cl. 204-129.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Funakura, Terubiko; and Higashino, Naomi, 5,485,114, Cl. 327-262.000.
Hanibuchi, Toshiaki, 5,485,026, Cl. 257-203.000.
Hatano, Yoshiko; Onishi, Ken; Asamura, Yoshinori; Itou, Takashi; and Tsukamoto, Manabu, 5,485,533, Cl. 382-236.000.
Hiraki, Toshiyuki; and Hata, Masayuki, 5,485,418, Cl. 365-49.000.
Ikeda, Akira; Tanimura, Yasuhiro; Nakatsugawa, Naoki; Tanaka, Masaaki; Konishi, Hiroshige; Hiraoka, Toshie; Nishio, Shinji; and Kawahira, Hiroto, 5,484,570, Cl. 422-1.000.
Iwata, Yasunobu, 5,485,366, Cl. 364-140.000.
Kaneko, Akira; Iguchi, Norikazu; Hayashida, Takahiro; Takeshita, Torao; and Shinohara, Yoshio, 5,485,065, Cl. 318-270.000.
Kawajiri, Kazuhiko; Suganami, Takuya; Honda, Tetsuya; Sugimoto, Teruo; and Fujiwara, Michio, 5,483,802, Cl. 62-6.000.
Kiji, Akio, 5,485,415, Cl. 364-786.000.
Kiriyama, Tetsuro; and Unno, Mahito, 5,485,468, Cl. 364-560.000.
Kobayashi, Shinichi; Nakayama, Takeshi; Miyawaki, Yoshikazu; Futatsuya, Tomoshi; and Terada, Yasushi, 5,485,421, Cl. 365-189.050.
Kojima, Toshiharu, 5,484,987, Cl. 329-306.000.
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Kojima, Yasuhiro; Izui, Yoshio; Goda, Tadahiro; and Kyomoto, Sumie, 5,485,545, Cl. 395-22.000.
Kuragaki, Akira; and Shiroyama, Shigeru, 5,485,048, Cl. 310-239.000.
Matsuo, Masahito; and Yoshida, Toyohiko, 5,485,587, Cl. 395-375.000.
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Nakahara, Kazuhiko; and Kashiwa, Takuo, 5,485,130, Cl. 333-104.000.
Niwayama, Masaki, 5,485,443, Cl. 369-54.000.
Suganuma, Seishi, 5,485,160, Cl. 342-195.000.
Takai, Kazuyoshi; Kawahara, Hironori; Saji, Masaaki; and Ono, Yukio, 5,485,580, Cl. 395-220.200.
Tera, Yoshiko; Morishima, Kouji; and Sakai, Atsushi, 5,485,051, Cl. 310-313.00B.
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Ukita, Nobuo; Nakamura, Kenji; Ohsawa, Takashi; and Hanazaki, Yasumasa, 5,485,061, Cl. 315-307.000.
Yamada, Yoshiko, 5,485,470, Cl. 371-20.500.
Mitsubishi Electric Research Laboratories, Inc.: *See*—
Bershteyn, Mikhail, 5,485,471, Cl. 371-27.000.
Golding, Andrew R.; Schabes, Yves; and Roche, Emmanuel, 5,485,372, Cl. 364-419.080.
Mitsubishi Gas Chemical Company, Inc.: *See*—
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Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
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Mitsubishi Petrochemical Company Limited: *See*—
Okuno, Hiromi; Koshina, Hizuru; and Hasegawa, Katsuaki, 5,484,669, Cl. 429-194.000.
Mitsubishi Rayon Company, Inc.: *See*—
Oda, Masaharu; Kamada, Kensuke; and Kubo, Takatoshi, 5,484,494, Cl. 148-561.000.
Mitsuboshi Belting Ltd.: *See*—
Nagai, Takaji; Sawauchi, Toshiki; and Ishihara, Mitsuhiro, 5,484,322, Cl. 451-5.000.
Nakajima, Masayoshi; Kinoshita, Takashi; Hasegawa, Arata; and Onaka, Yoshiaki, 5,484,343, Cl. 474-266.000.
Mitsugi, Tatsuya, to Mitsubishi Denki Kabushiki Kaisha. Magnetic azimuth sensor compensation apparatus for vehicle navigation system and method thereof. 5,485,385, Cl. 364-449.000.
Mitsuhashi, Hiroshi: *See*—
Ikeya, Yukinobu; Kanatani, Hirotoshi; Nakajima, Kaoru; and Mitsuhashi, Hiroshi, 5,484,595, Cl. 424-195.100.
Mitsui, Akio; and Takizawa, Hiroo, to Fuji Photo Film Co., Ltd. Silver halide photographic material and image forming method using the same. 5,484,692, Cl. 430-505.000.
Mitsui Toatsu Chemicals, Inc.: *See*—
Nagatomo, Akinori; Tamatani, Hiroaki; Ajioka, Masanobu; and Yamaguchi, Akihiro, 5,484,945, Cl. 548-520.000.
Yamaguchi, Keizaburo; Urakami, Tatsuhiro; Tanabe, Yoshimitsu; Yamazaki, Midori; Tamai, Shoji; Yamaya, Norimasa; Ohta, Masahiro; and Yamaguchi, Akihiro, 5,484,948, Cl. 548-549.000.
Yamashita, Wataru; Okawa, Yuichi; Tamai, Shoji; Matsuo, Mitsunori; Ishida, Tsutomu; Yamaguchi, Keizaburo; and Yamaguchi, Akihiro, 5,484,880, Cl. 528-353.000.
Mitsui, Yasuhiro: *See*—
Irie, Takashi; Mitsui, Yasuhiro; Mizokami, Kazuaki; and Kuriyama, Katsumi, 5,485,016, Cl. 250-288.000.
Mitsuya, Teruaki, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Fixing device, fixing method, and recording apparatus. 5,485,260, Cl. 355-290.000.
Mitutoyo Corporation: *See*—
Kiriyama, Tetsuro; and Unno, Mahito, 5,485,468, Cl. 364-560.000.
Kodato, Toru, 5,483,751, Cl. 33-811.000.
Miura, Ayako, to Canon Kabushiki Kaisha. Method and apparatus for forming a graphical display of data and for omitting a range of data within the graph. 5,485,564, Cl. 395-140.000.
Miura, Kosho; and Kitaoka, Naoki, to Nikon Corporation. Photographing information setting device for camera. 5,485,238, Cl. 354-289.120.

Miura, Okimi, to Matsushita Electric Industrial Co., Ltd. Riding situation guiding management system. 5,485,347, Cl. 364-557.000.
Miura, Takenobu: *See*—
Mizuno, Tohru; Karakama, Tatsuo; Nihei, Ryo; and Miura, Takenobu, 5,485,552, Cl. 395-99.000.
Miyachi, Takeshi; Mizusawa, Nobutoshi; Hara, Shinichi; and Maehara, Hiroshi, to Canon Kabushiki Kaisha. X-ray mask, and exposure apparatus and device production using the mask. 5,485,495, Cl. 378-34.000.
Miyamoto, Kazuhiro: *See*—
Nakai, Toshiki; Amano, Mitsuyoshi; Miyamoto, Kazuhiro; Akiba, Yoshiyuki; and Sato, Masuhiro, 5,484,291, Cl. 434-307.00A.
Miyamoto, Noriaki: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hirosaka, Keitaro; and Ogoshi, Yasuhiro, 5,484,227, Cl. 404-84.100.
Miyano, Toshiki; and Ozawa, Kazunori, to NEC Corporation. Speech coding method and system. 5,485,581, Cl. 395-2.320.
Miyao, Shuichi: *See*—
Kobayashi, Yoji; Nishina, Yasuhide; and Miyao, Shuichi, 5,483,918, Cl. 117-84.000.
Miyashita, Toshiyuki: *See*—
Reed, John C.; Miyashita, Toshiyuki; Harigai, Masayoshi; and Hanade, Motoi, 5,484,710, Cl. 435-69.100.
Miyasita, Hiromi: *See*—
Tsumura, Masahiro; Tashima, Masao; Miyasita, Hiromi; Takeda, Haruhiko; and Fujii, Tomoaki, 5,484,854, Cl. 525-486.000.
Miyata, Katsurou, to Sony Corporation. Smear compensation circuit for a solid state imager. 5,485,205, Cl. 348-248.000.
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Seto, Yoshiaki; Miyauchi, Masayuki; and Fujii, Takanobu, 5,484,993, Cl. 235-437.000.
Miyawaki, Mamoru: *See*—
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Miyawaki, Yoshikazu: *See*—
Kobayashi, Shinichi; Nakayama, Takeshi; Miyawaki, Yoshikazu; Futatsuya, Tomoshi; and Terada, Yasushi, 5,485,421, Cl. 365-189.050.
Miyazaki, Hirotaka; Sakai, Hiromitsu; and Okada, Tsuneyoshi, to Polyplastics Co., Ltd. Injection molding process using a resin reservoir containing a retractable piston. 5,484,563, Cl. 264-69.000.
Miyoshi, Hiroaki; Mizushima, Yasuhiko; Ohtsuka, Makoto; and Hihara, Hiroki, to NEC Corporation. Fault tolerant computer system comprising a fault detector in each processor module. 5,485,604, Cl. 395-182.080.
Mizokami, Kazuaki: *See*—
Irie, Takashi; Mitsui, Yasuhiro; Mizokami, Kazuaki; and Kuriyama, Katsumi, 5,485,016, Cl. 250-288.000.
Mizuishi, Kenichi: *See*—
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Mizuno, Tohru; Karakama, Tatsuo; Nihei, Ryo; and Miura, Takenobu, to Fanuc Ltd. Method of creating a robot motion program. 5,485,552, Cl. 395-99.000.
Mizusawa, Nobutoshi: *See*—
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Mizushima, Yasuhiko: *See*—
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MKS Instruments, Inc.: *See*—
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Mobil Oil Corporation: *See*—
Cannan, William L.; and Jennings, Alfred R., Jr., 5,484,231, Cl. 405-128.000.
Loveless, Frederick C.; and Liu, Wan-Li, 5,484,866, Cl. 526-340.000.
Muldowney, Gregory P.; Weiss, Ronald A.; and Wolfenbarger, Julian A., 5,484,578, Cl. 422-220.000.
Prader, Randolph D.; and Smith, Graham, 5,484,376, Cl. 493-194.000.
Mobilio, Dominic, to American Home Products Corporation. Phospholipase A_2 inhibitors. 5,484,806, Cl. 514-423.000.
Mochida, Isao; Fujiura, Ryuji; Kojima, Takashi; and Sakamoto, Hitoshi, to Mitsubishi Gas Chemical Company, Inc. Self-adhesive carbonaceous grains and process for producing high-density and high-strength carbon artifacts showing a fine mosaic texture of optical anisotropy derived from such grains. 5,484,520, Cl. 208-22.000.
Mochida, Tooru; Terakado, Yoshimitsu; and Hayashi, Hijiri, to Kabushiki Kaisha Shinkawa. Motor control circuit for a wire bonding apparatus. 5,485,063, Cl. 318-34.000.
Mochiji, Kozo: *See*—
Oizumi, Hiroaki; Ito, Masaaki; Soga, Takashi; Ogawa, Taro; Mochiji, Kozo; and Takeda, Eiji, 5,485,497, Cl. 378-84.000.
Moench, Jerry D.: *See*—
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Mogavero, Annabelle: *See*—
Blank, Robert G.; Mogavero, Annabelle; and Seabrook, Alexander, 5,484,800, Cl. 514-365.000.
Mohamed, Adel W. Penile prosthesis implant insertion instrument. 5,484,450, Cl. 606-108.000.
Molex Incorporated: *See*—
Smith, Vernon A.; Suthard, Robert A.; Urasea, Kevin J.; and Wende, Russell E., 5,483,739, Cl. 29-753.000.
Watanabe, Souichi; Takahashi, Sadao; and Kamei, Kazuaki, 5,483,738, Cl. 29-748.000.
Molitor, Lisa: *See*—
Melker, Richard J.; Gearen, Peter F.; Miller, Gary J.; DeBruyne, Michael P.; and Molitor, Lisa, 5,484,442, Cl. 606-79.000.
Molock, Frank F.; Nunez, Ivan M.; and Ford, James D., to Johnson & Johnson Vision Products, Inc. Polymeric ophthalmic lens prepared from unsaturated polyoxyethylene monomers. 5,484,863, Cl. 526-301.000.
Molus, Richard J., Sr.: *See*—
Hyatt, Craig S.; Turek, Gary A.; Molus, Richard J., Sr.; and Hostria, Emmanuel G. D., 5,485,590, Cl. 395-442.000.
Momcilovich, Mark A.: *See*—
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Momiyama, Masayoshi: *See*—
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Demange, Fabien, 5,484,142, Cl. 271-251.000.
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Buhlke, Dennis, 5,484,331, Cl. 452-134.000.
Monogram Aerospace Fasteners: *See*—
Steacel, Edgar L., 5,483,810, Cl. 72-88.000.
Monsanto Company: *See*—
Bussler, Brett H.; Hakes, Harrison R.; and Mayonado, David J., 5,484,760, Cl. 504-103.000.
South, Michael S., 5,484,761, Cl. 504-238.000.
Monta, Peter A.: *See*—
Lim, Jae S.; and Monta, Peter A., 5,485,210, Cl. 348-409.000.
Montague, P. Read: *See*—
Rubenstein, Allen I.; Galley, Joseph A.; Montague, P. Read; and Reeke, George N., 5,485,546, Cl. 395-23.000.
Montfort, David B., to Xerox Corporation. Vacuum coupling arrangement for applying vibratory motion to a flexible planar member. 5,485,258, Cl. 355-273.000.
Montoya, Wayne: *See*—
Wartenberg, Mark F.; Atkins, Harriette; Reamey, Robert H.; Welsh, Laurence; Strain, James; Wójtowicz, Janusz; Montoya, Wayne; Drzaic, Paul S.; Havens, John; Tomita, Akira; and Lau, Aldrich N. K., 5,484,552, Cl. 252-299.500.
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Vick, Ralph L., 5,484,269, Cl. 417-225.000.
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Moore Business Forms, Inc.: *See*—
Casper, Mark; and Michalovic, Stephen, 5,484,082, Cl. 221-305.000.
Chigot, Pierre, 5,484,168, Cl. 283-67.000.
Moore, Christopher P.; VanSlyke, Steven A.; and Gysling, Henry J., to Eastman Kodak Company. Internal junction organic electroluminescent device with a novel composition. 5,484,922, Cl. 546-7.000.
Moore, John E. Method for carving wood accurately, artistically, and in a time efficient manner. 5,484,495, Cl. 156-62.000.
Moore, Ronald J.: *See*—
Donlan, Fraser P., Jr.; Hare, David D.; Jones, Jeffrey D.; Miller, Thomas L.; Moore, Ronald J.; and Nelson, Richard F., 5,483,984, Cl. 134-122.00R.
Moradell, Pierre G. R.; and Jaudouin, Paul J. G., to Bertrand Faure France. Systems for adjusting vehicle seats. 5,483,853, Cl. 74-665.0GD.
Moran, Thomas P.: *See*—
Saund, Eric; Moran, Thomas P.; and Becker, Craig D., 5,485,565, Cl. 395-142.000.
Morehart, Christine L.; and Ravagnani, Frederick J., to Bridgestone Corporation. Pneumatic tire with air retention carcass. 5,484,005, Cl. 152-564.000.
Moretto, Hans-Heinrich: *See*—
Ohlendorf, Wolfgang; Batz, Michael; Moretto, Hans-Heinrich; Schmidt, Peter; and Jonas, Gerhard, 5,484,511, Cl. 203-41.000.
Morgan, Vincent J.; and Shepherd, Norman J. Overdenture bar apparatus and method for installing same. 5,484,285, Cl. 433-173.000.
Mori, Sunao: *See*—
Hanyu, Yukio; Tsuboyama, Akira; Taniguchi, Osamu; Mihara, Tadashi; Nakamura, Katsutoshi; and Mori, Sunao, 5,485,290, Cl. 359-43.000.
Mori, Takao; and Suzuki, Takayuki, to Olympus Optical Co., Ltd. Illumination optical system for endoscopes. 5,485,316, Cl. 359-708.000.
Mori, Takashi; and Ichikawa, Fumitoshi, to Kabushiki Kaisha Toshiba. Reactive power compensating apparatus and method for reducing in switching loss in steady state operation thereof. 5,485,075, Cl. 323-207.000.
Mori, Takuji: *See*—
Nakamoto, Akira; Takada, Shiro; and Mori, Takuji, 5,483,820, Cl. 73-1.00C.
Morich, Michael A.; Petropoulos, Labros; and Lampman, David A., to Picker International, Inc. Magnetic resonance insert gradient coils with parabolic returns for improved access. 5,485,087, Cl. 324-318.000.
Morii, Hiroko: *See*—
Hayashi, Kazuyuki; Otsugi, Minoru; Morii, Hiroko; and Sugita, Norio, 5,484,545, Cl. 252-62.580.

Morikawa, Fumihiro; and Saeki, Hiroaki, to Nippon Denzan Corporation. Heat sink fan. 5,484,013, Cl. 165-80.300.

Morisawa, Tahei: *See*—
Aoki, Harumi; Ogawa, Kimiaki; and Morisawa, Tahei, 5,485,201, Cl. 348-223.000.

Morishima, Kouji: *See*—
Tera, Yoshiko; Morishima, Kouji; and Sakai, Atsushi, 5,485,051, Cl. 310-313.00B.

Morishita, Hiroki; Nakamura, Hiroaki; Eki, Makoto; Makiura, Yoshinori; Otsuka, Masao; Taguchi, Kazushiro; and Ban, Keiji, to Mita Industrial Co., Ltd. Image forming apparatus including a paper feeding device having improved paper jam detection capability. 5,485,247, Cl. 355-205.000.

Moriya, Yoshihito; Takenaka, Akihiko; and Adachi, Michio, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Valve timing control device. 5,483,930, Cl. 123-90.170.

Moriyama, Makoto; Kuwano, Kouichi; and Tochizawa, Ikuo, to Nippon Paint Co., Ltd. Method for treating surface of thermoplastic resin article. 5,484,560, Cl. 264-483.000.

Moroney, Paul: *See*—
Eyer, Mark K.; and Moroney, Paul, 5,485,577, Cl. 395-188.010.

Morris, Frank J., to Texas Instruments Incorporated. Thin film resistor and method for manufacturing the same. 5,485,138, Cl. 338-306.000.

Morris, Gregory R., to Respironics, Inc. Oxygen reservoir bag for a squeeze bag resuscitator. 5,483,955, Cl. 128-205.130.

Morton, Frank S. S.: *See*—
Schurig, Gregory A.; Morton, Frank S. S.; and Stroad, Norman S., 5,484,598, Cl. 424-401.000.

Morton International, Inc.: *See*—
Clark, Randall J.; Marjanski, George C.; and Kort, Leland B., 5,483,813, Cl. 72-334.000.
Hock, Christopher; Rink, Linda M.; and Hatt, Wesley L., 5,483,896, Cl. 102-530.000.
Horn, Klaus; Lingnau, Jürgen; Schötze, Gerald; and Hinter, Werner, 5,484,688, Cl. 430-311.000.
Lewarchik, Ronald J.; Smith, Marc L.; and Sestrick, Michael R., 5,484,842, Cl. 524-608.000.
Stein, Douglas J.; Peters, Frederick M.; Kelly, James R.; and Ivan, Chad J., 5,483,845, Cl. 73-865.300.

Morton, James S.: *See*—
Huang, Pao-Ter; Cai, Chunsheng; Janik, Jaroslav; Lecko, John H.; and Morton, James S., 5,484,049, Cl. 198-460.300.

Moss, Leslie C.; Medine, Carol A.; and Naylor, William, to Transaction Technology, Inc. Home services delivery system with intelligent terminal emulator. 5,485,370, Cl. 364-408.000.

Moss, Neil: *See*—
Beaulieu, Pierre L.; Déziel, Robert; and Moss, Neil, 5,484,771, Cl. 514-18.000.

Motorola, Inc.: *See*—
Bruckert, Eugene J., 5,485,631, Cl. 455-33.300.
Cho, Jaeshin, 5,484,740, Cl. 437-40.000.
Cunningham, Howard L.; and Hanby, Robert J., 5,485,583, Cl. 395-845.000.
Diem, Darrell D., 5,485,503, Cl. 379-57.000.
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Maier, Karl, 5,484,014, Cl. 165-159.000.

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Katoh, Kenji; Inoue, Tokuta; Nohira, Hidetaka; Nakanishi, Kiyoshi; Iguchi, Satoshi; Kihara, Tetsuro; Gotoh, Masato; Asanuma, Takamitsu; Okano, Hiroshi; Harada, Jun; Takeshima, Shinichi; Sugiyama, Masahiko; Sakurai, Shigenori; Ohkubo, Kenji; and Murachi, Mikio, 5,483,795, Cl. 60-276.000.

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Hayashi, Akihiro; Yoshimura, Kazuhiro; Murakami, Yasuhisa; and Hikosaka, Yasumi, 5,485,231, Cl. 351-243.000.

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Sawachika, Isao; Muraoka, Yoshiro; and Torizaka, Masami, 5,485,172, Cl. 345-8.000.

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Gamo, Masao, 5,484,962, Cl. 174-261.000.

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Carter, Thomas G.; Horner, Douglas M.; Zimmerman, Robert L.; Pristas, Robert J.; and Murphy, James C., 5,484,079, Cl. 220-589.000.

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Kaufmann, Christine M.; Murschell, Dale L.; Nollen, Dennis A.; Saracino, Anthony R.; and Trentacosta, Joseph D., 5,484,500, Cl. 156-198.000.

Mustich, Giuseppe: *See*—
Frangi, Enrico; Bertani, Marco; Mustich, Giuseppe; and Tuccini, Gianfranco, 5,484,594, Cl. 424-195.100.

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Beck, Martin H.; Rolland, George F.; and Muszynski, John H., 5,484,072, Cl. 215-375.000.

Mutoh, Hiroto, to Seiko Instruments Inc. Sample holding apparatus. 5,484,252, Cl. 414-783.000.

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Schofield, Peter R.; Watson, John M.; Scott, Kieran F.; Rolfe, Barry G.; Djordjevic, Michael A.; Kuempel, Peter L.; and Innes, Roger W., 5,484,718, Cl. 435-172.300.

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Nachtrab, William R., Jr.: *See*—
Smitterberg, Dean W.; Nachtrab, William R., Jr.; Kadlecek, David G.; and Beutler, Bruce H., 5,483,856, Cl. 83-23.000.

Nacman, Aron, to Xerox Corporation. Multi-phase pixel clock for a raster output scanner (ROS) printer. 5,485,195, Cl. 347-247.000.

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Boivin, Robert M.; Nadarajah, Ravindran; Rude, John E.; and Zimmerman, Kenneth J., 5,483,753, Cl. 34-242.000.

Naficy, Sadeque S. Method and device for treatment of HIV infections and AIDS. 5,484,396, Cl. 604-4.000.

Nagahara, Shin: *See*—
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Nagahata, Takaya; and Kishimoto, Tokihiko, to Rohm Co. Ltd. Thermal printhead. 5,485,192, Cl. 347-203.000.

Nagai, Masaichi: *See*—
Maeda, Yoshihito; Ikuta, Isao; Andoh, Hisashi; Nagai, Masaichi; Katoh, Yoshimi; Sato, Yoshio; Tsuboi, Nobuyoshi; and Minemura, Hiroyuki, 5,484,686, Cl. 430-270.130.

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Nagano, Akihiko: *See*—
Irie, Yoshiaki; Yamada, Akira; and Nagano, Akihiko, 5,485,241, Cl. 354-410.000.

Nagao, Takashi: *See*—
Venable, Dennis L.; Campanelli, Michael R.; Fuss, William A.; Bollman, James E.; Nagao, Takashi; Yamada, Toshiya; and Yamada, Kazuya, 5,485,568, Cl. 395-155.000.

Nagaraj, Bangalore A.; Weil, Antoinette E.; and Devitt, John W., to General Electric Company. Non-degrading reflective coating system for high temperature heat shields and a method therefor. 5,484,263, Cl. 415-200.000.

Nagasaka, Junji: *See*—
Takagi, Atsushi; Nagasaka, Junji; Ogata, Yoshinori; and Takaoka, Hitoshi, 5,485,556, Cl. 395-126.000.

Nagasawa, Kenichi: *See*—
Yagisawa, Toshihiro; Ibaraki, Shoichi; Kashida, Motokazu; and Nagasawa, Kenichi, 5,485,521, Cl. 381-24.000.

Nagashima, Shingo: *See*—
Hayashi, Mitsutoshi; Fujita, Akitaka; Nagashima, Shingo; Kurashima, Minoru; Kajiyama, Makoto; and Uno, Hideki, 5,484,232, Cl. 405-184.000.

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Nagatomo, Akira: *See*—
Takayanagi, Yoshiaki; Saiso, Asao; Koizumi, Ryoichi; and Nagatomo, Akira, 5,485,182, Cl. 347-17.000.

Nagesh, Voddarahalli K.: *See*—
Dawson, Peter F., deceased; Dawson, by Shirley B., executor; Leibovitz, Jacques; and Nagesh, Voddarahalli K., 5,484,964, Cl. 174-261.000.

Naieni, Shahrokh A.; Herron, Carlisle M.; and Hauser, Thomas R., to Procter & Gamble Company, The . Esterified high lignin content cellulosic fibers. 5,484,896, Cl. 530-504.000.

Naimpally, Saiprasad V.: *See*—
Meyer, Edwin R.; Naimpally, Saiprasad V.; Phillips, Larry; and Inoue, Shuji, 5,485,215, Cl. 348-423.000.

Nakae, Masanori: *See*—
Kageyama, Bunji; Nakae, Masanori; and Yagi, Shigeo, 5,484,725, Cl. 435-197.000.

Nakagawa, Eigo; Yamada, Norikazu; and Ikeda, Chikako, to Fuji Xerox Co., Ltd. Method of driving image sensor and image sensor. 5,485,206, Cl. 348-301.000.

Nakagiri, Takashi: *See*—
Hirai, Yutaka; Osada, Yoshiyuki; Nakagiri, Takashi; and Hatanaka, Katsumori, 5,485,020, Cl. 257-59.000.

Nakagomi, Hiroshi; Arashima, Teruo; Maeoka, Kunihiko; Ohbe, Takashi; Kawai, Jun; Abe, Tsutomu; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saiso, Akio; Kimura, Makiko; Kashino, Toshio; Saikawa, Hideo; Karita, Seiichiro; and Orikasa, Tsuyoshi, to Canon Kabushiki Kaisha. Ink jet recording head and ink jet apparatus having same. 5,485,184, Cl. 347-63.000.

Nakahara, Kazuhiko; and Kashiwa, Takao, to Mitsubishi Denki Kabushiki Kaisha. Microwave switch circuit and an antenna apparatus. 5,485,130, Cl. 333-104.000.

Nakahara, Kazuyuki: *See*—
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuyuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,485,246, Cl. 355-202.000.

Nakai, Tatsuya: *See*—
Ikeda, Hayato; Nakai, Tatsuya; Yokomachi, Naoya; and Yokoi, Masanobu, 5,483,867, Cl. 92-71.000.

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Ueda, Hiroyuki; Yamada, Yasuaki; Ozawa, Toshiaki; Nakajima, Hirobaru; and Kondo, Hirootsu, 5,484,214, Cl. 400-63.000.

Nakajima, Kaoru: *See*—
Ikeya, Yukinobu; Kanatani, Hirotoshi; Nakajima, Kaoru; and Mitsuhashi, Hiroshi, 5,484,595, Cl. 424-195.100.

Nakajima, Masashi, deceased (by Michiko Nakajima, heir): *See*—
Tsukashima, Keiichi; Nakajima, Masashi, deceased; Fujimaru, Masayoshi; and Suzuki, Kenji, 5,484,949, Cl. 549-13.000.

Nakajima, Massyoshi; Kinoshita, Takashi; Hasegawa, Arata; and Osaka, Yoshiaki, to Mitsuboshi Belting Ltd. Power transmission belt. 5,484,343, Cl. 474-266.000.

Nakajima, Michiko, heir: *See*—
Tsukashima, Keiichi; Nakajima, Masashi, deceased; Fujimaru, Masayoshi; and Suzuki, Kenji, 5,484,949, Cl. 549-13.000.

Nakajima, Nobuyuki, to Canon Kabushiki Kaisha. Character processing method and apparatus with brightness correction based output size. 5,485,278, Cl. 358-296.000.

Nakajo, Yukihisa, to Yamaha Corporation. Method and device for recording data on an optical disc. 5,485,449, Cl. 369-116.000.

Nakakita, Yasukazu: *See*—
Kado, Hisao; and Nakakita, Yasukazu, 5,484,715, Cl. 435-103.000.

Nakamoto, Akira; Takada, Shiro; and Mori, Takuji, to Kubota Corporation. Method for zero correction in torque sensor. 5,483,820, Cl. 73-1.00C.

Nakamura, Akira: *See*—
Kita, Hideki; Nakamura, Akira; Fukunaga, Yasuyuki; and Katafuchi, Toshinobu, 5,485,251, Cl. 355-215.000.

Nakamura, Hiroaki: *See*—
Morishita, Hiroki; Nakamura, Hiroaki; Eki, Makoto; Makiura, Yoshinori; Otsuka, Masao; Taguchi, Kazushiro; and Ban, Keiji, 5,485,247, Cl. 355-205.000.

Nakamura, Joji: *See—*
Suzuki, Fumio; Shimada, Junichi; Koike, Nobuaki; Nakamura, Joji; Shioazaki, Shizuo; Ichikawa, Shunji; Ishii, Akio; and Nonaka, Hiromi, 5,484,920, Cl. 544-268.000.

Nakamura, Katsutoshi: *See—*
Hanyu, Yukio; Tsuboyama, Akira; Taniguchi, Osamu; Mihara, Tadashi; Nakamura, Katsutoshi; and Mori, Sunao, 5,485,290, Cl. 359-43.000.

Nakamura, Kazunari; Matsunaka, Kenji; and Watanabe, Akira, to Olympus Optical Co., Ltd. Color misregistration easing system which corrects on a pixel or block basis only when necessary. 5,485,203, Cl. 348-263.000.

Nakamura, Kazushige: *See—*
Kashimura, Noboru; Sakoh, Harumi; Nakamura, Kazushige; Amamiya, Shoji; Kasuya, Takashige; Tsuji, Haruyuki; Yamagami, Masaaki; and Ikezue, Tatsuya, 5,485,250, Cl. 355-211.000.

Nakamura, Kenji: *See—*
Ukita, Nobuo; Nakamura, Kenji; Ohsawa, Takashi; and Hanazaki, Yasumasa, 5,485,061, Cl. 315-307.000.

Nakamura, Koichi: *See—*
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Nakamura, Koki: *See—*
Tsukahara, Jiro; Hioki, Takanori; and Nakamura, Koki, 5,484,683, Cl. 430-203.000.

Nakamura, Kozo; Yokonuka, Yasushi; Kozima, Yasuyuki; Takaoka, Kazuhiko; Yamamoto, Kagehiro; and Asai, Takeshi, to Hitachi, Ltd.; and Hitachi Engineering Co., Ltd. High-speed image signal processing system. 5,485,287, Cl. 358-426.000.

Nakamura, Kyoji: *See—*
Susaki, Toshikazu; and Nakamura, Kyoji, 5,484,026, Cl. 173-4.000.

Nakamura, Masanari: *See—*
Gotoda, Katsuhiko; Inada, Hisanobu; Shoji, Susumu; Shiba, Katsuya; Tsukuda, Yasunori; and Nakamura, Masanari, 5,485,244, Cl. 355-200.000.

Nakamura, Shunichiro: *See—*
Kashima, Rika; Nakamura, Shunichiro; Minemura, Harumi; Shiono, Katsumi; Higuchi, Masahiro; Yoshimori, Mikio; and Hayakawa, Takayuki, 5,485,598, Cl. 395-182.040.

Nakamura, Takaji, to Omron Corporation. Interference device for discriminating a certain oscillation. 5,484,968, Cl. 181-122.000.

Nakamuta, Minoru: *See—*
Katakura, Takaaki; Mouri, Hidemasa; and Nakamuta, Minoru, 5,484,572, Cl. 422-101.000.

Nakane, Keiichi: *See—*
Nonaka, Naomichi; Nakane, Keiichi; Kuwabara, Tadashi; Koreeda, Hiroyuki; and Kuwamoto, Hideki, 5,485,544, Cl. 395-12.000.

Nakanishi, Kiyoshi: *See—*
Katoh, Kenji; Inoue, Tokuta; Nohira, Hidetaka; Nakanishi, Kiyoshi; Iguchi, Satoshi; Kihara, Tetsuro; Gotoh, Masato; Asasuma, Takamitsu; Okano, Hiroshi; Harada, Jun; Takeshima, Shinichi; Sugiyama, Masahiko; Sakurai, Shigenori; Ohkubo, Kenji; and Murachi, Mikio, 5,483,795, Cl. 60-276.000.

Nakano, Satoshi: *See—*
Sato, Osamu; Nakano, Satoshi; Hirai, Isamu; Kitazawa, Toshiyuki; Sensui, Takayuki; Yamamoto, Masato; Yamanaka, Toshimasa; Shishikura, Takenao; and Takahashi, Akio, 5,485,242, Cl. 354-442.000.

Nakatani, Seiichi; Hatakeyama, Akihito; Kawakita, Kouji; Sogou, Hirishi; Ogawa, Tatsuo; and Kojima, Tamao, to Matsushita Electric Industrial Co., Ltd. Connecting member of a circuit substrate and method of manufacturing multilayer circuit substrates by using the same. 5,484,647, Cl. 428-209.000.

Nakatsugawa, Naoki: *See—*
Ikeda, Akira; Tanimura, Yasuhiro; Nakatsugawa, Naoki; Tanaka, Masaaki; Konishi, Hiroshige; Hiraoka, Toshie; Nishio, Shinji; and Kawahira, Hiroto, 5,484,570, Cl. 422-1.000.

Nakauchi, Norio: *See—*
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Nakayama, Takeshi: *See—*
Kobayashi, Shinichi; Nakayama, Takeshi; Miyawaki, Yoshikazu; Futatsuya, Tomoshi; and Terada, Yasushi, 5,485,421, Cl. 365-189.050.

Nakayama, Toshiki: *See—*
Suzuki, Kenji; Miyawaki, Mamoru; Akashi, Akira; and Nakayama, Toshiki, 5,485,004, Cl. 250-208.200.

Nakazawa, Yasushi; Kitamura, Katsuhiro; Oku, Yasunori; and Enomoto, Masatoshi, to Honda Giken Kogyo Kabushiki Kaisha. Method of cutting a hollow metallic material. 5,484,981, Cl. 219-121.720.

Nakazono, Yoshiharu: *See—*
Shibayama, Takao; Maekawa, Keiichiro; Uzuyama, Kimitake; Maruo, Masaru; Fukutome, Akihito; Nakazono, Yoshiharu; and Matsumoto, Yoshimichi, 5,483,823, Cl. 73-118.100.

Nalco Canada Inc.: *See—*
Chung, Daniel K., 5,484,834, Cl. 524-446.000.

Nally, Debora E., to Siemens Automotive L.P. Fuel injector having novel multiple orifice disk members. 5,484,108, Cl. 239-553.300.

Nam, Jung H., to Samsung Electronics Co., Ltd. CCD image sensor for normal and mirror images. 5,485,207, Cl. 348-321.000.

Namba, Toshio; Osaki, Masanobu; and Furuya, Junichi, to Unisia Jecs Corporation. Apparatus and a method for controlling fuel supply to engine. 5,483,940, Cl. 123-497.000.

Namic Caribe, Inc.: *See—*
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Menchetti, Robert J.; and Kessler, Matthew J., 5,483,777, Cl. 52-481.100.

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Tokita, Shigeki; Okabayashi, Makoto; Amano, Takashi; and Nishida, Izao, 5,484,490, Cl. 136-236.100.

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Bergemont, Albert, 5,484,741, Cl. 437-43.000.
Lorenz, Perry S., 5,485,122, Cl. 330-252.000.

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Sezai, Toshihiro, 5,485,162, Cl. 342-378.000.

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Franke-Polz, Eric M., 5,485,387, Cl. 364-472.000.

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Moss, Leslie C.; Medine, Carol A.; and Naylor, William, 5,485,370, Cl. 364-408.000.

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Velluccí, Dominic J., Jr.; Mason, Charles R.; Cochran, Stuart A.; Coleman, Edward C.; and Nayyar, Dalip K., 5,484,616, Cl. 426-242.000.

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Lindacher, Joseph M.; and Ames, Stephen J., 5,484,990, Cl. 235-467.000.

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Aramaki, Toshiya, 5,485,457, Cl. 370-60.000.
Azuma, Kunihiko, 5,485,128, Cl. 331-135.000.
Baba, Kenji, 5,485,478, Cl. 372-37.000.
Chiba, Kenichiro, 5,485,489, Cl. 375-344.000.
Chikaki, Shinichi, 5,483,717, Cl. 15-3.000.
Ito, Tomokazu; and Sugiyama, Akihiko, 5,485,113, Cl. 327-234.000.
Kimura, Katsuji, 5,485,119, Cl. 330-253.000.
Kuboniwa, Osamu, 5,485,413, Cl. 364-760.000.
Kuroda, Yasuaki, 5,485,591, Cl. 395-800.000.
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Ogawa, Sumio, 5,485,427, Cl. 365-210.000.
Shibuya, Akinobu; and Kimura, Mitsuru, 5,485,352, Cl. 361-771.000.
Taniji, Yukio, 5,485,204, Cl. 348-264.000.
Tanimoto, Susumu, 5,485,111, Cl. 327-143.000.
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King, Leonard T.; Nelmida, Leo; and Estrada, Frank, 5,484,203, Cl. 366-337.000.

Nelson, Art J.: *See—*
Hasoon, Falah S.; and Nelson, Art J., 5,484,736, Cl. 437-4.000.

Nelson, Carl T.: *See—*
Dobkin, Robert C.; Nelson, Carl T.; and O'Neill, Dennis P., 5,485,109, Cl. 327-77.000.

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Stark, John G.; Lund, Richard G.; Nelson, Cecil H.; and Rogers, Brynn D., 5,484,389, Cl. 601-34.000.

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Saravia, Heber; Jones, Christopher S.; and Nelson, Charles L., 5,484,402, Cl. 604-35.000.

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Donlan, Fraser P., Jr.; Hare, David D.; Jones, Jeffrey D.; Miller, Thomas L.; Moore, Ronald J.; and Nelson, Richard F., 5,483,984, Cl. 134-122.00R.

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Assar, Mahmud; Estakhri, Petro; Nemazie, Siamack; and Mozaffari, Mahmood, 5,485,595, Cl. 395-430.000.

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Nettleton, Harry W.: *See—*
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Neu Dynamics Corp.: *See—*
Neu, H. Karl, 5,484,274, Cl. 425-116.000.

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Esch, Heinz; Kuhlmann, Robert; Neumueller, Mattias; Otto, Karin; and Rausch, Ralf, 5,484,581, Cl. 423-335.000.

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Albaugh, Pamela; and Hutchison, Alan, 5,484,944, Cl. 546-171.000.

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Rubenstein, Allen L.; Galley, Joseph A.; Montague, P. Read; and Reeke, George N., 5,485,546, Cl. 395-23.000.

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Lee-Huang, Sylvia; Huang, Philip L.; Nara, Peter L.; Chen, Hao-Chia; Kung, Hsiang-fu; Huang, Peter; Huang, Henry I.; and Huang, Paul L., 5,484,889, Cl. 530-379.000.

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Mazzoleni, Giancarlo; and Baker, Gordon M., 5,483,821, Cl. 73-82.000.

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Lai, Michael; Ng, John L.; and Shaw, Jin-Fan, 5,485,619, Cl. 395-700.000.

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Abe, Masahiro; Nanataki, Tsutomu; and Yano, Shinsuke, 5,485,132, Cl. 333-219.000.
Goto, Daisaku, 5,484,564, Cl. 264-219.000.

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Hills, Robert R.; and Nichols, Henry R., 5,484,988, Cl. 235-379.000.

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Raben, Nina; Nichols, Ralph; Plotz, Paul; and Leff, Richard, 5,484,703, Cl. 435-7.400.

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Thomas, Daniel L.; Hoover, John W.; and Marracino, Charles R., 5,484,262, Cl. 415-178.000.

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Hayashi, Akihiro; Yoshimura, Kazuhiro; Murakami, Yasuhisa; and Hikosaka, Yasumi, 5,485,231, Cl. 351-243.000.

Nield, James M., to Diamond Automations, Inc. Method and apparatus for weighting and breaking eggs. 5,483,872, Cl. 99-568.000.

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Mizuno, Tohru; Karakama, Tatsuo; Nihei, Ryo; and Miura, Takenobu, 5,485,552, Cl. 395-99.000.

Nihon Nohyaku Co., Ltd.: *See—*
Ikeda, Kenichi; Ueyama, Shin'ichi; Endo, Katsutoshi; and Kato, Chiaki, 5,484,934, Cl. 548-213.000.

Niigata Engineering Co., Ltd.: *See—*
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,484,227, Cl. 404-84.100.

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Nijholt, Geert; and Persoon, Eric H. J., to U.S. Philips Corporation. Pipeline system which pauses processing of already input data during dead time intervals at the system input. 5,485,603, Cl. 395-550.000.

Nikam, Sham S.: *See—*
Goel, Om P.; and Nikam, Sham S., 5,484,930, Cl. 546-308.000.

Nikki-Universal Co., Ltd.: *See—*
Isomae, Kazuro, 5,484,756, Cl. 502-314.000.

Nikko Co., Ltd.: *See—*
Ishimoto, Zenichi, 5,484,321, Cl. 446-433.000.

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Kusada, Yosuke, 5,485,003, Cl. 250-201.800.
Kusaka, Yosuke, 5,485,001, Cl. 250-201.800.
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Miura, Koeho; and Kitaoka, Naoki, 5,485,238, Cl. 354-289.120.
Sato, Haruo, 5,485,314, Cl. 359-691.000.
Susaki, Toshikazu; and Nakamura, Kyoji, 5,484,026, Cl. 173-4.000.
Tsuru, Hiroyuki; Sato, Shigemasa; and Terunuma, Hiroshi, 5,485,240, Cl. 354-402.000.
Yokonuma, Norikazu; Kazami, Kazuyuki; Hibino, Hideo; and Yamazaki, Youichi, 5,485,233, Cl. 354-106.000.

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Nippon Densan Corporation: *See—*
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Nippon Kayaku Kabushiki Kaisha: *See—*
Tatee, Tochiro; Shiozawa, Akira; Yamamoto, Hirotaka; Ichikawa, Yuhichiro; and Narita, Aya, 5,484,954, Cl. 549-389.000.

Nippon Paint Co., Ltd.: *See—*
Moriyama, Makoto; Kuwano, Kouichi; and Tochizawa, Ikuo, 5,484,560, Cl. 264-483.000.

Nippon Paper Industries Co., Ltd.: *See—*
Takano, Toshiyuki; and Satake, Toshimi, 5,484,689, Cl. 430-341.000.

Nippon Road Co., Ltd., The: *See—*
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,484,227, Cl. 404-84.100.

Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See—*
Kodama, Kazuo; Tsuda, Toru; and Takahashi, Kazutomo, 5,484,841, Cl. 524-589.000.

Nippon Soda Co., Ltd.: *See—*
Tsukashima, Keiichi; Nakajima, Masashi, deceased; Fujimaru, Masayoshi; and Suzuki, Kenji, 5,484,949, Cl. 549-13.000.

Nippon Telegraph and Telephone Corporation: *See—*
Yokoyama, Haruki; and Shinohara, Masanori, 5,483,919, Cl. 117-119.000.

Nippondenso Co., Ltd.: *See*—
Hibino, Katsuhiko, 5,485,155, Cl. 342-70.000.
Moriya, Yoshihito; Takenaka, Akihiko; and Adachi, Michio, 5,483,930, Cl. 123-90.170.

Nisca Corporation: *See*—
Yamashita, Masashi; Ohno, Norihiro; Tohyama, Tetsuyuki; Kubo, Eiichi; Komatsu, Takahiko; and Kouno, Yoshinou, 5,484,141, Cl. 271-227.000.

Nishida, Akinori: *See*—
Matsumoto, Shoji; Matsuda, Masanori; Goto, Eiji; Nishida, Akinori; and Hori, Takeshi, 5,485,344, Cl. 361-225.000.

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Tokita, Shigeki; Okabayashi, Makoto; Amano, Takashi; and Nishida, Isao, 5,484,490, Cl. 136-236.100.

Nishida, Sumio; and Sanemitsu, Yuzuru, to Sumitomo Chemical Company, Limited. Process for production of fluoroalkane carboxamide derivatives. 5,484,933, Cl. 548-195.000.

Nishii, Sumio: *See*—
Amemiya, Shinichi; Jibiki, Takao; and Nishii, Sumio, 5,483,964, Cl. 128-661.090.

Nishiie, Katsuhiko; and Kubono, Akira, to Usui Kokusai Sangyo Kaisha Ltd. Process for bending a metal tube to a small radius of curvature and a bent metal tube. 5,483,809, Cl. 72-150.000.

Nishikawa, Hiroshi: *See*—
Aoyama, Yasutada; Takada, Hiroyuki; Hayashi, Koichi; Chaya, Norio; and Nishikawa, Hiroshi, 5,485,218, Cl. 348-447.000.

Nishikawa, Yoshikazu: *See*—
Mabuchi, Toshiaki; and Nishikawa, Yoshikazu, 5,485,208, Cl. 348-335.000.

Nishimoto, Keiji: *See*—
Kagata, Hiroshi; Kato, Junichi; Inoue, Tatsuya; Kameyama, Ichiro; and Nishimoto, Keiji, 5,484,753, Cl. 501-136.000.

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Nishimoto, Yoshifumi: *See*—
Kimura, Atsushi; Nishimoto, Yoshifumi; Tanaka, Hideki; Seki, Hiroyuki; Harada, Toshiaki; Okamura, Yoshitaka; and Yamamoto, Shinji, 5,484,216, Cl. 400-319.000.

Nishimoto, Yoshitaka: *See*—
Tsuchida, Takayasu; Murakami, Yutaka; Nishimoto, Yoshitaka; and Kotani, Takuya, 5,484,714, Cl. 435-100.000.

Nishimoto, Yuko: *See*—
Maeda, Kazuo; Tokumasu, Noboru; and Nishimoto, Yuko, 5,484,749, Cl. 437-238.000.

Nishina, Yasuhide: *See*—
Kobayashi, Yoji; Nishina, Yasuhide; and Miyao, Shuichi, 5,483,918, Cl. 117-84.000.

Nishio, Shinji: *See*—
Ikeda, Akira; Tanimura, Yasuhiro; Nakatsugawa, Naoki; Tanaka, Masaaki; Konishi, Hiroshige; Hiraoka, Toshie; Nishio, Shinji; and Kawahira, Hiroto, 5,484,570, Cl. 422-1.000.

Nishio, Takeyoshi: *See*—
Abe, Hiroomi; Fujii, Takeshi; Yamamoto, Masashi; Nishio, Takeyoshi; and Nomura, Takao, 5,484,824, Cl. 523-436.000.

Nishioka, Kiyokazu: *See*—
Kurokawa, Yoshiki; Nishioka, Kiyokazu; Kamimaki, Hideki; and Atarashi, Yoshifumi, 5,485,623, Cl. 395-182.200.

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Nissan Motor Co., Ltd.: *See*—
Fujii, Kazuo; Takahashi, Isao; Hara, Junichiro; and Matsuoka, Takayoshi, 5,483,805, Cl. 62-158.000.
Itatsu, Makoto, 5,484,975, Cl. 219-86.700.
Kobayashi, Masato; Matsuno, Osamu; Kishimoto, Youichi; and Kawamura, Katsuhiko, 5,483,945, Cl. 123-674.000.
Oike, Mitsuru; Kusano, Masahiro; and Sato, Osamu, 5,485,376, Cl. 364-424.050.
Sasaki, Mitsuo; and Hirai, Toshiro, 5,485,377, Cl. 364-424.050.

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Murata, Kenji; Sonohara, Kazuo; Ito, Susumu; Ishizu, Kyoji; and Emura, Tokuo, 5,485,394, Cl. 364-483.000.

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Kashima, Rika; Nakamura, Shunichiro; Minemura, Harumi; Shiono, Katsumi; Higuchi, Masahiro; Yoshimori, Mikio; and Hayakawa, Takayuki, 5,485,598, Cl. 395-182.040.

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Nix, James L.; Ruse, Guy F.; Reinholz, Paul D.; Helms, Anthony C.; and O'Connor, Daniel J., to Quantum Peripherals Colorado, Inc. Magnetoresistive device and method having improved barkhausen noise suppression. 5,485,334, Cl. 360-113.000.

Nobes, Geoffrey A. R.: *See*—
Breton, Marcel P.; and Nobes, Geoffrey A. R., 5,484,475, Cl. 106-20.00C.

Nobikoba, L. M.: *See*—
Cho, Won T.; Kim, Wan S.; Kim, Myung K.; Park, Jin K.; Kim, Hak R.; Rhee, Sang K.; Domracheva, A. G.; Panichkina, T. B.; Saburoba, L. A.; Nobikoba, L. M.; and Bartochevichi, Y. E., 5,484,712, Cl. 435-7K.000.

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Noguchi, Hiromichi; Asai, Naohito; and Suga, Yuko, to Canon Kabushiki Kaisha. Photopolymerizable adhesive for preventing peeling and separation at a joint section between first and second members of an ink jet printing head and a method of using the same. 5,484,823, Cl. 522-92.000.

Noguchi, Koji: *See*—
Goto, Ryuji; and Noguchi, Koji, 5,484,680, Cl. 430-122.000.

Noguchi, Masato: *See*—
Kishi, Yoshio; Noshiro, Teruhito; Noguchi, Masato; and Takahashi, Hiroaki, 5,485,448, Cl. 369-99.000.

Nogueras, Jose L. A., to Fabricas Lucia Antonio Betere, S.A. (Flabesa). Method and apparatus for sewing the perimeter seam of an upholstered or trimmed article. 5,483,909, Cl. 112-475.040.

Nohira, Hidetaka: *See*—
Katoh, Kenji; Inoue, Tokuta; Nohira, Hidetaka; Nakanishi, Kiyoshi; Iguchi, Satoshi; Kihara, Tetsuro; Gotoh, Masato; Asanuma, Takamitsu; Okano, Hiroshi; Harada, Jun; Takeshima, Shinichi; Sugiyama, Masahiko; Sakurai, Shigenori; Ohkubo, Kenji; and Murachi, Mikio, 5,483,795, Cl. 60-276.000.

Nokia Technology GmbH: *See*—
Kuusama, Juha; and Mäkivirta, Aki, 5,485,524, Cl. 381-94.000.

Nokia Telecommunications Oy: *See*—
Paavonen, Tapio, 5,485,635, Cl. 455-54.100.

Nolan, Timothy F.; and Stubbs, Brian M., to Hercules Incorporated. Process for the manufacture of alkyl ketene dimer. 5,484,952, Cl. 549-329.000.

Nolle, Wolfgang, to Union Special GmbH. Blowing device on a sewing machine for uncurling the edge of sewing material. 5,483,908, Cl. 112-150.000.

Nollen, Dennis A.: *See*—
Kaufmann, Christine M.; Murschell, Dale L.; Nollen, Dennis A.; Saracino, Anthony R.; and Trentacosta, Joseph D., 5,484,500, Cl. 156-198.000.

Nomura, Hiroshi; Sato, Norio; and Aoki, Nobuaki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Backlash removing mechanism for zoom lens assembly. 5,485,315, Cl. 359-701.000.

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Abe, Hiroomi; Fujii, Takeshi; Yamamoto, Masashi; Nishio, Takeyoshi; and Nomura, Takao, 5,484,824, Cl. 523-436.000.

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Nonaka, Hiromi: *See*—
Suzuki, Fumio; Shimada, Junichi; Koike, Nobuaki; Nakamura, Joji; Shioazaki, Shizuo; Ichikawa, Shunji; Ishii, Akio; and Nonaka, Hiromi, 5,484,920, Cl. 544-268.000.

Nonaka, Naomichi; Nakane, Keiichi; Kuwabara, Tadashi; Koreeda, Hiroyuki; and Kuwamoeo, Hideki, to Hitachi, Ltd. History sensitive help control method and system. 5,485,544, Cl. 395-12.000.

Nonoyama, Takao: *See*—
Ohkawa, Hiroshi; and Nonoyama, Takao, 5,483,913, Cl. 114-264.000.

Norand Corporation: *See*—
Sherman, Richard A.; Schultz, Darald R.; Salvay, Steven H.; Jaeger, Robert B.; Davis, Patrick H.; and Hanson, George E., 5,484,991, Cl. 235-472.000.

Nordeng, Arnold E., to Fluke Corporation. Impedance synthesizer. 5,485,115, Cl. 327-363.000.

Nordica S.p.A.: *See*—
Gorza, Roberto; Baggio, Giorgio; and Battistella, Mirco, 5,483,758, Cl. 36-119.000.

Norman, Daniel P.; Guidotti, Richard A.; and Saitta, David A., to BellSouth Corporation. Apparatus and method for remotely initiating operation of a cellular telephone. 5,485,505, Cl. 379-58.000.

Norman, Mitch E.: *See*—
McInerney, James M.; and Norman, Mitch E., 5,484,164, Cl. 280-112.000.

Norris, Andrew: *See*—
Johnson, David L.; Kostek, Sergio; and Norris, Andrew, 5,485,431, Cl. 367-30.000.

North American Philips Corporation: *See*—
Wong, Stephen; Mukherjee, Satyendranath; and Majid, Naveed, 5,485,292, Cl. 327-56.000.

Northeast Orthotics and Prosthetics: *See*—
McCoy, D. Barry, 5,484,393, Cl. 602-6.000.

Northern Telecom Limited: *See*—
Baker, Brian N., 5,485,593, Cl. 395-200.080.
Jones, Kevan P., 5,485,299, Cl. 359-179.000.
Knappe, Michael E.; and Shelton, Brian R., 5,485,514, Cl. 379-387.000.

Northwestern University: *See*—
Davis, Lyman E.; and Anderson, Byron E., 5,484,735, Cl. 436-548.000.

Norton Chemical Process Products Corp.: *See*—
Szymanski, Thomas; Rolando, Steven A.; Gough, David M.; and Bennett, Gerald S., 5,484,757, Cl. 502-439.000.

Norwood, Richard L.: *See*—
Blase, Michael; Kelly, Luke E.; Meek, Steven K.; Langeland, Brenda K.; and Norwood, Richard L., 5,483,726, Cl. 15-321.000.

Nosal, Roger: *See*—
Abood, Norman A.; Flynn, Daniel L.; Laneman, Scott A.; Nosal, Roger; and Schretzman, Lori A., 5,484,946, Cl. 548-543.000.

Nose, Toshiro: *See*—

Inoue, Noburiro; Sasaki, Katsunari; Nose, Toshiro; and Hatate, Yoshio, 5,485,193, Cl. 347-206.000.

Noshiro, Teruhito: *See*—
Kishi, Yoshio; Noshiro, Teruhito; Noguchi, Masato; and Takahashi, Hiroaki, 5,485,448, Cl. 369-99.000.

Nova Scotia Research Foundation: *See*—
Oliver, John B., 5,484,133, Cl. 251-14.000.

Novella, Marco: *See*—
Corain, Luciano; Novella, Marco; and Bortoli, Giulio, 5,483,997, Cl. 139-194.000.

Novo Nordisk A/S: *See*—
Lau, Jesper; Knutsen, Lars J. S.; Sheardown, Malcolm; and Hansen, Anker J., 5,484,774, Cl. 514-46.000.

Nowaczyk, Kazimierz: *See*—
Lakowicz, Joseph R.; Berndt, Klaus W.; Nowaczyk, Kazimierz; Szmacinski, Henryk; and Johnson, Michael L., 5,485,530, Cl. 382-191.000.

Nowak, Edward J.: *See*—
Bertsch, John E.; Mann, Randy W.; Nowak, Edward J.; and Tong, Minh H., 5,485,095, Cl. 324-537.000.

Nowak, Manfred: *See*—
Kohlpaintner, George; Kugler, Kurt; Radmanic, Stjepan; Wittal, Roland; and Nowak, Manfred, 5,484,184, Cl. 296-217.000.

Nowotarski, Mark S.: *See*—
Gittens, Timothy E.; Nowotarski, Mark S.; and Digiacamo, Frank A., 5,484,973, Cl. 219-74.000.

Nozaki, Hidetoshi: *See*—
Ihara, Hisanori; and Nozaki, Hidetoshi, 5,484,658, Cl. 428-428.000.

Nunes, James A.; and Cowan, Michael G. Recumbent tricycle apparatus with differential brake steering. 5,484,152, Cl. 280-282.000.

Nunez, Ivan M.: *See*—
Molock, Frank F.; Nunez, Ivan M.; and Ford, James D., 5,484,863, Cl. 526-301.000.

Nuovopignone - Industrie Meccaniche e Fonderia S.p.A.: *See*—
Corain, Luciano; Novella, Marco; and Bortoli, Giulio, 5,483,997, Cl. 139-194.000.

Nutbrown, Bruce: *See*—
Dobbins, Kurt; Andlauer, Phil; Oliver, Chris; Parker, Tom; Grimes, Andy; Nutbrown, Bruce; Hullette, Dan; Dev, Roger; and Jeffords, Jason, 5,485,455, Cl. 370-60.000.

NYX, Inc.: *See*—
Sandhu, Chain S.; and Lilov, Lev, 5,484,178, Cl. 292-173.000.

Oakes, Thomas R.: *See*—
Hei, Robert D.; Oakes, Thomas R.; and Wei, Guang-jong J., 5,484,549, Cl. 252-103.000.

Oates, Daniel E.: *See*—
Dionne, Gerald F.; and Oates, Daniel E., 5,484,765, Cl. 505-210.000.

Obayomi, Jacob S.: *See*—
Kotwal, Rangnath A.; Obayomi, Jacob S.; Ruzicka, Henry J.; and Waterman, William F., 5,483,791, Cl. 60-39.310.

O'Brien, Robert N., to R & O Mining Processing Ltd. Hydrometallurical recovery of copper and zinc from complex sulfide ores. 5,484,579, Cl. 423-36.000.

Occidental Chemical Corporation: *See*—
Buchanan, Robert A.; Stults, Jeffrey S.; and Spohn, Ronald F., 5,484,879, Cl. 528-353.000.

Ochiai, Tetsuo: *See*—
Kikuchi, Yasushi; Ochiai, Tetsuo; Shirokawa, Takashi; and Fujii, Hajime, 5,484,836, Cl. 524-495.000.

O'Clair, Chester R.: *See*—
Greskovich, Charles D.; Minnear, William P.; O'Clair, Chester R.; Gurmea, Erdogan O.; and Riedner, Robert J., 5,484,750, Cl. 501-86.000.

O'Connor, Daniel J.: *See*—
Nix, James L.; Ruse, Guy F.; Reinholz, Paul D.; Helms, Anthony C.; and O'Connor, Daniel J., 5,485,334, Cl. 360-113.000.

Octamer, Incorporated: *See*—
Kua, Ernest; and Meadekeyev, Jerome, 5,484,951, Cl. 549-285.000.

Oda, Masaharu; Kamada, Kensuke; and Kubo, Takatoshi, to Mitsubishi Rayon Company, Inc. Amorphous alloy and method for its production. 5,484,494, Cl. 148-561.000.

Oda, Masataka: *See*—
Kuroda, Masayoshi; and Oda, Masataka, 5,485,261, Cl. 355-319.000.

Odagawa, Kazuyoshi: *See*—
Higeta, Akira; Odagawa, Kazuyoshi; and Sasaki, Shinichi, 5,485,249, Cl. 355-210.000.

Odashima, Satoshi; and Yoshida, Kazuyoshi, to Shin-Etsu Polymer Co., Ltd. Heat-sealable connector and method for the preparation thereof. 5,484,648, Cl. 428-209.000.

Odebrecht, Wolfgang: *See*—
Abersfelder, Guenter; Grantz, Helmut; and Odebrecht, Wolfgang, 5,483,807, Cl. 62-435.000.

O'Donnell, Thomas J., to Sealy, Inc. Bedding system display assembly. 5,484,195, Cl. 312-125.000.

Oechsle, Dietmar; Baur, Wolfgang; and Gottkehaskamp, Ludger, to Schenk-Filterbau Gesellschaft mit beschränkter Haftung. Method of manufacturing stabilizing and/or filtering aids for use in the processing of liquids, especially beverages. 5,484,620, Cl. 426-422.000.

Oertli, Gustav, to Sulzer Ruti AG. Device for coupling and uncoupling loom heald shafts. 5,483,995, Cl. 139-57.000.

Offen, Walter W.: *See*—
Bodick, Neil C.; Bymaster, Franklin P.; Offen, Walter W.; and Shannon, Harlan E., 5,484,794, Cl. 514-305.000.

Ogaki, Takeshi; and Takeda, Yoshiko, to Kabushiki Kaisha Toshiba. System for specifying a duty by means of a handwritten sheet with a cipher function. 5,485,368, Cl. 364-191.000.

Ogata, Yoshinori: *See*—
Takagi, Atsushi; Nagasaka, Junji; Ogata, Yoshinori; and Takaoka, Hitoshi, 5,485,556, Cl. 395-126.000.

Ogawa, Atsushi; Ozawa, Yoshio; Hirata, Toshimichi; Kawai, Tsuyoshi; Fukushima, Kiyoshi; and Toyoshima, Masashi, to Sanyo Electric Co., Ltd. Defrost control apparatus for refrigerator. 5,483,804, Cl. 62-153.000.

Ogawa, Hiroshi. Musical instrument and a method of applying a low impedance amplifer to a musical instrument. 5,484,958, Cl. 84-731.000.

Ogawa, Kazuo: *See*—
Knaob, Yoshiaki; Tachiiri, Yoshikazu; and Ogawa, Kazuo, 5,484,162, Cl. 280-711.000

Ogawa, Ken; Oshima, Yoshikazu; Ehara, Yasunori; Machida, Kei; and Kato, Atsushi, to Honda Giken Kogyo Kabushiki Kaisha. Control system for internal combustion engines. 5,483,935, Cl. 123-421.000.

Ogawa, Ken: *See*—
Oshima, Yoshikazu; and Ogawa, Ken, 5,483,938, Cl. 123-478.000.

Ogawa, Kensuke; and Allam, Jeremy, to Hitachi, Ltd. Nanofabricated device for multiple-state logic operation. 5,485,018, Cl. 257-24.000.

Ogawa, Kimiaki: *See*—
Aoki, Harumi; Ogawa, Kimiaki; and Morisawa, Tihei, 5,485,201, Cl. 348-223.000.

Ogawa, Sumio, to NEC Corporation. Dynamic random access memory device equipped with dummy cells implemented by enhancement type transistors. 5,485,427, Cl. 365-210.000.

Ogawa, Taro: *See*—
Oizumi, Hiroaki; Ito, Masaaki; Soga, Takashi; Ogawa, Taro; Mochiji, Kozo; and Takeda, Eiji, 5,485,497, Cl. 378-84.000.

Ogawa, Tatsuo: *See*—
Nakatani, Seiichi; Hatakeyama, Akihito; Kawakita, Kouji; Sogou, Hirishi; Ogawa, Tatsuo; and Kojima, Tamao, 5,484,647, Cl. 428-209.000.

Ogawa, Tetsuo: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,484,227, Cl. 404-84.100.

Ogino, Kazumasa; Shimamura, Haruo; Tomisawa, Kazuyuki; Urushizaki, Fumio; Nemoto, Masami; and Yoshida, Tuguchika, to Taisho Pharmaceutical, Co., Ltd. Attracting and ingestion-stimulating agent for cockroach. 5,484,588, Cl. 424-84.000.

Ogino, Tsukasa, to Canon Kabushiki Kaisha. Optical information recording/reproducing apparatus comprising digital servo device for performing focusing and/or tracking of optical head based on digital information. 5,485,440, Cl. 369-44.340.

Ogisu, Yasuhiko: *See*—
Funahashi, Toshikazu; Ogisu, Yasuhiko; Kato, Mamoru; Takahashi, Shigeyuki; and Uemura, Toshiya, 5,484,516, Cl. 205-50.000.

Ogle, Jim: *See*—
Scharf, Mike; Finley, Mike; Veillon, Joe; Kipp, Jim; Dudar, Tom; Owens, Jim; and Ogle, Jim, 5,484,431, Cl. 604-403.000.

Ogoshi, Yasuhiro: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,484,227, Cl. 404-84.100.

O'Grady, David S.: *See*—
Bajuk, Stanislav P.; O'Grady, David S.; and Smith, Edward T., 5,484,672, Cl. 430-5.000.

Oguchi, Takahiro: *See*—
Yamano, Akihiko; Hatanaka, Katsunori; Sakai, Kunihiro; Oguchi, Takahiro; and Shido, Shunichi, 5,485,451, Cl. 369-126.000.

Ogus, Aaron W.: *See*—
Schrier, Evan J.; Reardon, Thomas R.; and Ogus, Aaron W., 5,485,460, Cl. 370-94.100.

Ohanian, Oscar K.: *See*—
Facciano, Andrew B.; Hopkins, Ronald N.; Krebs, Rodney H.; Neumann, James L.; and Ohanian, Oscar K., 5,483,894, Cl. 102-293.000.

Ohara, Hidehiko: *See*—
Sasaki, Koshi; Ohara, Hidehiko; and Iraaki, Naoshi, 5,484,651, Cl. 428-224.000.

Ohara, Makoto; Tomizawa, Hirotsugu; and Sugiura, Shinichirou, to Kabushiki Kaisha Sega Enterprises. Information display system for electronically reading a book. 5,485,176, Cl. 345-173.000.

Ohashi, Kazutoshi: *See*—
Higashimura, Hideyuki; Obbe, Yoshitaka; Okada, Akihiko; Ohashi, Kazutoshi; Matsui, Ryuhei; and Kriyama, Shigeki, 5,484,831, Cl. 524-257.000.

Ohba, Takashi: *See*—
Nakagomi, Hiroshi; Arashima, Teruo; Maeoka, Kunihiko; Ohba, Takashi; Kawai, Jun; Abe, Tsutomu; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; Kimura, Makiko; Kashino, Toshio; Saikawa, Hideo; Karita, Seiichiro; and Orikasa, Tsuyoshi, 5,485,184, Cl. 347-63.000.

Obbe, Yoshitaka: *See*—

Higashimura, Hideyuki; Ohbe, Yoshitaka; Okada, Akihiko; Ohashi, Kazutoshi; Matsui, Ryuhei; and Kriyama, Shigeki, 5,484,831, Cl. 524-257.000.
Ohkawa, Hiroshi; and Nonoyama, Takao. Floating structures and locking device thereof. 5,483,913, Cl. 114-264.000.
Ohkubo, Kenji: *See*—
Katoh, Kenji; Inoue, Tokuta; Nohira, Hidetaka; Nakanishi, Kiyoshi; Iguchi, Satoshi; Kihara, Tetsuro; Gotoh, Masato; Asanuma, Takamitsu; Okano, Hiroshi; Harada, Jun; Takeshima, Shinichi; Sugiyama, Masahiko; Sakurai, Shigenori; Ohkubo, Kenji; and Murachi, Mikio, 5,483,795, Cl. 60-276.000.
Ohlendorf, Wolfgang; Batz, Michael; Moretto, Hans-Heinrich; Schmidt, Peter; and Jonas, Gerhard, to Bayer Aktiengesellschaft. Process for the removal of impurities from hydrazine hydrate. 5,484,511, Cl. 203-41.000.
Ohnishi, Kiroaki, to Rohm Co., Ltd. Method of manufacturing a corner head type thermal head. 5,483,736, Cl. 29-611.000.
Ohnmacht, Cyrus J.; Harris, Robert J.; and Trainor, Diane A., to Imperial Chemical Industries, plc. 1,8-(2H,5H)-acridinedione therapeutic agents. 5,484,792, Cl. 514-297.000.
Ohno, Norihiro: *See*—
Yamashita, Masashi; Ohno, Norihiro; Tohyama, Tetsuyuki; Kubo, Eiichi; Komatsu, Takahiko; and Kouno, Yoshinou, 5,484,141, Cl. 271-227.000.
Ohnsorge, Horst, to Alcatel N.V. Hand-held radiotelephone with video transmission and display. 5,485,504, Cl. 379-58.000.
Ohsawa, Takashi: *See*—
Ukita, Nobuo; Nakamura, Kenji; Ohsawa, Takashi; and Hanazaki, Yasumasa, 5,485,061, Cl. 315-307.000.
Ohsawa, Toshifumi, to Canon Kabushiki Kaisha. Camera incorporating an auto-zoom function. 5,485,239, Cl. 354-402.000.
Ohsawa, Yuichi: *See*—
Iwasaki, Hitoshi; Ohsawa, Yuichi; and Kondoh, Reiko, 5,484,491, Cl. 148-313.000.
Ohshima, Junji: *See*—
Sasaki, Ichiro; Teraoka, Takao; Ohshima, Junji; Katsumata, Toru; and Sato, Koichi, 5,484,845, Cl. 525-64.000.
Ohsugi, Minoru: *See*—
Hayashi, Kazuyuki; Ohsugi, Minoru; Morii, Hiroko; and Sugita, Norio, 5,484,545, Cl. 252-62.580.
Ohta, Masahiro: *See*—
Yamaguchi, Keizaburo; Urakami, Tatsuhiro; Tanabe, Yoshimitsu; Yamazaki, Midori; Tamai, Shoji; Yamaya, Norimasa; Ohta, Masahiro; and Yamaguchi, Akihiro, 5,484,948, Cl. 548-549.000.
Ohta, Shizuyuki: *See*—
Yamaoka, Kanemitsu; Adachi, Tetsuo; and Ohta, Shizuyuki, 5,484,619, Cl. 426-315.000.
Ohta, Yasuhiro; Umemoto, Masaru; and Kashiwagi, Kenryo, to Tsubakimoto Chain Co. Rubber tire individual separation transport apparatus. 5,484,048, Cl. 198-397.000.
Ohtake, Tutomu. Bioelectric signal recording device. 5,483,967, Cl. 128-[illegible].
Ohtani, Noriko: *See*—
Kikuchi, Toshihiro; Maruyama, Akio; Ohtani, Noriko; Nagahara, Shin; Tanaka, Hisami; Sakakibara, Teigo; and Tanaka, Takakazu, 5,484,673, Cl. 430-58.000.
Ohtsubo, Hideki: *See*—
Waku, Yoshiharu; Ohtsubo, Hideki; and Kohtoku, Yasuhiko, 5,484,752, Cl. 501-127.000.
Ohtsuka, Makoto: *See*—
Miyoshi, Hiroaki; Mizushima, Yasuhiko; Ohtsuka, Makoto; and Hihara, Hiroki, 5,485,604, Cl. 395-182.080.
Ohtsuka, Masanori: *See*—
Tsunemiya, Takanobu; and Ohtsuka, Masanori, 5,485,262, Cl. 356-3.080.
Ohtsuka, Masaru, to Canon Kabushiki Kaisha. Apparatus and method for measuring the error of an apparatus which measure a cylindrical shape using an interferometer. 5,485,275, Cl. 356-360.000.
Ohtsuka, Nobuyuki: *See*—
Kitahara, Kuninori; Ohtsuka, Nobuyuki; and Ozeki, Masashi, 5,484,664, Cl. 428-641.000.
Oikawa, Akira: *See*—
Watanabe, Keiji; Oikawa, Akira; Fukuyama, Shun-ichi; Yamagami, Masaaki; and Namiki, Takahisa, 5,484,687, Cl. 430-296.000.
Oike, Mitsuru; Kusano, Masahiro; and Sato, Osamu, to Nissan Motor Co., Ltd. Steering wheel posture control system. 5,485,376, Cl. 364-424.050.
Oinoue, Hiroshi; and Kanada, Tokio, to Sony Corporation. Disc driving apparatus having means for placing a read record head at a predetermined position in the innermost region of a disc. 5,485,445, Cl. 369-56.000.
Oizumi, Hiroaki; Iio, Masaaki; Soga, Takashi; Ogawa, Taro; Mochiji, Kozo; and Takeda, Eiji, to Hitachi, Ltd. Optical element and projection exposure apparatus employing the same. 5,485,497, Cl. 378-84.000.
Okabayashi, Ichiro, to Matsushita Electric Industrial Co., Ltd. Transfer control unit, processor element and data transferring method. 5,485,582, Cl. 395-250.000.
Okabayashi, Makoto: *See*—
Tokita, Shigeki; Okabayashi, Makoto; Amano, Takashi; and Nishida, Isao, 5,484,490, Cl. 136-236.100.
Okabayashi, Norio; Kawasaki, Motohiro; and Takahashi, Kazushi, to Daicel Chemical Industries, Ltd. Stamper for injection molding. 5,484,324, Cl. 451-28.000.
Okada, Akihiko: *See*—
Higashimura, Hideyuki; Ohbe, Yoshitaka; Okada, Akihiko; Ohashi, Kazutoshi; Matsui, Ryuhei; and Kriyama, Shigeki, 5,484,831, Cl. 524-257.000.
Okada, Masatoshi: *See*—
Ichinobe, Hitoshi; Hongo, Yasuo; and Okada, Masatoshi, 5,485,531, Cl. 382-198.000.
Okada, Tsuneyoshi: *See*—
Miyazaki, Hirotaka; Sakai, Hitomitsu; and Okada, Tsuneyoshi, 5,484,563, Cl. 264-69.000.
Okado, Chihiro; and Hideshima, Makoto, to Kabushiki Kaisha Toshiba. Power transistor overcurrent protection circuit. 5,485,341, Cl. 361-98.000.
Okamoto, Yoshihiko, to Hitachi, Ltd. Mask for manufacturing semiconductor device and method of manufacture thereof. 5,484,671, Cl. 430-5.000.
Okamura, Masatoshi: *See*—
Shima, Motohiko; Okamura, Masatoshi; and Kutsukake, Jin, 5,484,058, Cl. 206-387.100.
Okamura, Yoshitaka; Sugiyama, Hiroshi; and Yamamoto, Kousuke, to Canon Kabushiki Kaisha. Ink-jet recording apparatus having improved recovery device. 5,485,187, Cl. 347-85.000.
Okamura, Yoshitaka: *See*—
Kimura, Atsushi; Nishimoto, Yoshifumi; Tanaka, Hideki; Seki, Hiroyuki; Harada, Toshiaki; Okamura, Yoshitaka; and Yamamoto, Shinji, 5,484,216, Cl. 400-319.000.
Okano, Hiroshi: *See*—
Katoh, Kenji; Inoue, Tokuta; Nohira, Hidetaka; Nakanishi, Kiyoshi; Iguchi, Satoshi; Kihara, Tetsuro; Gotoh, Masato; Asanuma, Takamitsu; Okano, Hiroshi; Harada, Jun; Takeshima, Shinichi; Sugiyama, Masahiko; Sakurai, Shigenori; Ohkubo, Kenji; and Murachi, Mikio, 5,483,795, Cl. 60-276.000.
Okawa, Yuichi: *See*—
Yamashita, Wataru; Okawa, Yuichi; Tamai, Shoji; Matsuo, Mitsunori; Ishida, Tsutomu; Yamaguchi, Keizaburo; and Yamaguchi, Akihiro, 5,484,880, Cl. 528-353.000.
Okazaki, Takeshi: *See*—
Ishinaga, Hiroyuki; Sugitani, Hiroshi; Masuda, Kazuaki; Kasamoto, Masami; Suzuki, Seiji; Kashino, Toshio; Kawai, Jun; Okazaki, Takeshi; Arashima, Teruo; and Kamiyama, Yuji, 5,485,186, Cl. 347-67.000.
Okita, Tsutomu: *See*—
Hashimoto, Hiroshi; Satake, Masaki; Murayama, Yuichiro; and Okita, Tsutomu, 5,484,661, Cl. 428-522.000.
Oku, Yasunori: *See*—
Nakazawa, Yasushi; Kitamura, Katsuhiro; Oku, Yasunori; and Enomoto, Masatoshi, 5,484,981, Cl. 219-121.720.
Okuno, Hiromi; Koshina, Hizuru; and Hasegawa, Katsuaki, to Matsushita Electric Industrial Co., Ltd.; and Mitsubishi Petrochemical Company Limited. Nonaqueous electrolyte secondary batteries. 5,484,669, Cl. 429-[illegible].
O'Leary, Robert K.; and McBrayer, Patrick A., to Osteotech, Inc. Flowable demineralized bone powder composition and its use in bone repair. 5,484,601, Cl. 424-422.000.
Oleinick, Nancy L.: *See*—
Kenney, Malcolm E.; Oleinick, Nancy L.; Rihter, Boris D.; and Li, Ying-Syi, 5,484,778, Cl. 514-63.000.
Oleszczuk, Andrew R.: *See*—
Lickfield, Deborah K.; Berman, Mark H. S.; Hyslop, Robert F.; Oleszczuk, Andrew R.; Gessner, Scott L.; and Austin, Jared A., 5,484,645, Cl. 428-198.000.
Olive, José J. R.: *See*—
Waskönig, Wilhelm; and Olive, José J. R., 5,484,423, Cl. 604-272.000.
Olive, Raymond G., to Discount High Limited. Device for controlling length of paper pulled from a wound roll thereof. 5,484,119, Cl. 242-422.400.
Oliver, Chris: *See*—
Dobbins, Kurt; Andlauer, Phil; Oliver, Chris; Parker, Tom; Grimes, Andy; Nutbrown, Bruce; Hullette, Dan; Dev, Roger; and Jeffords, Jason, 5,485,455, Cl. 370-60.000.
Fee, Brendan; and Oliver, Chris, 5,485,576, Cl. 395-185.090.
Oliver, John B., to Nova Scotia Research Foundation. Manual override system for linear magnetically operated valve. 5,484,133, Cl. 251-14.000.
Oliver, Stewart W., to Telegenics, Inc. Telemetry device including a dynamic off-hook detector. 5,485,509, Cl. 379-106.000.
Olivieri, Icaro, to Canstar Sports Group Inc. Skate blade assembly with reinforcement insert. 5,484,148, Cl. 280-11.180.
Olsen, Perry E.: *See*—
Gleddie, Sanford C.; Leggett, Mary E.; Rice, Wendell A.; and Olsen, Perry E., 5,484,464, Cl. 47-57.600.
Olson, C. Donald; and Urbanski, Mark G., to Alphatec Manufacturing, Inc. Modular femur fixation device. 5,484,439, Cl. 606-65.000.
Olympus Optical Co., Ltd.: *See*—
Mori, Takao; and Suzuki, Takayuki, 5,485,316, Cl. 359-708.000.
Nakamura, Kazunari; Matsunaka, Kenji; and Watanabe, Akira, 5,485,203, Cl. 348-263.000.
Omron Corporation: *See*—
Ejima, Hideji; and Yoshikawa, Taiji, 5,485,551, Cl. 395-61.000.
Ishihara, Hideshi, 5,485,532, Cl. 382-205.000.
Nakamura, Takaji, 5,484,968, Cl. 181-122.000.
Onaka, Yoshiaki: *See*—
Nakajima, Masayoshi; Kinoshita, Takashi; Hasegawa, Arata; and Onaka, Yoshiaki, 5,484,343, Cl. 474-266.000.

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Phillips, Larry: *See—*
Meyer, Edwin R.; Naimpally, Saiprasad V.; Phillips, Larry; and Inoue, Shuji, 5,485,215, Cl. 348-423.000.

Phillips Petroleum Company: *See—*
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Morich, Michael A.; Petropoulos, Labros; and Lampman, David A., 5,485,087, Cl. 324-318.000.

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Piejko, Karl-Erwin: *See—*
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Pilliod, Peter P., to Progressive Furniture, Inc. Drawer guide assembly. 5,484,198, Cl. 312-334.180.

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Nakai, Toshiki; Amano, Mitsuyoshi; Miyamoto, Kazuhiro; Akiba, Yoshiyuki; and Sato, Masahiro, 5,484,291, Cl. 434-307.00A.
Tamamura, Maupei; Iidaka, Hiroshi; Kondo, Kazuyuki; and Yokota, Keitaro, 5,485,523, Cl. 381-71.000.

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Pitt, Alan R.; Caesar, Julian C.; Gibson, Dennis; Wear, Trevor J.; Young, David J.; and King, Scott A., to Eastman Kodak Company. Surfactants and hydrophilic colloid compositions and materials containing them. 5,484,695, Cl. 430-546.000.

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Pitzen, Sylvester A., to Sono Therapy Institute, Inc. Method and device for loosening connective tissue and stimulating blood circulation. 5,484,387, Cl. 601-15.000.

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Pleauler, John A., to Owens-Illinois Plastic Products Inc. Container decorating system. 5,484,047, Cl. 198-370.010.

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Plute, Michael E.: *See—*
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Pogue, Thomas J., III: *See—*
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Poirier, Mark E. Sound effects belt. 5,484,316, Cl. 446-28.000.

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Betensky, Ellis I., 5,485,313, Cl. 359-689.000.
Guerra, John M., 5,484,558, Cl. 264-1.240.
Minns, Richard A., 5,484,822, Cl. 522-35.000.

Poli, Jean-Charles: *See—*
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Poling, Timothy R.: *See—*
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Pollack, Richard J.: *See—*
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Polyplastics Co., Ltd.: *See—*
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Sasaki, Ichiro; Teraoka, Takao; Ohshima, Junji; Katsumata, Toru; and Sato, Koichi, 5,484,845, Cl. 525-64.000.

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Polyset Company, Inc.: *See—*
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Portec Inc.: *See—*
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Posato, John E.: *See—*
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Postma, Lambertus; Haisma, Jan; Ruigrok, Jacobus J. M.; and Somers, Gerardus H. J., to U.S. Philips Corporation. Method of manufacturing a thin-film magnetic head. 5,483,735, Cl. 29-603.000.
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Dodd, Robert H.; Potier, Pierre; Doisy, Xavier; Rossier, Jean; and De Carvalho, Lia P., 5,484,793, Cl. 514-300.000.
Potter, Raymond G., to Du Pont de Nemours, E. I., and Company. Centrifuge rotor having liquid-capturing holes. 5,484,381, Cl. 494-12.000.
Pow, Eric G.: *See*—
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Prader, Randolph D.; and Smith, Graham, to Mobil Oil Corporation. Ready to load bag pack, method of forming and system. 5,484,376, Cl. 493-194.000.
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Qiao, Yong; Redmond, William F.; Dunah, Richard E.; and Ciupke, Werner W., 5,485,291, Cl. 359-49.000.
Precision Screen Machines, Inc.: *See*—
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Pregenzer, Bruno: *See*—
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President and Fellows of Harvard College: *See*—
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Pringle, Ronald E., to Camco International Inc. Spoolable coiled tubing mandrel and gas lift valves. 5,483,988, Cl. 137-155.000.
Prissok, Frank; Lehrich, Friedhelm; Lehr, Gerhard; Glinka, Aleksander; and Harrop, Douglas J., to BASF Elastogran GmbH. UV-stabilizer concentrates based on TPU, a process for their production and utilization. 5,484,827, Cl. 524-86.000.
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Pu, Kuan H. Perfume gas generating device. 5,484,086, Cl. 222-187.000.
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Raben, Nina; Nichols, Ralph; Plotz, Paul; and Leff, Richard, to United States of America. Assay using recombinant histidyl-tRNA synthetase. 5,484,703, Cl. 435-7.400.
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Loeffler, Hermann; Lamm, Gunther; Bach, Volker; Lange, Arno; Reichelt, Helmut; and Rothmaier, Herbert, 5,484,460, Cl. 8-638.000.
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Nix, James L.; Ruse, Guy F.; Reinholz, Paul D.; Helms, Anthony C.; and O'Connor, Daniel J., 5,485,334, Cl. 360-113.000.
Reinsch, Burkhard: *See*—
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Rejc, Gabrijel. Vertical lift gate with strip cladding in guideways. 5,484,007, Cl. 160-133.000.
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Busboom, Leah J. H.; Clausen, Trent L.; Eagen, Stephen T.; Kiel, Harvey G.; Manulik, Robert J.; Plute, Michael E.; Remfert, Jeffrey E.; and Roman, Raymond F., 5,485,570, Cl. 395-161.000.
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Pirkle, William H.; Welch, Christopher J.; and Lamm, Bo R., 5,484,530, Cl. 210-635.000.
Research Products Corporation: *See*—
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Reuschle, Patricia D.; Kenin, Michael; Posato, John E.; and Szosack, Joseph M., to Eastman Kodak Company. Automatic cleaning mechanism for a corona charger using cleaning pad. 5,485,255, Cl. 355-225.000.
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Reynolds, Joseph D., to Eaton Corporation. Transmission countershaft assembly. 5,483,847, Cl. 74-331.000.

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Cho, Won T.; Kim, Wan S.; Kim, Myung K.; Park, Jin K.; Kim, Hak R.; Rhee, Sang K.; Domracheva, A. G.; Panichkina, T. B.; Saburoba, L. A.; Nobikoba, L. M.; and Bartochevichi, Y. E., 5,484,712, Cl. 435-78.000.

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Ricciardi, Robert. Motorcycle kickstand accessory. 5,484,153, Cl. 280-293.000.

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Rice, Wendell A.: *See—*
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Rich, Donald S., to Technology Handlers, Inc. Article stack handler/sorter. 5,484,062, Cl. 209-587.000.

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Caillaut, Claude; Bonnin, Christophe; Houdayer, Christophe; Rigaux, Christian; Berges, Martha; Beghini, Eric; Defossez, Marc; and Message, Olivier, 5,484,213, Cl. 384-486.000.

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Rihter, Boris D.: *See—*
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Rimai, Donald S.: *See—*
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Rishton, Michael L., to C. R. Bard, Inc. Intra-aortic balloon catheter. 5,484,385, Cl. 600-16.000.

Riso Kagaku Corporation: *See—*
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Riverwood International Corporation: *See—*
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Sutherland, Robert L., 5,484,059, Cl. 206-434.000.

Robert Bosch GmbH: *See—*
Heintz, Frieder; Winner, Hermann; and Geiser, Georg, 5,485,381, Cl. 364-426.040.
Stutzenberger, Heinz, 5,483,934, Cl. 123-305.000.
Zhang, Hong; and Streib, Martin, 5,484,351, Cl. 477-113.000.

Roberts, John L., to Hughes Aircraft Company. Method for fabricating a bearing with semi-rhythmic ball spacing. 5,483,744, Cl. 29-898.070.

Roberts, Mary E.: *See—*
Ruddy, Stephen B.; McIntire, Gregory L.; Roberts, Mary E.; Douty, Brent D.; and Cooper, Eugene R., 5,484,585, Cl. 424-9.450.

Robertshaw Controls Company: *See—*
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Robertson, James W.: *See—*
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Robertson, John A.; and Vaughn, Ken R., to Infosight Corporation. High temperature-resistant, thermally-printable label for attachment to hot metal stock and method thereof. 5,484,099, Cl. 228-176.000.

Robinder, Ronald C., to Honeywell Inc. Liquid crystal display including color triads with split pixels. 5,485,293, Cl. 359-59.000.

Robinson, David: *See—*
Atkinson, Robert; Keith, Peter; Ellis, Louis G.; Schmaltz, Dale; and Robinson, David, 5,484,409, Cl. 604-96.000.

Robinson, James W.; Ludwig, Alan H.; and Tribbett, Lindy M., to Case Corporation. Control system for a cotton harvester. 5,484,337, Cl. 460-119.000.

Roche, Emmanuel: *See—*
Golding, Andrew R.; Schabes, Yves; and Roche, Emmanuel, 5,485,372, Cl. 364-419.080.

Rockstein, George B.: *See—*
Wilz, David M.; Rockstein, George B.; Knowles, Carl H.; and Naylor, Charles A., 5,484,992, Cl. 235-472.000.

Rockwell International Corporation: *See—*
Cadaret, Patrick M.; and Dernovshek, Joseph F., 5,484,041, Cl. 188-73.370.
DeCoux, Steven P., 5,484,221, Cl. 403-203.000.

Rockwood, Robert E., to Environamics Corp. Cooling device for a pump and corresponding barrier tank. 5,484,267, Cl. 417-53.000.

Röder, Manfred: *See—*
Wolf, Fritz; Kutsche, Thomas; and Röder, Manfred, 5,485,417, Cl. 364-424.010.

Rodriguez, Michael; Vivian, Bonnie B.; and Freeman, Shirley K., to Denver Biomaterials, Inc. Treatment method for pleural effusion. 5,484,401, Cl. 604-28.000.

Rodriguez, Michael J.: *See—*
Dressman, Bruce A.; Fritz, James E.; Hammond, Marlys; Hornback, William J.; Kaldor, Stephen W.; Kalish, Vincent J.; Munroe, John E.; Reich, Siegfried H.; Tatlock, John H.; Shepherd, Timothy A.; and Rodriguez, Michael J., 5,484,926, Cl. 546-114.000.

Roebelen, George J., Jr., to United Technologies Corporation. Maintainable in-line fluid connector. 5,483,993, Cl. 137-614.000.

Roell, Friedrich, to Tecnit-Techische Textilien Und Systeme GbmH. Electric heating element in knitted fabric. 5,484,983, Cl. 219-545.000.

Roemer, Peter B.: *See—*
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Roffman, Jeffrey H.; Poling, Timothy R.; Guillon, Michel; and Menezes, Edgar V., to Johnson & Johnson Vision Products, Inc. Multifocal ophthalmic lens pair. 5,485,228, Cl. 351-161.000.

Rogers, Bryan D.: *See—*
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Rogers, Grant: *See—*
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Rogers, Kevin P.; and Simensen, Christian, to Comalco Aluminum Limited. Al-Si alloys and method of casting. 5,484,492, Cl. 148-437.000.

Rogowsky, Heinz F.: *See—*
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Bigley, Andrew B. W., Jr.; Daecher, Jeffrey L.; Holy, Norman L.; Jerman, Robert E.; Johnson, Phelps B.; and Work, William J., 5,485,541, Cl. 385-141.000.
Born, Daniel A.; Lavoie, Alvin C.; and Emmons, William D., 5,484,849, Cl. 525-167.500.
Paik, Yi H.; Simon, Ethan S.; and Swift, Graham, 5,484,878, Cl. 528-328.000.
Shaber, Steven H.; Szapacs, Edward M.; and Reynolds, Charles H., 5,484,787, Cl. 514-256.000.

Rohm Co. Ltd.: *See—*
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Rolando, Steven A.: *See—*
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Rolfe, Barry G.: *See—*
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Rolfe, David B.: *See—*
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Rolls-Royce, plc: *See—*
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Romeo, Aurelio: *See—*
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Rosa, Thomas F. Adjustable sun visor attachment. 5,484,183, Cl. 296-97.600.

Rose, Ron A., to Grinding & Sizing Co., Inc. Method of drilling with fluid including nut cork and drilling fluid additive. 5,484,028, Cl. 175-72.000.

Rosebush, Paul: *See—*
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Warrior, Jogesh; Jacobson, Vincent C.; Orth, Kelly M.; and Tielens, Craig R., 5,485,400, Cl. 364-550.000.

Rosén, Åke, to Tetra Laval Holdings & Finance S.A. Packaging laminate with excellent sealing and barrier properties and also packaging container manufactured from the packaging laminate. 5,484,660, Cl. 428-516.000.

Rosen, Steven D.: *See—*
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Rosenberg, Ethan, to Hygein Biomedical Research Inc. Apparatus and methods for the diagnosis of labor. 5,483,970, Cl. 128-733.000.

Rosenberg, Gary F. Releasable, modular, multi-use fastener for vehicles. 5,484,240, Cl. 410-110.000.

Rosenfeld, Michael G.; and Anderson, Bogi, to University of California, The Regents of the . Transcription factor for regulation of the development of skin and hair. 5,484,732, Cl. 435-320.100.

Roski, James P.: *See—*
Cahoon, John M.; Kam, Jack L.; Huang, Nai Z.; and Roski, James P., 5,484,542, Cl. 252-18.000.

Rossi, Alessandro: *See—*
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Rossier, Jean: *See—*
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Rossman, Phillip J.: *See—*
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Rostoker, Michael D.; Pasch, Nicholas F.; and Zelayeta, Joe, to LSI Logic Corporation. Afocal concentrator for low wavelength lithography, particularly for semiconductor lithgraphy. 5,485,243, Cl. 355-1.000.

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Rotter, Martin J. Process for fixing plastic reinforcing pins into non-woven filamentary material and product produced by the process. 5,484,641, Cl. 428-139.000.

Roustaei, Alexander. Optical scanning head with improved resolution. 5,484,994, Cl. 235-462.000.

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Rowell, Mark M. Bicycle chain lubricating device. 5,484,038, Cl. 184-15.100.

Rozenzon, Yan: *See—*
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Rubenstein, Allen I.; Galley, Joseph A.; Montague, P. Read; and Reeke, George N., to Neurosciences Research Foundation, Inc. Discriminatica and testing methods and apparatus employing adaptively changing network behavior based on spatial and heterocellular modification rules. 5,485,546, Cl. 395-23.000.

Ruddy, Stephen B.; McIntire, Gregory L.; Roberts, Mary E.; Douty, Brent D.; and Cooper, Eugene R., to Sterling-Winthrop Inc. Compositions of iodobenzoic acid derivatives and pharmaceutically acceptable clays for visualization of the gastrointestinal tract. 5,484,585, Cl. 424-9.450.

Rude, John E.: *See—*
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Rudloff, Terry R. Concrete block revetment system for soil erosion prevention. 5,484,230, Cl. 405-20.000.

Rudnic, Edward M.; McCarty, John A.; and Belendiuk, George W., to Pharmavene, Inc. Sustained-release drug delivery system. 5,484,608, Cl. 424-468.000.

Rufeld, Inc.: *See—*
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Runyon, Edwin K.; Williams, Harold R.; McCorkle, Todd E.; Weiss, Mark E.; and Williams, Earl R., to ADB-Alnaco, Inc. Airfield lighting system. 5,485,151, Cl. 340-953.000.

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Russ, David E.: *See—*
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Russ, Werner H.; Tappe, Horst; and Schumacher, Christian, to Hoechst Aktiengesellschaft. Triphendioxazine compounds, processes for their preparation and their use as dyestuffs. 5,484,458, Cl. 8-549.000.

Russell, B. Don; Aucoin, B. Michael; and Benner, Carl L., to Texas A & M University System, The . Randomness fault detection system. 5,485,093, Cl. 324-522.000.

Russo, Ronald D., to Wilson-Cook Medical Inc. Retention bolsters for percutaneous catheters. 5,484,420, Cl. 604-178.000.

Rutschmann, Richard: *See—*
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Rutz, Howard G.; and Luk, Sidney, to Hoeganaes Corporation. Method of making a sintered metal component and metal powder compositions therefor. 5,484,469, Cl. 75-252.000.

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Ryan, Christopher M.: *See—*
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Ryer, Jack: *See—*
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Ryobi Outdoor Products Inc.: *See—*
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Ryuka, Akihiro: *See—*
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Ryun, Byung-Ryul; Han, Tae-Hyeon; Lee, Soo-Min; Cho, Deok-Ho; Lee, Seong-Heara; and Kang, Jin-Young, to Electronics & Telecommunications Research Institute; and Korea Telecommunication Authority. Method for fabricating bipolar transistor. 5,484,737, Cl. 437-31.000.

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Saadat, Mohsen M. Gripper mechanism. 5,484,181, Cl. 294-88.000.

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Sadre, Ahmad; Baechtel, Donald F.; and Graber, Mark S., to Automation System and Products, Inc. Integrated control system for industrial automation applications. 5,485,620, Cl. 395-700.000.

Saeki, Hiroaki: *See—*
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Saferstein, Lowell G.: *See—*
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Sagara, Tomoyuki, to Sharp Kabushiki Kaisha. Thin film magnetic head structure and method of fabricating the same for accurately locating and connecting terminals to terminal connections. 5,485,337, Cl. 360-126.000.

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Sahli, Richard M.; and Baumgartner, Deborah S., to GNB Battery Technologies Inc. Spacers for lead-acid batteries. 5,484,667, Cl. 429-100.000.

Saigo, Kaoru: *See—*

Zenno, Shuhei; and Saigo, Kaoru, 5,484,723, Cl. 435-189.000.

Saigo, Tsuyoshi; Koseki, Takeo; Kikuchi, Yoshihiro; and Hatanaka, Takashi, to Hoya Corporation. Spectacle lens supply method. 5,485,399, Cl. 364-525.000.

Saika, Tetsuyuki: *See*—
Kanesaki, Hiroyuki; Saika, Tetsuyuki; and Mikami, Masafumi, 5,484,872, Cl. 528-73.000.

Saikawa, Hideo: *See*—
Nakagomi, Hiroshi; Arashima, Teruo; Maeoka, Kunihiko; Ohba, Takashi; Kawai, Jun; Abe, Tsutomu; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; Kimura, Makiko; Kashino, Toshio; Saikawa, Hideo; Karita, Seiichiro; and Orikasa, Tsuyoshi, 5,485,184, Cl. 347-63.000.

Sailer, Hanns P.: *See*—
Santos, Esteban; Sailer, Hanns P.; Singer, Paul H.; and Purkayastha, Indrajit, 5,485,343, Cl. 361-115.000.

Saint-Gobain Vitrage International: *See*—
Kramling, Franz; Charrue, Herve; Weber, Frederic; Letemps, Bernard; and Didelot, Claude, 5,484,657, Cl. 428-426.000.

Sainz, Ray: *See*—
Wise, Frederick M.; Sainz, Ray; and DeWitt, Carl F., 5,484,643, Cl. 428-192.000.

Saito, Akio: *See*—
Nakagomi, Hiroshi; Arashima, Teruo; Maeoka, Kunihiko; Ohba, Takashi; Kawai, Jun; Abe, Tsutomu; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; Kimura, Makiko; Kashino, Toshio; Saikawa, Hideo; Karita, Seiichiro; and Orikasa, Tsuyoshi, 5,485,184, Cl. 347-63.000.

Saito, Asao: *See*—
Nakagomi, Hiroshi; Arashima, Teruo; Maeoka, Kunihiko; Ohba, Takashi; Kawai, Jun; Abe, Tsutomu; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; Kimura, Makiko; Kashino, Toshio; Saikawa, Hideo; Karita, Seiichiro; and Orikasa, Tsuyoshi, 5,485,184, Cl. 347-63.000.
Takayanagi, Yoshiaki; Saito, Asao; Koizumi, Ryoichi; and Nagatomo, Akira, 5,485,182, Cl. 347-17.000.

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Saito, Hitoshi, to Yazaki Corporation. Double terminal stop connector. 5,484,223, Cl. 403-329.000.

Saito, Kiyohiro: *See*—
Kataoka, Akira; Inohara, Masanobu; Tsukita, Ryuichi; Suma, Toshio; and Saito, Kiyohiro, 5,483,760, Cl. 36-134.000.

Saito, Makoto: *See*—
Isono, Yukihiro; Saito, Makoto; Adachi, Kazuyoshi; Yumoto, Masato; and Takakura, Akio, 5,483,734, Cl. 29-603.000.

Saito, Tetsuo: *See*—
Ota, Hiroshi; Sakoda, Kousuke; Saito, Tetsuo; Maeda, Eiichiro; and Yamamoto, Toshiyuki, 5,485,612, Cl. 395-650.000.

Saitta, David A.: *See*—
Norman, Daniel P.; Guidotti, Richard A.; and Saitta, David A., 5,485,505, Cl. 379-58.000.

Saji, Masaaki: *See*—
Takai, Kazuyoshi; Kawahara, Hironori; Saji, Masaaki; and Ono, Yukio, 5,485,580, Cl. 395-220.200.

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Tera, Yoshiko; Morishima, Kouji; and Sakai, Atsushi, 5,485,051, Cl. 310-313.00B.

Sakai, Hiromitsu: *See*—
Miyazaki, Hirotaka; Sakai, Hiromitsu; and Okada, Tsuneyoshi, 5,484,563, Cl. 264-69.000.

Sakai, Kunihiro: *See*—
Yamano, Akihiko; Hatanaka, Katsunori; Sakai, Kunihiro; Oguchi, Takahiro; and Shido, Shunichi, 5,485,451, Cl. 369-126.000.

Sakaibara, Toru; Takamatsu, Ryoichi; and Hara, Hideyuki, to Hitachi, Ltd. Parallel graphics processor with graphics command distributor and command sequencing method. 5,485,559, Cl. 395-133.000.

Sakakibara, Teigo: *See*—
Kikuchi, Toshihiro; Maruyama, Akio; Ohtani, Noriko; Nagahara, Shin; Tanaka, Hisami; Sakakibara, Teigo; and Tanaka, Takakazu, 5,484,673, Cl. 430-58.000.

Sakamoto, Hitoshi: *See*—
Mochida, Isao; Fujiura, Ryuji; Kojima, Takashi; and Sakamoto, Hitoshi, 5,484,520, Cl. 208-22.000.

Sakamoto, Kazunori; Kawamura, Tateki; and Kondoh, Yutaka, to Aisin Seiki Kabushiki Kaisha. Impact sensing apparatus. 5,483,846, Cl. 74-2.000.

Sakamoto, Okihiko: *See*—
Yanagida, Takeshi; and Sakamoto, Okihiko, 5,484,816, Cl. 514-725.000.

Sakashita, Takeshi; Shimoda, Tomoaki; Kishimura, Kotaro; and Uchimura, Shuichi, to GE Plastics Japan. Copolymeric polycarbonate production method. 5,484,875, Cl. 528-198.000.

Sakharov, Aleksej M.: *See*—
Skibida, Irina P.; Sakharov, Andrei M.; and Sakharov, Aleksej M., 5,484,914, Cl. 536-124.000.

Sakharov, Andrei M.: *See*—
Skibida, Irina P.; Sakharov, Andrei M.; and Sakharov, Aleksej M., 5,484,914, Cl. 536-124.000.

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Ota, Hiroshi; Sakoda, Kousuke; Saito, Tetsuo; Maeda, Eiichiro; and Yamamoto, Toshiyuki, 5,485,612, Cl. 395-650.000.

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Kashimura, Noboru; Sakoh, Harumi; Nakamura, Kazushige; Amamiya, Shoji; Kasuya, Takashige; Tsuji, Haruyuki; Yamagami, Masaaki; and Ikezue, Tatsuya, 5,485,250, Cl. 355-211.000.

Sakurai, Shigenori: *See*—
Katoh, Kenji; Inoue, Tokuta; Nohira, Hidetaka; Nakanishi, Kiyoshi; Iguchi, Satoshi; Kihara, Tetsuro; Gotoh, Masato; Asanuma, Takamitsu; Okano, Hiroshi; Harada, Jun; Takeshima, Shinichi; Sugiyama, Masahiko; Sakurai, Shigenori; Ohkubo, Kenji; and Murachi, Mikio, 5,483,795, Cl. 60-276.000.

Salganik, Rudolf L, to Rufeid, Inc. Anti-viral methods using RNAse and DNAse. 5,484,589, Cl. 424-94.200.

Salituro, Francesco G.: *See*—
Palfreyman, Michael G.; McDonald, Ian Alexander; Salituro, Francesco G.; and Schwarcz, Robert, 5,484,814, Cl. 514-564.000.

Sall, Daniel J.; Shuman, Robert T.; Smith, Gerald F.; and Wiley, Michael R., to Eli Lilly and Company. Antithrombotic agents. 5,484,772, Cl. 514-[illegible].000.

Sallwasser, Alan J., to Motus, Inc. Latch mechanism. 5,484,176, Cl. 292-137.000.

Salnick, Richard E.; Emerson, Mark H.; Gaberson, Paul C.; and Bice, Charles D., to Westinghouse Electric Corporation. Online diagnostic system for rotating electrical apparatus. 5,485,491, Cl. 376-245.000.

Salvay, Steven H.: *See*—
Sherman, Richard A.; Schultz, Darald R.; Salvay, Steven H.; Jaeger, Robert B.; Davis, Patrick H.; and Hanson, George E., 5,484,991, Cl. 235-472.000.

Salz, Wolfram; and Reinsch, Burkhard, to Webasto Karosseriesysteme GmbH. Vehicle roof with a series of plates. 5,484,185, Cl. 296-220.000.

SamSung Electronics Co., Ltd.: *See*—
Do, In R.; and Choi, Do Y., 5,485,324, Cl. 360-85.000.
Jang, In-sik; and Yamamura, Nobuyuki, 5,484,627, Cl. 427-58.000.
Lee, Min-su, 5,485,329, Cl. 360-99.060.
Lee, Si-Yeol; Jang, Hyun-Soon; and Kim, Myung-Ho, 5,485,426, Cl. 365-203.000.
Lee, Yong-hee; Seo, Young-woo; and Shin, Jung-hyun, 5,484,739, Cl. 437-34.000.
Nam, Jung H., 5,485,207, Cl. 348-321.000.
Park, Sang-Gon, 5,485,153, Cl. 341-147.000.

Sanchez-Frank, Alejandra: *See*—
Banning, Kenneth R.; Erwin-Grotsky, George P.; Li, Shih-Gong; Sanchez-Frank, Alejandra; and Shrader, Theodore, 5,485,567, Cl. 395-148.000.

Sand, Bruce J., to Laser Biotech, Inc. Collagen treatment apparatus. 5,484,432, Cl. 606-5.000.

Sanda, Akihiro, to Fuji Photo Film Co., Ltd. Apparatus for overturning long-web rolls. 5,484,251, Cl. 414-731.000.

Sandbank, Barry M.: *See*—
Holden, Paul; and Sandbank, Barry M., 5,484,603, Cl. 424-447.000.

Sandell, Donald R.: *See*—
Lee, Wade P.; and Sandell, Donald R., 5,485,011, Cl. 250-338.100.

Sandhu, Chain S.; and Lilov, Lev, to NYX, Inc. New side pull latch mechanism. 5,484,178, Cl. 292-173.000.

Sandoz Ltd.: *See*—
Hiiuke, Tadashi; Inoue, Yasokazu; and Soga, Hiroshi, 5,484,456, Cl. [illegible].341.000.

Sandvik AB: *See*—
Östlund, Åke; Oskarsson, Ulf; Gustafson, Per; and Åkesson, Leif, 5,484,468, Cl. 75-236.000.

Sanemitsu, Yuzuru: *See*—
Nishida, Sumio; and Sanemitsu, Yuzuru, 5,484,933, Cl. 548-195.000.

Sani-Tech Incorporated: *See*—
DuPont, Paul R.; Schwarz, Richard B.; Dubord, Richard N.; and Simone, Michael L., 5,484,506, Cl. 156-503.000.

Sankyo Seiki Mfg. Co., Ltd.: *See*—
Orii, Makoto; and Imai, Teruaki, 5,483,849, Cl. 74-506.000.

Sano, Eiichi: *See*—
Ueda, Masahide; Izumi, Tomoo; Yamasaki, Hiroyuki; Hirai, Atsuto; Matsuura, Masahiko; Sano, Eiichi; Terasaka, Yoshihisa; Yamada, Masami; and Yoshida, Satoshi, 5,485,257, Cl. 359-272.000.

Sano, Osamu: *See*—
Tokumoto, Yoshitomo; and Sano, Osamu, 5,484,346, Cl. 475-185.000.

Sansone, Anthony J.: *See*—
Haywood, Gerald A.; King, Gregory S.; and Sansone, Anthony J., 5,484,241, Cl. 410-154.000.

Santandrea, Luciano; Lombardi, Massimo; and Amato, Salvatore, to Axis USA, Inc. Programmably controlled armature winding methods. 5,484,114, Cl. 242-7.030.

Santoro, Mark R.: *See*—
Drost, Robert J.; Murata, David M.; Bosnyak, Robert J.; Santoro, Mark R.; and Tavrow, Lee S., 5,485,106, Cl. 326-66.000.

Santos, Esteban; Sailer, Hanns P.; Singer, Paul H.; and Purkayastha, Indrajit, to General Electric Company. Digital circuit interrupter with battery back-up facility. 5,485,343, Cl. 361-115.000.

Sanyo Electric Co., Ltd.: *See*—
Ogawa, Atsushi; Ozawa, Yoshio; Hirata, Toshimichi; Kawai, Tsuyoshi; Fukushima, Kiyoshi; and Toyoshima, Masashi, 5,483,804, Cl. 62-153.000.

Sapporo Breweries Limited: *See*—
Kado, Hisao; and Nakakita, Yasukazu, 5,484,715, Cl. 435-103.000.

Saracino, Anthony R.: *See*—
Kaufmann, Christine M.; Murschell, Dale L.; Nollen, Dennis A.; Saracino, Anthony R.; and Trentacosta, Joseph D., 5,484,500, Cl. 156-198.000.

Saravia, Heber; Jones, Christopher S.; and Nelson, Charles L., to Stryker Corporation. Surgical suction irrigator. 5,484,402, Cl. 604-35.000.

Sard, Howard P.: *See*—
Sharpe, Richard J.; Arndt, Kenneth A.; Galli, Stephen L.; Meltzer, Peter C.; Razdan, Raj K.; and Sard, Howard P., 5,484,788, Cl. 514-275.000.

Sarkkinen, Timo; Alapuranen, Pertti; and Tiensyrjä, Kari, to Rautaruukki Oy. Method and apparatus for successive horizontal and vertical data filtering. 5,485,412, Cl. 364-724.050.

Sasaki, Ichiro; Teraoka, Takao; Ohshima, Junji; Katsumata, Toru; and Sato, Koichi, to Polyplastics Co., Ltd.; and Takeda Chemical Indus., Ltd. Polyacetal compositions having surface gloss reducing effective amounts of core-shell polymers. 5,484,845, Cl. 525-64.000.

Sasaki, Katsunari: *See*—
Inoue, Nobuhiro; Sasaki, Katsunari; Nose, Toshiro; and Hatate, Yoshio, 5,485,193, Cl. 347-206.000.

Sasaki, Koshi; Ohara, Hidehiko; and Imaki, Naoshi, to Mitsubishi Chemical Corporation. Fluorine-containing polyolefin non-woven fabric and method of manufacturing the same. 5,484,651, Cl. 428-224.000.

Sasaki, Masahiko; and Hatada, Hideo, to Sony Corporation. Monitoring device. 5,485,056, Cl. 315-8.000.

Sasaki, Mitsuo; and Hirai, Toshiro, to Unisia Jec Corporation; and Nissan Motor Co., Ltd. Apparatus and method for controlling damping force characteristic of vehicular shock absorber. 5,485,377, Cl. 364-424.050.

Sasaki, Shinichi: *See*—
Higeta, Akira; Odagawa, Kazuyoshi; and Sasaki, Shinichi, 5,485,249, Cl. 355-210.000.

Sasaki, Takashi; Harada, Hiroyuki; and Hogetsu, Akihiko, to Shinko Pantec Co., Ltd.; and Mitsubishi Corporation. Methods and apparatuses for producing high purity oxygen and hydrogen. 5,484,512, Cl. 204-129.000.

Satake, Masaki: *See*—
Hashimoto, Hiroshi; Satake, Masaki; Murayama, Yuichiro; and Okita, Tsutomu, 5,484,661, Cl. 428-522.000.

Satake, Toshimi: *See*—
Takano, Toshiyuki; and Satake, Toshimi, 5,484,689, Cl. 430-341.000.

Sater, Ghaleb A.: *See*—
Green, David T.; Bolanos, Henry; Heaton, Lisa W.; Alari, Mark E.; and Sater, Ghaleb A., 5,484,095, Cl. 227-181.100.

Sato, Haruo, to Nikon Corporation. Standard zoom lens. 5,485,314, Cl. 359-691.000.

Sato, Koichi: *See*—
Sasaki, Ichiro; Teraoka, Takao; Ohshima, Junji; Katsumata, Toru; and Sato, Koichi, 5,484,845, Cl. 525-64.000.

Sato, Mamoru; Osawa, Hidefumi; and Kawamura, Naoto, to Canon Kabushiki Kaisha. Image processing apparatus. 5,485,557, Cl. 395-[illegible].000.

Sato, Masuhiro: *See*—
Nakai, Toshiki; Amano, Mitsuyoshi; Miyamoto, Kazuhiro; Akiba, Yoshiyuki; and Sato, Masuhiro, 5,484,291, Cl. 434-307.00A.

Sato, Norio: *See*—
Nomura, Hiroshi; Sato, Norio; and Aoki, Nobuaki, 5,485,315, Cl. 359-701.000.

Sato, Osamu; Nakano, Satoshi; Hirai, Isamu; Kitazawa, Toshiyuki; Sensui, Takayuki; Yamamoto, Masato; Yamanaka, Toshimasa; Shishikura, Takeno; and Takahashi, Akio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Exposure control apparatus of camera. 5,485,242, Cl. 354-442.000.

Sato, Osamu: *See*—
Oike, Mitsuru; Kusano, Masahiro; and Sato, Osamu, 5,485,376, Cl. 364-424.050.

Sato, Shigemasa: *See*—
Tsuru, Hiroyuki; Sato, Shigemasa; and Terumuma, Hiroshi, 5,485,240, Cl. 354-402.000.

Sato, Shinichi: *See*—
Tochihara, Shinichi; and Sato, Shinichi, 5,485,188, Cl. 347-100.000.

Sato, Toshihiko: *See*—
Seki, Yasunari; Sato, Toshihiko; Iida, Naoki; and Iwata, Yoichi, 5,485,382, Cl. 364-431.050.

Sato, Yoshio: *See*—
Maeda, Yoshihito; Ikuta, Isao; Andoh, Hisashi; Nagai, Masaichi; Katoh, Yoshimi; Sato, Yoshio; Tsuboi, Nobuyoshi; and Minemura, Hiroyuki, 5,484,686, Cl. 430-270.130.

Satoh, Isao: *See*—
Hamasaka, Hiroshi; Satoh, Isao; Fukushima, Yoshihisa; Takagi, Yuji; and Azumatani, Yasushi, 5,485,439, Cl. 369-47.000.

Satomura, Seiichiro; Yamazaki, Katuya; and Ishii, Kazuyoshi, to Canon Kabushiki Kaisha. Information recording method and apparatus for determining whether recording has been correctly performed. 5,485,433, Cl. 369-13.000.

Sattinger, Stanley S.: *See*—
McKendree, Francis S.; Wright, Dexter V.; Hill, Peter D.; and Sattinger, Stanley S., 5,484,969, Cl. 181-142.000.

Saturn Electronics & Engineering, Inc.: *See*—
Ciolli, Henry, 5,483,835, Cl. 73-726.000.

Saund, Eric; Moran, Thomas P.; and Becker, Craig D., to Xerox Corporation. Gestural indicators for selecting graphic objects. 5,485,565, Cl. 395-142.000.

Saur, Reinhold: *See*—
Sauter, Hubert; Schelberger, Klaus; Saur, Reinhold; Lorenz, Gisela; and Ammermann, Eberhard, 5,484,779, Cl. 514-63.000.

Sauter, Hubert; Schelberger, Klaus; Saur, Reinhold; Lorenz, Gisela; and Ammermann, Eberhard, to BASF Aktiengesellschaft. Fungicidal compositions. 5,484,779, Cl. 514-63.000.

Savair Inc.: *See*—
Fantazian, George V.; and Eisbrenner, Ronald J., 5,484,986, Cl. 219-[illegible].410.

Savannah Foods and Industries: *See*—
Zeigler, Dwayne, 5,485,066, Cl. 318-375.000.

Savi Technology, Inc.: *See*—
Verma, Vikram; Yeo, Nian J.; and Balzano, Quirino, 5,485,166, Cl. 343-744.000.

Sawachika, Isao; Muraoka, Yoshiro; and Torizuka, Masami, to Sony Corporation. Automatic image regulating arrangement for head-mounted image display apparatus. 5,485,172, Cl. 345-8.000.

Sawauchi, Toshiki: *See*—
Nagai, Takaji; Sawauchi, Toshiki; and Ishihara, Mitsuhira, 5,484,322, Cl. 451-5.000.

Sbalchiero, Federico; Luciani, Sabatino; and Rossi, Alessandro, to Axis USA, Inc. Fusing methods and apparatus for use in making dynamo-electric machines. 5,484,976, Cl. 219-110.000.

Sbaschnig, Richard W.: *See*—
Cullen, Michael J.; Marzonie, Robert M.; Ulrey, Joseph N.; Sbaschnig, Richard W.; Weyburne, Michael A.; and Mingo, Paul C., 5,483,941, Cl. 123-481.000.

Scambia Industrial Developments Aktiengesellschaft: *See*—
Steenackers, Pieter D., 5,484,575, Cl. 422-176.000.

Scarzello, Osvaldo, to Comau S.p.A. Machine tool with a dynamic tool magazine. 5,484,369, Cl. 483-56.000.

Schabes, Yves: *See*—
Golding, Andrew R.; Schabes, Yves; and Roche, Emmanuel, 5,485,372, Cl. 364-419.080.

Schade, Christian: *See*—
Bruchmann, Bernd; Minges, Roland; and Schade, Christian, 5,484,916, Cl. 540-202.000.

Schadt, Martin: *See*—
Kelly, Stephen; and Schadt, Martin, 5,484,551, Cl. 252-299.670.

Schaetzer, Erich: *See*—
Berger, Harald; Dragesser, Norbert; Heumueller, Rudolf; Schaetzer, Erich; and Wagner, Manfred, 5,484,573, Cl. 422-128.000.

Scharf, Mike; Finley, Mike; Veillon, Joe; Kipp, Jim; Dudar, Tom; Owens, Jim; and Ogle, Jim, to United States of America, National Aeronautics and Space Administration. System for creating at a site, remote from a sterile environment, a parenteral solution. 5,484,431, Cl. 604-403.000.

Scheffer, Terry J.; and Clifton, Benjamin R., to In Focus Systems, Inc. LCD addressing system and method. 5,485,173, Cl. 345-100.000.

Scheidt, Wilbur D.: *See*—
Pratt, Vanon D.; Whitney, Eric J.; and Scheidt, Wilbur D., 5,484,980, Cl. 219-121.650.

Scheier, Louise E.: *See*—
Scheier, Paul A.; and Scheier, Louise E., 5,483,722, Cl. 15-167.200.

Scheier, Paul A.; and Scheier, Louise E. Toothbrush with resilient flexible bristle support. 5,483,722, Cl. 15-167.200.

Scheiffele, Ekkehard; Gerber, Gerhard; Siems, Werner; and Werner, Andreas, to Henning Berlin GmbH Chemie-und Pharmawerk. Agent for treating chronically inflammatory intestional diseases. 5,484,605, Cl. 424-451.000.

Schelberger, Klaus: *See*—
Sauter, Hubert; Schelberger, Klaus; Saur, Reinhold; Lorenz, Gisela; and Ammermann, Eberhard, 5,484,779, Cl. 514-63.000.

Schell, Jerry D.: *See*—
Singh, Jogender; Schell, Jerry D.; and Young, William R., 5,484,665, Cl. 428-661.000.

Schenk-Filterbau Gesellschaft mit beschränkter Haftung: *See*—
Oechsle, Dietmar; Baur, Wolfgang; and Gottkehaskamp, Ludger, 5,484,620, Cl. 426-422.000.

Schepers, Frederik, to Lever Brothers Company, Division of Conopco, Inc. Method for creating a pH jump system. 5,484,555, Cl. 252-541.000.

Schepis, Dominic J.; Srikrishnan, Kris V.; Subbanna, Seshadri; and Tejwani, Manu J., to International Business Machines Corporation. Antifuse element with electrical or optical programming. 5,485,032, Cl. 257-530.000.

Schering Corporation: *See*—
Doran, Henry J.; and Coveney, Donal J., 5,484,931, Cl. 546-310.000.

Scherr, Elliot: *See*—
MacDiarmid, Alan G.; Scherr, Elliot; and Tang, Xun, 5,484,884, Cl. 528-422.000.

Schiffelbolz, Max. Cup stacking apparatus. 5,484,254, Cl. 414-788.200.

Schilit, William N.: *See*—
Weiser, Mark D.; Goldstein, Richard J.; Want, Roy; Welch, Brent B.; Elrod, Scott A.; Maltz, David A.; Schilit, William N.; and Theimer, Marvin M., 5,485,634, Cl. 455-53.100.

Schilling, Steven L.: *See*—
Bolton, Jeffrey S.; Kalyanaraman, Ramon; Schilling, Steven L.; and Blue, Clarence D., 5,484,819, Cl. 521-155.000.

Schinn, Volker: *See*—
Hecht, Franz; Kurze, Bernd; Hentschel, Mona; Schinn, Volker; Weichselbaum, Thomas; and Kranz, Hans-Werner, 5,485,350, Cl. 361-697.000.

Schleiermacher, Herbert: *See*—

Mahlberg, Hans-Peter; Fuchs, Heinz W.; Rechberg, Reinhard; Bauer, Lothar; Lemme, Werner; Strusch, Wolfgang; Tedsen, Tai; Schleiermacher, Herbert; and Wahnschaffe, Jürgen, 5,483,928, Cl. 123-41.420.

Schleigh, William R.: *See*—
Jain, Rakesh; Schleigh, William R.; and Stewart, Robert C., 5,484,696, Cl. 430-551.000.

Schlessinger, Marc A. Switching type electrical receptacles having selectively orientable plug-receiving contact carriers. 5,484,299, Cl. 439-188.000.

Schlessmann, Helmut: *See*—
Stoll, Gerhard; and Schlessmann, Helmut, 5,483,931, Cl. 123-185.300.

Schloegl, Gunter: *See*—
Murschall, Ursula; Peiffer, Herbert; and Schloegl, Gunter, 5,484,633, Cl. 428-35.700.

Schlosser, Wolfgang: *See*—
Gibb, Peter; Voss, Henry H.; Schlosser, Wolfgang; and Pow, Eric G., 5,484,666, Cl. 429-34.000.

Schlueter, Harald: *See*—
Schulze, Joerg; Schlueter, Harald; Bacher, Kurt; Schrott, Wolfgang; and Kromm, Erich, 5,484,457, Cl. 8-543.000.

Schlumberger Industries: *See*—
Fillod, Maurice; and Gautherot, Daniel, 5,484,215, Cl. 400-120.180.

Schlumberger Technology Corporation: *See*—
Eddison, Alan M., 5,484,029, Cl. 175-73.000.
Johnson, David L.; Kostek, Sergio; and Norris, Andrew, 5,485,431, Cl. 367-30.000.

Schlüter, Peter, to Lucas Industries Public Limited Company. Pneumatic booster with solenoid auxiliary control, particularly for motor vehicle brake systems. 5,483,866, Cl. 91-367.000.

Schmaltz, Dale: *See*—
Atkinson, Robert; Keith, Peter; Ellis, Louis G.; Schmaltz, Dale; and Robinson, David, 5,484,409, Cl. 604-96.000.

Schmidt, Friedrich G.: *See*—
Jadamus, Hans; Schmidt, Friedrich G.; and Heuer, Horst, 5,484,848, Cl. 525-105.000.

Schmidt, Jonathan R.: *See*—
Williams, Kenneth R.; Koehl, Herbert K.; and Schmidt, Jonathan R., 5,485,494, Cl. 378-16.000.

Schmidt, Karl: *See*—
Horvath, Stefan; Schmidt, Karl; Schommer, Henry; and Fiedler, Gerhard, 5,484,265, Cl. 417-32.000.

Schmidt, Manfred: *See*—
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Shin-Etsu Polymer Co., Ltd.: *See*—
Odashima, Satoshi; and Yoshida, Kazuyoshi, 5,484,648, Cl. 428-209.000.

Shin, Jung-hyun: *See*—
Lee, Yong-hee; Seo, Young-woo; and Shin, Jung-hyun, 5,484,739, Cl. 437-34.000.

Shinada, Yasuyuki: *See*—
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Shindo, Yoichi: *See*—
Kitamura, Shoji; and Shindo, Yoichi, 5,485,479, Cl. 372-43.000.

Shinko Pantec Co., Ltd.: *See*—
Sasaki, Takashi; Harada, Hiroyuki; and Hogetsu, Akihiko, 5,484,512, Cl. 204-129.000.

Shinohara, Masanori: *See*—
Yokoyama, Haruki; and Shinohara, Masanori, 5,483,919, Cl. 117-89.000.

Shinohara, Yoshio: *See*—
Kaneko, Akira; Iguchi, Norikazu; Hayashida, Takahiro; Takeshita, Toru; and Shinohara, Yoshio, 5,485,065, Cl. 318-270.000.

Shinozaki, Hirofumi: *See*—
Hirano, Satoshi; and Shinozaki, Hirofumi, 5,485,266, Cl. 356-249.000.

Shioazaki, Shizuo: *See*—
Suzuki, Fumio; Shimada, Junichi; Koike, Nobuaki; Nakamura, Joji; Shioazaki, Shizuo; Ichikawa, Shunji; Ishii, Akio; and Nonaka, Hiromi, 5,484,920, Cl. 544-268.000.

Shiono, Katsumi: *See*—
Kashima, Rika; Nakamura, Shunichiro; Minemura, Harumi; Shiono, Katsumi; Higuchi, Masahiro; Yoshimori, Mikio; and Hayakawa, Takayuki, 5,485,598, Cl. 395-182.040.

Shionogi & Co., Ltd.: *See*—
Kageyama, Bunji; Nakae, Masanori; and Yagi, Shigeo, 5,484,725, Cl. 435-197.000.

Shiozawa, Akira: *See*—
Tatee, Tochiro; Shiozawa, Akira; Yamamoto, Hirotaka; Ichikawa, Yuhichiro; and Narita, Aya, 5,484,954, Cl. 549-389.000.

Shipley Company Inc.: *See*—
Goldberg, Robert L., 5,484,518, Cl. 205-166.000.

Shipley Company L.L.C.: *See*—
Storjohann, Donald E.; and Wiberg, Sven J., 5,484,626, Cl. 427-8.000.

Shippee, James H. Floating layer recovery apparatus. 5,484,023, Cl. 166-369.000.

Shippers Paper Products Company: *See*—
Haywood, Gerald A.; King, Gregory S.; and Sansone, Anthony J., 5,484,241, Cl. 410-154.000.

Shirasu, Toshiyuki: *See*—
Saito, Etsuro; Ozaki, Yoshio; Shirasu, Toshiyuki; and Yoshikawa, Koichi, 5,485,232, Cl. 352-5.000.

Shirokawa, Takashi: *See*—
Kikuchi, Yasushi; Ochiai, Tetsuo; Shirokawa, Takashi; and Fujii, Hajime, 5,484,836, Cl. 524-495.000.

Shiroyama, Shigeru: *See*—
Kuragaki, Akira; and Shiroyama, Shigeru, 5,485,048, Cl. 310-239.000.

Shiseido Company, Ltd.: *See*—
Yanagida, Takeshi; and Sakamoto, Okihiko, 5,484,816, Cl. 514-725.000.

Shishikura, Takenao: *See*—
Sato, Osamu; Nakano, Satoshi; Hirai, Isamu; Kitazawa, Toshiyuki; Sensui, Takayuki; Yamamoto, Masato; Yamanaka, Toshimasa; Shishikura, Takenao; and Takahashi, Akio, 5,485,242, Cl. 354-442.000.

Shofner, Frederick M.; Townes, Mark G.; and Williams, Gordon F., to Zellweger Uster, Inc. Needle-based apparatus for individualizing single fibers and other textile entities for testing purposes. 5,483,844, Cl. 73-864.420.

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Gotoda, Katsuhiko; Inada, Hisanobu; Shoji, Susumu; Shiba, Katsuya; Tsukuda, Yasunori; and Nakamura, Masanari, 5,485,244, Cl. 355-200.000.

Shono, Seita; and Usami, Akihiro, to Canon Kabushiki Kaisha. Image processing system for performing color image data calibration. 5,485,284, Cl. 358-504.000.

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Banning, Kenneth R.; Erwin-Grotsky, George P.; Li, Shih-Gong; Sanchez-Frank, Alejandra; and Shrader, Theodore, 5,485,567, Cl. 395-148.000.

Shriver, James M. Portable pitching aid. 5,484,145, Cl. 273-26.00A.

Shtayer, Roneu; Eliyahu, Roni; Shvager, Yehuda; and Ben-Arie, Yaron, to Motorola, Inc. Asynchronous transfer mode (ATM) system having an ATM device coupled to multiple physical layer devices. 5,485,456, Cl. 370-60.000.

Shuman, Robert T.: *See*—
Sall, Daniel J.; Shuman, Robert T.; Smith, Gerald F.; and Wiley, Michael R., 5,484,772, Cl. 514-18.000.

Shvager, Yehuda: *See*—
Shtayer, Roneu; Eliyahu, Roni; Shvager, Yehuda; and Ben-Arie, Yaron, 5,485,456, Cl. 370-60.000.

Sicinski, Rafal R.: *See*—
DeLuca, Hector F.; and Sicinski, Rafal R., 5,484,781, Cl. 514-167.000.
DeLuca, Hector F.; and Sicinski, Rafal R., 5,484,782, Cl. 514-167.000.

Siddall, Jonathan H.; and Beaudoin, Daniel A., to Dow Chemical Company, The. Liquid phase powder bed syndiotactic vinylaromatic polymerization. 5,484,862, Cl. 526-88.000.

Sideman, Samuel: *See*—
Adam, Dan; Viesnudel, Ilia; Gilat, Shlomo; and Sideman, Samuel, 5,483,968, Cl. 128-696.000.

Siecor Corporation: *See*—
Mills, Gregory A., 5,485,539, Cl. 385-114.000.

Siegrist, Urs; and Szczepanski, Henry, to Ciba-Geigy Corporation. Process for the preparation of aqueous nicotinaldehyde. 5,484,918, Cl. 544-182.000.

Siemens Aktiengesellschaft: *See*—
Aichinger, Horst, 5,485,501, Cl. 378-98.700.
Franetzki, Manfred, 5,484,283, Cl. 433-116.000.
Hauptmann, Jörg, 5,485,516, Cl. 379-413.000.
Hechi, Franz; Kurze, Bernd; Hentschel, Mona; Schinn, Volker; Weichselbaum, Thomas; and Kranz, Hans-Werner, 5,485,350, Cl. 361-692.000.
Kiehl, Oliver, 5,485,123, Cl. 330-264.000.
Stoecki, Klaus, 5,484,188, Cl. 297-408.000.

Siemens Automotive L.P.: *See*—
Nally, Debora E., 5,484,108, Cl. 239-553.300.

Siemens Corporate Research, Inc.: *See*—
Schwanke, Robert W., 5,485,621, Cl. 395-700.000.

Siemens Electric Limited: *See*—
Perry, Paul D.; and Cook, John E., 5,483,942, Cl. 123-520.000.

Siemens Medical Systems, Inc.: *See*—
Kelly, Cliff; Crouse, Helen C.; and Hoel, Per, 5,485,349, Cl. 361-690.000.

Siemens Roim Communications Inc.: *See*—
Iglehart, David; Whittington, Robert D.; Jreij, Elie A.; Kosciuski, Andrzej; and Lester, Leland, 5,485,511, Cl. 379-201.000.

Siemerink, Bernadinus F. A.; and Huisman, Wilhelmus J. J. Construction according to a double-curved surface. 5,483,774, Cl. 52-81.200.

Siemon, Ronald L.: *See*—
Pawloski, James C.; Bliss, Gary S.; and Siemon, Ronald L., 5,484,052, Cl. 198-803.010.

Siems, Werner: *See*—
Scheiffele, Ekkehard; Gerber, Gerhard; Siems, Werner; and Werner, Andreas, 5,484,605, Cl. 424-451.000.

Siliconix Incorporated: *See*—
Williams, Richard K.; and Blanchard, Richard A., 5,485,027, Cl. 257-543.000.

Silverman, Jeffrey N., to Genesco Inc. Footwear or other products. 5,483,759, Cl. 36-137.000.

Simensen, Christian: *See*—
Rogers, Kevin P.; and Simensen, Christian, 5,484,492, Cl. 148-437.000.

Simmering, Lisa C.: *See*—
Whitney, Robert L.; Simmering, Lisa C.; O'Nan, Glenn S.; Bryant, Aubrey; and Reed, Steven F., 5,484,300, Cl. 439-207.000.

Simmons, Stephen C.: *See*—
Kerstein, Scott M.; Simmons, Stephen C.; Dunn, Brett A.; and Grider, Duane M., 5,483,936, Cl. 123-425.000.

Simon, Ethan S.: *See*—
Paik, Yi H.; Simon, Ethan S.; and Swift, Graham, 5,484,878, Cl. 528-328.000.

Simon, John: *See*—
McLaughlin, Paul D.; Joshi, Sharad; Syad, Azhar; and Simon, John, 5,483,976, Cl. 128-885.000.

Simon, Richard L.: *See*—
Boyd, Donald B.; Hauser, Kenneth L.; Lifer, Sherryl L.; Marshall, Winston S.; Palkowitz, Alan D.; Pfeifer, William; Reel, Jon K.; Simon, Richard L.; Steinberg, Mitchell I.; Takeuchi, Kumiko; Thrasher, K. Jeff; and Whitesitt, Celia A., 5,484,780, Cl. 514-94.000.

Simoncic, Paul: *See*—
Horn, Raymond; and Simoncic, Paul, 5,485,528, Cl. 382-131.000.

Simone, Michael L.: *See*—
DuPont, Paul R.; Schwarz, Richard B.; Dubord, Richard N.; and Simone, Michael L., 5,484,506, Cl. 156-503.000.

Simpson, Danny, to Seymour Housewares Corporation. Door mounted ironing board assembly with retractable holders. 5,483,761, Cl. 38-137.000.

Simpson Industries, Inc.: *See*—
Friedman, Ronald S.; and Sisco, William C., 5,483,932, Cl. 123-192.300.

Simpson, Richard: *See*—
Gutag, Karl M.; Simpson, Richard; and Walsh, Brendan, 5,485,411, Cl. 364-716.000.

SIMS Deltec, Inc.: *See*—
Blomquist, Michael L., 5,485,408, Cl. 364-578.000.

Singer, Mark S.: *See*—
Lasky, Laurence A.; Imai, Yasuyuki; Rosen, Steven D.; and Singer, Mark S., 5,484,891, Cl. 530-387.300.

Singer, Martin H.; Tell, Daniel; and Kobrinetz, Anthony, to Motorola, Inc. Personal locator system. 5,485,163, Cl. 342-457.000.

Singer, Paul H.: *See*—
Santos, Esteban; Sailer, Hanns P.; Singer, Paul H.; and Purkayastha, Indrajit, 5,485,343, Cl. 361-115.000.

Singer, Robert D.; and Trickey, Ernest A., to ElectroBionics Corporation. Method and apparatus for rotating a wrist. 5,484,394, Cl. 602-16.000.

Singer, Vanessa L. Combination strumming pick and percussion device. 5,483,859, Cl. 84-322.000.

Singh, Jogender; Schell, Jerry D.; and Young, William R., to General Electric Company. Rotary seal member and method for making. 5,484,665, Cl. 428-661.000.

Singh, Shanker, to International Business Machines Corporation. Memory array based data reorganizer. 5,485,588, Cl. 395-405.000.

Singleton, Robert W.; and McCann, Donald R., to Ford Motor Company. Force reversing and transmitting apparatus for a parking brake system. 5,484,039, Cl. 188-2.00D.

Sisco, William C.: *See*—
Friedman, Ronald S.; and Sisco, William C., 5,483,932, Cl. 123-192.200.

Sjogren, Robert D., to Meridian, L.L.C. Insecticidal composite timed released particle. 5,484,600, Cl. 424-405.000.

Skaarup, Ole; and Hara, James H., to Skarhar, Inc. Self-launching superstructure for vessels. 5,483,910, Cl. 114-71.000.

Skaistis, Jeff: *See*—
Nicholls, Peter; Kiayos, Robert; Skaistis, Jeff; Johnson, Steve; Locker, Andy; Guzik, Chris; and Howard, Scott, 5,485,369, Cl. 364-401.000.

Skarhar, Inc.: *See*—
Skaarup, Ole; and Hara, James H., 5,483,910, Cl. 114-71.000.

SKF France: *See*—
Caillaut, Claude; Bonnin, Christophe; Houdayer, Christophe; Riganz, Christian; Berges, Martha; Beghini, Eric; Defossez, Marc; and Message, Olivier, 5,484,213, Cl. 384-486.000.

Skibida, Irina P.; Sakharov, Andrei M.; and Sakharov, Aleksej M., to Cerestar Holding B.V. Process for the production of oxyacids from carbohydrates. 5,484,914, Cl. 536-124.000.

Skorochodov, Wladimir N.: *See*—
Dejneko, Andrej D.; Skorochodov, Wladimir N.; Kosar, Sergej L.; Lepeicin, Wladilen S.; Schumilow, Wladimir P.; Gutu, Mihail-Dan; Riedesel, Udo; and Rogowsky, Heinz F., 5,484,513, Cl. 204-129.100.

Skow, Lynn R.; Moore, Arthur R.; and Gilbertson, James R., to Minnesota Mining and Manufacturing Company. Magazine storage system for recording strips. 5,485,325, Cl. 360-91.000.

Skowronski, Richard E.; Lantz, Kenneth F.; Leon, Tomas F., deceased (by Jose Leon); Alexander, Donald J.; Kolonsayets, George; Adams, Vincent C.; Szymczak, Eugene B.; Minnich, Edward W.; and Totzke, Wade K., to Life Fitness. Exercise treadmill. 5,484,362, Cl. 482-54.000.

Slavicheff, Craig S.; and Barrow, Stephen R., to Chesebrough-Pond's USA Co. Clear hydroalcholic cosmetic microemulsions. 5,484,597, Cl. 424-401.000.

Sleicher, Daniel: *See*—
Brown, Gene W.; Calcaterra, Farrell F.; and Sleicher, Daniel, 5,484,466, Cl. 55-498.000.

Sloan-Kettering Institute for Cancer Research: *See*—
DiResta, Gene R.; Lee, Jongbin; and Arbit, Ehud, 5,484,399, Cl. 604-21.000.

Sloane, Thomas E., Jr.; and Altman, Zinovy, to Critikon, Inc. Catheter needle having surface indication thereon and process for forming such catheter. 5,484,422, Cl. 604-272.000.

Slocum, Alexander H.: *See*—
Kane, Nathan R.; and Slocum, Alexander H., 5,484,208, Cl. 384-12.000.

Smallwood, Robert C.; and Zarich, Michael P. Gas discharge lamp and power distribution system therefor. 5,485,057, Cl. 315-58.000.

SMC Kabushiki Kaisha: *See*—
Nagai, Shigekazu; Kawamoto, Tadasu; and Isaba, Teruo, 5,484,051, Cl. 198-750.700.

Smedley, William H.: *See*—
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,484,360, Cl. 482-37.000.

Smith & Nephew plc: *See*—
Holden, Paul; and Sandbank, Barry M., 5,484,603, Cl. 424-447.000.

Smith & Nephew Roylan, Inc.: *See*—
King, Theodore L., II; and Basaj, Barbara L., 5,484,355, Cl. 482-4.000.

Smith, Colin D.: *See*—
Miller, Jeremy P.; Smith, Colin D.; Allam, Rodney J.; and Topham, Anthony K. J., 5,483,806, Cl. 62-402.000.

Smith, Craig C., to Brigham Young University. Method for processing sampled data signals. 5,485,395, Cl. 364-485.000.
Smith, David: *See*—
Healey, Peter; and Smith, David, 5,485,296, Cl. 359-112.000.
Smith, Deborah J.: *See*—
Licari, James J.; and Smith, Deborah J., 5,485,038, Cl. 257-758.000.
Smith, Denise M.: *See*—
Awad, Aziz C.; and Smith, Denise M., 5,484,624, Cl. 426-614.000.
Smith, Douglas G.; Joseph, Aaron W.; Boone, David A.; Borchers, Robert E.; and Burgess, Ernest M., to Prosthetics Research Study. Gait activity monitor. 5,485,402, Cl. 364-566.000.
Smith, Douglas H.: *See*—
Miller, Leslie A.; McCall, Thomas J., Jr.; Marquiss, Samuel A.; Smith, Douglas H.; and Johnson, Richard F., 5,483,843, Cl. 73-864.230.
Smith, Edward F., III: *See*—
Klein, Arthur S.; and Smith, Edward F., III, 5,484,569, Cl. 420-503.000.
Smith, Edward T.: *See*—
Bajuk, Stanislav P.; O'Grady, David S.; and Smith, Edward T., 5,484,672, Cl. 430-5.000.
Smith, Franklin D. Portable line barrier. 5,484,137, Cl. 256-50.000.
Smith, Gerald F.: *See*—
Sall, Daniel J.; Shuman, Robert T.; Smith, Gerald F.; and Wiley, Michael R., 5,484,772, Cl. 514-18.000.
Smith, Graham: *See*—
Prader, Randolph D.; and Smith, Graham, 5,484,376, Cl. 493-194.000.
Smith, Kenneth W., to Borland International, Inc. Methods and interface for building command expressions in a computer system. 5,485,618, Cl. 395-700.000.
Smith, Kerby C.: *See*—
Hellweg, Albert W.; and Smith, Kerby C., 5,484,093, Cl. 224-253.000.
Smith, Marc L.: *See*—
Lewarchik, Ronald J.; Smith, Marc L.; and Sestrick, Michael R., 5,484,842, Cl. 524-608.000.
Smith, Robert K. Belt cleaner. 5,484,323, Cl. 451-10.000.
Smith, Thomas W.: *See*—
Cunningham, Michael F.; Mahabadi, Hadi K.; Smith, Thomas W.; and Creatura, John A., 5,484,681, Cl. 430-137.000.
Smith, Vernon A.; Suthard, Robert A.; Urness, Kevin J.; and Weade, Russell E., to Molex Incorporated. Electrical terminal applicator with improved crimp height adjustment plate means. 5,483,739, Cl. 29-753.000.
Smiths Industries: *See*—
Pulice, Gerald F., 5,485,083, Cl. 324-204.000.
Smits, Hendrikus J. E.; van der Meer, Roelof; and Groothuis, Adelbert H. L., to General Electric Company. Polymer mixture which comprises a polyphenylene ether and a polyamide. 5,484,858, Cl. 525-393.000.
Smitterberg, Dean W.; Nachtrab, William R., Jr.; Kadlecek, David G.; and Beutler, Bruce H., to Marquip, Inc. Apparatus and method for slitting corrugated paperboard boxes. 5,483,856, Cl. 83-23.000.
Smocer, Anthony V. Safety syringe. 5,484,421, Cl. 604-195.000.
Smothers, William K., to Du Pont de Nemours, E. I., and Company. Visible dye photosensitizers derived from tropinone. 5,484,927, Cl. 546-126.000.
Smith, Steven L.: *See*—
Bjorner, Johannes A. S.; and Smtih, Steven L., 5,485,263, Cl. 356-4.010.
Snare, Jeffrey L.: *See*—
Crabbé, Emmanuel F.; Jenkins, Keith A.; and Snare, Jeffrey L., 5,485,029, Cl. 257-501.000.
Sniff, Donald, to Emergency Safety Products, Inc. Electroluminescent sign conversion kit. 5,485,145, Cl. 340-815.400.
Sobajima, Yoshihiro; Kinoshita, Satoru; and Hamaura, Masahide, to Mitsubishi Chemical Corporation. Heat-resistant, propylene resin-based molding materials and molded products obtained therefrom. 5,484,835, Cl. 524-494.000.
Sobhani, Mohi, to Hughes Aircraft Company. Brushless rotary connector. 5,484,294, Cl. 439-21.000.
Sobol, James M.: *See*—
Wilson, James; Cellini, Ronald A.; and Sobol, James M., 5,485,152, Cl. 341-143.000.
Societa Italiana Progetti S.r.l.: *See*—
Marinoni, Mario, 5,483,770, Cl. 49-388.000.
Societe Francaise Hoechst: *See*—
Mallo, Paul; Fietier, Isabelle; and Karsunky, Ulrich, 5,484,843, Cl. 524-804.000.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.": *See*—
D'Agostino, Guy; and Belhamici, Rachid, 5,483,991, Cl. 137-514.000.
Soga, Hiroshi: *See*—
Hiuke, Tadashi; Inoue, Yasokazu; and Soga, Hiroshi, 5,484,456, Cl. 8-543.000.
Soga, Takashi: *See*—
Oizumi, Hiroaki; Ito, Masaaki; Soga, Takashi; Ogawa, Taro; Mochiji, Kozo; and Takeda, Eiji, 5,485,497, Cl. 378-84.000.
Sogou, Hirishi: *See*—
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Sohn, Wayne J.: *See*—
Chainer, Timothy J.; Sohn, Wayne J.; and Yarmchuk, Edward J., 5,485,322, Cl. 360-51.000.
Sokal, Nathan O. Flyback charging with current mode controlled flyback converter. 5,485,361, Cl. 363-21.000.
Sokn, Erick L.: *See*—
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Solari Udine S.p.A.: *See*—
Perissinotto, Claudio; and Fiorentini, Antonio, 5,485,317, Cl. 359-712.000.
Sollami Company, The: *See*—
Sollami, Phillip A., 5,484,191, Cl. 299-105.000.
Sollami, Phillip A., to Sollami Company, The . Insert for tungsten carbide tool. 5,484,191, Cl. 299-105.000.
Solomon, Montague C.; and Oraceska, Biljana, to Chatfield Pharmaceuticals Limited. Cross-linked alginate transdermal medicine delivery devices. 5,484,604, Cl. 424-449.000.
Sölve, Torbjön W.; and Zak, Robert A., to Ericsson GE Mobile Communications, Inc. System for adaptively reducing noise in speech signals. 5,485,522, Cl. 381-56.000.
Somers, Gerardus H. J.: *See*—
Postma, Lambertus; Haisma, Jan; Ruigrok, Jacobus J. M.; and Somers, Gerardus H. J., 5,483,735, Cl. 29-603.000.
Sone, Takurou: *See*—
Furukawa, Masamichi; and Sone, Takurou, 5,485,442, Cl. 369-47.000.
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Sonnino, Carlo B.: *See*—
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Sono Therapy Institute, Inc.: *See*—
Pitzen, Sylvester A., 5,484,387, Cl. 601-15.000.
Sonohara, Kazuo: *See*—
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Sony Corporation: *See*—
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Flum, Alan; Zampini, Michael A.; and Allum, Norman A., 5,484,298, Cl. 439-188.000.
Fujinami, Yasushi; and Yonemitsu, Jun, 5,485,280, Cl. 358-335.000.
Kishi, Yoshio; Noshiro, Teruhito; Noguchi, Masato; and Takahashi, Hiroaki, 5,485,448, Cl. 369-99.000.
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Yonemitsu, Jun; Tahara, Katsumi; and Suzuki, Teruhiko, 5,485,279, Cl. 348-411.000.
Zampini, Michael A.; Flum, Alan; Davis, Donald E.; and Dombrowski, Joseph J., 5,485,525, Cl. 381-119.000.
Sony Electronics Inc.: *See*—
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Flum, Alan; Zampini, Michael A.; and Allum, Norman A., 5,484,298, Cl. 439-188.000.
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Sony Magnescale Inc.: *See*—
Ishimoto, Shigeru; Matuyama, Yasuhiko; and Maejima, Hideo, 5,485,407, Cl. 364-577.000.
Sony United Kingdom Limited: *See*—
Burns, James E.; David, Morgan W. A.; and Dorricott, Martin R., 5,485,224, Cl. 348-699.000.
Soofi, Madjid; Irwin, James S.; and Connors, Charles W., Jr., to Magneco/Metrel, Inc. Consumable form with adjustable walls. 5,484,138, Cl. 266-281.000.
Sorkin, Gregory B.: *See*—
Chess, David M.; Kephart, Jeffrey O.; and Sorkin, Gregory B., 5,485,575, Cl. 395-183.140.
Sothman, Donald J., to Commercial and Architectural Products, Inc. Slotted display wall panel. 5,484,067, Cl. 211-87.000.
Sotom, Michel, to Alcatel N.V. Optical switching matrix. 5,485,297, Cl. 359-123.000.
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Suzuki, Fumio; Kuroda, Takeshi; Kawakita, Takashi; Kitamura, Shigeto; and Manabe, Haruhiko, to Kyowa Hakko Kogyo Co., Ltd. Imidazonaphthyridine derivatives. 5,484,924, Cl. 546-82.000.

Suzuki, Hiroshi, to Sony Corporation. Signal recording and/or reproducing device for unequal quantized data with encoded bit count per frame control of writing and/or reading speed. 5,485,469, Cl. 371-41.000.

Suzuki, Kenji; Miyawaki, Mamoru; Akashi, Akira; and Nakayama, Toshiki, to Canon Kabushiki Kaisha. Photosensor device including means for designating a plurality of pixel blocks of any desired size. 5,485,004, Cl. 250-208.200.

Suzuki, Kenji: *See*—
Tsukashima, Keiichi; Nakajima, Masashi, deceased; Fujimaru, Masayoshi; and Suzuki, Kenji, 5,484,949, Cl. 549-13.000.

Suzuki, Kuniyoshi; and Takaku, Toshiaki, to Shin-Etsu Handotai Co., Ltd. Method for storage of silicon wafer. 5,484,748, Cl. 437-225.000.

Suzuki, Masami; Akano, Mitsuhiro; Sugimoto, Katsumi; and Kuroda, Hideyuki, to Zeon Kasei Co., Ltd.; and Fuji Photo Film Co., Ltd. Acoustic insulator. 5,484,970, Cl. 181-294.000.

Suzuki, Motoyoshi: *See*—
Takahashi, Hiroki; Suzuki, Motoyoshi; and Taguchi, Naoto, 5,484,297, Cl. 439-157.000.

Suzuki, Naohisa: *See*—
Tateyama, Jiro; and Suzuki, Naohisa, 5,485,178, Cl. 347-5.000.

Suzuki, Seiji: *See*—
Ishinaga, Hiroyuki; Sugitani, Hiroshi; Masuda, Kazuaki; Kasamoto, Masami; Suzuki, Seiji; Kashino, Toshio; Kawai, Jun; Okazaki, Takeshi; Arashima, Teruo; and Kamiyama, Yuji, 5,485,186, Cl. 347-65.000.

Suzuki, Takayuki: *See*—
Mori, Takao; and Suzuki, Takayuki, 5,485,316, Cl. 359-708.000.

Suzuki, Teruhiko: *See*—
Yonemitsu, Jun; Tahara, Katsumi; and Suzuki, Teruhiko, 5,485,279, Cl. 348-411.000.

Suzuki, Yasuhiro, to Fujitsu Limited. Method and apparatus for continuously displaying a hierarchical menu with a permanent stationing setting/clearing icon. 5,485,175, Cl. 395-156.000.

Suzuki, Yoshiaki: *See*—
Kasashima, Masahiko; Nanno, Nobuyuki; Takeguchi, Kouichirou; Akashi, Kazuo; Suzuki, Yoshiaki; Ando, Makoto; and Yamanaka, Yuji, 5,485,073, Cl. 320-15.000.

Suzuki, Yoshiyuki: *See*—
Kamei, Masafumi; Suzuki, Yoshiyuki; Hasegawa, Shizuo; Ichikawa, Hiroyuki; Funamizu, Yoshihiro; Itoh, Akio; and Abe, Yoshinori, 5,485,288, Cl. 358-530.000.

Svedberg, Lars-Olov: *See*—
Petersen, Jörgen; and Svedberg, Lars-Olov, 5,484,815, Cl. 521-56.000.

Swank, Robert P., to Impact MST Incorporated. Positive displacement centrifugal pump. 5,484,268, Cl. 417-211.000.

Swartz, William E.: *See*—
Leech, Jeffrey L.; Elfstrom, James T.; and Swartz, William E., 5,484,332, Cl. 452-173.000.

Sweazey, Paul, to Apple Computer, Inc. Topology discovery in a multiple-ring network. 5,485,578, Cl. 395-200.110.

Sweden On Line AB: *See*—
Källström, Ulf, 5,485,198, Cl. 348-11.000.

Swift, Graham: *See*—
Paik, Yi H.; Simon, Ethan S.; and Swift, Graham, 5,484,878, Cl. 528-328.000.

Swindle, Robert W.: *See*—
State, Robert A.; Galloway, F. Houston; Medelius, Pedro J.; Swindle, Robert W.; and Bierman, Tracy A., 5,485,142, Cl. 340-506.000.

Swisher, Robert G.; Gaa, Peter C.; and Kasunic, James W., to PPG Industries, Inc. Chemical treatment for fibers and reinforcement for polymer matrices resulting in good solvent resistance. 5,484,656, Cl. 428-378.000.

Syad, Azhar: *See*—
McLaughlin, Paul D.; Joshi, Sharad; Syad, Azhar; and Simon, John, 5,483,976, Cl. 128-885.000.

Sydor, Robin M.; and Grimm, Thomas M., to Ergodyne Corporation. Wrist support and wrist support stay. 5,484,392, Cl. 602-5.000.

Synepos Aktiengesellschaft: *See*—
Racz, Istvan; and Marton, Sylvia, 5,484,776, Cl. 514-54.000.

Szablikowski, Klaus; Buysch, Hans-Josef; and Klausener, Alexander, to Wolff Walsrode Aktiengesellschaft. Process for the production of polysaccharide carbonates. 5,484,903, Cl. 536-18.600.

Szapacs, Edward M.: *See*—
Shaber, Steven H.; Szapacs, Edward M.; and Reynolds, Charles H., 5,484,787, Cl. 514-256.000.

Szczepanski, Henry: *See*—
Siegrist, Urs; and Szczepanski, Henry, 5,484,918, Cl. 544-182.000.

Szejna, Glenn: *See*—
Hinton, Corydon A.; and Szejna, Glenn, 5,485,502, Cl. 378-117.000.

Szmacinski, Henryk: *See*—
Lakowicz, Joseph R.; Berndt, Klaus W.; Nowaczyk, Kazimierz; Szmacinski, Henryk; and Johnson, Michael L., 5,485,530, Cl. 382-191.000.

Szostek, Joseph M.: *See*—
Reuschle, Patricia D.; Kenin, Michael; Posato, John E.; and Szostek, Joseph M., 5,485,255, Cl. 355-225.000.

Szymanski, Thomas; Rolando, Steven A.; Gough, David M.; and Bennett, Gerald S., to Norton Chemical Process Products Corp. Titania-based catalyst carriers. 5,484,757, Cl. 502-439.000.

Szymczak, Eugene B.: *See*—
Skowronski, Richard E.; Lantz, Kenneth F.; Leos, Tomas F., deceased; Alexander, Donald J.; Kolomayets, George; Adams, Vincent C.; Szymczak, Eugene B.; Minnich, Edward W.; and Totzke, Wade E., 5,484,362, Cl. 482-54.000.

T.M.T. Transmissioni Meccaniche Torino S.r.l.: *See*—
Gallone, Fiorenzo, 5,484,210, Cl. 384-49.000.

TA Instruments, Inc.: *See*—
Dunley, Robert L., 5,484,204, Cl. 374-10.000.

Tabart, Michel: *See*—
Achard, Daniel; Grisoni, Serge; Malleron, Jean-Luc; Peyronel, Jean-Francois; and Tabart, Michel, 5,484,804, Cl. 514-414.000.
Achard, Daniel; Moutonnier, Claude; Peyronel, Jean-François; Tabart, Michel; and Truchon, Alain, 5,484,942, Cl. 548-453.000.

Tachibana, Shunichi, to Canon Kabushiki Kaisha. Image recording apparatus. 5,485,285, Cl. 358-296.000.

Tachiiri, Yoshikazu: *See*—
Kanoh, Yoshiaki; Tachiiri, Yoshikazu; and Ogawa, Kazuo, 5,484,162, Cl. 280-711.000.

Tada, Toshihiko: *See*—
Endoh, Chihiro; and Tada, Toshihiko, 5,485,094, Cl. 324-537.000.

Tagawa, Toshiya: *See*—
Hayashi, Masayuki; Mitekura, Yoshihiro; Kanaya, Koichi; Terao, Masato; Tagawa, Toshiya; Tomidokoro, Nobuaki; Kitayama, Masahiro; Kizaki, Osamu; Kawada, Yasuo; Nakahara, Kazuyuki; Harada, Tomofumi; and Hashimoto, Yasunari, 5,485,246, Cl. 355-202.000.

Taguchi, Kazushiro: *See*—
Morishita, Hiroki; Nakamura, Hiroaki; Eki, Makoto; Makiura, Yoshinori; Otsuka, Masao; Taguchi, Kazushiro; and Ban, Keiji, 5,485,247, Cl. 355-205.000.

Taguchi, Naoto: *See*—
Takahashi, Hiroki; Suzuki, Motoyoshi; and Taguchi, Naoto, 5,484,297, Cl. 439-157.000.

Taguchi, Yutaka: *See*—
Seki, Shunichi; Eda, Kazuo; Taguchi, Yutaka; and Onishi, Keiji, 5,485,052, Cl. 310-313.00B.

Tahara, Katsumi: *See*—
Yonemitsu, Jun; Tahara, Katsumi; and Suzuki, Teruhiko, 5,485,279, Cl. 348-411.000.

Tai, Seiji; Hayashi, Nobuyuki; Kamijima, Koichi; Katayose, Mitsuo; Akimoto, Takayuki; Hayashida, Shigeru; Hagiwara, Hideo; Era, Susumu; Kobayashi, Setsuo; and Mukoh, Akio, to Hitachi, Ltd.; and Hitachi Chemical Co., Ltd. Naphthalocyanine derivatives, production thereof, optical recording medium using the same, and production thereof. 5,484,685, Cl. 540-452.000.

Taiho Industries Co., Ltd.: *See*—
Katakura, Takaaki; Mouri, Hidemasa; and Nakamuta, Minoru, 5,484,572, Cl. 422-101.000.
Taisho Pharmaceutical, Co., Ltd.: *See*—
Ogino, Kazumasa; Shimamura, Haruo; Tomisawa, Kazuyuki; Urushizaki, Fumio; Nemoto, Masami; and Yoshida, Taguchika, 5,484,588, Cl. 424-84.000.
Takach, Peter L.: *See*—
Deibler, Dean T.; Ratz, Thomas; Takach, Peter L.; and Thoms, Roland, 5,484,074, Cl. 216-12.000.
Takada, Hiroyuki: *See*—
Aoyama, Yasutada; Takada, Hiroyuki; Hayashi, Koichi; Chaya, Norio; and Nishikawa, Hiroshi, 5,485,218, Cl. 348-447.000.
Takada, Morio; and Kakizawa, Yasutoshi, to Dainippon Ink and Chemicals, Inc. Process for the continuous production of biodegradable polyester polymer. 5,484,882, Cl. 528-361.000.
Takada, Shiro: *See*—
Nakamoto, Akira; Takada, Shiro; and Mori, Takuji, 5,483,820, Cl. 73-1.00C.
Takagi, Atsushi; Nagasaka, Junji; Ogata, Yoshinori; and Takaoka, Hitoshi, to Toyota Jidosha Kabushiki Kaisha. Graphic display device for providing color image of an object, based on radiations incident upon the object, and light reflecting characteristics of the object. 5,485,556, Cl. 395-126.000.
Takagi, Shiro, to Kabushiki Kaisha Toshiba. Data storage device and data managing method. 5,485,475, Cl. 371-404.000.
Takagi, Yuji: *See*—
Hamasaka, Hiroshi; Satoh, Isao; Fukushima, Yoshihisa; Takagi, Yuji; and Azumatani, Yasushi, 5,485,439, Cl. 369-47.000.
Takagi, Yukio: *See*—
Ikeda, Hachiro; Miyamoto, Noriaki; Umeda, Ryoei; Yasu, Hidenori; Fukukawa, Mitsuo; Masuyama, Yukiei; Kinoshita, Shoji; Takagi, Yukio; Gocho, Tomohiro; Goto, Fumio; Ishii, Akio; Ogawa, Tetsuo; Hasegawa, Yoshun; Hironaka, Keitaro; and Ogoshi, Yasuhiro, 5,484,227, Cl. 404-84.100.
Takahashi, Akio: *See*—
Sato, Osamu; Nakano, Satoshi; Hirai, Isamu; Kitazawa, Toshiyuki; Sensui, Takayuki; Yamamoto, Masato; Yamanaka, Toshimasa; Shishikura, Takenao; and Takahashi, Akio, 5,485,242, Cl. 354-442.000.
Takahashi, Hiroaki: *See*—
Kishi, Yoshio; Noshiro, Teruhito; Noguchi, Masato; and Takahashi, Hiroaki, 5,485,448, Cl. 369-99.000.
Takahashi, Hiroki; Suzuki, Motoyoshi; and Taguchi, Naoto, to Yazaki Corporation. Lever fitting-type connector. 5,484,297, Cl. 439-157.000.
Takahashi, Isao: *See*—
Fujii, Kazuo; Takahashi, Isao; Hara, Junichiro; and Matsuoka, Takayoshi, 5,483,805, Cl. 62-158.000.
Takahashi, Kazushi: *See*—
Okabayashi, Norio; Kawasaki, Motohiro; and Takahashi, Kazushi, 5,484,324, Cl. 451-28.000.
Takahashi, Kazutomo: *See*—
Kodama, Kazuo; Tsuda, Toru; and Takahashi, Kazutomo, 5,484,841, Cl. 524-389.000.
Takahashi, Minoru; Yoshimi, Makoto; and Shigyo, Naoyuki, to Kabushiki Kaisha Toshiba. Semiconductor device having a single crystal semiconductor layer formed on an insulating film. 5,485,028, Cl. 257-347.000.
Takahashi, Sadao: *See*—
Watanabe, Souichi; Takahashi, Sadao; and Kamei, Kazuaki, 5,483,738, Cl. 29-748.000.
Takahashi, Shigeyuki: *See*—
Funahashi, Toshikazu; Ogisu, Yasuhiko; Kato, Mamoru; Takahashi, Shigeyuki; and Uemura, Toshiya, 5,484,516, Cl. 205-50.000.
Takahashi, Toshiyuki: *See*—
Takiguchi, Iwao; and Takahashi, Toshiyuki, 5,485,149, Cl. 340-825.690.
Takai, Kazuyoshi; Kawahara, Hironori; Saji, Masaaki; and Ono, Yukio, to Mitsubishi Denki Kabushiki Kaisha. Circuit for detecting transmission bus's abnormality and for controlling output drivers in a complementary signal transmission device. 5,485,580, Cl. 395-220.200.
Takaku, Toshiaki: *See*—
Suzuki, Kuniyoshi; and Takaku, Toshiaki, 5,484,748, Cl. 437-225.000.
Takaku, Yutaka; and Ishii, Toshio, to Hitachi, Ltd. Combustion-conditon diagnostic system and method for a multicylinder engine. 5,485,374, Cl. 364-424.030.
Takakura, Akio: *See*—
Isono, Yukihiro; Saito, Makoto; Adachi, Kazuyoshi; Yumoto, Masato; and Takakura, Akio, 5,483,734, Cl. 29-603.000.
Takamatsu, Hiroshi: *See*—
Nihei, Ryo; Terada, Akihiro; and Takamatsu, Hiroshi, 5,484,982, Cl. 219-121.790.
Takamatsu, Ryoichi: *See*—
Sakaibara, Toru; Takamatsu, Ryoichi; and Hara, Hideyuki, 5,485,559, Cl. 395-133.000.
Takano, Toshiyuki; and Satake, Toshimi, to Nippon Paper Industries Co., Ltd. Optical recording material comprising a bis-dithiobenzilnickel complex. 5,484,689, Cl. 430-341.000.
Takaoka, Hitoshi: *See*—
Takagi, Atsushi; Nagasaka, Junji; Ogata, Yoshinori; and Takaoka, Hitoshi, 5,485,556, Cl. 395-126.000.
Takaoka, Kazuhiko: *See*—
Nakamura, Kozo; Yokosuka, Yasushi; Kozima, Yasuyuki; Takaoka, Kazuhiko; Yamamoto, Kagehiro; and Asai, Takeshi, 5,485,287, Cl. 358-426.000.
Takasu, Yoshiaki, to Tomoegawa Paper Co., Ltd. Developer for electrophotography and method for electrophotographic development using the same. 5,484,676, Cl. 430-106.600.
Takasuka, Yoshitaka; Kimura, Yasuyuki; and Kato, Akira, to Honda Giken Kogyo Kabushiki Kaisha. Combustion knock detection system for internal combustion engine. 5,485,380, Cl. 364-426.030.
Takata Corporation: *See*—
Fujimura, Yoshiichi; and Matsuuka, Shizutaka, 5,484,118, Cl. 272-384.200.
Takayanagi, Yoshiaki; Saito, Asao; Koizumi, Ryoichi; and Nagatomo, Akira, to Canon Kabushiki Kaisha. Liquid jet recording apparatus. 5,485,182, Cl. 347-17.000.
Takeda Chemical Indus., Ltd.: *See*—
Sasaki, Ichiro; Teraoka, Takao; Ohshima, Junji; Katsumata, Toru; and Sato, Koichi, 5,484,845, Cl. 525-64.000.
Takeda Chemical Industries, Ltd.: *See*—
Hayakawa, Yuzo; and Hakotani, Masahiro, 5,484,276, Cl. 425-343.000.
Kato, Takeshi; and Shida, Yasushi, 5,484,955, Cl. 552-4.000.
Takeda, Eiji: *See*—
Oizumi, Hiroaki; Ito, Masaaki; Soga, Takashi; Ogawa, Taro; Mochiji, Kozo; and Takeda, Eiji, 5,485,497, Cl. 378-84.000.
Takeda, Haruhiko: *See*—
Tsumura, Masahiro; Tashima, Masao; Miyasita, Hiromi; Takeda, Haruhiko; and Fujii, Tomoaki, 5,484,854, Cl. 525-486.000.
Takeda, Nobuhiro: *See*—
Muramoto, Tomotaka; and Takeda, Nobuhiro, 5,485,209, Cl. 348-149.000.
Takeda, Takashi, to Canon Kabuishiki Kaisha. Communication processing apparatus. 5,485,282, Cl. 358-435.000.
Takeda, Yoshiko: *See*—
Ogaki, Takeshi; and Takeda, Yoshiko, 5,485,368, Cl. 364-191.000.
Takeguchi, Kouichirou: *See*—
Kasashima, Masahiko; Nanno, Nobuyuki; Takeguchi, Kouichirou; Akashi, Kazuo; Suzuki, Yoshiaki; Ando, Makoto; and Yamanaka, Yuji, 5,485,073, Cl. 320-15.000.
Takemoto, Fumito; and Shimazaki, Osamu, to Fuji Photo Film Co., Ltd. Method and apparatus for emphasizing sharpness of image by detecting the edge portions of the image. 5,485,534, Cl. 382-263.000.
Takemura, Yasuhiko: *See*—
Yamazaki, Shunpei; Mase, Akira; Hiroki, Masaaki; Takemura, Yasuhiko; Zhang, Hongyong; and Uochi, Hideki, 5,485,019, Cl. 257-57.000.
Takenaka, Akihiko: *See*—
Moriya, Yoshihito; Takenaka, Akihiko; and Adachi, Michio, 5,483,930, Cl. 123-90.170.
Takeshima, Shinichi: *See*—
Katoh, Kenji; Inoue, Tokuta; Nohira, Hidetaka; Nakanishi, Kiyoshi; Iguchi, Satoshi; Kihara, Tetsuro; Gotoh, Masato; Asanuma, Takamitsu; Okano, Hiroshi; Harada, Jun; Takeshima, Shinichi; Sugiyama, Masahiko; Sakurai, Shigenori; Ohkubo, Kenji; and Murachi, Mikio, 5,483,795, Cl. 60-276.000.
Takeshita, Torao: *See*—
Kaneko, Akira; Iguchi, Norikazu; Hayashida, Takahiro; Takeshita, Torao; and Shinohara, Yoshio, 5,485,065, Cl. 318-270.000.
Takeuchi, Kumiko: *See*—
Boyd, Donald B.; Hauser, Kenneth L.; Lifer, Sherryl L.; Marshall, Winston S.; Palkowitz, Alan D.; Pfeifer, William; Reel, Jon K.; Simon, Richard L.; Steinberg, Mitchell I.; Takeuchi, Kumiko; Thrasher, K. Jeff; and Whitesitt, Celia A., 5,484,780, Cl. 514-94.000.
Takiguchi, Iwao; and Takahashi, Toshiyuki, to Sony Corporation. Remote controller and method for assigning to signals priority based on type and manufacture of equipment. 5,485,149, Cl. 340-825.690.
Takizawa, Hiroo: *See*—
Mitsui, Akio; and Takizawa, Hiroo, 5,484,692, Cl. 430-505.000.
Taligent, Inc.: *See*—
Davis, Mark E.; and Lin, Judy, 5,485,373, Cl. 364-419.130.
Talreja, Sanjay S.: *See*—
Bauer, Mark E.; Frary, Kevin W.; and Talreja, Sanjay S., 5,485,422, Cl. 365-168.000.
Tamai, Shoji: *See*—
Yamaguchi, Keizaburo; Urakami, Tatsuhiro; Tanabe, Yoshimitsu; Yamazaki, Midori; Tamai, Shoji; Yamaya, Norimasa; Ohta, Masahiro; and Yamaguchi, Akihiro, 5,484,948, Cl. 548-549.000.
Yamashita, Wataru; Okawa, Yuichi; Tamai, Shoji; Matsuo, Mitsunori; Ishida, Tsutomu; Yamaguchi, Keizaburo; and Yamaguchi, Akihiro, 5,484,880, Cl. 528-353.000.
Tamaki, Satoshi; Ikkai, Yasufumi; and Kondo, Yasuhiro, to Matsushita Electric Industrial Co., Ltd. Protecting device of electromobile. 5,485,375, Cl. 364-424.030.
Tamamura, Manpei; Iidaka, Hiroshi; Kondo, Kazuyuki; and Yokota, Keitaro, to Fuji Jukogyo Kabushiki Kaisha; and Pioneer Electronic Corporation. Active noise reduction system for automobile compartment. 5,485,523, Cl. 381-71.000.
Tamaoka, Naozumi: *See*—
Kitabatake, Asao; Tamaoka, Naozumi; Ueda, Hitoshi; and Wada, Kenichi, 5,485,169, Cl. 343-765.000.
Tamatani, Hiroaki: *See*—
Nagatomo, Akinori; Tamatani, Hiroaki; Ajioka, Masanobu; and Yamaguchi, Akihiro, 5,484,945, Cl. 548-520.000.
Tamura Electric Works, Ltd.: *See*—
Seto, Yoshiaki; Miyauchi, Masayuki; and Fujii, Takanobu, 5,484,993, Cl. 235-437.000.

Tamura, Yasuki: *See*—
Kamura, Hitoshi; and Tamura, Yasuki, 5,483,939, Cl. 123-492.000.
Tanabe, Yoshimitsu: *See*—
Yamaguchi, Keizaburo; Urakami, Tatsuhiro; Tanabe, Yoshimitsu; Yamazaki, Midori; Tamai, Shoji; Yamaya, Norimasa; Ohta, Masahiro; and Yamaguchi, Akihiro, 5,484,948, Cl. 548-549.000.
Tanaka, Atsushi: *See*—
Yanagisawa, Ryozo; Tanaka, Atsushi; Yoshimura, Yuichiro; Kaneko, Kiyoshi; Kobayashi, Katsuyuki; and Tokioka, Masaki, 5,484,967, Cl. 178-19.000.
Tanaka, Hideki: *See*—
Kimura, Atsushi; Nishimoto, Yoshifumi; Tanaka, Hideki; Seki, Hiroyuki; Harada, Toshiaki; Okamura, Yoshitaka; and Yamamoto, Shinji, 5,484,216, Cl. 400-319.000.
Tanaka, Hisami: *See*—
Kikuchi, Toshihiro; Maruyama, Akio; Ohtani, Noriko; Nagahara, Shin; Tanaka, Hisami; Sakakibara, Teigo; and Tanaka, Takakazu, 5,484,673, Cl. 430-58.000.
Tanaka, Masaaki: *See*—
Ikeda, Akira; Tanimura, Yasuhiro; Nakatsugawa, Naoki; Tanaka, Masaaki; Konishi, Hiroshige; Hiraoka, Toshie; Nishio, Shinji; and Kawahira, Hiroto, 5,484,570, Cl. 422-1.000.
Tanaka, Takakazu: *See*—
Kikuchi, Toshihiro; Maruyama, Akio; Ohtani, Noriko; Nagahara, Shin; Tanaka, Hisami; Sakakibara, Teigo; and Tanaka, Takakazu, 5,484,673, Cl. 430-58.000.
TanData Corporation: *See*—
Nicholls, Peter; Kinyon, Robert; Skaistis, Jeff; Johnson, Steve; Locker, Andy; Guzik, Chris; and Howard, Scott, 5,485,369, Cl. 364-401.000.
Tandon, Rajeev P., to Unisys Corporation. Method and apparatus for assisting in the determination of the source of errors in a multi-host data base management system. 5,485,573, Cl. 395-183.010.
Tang, Nianfa: *See*—
MacLaren, David S.; and Tang, Nianfa, 5,484,524, Cl. 210-151.000.
Tang, Raymond: *See*—
Wong, Nam S.; Lee, Kuan M.; and Tang, Raymond, 5,485,167, Cl. 343-753.000.
Tang, Xun: *See*—
MacDiarmid, Alan G.; Scherr, Elliot; and Tang, Xun, 5,484,884, Cl. 528-422.000.
Tang, Yuan; Chang, Chi; Van Buskirk, Michael A.; and Chang, Chung K., to Advanced Micro Devices, Inc. Method for eliminating of cycling-induced electron trapping in the tunneling oxide of 5 volt only flash eeproms. 5,485,423, Cl. 365-185.000.
Tani Electronic Industry Co., Ltd.: *See*—
Tani, Okie; and Nanzai, Takashi, 5,483,879, Cl. 101-123.000.
Tani, Mikko: *See*—
Koivukunnas, Pekka; Kuosa, Harri; Tuomela, Jussi; Ellilä, Markku; and Tani, Mikko, 5,483,873, Cl. 100-38.000.
Tani, Naoki: *See*—
Yamazato, Hisao; Tani, Naoki; Aoki, Naohiko; Kashihara, Jyunzou; and Uramoto, Yasunari, 5,485,397, Cl. 364-492.000.
Tani, Okie; and Nanzai, Takashi, to Tani Electronic Industry Co., Ltd. Printer system for printing circuit patterns or like on base board. 5,483,879, Cl. 101-123.000.
Taniguchi, Osamu: *See*—
Hanyu, Yukio; Tsuboyama, Akira; Taniguchi, Osamu; Mihara, Tadashi; Nakamura, Katsutoshi; and Mori, Sunao, 5,485,290, Cl. 359-43.000.
Taniji, Yukio, to NEC Corporation. Solid state image sensor and imaging method using spatial pixel offset. 5,485,204, Cl. 348-264.000.
Tanimoto, Susumu, to NEC Corporation. Power on reset circuit with accurate detection at low voltages. 5,485,111, Cl. 327-143.000.
Tanimura, Yasuhiro: *See*—
Ikeda, Akira; Tanimura, Yasuhiro; Nakatsugawa, Naoki; Tanaka, Masaaki; Konishi, Hiroshige; Hiraoka, Toshie; Nishio, Shinji; and Kawahira, Hiroto, 5,484,570, Cl. 422-1.000.
Tanji, Keisuke: *See*—
Kikuchi, Hiromichi; Hideshima, Yoshinori; and Tanji, Keisuke, 5,483,713, Cl. 5-502.000.
Tank, Klaus. Method of bonding two bodies together by brazing. 5,484,096, Cl. 228-121.000.
Tanox Biosystems, Inc.: *See*—
Chang, Tse W.; and Chang, Nancy T., 5,484,907, Cl. 536-23.530.
Tapematic U.S.A., Inc.: *See*—
Perego, Luciano, 5,483,877, Cl. 101-44.000.
Tappe, Horst: *See*—
Russ, Werner H.; Tappe, Horst; and Schumacher, Christian, 5,484,458, Cl. 8-549.000.
Taraskavage, Diane: *See*—
Kelly, Ray G.; Turnbough, Sharon A.; Taraskavage, Diane; and Blocker, Douglas L., 5,483,904, Cl. 108-156.000.
Tarnovsky, Goerge V. Talking display signage. 5,485,139, Cl. 340-573.000.
Tashima, Masao: *See*—
Tsumura, Masahiro; Tashima, Masao; Miyasita, Hiromi; Takeda, Haruhiko; and Fujii, Tomoaki, 5,484,854, Cl. 525-486.000.
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Kohlpaintner, George; Kugler, Kurt; Radmanic, Stjepan; Wittal, Roland; and Nowak, Manfred, 5,484,184, Cl. 296-217.000.
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Wessel, Mark A.: *See*—
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Wildner, Robert J. Trailer and environmentally safe work platform system. 5,484,035, Cl. 182-63.000.

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Wilkinson, William T. Aerobic/cross training exercise belt. 5,484,366, Cl. 482-105.000.

Willacy, Steven J.; and Mitchell, David S., to Lucas Industries public limited company. Gearbox. 5,483,851, Cl. 74-606.00R.

Williams, Bruce H.; Arbanas, Glenn A.; and Greeff, Roy E., to Unisys Corporation. Digitally implemented phase and lock indicators for a bit synchronizer. 5,485,484, Cl. 375-376.000.

Williams, Cole. Waterproof, breathable articles of apparel for a wearer's extremities. 5,483,703, Cl. 2-239.000.

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Nacman, Aron, 5,485,195, Cl. 347-247.000.
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Rahgozar, M. Armon, 5,485,566, Cl. 395-148.000.
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Spiewak, John W.; and Larson, James R., 5,484,679, Cl. 430-115.000.
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Weiser, Mark D.; Goldstein, Richard J.; Want, Roy; Welch, Brent B.; Elrod, Scott A.; Maltz, David A.; Schilit, William N.; and Theimer, Marvin M., 5,485,634, Cl. 455-53.100.
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Aikens, Richard S., 5,485,005, Cl. 250-214.0VT.
Xing Inc.: *See—*
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White, Mark L.; Carroll, Stephen F.; and Ma, Jeremy K., 5,484,705, Cl. 435-7.320.
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Gotoh, Taiji; Yamamoto, Hidetoshi; Iwama, Kiyokazu; and Yamada, Kiyoshi, 5,484,174, Cl. 285-382.200.
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Ueda, Masahide; Izumi, Tomoo; Yamasaki, Hiroyuki; Hirai, Atsuto; Matsuura, Masahiko; Sano, Eiichi; Terasaka, Yoshihisa; Yamada, Masami; and Yoshida, Satoshi, 5,485,257, Cl. 359-272.000.
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Aoki, Eiichiro; and Maruyama, Kazunori, 5,484,957, Cl. 84-635.000.
Furukawa, Masamichi; and Sone, Takuros, 5,485,442, Cl. 369-47.000.
Kawamura, Kiyoshi; and Motoya, Kondo, 5,483,861, Cl. 84-719.000.
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Yamamoto, Kagehiro: *See—*
Nakamura, Kozo; Yokosuka, Yasushi; Kozima, Yasuyuki; Takaoka, Kazuhiko; Yamamoto, Kagehiro; and Asai, Takeshi, 5,485,287, Cl. 358-426.000.
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Okamura, Yoshitaka; Sugiyama, Hiroshi; and Yamamoto, Kousuke, 5,485,187, Cl. 347-85.000.
Yamamoto, Makoto, to Yozan Inc. A CCD array memory device achieving high speed accessing by writing and reading data through a cache memory. 5,485,597, Cl. 395-437.000.
Yamamoto, Masashi: *See—*
Abe, Hiroomi; Fujii, Takeshi; Yamamoto, Masashi; Nishio, Takeyoshi; and Nomura, Takao, 5,484,824, Cl. 523-436.000.
Yamamoto, Masato: *See—*
Sato, Osamu; Nakano, Satoshi; Hirai, Isamu; Kitazawa, Toshiyuki; Sesumi, Takayuki; Yamamoto, Masato; Yamanaka, Toshimasa; Shishikura, Takeaso; and Takahashi, Akio, 5,485,242, Cl. 354-442.000.
Yamamoto, Shinji: *See—*
Kimura, Atsushi; Nishimoto, Yoshifumi; Tanaka, Hideki; Seki, Hiroyuki; Harada, Toshiaki; Okamura, Yoshitaka; and Yamamoto, Shinji, 5,484,216, Cl. 400-319.000.
Yamamoto, Toshiyuki: *See—*
Ota, Hiroshi; Sakoda, Kousuke; Saito, Tetsuo; Maeda, Eiichiro; and Yamamoto, Toshiyuki, 5,485,612, Cl. 395-650.000.
Yamamura, Nobuyuki: *See—*
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Yamanaka, Masayoshi: *See—*
Igarashi, Hisashi; Chikamatsu, Masataka; Maruyama, Hiroshi; and Yamanaka, Masayoshi, 5,485,596, Cl. 364-431.030.
Yamanaka, Toshimasa: *See—*
Sato, Osamu; Nakano, Satoshi; Hirai, Isamu; Kitazawa, Toshiyuki; Sesumi, Takayuki; Yamamoto, Masato; Yamanaka, Toshimasa; Shishikura, Takeaso; and Takahashi, Akio, 5,485,242, Cl. 354-442.000.
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Kasashima, Masahiko; Nanno, Nobuyuki; Takeguchi, Konichiro; Akashi, Kazuo; Suzuki, Yoshiaki; Ando, Makoto; and Yamanaka, Yuji, 5,485,073, Cl. 320-15.000.
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Yamasaki, Hiroyuki: *See—*
Ueda, Masahide; Izumi, Tomoo; Yamasaki, Hiroyuki; Hirai, Atsuto; Matsuura, Masahiko; Sano, Eiichi; Terasaka, Yoshihisa; Yamada, Masami; and Yoshida, Satoshi, 5,485,257, Cl. 359-272.000.
Yamashita, Chiaki: *See—*
Iwasaki, Kazuo; Yamashita, Chiaki; Meori, Shuhsun; and Iwasaki, Yoshio, 5,484,593, Cl. 424-195.100.
Yamashita, Masashi; Ohno, Noribiro; Tohyama, Tetsuyuki; Kubo, Eiichi; Komatsu, Takahiko; and Kosno, Yoshinou, to Nisca Corporation. Automatic document feeder with position compensating device. 5,484,141, Cl. 271-227.000.
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Yamashita, Wataru; Okawa, Yuichi; Tamai, Shoji; Matsuo, Mitsunori; Ishida, Tsutomu; Yamaguchi, Keizaburo; and Yamaguchi, Akihiro, to Mitsui Toatsu Chemicals, Inc. Polyimide. 5,484,880, Cl. 528-353.000.
Yamatake-Honeywell Co., Ltd.: *See—*
Hisanaga, Tetsuo; and Kajita, Tetsuya, 5,485,150, Cl. 340-870.020.
Yamauchi, Yasuhiro, to Jatco Corporation. Transmission. 5,483,850, Cl. 74-606.000.
Yamawaki, Koichi; Dumontier, Franck; Peters, Mike; and Guiheud, Jean-Marc, to Taylor Made Golf Company, Inc. Golf club head. 5,484,155, Cl. 273-164.100.
Yamaya, Norimasa: *See—*
Yamaguchi, Keizaburo; Urakami, Tatsuhiro; Tanabe, Yoshimitsu; Yamazaki, Midori; Tamai, Shoji; Yamaya, Norimasa; Ohta, Masahiro; and Yamaguchi, Akihiro, 5,484,948, Cl. 548-549.000.
Yamazaki, Katuya: *See—*
Satomura, Seiichiro; Yamazaki, Katuya; and Ishii, Kazuyoshi, 5,485,433, Cl. 369-13.000.
Yamazaki, Midori: *See—*
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Yamazaki, Shunpei; Mase, Akira; Hiroki, Masaaki; Takemura, Yasuhiko; Zhang, Hongyong; and Uochi, Hideki, to Semiconductor Energy Laboratory Co., Ltd. Semiconductor device and method for forming the same. 5,485,019, Cl. 257-57.000.
Yamazaki, Youichi: *See—*
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Yamazato, Hisao; Tani, Naoki; Aoki, Naohiko; Kashihara, Jyunzou; and Uramoto, Yasunori, to Sharp Kabushiki Kaisha. Communication system. 5,485,397, Cl. 364-492.000.
Yanagida, Takeshi; and Sakamoto, Okihiko, to Shiseido Company, Ltd. External skin treatment composition. 5,484,816, Cl. 514-725.000.
Yanagisawa, Masahiro, to NEC Corporation. Magnetic memory device having a perfluro-polyether film coated on an inner surface of its housing for entrapping dust. 5,485,327, Cl. 360-97.020.
Yanagisawa, Ryozo; Tanaka, Atsushi; Yoshimura, Yuichiro; Kaneko, Kiyoshi; Kobayashi, Katsuyuki; and Tokioka, Masaki, to Canon Kabushiki Kaisha. Coordinate input apparatus. 5,484,967, Cl. 178-19.000.
Yang, Danny D. L.; and Freeman, Jay D., to Eastman Kodak Company. Shorted DMR reproduce head. 5,485,333, Cl. 360-113.000.
Yang, David: *See—*
Wallace, Sidney; Yang, David; Wallace, Michael; Li, Chau; and Kuang, Li-Ren, 5,484,584, Cl. 424-129.000.

Yang, Peng-Ta. Method and apparatus for drying grain material. 5,483,755, Cl. 34-514.000.

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Yano, Kentaro: *See*—
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Yao, Mitsuyoshi; and Ueda, Kohichi, to Fujitsu Limited. Divider circuit which calculates an integral quotient of an integral divisor. 5,485,414, Cl. 364-766.000.

Yao, Nian J.: *See*—
Verma, Vikram; Yao, Nian J.; and Balzano, Quirino, 5,485,166, Cl. 343-744.000.

Yarmchuk, Edward J.: *See*—
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Yasu, Hidenori: *See*—
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Koumatsu, Seiji; and Abe, Kimihiro, 5,484,301, Cl. 439-271.000.
Saito, Hitoshi, 5,484,223, Cl. 403-329.000.
Takahashi, Hiroki; Suzuki, Motoyoshi; and Taguchi, Naoto, 5,484,297, Cl. 439-157.000.

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Yazaki Meter Co., Ltd.: *See*—
Cahill, Sean S., 5,484,745, Cl. 437-63.000.

Yellowstone Environmental Science, Inc.: *See*—
Hunter, Robert M.; and Stewart, Frank M., 5,485,518, Cl. 380-20.000.

Yeon, Kyu J.; Kim, Je H.; Choi, Kyung E.; Kim, Dal H.; and Lee, Ki H., to Cheil Foods & Chemicals, Inc. Salts of a quinolone-carboxylic acid. 5,484,785, Cl. 514-254.000.

Yoakum, Jay F.; and Wooldridge, Sammy E., to Avid Marketing, Inc. Hypodermic syringe for implanting solid objects. 5,484,403, Cl. 604-59.000.

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Yokohama Rubber Co., Ltd., The: *See*—
Kikuchi, Yasushi; Ochiai, Tetsuo; Shirokawa, Takashi; and Fujii, Hajime, 5,484,836, Cl. 524-495.000.

Yokoi, Masanobu: *See*—
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Yokonuma, Norikazu; Kazami, Kazuyuki; Hibino, Hideo; and Yamazaki, Youichi, to Nikon Corporation. Information recording device. 5,485,233, Cl. 354-106.000.

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Nakamura, Kozo; Yokosuka, Yasushi; Kozima, Yasuyuki; Takaoka, Kazuhiko; Yamamoto, Kagehiro; and Asai, Takeshi, 5,485,287, Cl. 358-426.000.

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Yokouchi, Hisatake: *See*—
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Yonehara, Takao: *See*—
Ichikawa, Takeshi; and Yonehara, Takao, 5,484,746, Cl. 437-83.000.

Yonemitsu, Jun; Tahara, Katsumi; and Suzuki, Teruhiko, to Sony Corporation. Methods and systems for encoding and decoding picture signals and related picture-signal records. 5,485,279, Cl. 348-411.000.

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Fujinami, Yasushi; and Yonemitsu, Jun, 5,485,280, Cl. 358-335.000.

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Yoo, Wan M.: *See*—
Ra, Jong O.; Lim, Joon Y.; and Yoo, Wan M., 5,484,344, Cl. 475-59.000.
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Yoon, InBae. Multifunctional devices for use in endoscopic surgical procedures and methods therefor. 5,484,426, Cl. 604-286.000.

York, Robert A.: *See*—
Compton, Richard C.; and York, Robert A., 5,485,164, Cl. 343-700.0MS.

Yoshida, Akimaro: *See*—
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Yoshida, Kazuyoshi: *See*—
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Yoshida, Takahiko: *See*—
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Yoshimi, Makoto: *See*—
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Young, David J.: *See*—
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Young, David K.; Setzer, William C.; Koch, Francis P.; Rapp, Robert A.; Pryor, Michael J.; and Jarrett, Noel, to KB Alloys, Inc. Aluminum base alloy. 5,484,493, Cl. 148-437.000.

Young Dental Manufacturing Company, Inc.: *See*—
Bailey, Ronald L., 5,484,284, Cl. 433-125.000.

Young, Lowell S., to University of California, The Regents of the . Method for treating gram negative bacterial infections in humans. 5,484,591, Cl. 424-150.100.

Young, Richard L.: *See*—
Lampropoulos, Fred P.; Young, Richard L.; Bushman, Cidny A.; and Lampropoulos, Bryan R., 5,483,999, Cl. 141-86.000.

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Yu, Shu-Chun. Fully automatic and simplified control structure. 5,483,985, Cl. 135-22.000.

Yuh Jou Co., Ltd.: *See*—
Lee, Fang-Liang, 5,484,149, Cl. 280-11.260.

Yumoto, Masato: *See*—
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TO WHOM

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Du Pont de Nemours, E. I., and Company: *See*—
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Fujita, Goro: *See*—
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Iwaasa, Shoji: *See*—
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Ohmori, Kiyoshi; Iwaasa, Shoji; and Fujita, Goro, to Sony Corporation. Recording and/or reproducing apparatus with a disc cartridge temperature sensor. B1 5,182,742, Cl. 369-116.000.

Plummer, James D., to Leland Stanford Junior University, The Board of Trustees of the . Monolithic semiconductor switching device. B1 1,033,209, Cl. 257-124.000.

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316 5,484,022
369 5,484,023
5,484,024

CLASS 172
311 5,484,025

CLASS 173
4 5,484,026

CLASS 174
74 R 5,484,960
84 C 5,484,961
261 5,484,962
5,484,963
5,484,964

262 5,484,965
524 5,484,959

CLASS 175

18 5,484,027
72 5,484,028
73 5,484,029

CLASS 178

18 5,484,966
19 5,484,967

CLASS 180

6.2 5,484,030
8.1 5,484,031
245 5,484,033
312 5,484,034

CLASS 181

122 5,484,968
142 5,484,969
294 5,484,970

CLASS 182

63 5,484,035
107 5,484,036
185 5,484,037

CLASS 184

15.1 5,484,038

CLASS 188

2 D 5,484,039
24.21 5,484,032
67 5,484,040
73.37 5,484,041
106 A 5,484,042
187 5,484,043
353 5,484,044

CLASS 190

115 5,484,046

CLASS 192

58.4 5,484,045

CLASS 198

370.01 5,484,047
397 5,484,048
460.3 5,484,049
468.3 5,484,050
750.7 5,484,051
803.01 5,484,052

CLASS 200

279 5,484,971

CLASS 202

162 5,484,510

CLASS 203

41 5,484,511

CLASS 204

129 5,484,512
129.1 5,484,513
255 5,484,514
425 5,484,515

CLASS 205

50 5,484,516
88 5,484,517
166 5,484,518

CLASS 206

147 5,484,053
232 5,484,054
279 5,484,519
349 5,484,056
374 5,484,057
387.1 5,484,055
5,484,058
434 5,484,059
438 5,484,060
722 5,484,063

CLASS 208

22 5,484,520

CLASS 209

127.4 5,484,061
587 5,484,062

CLASS 210

86 5,484,521
5,484,522
130 5,484,523
151 5,484,524
169 5,484,525
229 5,484,526
232 5,484,527
321.8 5,484,528
448 5,484,529
635 5,484,530
653 5,484,531
656 5,484,532
660 5,484,533
703 5,484,534
724 5,484,535
741 5,484,536
748 5,484,537
767 5,484,538
774 5,484,539

CLASS 211

50 5,484,064
65 5,484,065
69.8 5,484,066
87 5,484,067
193 5,484,068

CLASS 212

270 5,484,069

CLASS 213

223 5,484,070
254 5,484,071
375 5,484,072

CLASS 216

2 5,484,073
12 5,484,074
27 5,484,075

CLASS 218

70 5,484,972

CLASS 219

74 5,484,973
85.22 5,484,974
86.41 5,484,986
86.7 5,484,975
110 5,484,976
121.13 5,484,977
121.59 5,484,978
121.64 5,484,979
121.65 5,484,980
121.72 5,484,981
121.79 5,484,982
5,484,983
545 5,484,984
734 5,484,985
772

CLASS 220

3.9 5,484,076
404 5,484,077
531 5,484,078
589 5,484,079
708 5,484,080
759 5,484,081

CLASS 221

305 5,484,082

CLASS 222

107 5,484,083
147 5,484,084
175 5,484,085
187 5,484,086
390 5,484,087
402.2 5,484,088
534 5,484,089

CLASS 224

40 5,484,090
253 5,484,093
404 5,484,092
542 5,484,091

CLASS 227

8 5,484,094
181.1 5,484,095

CLASS 228

121 5,484,096
123.1 5,484,097
176 5,484,099
184 5,484,098

CLASS 229

101.1 5,484,100
125.04 5,484,101
132 5,484,102

CLASS 235

379 5,484,988
435 5,484,989
437 5,484,993
462 5,484,994
467 5,484,990
472 5,484,991
5,484,992
5,484,995
487 5,484,996
492 5,484,997
494 5,484,998
5,484,999
5,485,000

CLASS 236

68 D 5,484,103

CLASS 239

87 5,484,104
127.3 5,484,105
317 5,484,106
427.5 5,484,107
553.3 5,484,108

CLASS 241

73 5,484,109
86.1 5,484,110
197 5,484,111
236 5,484,112

CLASS 242

7.03 5,484,113
5,484,114
35.5 A 5,484,115
35.6 R 5,484,116
345.2 5,484,117
422.4 5,484,119

CLASS 244

54 5,484,120
134 B 5,484,122
134 F 5,484,121

CLASS 248

68.1 5,484,123
118 5,484,124
201 5,484,125
217.3 5,484,126
231.9 5,484,132
284.1 5,484,127
311.2 5,484,128
5,484,129
354.3 5,484,130
527 5,484,131

CLASS 250

201.8 5,485,001
5,485,002
5,485,003
208.2 5,485,004
214 VT 5,485,005
222.1 5,485,006
227.28 5,485,007
288 5,485,016
310 5,485,008
332 5,485,010
338.1 5,485,011
339.06 5,485,012
574 5,485,013

CLASS 251

14 5,484,133

CLASS 252

8.8 5,484,540
17 5,484,541
18 5,484,542
51.5 A 5,484,543
54 5,484,544
62.58 5,484,545
67 5,484,546
73 5,484,547
103 5,484,549
179.17 5,484,548
299.01 5,484,550
299.5 5,484,552
299.67 5,484,551
351 5,484,553
373 5,484,554
541 5,484,555
700 5,484,556

CLASS 254

2 B 5,484,134
134.3 FT 5,484,135
200 5,484,136

CLASS 256

50 5,484,137

CLASS 257

21 5,485,014
5,485,015
24 5,485,017
5,485,018
57 5,485,019
59 5,485,020
84 5,485,021
124 B2 Re.33,209
133 5,485,022
139 5,485,023
173 5,485,024
198 5,485,025
203 5,485,026
343 5,485,027
347 5,485,028
501 5,485,029
506 5,485,030
530 5,485,031
5,485,032
578 5,485,033
592 5,485,034
637 5,485,035
691 5,485,036
712 5,485,037
758 5,485,038
774 5,485,039

CLASS 264

1.240 5,484,558
9 5,484,559
37 5,484,557
40.1 5,484,562
46.4 5,484,561
69 5,484,563
219 5,484,564
230 5,484,565
250 5,484,566
328.1 5,484,567
483 5,484,560

CLASS 266

281 5,484,138

CLASS 271

3 5,484,139
175 5,484,140
227 5,484,141
251 5,484,142
293 5,484,143

CLASS 272

384.2 5,484,118

CLASS 273

1.5 R 5,484,144
26 A 5,484,145
57.2 5,484,147
67 A 5,484,146
164.1 5,484,155
194 B 5,484,156
260 5,484,157
276 5,484,158
424 5,484,159

CLASS 280

11.18 5,484,148
11.26 5,484,149
79.3 5,484,150
112 5,484,164
250.1 5,484,151
282 5,484,152
293 5,484,153
652 5,484,154
659 5,484,160
661 5,484,161
711 5,484,162
728.2 5,484,163
5,484,165
735 5,484,166

CLASS 283

67 5,484,167
5,484,168
5,484,169
79 5,484,170

CLASS 285

31 5,484,171
175 5,484,172
229 5,484,173
382.2 5,484,174

CLASS 291

121 5,484,668

CLASS 292

80 5,484,175
137 5,484,176
140 5,484,177
173 5,484,178
251.5 Re.35,146
336.3 5,484,179
341.16 5,484,180

CLASS 294

88 5,484,181
165 5,484,182

CLASS 296

97.5 5,484,186
97.6 5,484,183
217 5,484,184
220 5,484,185

CLASS 297

408 5,484,188
410 5,484,189
411.3 5,484,187
476 5,484,190

CLASS 299

105 5,484,191

CLASS 301

131 5,484,192

CLASS 303

113.1 5,484,193
116.2 5,484,194

CLASS 307

3 5,485,040
10.1 5,485,041

CLASS 310

47 5,485,042
49 R 5,485,043
90 5,485,044
156 5,485,045
166 5,485,046
5,485,047
239 5,485,048
248 5,485,049
260 5,485,050
313 B 5,485,051
5,485,052
326 5,485,053

CLASS 312

125 5,484,195
242 5,484,196
334.12 5,484,197
334.18 5,484,198
334.33 5,484,199

CLASS 313

440 5,485,054
505 5,485,055

CLASS 315

8 5,485,056
58 5,485,057
194 5,485,058
209 R 5,485,060
307 5,485,059
5,485,061
408 5,485,062

CLASS 318

34 5,485,063
139 5,485,064
270 5,485,065
375 5,485,066
466 5,485,067
568.1 5,485,068
570 5,485,069
696 5,485,070
700 5,485,071
723 5,485,072

CLASS 320

15 5,485,073

CLASS 323

207 5,485,075
225 5,485,076
286 5,485,077
315 5,485,074

CLASS 324

76.12 5,485,078
96 5,485,079
158.1 5,485,080
5,485,081
202 5,485,082
204 5,485,083
225 5,485,084
307 5,485,085
5,485,086
318 5,485,087
320 5,485,088
346 5,485,089
433 5,485,090
439 5,485,099
455 5,485,091
457 5,485,092
522 5,485,093
537 5,485,094
5,485,095
610 5,485,100
617 5,485,101
761 5,485,096
765 5,485,097

CLASS 326

10 5,485,102
38 5,485,104
5,485,105
41 5,485,103
66 5,485,106
86 5,485,107

CLASS 327

8 5,485,108
56 5,485,292
77 5,485,109
99 5,485,110
143 5,485,111
234 5,485,113
262 5,485,114
363 5,485,115
537 5,485,116
538 5,485,117

CLASS 329

306 5,484,987

CLASS 330

54 5,485,118
151 5,485,120
252 5,485,122
253 5,485,119
260 5,485,121
264 5,485,123
278 5,485,124

CLASS 331

17 5,485,125
57 5,485,126
69 5,485,127
135 5,485,128

CLASS 332

100 5,485,129

CLASS 333

104 5,485,130
202 5,485,131
219 5,485,132

CLASS 335

78 5,485,133
132 5,485,134

CLASS 336

96 5,485,135

CLASS 337

168 5,485,136
295 5,485,137

CLASS 338

306 5,485,138

CLASS 340

436 5,485,140
457 5,485,141
506 5,485,142
568 5,485,143
573 5,485,139
629 5,485,144
815.4 5,485,145
825.44 5,485,146
825.5 5,485,147
825.54 5,485,148
825.69 5,485,149
870.02 5,485,150
953 5,485,151

CLASS 341

143 5,485,152
147 5,485,153

CLASS 342

44 5,485,154
70 5,485,155
77 5,485,156
160 5,485,157
165 5,485,158
5,485,159
195 5,485,160
357 5,485,161
378 5,485,162
457 5,485,163

CLASS 343

700 MS 5,485,164
741 5,485,165
744 5,485,166
753 5,485,167
761 5,485,168
765 5,485,169
895 5,485,170

CLASS 345

8 5,485,172
100 5,485,173
123 5,485,174
160 5,485,171
173 5,485,176
182 5,485,177

CLASS 347

5 5,485,178
14 5,485,179
15 5,485,180
17 5,485,182
41 5,485,183
63 5,485,181
5,485,184
64 5,485,185
65 5,485,186
85 5,485,187
100 5,485,188
102 5,485,189
130 5,485,190
131 5,485,191
203 5,485,192
206 5,485,193
232 5,485,194
247 5,485,195

CLASS 348

1 5,485,196
5,485,197
5,485,198
11 5,485,199
180 5,485,200
207 5,485,201
223 5,485,202
5,485,205
203 5,485,203
264 5,485,204
301 5,485,206
321 5,485,207
335 5,485,208
340 5,485,209
409 5,485,210
5,485,211
411 5,485,279
415 5,485,212
5,485,213
416 5,485,214
423 5,485,215
443 5,485,216
445 5,485,217
447 5,485,218
460 5,485,219
525 5,485,220
563 5,485,221
607 5,485,222
622 5,485,223
699 5,485,224
704 5,485,225
836 5,485,226

CLASS 351

46 5,485,227
161 5,485,228
215 5,485,229
239 5,485,230
243 5,485,231

CLASS 352

5 5,485,232

CLASS 354

106 5,485,233
149.11 5,485,234
165 5,485,235
195.11 5,485,236
288 5,485,237
289.12 5,485,238
402 5,485,239
5,485,240
410 5,485,241
442 5,485,242

CLASS 355

1 5,485,243
200 5,485,244
202 5,485,245
5,485,246
205 5,485,247
206 5,485,248
210 5,485,249
211 5,485,250
215 5,485,251
219 5,485,252
221 5,485,253
225 5,485,255
253 5,485,254
271 5,485,256
273 5,485,258
284 5,485,259
290 5,485,260
319 5,485,261

CLASS 356

3.08 5,485,262
4.01 5,485,263
5.09 5,485,009
73.1 5,485,264
121 5,485,265
249 5,485,266
307 5,485,267
310 5,485,268
318 5,485,269
356 5,485,270
345 5,485,271
349 5,485,272
350 5,485,273
5,485,274
360 5,485,275
437 5,485,276
445 5,485,277

CLASS 358

296 5,485,278
5,485,285
5,485,286
335 5,485,280
426 5,485,287
433 5,485,282
448 5,485,289
451 5,485,281
504 5,485,284
518 5,485,283
530 5,485,288

CLASS 359

43 5,485,290
49 5,485,291
58 5,485,294
59 5,485,293
73 5,485,295
112 5,485,296
123 5,485,297
139 5,485,298
179 5,485,299
180 5,485,300
181 5,485,301
189 5,485,302
272 5,485,257
273 5,485,303
291 5,485,304
407 5,485,305
419 5,485,306
421 5,485,307
457 5,485,308
485 5,485,309
495 5,485,310
530 5,485,311
561 5,485,312
689 5,485,313
691 5,485,314
701 5,485,315
708 5,485,316
712 5,485,317
811 5,485,318
833 5,485,319

CLASS 360

31 5,485,320
48 5,485,321
51 5,485,322
78.08 5,485,323
85 5,485,324
91 5,485,325
96.5 5,485,326
97.02 5,485,327
98.08 5,485,328
99.06 5,485,329
5,485,330
99.08 5,485,331
103 5,485,332
113 5,485,333
5,485,334
122 5,485,335
125 5,485,336
126 5,485,337
133 5,485,338

CLASS 361

42 5,485,339
45 5,485,340
98 5,485,341
104 5,485,342
115 5,485,343
225 5,485,344
283.3 5,485,345
504 5,485,346
680 5,485,614
685 5,485,348
690 5,485,349
692 5,485,350
704 5,485,351
771 5,485,352
802 5,485,353

CLASS 362

31 5,485,354
84 5,485,355
95 5,485,356
103 5,485,357
106 5,485,358
109 5,485,359
158 5,485,360
21 5,485,361
24 5,485,362
56 5,485,363
59 5,485,364
132 5,485,365

CLASS 364

140 5,485,366
160 5,485,367
191 5,485,368
5,485,369
5,485,370
413.23 5,485,371
419.08 5,485,372
419.13 5,485,373
424.01 5,485,417
424.03 5,485,374
5,485,375
424.05 5,485,376
5,485,377
5,485,378
426.02 5,485,379
426.03 5,485,380
426.04 5,485,381
431.03 5,485,506
431.05 5,485,382
434 5,485,383
449 5,485,384
5,485,385
471 5,485,386
472 5,485,387
473 5,485,388
474.17 5,485,391
474.2 5,485,389
474.24 5,485,390
477 5,485,392
5,485,393
5,485,394
485 5,485,395
491 5,485,396
492 5,485,397
506 5,485,398
525 5,485,399
550 5,485,400
551.01 5,485,401
557 5,485,347
559 5,485,403
5,485,404
560 5,485,405
5,485,406
566 5,485,402
577 5,485,407
578 5,485,408
705.01 5,485,410
716 5,485,411
724.05 5,485,412
760 5,485,413
766 5,485,414
786 5,485,415
825 5,485,416

CLASS 365

49 5,485,418
69 5,485,419
154 5,485,420
168 5,485,422
185 5,485,423
189.05 5,485,421
200 5,485,424
5,485,425
203 5,485,426
210 5,485,427
221 5,485,428
222 5,485,429
233 5,485,430

CLASS 366

15 5,484,200
5,484,201
120 5,484,202
337 5,484,203

CLASS 367

30 5,485,431
88 5,485,432

CLASS 369

13 5,485,433
5,485,434
5,485,435
36 5,485,436
44.14 5,485,437
44.28 5,485,438
44.34 5,485,440
44.37 5,485,441
47 5,485,439
5,485,442
54 5,485,443
5,485,444
56 5,485,445
75.1 5,485,446
84 5,485,447
99 5,485,448
116 5,485,449
B1 5,182,742
126 5,485,451
284 5,485,452

CLASS 370

16 5,485,453
58.3 5,485,454
60 5,485,455
5,485,456
5,485,457
85.2 5,485,458
85.4 5,485,459
94.1 5,485,460
94.2 5,485,461
95.1 5,485,462
5,485,463
95.2 5,485,464

CLASS 371

20.5 5,485,470
22.1 5,485,473
22.3 5,485,466
22.5 5,485,467
27 5,485,471
37.1 5,485,474
41 5,485,469
43 5,485,472
47.1 5,485,476
404 5,485,475

CLASS 372

6 5,485,480
5,485,481
37 5,485,478
43 5,485,479
75 5,485,482
198 5,485,112

CLASS 373

154 5,485,483

CLASS 374

10 5,484,204
142 5,484,205
181 5,484,206

CLASS 375

200 5,485,485
205 5,485,486
238 5,485,487
257 5,485,488
344 5,485,489
371 5,485,490
376 5,485,484

CLASS 376

245 5,485,491

CLASS 378

5 5,485,492
16 5,485,494
34 5,485,495
64 5,485,496
84 5,485,497
5,485,498
98.2 5,485,500
98.7 5,485,501
117 5,485,502
686 5,485,493

CLASS 379

57 5,485,503
58 5,485,504
5,485,505
67 5,485,506
88 5,485,507
97 5,485,508
106 5,485,509
145 5,485,510
201 5,485,511
221 5,485,512
355 5,485,513
387 5,485,514
391 5,485,515
413 5,485,516
433 5,485,517

CLASS 380

20 5,485,518
23 5,485,519
24 5,485,520

CLASS 381

24 5,485,521
56 5,485,522
71 5,485,523
94 5,485,524
119 5,485,525
128 5,485,527
131 5,485,528
162 5,485,529
191 5,485,530
198 5,485,531
205 5,485,532
232 5,485,526
236 5,485,533
263 5,485,534
305 5,485,535

CLASS 383

67 5,484,207

CLASS 384

12 5,484,208
18 5,484,209
49 5,484,210
192 5,484,211
462 5,484,212
486 5,484,213

CLASS 385

31 5,485,536
60 5,485,537
92 5,485,538
114 5,485,539
129 5,485,540
141 5,485,541

CLASS 392

474 5,485,542

CLASS 395

2.32 5,485,581
2.76 5,485,543
12 5,485,544
23 5,485,545
23 5,485,546
24 5,485,547
27 5,485,548
51 5,485,549
5,485,580
61 5,485,551
99 5,485,552
106 5,485,553
116 5,485,554
120 5,485,556
129 5,485,557
131 5,485,558
133 5,485,559
5,485,560
550 5,485,561
600 5,485,562
5,485,603
5,485,605
5,485,606
5,485,607
5,485,608
5,485,609
5,485,610
5,485,611
5,485,612
5,485,613
700 5,485,614
5,485,615
5,485,617
5,485,618
5,485,619
5,485,620
5,485,621
775 5,485,624
880 5,485,591
5,485,625
5,485,627
5,485,628
5,485,629
842 5,485,584
845 5,485,583

CLASS 400

63 5,484,214
120.18 5,484,215
319 5,484,216

CLASS 403

2 5,484,217
12 5,484,218
57 5,484,219
165 5,484,220
203 5,484,221
307 5,484,222
329 5,484,223

CLASS 404

9 5,484,225
77 5,484,224
84.05 5,484,226
84.1 5,484,227
90 5,484,228
110 5,484,229

CLASS 405

20 5,484,230
128 5,484,231
184 5,484,232
240 5,484,233
284 5,484,234
5,484,235
286 5,484,236

CLASS 406

86 5,484,237

CLASS 410

110 5,484,240
154 5,484,241

CLASS 411

353 5,484,242
5,484,243
424 5,484,244

CLASS 414

408 5,484,245
409 5,484,246
412 5,484,238
5,484,247
458 5,484,248
523 5,484,249
723 5,484,250
731 5,484,251
783 5,484,252
787 5,484,253
788.2 5,484,254
789 5,484,255
790.8 5,484,256

CLASS 415

2.1 5,484,257
115 5,484,258
119 5,484,259
134 5,484,260
151 5,484,261
178 5,484,262
200 5,484,263

CLASS 416

204 R 5,484,264

CLASS 417

32 5,484,265
44.1 5,484,266
53 5,484,267
211 5,484,268
225 5,484,269
415 5,484,270
477.8 5,484,239

CLASS 418

26 5,484,271
35 5,484,272

CLASS 419

41	5,484,568

CLASS 420

503	5,484,569

CLASS 422

1	5,484,570
82.08	5,484,571
101	5,484,572
128	5,484,573
171	5,484,574
176	5,484,575
211	5,484,576
	5,484,577
220	5,484,578

CLASS 423

36	5,484,579
219	5,484,580
335	5,484,581
359	5,484,582
420.2	5,484,583

CLASS 424

9.45	5,484,585
61	5,484,586
84	5,484,587
	5,484,588
94.2	5,484,589
94.5	5,484,590
129	5,484,584
150.1	5,484,591
185.1	5,484,592
195.1	5,484,593
	5,484,594
	5,484,595
277.1	5,484,596
401	5,484,597
	5,484,598
405	5,484,599
	5,484,600
422	5,484,601
440	5,484,602
447	5,484,603
449	5,484,604
	5,484,833
451	5,484,605
455	5,484,606
460	5,484,607
468	5,484,608
470	5,484,609
487	5,484,610
570	5,484,611
649	5,484,612

CLASS 425

112	5,484,273
116	5,484,274
190	5,484,275
343	5,484,276
388	5,484,277
533	5,484,278

CLASS 426

124	5,484,613
231	5,484,614
238	5,484,615
242	5,484,616
250	5,484,617
304	5,484,618
315	5,484,619
422	5,484,620
523	5,484,621
555	5,484,622
601	5,484,623
614	5,484,624
646	5,484,625

CLASS 427

8	5,484,626
58	5,484,627
215	5,484,628
255	5,484,629

CLASS 428

2	5,484,631
11	5,484,630
35.7	5,484,632
	5,484,633
36.1	5,484,634
40	5,484,635
	5,484,636
66.6	5,484,637
67	5,484,638
95	5,484,639
119	5,484,640
139	5,484,641
186	5,484,642
192	5,484,643
195	5,484,644
198	5,484,645
	5,484,646
209	5,484,647
	5,484,648
220	5,484,649
221	5,484,650
224	5,484,651
251	5,484,652
290	5,484,653
332	5,484,654
367	5,484,655
378	5,484,656
426	5,484,657
428	5,484,658
516	5,484,660
522	5,484,661
553	5,484,662
627	5,484,663
641	5,484,664
661	5,484,665

CLASS 429

34	5,484,666
100	5,484,667
194	5,484,669
199	5,484,670

CLASS 430

5	5,484,671
	5,484,672
58	5,484,673
059	5,484,674
106	5,484,675
106.6	5,484,676
110	5,484,677
	5,484,678
115	5,484,679
122	5,484,680
137	5,484,681
138	5,484,682
203	5,484,683
253	5,484,684
270.13	5,484,686
296	5,484,687
311	5,484,688
341	5,484,689
435	5,484,690
458	5,484,691
505	5,484,692
529	5,484,693
530	5,484,694
546	5,484,695
551	5,484,696
569	5,484,697

CLASS 431

202	5,484,279

CLASS 433

80	5,484,281
92	5,484,282
116	5,484,283
125	5,484,284
173	5,484,285
201.1	5,484,286

CLASS 434

128	5,484,287
163	5,484,288
225	5,484,290
307 A	5,484,291
317	5,484,292
432	5,484,293

CLASS 435

5	5,484,699
6	5,484,700
	5,484,701
	5,484,702
7.23	5,484,704
7.32	5,484,705
7.36	5,484,706
7.4	5,484,703
	5,484,726
7.92	5,484,707
7.93	5,484,709
14	5,484,708
69.1	5,484,710
69.2	5,484,711
78	5,484,712
100	5,484,714
103	5,484,715
108	5,484,716
119	5,484,717
172.3	5,484,718
	5,484,719
	5,484,720
174	5,484,721
188	5,484,722
189	5,484,723
193	5,484,724
197	5,484,725
252.3	5,484,727
	5,484,728
262.5	5,484,729
264	5,484,730
305.3	5,484,731
320.1	5,484,732

CLASS 436

161	5,484,733
176	5,484,734
548	5,484,735

CLASS 437

4	5,484,736
31	5,484,737
33	5,484,738
34	5,484,739
40	5,484,740
43	5,484,741
44	5,484,742
	5,484,743
52	5,484,744
63	5,484,745
83	5,484,746
190	5,484,747
225	5,484,748
238	5,484,749

CLASS 439

21	5,484,294
66	5,484,295
140	5,484,296
157	5,484,297
188	5,484,298
	5,484,299
207	5,484,300
271	5,484,301
326	5,484,302
345	5,484,303
409	5,484,304
421	5,484,305
441	5,484,306
535	5,484,307
536	5,484,308
539	5,484,309
608	5,484,310

CLASS 440

61	5,484,311

CLASS 441

74	5,484,312
80	5,484,313

CLASS 445

24	5,484,314
26	5,484,315

CLASS 446

28	5,484,316
75	5,484,318
397	5,484,319
418	5,484,320
433	5,484,321

CLASS 451

5	5,484,322
10	5,484,323
28	5,484,324
38	5,484,325
41	5,484,326
49	5,484,327
356	5,484,328
523	5,484,329
540	5,484,330

CLASS 452

134	5,484,331
173	5,484,332
182	5,484,333

CLASS 453

3	5,484,334

CLASS 454

250	5,484,335

CLASS 455

4.1	5,485,630
33.3	5,485,631
51.2	5,485,632
	5,485,633
53.1	5,485,634
54.1	5,485,635

CLASS 460

119	5,484,336
	5,484,337

CLASS 464

68	5,484,338
69	5,484,339

CLASS 474

101	5,484,340
205	5,484,341
254	5,484,342
266	5,484,343

CLASS 475

59	5,484,344
162	5,484,345
185	5,484,346
231	5,484,347
248	5,484,348
275	5,484,349

CLASS 477

97	5,484,350
113	5,484,351
125	5,484,352
169	5,484,353
174	5,484,354

CLASS 482

4	5,484,355
9	5,484,358
11	5,484,359
37	5,484,360
51	5,484,361
54	5,484,362
71	5,484,363
87	5,484,364
97	5,484,365
105	5,484,366
107	5,484,367
122	5,484,368

CLASS 483

56	5,484,369

CLASS 492

4	5,484,370
16	5,484,371
58	5,484,372

CLASS 493

59	5,484,373
87	5,484,374
190	5,484,375
194	5,484,376
316	5,484,377
356	5,484,378
359	5,484,379
480	5,484,380

CLASS 494

12	5,484,381
37	5,484,382
48	5,484,383

CLASS 501

86	5,484,750
87	5,484,751
127	5,484,752
136	5,484,753

CLASS 502

169	5,484,754
219	5,484,755
314	5,484,756
439	5,484,757

CLASS 503

214	5,484,758
227	5,484,759

CLASS 504

103	5,484,760
238	5,484,761
261	5,484,762
269	5,484,763

CLASS 505

210	5,484,764
	5,484,765
441	5,484,766

CLASS 514

2	5,484,767
	5,484,768
17	5,484,770
18	5,484,771
	5,484,772
23	5,484,773
46	5,484,774
54	5,484,775
	5,484,776
	5,484,777
63	5,484,778
	5,484,779
94	5,484,780
167	5,484,781
	5,484,782
214	5,484,783
254	5,484,785
256	5,484,786
	5,484,787
275	5,484,788
277	5,484,789
291	5,484,790
	5,484,791
297	5,484,792
300	5,484,793
305	5,484,794
319	5,484,795
	5,484,796
	5,484,797
324	5,484,798
345	5,484,799
365	5,484,800
	5,484,801
390	5,484,802
410	5,484,803
414	5,484,804
422	5,484,805
423	5,484,806
424	5,484,807
443	5,484,808
449	5,484,809
456	5,484,810
489	5,484,811
	5,484,812
564	5,484,814
725	5,484,816

CLASS 521

56	5,484,815
116	5,484,817
123	5,484,818
155	5,484,819
174	5,484,820

CLASS 522

26	5,484,821
35	5,484,822
92	5,484,823

CLASS 523

436	5,484,824

CLASS 524

35	5,484,825
	5,484,826
86	5,484,827
91	5,484,828
92	5,484,829
101	5,484,830
257	5,484,831
261	5,484,832
446	5,484,834
494	5,484,835
495	5,484,836
	5,484,837
	5,484,838
496	5,484,839
501	5,484,840
521	5,484,844
533	5,484,839
589	5,484,841
600	5,484,842
804	5,484,843

CLASS 525

64	5,484,845
67	5,484,846
102	5,484,847
105	5,484,848
167.5	5,484,849
286	5,484,850
329.4	5,484,965
333.5	5,484,851
333.6	5,484,852
386	5,484,857
393	5,484,858
432	5,484,860
450	5,484,861
454	5,484,853
486	5,484,854

CLASS 526

62	5,484,855
	5,484,856
88	5,484,862
301	5,484,863
	5,484,864
340	5,484,866

CLASS 528

9	5,484,867
15	5,484,868
18	5,484,869
28	5,484,870
31	5,484,871
73	5,484,872
91	5,484,873
196	5,484,874
198	5,484,875
226	5,484,876
328	5,484,878
353	5,484,879
	5,484,880
354	5,484,881
361	5,484,882
397	5,484,883
422	5,484,884

CLASS 530

326	5,484,885
350	5,484,886
351	5,484,887
355	5,484,888
379	5,484,889
383	5,484,890
387.3	5,484,891
388.73	5,484,892
391.5	5,484,893
410	5,484,894
500	5,484,895
504	5,484,896

CLASS 534

15	5,484,897
612	5,484,898
618	5,484,899
696	5,484,900
741	5,484,901

CLASS 536

18.4	5,484,902
18.6	5,484,903
23.1	5,484,904
23.53	5,484,907
23.6	5,484,905
	5,484,906
24.31	5,484,908
24.32	5,484,909
26.22	5,484,911
57	5,484,913
124	5,484,914

CLASS 540

131	5,484,915
202	5,484,916
452	5,484,685
523	5,484,917

CLASS 544

182	5,484,918
193.1	5,484,919
268	5,484,920
361	5,484,921

CLASS 546

7	5,484,922
17	5,484,923
82	5,484,924
90	5,484,925
116	5,484,926
126	5,484,927
171	5,484,944
280	5,484,928
286	5,484,929
308	5,484,930
310	5,484,931
346	5,484,932

CLASS 548

195	5,484,933
213	5,484,934
233	5,484,935
265.6	5,484,936
266.2	5,484,937
335.1	5,484,938
343.1	5,484,939
364.7	5,484,940
373.1	5,484,941
453	5,484,942
	5,484,943
520	5,484,945
543	5,484,946
549	5,484,948

CLASS 549

13	5,484,949
215	5,484,950
285	5,484,951
329	5,484,952
362	5,484,953
389	5,484,954

CLASS 552

4	5,484,955

CLASS 600

3	5,484,384
16	5,484,385
104	5,483,951
131	5,483,952

CLASS 601

15	5,484,387
21	5,484,386
27	5,484,388
34	5,484,389
133	5,484,390
135	5,484,391
22	5,484,398
	5,484,399
28	5,484,401
33	5,484,402
59	5,484,403
66	5,484,404
77	5,484,405
87	5,484,406
89	5,484,410
95	5,484,407
96	5,484,408
	5,484,409

CLASS 602

5	5,484,392
6	5,484,393
16	5,484,394
19	5,484,395

CLASS 604

4	5,484,396
5	5,484,397
21	5,484,399

101	5,484,411
110	5,484,413
	5,484,414
132	5,484,415
164	5,484,416
165	5,484,417
167	5,484,418
171	5,484,419
178	5,484,420
195	5,484,421
272	5,484,422
282	5,484,423
	5,484,424
	5,484,425
286	5,484,426
313	5,484,427
319	5,484,428
385.1	5,484,429
	5,484,430
403	5,484,431

CLASS 606

5	5,484,432
17	5,484,433
37	5,484,434
46	5,484,435
48	5,484,436
61	5,484,437
84	5,484,438
65	5,484,439
73	5,484,440
79	5,484,441
	5,484,442
86	5,484,443
87	5,484,446
107	5,484,447
108	5,484,444
	5,484,449
	5,484,450
129	5,484,445
139	5,484,451

CLASS 607

5	5,484,452
108	5,484,448

CLASS 900

305	5,484,956

CLASSIFICATION OF DESIGNS

D2—	622	366,131		488	366,168		367	366,206			366,245
	750	366,132		498	366,169		373	366,207		177	366,246
	861	366,133		511	366,170		382	366,208		184	366,247
	862	366,134		534	366,171	D9—	307	366,209			366,248
	902	366,135		553	366,172		423	366,210	D14—	100	366,249
	904	366,136		579	366,173		425	366,211			366,250
		366,137		580	366,174		433	366,212		106	366,251
	946	366,138		596	366,175		503	366,213			366,252
	961	366,139		601	366,176		520	366,214		113	366,253
		366,140		605	366,177	D10—	18	366,215		114	366,254
	970	366,141	D7—	307	366,178		39	366,216			366,255
D3—	208	366,229		309	366,180		46	366,217		115	366,256
	221	366,142		361	366,181		82	366,218		138	366,257
		366,143		376	366,182		65	366,219			366,258
	228	366,144		388	366,183			366,220			366,259
	231	366,145		395	366,184		98	366,221		191	366,260
	249	366,146		401.2	366,185		105	366,222		217	366,261
	290	366,147		536	366,186	D11—	3	366,223		218	366,262
	371	366,148		553	366,187		6	366,224			366,263
	328	366,149		644	366,178		81	366,225	D15—	17	366,264
D4—	116	366,150		666	366,188		144	366,226			366,265
		366,151			366,189		164	366,227		27	366,266
	128	366,152		708	366,190			366,228		30	366,267
		366,153	D8—	1	366,191		221	366,230		199	366,268
D5—	32	366,154		2	366,192	D12—	92	366,231	D16—	202	366,269
D6—	328	366,155		10	366,193		188	366,232		203	366,270
	346	366,156		14	366,194		147	366,233			366,271
	348	366,157			366,195		159	366,234		246	366,272
	362	366,158			366,196		187	366,235		306	366,273
	370	366,159		41	366,197		193	366,236		310	366,274
		366,160		42	366,198	D13—	108	366,237	D18—	43	366,275
	375	366,161		52	366,199		110	366,238			366,276
	393	366,162		107	366,200		146	366,239			366,277
	403	366,163		300	366,201			366,240			366,278
	406	366,164		333	366,202		147	366,241	D19—	36	366,279
	421	366,165			366,203			366,242		52	366,280
	447	366,166		338	366,204		162	366,243		69	366,281
	480	366,167		353	366,205			366,244		83	366,282
D21—	2	366,283			366,321						
	20	366,284			366,322						
	48	366,285			366,323						
	59	366,286			366,324						
	85	366,287			366,325						
		366,288			366,326						
	99	366,289			366,327						
	118	366,290			366,328						
	121	366,291			366,329						
	122	366,292			366,330						
		366,293			366,331						
	123	366,294			366,332						
	136	366,295			366,333						
		366,296			366,334						
	153	366,297			366,335						
	184	366,298		139	366,336						
	195	366,299			366,337						
	198	366,300	D26—	44	366,338						
	210	366,301		49	366,339						
	234	366,302		51	366,340						
	237	366,303		81	366,341						
	240	366,304		84	366,342						
	253	366,305		101	366,343						
	254	366,306		133	366,344						
D22—	134	366,307	D27—	186	366,345						
D23—	213	366,308	D28—	35	366,346						
	216	366,309		76	366,347						
	223	366,310	D29—	106	366,348						
	227	366,311		111	366,349						
	288	366,312		120	366,350						
	367	366,313	D30—	101	366,351						
D24—	106	366,314									
	110	366,315									
	126	366,316									
	146	366,317									
	168	366,318									
	177	366,319									
D25—	68	366,320									
	104	366,321									

CLASSIFICATION OF PLANTS

P.—	87.15	9,427		87.18	9,429			9,431			9,433
		9,428			9,430			9,432		88.3	9,434

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01	:	5,484,313		5,484,076		5,484,487		5,485,130		5,485,554		5,484,569
		5,484,522		5,484,089		5,484,534		5,485,122		5,485,563		5,484,577
		5,484,625		5,484,090		5,484,552		5,485,125		5,485,565		5,484,597
		5,485,305		5,484,093		5,484,571		5,485,127		5,485,571		5,484,917
		5,485,583		5,484,103		5,484,580		5,485,140		5,485,577		5,484,944
02	:	5,484,363		5,484,106		5,484,586		5,485,147		5,485,578		5,484,973
04	:	5,483,733		5,484,126		5,484,590		5,485,148		5,485,579		5,485,014
		5,483,744		5,484,131		5,484,591		5,485,161		5,485,584		5,485,046
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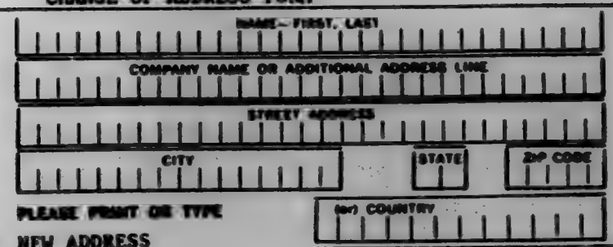
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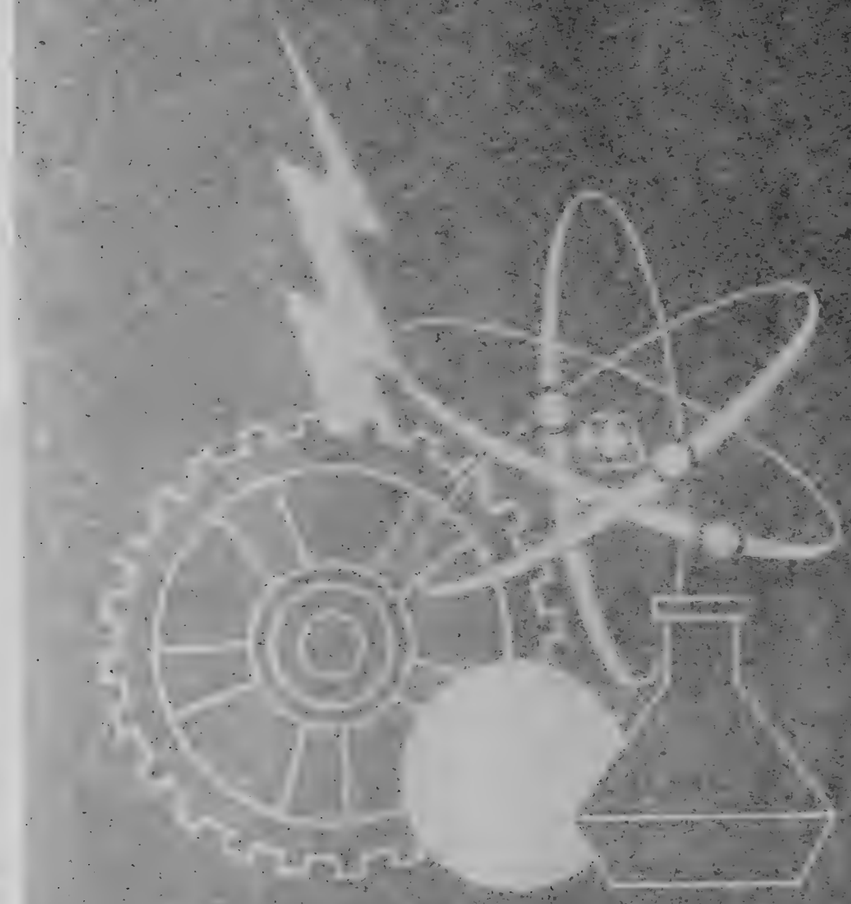
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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1181 O.G. 50, on December 19, 1995.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective June 20, 1995, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1181 O.G. 49, on December 19, 1995.

International fees were changed, effective on January 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1181 O.G. 49, on December 19, 1995.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1995, and were announced in the *Official Gazette* at 1177 O.G. 171, on August 29, 1995.

The schedule of PCT fees (in U.S. dollars), effective January 1, 1996, is as follows:

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—Corresponding prior U.S. national application filed	430.00
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European Patent Office as ISA	1700.00
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Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee	164.00
—Confirmation fee	82.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	207.00
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USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	470.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	710.00
—Additional examination fee, per additional invention (payable only upon invitation)	250.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4)	47.00	94.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	340.00	680.00
USPTO was ISA but not IPEA	375.00	750.00
USPTO was neither ISA nor IPEA		
—Search report has not been prepared by the European Patent Office or the Japanese Patent Office	505.00	1010.00
—Search report has been prepared by the European Patent Office or the Japanese Patent Office	440.00	880.00
Other National fees		
—For each independent claim in excess of 3	39.00	78.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	125.00	250.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

Nov. 27, 1995

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on January 19, 1993 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,179,735 through 5,181,273
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 17, 1989 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,797,952 through 4,799,271
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 15, 1985 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,493,115 through 4,494,244
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $495.00
By other than a small entity $990.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $995.00
By other than a small entity $1,990.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,495.00
By other than a small entity $2,990.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $660.00
(2) unintentional $1,550.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED November 15, 1996
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,411	06/762,350	05/05/87
(4,415,705)	(06/399,643)	(11/15/83)
Re. 34,136	07/434,849	12/01/92
(4,705,783)	(06/748,489)	(11/10/87)
4,414,694	06/435,106	11/15/83
4,414,696	06/400,564	11/15/83
4,414,700	06/295,659	11/15/83
4,414,701	06/399,423	11/15/83
4,414,710	06/292,932	11/15/83
4,414,713	06/308,428	11/15/83
4,414,718	06/374,318	11/15/83
4,414,722	06/270,223	11/15/83
4,414,728	06/265,668	11/15/83
4,414,730	06/303,491	11/15/83
4,414,733	06/265,744	11/15/83
4,414,736	06/324,155	11/15/83
4,414,738	06/230,246	11/15/83
4,414,744	06/287,916	11/15/83
4,414,745	06/298,164	11/15/83
4,414,749	06/278,402	11/15/83
4,414,771	06/262,095	11/15/83
4,414,772	06/274,725	11/15/83
4,414,779	06/324,079	11/15/83
4,414,789	06/243,808	11/15/83
4,414,790	06/384,471	11/15/83
4,414,791	06/286,478	11/15/83
4,414,802	06/413,069	11/15/83
4,414,811	06/235,785	11/15/83
4,414,812	06/259,049	11/15/83
4,414,823	06/341,351	11/15/83
4,414,828	06/272,279	11/15/83
4,414,831	06/253,529	11/15/83
4,414,836	06/430,957	11/15/83
4,414,851	06/297,436	11/15/83
4,414,852	06/301,628	11/15/83
4,414,854	06/316,679	11/15/83
4,414,855	06/268,890	11/15/83
4,414,857	06/291,390	11/15/83
4,414,858	06/360,739	11/15/83
4,414,862	06/249,577	11/15/83
4,414,863	06/418,145	11/15/83
4,414,864	06/291,127	11/15/83
4,414,869	06/253,599	11/15/83
4,414,887	06/353,993	11/15/83
4,414,900	06/314,218	11/15/83
4,414,901	06/274,739	11/15/83
4,414,906	06/295,204	11/15/83
4,414,910	06/431,622	11/15/83
4,414,913	06/283,515	11/15/83
4,414,921	06/325,003	11/15/83
4,414,930	06/307,721	11/15/83
4,414,940	06/253,581	11/15/83

Patent Number	Serial Number	Issue Date
4,414,952	06/232,025	11/15/83
4,414,957	06/359,061	11/15/83
4,414,973	06/242,287	11/15/83
4,414,975	06/264,184	11/15/83
4,414,981	06/370,332	11/15/83
4,414,987	06/294,814	11/15/83
4,414,994	06/322,522	11/15/83
4,415,000	06/379,156	11/15/83
4,415,001	06/257,225	11/15/83
4,415,002	06/271,295	11/15/83
4,415,003	06/297,057	11/15/83
4,415,017	06/277,759	11/15/83
4,415,027	06/389,072	11/15/83
4,415,028	06/300,087	11/15/83
4,415,036	06/350,670	11/15/83
4,415,053	06/225,360	11/15/83
4,415,058	06/335,680	11/15/83
4,415,059	06/389,267	11/15/83
4,415,064	06/293,031	11/15/83
4,415,079	06/357,763	11/15/83
4,415,088	06/279,727	11/15/83
4,415,096	06/294,018	11/15/83
4,415,098	06/274,002	11/15/83
4,415,099	06/272,476	11/15/83
4,415,109	06/283,958	11/15/83
4,415,114	06/261,577	11/15/83
4,415,116	06/290,631	11/15/83
4,415,121	06/273,023	11/15/83
4,415,124	06/309,379	11/15/83
4,415,127	06/308,670	11/15/83
4,415,130	06/224,347	11/15/83
4,415,139	06/289,349	11/15/83
4,415,140	06/359,215	11/15/83
4,415,142	06/327,500	11/15/83
4,415,146	06/411,619	11/15/83
4,415,148	06/330,728	11/15/83
4,415,152	06/296,984	11/15/83
4,415,157	06/306,043	11/15/83
4,415,159	06/304,092	11/15/83
4,415,163	06/351,254	11/15/83
4,415,167	06/449,188	11/15/83
4,415,169	06/306,458	11/15/83
4,415,184	06/257,547	11/15/83
4,415,191	06/284,644	11/15/83
4,415,193	06/239,308	11/15/83
4,415,199	06/343,747	11/15/83
4,415,204	06/377,983	11/15/83
4,415,206	06/232,439	11/15/83
4,415,208	06/289,060	11/15/83
4,415,209	06/320,394	11/15/83
4,415,213	06/317,210	11/15/83
4,415,226	06/221,956	11/15/83
4,415,231	06/293,658	11/15/83
4,415,238	06/307,717	11/15/83
4,415,245	06/378,670	11/15/83
4,415,251	06/341,555	11/15/83
4,415,253	06/369,349	11/15/83
4,415,257	06/394,501	11/15/83
4,415,263	06/313,948	11/15/83
4,415,268	06/272,348	11/15/83
4,415,273	06/233,617	11/15/83
4,415,274	06/297,621	11/15/83
4,415,276	06/295,010	11/15/83
4,415,282	06/341,299	11/15/83
4,415,285	06/371,887	11/15/83
4,415,289	06/308,671	11/15/83
4,415,290	06/336,305	11/15/83
4,415,295	06/331,997	11/15/83
4,415,303	06/263,403	11/15/83
4,415,308	06/252,595	11/15/83
4,415,316	06/258,143	11/15/83
4,415,319	06/291,874	11/15/83
4,415,325	06/270,873	11/15/83
4,415,327	06/393,191	11/15/83
4,415,328	06/306,568	11/15/83
4,415,337	06/374,838	11/15/83
4,415,338	06/387,176	11/15/83
4,415,342	06/368,096	11/15/83
4,415,348	06/383,860	11/15/83
4,415,349	06/368,605	11/15/83
4,415,356	06/310,524	11/15/83
4,415,364	06/391,720	11/15/83
4,415,365	06/305,332	11/15/83
4,415,376	06/349,097	11/15/83
4,415,381	06/284,376	11/15/83
4,415,384	06/382,325	11/15/83
4,415,391	06/366,029	11/15/83
4,415,396	06/423,776	11/15/83
4,415,404	06/221,587	11/15/83
4,415,408	06/317,354	11/15/83
4,415,410	06/470,346	11/15/83
4,415,411	06/236,908	11/15/83
4,415,413	06/310,903	11/15/83
4,415,417	06/399,578	11/15/83
4,415,419	06/393,708	11/15/83
4,415,420	06/464,304	11/15/83
4,415,426	06/286,875	11/15/83
4,415,427	06/431,957	11/15/83
4,415,430	06/285,454	11/15/83
4,415,434	06/285,601	11/15/83
4,415,435	06/422,675	11/15/83
4,415,437	06/305,264	11/15/83
4,415,440	06/415,953	11/15/83
4,415,441	06/417,218	11/15/83
4,415,443	06/282,046	11/15/83
4,415,445	06/371,105	11/15/83
4,415,447	06/301,533	11/15/83
4,415,450	06/335,036	11/15/83
4,415,457	06/243,069	11/15/83
4,415,459	06/271,818	11/15/83
4,415,460	06/369,352	11/15/83
4,415,464	06/357,447	11/15/83
4,415,473	06/325,180	11/15/83
4,415,475	06/390,142	11/15/83
4,415,480	06/305,266	11/15/83
4,415,484	06/372,253	11/15/83
4,415,504	06/416,338	11/15/83
4,415,505	06/400,892	11/15/83
4,415,509	06/281,111	11/15/83
4,415,512	06/245,137	11/15/83
4,415,515	06/366,058	11/15/83
4,415,523	06/110,536	11/15/83
4,415,529	06/426,442	11/15/83
4,415,532	06/240,642	11/15/83
4,415,537	06/344,896	11/15/83
4,415,538	06/251,173	11/15/83
4,415,540	06/346,837	11/15/83
4,415,548	06/373,654	11/15/83
4,415,551	06/344,089	11/15/83
4,415,563	06/328,035	11/15/83
4,415,565	06/246,984	11/15/83
4,415,570	06/383,703	11/15/83
4,415,574	06/358,260	11/15/83
4,415,577	06/294,207	11/15/83
4,415,581	06/495,905	11/15/83
4,415,592	06/357,428	11/15/83
4,415,593	06/372,599	11/15/83
4,415,594	06/335,495	11/15/83
4,415,595	06/324,406	11/15/83
4,415,608	06/339,812	11/15/83
4,415,618	06/456,301	11/15/83
4,415,621	06/347,761	11/15/83
4,415,628	06/314,536	11/15/83
4,415,630	06/470,180	11/15/83
4,415,632	06/472,660	11/15/83
4,415,637	06/358,417	11/15/83
4,415,640	06/350,039	11/15/83
4,415,647	06/427,067	11/15/83
4,415,648	06/234,687	11/15/83
4,415,653	06/447,579	11/15/83
4,415,654	06/409,699	11/15/83
4,415,656	06/380,797	11/15/83
4,415,660	06/357,414	11/15/83
4,415,663	06/411,157	11/15/83
4,415,664	06/411,158	11/15/83
4,415,668	06/255,480	11/15/83

Patent Number	Serial Number	Issue Date
4,415,669	06/327,837	11/15/83
4,415,672	06/380,464	11/15/83
4,415,674	06/367,198	11/15/83
4,415,675	06/410,232	11/15/83
4,415,676	06/410,297	11/15/83
4,415,680	06/427,142	11/15/83
4,415,683	06/362,228	11/15/83
4,415,688	06/443,274	11/15/83
4,415,689	06/415,204	11/15/83
4,415,697	06/292,858	11/15/83
4,415,702	06/347,259	11/15/83
4,415,707	06/401,052	11/15/83
4,415,709	06/308,583	11/15/83
4,415,711	06/394,672	11/15/83
4,415,716	06/228,951	11/15/83
4,415,717	06/439,093	11/15/83
4,415,719	06/328,383	11/15/83
4,415,721	06/232,929	11/15/83
4,415,722	06/360,045	11/15/83
4,415,730	06/391,284	11/15/83
4,415,733	06/244,312	11/15/83
4,415,736	06/334,838	11/15/83
4,415,737	06/451,349	11/15/83
4,415,738	06/281,858	11/15/83
4,415,750	06/358,314	11/15/83
4,415,751	06/319,846	11/15/83
4,415,756	06/326,644	11/15/83
4,415,757	06/358,103	11/15/83
4,415,759	06/310,012	11/15/83
4,415,760	06/367,815	11/15/83
4,415,761	06/283,556	11/15/83
4,415,763	06/349,562	11/15/83
4,415,765	06/261,161	11/15/83
4,415,771	06/250,779	11/15/83
4,415,775	06/295,945	11/15/83
4,415,776	06/255,272	11/15/83
4,415,783	06/420,322	11/15/83
4,415,786	06/361,261	11/15/83
4,415,787	06/246,639	11/15/83
4,415,740	06/347,710	11/15/83
4,415,791	06/347,386	11/15/83
4,415,795	06/262,835	11/15/83
4,415,799	06/237,159	11/15/83
4,415,809	06/289,155	11/15/83
4,415,811	06/296,045	11/15/83
4,415,812	06/338,639	11/15/83
4,415,817	06/309,756	11/15/83
4,415,819	06/223,198	11/15/83
4,415,821	06/376,655	11/15/83
4,415,830	06/298,073	11/15/83
4,415,832	06/323,260	11/15/83
4,415,833	06/306,793	11/15/83
4,415,835	06/275,834	11/15/83
4,415,842	06/407,418	11/15/83
4,415,845	06/305,626	11/15/83
4,415,846	06/241,756	11/15/83
4,415,847	06/291,029	11/15/83
4,415,848	06/308,237	11/15/83
4,415,850	06/233,819	11/15/83
4,415,860	06/245,995	11/15/83
4,415,864	06/228,528	11/15/83
4,415,866	06/324,661	11/15/83
4,415,869	06/282,355	11/15/83
4,415,872	06/293,463	11/15/83
4,415,873	06/364,292	11/15/83
4,415,875	06/379,283	11/15/83
4,415,977	06/371,343	11/15/83
4,415,882	06/299,121	11/15/83
4,415,883	06/303,122	11/15/83
4,415,884	06/309,287	11/15/83
4,415,903	06/366,812	11/15/83
4,415,905	06/465,236	11/15/83
4,415,913	06/271,169	11/15/83
4,415,915	06/248,939	11/15/83
4,415,923	06/294,058	11/15/83
4,415,926	06/382,990	11/15/83
4,415,936	06/296,490	11/15/83
4,415,938	06/319,786	11/15/83
4,415,947	06/254,981	11/15/83
4,415,948	06/310,597	11/15/83
4,415,949	06/295,716	11/15/83
4,415,960	06/362,941	11/15/83
4,415,962	06/274,006	11/15/83
4,415,963	06/257,478	11/15/83
4,415,967	06/269,626	11/15/83
4,415,971	06/249,409	11/15/83
4,415,975	06/221,791	11/15/83
4,415,976	06/258,342	11/15/83
4,415,977	06/243,928	11/15/83
4,415,978	06/254,226	11/15/83
4,415,982	06/229,002	11/15/83
4,415,988	06/283,182	11/15/83
4,415,989	06/249,465	11/15/83
4,415,990	06/276,408	11/15/83
4,416,004	06/294,304	11/15/83
4,416,008	06/215,842	11/15/83
4,704,742	06/859,509	11/10/87
4,704,744	06/885,279	11/10/87
4,704,748	06/836,660	11/10/87
4,704,750	06/883,305	11/10/87
4,704,751	06/823,590	11/10/87
4,704,754	07/016,795	11/10/87
4,704,756	06/943,210	11/10/87
4,704,760	06/864,069	11/10/87
4,704,763	06/796,015	11/10/87
4,704,768	06/867,043	11/10/87
4,704,769	06/855,930	11/10/87
4,704,771	06/738,674	11/10/87
4,704,773	06/873,624	11/10/87
4,704,775	06/798,999	11/10/87
4,704,782	06/913,952	11/10/87
4,704,783	06/859,526	11/10/87
4,704,786	06/778,951	11/10/87
4,704,788	06/830,740	11/10/87
4,704,790	06/805,693	11/10/87
4,704,796	06/862,130	11/10/87
4,704,801	06/890,431	11/10/87
4,704,803	06/889,469	11/10/87
4,704,805	06/921,917	11/10/87
4,704,809	07/006,172	11/10/87
4,704,811	06/924,430	11/10/87
4,704,814	06/748,737	11/10/87
4,704,815	07/006,053	11/10/87
4,704,821	06/881,912	11/10/87
4,704,822	06/920,455	11/10/87
4,704,826	06/277,813	11/10/87
4,704,831	06/925,944	11/10/87
4,704,832	06/865,355	11/10/87
4,704,834	06/834,344	11/10/87
4,704,841	06/889,734	11/10/87
4,704,844	06/886,726	11/10/87
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5,063,831	07/481,174	11/12/91
5,063,834	07/460,898	11/12/91
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5,063,845	07/480,776	11/12/91
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5,063,852	07/613,255	11/12/91
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5,063,866	07/443,673	11/12/91
5,063,869	07/407,550	11/12/91
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5,064,048	07/531,018	11/12/91
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5,065,167	07/526,210	11/12/91
5,065,180	07/611,072	11/12/91
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5,065,416	07/407,201	11/12/91
5,065,424	07/326,736	11/12/91
5,065,426	07/382,110	11/12/91
5,065,427	07/429,801	11/12/91

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,797,442, Re. S.N. 08/559,735, Nov. 15, 1995, Cl. 524, MELT PROCESSABLE CPVC BLENDS AND ALLOYS THEREOF, Richard C. Neuman, Owner of Record: *Inventor,* Attorney or Agent: Helen A. Odar, Ex. Gp.: 1511

4,826,831, Re. S.N. 08/542,941, Oct. 13, 1995, Cl. 514/170, METHOD OF HORMONAL TREATMENT FOR MENOPAUSAL OR POST MENOPAUSAL DISORDERS INVOLVING CONTINUOUS ADMINISTRATION OF PROGESTOGENS AND ESTROGENS, Earl R. Plunkett, et. al., Owner of Record: *Pre Jay Holdings Limited, Ontario, Canada, WOCO Investments Ltd., Ontario, Canada,* Attorney or Agent: Paul N. Kokulis, Ex. Gp.: 1205

5,014,362, Re. S.N. 08/556,080, Nov. 13, 1995, Cl. 002/168, ELASTOMERIC COVERING MATERIAL AND HAND GLOVE MADE THEREWITH, Neil E. Tillotson, et. al., Owner of Record: *First National Bank of Boston, Boston, Mass.,* Attorney or Agent: Peter G. Pappas, Ex. Gp.: 2407

5,204,555, Re. S.N. 08/425,753, Apr. 19, 1995, Cl. 307, LOGIC ARRAY HAVING HIGH FREQUENCY INTERNAL CLOCKING, Andrew C. Graham, Owner of Record: *Gazelle Microcircuits, Inc., Santa Clara, Calif.,* Attorney or Agent: Brian D. Ogonowsky, Ex. Gp.: 2500

5,241,669, Re. S.N. 08/521,712, Dec. 1, 1995, Cl. 395, METHOD AND SYSTEM FOR SIDEFILE STATUS POLLING IN A TIME ZERO BACKUP COPY PROCESS, Oded Cohn, et. al., Owner of Record: *International Business Machines Corp., Armonk, N.Y.,* Attorney or Agent: Keith L. Hargrove, Ex. Gp.: 2313

5,250,237, Re. S.N. 08/541,348, Oct. 10, 1995, Cl. 264/13, ALCOHOL-BASED SPIN LIQUIDS FOR FLASH-SPINNING POLYMERIC PLEXIFILAMENTS, Hyunkook Shin, Owner of Record: *E.I. Du Pont De Nemous and Co., Wilmington, Del.,* Attorney or Agent: David W. Westphal, Ex. Gp.: 1306

5,260,551, Re. S.N. 08/555,500, Nov. 8, 1995, Cl. 235/382, TIME CONTROLLED LOCK SYSTEM, Tore Wiik, et. al., Owner of Record: *Trioving A.S., Moss, Norway,* Attorney or Agent: Donald C. Lucas, Ex. Gp.: 2514

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 33,939, Reexam. No. 90/004,053, Nov. 28, 1995, Cl. 280/646, TELESCOPIC AND COLLAPSIBLE GOLF CART, Alex Cheng, Owner of Record: *Unique Product & Design Co., Ltd., Yung Kang City, Taiwan,* Attorney or Agent: Philip Furgang, II, New York, N.Y., Ex. Gp.: 3106, Requester: Thomas M. Galgano, Galgano & Burke, Hauppauge, N.Y.

4,641,953, Reexam. No. 90/004,065, Dec. 8, 1995, Cl. 355/014.00R, IMAGE FORMING APPARATUS, Hideshi Oushiden, et. al., Owner of Record: *Kabushiki Kaisha Toshiba, Kawasaki-Shi, Japan,* Attorney or Agent: Richard L. Schwaab, Foley & Lardner, Washington, D.C., Ex. Gp.: 2105, Requester: Owner

4,710,016, Reexam. No. 90/004,066, Dec. 8, 1995, Cl. 355/004, DEVELOPING APPARATUS, Junji Wantanabe, Owner of Record: *Kabushiki Kaisha Toshiba, Kawasaki-Shi, Japan,* Attorney or Agent: Richard L. Schwaab, Foley & Lardner, Washington, D.C., Ex. Gp.: 2105, Requester: Owner

4,712,127, Reexam. No. 90/004,067, Dec. 27, 1995, Cl. 257/296, HIGH RELIABILITY METAL & RESIN CONTAINER FOR A SEMICONDUCTOR DEVICE, Piero Colombo, et. al., Owner of Record: *SGS-Thompson Microelectronics, Inc., Carrolton, Tex.,* Attorney or Agent: Kenneth L. Cage, Willian Brinks Hofer Gilson & Lione, Washington, D.C., Ex. Gp.: 2503, Requester: International Rectifier Corp., El Segundo, Calif., c/o Samuel H. Weiner, Ostrolenk Faber Gerb & Soffen, New York, N.Y.

4,729,015, Reexam. No. 90/004,056, Dec. 12, 1995, Cl. 358/527, METHOD AND APPARATUS FOR MAKING POSITIVE COPIES FROM DIAPOSITIVES, Eduard Wagensonner, Owner of Record: *AFGA-Gevaert Aktiengesellscaft, Leverkusen, Germany,* Attorney or Agent: Darby & Darby, New York, N.Y., Ex. Gp.: 2612, Requester: Owner

4,754,840, Reexam. No. 90/004,062, Dec. 22, 1995, Cl. 182/002, LEVELLING ASSEMBLY FOR WORK PLATFORMS ON ARTICULATING BOOMS, Wayne P. MacDonald, et. al., Owner of Record: *JLG Industries, Inc., McConnellsburg, Pa.,* Attorney or Agent: Foley & Lardner, Washington, D.C., Ex. Gp.: 3505, Requester: Owner

4,985,106, Reexam. No. 90/004,068, Dec. 27, 1995, Cl. 156/276, INSULATION STRUCTURE FOR APPLIANCES, Thomas E. Nelson, Owner of Record: *Soltech, Inc., Shelbyville, Ky.,* Attorney or Agent: James M. Durlacher, Woodland Emhardt Naughton Moriarty & McNett, Indianapolis, Ind., Ex. Gp.: 1304, Requester: James M. Durlacher, Woodland Emhardt Naughton Moriarty & McNett, Indianapolis, Ind.

5,001,386, Reexam. No. 90/004,060, Dec. 21, 1995, Cl. 315/219, CIRCUIT FOR DIMMING GAS DISCHARGE LAMPS WITHOUT INTRODUCING STRIATIONS, Charles R. Sullivan, et. al., Owner of Record: *Lutron Electronics Co., Inc., Coopersburg, Pa.,* Attorney or Agent: Gregory J. Lavorgna, Seidel, Gonda, Lavorgna & Monaco, Philadelphia, Pa., Ex. Gp.: 2502, Requester: Owner

5,041,763, Reexam. No. 90/004,061, Dec. 21, 1995, Cl. 315/176, CIRCUIT AND METHOD FOR IMPROVED DIMMING OF GAS DISCHARGE LAMPS, Charles R. Sullivan, et. al., Owner of Record: *Lutron Electronics Co., Inc., Coopersburg, Pa.,* Attorney or Agent: Gregory J. Lavorgna, Seidel, Gonda, Lavorgna & Monaco, Philadelphia, Pa., Ex. Gp.: 2502, Requester: Owner

5,114,777, Reexam. No. 90/004,054, Dec. 11, 1995, Cl. 428/137, WOVEN MULTILAYER PAPERMAKING FABRIC HAVING INCREASED STABILITY AND PERMEABILITY AND METHOD, Hermann Gaisser, Owner of Record: *Wangner Systems, Greenville, S.C.,* Attorney or Agent: Cort Flint, Greenville, S.C., Ex. Gp.: 1508, Requester: Asten, Inc., Charleston, S.C., c/o Volpe & Koenig, Philadelphia, Pa.

5,116,083, Reexam. No. 90/004,064, Dec. 7, 1995, Cl. 248/312, HANGER FOR ARTICLES OF DIFFERENT SIZES AND SHAPES, Karsten H. Gerhardt, Owner of Record: *Ultra Hold Corporation, Quebec, Canada,* Attorney or Agent: Marks & Murase, Washington, D.C., Ex. Gp.: 3505, Requester: Owner

5,287,812, Reexam. No. 90/004,052, Nov. 15, 1995, Cl. 55/498, FILTER CARTRIDGE, Gregory S. Tronto, et. al., Owner of Record: *W. L. Gore & Associates, Inc., aka Gore Holdings, Newark, Del.,* Attorney or Agent: Victor M. Genco, Jr., Gore Holdings, Inc., Newark, Del., Ex. Gp.: 1305, Requester: Owner

5,249,950, Reexam. No. 90/004,058, Dec. 15, 1995, Cl. 425/412, HEATED STRIPPER SHOE ASSEMBLY, Michael E. Woolford, Owner of Record: *Anchor Wall Systems, Inc., Minneapolis, Minn.,* Attorney or Agent: Merchant Gould Smith Edell Welter & Schmidt, Minneapolis, Minn., Ex. Gp.: 1305, Requester: Owner

5,254,398, Reexam. No. 90/004,055, Dec. 11, 1995, Cl. 428/255, WOVEN MULTILAYER PAPERMAKING FABRIC HAVING INCREASED STABILITY AND PERMEABILITY AND METHOD, Hermann Gaisser, Owner of Record: *Wangner Systems, Greenville, S.C.,* Attorney or Agent: Cort Flint, Greenville, S.C., Ex. Gp.: 1504, Requester: Asten, Inc., Charleston, S.C., c/o Volpe & Koenig, Philadelphia, Pa.

5,295,297, Reexam. No. 90/004,063, Dec. 22, 1995, Cl. 029/827, METHOD OF PRODUCING SEMICONDUCTOR MEMORY, Wabei Kitamura, et. al., Owner of Record: *Hitachi Ltd., Tokyo, Japan,* Attorney or Agent: Antonelli Terry Stout & Kraus, Arlington, Va., Ex. Gp.: 3206, Requester: Owner

5,314,465, Reexam. No. 90/004,059, Dec. 18, 1995, Cl. 607/138, INCONTINENCE ELECTRODE APPARATUS AND METHOD, Donald D. Maurer, et. al., Owner of Record: *Empi Inc., St. Paul, Minn.,* Attorney or Agent: David R. Fairbairn, Kinney & Lange, Minneapolis, Minn., Ex. Gp.: 3311, Requester: Owner

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Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED OCTOBER 23, 1995 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
11,863	70/011,863	01/20/1885
101,895	71/073,436	01/19/1915
101,956	71/081,425	01/19/1915
102,002	71/080,596	01/19/1915
320,869	71/355,529	01/15/1935
320,877	71/355,964	01/15/1935
320,878	71/319,115	01/15/1935
320,890	71/356,582	01/15/1935
320,931	71/355,242	01/15/1935
320,933	71/356,666	01/15/1935
320,934	71/356,653	01/15/1935
320,955	71/356,550	01/15/1935
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320,970	71/356,903	01/15/1935
320,978	71/356,786	01/15/1935
320,992	71/356,444	01/15/1935
320,994	71/356,440	01/15/1935
320,999	71/356,424	01/15/1935
321,009	71/354,148	01/15/1935
321,012	71/354,391	01/15/1935
321,026	71/349,756	01/15/1935
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601,031	71/636,360	01/18/1955
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Disclaimer

D. 359,707—Seymour Cohen, Jericho, N.Y. SLEEPING MRS. SANTA CLAUS FIGURE. Patent dated June 27, 1995. Disclaimer filed September 15, 1995, by the assignee, Telco Creations, Inc.

Hereby enters this disclaimer to all claims of said patent.

D. 360,165—Seymour Cohen, Jericho, N.Y. SLEEPING SANTA CLAUS FIGURE. Patent dated July 11, 1995. Disclaimer filed September 15, 1995, by the assignee, Telco Creations, Inc.

Hereby enters this disclaimer to all claims of said patent.

4,793,355—Duane B. Crum, San Diego; Ronald C. Welsey, Cardiff; Richard E. Greenblatt, San Diego; Roberta M. Toussaint, Olivenhain; Eugene C. Hirschkoff, Leucadia, all of Calif. APPARATUS FOR PROCESS FOR MAKING BIOMAGNETIC MEASUREMENTS. Patent dated December 27, 1988. Disclaimer filed October 16, 1995, by the assignee, Biomagnetic Technologies, Inc.

Hereby enters this disclaimer to claims 1-24 of said patent.

5,398,613—Bernard Amiot, Cedex; Gilles Doisneau, Meug Sur Loire; Jean-Pierre Frehaut, Versailles; Serge Morin, Paris, all of France. SYSTEM FOR THE TILTING OF A SUSPENDED OBJECT WITH TENSIONING ROLLER FOR SUSPENSION LINE. Patent dated March 21, 1995. Disclaimer filed August 17, 1995, by the assignee, Thomson-Brandt Armements.

Hereby enters this disclaimer to claim 8 of said patent.

Disclaimer and Dedication

4,581,429—David H. Solomon, Glen Waverley; Ezio Rizzardo, Wheelers Hill; Paul Cacioli, Reservoir, all of Australia. POLYMERIZATION PROCESS AND POLYMERS PRODUCED THEREBY. Patent dated April 8, 1986. Disclaimer and dedication filed October 24, 1995, by the assignee, Commonwealth Scientific and Industrial Research Organization.

Hereby disclaims and dedicates to the public claims 16-19 of said patent.

Certificate of Correction For Week of January 23, 1996

Re. 34,735	5,234,925	5,355,216	5,403,724
D. 359,030	5,234,935	5,357,807	5,404,171
D. 360,341	5,238,382	5,362,306	5,404,308
D. 360,867	5,250,469	5,364,912	5,405,494
D. 363,236	5,263,723	5,367,607	5,406,010
D. 363,278	5,265,272	5,368,712	5,406,287
D. 363,630	5,281,501	5,369,008	5,406,548
4,948,882	5,290,636	5,370,713	5,409,481
4,949,543	5,299,267	5,371,193	5,411,918
4,980,279	5,310,662	5,379,828	5,412,176
4,992,673	5,324,882	5,380,418	5,415,302
5,018,140	5,326,693	5,381,468	5,415,603
5,058,684	5,327,905	5,387,671	5,416,136
5,089,480	5,335,267	5,391,531	5,416,889
5,102,032	5,335,665	5,393,760	5,417,558
5,132,126	5,335,802	5,394,649	5,419,321
5,134,609	5,340,065	5,396,369	5,419,461
5,141,014	5,342,783	5,397,776	5,419,688
5,175,296	5,344,843	5,399,774	5,420,149
5,179,350	5,345,447	5,399,868	5,420,263
5,219,974	5,346,939	5,401,190	5,420,438
5,220,433	5,347,333	5,401,509	5,422,738
5,221,139	5,352,687	5,401,766	5,422,970
5,227,570	5,354,259	5,403,648	5,423,378
5,234,598	5,354,743	5,403,711	5,424,277
5,425,913	5,439,046	5,450,170	5,456,504
5,426,934	5,439,143	5,450,181	5,456,591
5,426,984	5,439,180	5,450,583	5,456,651
5,427,173	5,439,951	5,450,892	5,456,840
5,427,370	5,440,432	5,451,690	5,457,108
5,427,713	5,440,595	5,451,714	5,457,308
5,429,022	5,442,314	5,451,914	5,457,544
5,430,551	5,442,975	5,452,027	5,457,987
5,431,855	5,443,248	5,452,163	5,458,728
5,431,954	5,443,332	5,452,382	5,459,224
5,432,288	5,443,899	5,452,501	5,459,387
5,432,529	5,443,980	5,452,555	5,459,404
5,432,715	5,444,829	5,452,814	5,459,468
5,432,869	5,444,975	5,453,118	5,459,915
5,433,091	5,446,037	5,453,315	5,460,024
5,433,787	5,446,071	5,453,434	5,460,163
5,434,411	5,446,875	5,453,501	5,460,505
5,434,824	5,447,562	5,453,601	5,460,507
5,435,564	5,447,635	5,453,831	5,460,816
5,435,787	5,447,858	5,454,190	5,460,829
5,435,835	5,448,267	5,454,381	5,461,034
5,436,352	5,448,339	5,454,925	5,461,077
5,436,736	5,448,483	5,455,217	5,461,373
5,436,778	5,448,661	5,455,284	5,461,574
5,437,008	5,449,117	5,455,362	5,461,831
5,437,462	5,449,540	5,455,407	5,461,889
5,437,624	5,449,717	5,455,657	5,463,456
5,438,190	5,449,886	5,455,774	5,463,930
5,438,202	5,450,005	5,455,925	5,464,466
5,438,648	5,450,129	5,455,978	5,466,272
			5,468,967

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
October 16-20, 1995

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Recommended for Publication
10-17	EX	74/071,233	Clarkson Controls & Equipment Co.	whether the two-dimensional representation of the three-dimensional configuration of applicant's goods, which representation applicant claims is trademark, is de jure functional	ReFusal Reversed	No

Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney
	two-dimensional representation of the configuration of applicant's goods, namely, plastic tower packings for gas-liquid contact systems such as chemical recovery systems, water degasifiers, fume scrubbers for atmospheric pollution control, fruit storage controlled atmosphere systems, solution tanks for dissolved air flotation systems, and the like	

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

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Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addresaed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL-85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box M Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filings of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box TTAB FEE	Oppositions, Cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections, and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

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Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation*; papers relating to pending litigation shall be mailed only to the Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
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Box OED	Mail for the Office of Enrollment and Discipline.

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In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

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Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4488
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
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	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
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	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Library, University of Michigan	(313) 764-5298
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	Detroit: Great Lakes Patent and Trademark Center	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
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	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
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	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
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	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
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Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
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West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
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	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy
J.O. THOMAS, JR., Deputy Assistant Commissioner for Patent Process Services

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	06/16/94
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	308-1235	06/28/94
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—BARRY S. RICHMAN, Director	308-0651	08/26/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	09/15/94
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	03/22/94
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	01/17/94
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	05/31/94
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	06/23/93
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	03/30/94
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	05/24/94
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	04/19/94
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	05/30/94
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	05/12/94
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	07/12/94
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	09/26/94
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/25/94
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	06/20/94

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of October 1, 1995

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Sussman, Acting Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	03/23/95	05/25/95
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/23/95	07/03/95
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/26/95	08/21/95
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/06/95	08/14/95
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/23/95	05/01/95
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/14/95	07/03/95
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/02/95	07/24/95
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions– Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/15/95	06/17/95
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/30/95	05/30/95
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—John Walker, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	02/14/95	—0—
Renewals (All Classes)	07/25/95	—0—
Section 12(c) Publications (All Classes)	04/11/95	—0—

1. ** Assigned to all Law Office

2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 305–8747 through (703) 305-9752 from 6:30 a.m. to Midnight EST, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

JANUARY 23, 1996

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 Re. 34,069 (2776th)

PROCESS FOR THE PREPARATION OF OLIGONUCLEOTIDES

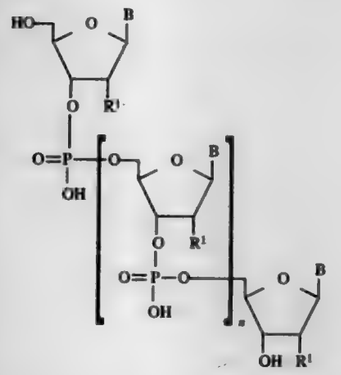
Hubert Köster, Concord, Mass., and Nanda D. Sinha, San Rafael, Calif., assignors to Millipore Corporation, Bedford, Mass.

Reexamination Request No. 90/003,459, Jun. 10, 1994.
Reexamination Certificate for Reissue Patent Re. 34,069, issued Sep. 15, 1992, Ser. No. 481,572, Feb. 16, 1990.
Original No. 4,725,677, dated Feb. 16, 1988, Ser. No. 752,178, Aug. 10, 1984.
Int. Cl.[6] C07H *15/12;17/00*
U.S. Cl. 536—25.34

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–19** is confirmed.

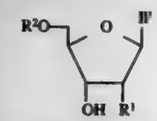
1. A process for the preparation of oligonucleotides of the formula **I**



(I)

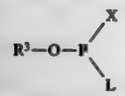
in which B denotes a nucleoside base, R^1 denotes hydrogen, hydroxyl or hydroxyl which is protected by, where appropriate, a removable protective group and n denotes an integer from 1 to 200, comprising the steps of

(a) reacting a nucleoside of the formula II



(II)

in which R^1 as defined as above, and R^2 denotes a removable protective group and B' denotes the nucleotide base B protected by the protective groups which can be eliminated, with a phosphine derivative of the formula III

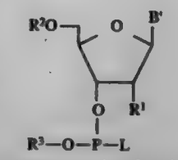


(III)

in which R^3 is a protective group which can be eliminated, and X and L are groups which react with hydroxyl groups in the sugar nioieties of the nucleotides or nucleosides, in the presence of a base to thereby form a nucleotide phosphite

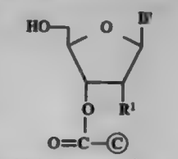
(b) reacting the nucleotide phosphite obtained in step

(a) and represented by the formula IV



(IV)

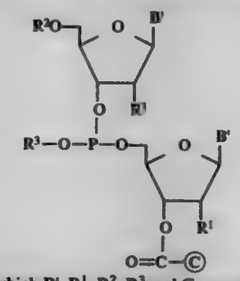
in which B', R^1, R^2, R^3 and L are as defined above, with a nucleoside, of the formula V, bound to a polymeric carrier



(V)

in which B' and R^1 are as defined above and C denotes the polymeric carrier;

(c) oxidizing the carrier-bound nucleoside-nucleotides obtained in step (b) and represented by the formula:



(VI)

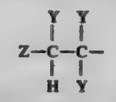
in which B', R^1, R^2, R^3 and C are as defined above, with formation of phosphotriester groups,

(d) blocking free primary 5—OH groups, which have not been reacted in the reaction according to step (b), with permanent protective groups;

(e) eliminating the protective group R^2;

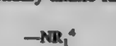
(f) optionally repeating steps (a) to (e) to introduce further nucleoside phosphate or oligonucleoside phosphate units; and

(g) cleaving the nucleoside carrier bond and optionally eliminating the protective groups present in the oligonucleoside phosphates, which process comprises using in step (a) as the phosphine derivative of the formula III a compound in which R^3 denotes a group of the formula VI



(VII)

in which the groups Y, which can be identical or different, represent hydrogen, methyl, and/or ethyl and Z represents an electron-attracting group, where, in the phosphine derivative of the formula III, X is chlorine, bromine, CN or SCN and L is CN or CNS, a secondary amino radical of the formula (VIII)



(VIII)

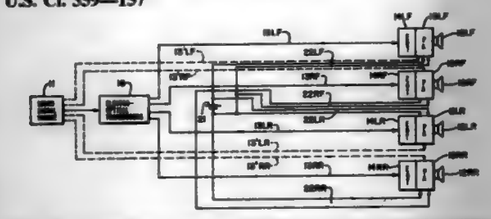
where the groups R^4 are primary, secondary, or tertiary alkyl radicals having 1–10 carbon atoms, or together form a cycloalky radical having 5–7 carbon atoms, which can contain one or two nitrogen, oxygen, or sulfur atoms as hereoatoms, or are imidazole, triazole, tetrazole, 3-nitro-1,2,4-triazole, thiazole, pyrrole, benzotriazole, benzohydroxytriazole, imidazole substituted in the phenyl moiety, triazole substituted in the phenyl moiety, tetrazole substi-

tuted in the phenyl moiety, 3-nitro- 1,2,4-triazole substituted in the phenyl moiety, thiazole substituted in the phenyl moiety, pyrrole substituted in the phenyl moeity, or benzohydroxytriazole substituted in the phenyl moeity.

B1 4,282,605 (2777th)
SOUND REPRODUCING WITH REMOTE AMPLIFYING TRANSDUCER

Amar G. Bose, Wayland, Mass., assignor to Bose Corporation, Framingham, Mass.

Reexamination Request No. 90/002,546, Dec. 27, 1991.
Reexamination Certificate for Patent 4,282,605, issued Aug. 4, 1981, Ser. No. 82,300, Oct. 5, 1979.
Int. Cl.[6] H04B *10/00*
U.S. Cl. 359—157



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim 7 is confirmed.

Claim 6 was previously disclaimed.

Claims 1–5 are cancelled.

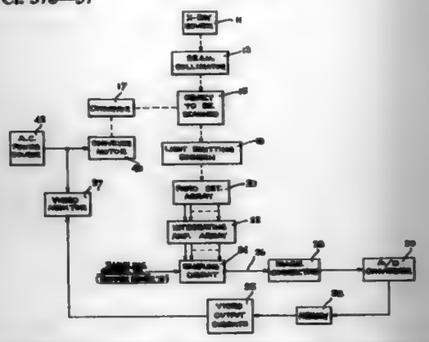
7. Vehicle sound reproducing apparatus in accordance with claim 6 wherein said means for coupling comprises source electro-optical transducing means at the location of said source and a corresponding plurality of receiving electro-optical transducing means each integrated with a respective one of said power amplifying means,

and a corresponding plurality of light pipe means for coupling said source electro-optical transducing means to a respective one of said receiving electro-optical transducing means.

B1 4,366,382 (2778th)
X-RAY LINE SCAN SYSTEM FOR USE IN BAGGAGE INSPECTION

Andreas F. Kotowski, Covina, Calif., assignor to Scanray Corporation, Calif.

Reexamination Request No. 90/003,947, Sep. 11, 1995.
Reexamination Certificate for Patent 4,366,382, issued Dec. 28, 1982, Ser. No. 185,561, Sep. 9, 1980.
Int. Cl.[6] G01N *23/00*
U.S. Cl. 378—57



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–8 is confirmed.

1. A system for inspecting objects including

an x-ray source,

conveyor means for moving said objects through rays in the output of said source,

means for receiving said rays after they have passed through said objects,

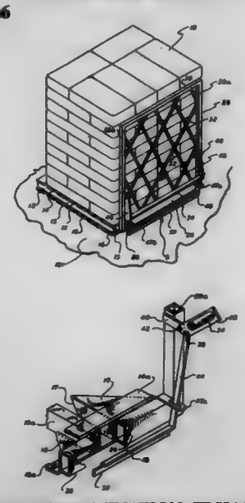
means responsive to the output of said receiving means for providing a video display in accordance with the receiving means output comprising a light-emitting screen in the form of a strip, an array of photo-detectors opposite said screen for generating electrical signals in accordance with the light emission of the portions of the screen thereopposite, separate means for individually integrating the output of each of said detectors, electronic sampling circuit means for time multiplexing the outputs of said integrating means to provide a series of sequential pulses representing the outputs of said integrating means, means responsive to said pulses for generating video output signals, and video monitor means responsive to said video output signals for displaying said video output signals, and

means for collimating the rays of said source into a narrow fan-shaped beam prior to their passage through the objects, said beam scanning said objects in successive slices as the conveyor means moves the objects therethrough.

B1 4,756,651 (2779th)
CARGO RESTRAINING DEVICE FOR PALLETIZED LOADS

James J. Van Gompel, Fremont, Ind., and Ronald R. Akey, Footville, Wis., assignors to Bruce P. Purdy, and Barabara G. Purdy, both of Incline Village, Nev.

Reexamination Request No. 90/003,742, Feb. 24, 1995.
Reexamination Certificate for Patent 4,756,651, issued Jul. 12, 1988, Ser. No. 13,197, Feb. 9, 1987.
Continuation of Ser. No. 898757, Aug. 13, 1986, abandoned, which is a continuation of Ser. No. 640338, Aug. 13, 1984, abandoned, which is a continuation-in-part of Ser. No. 370131, Apr. 20, 1982, Pat. No. 4,515,506.
The portion of the term of this patent subsequent to May 7, 2002, has been disclaimed.
Int. Cl.[6] B60P *1/64;7/13*
U.S. Cl. 410—46



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

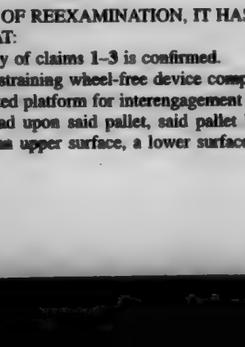
The patentability of claims 1–3 is confirmed.

2. A cargo restraining wheel-free device comprising:

(a) A bifurcated platform for interengagement with a pallet with a cargo load upon said pallet, said pallet being of the type including an upper surface, a lower surface, and intervening cross-ties, said platform having two horizontal portions separated by a slot therebetween for receiving a cross-tie of the pallet upon insertion of said platform into the space between said upper and lower surfaces of said pallet with said portions adjacent the sides of said cross-tie;

(b) a vertical frame extending upwardly from one end of the platform; and

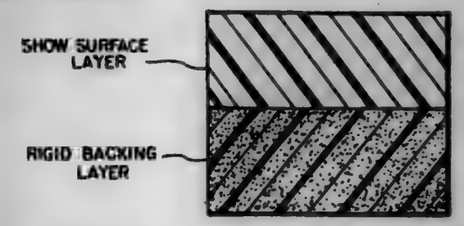
(c) a handle and hinge means at one side of the platform pivotally securing the handle to said frame at a pivot, said vertically-extending member being connected to a horizontal friction member adapted to extend downwardly beyond the bottom of said pallet when said handle is moved downwardly and; said second pivot being displaced past its vertically aligned lowermost point of rotation with respect to said first pivot and toward said vertical frame when said handle is moved downwardly, said vertically-extending members being thereby angled with their lower ends further away from said vertical frame and platform than their upper ends, thereby locking said handle in said downward position; said horizontal friction member in its said extended position acting by contacting an underlying supporting surface to tip said frame to effect frictional contact between said platform and upper support surface to prevent movement of said pallet with respect to said platform, and restrain movement of said device with respect to the underlying support by the resulting increase in frictional contact between said horizontal friction member and said support surface, at least the lower face of said horizontal member comprising a frictional material which is placed in contact with said underlying supporting surface.



B1 4,784,904 (2780th)
REINFORCED SHAPED ARTICLE

Richard Wood, Blackburn, and Gerald N. Nicholl, Bury, both of, United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

Reexamination Request No. 90/002,965, Feb. 1, 1993.
Reexamination Certificate for Patent 4,784,904, issued Nov. 15, 1988, Ser. No. 880,729, Jul. 1, 1986.
Claims priority, application United Kingdom, Jul. 1, 1985, 8516617
Int. Cl.[6] B32B *5/22*; B29C *67/00*
U.S. Cl. 428—317.9



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 2, 4, 6 and 9 are cancelled.

Claims 1, 3, 5, 7 and 8 are determined to be patentable as amended.

Claim 10, dependent on an amended claim, is determined to be patentable.

1. Shaped article *of sanitaryware* having a show surface of [thermoplastic material] *an acrylic polymer sheet* with a reinforcement of a rigid polyurethane or polyisocyanurate foam, characterized in that the foam [is substantially free from halocarbon] *contains water as the* blowing agent *in an amount ranging from 0.1 to 1% by weight based on weight of polyol present in the foam, said foam having a density of 300 –600 kg/m^3 and being characterized by its improved resistance to delamination or distortion when subject to elevated temperatures in comparison with a corresponding article when halocarbon blowing agent is used instead of water.*

B1 4,888,023 (2782th)
FEMORAL PROSTHESIS WITH UNCOUPLED DISTAL TIP

Robert G. Averill, Ringwood, and Robert C. Cohen, Denville, both of N.J., assignors to Osteonics Corp., Allendale, N.J.

Reexamination Request No. 90/003,379, Mar. 30, 1994.
Reexamination Certificate for Patent 4,888,023, issued Dec. 19, 1989, Ser. No. 145,794, Jan. 19, 1988.
Int. Cl.[6] A61F *2/32*
U.S. Cl. 623—22



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–14 is confirmed.

1. In a stem-type femoral prosthesis for implantation in a resected proximal end of a femur, the prosthesis including a stem to be received within the prepared femur, the stem having a proximal end, an affixation surface adjacent the proximal end for enabling the stem to be affixed in place when seated properly within the prepared femur, and a distal end spaced axially downwardly from the proximal end for reception within a passage created in the wall of the prepared femur, the improvement comprising: a distal tip integral with the distal end of the stem, the distal tip being spaced axially downwardly from the affixation surface a distance sufficient to enable seating of the distal tip within harder portions of the bone in the wall of the femur when the affixation surface is properly seated in the prepared femur, the stem including a shaft portion located between the affixation surface and the distal tip, the shaft portion having a diameter smaller than the corresponding diameter of the distal tip for enabling flexing in the shaft portion, and the distal tip having an external peripheral surface for engaging said harder portions of bone to confine the distal tip against transverse movements within the passage upon completion of the implantation, and a fixation-resistant surface finish on the external peripheral surface for maintaining the distal tip unaffixed to the femur and moveable axially relative to the wall of the femur to permit axial displacement of the distal tip and the distal end in response to forces applied to the prosthesis during use of the prosthesis.

B1 5,141,509 (2783th)
PENILE PROSTHESIS HAVING MEANS FOR PREVENTING SPONTANEOUS INFLATION

John H. Burton, Minnetonka, and Dezso K. Levius, Bloomington, both of Minn., assignors to American Medical Systems, Inc., Minnetonka, Minn.

Reexamination Request No. 90/003,438, May 17, 1994.
Reexamination Certificate for Patent 5,141,509, issued Aug. 25, 1992, Ser. No. 741,004, Aug. 6, 1991.
Int. Cl.[6] A61F *2/02*
U.S. Cl. 623—11

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

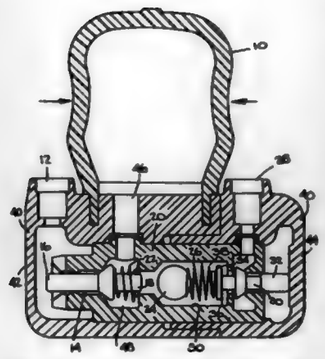
The patentability of claims 3, 8 & 9 is confirmed.

Claim 6 is cancelled.

Claims 1 & 2 are determined to be patentable as amended.

Claims 4, 5 & 7, dependent on an amended claim, are determined to be patentable.

1. An inflatable penile prosthesis comprising means for causing or maintaining erection of a penis, said means having at least one



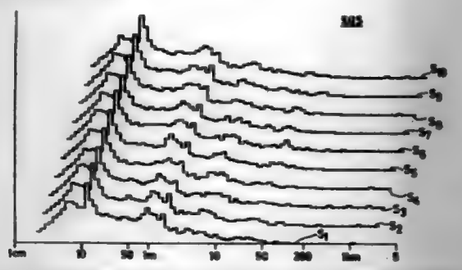
inflatable cylinder or pressurizable *chamber* for insertion into the penis, a fluid reservoir, pump means, and valves for permitting the flow of fluid between said reservoir and said cylinder or chamber as a consequence of predetermined pressure changes within the prosthesis, and an additional valve disposed at a predetermined designated point along the flow passage between the reservoir and the cylinder or chamber, *said additional valve being a bi-stable valve having an open mode in which fluid is permitted to flow through said additional valve and a closed mode in which fluid is unable to flow through said additional valve, said additional valve being designed to remain in the open mode or the closed mode unless directed to the other mode by a volitional force,* said additional valve acting to prevent the spontaneous inflation of the prosthesis occasioned by the unwanted transfer of fluid from the reservoir to the cylinder of chamber by remaining closed, as desired, until opened by the application of suitable predetermined pressure or force exerted volitionally from without the prosthesis.

B1 5,146,550 (2784th)

PROCESS FOR DISPLAYING MEASURING RESULTS IN GRAPHIC FORM IN TEST APPARATUS FOR TESTING TEXTILE GOODS AND APPARATUS FOR CARRYING OUT THE PROCESS

Richard Furter, Zug, and Benno Christen, Winterthur, both of, Switzerland, assignors to Zellweger Uster Ltd., Uster, Switzerland

Reexamination Request No. 90/003,507, Jul. 25, 1994.
Reexamination Certificate for Patent 5,146,550, issued Sep. 8, 1992, Ser. No. 731,266, Jul. 17, 1991.
Continuation of Ser. No. 52,410, May 21, 1987, abandoned.
Claims priority, application Switzerland, May 21, 1986, 02043/86
Int. Cl.[6] G06F *17/60;19/00*
U.S. Cl. 395—140



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–24** is confirmed.

4. A method for testing rovings, yarns or slivers and providing a presentation of information indicating a quality of the tested material, comprising the steps of:

(a) running a sample roving, yarn or sliver lengthwise past a sensing head of a test apparatus, said sensing head being operative to produce signals indicating values along the length of said sample;

(b) analyzing variations caused in said sensing head signals when said sample roving, yarn or sliver moves lengthwise past said sensing head to produce a set of analytical quantities plottable as a graph;

(c) storing said set of analytical quantities in a memory;

(d) repeating steps (a)–(c) for a plurality of said samples; and

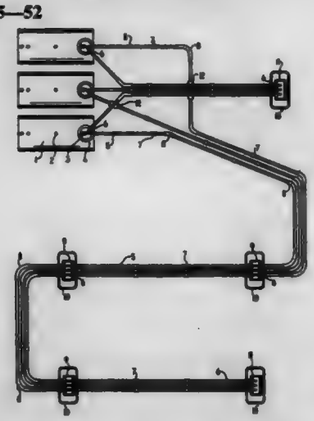
(e) presenting, in the form of a collective chart, a graph for each of said sets of analytical quantities, while providing a vertical and horizontal shift of said individual graphs relative to one another to produce a three-dimensional effect.

B1 5,263,794 (2785th)

ENVIRONMENTALLY SAFE UNDERGROUND PIPING SYSTEM

Michael C. Webb, Chester Springs, Pa., assignor to Environ Products, Inc., Lionville, Pa.

Reexamination Request No. 90/003,761, Mar. 22, 1995.
Reexamination Certificate for Patent 5,263,794, issued Nov. 23, 1993, Ser. No. 838,615, Feb. 19, 1992.
The portion of the term of this patent subsequent to Mar. 29, 2011, has been disclaimed.
Int. Cl.[6] F16L *1/00*
U.S. Cl. 405—52



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **2–5, 10, 14–17** and **22** is confirmed.

Claims **1, 11–13** and **23** are cancelled.

Claims **6–9, 18–21, 24** and **25** are determined to be patentable as amended.

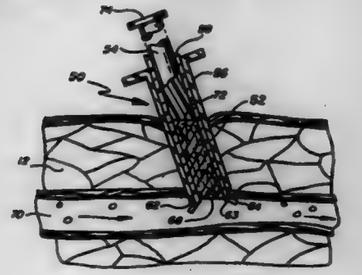
6. A secondarily contained underground piping system as claimed in claim **[1]** *3* wherein said flexible supply pipe has smooth inner and outer surfaces and is made of fiber reinforced thermal plastic composite material.

B1 5,275,616 (2786th)

INSERTION ASSEMBLY AND METHOD OF INSERTING A VESSEL PLUG INTO THE BODY OF A PATIENT

Bradford C. Fowler, Woodinville, Wash., assignor to Quinton Instruments Company, Seattle, Wash.

Reexamination Request No. 90/003,529, Aug. 12, 1994.
Reexamination Certificate for Patent 5,275,616, issued Jan. 4, 1994, Ser. No. 993,328, Dec. 18, 1992.
Continuation of Ser. No. 826,719, Jan. 28, 1992, Pat. No. 5,192,300, which is a continuation of Ser. No. 591,342, Jan. 1, 1990, Pat. No. 5,108,421.
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—213



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–8** and **16–20** is confirmed.

Claim **9** is determined to be patentable as amended.

Claims **10–15**, dependent on an amended claim, are determined to be patentable.

IG

1. A closure device for sealing an incision formed in the body of a patient wherein the incision extends from the skin of the patient through the lumen of a blood vessel and into a blood vessel of the patient, said closure device including a plug means comprising:

an elongate and generally cylindrical vessel plug having distal and proximal ends, and said vessel plug has a length sufficient to be received in the incision such that said distal end is positioned at a first predetermined position in the incision proximally of the lumen of the blood vessel of the patient, and said proximal end is positioned adjacent to the outer surface skin of the patient to obstruct the flow of blood from the blood vessel into the incision; and

wherein said distal end of said vessel plug is oriented at an angle of approximately 25 to 45 degrees with respect to the lenghtwise dimension of said vessel plug.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,147

DENTAL TOOL HOLDER

Marc F. C. Apap, Montrouge; Cedric L. M. C. Thorin, Paris, both of, France; Otto Rosenstatter, Seeham, and Peter Malata, Bürmoos, both of, Austria, assignors to Dentalwerk Bürmoos Gesellschaft m.b.H., Bürmoos, Austria

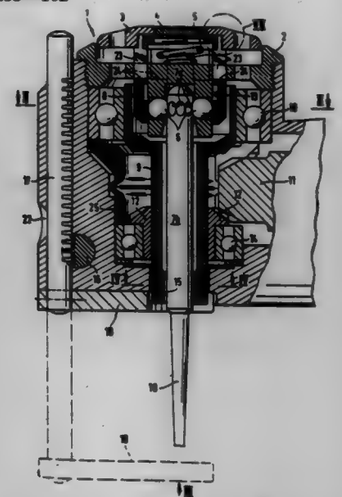
Original No. 4,940,410, dated Jul. 10, 1990, Ser. No. 235,649, Aug. 24, 1988. Application for reissue Jul. 8, 1992, Ser. No. 910,603

Claims priority, application Austria, Aug. 24, 1987, A 2108187

Int. Cl.[6] A61C *5/02*

U.S. Cl. 433—102

9 Claims



1. A dental toolholder apparatus in combination with and for holding an endodontic filing tool having a filing end for filing tooth material, and a shaft connected to the filing end, the apparatus comprising a toolholder housing, a drive sleeve mounted for rotation to said toolholder housing, said drive sleeve having a borehole therethrough for engaging a lower end of the tool shaft [for rotating and oscillating the tool], said borehole having a cross section taken transversely to the axis of the filing tool which has a [constant-drive configuration] *circumferentially regularly fluted inner surface* for [rotating the tool while] permitting swinging movement of the tool, clamping means connected to the housing for clamping an upper end of the tool shaft against *rotation and* axial movement to the housing while permitting swinging movement [and rotation] of the tool, and drive means operatively connected to said drive sleeve for rotating said drive sleeve.

Re. 35,148

FREQUENCY DIVERSITY FOR IMAGE ENHANCEMENT

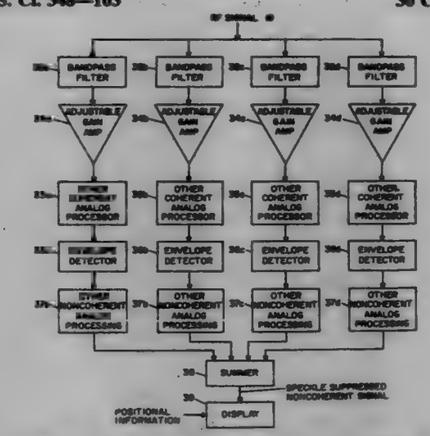
Frederic L. Lizzi, Tenafly, N.J.; Marek Elbaum, Dobbs Ferry, and Ernest J. Feleppa, Rye, both of N.Y., assignors to Riverside Research Institute, New York, N.Y.

Original No. 4,561,019, dated Dec. 24, 1985, Ser. No. 494,633, May 16, 1983. Application for reissue Jan. 20, 1995, Ser. No. 375,798

Int. Cl.[6] H04N *7/18*

U.S. Cl. 348—163

36 Claims



1. A method of reducing speckle in signals received from an object irradiated with finite-bandwidth, coherent pulses of any form of radiation that exhibits a wave nature comprising:

generating finite-bandwidth, coherent pulses and transmitting said pulses toward an object:

receiving the signals scattered by said object *to develop a broadband electrical signal* device [therefrom] *from said broadband electrical signal* separate, component, noncoherent signals, each representative of the components of said scattered signals in component frequency bands within said finite bandwidth; and

combining the component, noncoherent signals to obtain composite noncoherent signals, wherein the degradation of the signals due to speckle is less than in noncoherent signals derived directly from the original received signals.

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PLANT PATENTS

GRANTED JANUARY 23, 1996

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,435
MINIATURE ROSE PLANT NAMED 'SAVADEN'

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Dec. 27, 1994, Ser. No. 364,500
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—10.1 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described.

9,436
'HAKKO' CHERRY TREE

Koichiro Konta, No. 131, Ooaza Dai, Kahoku cho, Nishi murayama gun, Yamagata pref., Japan

Filed Nov. 4, 1994, Ser. No. 337,458
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—37 1 Claim

1. A new and distinct variety of cherry tree, substantially as illustrated and described herein, particularly characterized by producing medium to large fruit of a vivid red color and an earlier flowering time than the known "Sato Nishiki" variety of cherry tree.

9,437
NECTARINE TREE 'LIZ'S LATE'

Chris F. Zaiger, 929 Grimes Ave.; Gary N. Zaiger, 1907 Elm Ave.; Leith M. Gardner, 1207 Grimes Ave., and Grant G. Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Dec. 12, 1994, Ser. No. 365,353
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—41.3 1 Claim

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, which is of large size, vigorous, upright in growth and a productive and regular bearer of large, firm, yellow flesh, freestone fruit with good flavor and eating quality; the fruit is further characterized by being nearly uniform in size throughout the tree, having good storage and shipping quality and, in comparison to August Glo Nectarine (U.S. Plant Pat. No. 8,039), the new variety matures in the same maturity season but is freestone instead of clingstone.

9,438
PEACH TREE 'AUTUMN FLAME'

James F. Doyle, 7685 N. Thompson Ave., Clovis, Calif. 93611-9016

Filed Jan. 10, 1995, Ser. No. 371,034
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—43.2 1 Claim

1. A new and distinct variety of peach tree, substantially as illustrated and described, and which is somewhat similar in its harvesting date to the Carnival variety of peach tree (U.S. Plant Pat. No. 2,144) which matures in approximately the same season, and approximately a week later than the common commercial variety Fairtime (unpatented), but which is distinguished therefrom and characterized principally as to novelty, by producing fruit which are ripe for harvesting and shipment approximately September 4 through September 20 under the ecological conditions prevailing in the San Joaquin Valley of central California, the subject variety producing fruit which have an attractive exterior coloration, are freestone by nature, and further have a firm yellow-colored flesh.

9,439
AZALEA PLANT NAMED ATHENA

Frank C. Moser, Alva, Fla., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Jan. 31, 1995, Ser. No. 381,330
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—36 1 Claim

1. A new and distinct cultivar of azalea named Athena, as described and illustrated.

9,440
CHRYSANTHEMUM PLANT NAMED 'HEATHER'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers Inc., Barberton, Ohio

Filed Dec. 30, 1994, Ser. No. 366,498
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—76 1 Claim

1. A new and distinct Chrysanthemum plant named Heather, as described and illustrated.

9,441
CHRYSANTHEMUM PLANT NAMED 'WHITE BLUSH'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 26, 1994, Ser. No. 296,467
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—82.1 1 Claim

1. A new and distinct Chrysanthemum plant named White Blush, as described and illustrated.

9,442
CHRYSANTHEMUM PLANT NAMED 'CORAL BLUSH'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 26, 1994, Ser. No. 296,466
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—82.3 1 Claim

1. A new and distinct Chrysanthemum plant named Coral Blush, as described and illustrated.

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GRANTED JAN. 23, 1996

ERRATA

For CLASS	See PATENT NO.
029–718	5,485,660
056–294	5,485,718
126–025	5,485,816
126–409	5,485,829
126–512	5,485,830
227–178	5,485,952
403–322	5,486,056
452–058	5,486,145
216–091	5,486,234
216–033	5,486,263
264–154	5,486,273
369–288	5,486,437
501–137	5,486,491
552–521	5,486,626
327–174	5,486,758
348–211	5,486,852
348–222	5,486,853
356–073	5,486,904
369–013	5,487,046
369–032	5,487,047
315–276	5,487,088
382–133	5,487,112

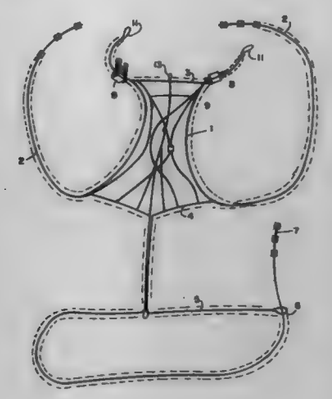
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PATENTS

GRANTED JANUARY 23, 1996

GENERAL AND MECHANICAL

5,485,636
RAPE PROTECTIVE DEVICE
Clifford N. Yandell, 2056 50th Ave., Vero Beach, Fla. 32966
Filed Dec. 27, 1994, Ser. No. 363,926
Int. Cl.[6] A41B *9/00*
U.S. Cl. 2—406 12 Claims



1. A protective undergarment for engaging both thighs and the waist of a wearer to prevent rape, the undergarment comprising:

(A) cable interconnected to form a crotch cover means for covering the anus and vulva of a wearer with a web having no openings large enough for penetration by a penis, the crotch cover means having two opposed sides and front and rear upper edges;

(B) a pair of cable clasp means for cable engaging, each one of said pair affixed to said crotch cover means at a junction of said front upper edge with one of said sides;

(C) a pair of elongate leg cables, having a free end and a fixed end, each one of said pair having the fixed end attached to said crotch cover means at a junction of said rear upper edge with one of said sides;

(D) said free end of each of said leg cables constructed for removably and length adjustably cooperating with one of said clasp means to snugly encircle a thigh while locking said leg cable within said clasp means to prevent loosening of the encirclement without disengaging said clasp means;

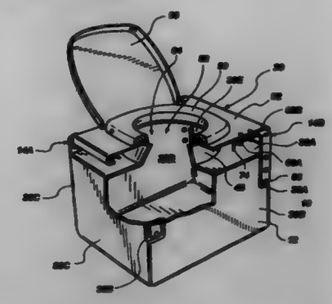
(E) an elongate waist cable attached at an intermediate point thereof to said rear upper edge of said crotch cover means by a cable, said waist cable having a noose at a first end for passage therethrough of a second end to thereby adjustably and snugly encircle the waist, the second end constructed for removably and length adjustably cooperating with one of said clasp means to lock the second end of the waist cable within said clasp means;

(F) locking means connected to said clasp means for preventing both of said clasp means from releasing said cables without the operation of said wearer; and

(G) in which said cable is flexible, cut-resistant and stretch-resistant.

5,485,637
HOLDING TANK FOR WASTE
John A. Green, 6895 S. 825 East, Midvale, Utah 84074
Filed Jul. 8, 1994, Ser. No. 272,829
Int. Cl.[6] A47K *11/04*
U.S. Cl. 4—483 17 Claims

1. A portable toilet comprising:



a tank formed of a plurality of walls defining an interior and provided with an aperture formed in a wall of the plurality of walls for accessing the interior;

a collar secured at a first edge to the wall to surround the aperture, the collar tapering along a collar surface a length in an axial direction and a span in a radial direction to a second edge of the collar;

a seat selectively attachable to be supported by the tank and having all opening positionable to register with the aperture for supporting a user;

a cap comprising a band projecting from a bulkhead, the band having a band surface formed to sealingly fit against the collar surface for sealing the aperture against passage of liquids, the band being selectively positionable on the collar to be spaced from the tank to contact the collar only on the collar surface intermediate the top edge and the bottom edge;

a funnel sealably securable to the collar for draining the tank through the aperture; and

a support attached to the tank and engaged by a latch mechanism for fastening selectively the seat, the cap and the funnel to the collar.

5,485,638
SELF LOCKING FUTON FRAME
John H. Newton, 7 Tigertown Rd., White River Jct., Vt. 05001
Filed May 25, 1994, Ser. No. 248,884
Int. Cl.[6] A47C *17/17*
U.S. Cl. 5—37.1 21 Claims

1. A futon frame for supporting a futon forming a chair or sofa when the futon frame is in a closed position and forming a bed when the futon frame is in an open position, the futon frame comprising:

a base having a first end with a first base end slot and a second end with a second base end slot;

a back having a first back side member and a second back side member;

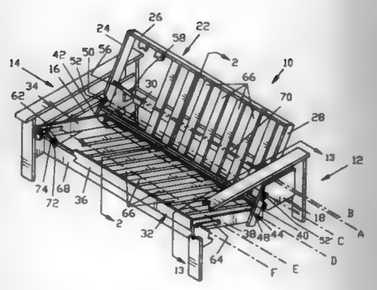
a first back pivot pin attaching to said first back side member and slidably engaging said first base end slot;

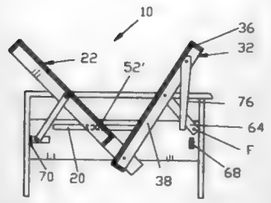
a second back pivot pin attaching to said second back side member and slidably engaging said second base end slot;

a first back support pivotably attaching to said first back side member and to said base;

a second back support pivotably attaching to said second back side member and to said base;

a seat having a first seat side member and a second seat side member, said seat pivotably attaching to said back;





a first seat support pivotably attaching to said first seat side member and to said base; and

a second seat support pivotably attaching to said second seat side member and to said base.

5,485,639

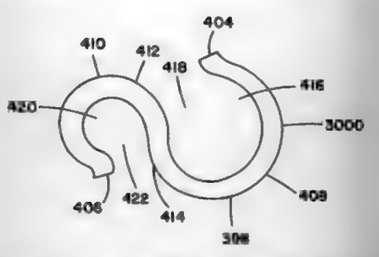
MODULAR INNERSPRING AND BOX SPRING ASSEMBLIES

Frank G. Cavazos, 14040 Shoshoni Dr., Lockport, Ill. 60441

Continuation-in-part of Ser. No. 203,100, Feb. 28, 1994. This application Jun. 6, 1994, Ser. No. 254,735

Int. Cl.[6] A47C *23/04*

U.S. Cl. 5—259.1 **12 Claims**



1. A mattress spring clip comprising a unitary strip of material having a spring bias characteristic, said unitary strip having a first side edge, a second side edge spaced apart from said first side edge to define a relatively wide wall therebetween, a first end an an opposite second end, said unitary strip curving arcuately in a clock-wise direction from said first end to a first loop entrance point of said unitary strip substantially opposite from and spaced apart a pre-determined distance from said first end to define a first loop entrance therebetween having a first loop entrance space, a first loop pocket formed by said unitary strip curving arcuately in a clock-wise direction from said first end to said first loop entrance point of said unitary strip, said unitary strip curving arcuately in a counterclock-wise direction from its said first loop entrance point to said second end, a second loop entrance point of said unitary strip substantially opposite from and spaced apart a pre-determined distance from said second end to define a second loop entrance therebetween having a second loop entrance space and a second loop pocket formed by said unitary strip curving arcuately in a counterclock-wise direction from its said first loop entrance point to said second end, said first end of said unitary strip of material having said spring bias characteristic being movable against said spring bias away from its said spaced apart pre-determined distance from said first loop entrance point when flexing pressure is applied thereto and returnable to said predetermined spaced apart distance when said flexing pressure is released, said second end of said unitary strip of material having said spring bias characteristic being movable against said spring bias away from its said spaced apart pre-determined distance from said second loop entrance point when flexing pressure is applied thereto and returnable to said pre-determined spaced apart distance when said flexing pressure is released.

5,485,640

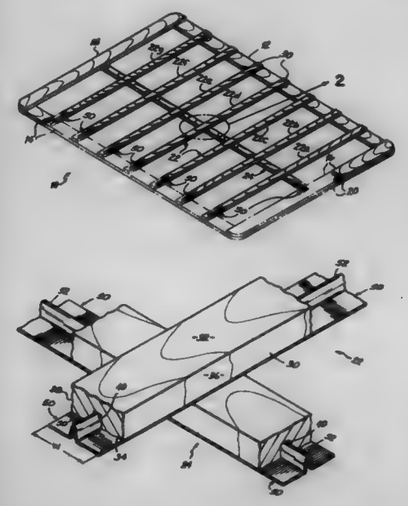
BEDDING FOUNDATION FRAME

Joe C. Workman, Carthage, Mo., assignor to L&P Property Management Company, Chicago, Ill.

Filed Aug. 4, 1994, Ser. No. 285,996

Int. Cl.[6] A47C *23/05*

U.S. Cl. 5—263 **12 Claims**



12. A frame for a bedding foundation, comprising:

a pair of opposed side rails and a pair of opposed end rails formed into a rectangular configuration;

a plurality of wooden slats extending between said side rails in spaced parallel relation to one another and to said opposed end rails, said wooden slats each having a top face, a bottom face, and opposed side walls of less height than the width of said top and bottom faces;

at least one of said wooden slats having a longitudinally extending slot in the center said bottom face;

a sheet metal strip of a thickness substantially less than the height of said wooden slats having a normally planar portion, said strip having an upstanding longitude flange formed in the center portion of said strip; and

said planar portion of said strip being in juxtaposition to the bottom face of said least one of said wooden slats with the flange of said strip extending upwardly into the slot of said at least one of said wooden slats, said at least one of said slats and said strip together bending when a normal load is placed on said frame, but with the strip providing additional resistance to bending of said at one of said wooden slats under normal loads and preventing breakage said at least one of said wooden slats under abnormal loads.

5,485,641

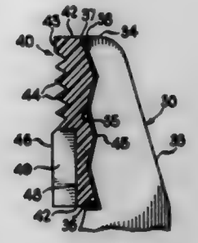
COMPOSITE/PLIER CUTTER TOOL WITH SHEAR ACTION CUTTER INSERT

Paul M. Maschmeier, Racine; Gregory A. Zurbuchen, and Paul B. Lemens, both of Kenosha, all of Wis., assignors to Snap-on Incorporated, Kenosha, Wis.

Continuation of Ser. No. 137,367, Oct. 18, 1993, abandoned. This application Dec. 9, 1994, Ser. No. 352,431

Int. Cl.[6] B25B *7/22*

U.S. Cl. 7—134 **6 Claims**



1. A non-electrically conductive and non-sparking pivoting cutter/plier hand tool comprising: first and second lever members respectively having cooperating jaws at adjacent ends thereof and each formed entirely of plastic material, a pivot mechanism having no exposed metallic portions pivotally interconnecting said lever members in intersecting relationship for pivotal movement between open and closed conditions of said jaws, first and second ceramic cutter inserts formed of transformation toughened zirconia (TTZ), and an adhesive fixedly securing said inserts respectively to said jaws in opposed relationship, said inserts respectively having first and second substantially parallel cutting surfaces disposed for movement in shearing relationship with each other when said jaws are moved from the open to the closed condition thereof, each of said inserts having a recessed surface intersecting the associated cutting surface at one end thereof and a retaining surface intersecting said cutting surface at an opposite end thereof to define a cutting edge.

5,485,642

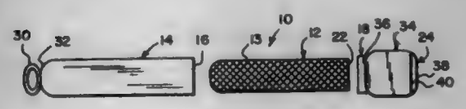
PURSE FILE WITH POP TOP OPENER

Patsy A. Wiggleton, 4718 Laura, Midland, Tex. 79703, and George Spector, 233 Broadway Room 702, New York, N.Y. 10279

Filed Mar. 17, 1995, Ser. No. 406,122

Int. Cl.[6] B25F *1/00*

U.S. Cl. 7—151 **4 Claims**



1. A nail file and pop top opener comprising:

a) a nail file blade having abrasive surfaces on opposite sides for filing and trimming fingernails;

b) a case having an open end to retain said nail file blade therein when not in use, so as to be carried in a purse;

c) a sleeve having a slot therein to engage in a removable manner with one end of said nail file blade extending from said open end of said case; and

d) a pop top can opener affixed to said sleeve, so that when said sleeve is in engagement with said one end of said nail file blade and said nail file blade is placed within said case, said pop top can opener could be maneuvered to lift up a pop top on a soft drink can thereby preventing breakage of fingernails.

5,485,643

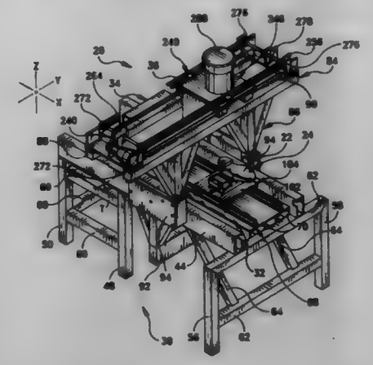
APPARATUS AND PROCESS FOR TRIMMING A SOLE OF A SHOE

Eric Beenfeldt, Orono, and Richard O. Eaton, Bangor, both of Me., assignors to Dexter Shoe Company, Dexter, Me.

Filed Aug. 1, 1994, Ser. No. 284,009

Int. Cl.[6] A43D *8/32;21/00;93/00;8/00*

U.S. Cl. 12—85 **32 Claims**



1. An apparatus for trimming a sole of a shoe having a shoe upper, said sole being attached to the shoe upper, said apparatus having members that are movable in at least three directions of movement along an x axis, a y axis and a z axis, said apparatus comprising:

a support structure;

a shoe carriage mounted on said support structure, said shoe carriage being constructed and arranged for mounting a shoe thereon and being movable back and forth along the x axis and up-and-down along the z axis;

a sensing station mounted on said support structure, said sensing station comprising means for detecting the exact outline of the shoe upper with respect to the sole;

a cutting station mounted on said support structure for trimming the sole of the shoe with a first cutter, the first cutter being movable side-to-side along the y axis; and

means for controlling the movement of the carriage between a starting position, the sensing station, the cutting station and back to the starting position and for controlling the operation and movement of the first cutter for trimming the sole of the shoe when the shoe is in the cutting station in accordance with the information as detected at the sensing station.

5,485,644

SUBSTRATE TREATING APPARATUS

Kaoru Shimbara; Yasuhiro Kurata, and Masashi Sawamura, all of Shiga, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Mar. 17, 1994, Ser. No. 210,177

Claims priority, application Japan, Mar. 18, 1993, 5-058150; Mar. 18, 1993, 5-058151; Mar. 18, 1993, 5-058152; Mar. 18, 1993, 5-058153; Mar. 18, 1993, 5-058154

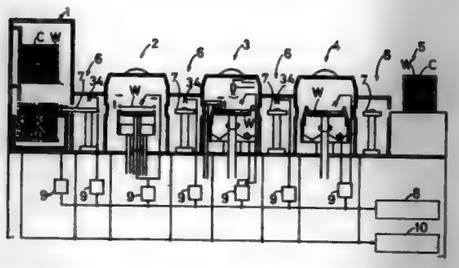
Int. Cl.[6] H01L *21/304;* B08B *11/02;* A46B *13/04*

U.S. Cl. 15—21.1 **22 Claims**

1. A substrate-treating apparatus for treating opposite surfaces of each of a plurality of substrate plates in a process of preparing the plates for industrial use, wherein the plates are retrievable from a substrate storage where the substrate plates are disposed in a vertical stack, the substrate-treating apparatus comprising:

a substrate soaking section for soaking said substrate storage in a substrate surface-treating liquid;

a first substrate-treating section for carrying out a first substrate-treating process applying surface-treating liquid onto a substrate retrieved from said substrate storage;



a first substrate-transporting section disposed between said substrate soaking section and said first substrate-treating section, including first surface-treating liquid applying means for applying surface-treating liquid to said substrate;

said substrate storage comprising a housing having a lateral opening as a passage for retrieval of said substrate plates from said vertical stack; and

said substrate soaking section comprises:

a tank for soaking said substrate storage, containing said substrate surface-treating liquid;

storage lifting means for vertically moving said substrate storage when soaking in said tank; and

current flowing means for forming a current at least superficially in the substrate surface-treating liquid in said tank, said current flowing from said lateral opening of the substrate storage housing in a rearward direction of said substrate soaking section.

5,485,645

OUTER WALL CLEANING ROBOT

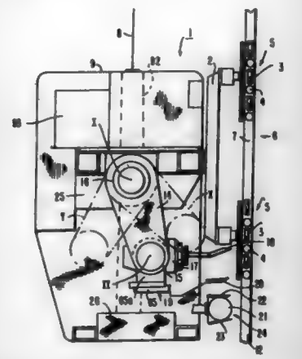
Shigeru Ohtsuki, Tokyo, Japan, assignor to Nihon Biso Co., Ltd., Tokyo, Japan

Filed Jul. 5, 1994, Ser. No. 270,906

Claims priority, application Japan, Jan. 20, 1993, 5-285897

Int. Cl.[6] A47L *1/02*

U.S. Cl. 15—103 **6 Claims**



1. An outer wall cleaning robot for cleaning a vertical outer wall surface of a building, comprising:

an arm pivotable about a first rotation axis that extends in a substantially horizontal direction in approximately parallel relation to the vertical outer wall surface of the building when in use;

an arm driving mechanism connected to said arm for driving said arm to pivot about the first rotation axis;

a rotational body supported by said arm in such a manner that said rotational body is pivotable about a second rotation axis extending in parallel with said first rotation axis;

a rotational-body driving mechanism for driving said rotational body independently of driving of said arm by said arm driving mechanism;

a wiping-squeegee mounting mechanism operably connected to said rotational body; and

a wiping squeegee attached to said mounting mechanism.

5,485,646

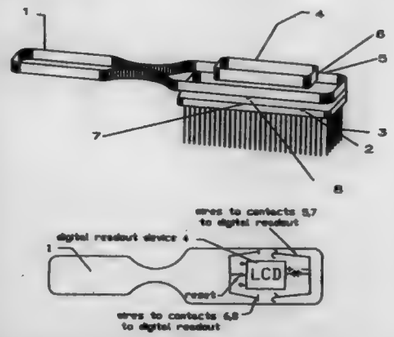
HAIRBRUSH WITH ELECTRONIC STROKE COUNTER

Robert L. Merritt, 4274 Catcerrk Rd., Valdosta, Ga. 31602

Filed Sep. 6, 1994, Ser. No. 301,076

Int. Cl.[6] A46B *9/04*; *7/06*

U.S. Cl. 15—105 **1 Claim**



1. A brush for brushing of hair, said brush comprising:

a flat, elongated handle having opposite ends, first and second opposing sides and first and second opposing edges, said handle having an elongated, flexible spring member substantially parallel therewith and extending laterally from said first side of said handle adjacent one end thereof, said spring member having an enlarged free edge and positioned intermediate said edges, a pair of spaced electrical contacts are mounted on said first side of said handle with said spring member positioned therebetween;

a flat, elongated base having first and second opposing sides and first and second opposing edges, said base having bristles extending from said first side thereof, said base having an elongated slot formed in the second side thereof intermediate said first and second edges of said base, a pair of spaced electrical contacts mounted on said second side of said handle with said slot positioned therebetween, said slot receiving the enlarged free edge of the spring member of said handle to couple the handle and base such that said base can swing relative to said handle in opposing directions during stroking of hair, the electrical contacts of the base being aligned with those of the handle such that upon swinging of the base in each direction, one of the contacts of the base engages one of the contacts of the handle;

an electronic digital read out means having a liquid crystal display mounted on the second side of said handle, said means is electrically coupled via wires to all of said electrical contacts such that as the brush is used to stroke hair, the digital read out means indicates the number of strokes achieved.

5,485,647

SPORTING EVENT SCRAPER BRUSH

Larry Durst, 1139 Bunkerhill Dr., Troy, Ohio 45373

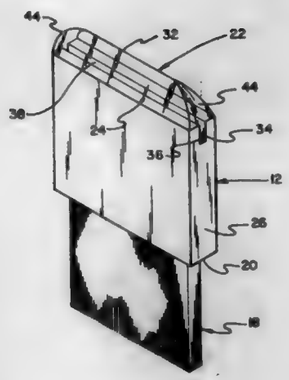
Filed Oct. 26, 1994, Ser. No. 329,285

Int. Cl.[6] A47L *25/00*

U.S. Cl. 15—111 **1 Claim**

1. A sporting event scraper brush comprising:

a handle for grasping and manipulating by an individual, said handle comprising a substantially rectangular handle block having a front face spaced from and parallel to a rear face, with a pair of lateral end faces extending orthogonally



between said front and rear faces, a first end of said handle being defined by a bottom face extending substantially orthogonally relative to said front face and said lateral end faces, with a second end of said handle being defined by a top face extending spaced from and substantially parallel to said bottom face so as to define a substantially rectangular shape of said handle block, said handle block being shaped so as to define a mounting groove extending from a first one of said lateral end walls across the top wall and terminating at a second one of said lateral end walls, the mounting groove extending through both of the lateral end walls;

a brush means extending from said first end of said handle for brushing loose dirt and debris from a surface; and,

a scraping means extending from said second end of said handle for scraping and mechanically removing attached dirt and debris from said surface, said scraping means comprising a scraping block secured to a top face of said handle block, said scraping block being shaped so as to define a planar front face which extends from said top face of said handle block at an oblique angle relative thereto, a planar rear face projecting from said tip face of said handle block and intersecting said planar front face of said scraping block, said front and rear faces being oriented at an oblique angle relative to one another and cooperating to define a scraping apex which can be utilized to mechanically engage and scrape said surface, said scraping block being further shaped so as to define respectively opposed arcuate lateral faces which extend from said top face of said handle block to intersect both said front and rear faces to define opposed pairs of arcuate lateral scraping apexes, wherein said arcuate lateral apexes can be utilized to clean an arcuate surface, said scraping block including an elongated longitudinal projection received within the mounting groove extending along the top face of the handle block, the longitudinal projection being frictionally and removably retained within the mounting groove so as to permit for selective removal of the scraping block from the handle block.

5,485,648

COVERING FOR THE PARTIALLY COATING OF ARTICLES SUCH AS BROOM BACKS AND ARTICLES SUCH AS BROOM BACKS SO COVERED

Sergio Balducci, 590 Via Florentiana, 50132 Bottegone (Pistoia), Italy, and Roberto Giraldi, Prato, Italy, assignors to Sergio Balducci, Via Florentina, Italy

Filed Jun. 16, 1994, Ser. No. 175,402

Claims priority, application Italy, Jul. 9, 1991, FI91A0171

Int. Cl.[6] A46B *5/00*

U.S. Cl. 15—175 **4 Claims**

1. A broom head comprising:

(a) an elongated broom back having an upper face, a lower face with plurality of bristles projecting therefrom and side faces extending between the upper and lower faces; a support extending from a central portion of the upper face, said support having a threaded seat therein for enabling attachment of the broom back to a handle, said threaded seat being defined by a side wall exteading about its periphery and a closed end wall spaced from said lower face; and

(b) a layer of thermoformed plastic material completely covering, closely engaging and conforming to the upper face, side faces, the support and the side wall and end wall of the threaded seat, said plastic layer further having a lower cut bent edge partially covering the lower face.

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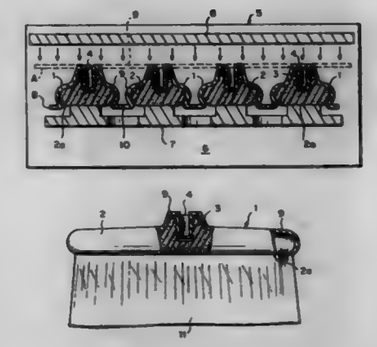
BEACH BRUSH

Gary L. Miceli, 39 Scout Ln., Hummelstown, Pa. 17036

Filed Mar. 16, 1990, Ser. No. 494,307

Int. Cl.[6] A46B *7/00*

U.S. Cl. 15—184 **22 Claims**



1. A brush for removal of dirty matter off of humans and animals comprising:

a) plurality of bristles, in substantially parallel relation to each other;

b) handle for supporting the ends of said bristles, said handle having an outer surface, a forward end where said bristles are supported, and a back end;

c) cover means of substantially smooth surface and located circumferentially around said handle and able to move back and forth over said handle so that said cover means may enclose varying lengths of said bristles, said cover means having a forward end and a back end;

d) grooves located substantially around the outer surface of said handle, said grooves parallel to each other and running from said forward end to said back end of said handle so that said grooves form a series of corresponding upraised parallel ridges in said handle, said ridges becoming gradually more upraised in the direction of said forward end of said handle, said ridges capable of fitting tightly against said cover so that said cover may be held in place at various positions along the length of said handle.

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WINDSCREEN WIPER WITH ELONGATED, CURVED BACKBONE

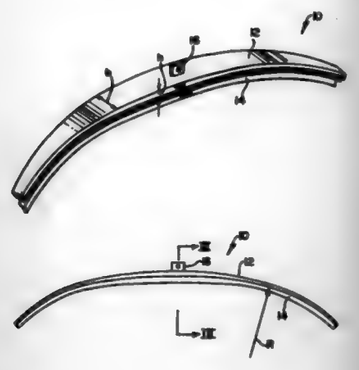
Adriaan R. Swanepoel, Pretoria, South Africa, assignor to Adriaan Retief Swanepoel, South Africa

Filed Oct. 19, 1993, Ser. No. 137,769

Claims priority, application South Africa, Jan. 23, 1992, 92/8225

Int. Cl.[6] B60S *1/38*

U.S. Cl. 15—250.43 **10 Claims**



1. A windscreen wiper which includes

an elongate backbone which is curved in a plane, is of a resiliently flexible material and which has a connecting formation at a portion intermediate its length for connection to a displacing and force applying member; and

a wiper blade attached to the backbone;

the backbone having first and second longitudinal ends and a mounting surface defined along the length thereof from said first longitudinal end to said second longitudinal end, said backbone being secured to said wiper blade, said curved backbone being substantially coextensive with said wiper blade, said backbone having a transverse cross-sectional profile defining a thickness and a width thereof, the thickness of said backbone being greatest at said intermediate portion and gradually decreasing along at least a first portion of said backbone, which is defined between said connecting formation and said first longitudinal end,

the backbone having a free-form curved profile in a plane, whereby the backbone defines an x–y plane, a z-axis extending perpendicularly from the x–y plane;

the backbone having a suitably varying cross-sectional profile along its length and a suitable free-form curvature, such that a double integral Z_T is less than 1.0 mm, where

$$z_T = \int_0^l \sin\left[\int_0^x \frac{I_{zz}(x)}{R(x)\,I_{yy}(x)}\,dx\right]dx$$

where l is a cantilever length of the backbone from the connecting formation to the first longitudinal end of the backbone and $I_{zz}(x)$ is the moment of inertia about the z-axis at a position x along the backbone from the connecting formation, R(x) is the radius of curvature of the backbone at position x expressed in metres, and $I_{yy}(x)$ is the moment of inertia about the y-axis at position x.

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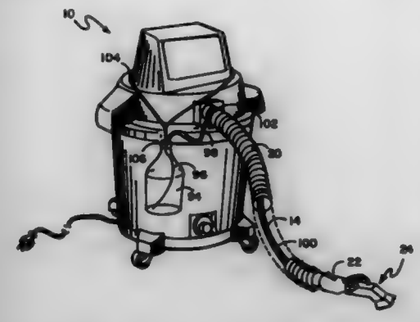
VACUUM CLEANING AND SHAMPOOING SYSTEM HAVING HIGH-PRESSURE AIR MEANS

Daniel R. Payeur, 66 Old Post Rd., Sanford, Me. 04073

Continuation-in-part of Ser. No. 243,258, May 16, 1994, abandoned. This application Mar. 31, 1995, Ser. No. 415,174

Int. Cl.[6] A47L *5/14*

U.S. Cl. 15—321 **8 Claims**



1. A vacuum cleaning system for cleaning a surface, said system of the type having: a vacuum cleaner producing a suction; a vacuum hose member having a diameter, a length, a first end connected to said vacuum cleaner and a second end, wherein the improvement comprises:

a nozzle member having an axis, an open first end, an open second end defining a mouth, said second end having a linear direction along its axis and a front side, a rear side, a first side, and a second side;

a collar member having an exterior surface, a first end and a second end, said first end of said collar member interconnected to said second end of said vacuum hose member, said second end of said collar member being of a shape to receive said first end of said nozzle member thereon;

means to produce high-pressure air;

a flexible air pressure hose having a diameter, a first end and a second end, said diameter of said air pressure hose being substantially smaller than said diameter of said vacuum hose member, said air pressure hose engaged at its first end to said means to produce high-pressure air to carry said high-pressure air therethrough;

a hose receipt aperture defined in said first end of said vacuum hose member, said hose receipt aperture receiving said second end of said air pressure hose therethrough, said air pressure hose extending inside said vacuum hose member along its length;

a valve member disposed within said collar member, said valve member having a first end and a second end, said valve member having an inlet defined at its first end and an outlet defined at its second end;

means to engage said air pressure hose to said inlet of said valve member at said second end of said vacuum hose member;

means to manually activate said valve member to either an "on" open mode or to an "off" closed mode, said activation means positioned on said exterior surface of said collar member;

a nozzle high-pressure air line having a first end and a second end, said nozzle high-pressure air line extending within said nozzle member from said first end of said nozzle member to said second end of said nozzle member;

means to engage said first end of said nozzle high-pressure air line to said outlet of said valve member at said second end of said collar member;

a high-pressure air outlet member disposed within, and transverse to, said mouth of said nozzle member, said high-pressure air outlet member having a first end and a second end, said high-pressure air outlet member having at least one outlet aperture defined therein facing outwards from said mouth of said nozzle member in the direction of said axis of said nozzle member; and

said nozzle high-pressure air line interconnected to said high-pressure air outlet member, said system, when said valve member is activated to its "on" position, to direct said high-pressure air from said means to produce high-pressure air, through said air pressure hose, through said valve member, through said nozzle high-pressure air line, through said high-pressure air outlet member, and through said outlet aperture to direct said high-pressure air out said mouth of said nozzle member against said surface being cleaned at the same time that said vacuum cleaner is sucking air through said mouth of said nozzle member, through said collar member and through said vacuum hose member into said vacuum cleaner.

5,485,652

SUCTION CLEANING HEAD

John A. Holland, Winthrop, Australia, assignor to VAX Appliances Ltd., United Kingdom

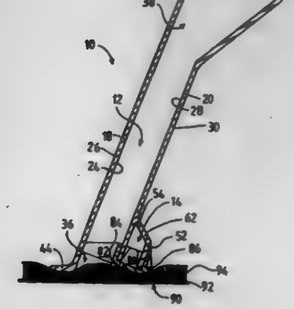
PCT No. PCT/AU91/00448, § 371 Date Mar. 4, 1993, § 102(e) Date Mar. 4, 1993, PCT Pub. No. WO92/05735, PCT Pub. Date Apr. 16, 1992

PCT Filed Oct. 2, 1991, Ser. No. 987,268

Claims priority, application United Kingdom, Jan. 2, 1990, 9021388; Australia, Mar. 20, 1991, PK5188; Mar. 25, 1991, PK5251

Int. Cl.[6] A47L *11/30;7/00*

U.S. Cl. 15—322 **24 Claims**



1. A suction cleaning head, comprising:

a suction chamber having an open mouth and an outlet connectable to an air extractor;

a cleaning liquid chamber positioned externally to said suction chamber and having an open mouth and an inlet connectable to a supply of cleaning liquid, the cleaning liquid being flowable through said cleaning liquid chamber; and

means for restricting the flow of the cleaning liquid through said cleaning liquid chamber, comprising:

a closure releasably engaging and at least partially closing the open mouth of said cleaning liquid chamber; and

a plurality of passageways formed at least in part by said closure, said passageways being in communication with said cleaning liquid chamber and enabling the cleaning liquid to flow from said cleaning liquid chamber at a rate restricted by a dimension and number of the passageways.

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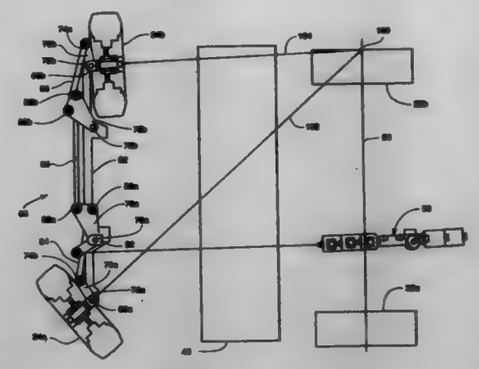
FLOOR CLEANING APPARATUS

Christopher M. Knowlton, Pinehurst, N.C.; Robert J. O'Hara, Castle Rock, Colo., and Timothy A. Strickland, Raeford, N.C., assignors to Windsor Industries, Inc., Englewood, Colo.

Filed Apr. 25, 1994, Ser. No. 233,814

Int. Cl.[6] A47L *5/30*

U.S. Cl. 15—340.4 **50 Claims**



1. A apparatus for cleaning a surface comprising:

a frame;

means, operatively attached to said frame, for cleaning a surface;

four wheels for use in moving said frame and said means for cleaning over a surface, wherein each of said four wheels is operatively connected to said frame and said four wheels includes a first pair of non-steerable wheels and a second pair of steerable wheels; and

means for steering said second pair of wheels that, when used to turn said second pair of wheels, can cause at least one of said second pair of wheels to turn more than about 45° so that tight turns can be made by the apparatus;

wherein said means for steering includes the following:

a first wheel arm that is operatively connected to one of said second pair of wheels and rotatable about a first wheel pivot point;

a second wheel arm that is operatively connected to the other of said second pair of wheels and is rotatable about a second wheel pivot point that is different than said first wheel pivot point;

a first steering arm that is rotatable about a first steering pivot point;

a second steering arm that is rotatable about a second steering pivot point that is different than said first steering pivot point;

a first link pivotally connected to said first wheel arm and said first steering arm;

a second link pivotally connected to said second wheel arm and said second steering arm; and

a third link pivotally connected to said first steering arm and said second steering arm.

5,485,654

SPACECRAFT HANDLE

Robert P. Nespodzany, Jr., Phoenix, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 15, 1994, Ser. No. 340,499

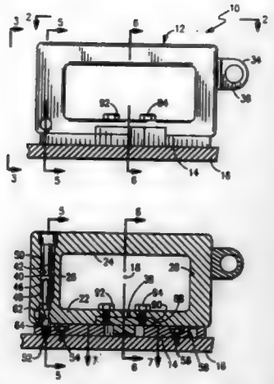
Int. Cl.[6] A47B *95/02*

U.S. Cl. 16—114 R **7 Claims**

7. A handle assembly comprising:

a baseplate having a slot with sidewall inner bearing surfaces;

a handle unit having a bar with an axis and with diametrically opposite flange outer bearing surfaces engaging the inner bearing surfaces;



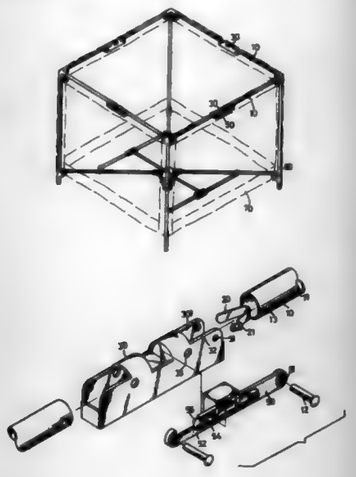
lock means for locking the handle unit to the baseplate; and release means for unlocking the lock means.

5,485,655

HINGE DEVICE FOR ARMRAILS OF A PLAYPEN

Kun Wang, No. 51, Lane 31, Sec. 2, Changping Rd., Taichung, Taiwan, Prov. of China

Filed Jan. 20, 1995, Ser. No. 375,625
Int. Cl.[6] E05D *11/10*; A47D *7/00*
U.S. Cl. 16—371 **3 Claims**



1. A hinge device for armrails of a playpen, said playpen having a plurality of armrails each composed of at least one pair of rods pivotally coupled by a hinge, said hinge being a U-shaped element having two open ends defined by two side walls, each side wall having a first hole and a second hole defined therein and each open end of said hinge having a cut-away defined in an upper portion thereof and communicating with said open end;

at least one plate having two slender arms engaged to a lateral side of said hinge, each slender arm having an engaging hole defined in a distal tip thereof and fixedly engaged to said plate, a finger having a first end extending integrally and longitudinally from each said slender arm and a second end having a boss extending laterally therefrom corresponding to said second hole of said hinge;

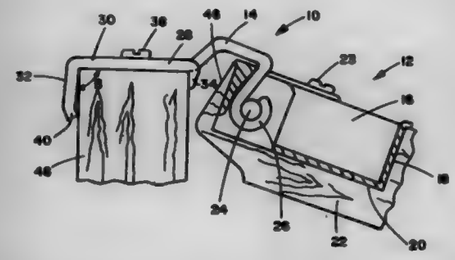
each rod of said armrail having a bore defined by a periphery in which a third hole and a fourth holes are laterally defined, said rod pivotally received in said open end of said hinge by a rivet extending through said engaging hole of said plate, said first hole of said hinge and said third hole of said rod, a biasing element received in said bore of said rod and having a protrusion extending therefrom and extending through said fourth hole of said rod and said second hole of said hinge and corresponding to said boss of said finger such that said second end of said finger can be pushed forward to said protrusion to eject said protrusion from said second hole of said hinge by said boss to allow said rod to be pivoted about an axis of said rivet and received in said cut-away of said hinge.

5,485,656

HINGE FOR MOUNTING A DOOR ON A FRAME

Georg Domenig, Kernersville, N.C., assignor to Grass America, Inc., Kernersville, N.C.

Filed Aug. 10, 1994, Ser. No. 288,446
Int. Cl.[6] E05D *5/02*
U.S. Cl. 16—387 **6 Claims**



1. A hinge for mounting a door on a frame comprising: a hinge arm receiver mountable on one of the door and the frame; a hinge arm having first and second ends, the first end connected to the hinge arm receiver and the second end having a hinge plate mountable on the other of the door and frame and receivable by said other of the door and frame in pre-mounting and mounted positions, the hinge plate having a depending ledge with a terminus portion engageable by said other of the door and frame, said terminus portion being engageable in said pre-mounting position by frictional contact between said terminus portion and said other of the door and frame, said one of the door and frame being supportable on said mounted hinge arm receiver and said frictional contact being maintained by a pulling force exerted on said hinge arm transmitted through the connected hinge arm receiver supporting said one of the door and frame, said hinge plate having a top with portions defining at least one hole for receiving a fastening screw, said hinge plate being moveable from said pre-mounting position to said mounted position by fastening said received fastening screw to said other of said door and frame, said terminus portion of said depending ledge being configured as a bent portion of the depending ledge, and said depending ledge defining an angle with said hinge plate top which is greater than about 90 degrees.

5,485,657

GARMENT HANGING CLIP AND METHOD OF USING THE SAME

Chung B. Kim, 1441 Creekside Dr., #325, Walnut Creek, Calif. 94596

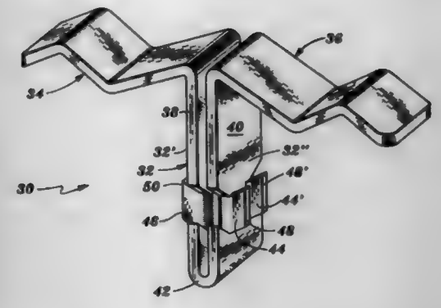
Filed May 11, 1994, Ser. No. 240,995
Int. Cl.[6] A41F *1/00*
U.S. Cl. 24—543 **9 Claims**

1. A garment hanging clip, comprising:

an elongated central portion having a first major face and a second major face opposite said first major face;

a first plurality of prongs projecting outwardly from said first major face;

a second plurality of prongs projecting outwardly from said second major face;



a first wing portion extending outwardly from said elongated central portion;

a second wing portion extending outwardly from said elongated central portion;

said first wing portion being manually bendable into confronting relation with said first plurality of prongs, and continuing to confront said first plurality of prongs after the manually applied bending force is no longer applied; and

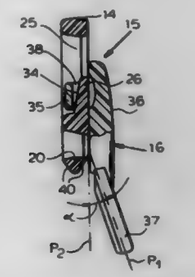
said second wing portion being manually bendable into confronting relation with said second plurality of prongs, and continuing to confront said second plurality of prongs after the manually applied bending force is no longer applied.

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GARMENT CLOSURE

Gerhard Fildan, Kriehburgergasse 31, A-1050 Vienna, Austria

Filed May 23, 1994, Ser. No. 247,667
Int. Cl.[6] A44B *11/00*
U.S. Cl. 24—614 **8 Claims**



1. A closure for a maternity brassiere, comprising:

a flat link lying in a plane and having an upper bar engageable by a brassiere support strap, a lower bar connectable to a breast cup of the brassiere by a fabric loop, a window formed in said link between said bars, and a wedge-shaped tongue projecting into said window; and

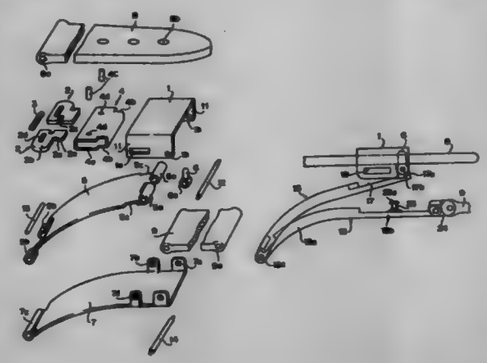
a connecting member releasably engageable with said flat link and having a plate dimensioned substantially to cover said window and said tongue when said connecting member is engaged with said link, a stirrup formed on an inner surface of said plate, engageable in said window and receiving said tongue, and a planar extension connected to said plate and inclined thereto, said extension being formed with a bar connectable to a loop of a brassiere flap covering an opening in said cup through which a nipple of a wearer can be exposed upon disengagement of said stirrup from said tongue, said plate has a configuration of a shield, said tongue being disposed between a pair of flanks spaced from the tongue to receive opposite sides of said stirrup between said tongue and said flanks, said flanks being formed with inwardly extending detents limiting inadvertent slippage of said stirrup from said tongue.

5,485,659

BUCKLE FOR WATCH BANDS

Junsuke Kashikie, and Hideo Taguchi, both of Tanashi, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/00481, § 371 Date Nov. 25, 1994, § 102(e) Date Nov. 25, 1994, PCT Pub. No. WO94/22340, PCT Pub. Date Oct. 13, 1994
PCT Filed Mar. 25, 1994, Ser. No. 338,513
Claims priority, application Japan, Mar. 26, 1993, 5-019744 U; Mar. 15, 1994, 6-043543
Int. Cl.[6] A44C *5/00*
U.S. Cl. 24—71 J **5 Claims**



1. A buckle for watch bands having a first band member having a plurality of adjusting holes and a second band member, the buckle including a cover having opposite side plates, each of which has an opening, a middle plate rotatably connected to an end of said cover at a longitudinal first end thereof, and a bottom plate rotatably connected to a second end of said middle plate at one of longitudinal ends thereof, the buckle comprising

a guide housing disposed in an inside of said cover;

a space formed between an upper plate of the guide housing and an inside wall of the cover in which the first band member is inserted and supported;

a pair of push plates slidably mounted in said guide housing so as to be slid in the lateral direction with respect to the longitudinal direction of the bands;

a spring provided between the push plates for outwardly urging the push plates respectively;

stopping means for stopping each of the push plates at a position where an outer end portion of the push plate is projected from the opening of the side plate of the cover so as to be operated by a finger of a wearer;

each push plate having an engaging projection and a slant formed on the underside of the engaging projection;

a tongue rotatably mounted on the first end of the middle plate to be engaged with the adjusting hole of the first band member; and

at least one engaging lug formed on said bottom plate to be projected to the push plates;

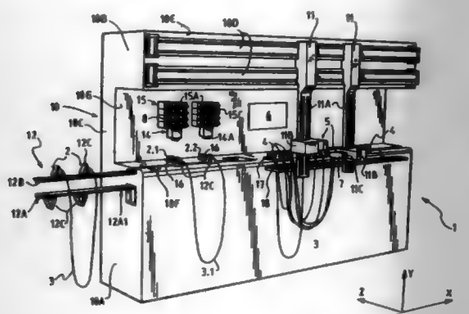
the engaging lug being arranged such that a part of the lug is engaged with said slant of the push plate so as to inwardly move the push plate due to the inclination of the slant when the bottom plate is pivoted toward the cover, and that the engaging lug engages with the engaging projection when passing the slant.

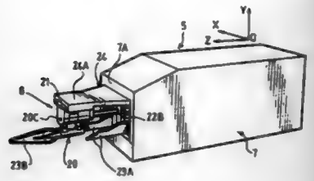
5,485,660

MACHINE FOR CONNECTION CONNEXION ELEMENTS INTO CONNECTORS

Serge F. Pittau, Aubagne, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris, France

Division of Ser. No. 945,623, Sep. 16, 1992, Pat. No. 5,333,374. This application Apr. 22, 1994, Ser. No. 231,114
Claims priority, application France, Sep. 26, 1991, 91 11867
Int. Cl.[6] B23P *21/00*; H01R *43/20*
U.S. Cl. 29—718 **6 Claims**





1. A machine for automatically inserting connexion elements of electrical conductors of cables into connector housings, which comprises:

(a) at least two connecting devices (**5**) each of which includes (i) a body (**7**) which can be displaced toward corresponding housing of a connector (**4**), (ii) at least one insertion member (**8**) provided with means (**20**) for grasping a connexion element (**2**) to be inserted into the corresponding housing (**4A**) of the connector, (iii) means (**21**) for fixing said at least one insertion member to said body, allowing locking or unlocking of said at least one insertion relative to said body, (iv) means (**22**) for controlling said grasping means (**20**), associated with said body and capable of assuming, when said insertion member (**8**) is locked, a first position, in which said grasping means (**20**) holds said connexion element (**2**) and enables it to be inserted into the corresponding housing of the connector, and a second position, in which the grasping means releases said connexion element which is then connected in the connector housing, (v) said fixing means (**21**) being removable and comprising a tenon (**21A**) and mortise (**21B**) assembly allowing said insertion member (**8**) to slide on the body (**7**), and a ball lock (**21C**) enabling the insertion member to be immobilized in position relative to said body, said at least two connecting devices (**5**) intended to deal respectively with the two connexion elements (**2**) provided at the ends of each cable (**3**), the body (**7**) of each device intended to carry said insertion member (**8**), being capable of being displaced, relative to a frame (**10**) of the machine, along the OX, OY and OZ axes of an orthonormal reference system;

(b) a plurality of connectors (**4**), the housings (**4A**) of which are intended to receive the corresponding connexion elements, and which are placed on said frame;

(c) means (**14**) for visualizing the positions of the connexion elements (**2**) equipping the respective ends of each cable;

(d) an area (**15**) for storing the various insertion members which are capable of being locked to said respective bodies, and which are selected as a function of the geometrical characteristics of said connexion elements to be connected; and

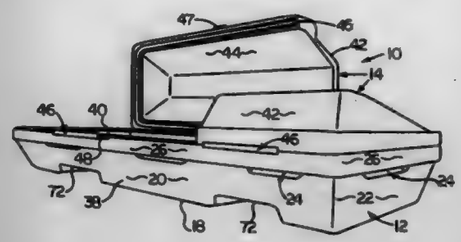
(e) a programable directing unit (**6**) containing the information relating to the various connexions to be carried out depending on the connexion elements (**2**) provided at the end of each cable (**3**), and on the housings (**4A**) of said connectors (**4**), as well as the types of insertion members (**8**) to be selected as a function of the connexion elements to be connected, and to which unit are joined up the means (**22**) for controlling the means (**20**) for grasping each selected member, and the displacements of each body (**7**) along the OX, OY and OZ aces of said reference system.

5,485,661

ENVIRONMENTALLY-PROTECTIVE COMBINATION BURIAL/SHIPPING/CREMATION CASE

Wilbur F. McClure, 973 Meadow La., Troy, Ohio 45373

Filed Jul. 9, 1993, Ser. No. 88,726
Int. Cl.[6] A61G *21/00*
U.S. Cl. 27—7 **13 Claims**



1. In a corpse-containing utility case, a generally-rectangular lower section comprising an elongated horizontal bottom barrier, a pair of opposed side barriers extending vertically upward from opposite side edges of said bottom barrier and a pair of opposed end barriers extending vertically upward from opposite end edges of said bottom barrier; all of said sid barriers and end barriers being essentially of the same height and forming a horizontal upper edge around said lower section of said case; and a generally-rectangular lid for enclosing and sealing the upper edge of said lower section; the improvement comprising:

said lower section having a unitary liquid-impervious outer jacket and a unitary air-pervious shell located inwardly of said outer jacket and providing a space between said shell and said jacket, said shell and said outer jacket being joined around the upper edges of said side barriers and said end barriers to thereby form an integral double-walled lower section of said case.

5,485,662

APPARATUS AND METHOD FOR CRIMPING FIBER FOR NONWOVEN APPLICATIONS

Ray W. Hodges, Jr., and Shiv Sibal, both of Conyers, Ga., assignors to Hercules Incorporated, Wilmington, Del.

Filed Apr. 29, 1994, Ser. No. 235,306
Int. Cl.[6] D02G *1/12*
U.S. Cl. 28—263 **62 Claims**

1. A crimper for crimping fiber, comprising:

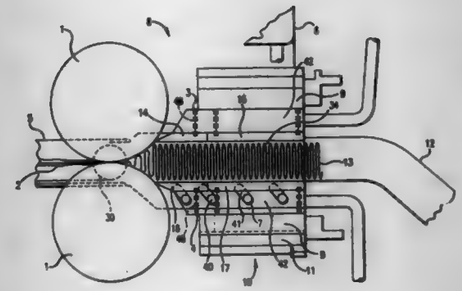
a stuffer box comprising:

a first doctor blade;

a second doctor blade opposing said first doctor blade; and forming a crimping zone with said first doctor blade

means for feeding fiber into said stuffer box; positioned upstream of said crimping space and

means for directly cooling the stuffer box so as to indirectly cool fiber passing through said stuffer box.

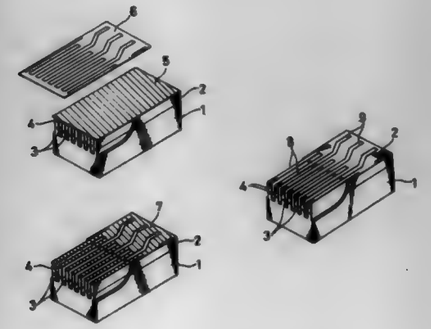


5,485,663

METHOD OF FABRICATING AN INK JET PRINT HEAD

Kuniaki Ochiai, and Shigeo Komakine, both of Shizuoka, Japan, assignors to Kabushiki Kaisha Tec, Shizuoka, Japan

Division of Ser. No. 853,267, Mar. 18, 1992, Pat. No. 5,311,218. This application Jan. 26, 1994, Ser. No. 186,634
Claims priority, application Japan, Mar. 19, 1991, 3-54296; Jan. 2, 1991, 3-255563
Int. Cl.[6] H01L *41/22*; B41J *2/01*
U.S. Cl. 29—25.35 **4 Claims**



1. A method of fabricating an ink jet print head, comprising steps of:

joining together a piezoelectric plate formed of a piezoelectric material and polarized in a direction of its thickness and a base plate formed of a nonconductive, nonelectrostrictive material having a rigidity lower than a rigidity of the piezoelectric material forming the piezoelectric plate;

forming a plurality of parallel grooves through the piezoelectric plate into the base plate by grinding so that an internal structure of the base plate is exposed in the ground surfaces of side walls between the grooves;

forming metal layers over entire bottom surfaces of the grooves and entire side surfaces of the side walls by electroless plating to form electrodes;

joining a top plate to an upper surface of the piezoelectric plate so as to close the grooves to form pressure chambers; and

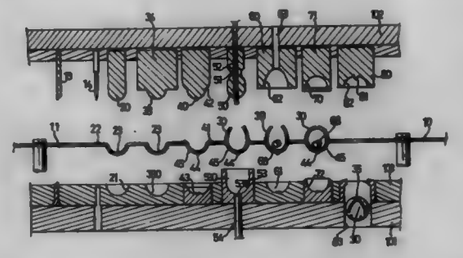
attaching a nozzle plate provided with a plurality of ink jets corresponding respectively to the pressure chambers to one end of the assembly of the base plate, the piezoelectric plate and the top plate.

5,485,664

METHOD FOR PRODUCING GLOBE-SHAPED BELLS WITH SINGLE PIECE SHELLS

Chung-Shyan Huang, No. 1-1, Chang Mar Street, Hsin Shui Hsiang, Chang Hua Hsien, Taiwan, Prov. of China

Filed Mar. 10, 1995, Ser. No. 402,462
Int. Cl.[6] B29D *17/00*
U.S. Cl. 29—169.5 **3 Claims**



1. A method for manufacturing a bell including a first half having an eye formed therein and a second half having four blades formed therein and having a cross shaped groove formed therein, said method comprising:

preparing a mold assembly comprising a lower mold including a plurality of first mold cavities formed therein for engaging with said first half of said bells, and comprising a plurality of mold pieces movable downward toward said lower mold, and

feeding a plate member step by step through said mold assembly,

wherein the first of said mold pieces are provided to form three slits in said plate member so as to define a unit in said plate member, a pair of second of said mold pieces are provided for forming a pair of positioning holes in said plate member, a third of said mold pieces is provided for forming a recess in said unit, a fourth of said mold pieces is provided for forming said blades, said blades are coupled to said plate member by at least one coupling portion, a fifth of said mold pieces is provided for forming said eye in said first half of said bell, a sixth of said mold pieces is provided for bending said blades, a seventh of said mold pieces includes an aperture formed therein for supplying a sounder into said first half of said bell, an eighth of said mold pieces includes a second mold cavity formed therein for bending said blades so as to form said second half of said bell, and a ninth of said mold pieces is provided for cutting said coupling portion so as to disengage said bell from said plate member.

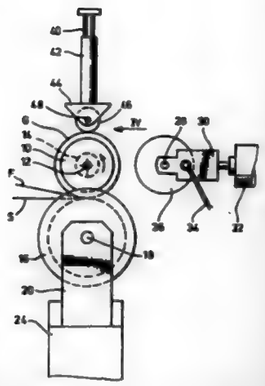
5,485,665

GASKET SIZE CONTROL

Kevin T. Marks, Crick; Nigel D. Salter, Wellesbourne; Rosario Remedios, and Peter Waddington, both of Rugby, all of, United Kingdom, assignors to T&N Technology Limited, Rugby, England

PCT No. PCT/GB92/01217, § 371 Date Jan. 21, 1994, § 102(e) Date Jan. 21, 1994, PCT Pub. No. WO93/02303, PCT Pub. Date Feb. 4, 1993
PCT Filed Jul. 17, 1992, Ser. No. 185,842
Claims priority, application United Kingdom, Jul. 23, 1991, 9115862
Int. Cl.[6] F16J *15/12*; B21C *47/06*
U.S. Cl. 29—407 **15 Claims**

1. A method of controlling the size of spiral gaskets which are formed by winding a sealing grip and a compressible filler strip around a mandrel so that the filler strip is interposed between turns of the sealing strip, characterised in that the method comprises continuously monitoring the size of the gasket as it is formed by measuring the angle through which the mandrel turns and the length of arcs on the periphery of the gasket as is it is wound, the



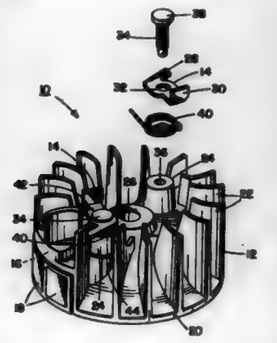
arcs being defined by the angles through which the mandrel turns, and terminating the supply of strip as a result of an arc achieving a particular length.

5,485,666

ROTOR ASSEMBLY APPARATUS AND METHOD

Lynn C. Welborn, King Mountain; Parks W. Stiles, and José I. Venegas, both of Gastonia, all of N.C., assignors to Homelite Inc., Charlotte, N.C.

Filed Nov. 9, 1993, Ser. No. 149,476
Int. Cl.[6] B23P *11/00;19/00*
U.S. Cl. 29—436 **30 Claims**



24. A method of operably connecting a first end of a spring to a starter pawl on a rotor assembly comprising steps of:

extending, by a positioner, an elongate member between cooling fins of a rotor of the assembly;

hooking the first end of the spring with a hook on a distal end of the elongate member;

retracting, by the positioner, the elongate member to thereby move the first end of the spring;

moving the distal end of the elongate member upward to thereby move the first end of the spring upward; and

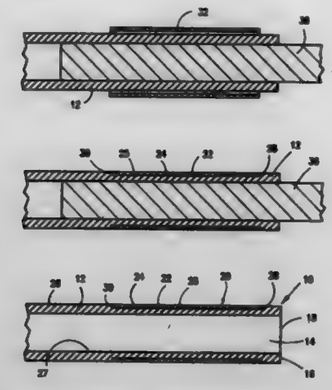
axially rotating the elongate member to allow the hook on the distal end to disengage from the first end of the spring.

5,485,667

METHOD FOR ATTACHING A MARKER TO A MEDICAL INSTRUMENT

Stephen J. Kleshinski, 599 Country Way, Scituate, Mass. 02066

Filed Mar. 3, 1994, Ser. No. 205,106
Int. Cl.[6] B23P *11/02*
U.S. Cl. 29—447 **21 Claims**



18. A method for attaching a marker to a medical instrument comprising the steps of:

providing a medical instrument having an outer surface and an inner chamber defined by an inner surface, at least one of said inner and outer surfaces being formed of a thermally responsive material which is softened at a softening temperature;

providing a marker formed of a shape-memory material capable of having a deformed configuration while at a first temperature and an original configuration at a second higher temperature;

lowering the temperature of said marker to said first temperature and deforming said marker;

positioning said marker in the deformed configuration adjacent to said inner or outer surface of thermally responsive material for subsequent engagement therewith; and

raising the temperature or said shape-memory material to said second temperature and said softening temperature to soften said thermally responsive material while causing said shape-memory material to transform from said deformed configuration to said original configuration wherein said marker engages said medical instrument.

5,485,668

NEEDLE AND SUTURE SWAGING METHOD

David Demarest, Parsippany; Robert B. Duncan, Bridgewater, both of N.J., and William Rattan, Cerritos, Calif., assignors to Ethicon, Inc., Somerville, N.J.

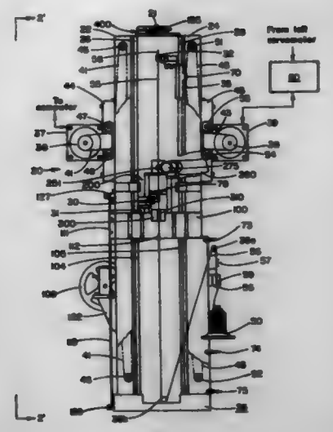
Division of Ser. No. 181,599, Jan. 13, 1994. This application Mar. 9, 1995, Ser. No. 401,365
Int. Cl.[6] B21D *39/00*
U.S. Cl. 29—517 **4 Claims**

1. A method for automatically threading and swaging a suture strand to a suture receiving opening formed in a surgical needle, said method comprising the steps of:

(a) gripping said suture strand at a free end thereof under tension from an indefinite length supply of suture material, said gripping accomplished by a first gripper means reciprocable along a suture axis from a cutting zone to an insertion zone;

(b) advancing said first gripper means and said suture strand gripped thereby along said suture axis from said cutting zone to said insertion zone;

(c) positioning said needle in a swage die opening formed between first and second swaging dies with said suture receiving opening thereof aligned with said suture axis;



(d) further advancing said first gripper means along said suture axis to direct said free end of said suture strand through an alignment guide positioned in the insertion zone between said free end of said suture strand and said suture receiving opening of said needle, whereby said free end of said suture strand is inserted into said suture receiving opening of said needle;

(e) gripping said suture strand at or slightly below said cutting zone, said gripping accomplished by a second gripper means reciprocable along a suture axis from a cutting zone to an insertion zone;

(f) advancing at least one of said first and second swaging dies to swage said surgical needle about the suture strand to form a needle-suture assembly; and

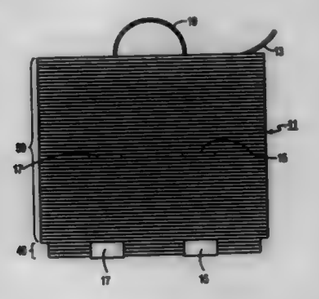
(g) cutting said suture strand at said cutting zone to obtain a needle-suture assembly gripped by said first gripper means and a suture strand of indefinite length gripped by said second gripper means.

5,485,669

METHOD OF MAKING AN ELECTRICAL COIL

Joseph S. Droho, Chicago, Ill., assignor to Philips Electronics North America Corporation, New York, N.Y.

Division of Ser. No. 226,183, Apr. 11, 1994. This application Apr. 20, 1995, Ser. No. 426,295
Int. Cl.[6] H01F *41/10*
U.S. Cl. 29—605 **8 Claims**



1. A method for winding a precision wound coil having at least a tapped layer with at least one tapped turn, an adjacent layer and a previous layer, comprising the steps of:

winding of turns to form the previous layer and a partially wound adjacent layer;

positioning a first anchor and a second anchor so that each anchor is in contact with both the partially wound adjacent layer and the previous layer;

winding of turns to form a fully wound adjacent layer whereby a first portion of each anchor is secured between the adjacent layer and the previous layer;

winding of turns to form a partially wound tapped layer including a portion of the at least one tapped turn;

temporarily lifting the first anchor from contact with the adjacent layer until the at least one tapped turn has been wound under the first anchor;

repositioning the first anchor to once again be in contact with the adjacent layer;

forming a loop from the at least one tapped turn between the first anchor and the second anchor;

temporarily lifting the second anchor from contact with the adjacent layer until the at least one tapped turn has been wound under the second anchor;

repositioning the second anchor to once again be in contact with the adjacent layer; and

winding of turns to form a fully wound tapped layer whereby a second portion of each anchor is secured between the tapped layer and the adjacent layer;

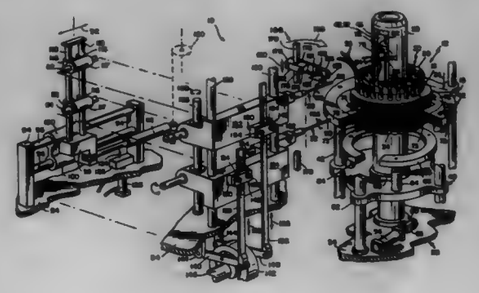
wherein in winding each layer grooves are formed between adjacent turns and wherein turns of the adjacent layer nest into the grooves of the previous layer and turns of the tapped layer nest into the grooves of the adjacent layer.

5,485,670

STATOR COIL LACING MACHINE

David G. Bourassa, Ossian, Ind.; Larry D. Moser, Ohio City, Ohio, and Keith W. Moser, Fort Wayne, Ind., assignors to Alliance Winding Equipment, Inc., Fort Wayne, Ind.

Filed Aug. 30, 1993, Ser. No. 114,216
Int. Cl.[6] H02K *15/02*
U.S. Cl. 29—732 **42 Claims**



1. A stator coil lacing machine, comprising:

means for orienting a stator on the stator coil lacing machine, the orienting means including an arbor on which the stator is placed;

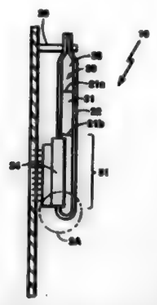
means for stitching lacing cord around stator coils of the stator;

a cord clamp disposed within the arbor for securing the lacing cord;

cord handling means for receiving a continuous length of cord and delivering the cord to the stitching means, the cord handling means being disposed within the arbor; and

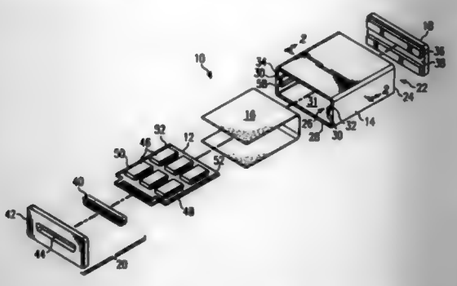
means for adjusting the relative positioning of the stitching means, the cord clamp, and the cord handling means without disassembly of the stator coil lacing machine so that the machine accommodates a range of stator stack heights.

5,485,671
METHOD OF MAKING A TWO-PHASE THERMAL BAG COMPONENT COOLER
Ralph I. Larson, Bolton, Mass., and Richard L. Phillips, Alachua, Fla., assignors to Aavid Laboratories, Inc., S. Lancaster, Mass.
Continuation-in-part of Ser. No. 120,153, Sep. 10, 1993. This application Mar. 22, 1994, Ser. No. 215,541
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—840.032 7 Claims



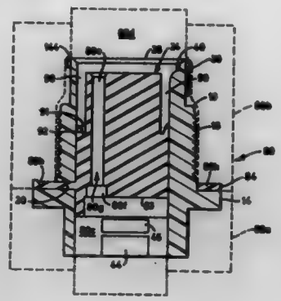
1. A method for fabricating a cooling apparatus comprising a closed bag having at least one wall of flexible, thermoplastic sheet material with a hole therein, the hole having a periphery, and an aluminum plate having a surface, the method comprising the steps of:
A. anodizing without sealing the aluminum plate surface to produce a porous anodized plate surface; and
B. adhering the sheet material at the hole periphery to the porous anodized plate surface to produce a sealed bag.

5,485,672
METHOD FOR ENCASING A PRINTED WIRING BOARD
Alton D. Carpenter, Houston, and Howard W. Segler, Stafford, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jun. 21, 1993, Ser. No. 81,494
Int. Cl.[6] H05K *3/30*
U.S. Cl. 29—841 6 Claims



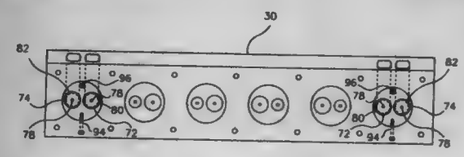
1. A method for encasing a printed wiring board comprising the steps of:
covering the printed wiring board with an adhesive material;
extruding a housing having an internal surface, first and second ends, first and second sides, and first and second openings at the first and second ends thereof from a plastic material reinforced with electrically conductive fiber;
cutting the housing to an appropriate length for the printed wiring board;
inserting the covered printed wiring board into the second opening of the housing such that the printed wiring board is held in place by internal ribs disposed on the internal surface of the housing; and
inserting an end plug into the first opening and a coupling member into the second opening of the housing such that the printed wiring board is held in place within the housing.

5,485,673
ENVIRONMENTAL CONNECTOR
Frederick L. Lau, Skokie, Ill., assignor to Switchcraft Inc., Chicago, Ill.
Filed Jun. 16, 1994, Ser. No. 260,595
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—883 9 Claims



1. A method of making an electrical connector, comprising the steps of:
forming a plastic housing having an axis and being formed with an axial chamber extending between opposing open ends, said housing having an external annular shoulder and an aperture adjacent to said shoulder;
positioning said housing in a cavity of an insertion mold having at least one post extending axially through said chamber of said housing, said cavity having an annular void adjacent to said shoulder;
injecting thermoplastic rubber into said chamber of said housing to form a rubber insert of predetermined shape within said housing and around said at least said one post, and to cause said thermoplastic rubber to flow out of said aperture and around said housing in said annular void to form an annular ring against said shoulder wherein said insert and said ring are interconnected as one piece;
removing said housing and insert from said cavity and away from said at least one post to form at least one axial bore through said insert within said chamber in the space vacated by said at least one post; and
inserting at least one conductive contact into said bore.

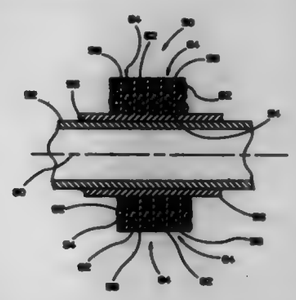
5,485,674
METHOD OF CONSTRUCTING AN APPARATUS FOR COMPRESSING GAS
Lynn Caldwell, Rt. 2, Box 159-1, Wetumka, Okla. 74883
Division of Ser. No. 173,988, Dec. 28, 1993, Pat. No. 5,378,113. This application Sep. 23, 1994, Ser. No. 311,610
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—888.011 20 Claims



1. A method of constructing an apparatus for compressing gas, said method comprising the steps of:

providing an internal combustion engine;
modifying an engine piston into a compressor piston;
removing valves from the internal combustion engine;
providing an intake compressor valve;
installing an intake compressor valve securing means for securing the intake compressor valve in the apparatus;
providing a discharge compressor valve; and
installing a discharge compressor valve securing means for securing the discharge compressor valve in the apparatus.

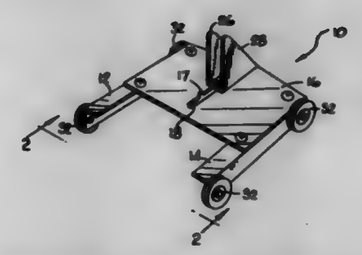
5,485,675
PROCESS FOR PRODUCING AN ACTIVATED CARBON ADSORBENT WITH INTEGRAL HEAT TRANSFER APPARATUS
Jack A. Jones, Los Angeles, and Andre H. Yavrouian, Glendale, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.
Division of Ser. No. 955,465, Oct. 2, 1992. This application Oct. 20, 1994, Ser. No. 325,138
Int. Cl.[6] B23P *15/26*
U.S. Cl. 29—890.046 19 Claims



1. A process for producing an integral adsorbent-heat exchanger apparatus for the transfer of heat and sorbate comprising:
a. wetting activated carbon particles with a mixture which comprises a binder having a carbon based molecular structure and a solvent for the binder thereby forming a particle mixture;
b. adjusting the solvent content of the particle mixture so that it is operable for pressing onto a surface without exuding a large amount of solvent thereby producing an adjusted mixture;
c. pressing the adjusted mixture onto the surface of a metal tube;
d. thereafter, removing an effective amount of solvent from the adjusted mixture pressed onto the tube operable for allowing the adjusted mixture to be pyrolyzed to a density of at least about 0.3 g/cc while remaining on the tube thereby forming an intermediate mixture; and
e. thereafter, subjecting the tube with the intermediate mixture thereon to an elevated temperature operable for pyrolyzing the binder, for bonding the activated carbon particles to each other to form a bonded activated carbon matrix, and for adjoining the matrix to the tube thereby producing an integral adsorbent-heat exchanger apparatus for the transfer of heat and sorbate.

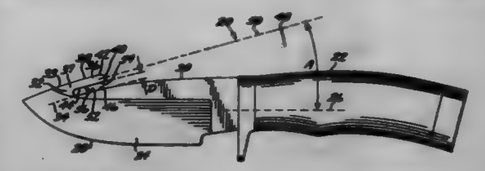
5,485,676
CARPET CUTTING KNIFE GUIDE
Mark A. Terhorst, 637 Newton St., Denver, Colo. 80204
Filed Aug. 9, 1994, Ser. No. 287,930
Int. Cl.[6] B26B *29/06*
U.S. Cl. 30—294 11 Claims

1. A carpet cutting knife guide for cutting overlapping adjacent edges of two pieces of carpet to be laid adjacently on a floor, the guide comprising:
a) a first lateral member and a second lateral member substantially parallel to each other and spaced from each other;



b) a platform member extending from the first lateral member to the second lateral member and attached to the first and second lateral members, the platform member being substantially parallel with the floor and having an opening through which at least a blade of a carpet cutting knife member having a proximal handle and a distal blade can pass, with said opening having in conjunction therewith at least one friction fit means whereby a portion of the knife member can be releasably retained, with said platform member constructed of a flexible material such that exerting a force on the handle of the releasably retained knife member or on the platform member causes the knife member to limitedly move substantially perpendicularly toward the floor when said force is exerted; and
c) movement means extending substantially perpendicularly from and attached to each of the lateral members for manually moving the guide over the overlapping edges of the carpet to be cut.

5,485,677
KNIFE WITH FABRIC CUTTER
Brett P. Seber, Escondido, Calif., assignor to Buck Knives, Inc., El Cajon, Calif.
Continuation-in-part of Ser. No. 929,731, Aug. 13, 1992, Pat. No. 5,359,778. This application Sep. 16, 1994, Ser. No. 307,182
Int. Cl.[6] B26B *29/00*
U.S. Cl. 30—294 20 Claims



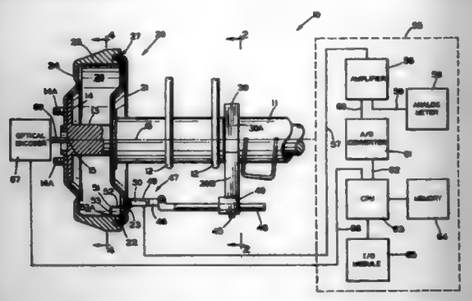
1. A knife, comprising:
a handle;
a blade joined to the handle and having a blade back; and
a fabric cutter integral with the blade and including
a fabric cutter body extending laterally outwardly from the blade back of the blade, an outwardly extending margin of the fabric cutter body defining a fabric cutter back,
a finger with no sharp edges, the finger extending rearwardly toward the handle from the outward margin of the fabric cutter body, the finger having a length of about 0.3 inches, the finger having a finger back forming a continuous surface with the fabric cutter back, the fabric cutter back and finger back being oriented at an angle to the handle of about 13.5 degrees,
the fabric cutter body, the finger, and a portion of the blade back defining a fabric cutter slot having a slot outer side and separated from the slot outer side by a distance of about 0.125 inches, and a slot bottom,
an outer ramp from the slot outer side to the slot bottom, the outer ramp having a radius of about 0.090 inches,
an inner ramp from the slot inner side to the slot bottom, the inner ramp having a radius of about 0.090 inches, and
a sharpened cutting edge at the slot bottom.

5,485,678

APPARATUS AND METHOD FOR MEASURING THE CIRCULARITY AND ECCENTRICITY OF A BRAKE DRUM WHILE MOUNTED UPON A VEHICLE

Theadore J. Wagg, New Hudson; James K. Clark, Canton, and Robert S. Sporzynski, Chelsea, all of Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.

Filed Aug. 15, 1994, Ser. No. 290,333
Int. Cl.[6] G01D *21/00*
U.S. Cl. 33—610 24 Claims



1. An apparatus for measuring the circularity of a brake drum, the drum being mounted upon a vehicle and rotatable about an axis of rotation, the apparatus comprising:

means adapted for mounting on a stationary portion of the vehicle for sensing a variation of a distance extending from the axis of rotation to a braking surface formed on an inner surface of the brake drum, said variation sensing means generating a first signal proportional to said variation;

means for sensing an angular position of the brake drum, said angular position sensing means generating a second signal indicative of the angular position of the drum; and

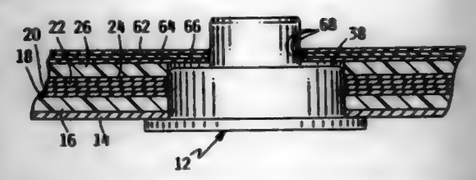
processing means connected to said variation sensing means and said angular position sensing means for receiving and operatively combining said first and second signals to define a data point.

5,485,679

IMAGE REGISTRATION BOARD AND COMPRESSIBLE PIN ASSEMBLY

Gretchen Ternes, Shoreview, Minn., assignor to Ternes-Burton Company

Filed Oct. 18, 1991, Ser. No. 780,739
Int. Cl.[6] G01D *21/00*
U.S. Cl. 33—623 47 Claims



1. An image board and compressible pin assembly for use in maintaining the registration of a flat or a plate during layout, stripping, transfer, or in a platemaker, said flat or said plate having at least one registration hole associated therewith, said platemaker having a cover movable into close parallel contact with said flat or said plate, said image board and compressible pin assembly comprising:

an image board having at least one base layer, at least one filler layer connected to and disposed above said base layer, at least one intermediate layer connected to and disposed above said at least one filler layer, and a bed layer connected to and disposed above said at least one intermediate layer, said at least one base layer having a bottom surface and said bed layer having a top surface, said image board defining an aperture extending entirely through each of said at least one base layer, said at least one filler layer, said at least one intermediate layer, and said bed layer, said image board defining a top side adjacent said top surface of said bed layer and a reverse side adjacent said bottom surface of said at least one base layer; and

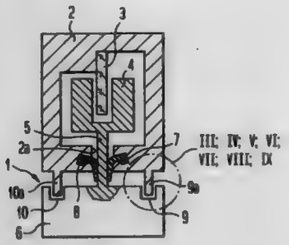
a compressible registration pin having a body and a post mounted for reciprocal movement relative to said body, said body being selectively and removably mountable within said aperture from said reverse side of said image board, said body including a flange member projecting therefrom, said flange member contacting said bottom surface of said base layer when said body is completely mounted within said aperture, at least a portion of said post initially extending above said top surface of said bed layer such that the flat or the plate may be placed thereon with the registration hole thereof receiving said portion of said post extending above said top surface of said bed layer therein when said post is in an extended position, said post being movable to a retracted position in response to contact between the cover of the platemaker and said post.

5,485,680

ENCAPSULATED MEASURING APPARATUS

Günther Nelle, Bergen, Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Germany

Filed Jun. 15, 1994, Ser. No. 259,925
Claims priority, application Germany, Jul. 15, 1993, 43 23 635.9
Int. Cl.[6] G01B *11/02*
U.S. Cl. 33—705 8 Claims



1. An encapsulated measuring apparatus for determining a relative position of two objects, comprising:

a housing;

an installation pedestal for supporting said housing;

scale means located in said housing;

means located in said housing for probing said scale;

first seal means for sealing said housing;

an entrainment member extending through said first seal means for connecting said probing means with an object to be measured, said entrainment member being connected with said installation pedestal; and

at least one additional seal means provided between said installation pedestal and said housing for additionally sealing said housing from harmful effects, said at least one additional seal means being provided in a region remote from a location in which said entrainment member extends between said housing and said installation pedestal.

5,485,681

SWIVEL TYPE DIPSTIK

Robert S. Hitchcock, Lake Providence, La., assignor to Moeller Products, Inc., Greenville, Mich.

Filed Jun. 28, 1994, Ser. No. 266,668
Int. Cl.[6] G01F *23/04*
U.S. Cl. 33—722 5 Claims



1. A dipstick for use with a fill tube, said dipstick comprising:

a screw-on cap;

a blade dependent from said cap;

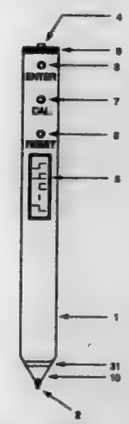
swivel means interposed between said blade and said cap for allowing said blade to rotate freely about its longitudinal access, said swivel means further comprising engaging means for slidingly engaging a surface; and receiving means for receiving said engaging means and wherein said receiving means comprises a segment of said cap having a conical interior.

5,485,682

OPTO-MECHANICAL INSTRUMENT TO ACCURATELY MEASURE LINEAR DISTANCES ON FLAT OR CURVED SURFACES

Guy C. Le Baeton, 1008 N. Oak Park Ave., Oak Park, Ill. 60302

Filed Dec. 7, 1994, Ser. No. 350,888
Int. Cl.[6] G01B *3/12*
U.S. Cl. 33—773 20 Claims



1. A tracking device for determining a scalable distance over a surface, the device comprising:

a rotary element adapted to frictionally contact the surface;

a sensor for generating pulses in proportion to a rotation of the rotary element;

counting means for storing a count of pulses in a first register;

first enter means for downloading the count from the first register to a third register;

dividing means for dividing a second register by a third register to yield a numerical ratio;

second enter means for downloading the ratio to a fourth register;

multiplying means for multiplying the count by the fourth register to yield a numerical product;

calibrate means for downloading the product to the second register;

display means for displaying the product;

first reset means for setting the first register to zero;

second reset means for setting the first register to zero, setting the second register to one, and setting the third register to one; and

initializing means for setting the fourth register to one;

whereby to scale a distance on a surface

the fourth register may be set to one with initializing means,

the rotary element may be turned to input into the first register a track number,

the multiplying means may yield the numerical product equal to the track number,

the track number may be downloaded into the second register with the calibrate means,

the rotary element may be run over a scale illustration corresponding to the distance scale number to input into the first register a scale number,

the first enter means may download the scale number into the third register,

the dividing means may yield the numerical ratio equal to the track number over the scale number,

the second enter means may download the ratio to a fourth register,

the rotary element may be run over an arbitrary line on the surface,

the multiplying means may yield the numerical product equal to the count times the ratio, and

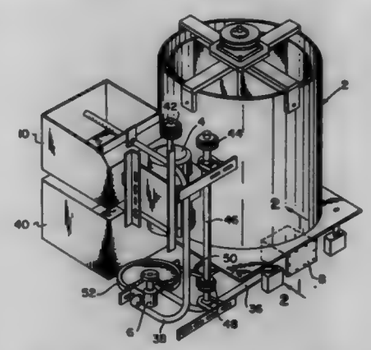
the display means may display the numerical product, the numerical product being a scaled distance over the surface corresponding to the arbitrary line.

5,485,683

CENTRIFUSE EXTRACTOR

Glenn D. Morgan, Powhatan, Va., assignor to Charles M. Neal, Richmond, Va.

Filed Mar. 8, 1994, Ser. No. 207,213
Int. Cl.[6] B26B *17/30;17/24*
U.S. Cl. 34—58 4 Claims



4. A mobile centrifuge extractor for removing fluids from mats and pads, comprising

(a) a cart;

(b) a fixed cylindrical housing mounted on said cart and defining a centrifuge chamber, said housing having a vertical axis and a lower fluid outlet and being open at its upper end;

(c) a cylindrical screen concentrically arranged in spaced relation within said housing to define inner and outer housing chambers, said screen being rotatably connected with said housing and having an open upper end;

(d) a plurality of radially arranged divider walls connected with said screen within said inner chamber for dividing said inner chamber into a plurality of compartments;

(e) an axial shaft connecting said divider walls;

(f) bearing means connected with said housing for supporting said axial shaft for rotation relative to said housing;

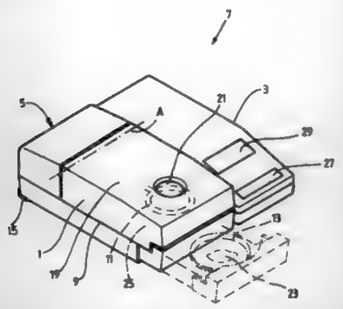
(g) first filter means connected with said housing lower fluid outlet for removing coarse particulates from the fluid;
(h) a pump connected with said first filter means for drawing fluid from said housing through said first filter means;
(i) drive means connected with said cart for rotating said cylindrical screen and driving said pump;
(j) second filter means connected with an outlet of said pump for removing fine particulates from the fluid; and
(k) means arranged beneath said second filter means for collecting filtered fluid, whereby when fluid soaked mats or pads are loaded into said compartments and said screen is rotated, fluid is extracted from the mats and pads by centrifugal force, drawn from said housing lower fluid outlet through said first filter means, pumped through said second filter means, and collected in said collecting means.

5,485,684

DRYER WITH PRECISION BALANCE

Florian Philipp, Bertschikon; Alfred Hautle; Reto Nuesch, both of Greifensee, and Beat Straub, Uster, all of, Switzerland, assignors to Mettler-Toledo AG, Greifensee, Switzerland

Filed Dec. 8, 1993, Ser. No. 163,925
Claims priority, application Switzerland, Feb. 16, 1993, 00472/93
Int. Cl.[6] F26B *19/00*
U.S. Cl. 34—226 **13 Claims**



1. A drying apparatus with a built-in precision balance for determining the moisture content of material to be weighed, the apparatus comprising a housing, a weighing dish for receiving the material, the balance having a measuring cell, a load-receiving means being connected to the measuring cell, a heat source being mounted above the weighing dish for heating the material, the weighing dish being located within the housing during drying, and means for moving the weighing dish in an essentially horizontal plane into and out of the housing for making the weighing dish accessible for charging and weighing-in of the material.

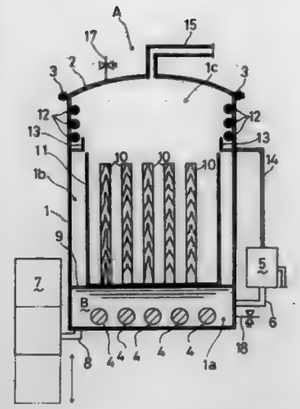
5,485,685

WOOD TREATING METHOD

Yotaro Hashimoto, Shiga, Japan, assignor to Eiwn Co., Ltd., Shiga, Japan

Continuation of Ser. No. 33,155, Mar. 16, 1993, abandoned. This application Oct. 24, 1994, Ser. No. 328,383
Claims priority, application Japan, Apr. 10, 1992, 4-089198; Dec. 22, 1992, 4-342513
Int. Cl.[6] F26B *3/00*
U.S. Cl. 34—348 **4 Claims**

1. A wood treating method, comprising the following steps of:
providing a mixture of methylene chloride solvent and water in a container, said water accounting for approximately 90% of said mixture;
heating said mixture in said container at approximately 100° C.–140° C. so that vapors of said methylene chloride solvent and said water are simultaneously generated;



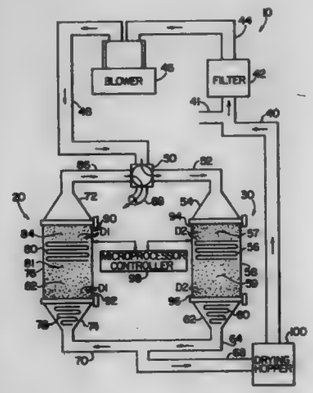
confining wood to be treated and said vapor of said mixture in a pressure container which is hermetically sealed with respect to an outer atmosphere so that said wood contacts solely with said vapor of said mixture;
permeating said vapor of said mixture into cells of said wood;
melting oil and fat contents in cell membranes of said cells by said vapor thereby creating perforations in said cell membranes; and
removing excess water confined in said cells of said wood through said perforations in said cell membranes.

5,485,686

HI-PERFORMANCE DESICCANT TOWER

Charles F. Sears, Jr., Tolland, Conn., assignor to Dri-Air Industries, Inc., East Windsor, Conn.

Filed May 25, 1994, Ser. No. 248,739
Int. Cl.[6] F26B *21/06*
U.S. Cl. 34—473 **19 Claims**



1. A system of drying and heating process air to be circulated for drying hygroscopic thermoplastic material contained in a drying hopper before the material is introduced into a plastic processing machine, the system including:
a drying hopper for containing hygroscopic thermoplastic material before the thermoplastic material is introduced into a plastics processing machine;
process air for drying said hygroscopic thermoplastic material contained in said drying hopper;
first and second desiccant towers, each of said towers alternating between a process cycle and a regeneration cycle while the other tower is in an opposite cycle;

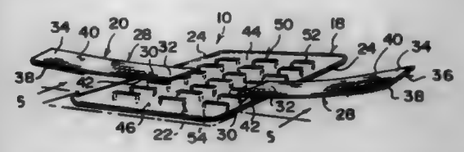
desiccant contained in said first and second desiccant towers for adsorbing moisture from the process air;
regeneration air for driving moisture off saturated desiccant in one of said towers in a regeneration cycle;
air conduit means providing a path for circulating the process air between the drying hopper and the first and second desiccant towers;
air circulating means for circulating the process air through the air conduit means;
air flow directing means for directing the process air to the top end of one of said desiccant towers thereby placing said one of the towers in a process cycle while the other of the towers is placed in a regeneration cycle, said air flow directing means also directing the regeneration air exiting from a top end of said other of the towers in a regeneration cycle to a vent;
means for regulating the time period and temperature of the process and regeneration cycles;
first and second bottom heater means respectively housed adjacent to a bottom end of the first and second desiccant heating towers and extending in a plane traverse to the longitudinal direction of the respective desiccant heating towers to heat the desiccant so as to adsorb moisture from said process air circulating downwardly through one of said towers in a process cycle, and for simultaneously super-heating and driving moisture off the desiccant by means of said regeneration air circulating upwardly through the other of said towers in a regeneration cycle, said regeneration air carrying by means of convection a generally bottom-originating hot convection wave front propagating upwardly through the desiccant in said tower in a regeneration cycle; and
first and second generally central heater means respectively housed between top and bottom ends of said first and second desiccant towers and extending in a plane transverse to the longitudinal direction of the respective desiccant heating towers for super-heating and driving moisture off the desiccant by means of said regeneration air carrying a generally centrally-originating hot convection wave front propagating upwardly through the desiccant of one of said towers in a regeneration cycle, the generally centrally-originating hot convection wave front coupled with the bottom-originating hot convection wave front considerably reducing the time to completely regenerate the saturated desiccant in said one of said towers in a regeneration cycle.

5,485,687

ANTI-SLIP SHOE ATTACHMENT DEVICE

Gilbert Rohde, Box 97, New Town, N. Dak. 58763

Filed Mar. 28, 1994, Ser. No. 218,431
Int. Cl.[6] A43C *15/00*
U.S. Cl. 36—62 **1 Claim**



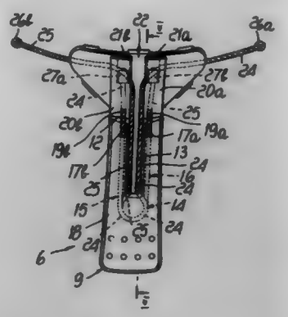
1. An anti-slip attachment device for and in combination with a shoe having a sole with a flat bottom and a vamp, which comprises:
a) a plate fabricated out of a rubberized canvas material fitted against the flat bottom of the sole of the shoe, said plate being sized to extend across the width of the sole of the shoe, so that each side of said plate can be properly aligned with each edge of the sole;
b) means for mounting said plate in a removable manner against the bottom of the sole of the shoe, said mounting means comprising a pair of straps of elastic webbing material, said means including adhesive material for attaching a first end of each said strap adjacent to one side of said plate, so that said straps are opposite from each other and can extend over the vamp of the shoe, with their second ends overlapping, and means including a mating hook and loop pile fastener on the overlapping second ends of said straps for connecting the two straps together, so that said plate when mounted will be in a stationary position with respect to the sole; and
c) means on the bottom of said plate for preventing the sole of the shoe from slipping on an icy surface comprising a plurality of staples, each having a crown and a pair of pointed legs, in which each said staple is inserted through said plate, so that the crown sits on the top of said plate and in contact with said flat bottom of said sole, while the pointed legs protrude through the bottom of said plate.

5,485,688

LEVER, PARTICULARLY FOR SKI BOOTS

Roberto Gorza, Feltre; Luca Gallina, Caerano San Marco, and Pino Tessari, Riese Pio X, all of, Japan, assignors to Nordica S.p.A., Trevignano, Italy

Filed Nov. 29, 1993, Ser. No. 158,534
Claims priority, application Italy, May 18, 1993, TV93A0054
Int. Cl.[6] A43B *5/04*
U.S. Cl. 36—117 **18 Claims**



1. In combination, a lever (5) and a ski boot (1), said ski boot (1, 2, 3) comprising a shell (2), at least one quarter (3) connected to said shell (2), and an upper perimetric edge (8) defined by said quarter (3), said lever (5) comprising;
a support (7) connected to said quarter (3) at a portion thereof adjacent to said upper perimetric edge (8);
at least two traction elements (24,25) each having one end connected to said ski boot (2, 3) and another end (27*a*, 27*b*) connected to said support (7);
a lever arm (6) having a base (11), and an upper surface (18) located opposite said base (11), said lever arm (6) being connected to said at least two traction elements (24, 25);
a first end (9) defined by said lever arm (6), said first end (9) being movable with respect to said support (7);
a second end (10) defined by said lever arm (6) opposite said first end thereof;
a third end (12) defined by said support (7) and shaped complementarily with respect to said second end (10), said second end (10) being arranged adjacent to said third end (12);
a first seat (13), a second seat (14), a third seat (15) and a fourth seat (16) defined in said lever arm (6) for accommodating said at least two traction elements (24,25), said first seat (13) formed axially with respect to said lever arm (6) and extending thereon from said second end (10), said second seat consisting of an annular seat (14) defined on said lever arm (6) for guiding said traction elements (24, 5) and connected to said first seat (13) at a location proximate to said first end (9), said third seat (15) and said fourth seat (16) being formed laterally with respect to said first seat (13) within said lever arm (6) and connected to said second seat (14);
a pair of first openings (17*a*, 17*b*) connecting said third seat (15) and said fourth seat (16) to said upper surface (18) of said lever arm (6);

a pair of longitudinal protrusions (**20***a*, **20***b*) protruding above said support (**7**) on said upper surface (**18**) of said lever arm (**6**), and;

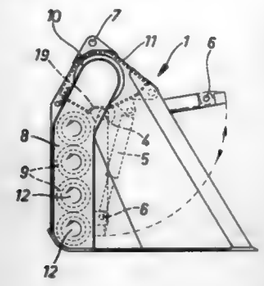
a pair of second openings (**19***a*, **19***b*) formed in said pair of longitudinal protrusions (**20***a*, **20***b*) coaxially with respect to said first openings (**17***a*, **17***b*).

5,485,689

BUCKET CRUSHER

Markku Jonninen, Hollola, Finland, assignor to Ideachip Oy, Hollola, Finland

Filed Jun. 17, 1994, Ser. No. 261,410
Claims priority, application Finland, Jun. 17, 1993, 932791
Int. Cl.[6] E02F *3/92*
U.S. Cl. 37—189 **8 Claims**



1. A bucket crusher to be mounted in place of the bucket of an excavator for crushing material, comprising:

substantially horizontal shafts having crushing tools which, as the shafts are rotating, disintegrate the material to be crushed and deliver resulting crushed aggregate between the shafts;

wherein said shafts as well as their crushing tools have a same rotating direction when in an operating position;

a pivoting axle provided on the bucket crusher;

a compression and feeding plate journalled to be pivotable at an edge around said pivoting axle, said plate being pivotable by means of power units between a first and a second position whereby, in the first position of said plate there is a substantially larger angle between the plate and a plane extending through the shafts than in the second position of said plate in which the plate compresses the material to be crushed against the crushing tools and the shafts; and

wherein said rotating direction of the shafts and crushing tools is selected such that the crushing tools on a side of the shafts facing the plate travel towards a side of the bucket crusher which is provided with said pivoting axle.

5,485,690

LIGHTWEIGHT MODULAR SNOWPLOW FOR QUICK ATTACHMENT TO AND SIMPLE, ECONOMICAL OPERATION FOR SMALL VEHICLE

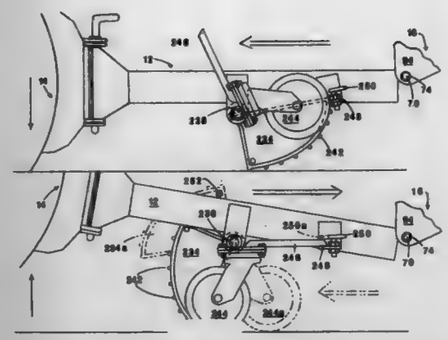
James P. MacQueen, 32 Valley St., Keene, N.H. 03431

Filed Jan. 18, 1994, Ser. No. 183,173
Int. Cl.[6] E01H *5/06*
U.S. Cl. 37—271 **11 Claims**

1. A lightweight modular snowplow assembly for a vehicle comprising in combination:

a vehicle mounting frame for mounting a snowplow to a vehicle, said vehicle mounting frame having means for releasably coupling and de-coupling said snowplow with said vehicle;

a triangular plow frame having a first double apex end releasably interconnectable with said coupling and de-coupling means of said vehicle mounting frame and a second opposite single apex end interconnected with a moldboard, said plow frame further having an axle mounted transversely on said plow



frame between said single apex end and said double apex end of said plow frame; and

means for raising and lowering said plow frame and said moldboard when said snowplow assembly is coupled for operation to said vehicle mounting frame of said vehicle, accomplished entirely and automatically as a result of forward and reverse motion of said vehicle to which said snowplow assembly is coupled; said means for raising and lowering comprising at least one biased cam, means for rotatably suspending said biased cam from said axle and means for preventing said biased cam from further rotation when said moldboard reaches its highest position from the ground surface,

wherein said biased cam comprises two straight sides and one convex curvilinear side,

each of said two straight sides having a first end and a second end, one of said two straight sides being longer than the other straight side, said two straight sides intersecting at said respective first ends at approximately a 90 degree angle with respect to each other, said intersection point of said two straight sides also connecting with said axle,

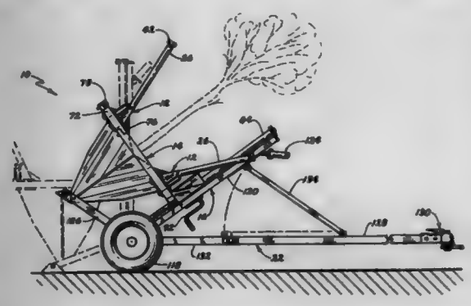
said one convex curvilinear side connecting the second ends of said two straight sides together in such a way that when said moldboard is resting on the ground surface, said second end of said shorter straight side is in contact with the ground surface.

5,485,691

APPARATUS FOR EXCAVATING AND TRANSPLANTING TREES AND THE LIKE AND METHOD OF USE

Timothy J. Stevens, Minnetonka, and David J. Kruskopf, Mound, both of Minn., assignors to EasyMove, Inc., Maple Plain, Minn.

Filed Aug. 24, 1994, Ser. No. 296,059
Int. Cl.[6] A01G *23/02*
U.S. Cl. 37—302 **32 Claims**



1. An apparatus for excavating and transplanting trees and other vegetation comprising:

at least two spade assemblies, each said spade assembly including a spade member slidably movable between a retracted position and an extended position, each said spade member having a spade blade and a spade handle extending from said spade blade;

a ring assembly to which are removably mounted said spade assemblies, said ring assembly including a strength member, a first gate member and a second gate member;

manually actuable driving means for urging said spade members into the soil, said driving means being engageable with said spade handle of said spade member;

means for raising and lowering said ring assembly;

a support structure to which said ring assembly is removably mounted; and

means for attaching said support structure to a transporting means for transporting the excavating and transplanting apparatus from one location to another.

5,485,692

MULTIPLE YEAR CALENDAR

Douglas D. Seely, III, 69159 Pine Rd., North Liberty, Ind. 46554

Filed Jan. 10, 1994, Ser. No. 179,624
Int. Cl.[6] G09D *3/06*
U.S. Cl. 40—114 **7 Claims**



1. A calendar comprising first and second indexes each of parallel orientation, said first index placed next to said second index, said first index including a listing of various years of said calendar and multiple rows of chronological sequential days of multiple weeks, said years being in at least one column, each year in each said column being alignable with one of, said rows of chronological sequential days, said second index including a listing of the twelve months of a year and multiple rows of numbered days of each month, said twelve months being in a column, each of the twelve months being alignable with a said row of numbered days, each day of said numbered days in each of said twelve months being alignable with a day in a said row of chronological sequential days so aligned with a said year.

5,485,693

HINGED SUPPORT PANEL DISPLAY PRISM

Egbert Frenken, and Michael Schöning, both of Heinsberg, Germany, assignors to M & V Reklametechnik Schoning-Krieg, Heinsberg, Germany

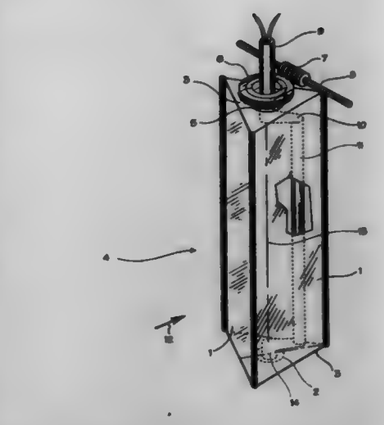
Filed Mar. 22, 1994, Ser. No. 215,901
Claims priority, application Germany, Jul. 12, 1993, 43 23 200.0
Int. Cl.[6] G09F *11/02*
U.S. Cl. 40—505 **20 Claims**

1. A display device for displaying designs comprising:

(a) at least one assembled prism having at least three rectangular side panels having display surfaces thereon and extending parallel to the axis of said assembled prism, each said panel having two longitudinal edges and two ends with adjacent panels connected to each other along their respective adjacent longitudinal edges;

(b) end pieces each attached to a said end of at least one of two said panels to form with all said panels said assembled prism;

(c) a hinge joining a first panel to an adjacent third panel along adjacent longitudinal edges thereof;



(d) means releasably securing said third panel to an adjacent second panel along the longitudinal edge of said third panel opposite said hinge to allow opening of said third panel relative to said end pieces for accessing the interior of said assembled prism, wherein said end pieces remain attached to said at least one other than said third panel;

(e) means for rotating said assembled prism about its axis to present said panels individually for view; and

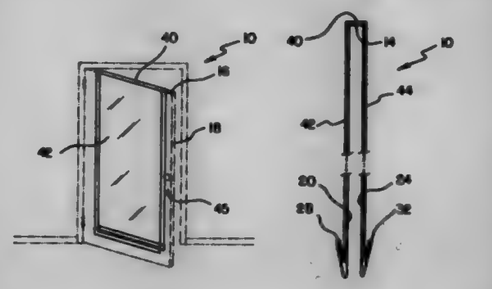
(f) illuminating means including at least one replaceable illuminating element disposed within said assembled prism to illuminate said panels and being replaceable when said third panel is open.

5,485,694

DOOR-MOUNTED POSTER SUPPORT

Sharon E. Good, 429 Ritchie Dr., Nashville, Tenn. 37220

Continuation of Ser. No. 103,204, Aug. 9, 1993, abandoned. This application Jan. 23, 1995, Ser. No. 376,983
Int. Cl.[6] G09F *7/02*
U.S. Cl. 40—661 **12 Claims**



12. A door-mounted poster support apparatus comprising:

a U-shaped base member assembly which includes a middle base portion adapted to rest on an upper surface of a door which has a front and a back side depending perpendicularly downward from said upper surface, and which also includes a first flexible plastic hanging base member which is connected perpendicularly to a first side of said middle base portion and is sufficiently flexible so as to hang substantially vertically from said first side of said middle base portion for covering a substantial portion of either the front or back side of the door and a second flexible plastic hanging base member which is connected perpendicularly to a second side of said middle base portion and is sufficiently flexible so as to hang substantially vertically from said second side of said middle base

portion when said middle base portion rests on the upper surface of the door for covering a substantial portion of an opposite side of the door substantially covered by said first flexible plastic hanging base member,

a transparent U-shaped cover assembly which includes a middle cover portion adapted to rest on said middle base portion, and which also includes a first flexible plastic hanging cover member which is connected perpendicularly to a first side of said middle cover portion and which is sufficiently flexible so as to hang substantially vertically from said first side of said middle cover portion and which substantially covers said first flexible plastic hanging base member and a second flexible plastic hanging cover member which is connected perpendicularly to a second side of said middle cover portion and is sufficiently flexible so as to hang substantially vertically from said second side of said middle cover portion and which substantially covers said second flexible plastic hanging base member when said middle base portion rests on the upper surface of the door, and

a selectively closable and openable closure assembly located at respective bottom edges of said first flexible plastic hanging base member and said first flexible plastic hanging cover member for retaining a poster that is sandwiched between said first flexible plastic hanging base member and said first flexible plastic hanging cover member,

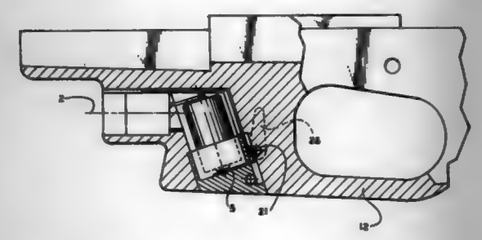
wherein said middle base portion and said middle cover portion are connected together by a quantity of adhesive material.

5,485,695

LASER AIMING DEVICE

Gaston Glock, Hausfeldstrasse 17, A-2232 Deutsch Wagram, Austria

Filed Sep. 20, 1994, Ser. No. 309,038
Claims priority, application Austria, Sep. 21, 1993, 1906/93
Int. Cl.[6] F41G *1/34*
U.S. Cl. 42—103 **5 Claims**



1. Laser sighting device for portable firearms, in which the sighting device includes a switch (**10**) that closes or opens a contact between two electrical conductors (**5**, **7**) and is arranged within a region of it trigger guard (**12**) comprising:

the switch (**10**) is arranged in a front region of the trigger guard (**12**) and comprises a rotatable bolt (**21**) having a rotation axis that is arranged substantially perpendicular to an axis of a laser beam (**2**) associated with the laser sighting device:

the bolt (**21**) has a cam-like surface (**22**) such that the bolt deforms one of the two electrical conductors (**5** or **7**) in a resilient fashion in at least one angular position of the bolt in such a way that said one conductor (**5** or **7**) comes in contact with the other electrical conductor (**7** or **5**), and

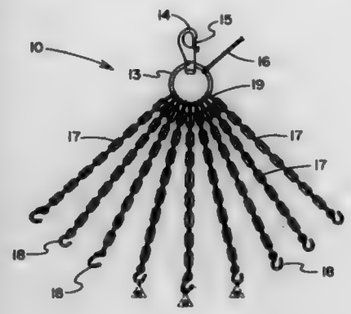
the electrical conductors (**5**, **7**) do not contact each other at least in one other angular position of the bolt.

5,485,696

FISHING LURE RETRIEVAL APPARATUS

Denny R. Barton, 1619 E. Longview La., Mustang, Okla. 73064

Filed Mar. 3, 1994, Ser. No. 205,176
Int. Cl.[6] A01K *97/00*
U.S. Cl. 43—17.2 **4 Claims**



1. A fishing lure retrieval apparatus comprising:

a rigid ring;

a snap hook slidably mounted onto the rigid ring, the snap hook including a hook entrance opening, with a slide bar slidably directed across the entrance opening to provide for an enclosed loop within the snap hook;

a flexible pull cable mounted to the rigid ring and extending from the rigid ring;

a plurality of lengths of chain cable slidably mounted along the rigid ring, with each chain cable having a first end secured to the rigid ring in a sliding relationship, and each chain cable having an outer distal end, each chain cable being secured to the rigid ring by an S-hook interposed between the first end of the respective chain cable and the rigid ring, the S-hook comprising a first member having a center portion and a lower end spaced from an upper end, the lower end of the first member being bent back in a first direction to abuttingly engage the center portion so as to define a lower loop projecting through a first chain link of the first end of the respective chain cable, and the upper end of the first member being bent back in a second direction opposite to the first direction to abuttingly engage the center portion so as to define an upper loop projecting through the ring, with the loops and the center portion of the first member all residing within a common plane, and further wherein the upper end of the first member projects downwardly beyond the lower end of the first member;

and,

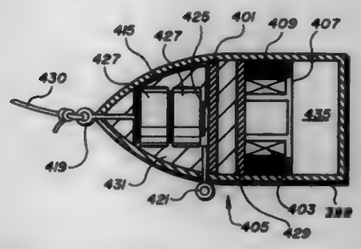
a plurality of hook members, with an individual one of said hook members being coupled to an individual one of said lengths of chain cable at said outer distal end thereof, each of the hook members comprising a second member having a center portion and lower end spaced from an upper end, the lower end of the second member being bent back in a first direction upon the center portion of the second member so as to define a lower loop, the lower end of the second member being spaced from the center portion thereof, and the upper end of the second member being bent back in a second direction opposite to the first direction to abuttingly engage the center portion so as to define an upper loop projecting through a last chain link of the outer distal end of the respective chain cable, with the loops and the center portion of the second member all residing within a common plane.

5,485,697

FISHING LURE

Teddie G. Watson, Henderson, Nev., and Jeffrey L. Orth, Salt Lake City, Utah, assignors to Soundtech, Inc., Paso Robles, Calif.

Continuation-in-part of Ser. No. 837,662, Feb. 14, 1992, Pat. No. 5,237,771, which is a continuation of Ser. No. 715,730, Jun. 17, 1991, abandoned, which is a continuation of Ser. No. 587,251, Sep. 24, 1990, abandoned, which is a continuation of Ser. No. 354,917, May 22, 1989, Pat. No. 4,960,437. This application Jul. 8, 1992, Ser. No. 910,635
Int. Cl.[6] A01K *85/00*
U.S. Cl. 43—42.31 **57 Claims**



1. A fishing lure comprising:

a body having means for connecting at least one hook thereto;

operation means removably secured in said body, said operation means including

a water-resistant container with an enclosing wall,

securing means for securing said water-resistant container in said body,

an oscillator circuit positioned within said water-resistant container to generate patterned electrical signals,

battery means positioned within said water-resistant container to supply electrical power to said oscillator circuit, and

luring means mechanically associated with said water-resistant container and connected to said oscillator circuit to receive said patterned electrical signals, said luring means being structured and arranged to generate fish-attracting action in response to said signals; and

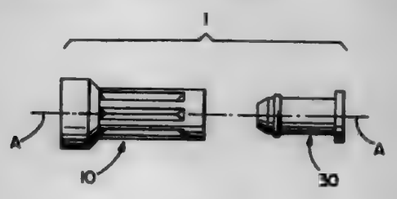
connecting means for connecting said body to structure operated by a remote operator.

5,485,698

TREE TREATMENT CAPSULE WITH RADIALLY EXPANDING SHANK PORTION

Hans A. K. Merving, August Stalbergsvag 10A, 644 00 Torshalla, Sweden

Continuation-in-part of Ser. No. 555,734, Jul. 23, 1990, Pat. No. 5,207,021, which is a continuation-in-part of Ser. No. 410,884, Sep. 22, 1989, Pat. No. 5,010,684, which is a continuation-in-part of Ser. No. 393,841, Aug. 7, 1989, Pat. No. 4,905,410, which is a continuation of Ser. No. 184,072, Apr. 20, 1988, abandoned. This application Jul. 30, 1990, Ser. No. 559,938
Int. Cl.[6] A01G *29/00*
U.S. Cl. 47—57.5 **10 Claims**



1. A tree treatment capsule for insertion into a bore in a tree comprising:

a plastic container having a shank with an internal cavity having an end opening containing therein a chemical agent and a head element integrally formed with said shank remote from said end opening, said shank including a circumferential recess formed therein;

a plastic plug for sealingly closing said internal cavity, said plastic plug having an outer external diameter slightly smaller than the diameter of said end opening;

said plug having a circumferentially extending ridge formed thereon and receivable in said circumferential recess such that said plug is only partially insertable into said end opening and so as to provide a tight fit between said plug and said end opening;

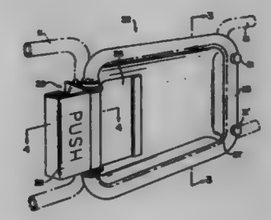
said shank having a plurality of recessed slots which are formed in the exterior surface thereof at circumferentially equal spacings, said slots extending longitudinally along a central portion of said shank between said end opening and said head element and allowing said shank to be broken so that as an impact force applied to said head element moves said head element towards said plastic plug, said plastic plug expands said central portion of said shank and breaks said shank along said recessed slots into a plurality of strips to form passages between said strips, thereby allowing said chemical agent to pass from said internal cavity through said passages.

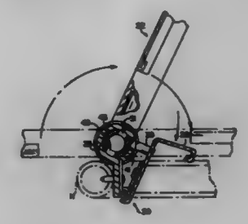
5,485,699

HOSPITAL BED GUARD

Thomas S. Gabhart, Hookerton, N.C., assignor to Product Strategies, Inc., Duluth, Ga.

Division of Ser. No. 46,224, Apr. 13, 1993, Pat. No. 5,381,571. This application Jul. 27, 1994, Ser. No. 280,949
Int. Cl.[6] E05B *65/06*
U.S. Cl. 49—394 **7 Claims**





1. On a rotating closure, movable between a first position and a second position, a lock comprising:

a frame having a side section defining at least one pin channel;

a locking mechanism rotatably communicating with said frame;

a handle for accessing said locking mechanism;

a springe hinge;

an extension of said handle carrying said spring hinge;

at least one locking pin attached to said handle extension;

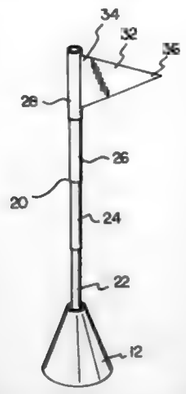
whereby pressure applied to said handle of said locking mechanism releases said at least one locking pin from said at least one pin channel, thereby allowing rotation between a first position and a second position.

5,485,700

TELESCOPIC FLAG AND CONE DEVICE

Brian M. Van Vranken, c/o A. Richards 2 Kirkner La., Watervliet, N.Y. 12189

Filed Sep. 28, 1994, Ser. No. 314,316
Int. Cl.[6] G09F *17/00*; E04H *12/32*
U.S. Cl. 52—40 **2 Claims**



1. A new and improved telescopic flag and cone device for providing clearly defined marker points for athletic drills comprising, in combination:
a cone portion having an open top, a closed bottom, an inner surface, and an outer surface, an X shaped support structure secured within the inner surface of the closed bottom, the X shaped structure functioning as a stabilizer for the device;
a pole portion having a first extent, a second extent, a third extent, and a fourth extent, the first extent received through the open top of the cone portion and secured to the X shaped support structure thereof, the second extent telescopically receiving the first extent nested therein, the third extent telescopically receiving the second extent nested therein, the fourth extent telescopically receiving the third extent nested therein, the fourth extent having a securement slot therein;
a flag portion having a first end and a second end, the first end having a rigid member theresecured, the rigid member received through the securement slot of the fourth extent of the pole portion for securement therewith, the second end optionally wrapping around the fourth extent permitting the fourth extent to be telescopically received within the cone for storage purposes.

5,485,701

TOY IGLOO

Thomas L. Hecht, 19 Deepwood Rd., Wilton, Conn. 06897

Filed Sep. 6, 1994, Ser. No. 300,759
Int. Cl.[6] E04B *1/32*; A63H *33/32*
U.S. Cl. 52—80.1 **4 Claims**



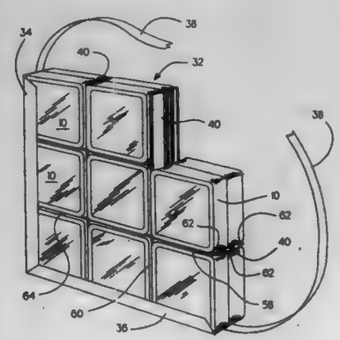
1. An igloo mold for making a child's snow igloo comprising:
a plurality of curved sections adapted to be secured together at the edges thereof to form the contour of an igloo of substantially hemispherical shape;
a first of said sections having an opening passing therethrough;
curved entry member means secured to said first section at the edge of the opening therethrough and extending outward from the first section to form an entry tunnel;
a second and third of each of said sections, each having an opening passing therethrough;
curved window member means secured to each of said second and third section at the edge of the respective openings therethrough and extending outward to form windows;
the outer surfaces of the plurality of sections having a grid of indentations in the form of the edges of snow blocks whereby snow may be packed on the said outer surfaces and held in place; and
the outer surfaces of the plurality of sections being rough to facilitate the sticking thereto of falling snow.

5,485,702

MORTARLESS GLASS BLOCK ASSEMBLY

Bernard C. Sholton, Coral Gables, Fla., assignor to Glenn Sholton, Coral Gables, Fla.

Filed Mar. 25, 1994, Ser. No. 217,925
Int. Cl.[6] E04C *1/42*
U.S. Cl. 52—308 **13 Claims**



6. A panel of glass blocks, comprising:
a plurality of generally rectangularly-shaped glass blocks having horizontal and vertical edges having lips therealong, each edge having a central seam running therealong, said glass blocks being arranged to form a glass block panel in which horizontally adjacent blocks have abutting vertical edges and vertically adjacent blocks have abutting horizontal edges;
a strap extending around the perimeter of said glass block panel;
a plurality of horizontally extending spacers interposed between said abutting horizontal edges and a plurality of vertically extending spacers interposed between said abutting vertical edges to provide a uniform spacing between said adjacent glass blocks, each of said spacers having:
first and second oppositely positioned channel portions defining a first end and a second end, said channel portions sharing a common wall,
first and second oppositely positioned curved
portions extending horizontally from said first end of
said channel portions and forming a U-shaped
configuration opening towards said channel portions which is configured to form a friction fit with adjacent glass blocks,
a first pad extending from a junction between said first and second oppositely positioned curved portions,
third and fourth oppositely positioned curved portions extending horizontally from said second end of said channel portions and forming a U-shaped configuration opening towards said channel portions which is configured to form a friction fit with adjacent glass blocks,
a second pad extending from a junction between said third and fourth oppositely positioned curved portions,
and wherein the width of said spacer is less than the width of said glass blocks such that the lips of the adjacent blocks

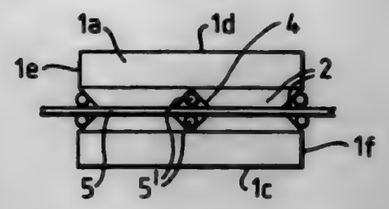
contact said first and second pads to form a groove between adjacent glass blocks; and
a sealant positioned in said groove.

5,485,703

CONSTRUCTION ASSEMBLY INCLUDING A RECTANGULAR BLOCK FOR DRY WALLING OR THE PERMANENT CONSTRUCTION OF A WALL OR PARTITION

Willy Nordahl, Opseth, Rute 975, N-2400 Elverum, Norway

Filed Jul. 20, 1994, Ser. No. 277,636
Int. Cl.[6] E04C *1/10*
U.S. Cl. 52—562 **3 Claims**



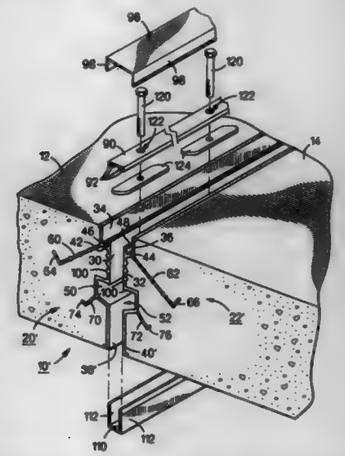
1. A construction assembly comprising in combination a rectangular block and at least one reinforcing rod, said block having on four sides thereof V-shaped slots extending lengthwise of each of said four sides, and a reinforcing rod disposed in at least one of said V-shaped slots, the reinforcing rod being so dimensioned relative to the V-shaped slot in which it is disposed, that the rod contacts the side walls of the V-shaped slot above the bottom of the slot, thereby to leave a space between the rod and the bottom of the slot.

5,485,704

JOINING MEANS AND METHOD FOR CAST PANELS

Frederick J. Sandor, Sr., 407 St. George Ct., Satellite Beach, Fla. 32937

Filed May 10, 1994, Ser. No. 240,258
Int. Cl.[6] E04B *2/00*
U.S. Cl. 52—584.1 **18 Claims**



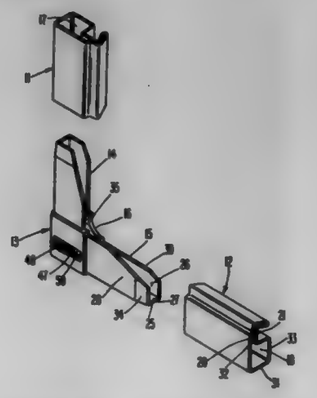
1. A system for joining first and second cast panels, comprising:
(a) first and second main structural members, cast into and extending along opposing, spaced apart edges of said first and second panels, respectively, and defining a cavity therebetween;
(b) a first locking member engagable with upper portions of each of said first and second main structural members to secure said first and second panels against movement toward or away from one another;
(c) a second locking member engagable with medial portions of each of said first and second main structural members; and
(d) a third locking member extending between said first and second locking members to draw said first and second locking members together and lock together said first and second panels.

5,485,705

CORNER ASSEMBLY FOR A SCREEN FRAME

Guy Guillemet, Terrebonne, Canada, assignor to Bay Mills Ltd., Ontario, Canada

Division of Ser. No. 122,887, Sep. 16, 1993. This application Mar. 23, 1995, Ser. No. 409,353
Int. Cl.[6] E06B *9/00*
U.S. Cl. 52—656.9 **7 Claims**



1. A corner assembly for a frame for a screen or the like, with the assembly comprising a corner connector having a corner junction and a pair of connector arms disposed at approximately 90° relative to each other; with said connector arms being spaced apart from each other by said corner junction, and with said corner junction including at least one exterior face, with the corner connector having a slideway therein disposed parallel to, and at least partially within one of its said arms; with a slide member carried in said slideway in sliding engagement with said slideway, between extended and retracted positions therein; with said slide member having a retaining protrusion extending therefrom, in a direction generally parallel to said slideway; said protrusion extending in protruding relation beyond said corner connector in the extended position of said slide member and being substantially entirely disposed in retracted relation within said corner connector in the retracted position of said slide member; and including a retaining button carried by said slide member and being adapted to be manually engaged by a user for moving said slide member between extended and retracted positions thereof, including an elongated opening in the exterior face of the corner junction, generally parallel with said slideway and connecting said slideway with the exterior of said corner junction, and with said retaining button extending from said slide member to the exterior of the corner junction through said opening, for traversal of said button along said opening as said slide member moves between retracted and extended positions.

5,485,706

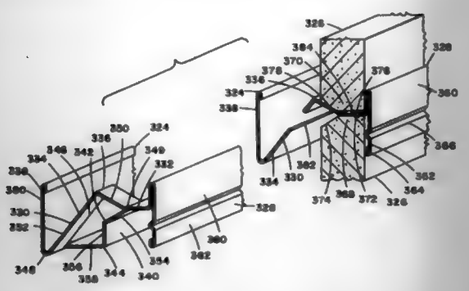
OFFSET FORMING OF STRUCTURAL COMPONENTS

Robert J. Menchetti, Buffalo, N.Y., assignor to National Gypsum Company, Charlotte, N.C.

Continuation of Ser. No. 20,969, Feb. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 858,797, Mar. 27, 1992, abandoned. This application Jul. 21, 1994, Ser. No. 278,559

Int. Cl.[6] F04C 3/36

U.S. Cl. 52—731.5 16 Claims



1. An elongate, structural, sheet metal member for use with flat boards having edges, comprising an elongate, narrow strip of sheet metal formed into an elongate structural member, said strip of sheet metal including at least three elongate sections, including a central web section between two side flange sections, said two flange sections being substantially parallel, and said web section extending between and connecting said flange sections, said central web section comprising a substantially flat portion attached to one of said flanges and extending substantially perpendicular to said flanges and a plurality of alternating deformed portions and undeformed portions angling in opposite directions between said flat portion and the other of said flanges, said deformed portions each being defined by a pair of substantially lateral slits and a pair of substantially longitudinal bends, said lateral slits having an extent generally perpendicular to the elongate extent of said structural member, said deformed portions including a major portion thereof disposed on an opposite side of an imaginary plane extending through said bends from said undeformed portions, whereby added stability is provided by said deformed portions, and board receiving spaces being formed between said one of said flanges and both sides of said flat portion.

5,485,707

METHOD AND APPARATUS FOR RELIEVING HYDROSTATIC PRESSURE FROM UNDER A SWIMMING POOL

Kenneth Wilkes, 724 Van Auken St., Elmhurst, Ill. 60126

Filed Jun. 15, 1994, Ser. No. 260,060

Int. Cl.[6] E04B 1/00

U.S. Cl. 52—741.3 1 Claim

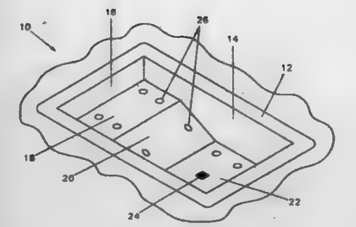
1. The method of relieving hydrostatic pressure under an in-ground swimming pool having a shallow end comprising the steps of

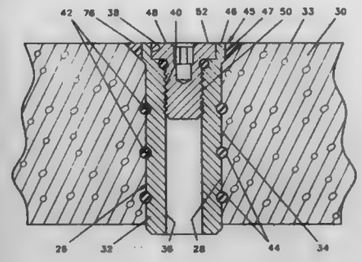
boring a plurality of holes in the shallow end of a swimming pool,

inserting into each of said borings a sleeve for receiving a removable plug,

inserting said removable plug into said sleeve such that it is flush with an inner surface of said pool, and

removing said removably plug when hydrostatic pressure is to be relieved.





5,485,708

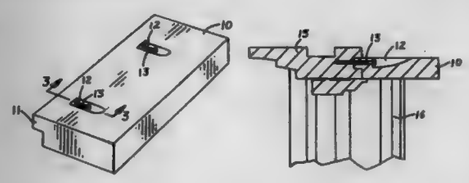
EXTENSION JAMB KIT

Flint S. Johnson, 645 5th Ave. South, South St. Paul, Minn. 55075

Filed Sep. 26, 1994, Ser. No. 312,398

Int. Cl.[6] E04B 1/00

U.S. Cl. 52—745.16 13 Claims



1. A ready-to-use extension jamb, said extension jamb having a one end with an opening therein for abutment and engagement to a building frame and an opposite free end with no opening therein, said extension jamb having a top surface with a recess therein, said extension jamb one end engageable with the building frame with the opposite free end cantilevreable from said building frame extension jamb having a further opening therein communicating with the recess, with; and

a fastener temporarily secured in a ready to apply position within the opening in the extension jamb by engagement between the fastener and the extension jamb said fastener located in the recess and below said top surface, so that one can handle the extension jamb without disturbing the fastener to enable the fastener to remain in a ready-to-use position in the recess so one can quickly drive the fastener through a portion of the extension jamb and into the building frame to secure the extension jamb to the building frame with the fastener engaging the one end and extending into the building frame to support the extension jamb in a cantilever fashion therefrom.

5,485,709

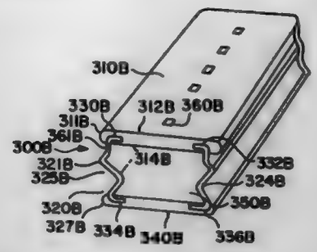
INSULATING SPACER FOR CREATING A THERMALLY INSULATING BRIDGE

Guy Guillemet, Terrebonne, Canada, assignor to Bay Mills Limited, Quebec, Canada

Continuation of Ser. No. 813,577, Dec. 26, 1991, Pat. No. 5,313,762. This application Jan. 31, 1994, Ser. No. 189,145

Int. Cl.[6] E04C 2/54

U.S. Cl. 52—786.13 26 Claims



1. An insulating spacer for creating a thermally insulating bridge between spaced apart panes of a multiple pane unit, the insulating spacer comprising:

a top bridge member for providing the sole contact of the spacer with spaced apart panes of the multiple pane unit, the top bridge member consisting essentially of one of a synthetic resin material and a composite synthetic resin material and having an upper surface and a lower surface substantially parallel to the upper surface;

a metallic first leg member and a metallic second leg member for supporting said bridge member, a portion of each leg member adhering onto lower surface of the top bridge member, and each leg member extending from that lower surface such that it is adapted to remain free from contact with the spaced apart panes;

a bottom bridge member which cooperates with each of the first and second leg members; and

a channel portion comprising a configuration in which the upper portion consists essentially of the top bridge member and the rest of the configuration comprises the first and second leg members and the bottom bridge member.

5,485,710

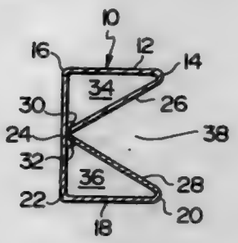
INSULATED GLASS SPACER WITH DIAGONAL SUPPORT

Luc Lafond, 23 Woodvalley Drive, Etobicoke, Ontario M9A 4H4, Canada

Filed Apr. 8, 1994, Ser. No. 224,416

Int. Cl.[6] E06B 7/12

U.S. Cl. 52—204.593 11 Claims



1. The spacer for spacing glass substrates in an insulated glass assembly, comprising:

a one-piece plastic C-shaped body including:

a base having first and second opposed sides;

an arm integrally connected at a first end to a respective side of said base, each arm having an opposed end, each said arm adapted for engaging a substrate, each said arm being in a spaced parallel relationship relative to one another from said first end to said opposed end, each arm at said opposed end including a partitioning member, said partitioning member including a free end and the partitioning members extending towards one another to converge at a point of contact on said base, said partitioning members and said arms forming a plurality of trigonal spaces within said C-shaped body.

5,485,711

BINDING MACHINE

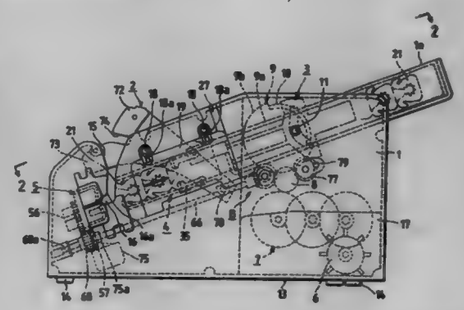
Seiichi Suzuki, and Keijiro Murayama, both of Tokyo, Japan, assignors to Max Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1994, Ser. No. 293,249

Claims priority, application Japan, Aug. 20, 1993, 5-049912 U; Aug. 20, 1993, 5-049913 U

Int. Cl.[6] B65B 61/14

U.S. Cl. 53—138.4 5 Claims



1. A binding machine for binding a puckered mouth of a bag, said binding machine comprising:

a body having a groove therein for placing the puckered mouth of a bag in contact with a binding piece;

a feeding passageway for a binding piece belt, which belt includes binding pieces each of which is a flat plate of elastic material having a first opening substantially at the center into which the puckered mouth of the bag is inserted, a second opening communicated with said-first opening and extended to an outer edge of the flat plate, and a pair of locking wings provided on both sides of said second opening, said binding piece being located at the top of the binding piece belt on the puckered mouth of a bag to bind the puckered mouth of the bag therewith, said binding-piece feeding passageway having a central axis;

a slider assembly reciprocated in said binding-piece-belt feeding passageway to feed said binding piece to a front end of said binding-piece-belt feeding passageway, said slider assembly including means for curving said binding piece;

a binding-piece engaging mechanism provided at the front end of said binding-piece-belt feeding passageway including a crosswise engaging arm which is rotatable, and a pair of jigs which are fixed;

means for holding said crosswise engaging arm in a predetermined angular position with respect to said jigs; and

means for rotating said crosswise engaging arm, wherein

said crosswise engaging arm is extended rearwardly from the front end of said binding-piece-belt feeding passageway when said crosswise engaging arm is held at said predetermined angular position, said pair of locking wings of said binding piece are inserted into said binding-piece engaging mechanism by said slider assembly in such a manner that said locking wings cross said crosswise engaging arm through said second opening,

said binding piece engages the puckered mouth of a bag through said first opening,

said jigs are set adjacent to and in front of said crosswise engaging arm and, when said crosswise engaging arm is at

said predetermined angular position, said jigs are located angularly ahead of said crosswise engaging arm in the direction of rotation of said crosswise engaging arm, and

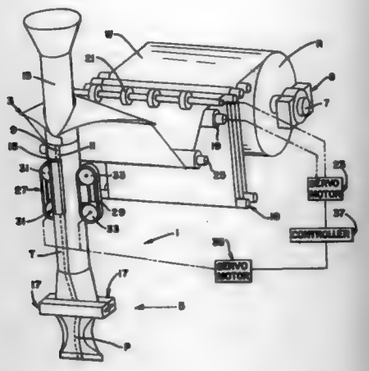
in binding the puckered mouth of the bag with said binding piece, said crosswise engaging arm is rotated by said rotating means around the central axis of said binding-piece-belt feeding passageway from said predetermined angular position so that one of said pair of locking wings of said binding piece, while being in contact with a corresponding one of said pair of jigs, is guided by said corresponding jig in such a manner that said one locking wing is crosswise engaged with said other locking wing which is fixedly supported by the other jig, whereby said binding piece is curved by said curving means in such a manner that after said locking wings are locked to one another said binding piece is substantially conical, the convex side thereof opening in the same direction as the opening of the bag with said first opening engaged with the puckered mouth of the bag at the top.

5,485,712

METHOD OF HANDLING FILM ON A VERTICAL FORM, FILL AND SEAL MACHINE

Dale M. Cherney, Howards Grove, and Keith Hopkins, Sheboygan, both of Wis., assignors to Hayssen Manufacturing Company, Sheboygan, Wis.

Filed Jan. 27, 1995, Ser. No. 379,849
Int. Cl.[6] B65B *9/20;1/22;1/24*
U.S. Cl. 53—436 **26 Claims**



1. A method of maintaining tension on a flexible film as it passes in any direction over a forming shoulder of a vertical form, fill and seal machine, the machine including a source of film, a measuring axis for conveying the film and measuring a predetermined amount of the film, a forming shoulder for forming the film into a tube, a pull axis for conveying the tube, and a finishing system for sealing and severing successive packages from the tube into finished packages of desired lengths, the method comprising the steps of

a. operating the measuring axis and the pull axis in a forward direction while pulling the film over the forming shoulder to form said tube and maintaining the tube in tension downstream of the forming shoulder to retain tension in the film as it passes over the forming shoulder in the forward direction,

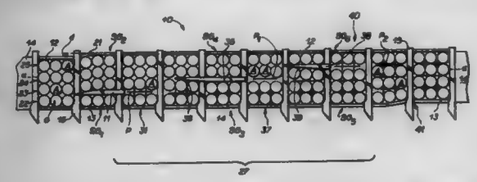
b. operating the measuring axis in a reverse direction while maintaining the tube in tension downstream of the forming shoulder to retain tension in the film as it passes over the forming shoulder in the reverse direction.

5,485,713

METHOD AND APPARATUS FOR INSERTING PARTITIONS INTO ARTICLE GROUPS

Frank Moncrief, Acworth, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Jul. 14, 1994, Ser. No. 274,929
Int. Cl.[6] B65B *35/44;61/00*
U.S. Cl. 53—445 **29 Claims**



1. A method for inserting partitions into a group of articles, comprising the steps of:

(a) combining articles with article selectors to form an article group of predetermined configuration, including rows of articles;

(b) conveying said article group and in a direction along a path of travel;

(c) creating with a first divider disposed above said article selectors a first article subgroup and a second article subgroup by separating at least one row of articles from said article group;

(d) inserting a first partition between said first article subgroup and said second article subgroup; and

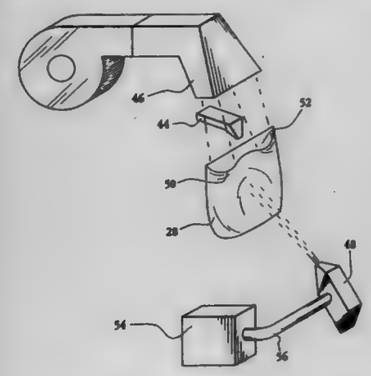
(e) recombining said first article subgroup with at least a portion of said second article subgroup.

5,485,714

DISK LOADER HAVING A SIDE AIR BLAST FOR PROPER BAG PRESENTATION

Samuel A. Montalvo, 18750 Barnhart Ave., Cupertino, Calif. 95014

Filed Feb. 27, 1995, Ser. No. 395,056
Int. Cl.[6] B65B *43/36;43/26;61/00*
U.S. Cl. 53—459 **18 Claims**



1. A method of loading disks in a flexible bag comprising the steps of:

directing a continuous flow of air into an opening of said flexible bag such that a pocket between opposed first and second sides of said flexible bag is at least partially exposed;

striking an exterior surface of said first side of said flexible bag with a blast of gas such that said first side is pressed toward said second side;

terminating said blast, thereby allowing said continuous flow of air to reshape said opening such that said pocket is exposed; and

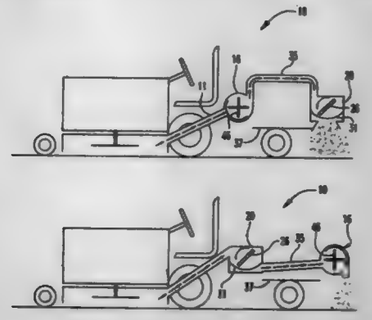
inserting disks into said pocket of said flexible bag.

5,485,715

GRASS AND LEAF ERADICATOR

Harlan Breeden, 4119 Leonard Springs Rd., Bloomington, Ind. 47403

Filed Nov. 14, 1994, Ser. No. 338,035
Int. Cl.[6] A01D *34/82*
U.S. Cl. 56—13.3 **19 Claims**



11. An apparatus for preparing mulch, comprising:

(a) a tractor with a mower-deck, wherein said mower-deck has at least one rotatably mounted cutting blade;

(b) a powered blower having an inlet and an outlet;

(c) an inlet duct adapted to guide grass and leaf clippings from said mower-deck and into the inlet of said blower;

(d) a powered hammer mill located downstream of said blower and having an entrance and an exit;

(e) an interconnecting duct fixedly mounted between said blower and said hammer mill.

18. A method for preparing mulch from grass, leaves, sticks, or similar debris, comprising the steps of:

(a) cutting the grass, leaves, sticks or similar debris with a lawn mower whereby clippings are formed;

(b) blowing said grass clippings from the discharge of said lawn mower into the entrance of a hammer mill utilizing a centrifugal fan;

(c) pulverizing said grass clippings into a mulch with said hammer mill; and

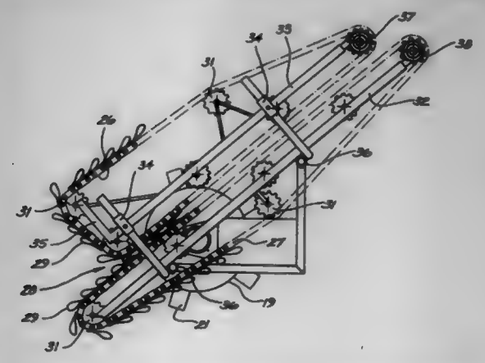
(d) discharging the mulch from said hammer mill.

5,485,716

DOUBLE ROW CANE HARVESTER

Malcolm J. Baker, Bundaberg, Australia, assignor to Antoft Industries, Limited, Queensland, Australia

Filed Sep. 6, 1994, Ser. No. 301,109
Claims priority, application Australia, Sep. 7, 1993, PM 1079
Int. Cl.[6] A01D *45/10*
U.S. Cl. 56—14.3 **17 Claims**



1. A harvester for cane stalks which are planted in substantially parallel rows, comprising:

a frame having a first and a second side;

a first basecutter assembly, mounted rearwardly of a crop gathering area and coupled to the frame between its first and second sides, for severing a first row of cane stalks;

crop feeding means mounted immediately behind the first basecutter assembly that lift and feed the severed stalks to a chopping area that chops the stalks into billets;

a second basecutter assembly, mounted forwardly and outwardly from the first side of the frame, arranged to sever cane stalks in a row substantially parallel to the first row of cane stalks; and

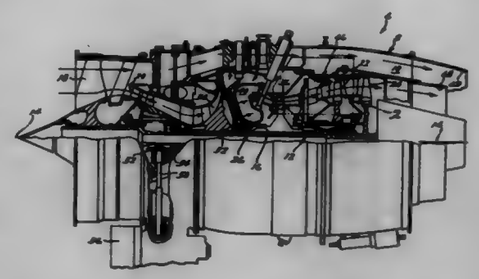
conveying means for transporting the cane stalks severed by the second basecutter assembly to a position proximate the first row of cane stalks such that the crop feeding means in addition to lifting and feeding the first row of cane stalks, lifts and feeds the severed cane stalks, transported from the substantially parallel row, to the chopping area.

5,485,717

MULTI-SPOOL BY-PASS TURBOFAN ENGINE

Gregg G. Williams, Milford, Mich., assignor to Williams International Corporation, Walled Lake, Mich.

Filed Jun. 29, 1994, Ser. No. 267,616
Int. Cl.[6] F02K *3/02*
U.S. Cl. 60—39.03 **2 Claims**



2. A method of minimizing thrust while maximizing RPM of the high pressure spool of a multi-spool by-pass turbofan engine comprising the steps of

inducing air flow through a fan at the forward end of a low pressure spool having a low pressure turbine at an aft end thereof;

dividing the air flow from the fan on said low pressure spool between a high pressure compressor on a high pressure spool and a by-pass duct;

conducting air from said high pressure compressor to a combustor disposed between the high pressure compressor and a high pressure turbine on said high pressure spool;

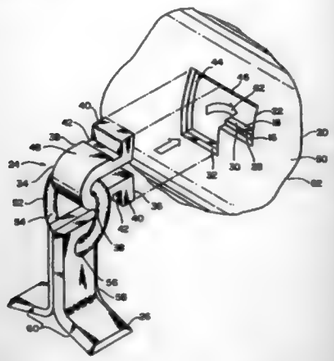
conducting the combustion gas to the said high pressure turbine on said high pressure spool;

conducting a portion of the combustion gas from the high pressure turbine to the low pressure turbine;

bleeding a portion of the combustion gas from immediately behind the high pressure turbine on said high pressure spool to said by-pass duct at engine idle conditions to increase the expansion ratio across the high pressure turbine to maximize the RPM thereof at idle conditions while concomitantly reducing the expansion ratio across the low pressure turbine to reduce the speed of said low pressure spool and of the fan thereon thereby reducing idle thrust produced by the fan and reducing air mass flow to the high pressure compressor on said high pressure spool; and

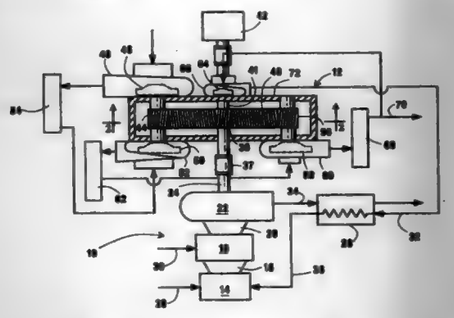
driving an alternator by said high pressure spool.

5,485,718
FLAIL CUTTER AND METHOD OF PROVIDING A FLAIL CUTTER FOR A BRUSH CUTTING MACHINE
Jimmie J. Dallman, 3709 99th Dr. S.E., Everett, Wash. 98205
Filed Nov. 17, 1994, Ser. No. 341,019
Int. Cl.[6] A01D *34/52*
U.S. Cl. 56—294 27 Claims



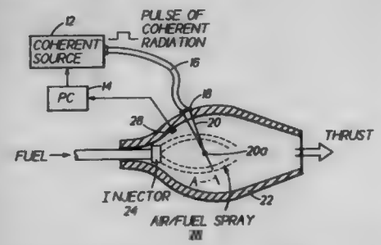
1. A flail cutter for a brush cutting machine, the flail cutter having blades and comprising:
a) a rotatable generally cylindrical member;
b) a plurality of one piece attaching means, each of the one piece attaching means directly attached to the generally cylindrical member; and
c) a plurality of holding means removably attached to the attaching means, each holding means holding at least one blade of the flail cutter.

5,485,719
INTEGRATION OF COMBUSTOR-TURBINE UNITS AND INTEGRAL-GEAR PRESSURE PROCESSORS
James B. Wulf, Williamsville, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.
Division of Ser. No. 30,742, Mar. 12, 1993, Pat. No. 5,402,631, which is a continuation-in-part of Ser. No. 698,125, May 10, 1991, abandoned. This application Sep. 20, 1994, Ser. No. 308,907
Int. Cl.[6] F02C *3/08*
U.S. Cl. 60—39.07 6 Claims



1. A system for supplying a compressed gas stream to an air separation plant, comprising:
(a) a combustor-turbine unit having an output shaft;
(b) a first integral-gear pressure processor having:
(1) a bull gear;
(2) at least one integral-gear pressure processing stage for compressing said gas stream, said stage drivingly coupled to said bull gear and having an inlet and an exit;
(c) a conduit from one of said at least one integral-gear pressure processing stages, being connectable to the air separation plant, for withdrawal of a portion of said gas stream;
(d) a conduit from one of said at least one integral-gear pressure processing stages to said combustor-turbine unit, for ducting a portion of said gas stream to said combustor-turbine unit; and
(e) means for driving said bull gear with said combustor-turbine unit output shaft, said means comprising a driving pinion coupled to said combustor-turbine unit output shaft and meshing with said bull gear; or a driving pinion coupled to said combustor-turbine unit output shaft and meshing with another pinion meshing with said bull gear.

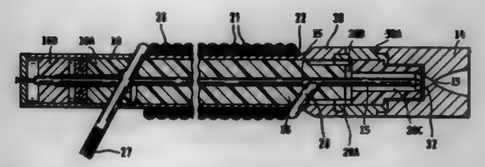
5,485,720
LASER INITIATED NON-LINEAR FUEL DROPLET IGNITION
Jimmy D. Few, and James W. L. Lewis, both of Tullahoma, Tenn., assignors to University of Tennessee Research Corporation, Knoxville, Tenn.
Continuation of Ser. No. 957,613, Oct. 6, 1992, Pat. No. 5,404,712. This application Aug. 11, 1994, Ser. No. 289,184
Int. Cl.[6] F02C *7/264*
U.S. Cl. 60—39.821 4 Claims



1. An ignition system for igniting, within a combustion chamber, an air/fuel spray comprised of fuel droplets, the ignition system comprising:
means for generating at least one pulse of coherent radiation;
means for directing the at least one pulse into the air/fuel spray for initiating a development of a plasma within the air/fuel spray;
said generating means including pulse control means comprising means for maintaining the pulse of coherent radiation for pumping the developing plasma and means for terminating the pulse of coherent radiation at a time after the plasma has become self-sustained and before a time that an ignition of the air/fuel spray occurs, the ignition using ignition precursors that are created from the self-sustained plasma after the termination of the pulse; and
feedback means including sensor means for detecting a presence of a flame within the combustion chamber, an output of said sensor means being coupled to said generating means for causing said generating means to repetitively generate pulses of coherent radiation at least until a presence of a flame is detected by said sensor means.

5,485,721
ARCJET FOR A SPACE FLYING BODY
Manfred Steenborg, Ritterhude, Germany, assignor to ERNO Raumfahrttechnik GmbH, Bremen, Germany
Filed Jun. 30, 1994, Ser. No. 268,807
Claims priority, application Germany, Jun. 30, 1993, 43 21 725.7
Int. Cl.[6] F03H *1/00*
U.S. Cl. 60—203.1 5 Claims

1. An arcjet propulsion plant for a space flying body, comprising a housing including an anode and an expansion nozzle forming a

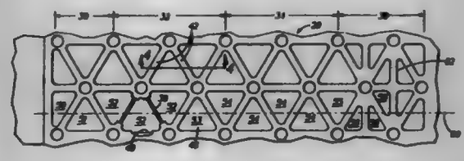


restrictor, a cathode concentrically mounted and electrically insulated in said housing for igniting an arc between a tip of said cathode and said anode when a propellant flow exists, a recess forming a plenum chamber (32, 52) in said anode housing upstream of said nozzle, said cathode tip reaching into said plenum chamber, an air gap spacing said cathode tip from said restrictor of said expansion nozzle, a propellant dissociation device (21, 41) mounted to directly surround said housing, and flow paths connecting said dissociation device in series with said plenum chamber for introducing dissociated propellant into said plenum chamber through said flow paths, and wherein said dissociation device is formed as a tubular member (21, 41) forming a decomposition chamber that is wound into a helix surrounding said housing, said flow paths having at least a radial portion (28B, 52B) leading from an end of said helix to said cathode (15).

5,485,722
CATALYTIC DECOMPOSITION OF HYDROXYLAMMONIUM NITRATE-BASED MONOPROPELLANTS
Eckart W. Schmidt, Bellevue, Wash., and David F. Gavin, Cheshire, Conn., assignors to Olin Corporation, Cheshire, Conn.
Filed Oct. 7, 1993, Ser. No. 132,980
Int. Cl.[6] C06D *5/00*
U.S. Cl. 60—219 18 Claims

9. A continuous process for the controlled generation of a gaseous propellant which comprises the steps of:
(a) passing a first measured amount of a hydroxylammonium nitrate-containing liquid into a reactor containing a solid catalyst selected from the group consisting of platinum group metals, transition group metals, and combinations thereof, to cause the hydroxylammonium nitrate to decompose into a high pressure gaseous product comprising water in the form of steam, carbon dioxide and nitrogen,
(b) controllably exhausting said high-pressure gaseous product from the reactor and maintaining the flow rate of hydroxylammonium nitrate-containing liquid into the reactor to cause the reactor chamber pressure to remain essentially constant, and
(c) repeating steps (a) and (b) in a continuous fashion.

5,485,723
VARIABLE THICKNESS ISOGRID CASE
Jeffrey P. McCoy, Ellington, and Allan R. Penda, Ansonia, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Apr. 29, 1994, Ser. No. 236,792
Int. Cl.[6] F02C *7/00*; F02K *3/04*
U.S. Cl. 60—226.1 3 Claims



1. A cylindrical isogrid fan containment case for a turbofan gas turbine engine comprising:
said case formed of an isogrid having a lattice of flanged ribs in isometric triangular relationship and having flanges on the outside edge of each rib;
a skin on the inside edge of said isogrid whereby triangular isogrid segments are formed between said ribs, thereby forming a plurality of axial rows of triangular segments;
a constant isogrid total thickness consisting of a skin thickness, a rib height plus a flange thickness; and
different triangular isogrid segments having different skin thicknesses and flange thicknesses, but the same rib height.

5,485,724
HYDRAULIC DRIVE SYSTEM
Yusaku Nozawa; Wataru Ohtsu; Nobuhiko Ichiki, all of Iharaki; Kazuyuki Ino, Shimodate; Hiroshi Matsuzaki, Tsukuba, and Kinya Takahashi, Tsuchiura, all of, Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan
PCT No. PCT/JP93/00677, § 371 Date Dec. 14, 1993, § 102(e) Date Dec. 14, 1993, PCT Pub. No. WO93/24757, PCT Pub. Date Dec. 9, 1993
PCT Filed May 21, 1993, Ser. No. 162,142
Claims priority, application Japan, May 22, 1992, 4-130938
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—421 5 Claims

1. A hydraulic drive system, comprising first and second variable displacement hydraulic pumps (P1, P2), a first hydraulic actuator (B) driven by hydraulic fluids delivered from said first and second hydraulic pumps (P1, P2), a second hydraulic actuator (C) driven by the hydraulic fluid delivered from said second hydraulic pump, first variable restrictor means (RB1) for controlling a flow rate of the hydraulic fluid supplied from said first hydraulic pump to said first hydraulic actuator, second variable restrictor means (RB2) for controlling a flow rate of the hydraulic fluid supplied from said second hydraulic pump to said first hydraulic actuator, third variable restrictor means (RC) for controlling a flow rate of the hydraulic fluid supplied from said second hydraulic pump to said second hydraulic actuator, a first pressure compensating device (VB1) for controlling a differential pressure across said first variable restrictor means, a second pressure compensating device (VB2) for controlling a differential pressure across said second variable restrictor means, a third pressure compensating device (VC) for controlling a differential pressure across said third variable restrictor means, first delivery rate control means (41*a*) for controlling a delivery rate of said first hydraulic pump, second delivery rate control means (41*b*) for controlling a delivery rate of said second hydraulic pump, and a coupling circuit (300) for joining the flow rate passing through said first variable restrictor means and the flow rate passing through said second variable restrictor means with each other and supplying the joined flow rate to said first hydraulic actuator, wherein said system further comprises:

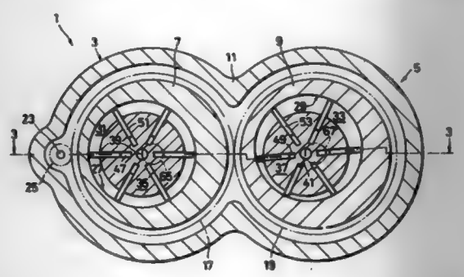
first sensor means (cb1) for detecting a pressure on an outlet side of said first pressure compensating device,
second sensor means (cb2) for detecting a pressure on an outlet side of said second pressure compensating device;
third sensor means (cc) for detecting a pressure on an outlet side of said third pressure compensating device;
first signal pressure supply means (SL1) for supplying the pressure detected by said first sensor means, as a first signal pressure, to said first delivery rate control means;
second signal pressure supply means (SL2) operated independently of said first signal pressure supply means for selecting a higher one of the pressure detected by said second sensor means and the pressure detected by said third sensor means, and supplying the selected higher pressure as a second signal pressure to said second delivery rate control means; and
opening/closing means disposed in said coupling circuit and switched over from a closed position to an open position in response to a shift from a sole operation of said first variable restrictor means (RB1) to a combined operation of said first and second variable restrictor means (RB1, RB2);
wherein an operating relationship between said first and second variable restrictor means (VB1, VB2) is set such that when a demanded flow rate of said first hydraulic actuator (B) is small, said first variable restrictor means is solely operated to supply only the hydraulic fluid from said first hydraulic pump (P1) to said first hydraulic actuator and when the demanded flow rate of said first hydraulic actuator is increased to exceed a predetermined value, said first and second variable restrictor means are both operated to supply both the hydraulic fluids from said first and second hydraulic pumps (P1, P2) to said first hydraulic actuator.

5,485,725

CONTINUOUSLY VARIABLE TRANSMISSION

Masao Teraoka, Tochigi, Japan, assignor to Tochigi Fugi Sangyo Kabushiki Kaisha, Japan

Filed Feb. 17, 1993, Ser. No. 18,946
Claims priority, application Japan, Feb. 18, 1992, 4-030844; Sep. 7, 1992, 4-238186
Int. Cl.[6] F16D *39/00*
U.S. Cl. 60—491 **6 Claims**



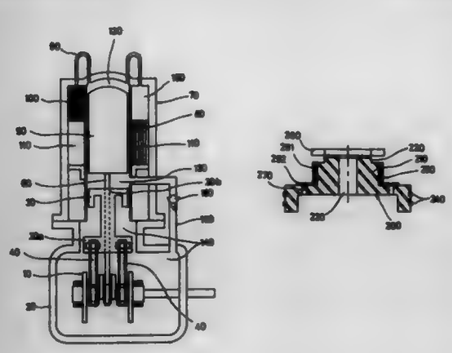
1. A continuously variable transmission for continuously changing the speed of a rotative driving force conveyed thereto comprising:
a casing;
a vane pump for receiving the rotative driving force and discharging a variable amount of fluid, said vane pump having a first housing movably supported inside the casing, a first rotor with a rotor shaft secured to said casing and rotatably accommodated inside said first housing, and a plurality of vanes held by said first rotor;
a vane motor driven by the pressure of the fluid discharged from said vane pump., outputting a rotative speed, and constructed so as to return the fluid discharged therefrom to said vane pump, said vane motor having a second housing movably supported inside the casing, a second rotor with a rotor shaft secured to said casing and rotatably accommodated inside said second housing, and a plurality of vanes held by said second rotor;
an eccentricity-controlling mechanism for mutually moving said first and second housings so as to gradually decrease the eccentricity of the internal circumference of said first housing with respect to said first rotor while increasing the eccentricity of the internal circumference of said second housing with respect to said second rotor, or vice versa, to regulate the rotative speed output from said vane motor, wherein
said first housing has an internal circumference with a rotatable first axis which is eccentric with respect to an axis of a periphery of said first housing,
said second housing has an internal circumference with a rotatable second axis which is eccentric with respect to an axis of a periphery of said second housing, and
said eccentricity-controlling mechanism comprises a rotation mechanism for rotating said first and second housings.

5,485,726

PRESSURE CONTROL APPARATUS FOR STIRLING MODULE

Dong K. Shin, Kyungki-do, and Sung T. Kim, Seoul, both of, Rep. of Korea, assignors to LG Electronics Inc., Rep. of Korea

Filed May 15, 1995, Ser. No. 441,453
Claims priority, application Rep. of Korea, May 17, 1994, 10845/1994; Aug. 29, 1994, 21424/1994
Int. Cl.[6] F01B *29/10*; F02G *1/04*
U.S. Cl. 60—519 **10 Claims**



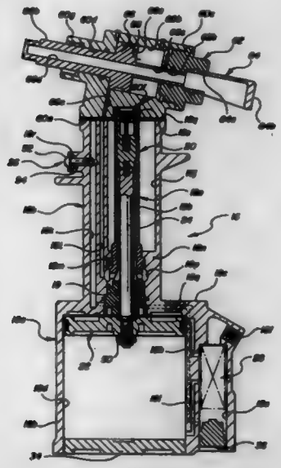
1. A pressure control apparatus for a stirling module wherein a compression space is formed between a displacer and a piston in a cylinder and a bounce space formed below said piston in said cylinder, comprising:
a piston including a plurality of pressure control hole groups vertically extended within said piston for connecting between said compression space and said bounce space, each of groups consists of at least one hole;
a pressure control member supporting section having a diameter smaller than that of the piston and upwardly extended from the top of the piston;
a support member engaging section having a diameter smaller than that of said pressure control member supporting section and upwardly extended from the top of the support member engaging section; and
a pressure control member including an engaging section threadly engaged to said pressure control member supporting section and an opening/closing section having a plurality of wings.

5,485,727

FASTENER INSTALLATION TOOL

Bruce T. Godfrey, Royal Oak, Mich., assignor to GBP Corporation, Warren, Mich.

Filed Nov. 14, 1994, Ser. No. 338,046
Int. Cl.[6] F15B *7/10*; B26B *13/00*
U.S. Cl. 60—572 **8 Claims**



1. A fastener installation tool including a housing assembly defining a head including a head bore, an air chamber, and a neck interconnecting the head and the air chamber and defining a neck bore; a head piston mounted in the head bore and adapted to be connected to a pulling head; a neck piston slidably mounted in the neck bore; an air piston mounted in the air chamber; a piston rod connecting the air piston to the neck piston; means for delivering pressurized air to the air chamber to selectively move the air piston in the air chamber and thereby move the neck piston in the neck chamber; first passage means interconnecting a location in the neck bore on one side of the neck piston and a location in the head bore on one side of the head piston; second passage means interconnecting a location in the neck bore on the other side of the neck piston and a location in the head bore on the other side of the head piston and coacting with the first passage means and the neck and head bores to define a closed loop hydraulic circuit; and hydraulic fluid filling the hydraulic circuit; characterized in that:
the neck piston is fixedly secured to one end of the piston rod; and
one of said neck and head pistons includes means operative to vary the volume of said one piston in response to variations in the hydraulic pressure acting against said one piston.

5,485,728

EFFICIENT UTILIZATION OF CHLORINE AND MOISTURE-CONTAINING FUELS

Norman L. Dickinson, Monte Sereno, Calif., assignor to EnerTech Environmental, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 763,000, Sep. 20, 1991, Pat. No. 5,261,225, which is a continuation of Ser. No. 388,069, Jul. 21, 1989, Pat. No. 5,050,375, which is a continuation-in-part of Ser. No. 123,280, Nov. 20, 1987, abandoned, which is a continuation-in-part of Ser. No. 813,486, Dec. 26, 1985, Pat. No. 4,714,032. This application Nov. 15, 1993, Ser. No. 152,796
Int. Cl.[6] F01K *17/00*
U.S. Cl. 60—648 **45 Claims**

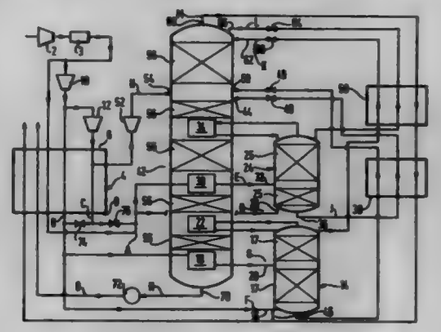
1. A continuously operable method of utilizing the energy of a relatively low-grade carbonaceous fuel having a fuel value comprising the steps of:
providing the fuel in a slurry;
pressurizing the slurry to keep it substantially in its liquid state;
heating the pressurized slurry to a temperature at which a substantial portion of oxygen chemically bound in molecules of the carbonaceous fuel splits off as carbon dioxide, thereby forming a char slurry including char particles derived from the fuel and an evolved gas;
reacting the char particles with a gas including oxygen to thereby convert the fuel value of the char particles of the slurry into thermal energy; and
using the thermal energy.

5,485,729

AIR SEPARATION

Paul Higginbotham, Guilford, England, assignor to The BOC Group plc, Windlesham Surrey, United Kingdom

Filed Dec. 13, 1994, Ser. No. 354,983
Claims priority, application United Kingdom, Dec. 15, 1993, 9325648
Int. Cl.[6] F25J *3/02*
U.S. Cl. 62—25 **21 Claims**



1. A method of separating air, comprising:
separating nitrogen from a first stream of compressed air in a higher pressure rectification column;
separating nitrogen from a second stream of compressed air in an intermediate pressure rectification column;
introducing oxygen-enriched liquid air into a lower pressure rectification column;
withdrawing from the lower pressure rectification column an impure oxygen product separated therein from the oxygen-enriched liquid air;
supplying liquid nitrogen reflux to each rectification column;
condensing a part of the first air stream upstream of the higher pressure rectification column by indirect heat exchange with a first liquid stream withdrawn from mass exchange in the lower pressure rectification column;
condensing nitrogen taken from mass exchange in the higher pressure rectification column by indirect heat exchange with a second stream of liquid withdrawn from mass exchange in the

lower rectification column and condensing a part of the second air stream upstream of the intermediate pressure rectification column by indirect heat exchange with a third stream of liquid withdrawn from mass exchange in the lower pressure rectification column;

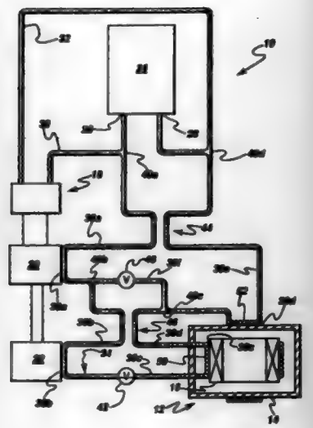
the first, second and third streams of liquid being all of a different composition from one another.

5,485,730

REMOTE COOLING SYSTEM FOR A SUPERCONDUCTING MAGNET

Kenneth G. Herd, Niskayuna, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 10, 1994, Ser. No. 288,178
Int. Cl.[6] F25B *19/00*
U.S. Cl. 62—51.1 **6 Claims**



1. A cooling system for a superconductive magnet having a thermal shield and having a superconductive coil disposed generally within and spaced apart from said thermal shield, said cooling system comprising:

a) a cryocooler coldhead disposed outside and spaced apart from said magnet and having a first stage and a second stage, wherein said second stage is colder than said first stage;

b) a compressor disposed outside and spaced apart from said magnet and having an outlet port and an inlet port; and

c) a helium-gas conduit circuit having:

(1) a first helium-gas path extending from said outlet port of said compressor to a first location which is in proximate thermal contact with said first stage of said cryocooler coldhead;

(2) a second helium-gas path extending from said first helium-gas path at said first location to a second location which is in proximate thermal contact with said second stage of said cryocooler coldhead;

(3) a third helium-gas path extending from said second helium-gas path at said second location to a third location which is in proximate thermal contact with said superconductive coil of said magnet;

(4) a fourth helium-gas path extending from said third helium-gas path at said third location to a fourth location which is in proximate thermal contact with said thermal shield of said magnet;

(5) a fifth helium-gas path extending from said fourth helium-gas path at said fourth location to said inlet port of said compressor, and

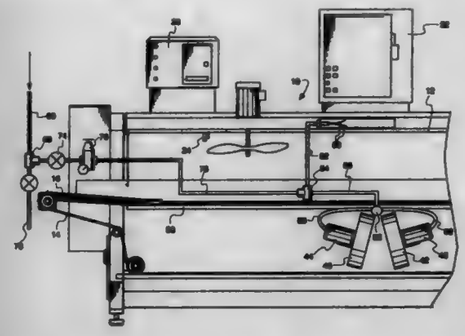
wherein said helium-gas paths are distinct from each other.

5,485,731

PROTECTION FOR MOTORS IN REFRIGERATED ENVIRONMENTS

Jim M. Venetucci, Forest Park, Ill., and Horst Spaeth, Rogers, Ark., assignors to Liquid Carbonic Corporation, Oak Brook, Ill.

Filed Jul. 6, 1994, Ser. No. 271,165
Int. Cl.[6] F25D *17/00*
U.S. Cl. 62—56 **21 Claims**



21. A method for cooling products, comprising the steps of:

providing a source of coolant gas;

providing an enclosure having an interior;

providing gas release means for releasing gas within the enclosure to cool the enclosure interior;

coupling the source of coolant gas to the gas release means;

circulating the environment within the enclosure with an electric fan having an electric motor located within the enclosure;

providing the electric motor with an enclosing casing defining an interior volume;

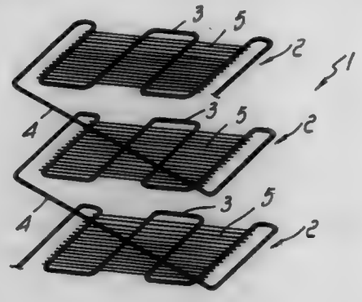
coupling the source of coolant gas to the electric motor and flowing coolant gas through the electric motor.

5,485,732

HEAT EXCHANGER, PARTICULARLY FOR USE AS A RACK EVAPORATOR IN REFRIGERATORS OR FREEZERS, AND PROCESS FOR MANUFACTURING IT

Vincenzo Locatelli, Lecco, Italy, assignor to Condenser Italiana S.R.L., Italy

Filed Jan. 14, 1994, Ser. No. 181,489
Claims priority, application Italy, Jan. 25, 1993, MI93A0111
Int. Cl.[6] F25B *39/00*
U.S. Cl. 62—520 **8 Claims**



1. A rack heat exchanger for use as a rack evaporator in refrigerators, freezers and the like comprising:

a plurality of stacked shelves defining superimposed planes;

a plurality of serpentine coils, with a serpentine coil for each of said shelves, each of said serpentine coils being constituted by at least one tubular body, said tubular body extending along a serpentine path in which bends alternate with straight branch portions, said serpentine path extending in a same one of said planes;

a plurality of supporting and heat-exchange enhancing structures, with a supporting structure for each of said shelves, each of said structures being connected to a respective one of said serpentine coils for allowing that at least an end branch portion of said serpentine coils freely and elastically twists about a longitudinal axis of said tubular body constituting said branch portion;

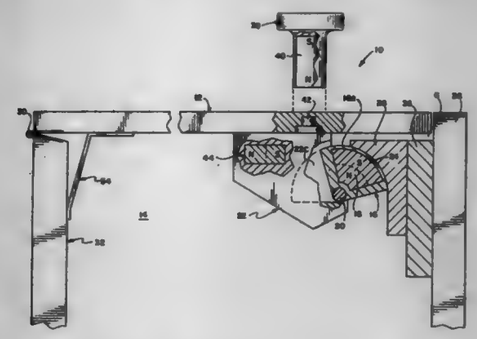
a plurality of tubular portions being in fluid communication with said serpentine coils, each of said tubular portions connecting the serpentine coil end branch portion of a shelf with an end branch of a contiguous underlying serpentine coil, the tubular portion extending in a generally diagonal direction from a first corner of a shelf to a second corner of a further underlying shelf, said second corner being opposite to a corner of said further shelf which is immediately underlying said first corner.

5,485,733

CONCEALED MAGNETIC LOCK FOR CABINET CLOSURE

Charles G. Hoffman, 204 Sentry Dr. North, Mansfield, Tex. 76063

Filed May 13, 1993, Ser. No. 60,645
Int. Cl.[6] E05B *47/00*; E05C *17/56*
U.S. Cl. 70—276 **19 Claims**



1. A magnetic lock comprising:

a pivotal latch attached pivotally at a latch axis to a latch housing that: is attachable to a closure member in closure relationship to a compartment;

a latch plate attachable to a latch panel;

a latch magnet having a first magnetic pole proximate the latch axis and a second magnetic pole positioned outward radially from the first magnetic pole on the pivotal latch;

a reset magnet positioned on the latch housing in like-pole-to-like-pole magnetic-repulsion relationship to the second magnetic pole of the latch magnet, such that magnetic repulsion between the reset magnet and the latch magnet actuates the pivotal latch pivotally in latch-engageable contact with the latch plate;

a magnetic handle having a magnetic-actuation end with a key magnet having a magnetic pole in opposite-pole-to-opposite-pole magnetic-attraction relationship to the second magnetic pole of the latch magnet positional intermediate the latch magnet and the reset magnet on an opposite side of the closure member;

the key magnet having magnetic force to overpower magnetic force of the reset magnet and transmit magnetic force through the closure member to actuate the pivotal latch to a pivotal position of disengageable relationship with the latch plate;

a closure hinge wall to which the closure member is attached pivotally;

a closure latch wall positioned at an opposite side of the closure member from the enclosure hinge wall;

a space block attached intermediately to the enclosure latch wall and the latch plate, said spacer block having a spacer surface; and,

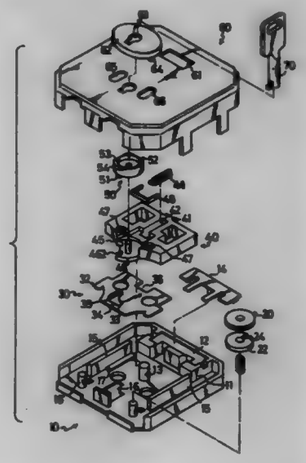
wherein the position inwardly in the compartment at which the spacer surface on the spacer block relative to the closure member in the locked position provides a disengagement air gap between an inside surface of the closure and the spacer surface on the spacer block, such that inward pivoting movement of the door permits the pivotal latch to disengage from locking relationship between the pivotal hatch and the latch plate.

5,485,734

COMBINATION LOCK

Kuo-Tsung Yang, No. 1, Alley 8, Lane 137, Fu Teh St., Taipei, Taiwan, Prov. of China

Filed Dec. 8, 1993, Ser. No. 164,003
Int. Cl.[6] E05B *37/00;65/48*
U.S. Cl. 70—285 **6 Claims**



1. A combination lock comprising:

a base equipped with at least one numerical wheel;

a cover engageable with the base;

a driving element operably mounted on the cover;

a sliding block slidably received within the base and cover and actuated by the driving element;

a control means being operably received on the sliding block and operable by a key to rotate a downwardly extending engaging element thereof to switch the combination lock between a key-openable mode and an a numerical-wheel-openable mode; and

a sliding plate slidably received between the base and the sliding block, the sliding plate having:

at least one ear to cooperate with the at least one numerical wheel and thereby selectively enabling a sliding movement of the sliding plate, and

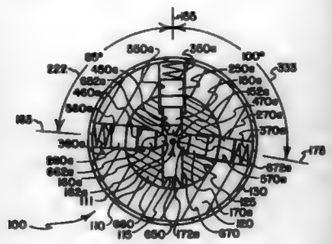
a guide portion adapted to cooperate with the engaging element and arranged such that the sliding block is confined to move with the sliding plate when the engaging element is in a first end of the guide portion and the sliding block is freely slidable relative to the sliding plate when the engaging element is in a second end of the guide portion.

5,485,735

KEY OPERATED ROTARY PLUG AND CYLINDER LOCK

Timothy P. Laahs, Des Plaines; Michael O. Misner, Lake Villa; Richard H. Schulz, Palatine, and Elbert M. Spencer, Wildwood, all of Ill., assignors to The Eastern Company, Wheeling, Ill.

Filed Dec. 6, 1993, Ser. No. 163,149
Int. Cl.[6] E05B 27/06
U.S. Cl. 70—358 49 Claims



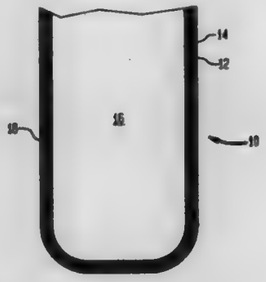
1. A key operated plug and cylinder lock comprising:
a) a cylinder having a plug-receiving hole formed therein;
b) a generally cylindrical plug configured to be journaled for smooth rotation within the plug-receiving hole of the cylinder, and defining a keyway of substantially rectangular cross-section that extends along a center axis of the plug;
c) pin-receiving holes formed in the cylinder and in the plug, and arranged in first, second and third rows that extend in first, second and third planes, with all of the pin-receiving holes of the first row extending in the first plane, with all of the pin-receiving holes of the second row extending in the second plane, with all of the pin-receiving holes of the third row extending in the third plane, and with all of the pin-receiving holes extending perpendicular to and intersecting the center axis of the plug;
d) tumbler pins carried within the pin-receiving holes, with the tumbler pins having inner end regions that are extensible into the keyway, and outer end regions that can be positioned to bridge junctures of the plug and the cylinder to prevent relative rotation of the plug and the cylinder, and that can be positioned to align with junctures of the plug and the cylinder to permit relative rotation of the plug and cylinder;
e) an elongate key of generally rectangular cross-section configured to be smoothly insertable into the keyway to bring recesses that are formed in two relatively flat, opposed side surfaces of the key, and in one narrow edge surface of the key into alignment with the pin-receiving holes so that the inner end regions of tumbler pins may be received within the recesses to position the tumbler pins to align with junctures of the plug and the cylinder to permit relative rotation of the plug and cylinder, with the recesses that are formed in at least one of the side surfaces of the key all being of generally oblong shape;
f) with the first plane extending from the center axis coaxially through the first row of pin-receiving holes, and paralleling the opposed, relatively flat side surfaces of the key when the key is inserted into the keyway, whereby the first row of tumbler pins is positioned to engage recesses that are formed in the narrow edge surface of the key; and,
g) with the second and third planes extending in a non-aligned, non-coplanar manner from the center axis coaxially through the second and third rows of pin-receiving holes, respectively, with the second and third planes being inclined relative to the first plane at unequal first and second angles of inclination, respectively, with the first angle being chosen from a first set of angles that reside within a range of about 75 to about 105 degrees, with the second angle being chosen from a second set of angles that reside with a range of about 75 to about 105 degrees, with the angles that comprise the first set differing from each other by no less than about 5 degrees, with the angles that comprise the second set differing from each other by no less than about 5 degrees, and with at least one of the chosen first and second angles of inclination not being equal to either of 90 and 105 degrees.

5,485,736

SEAMLESS CYLINDER SHELL CONSTRUCTION

John P. Collier, Franklin Lakes, N.J.; Richard Hogle, Oceanside, Calif.; James G. Marsh, Amhurstburg, Canada, and Prakash Thomas, Poway, Calif., assignors to The BOC Group, Inc., New Providence, N.J.

Continuation-in-part of Ser. No. 958,993, Oct. 9, 1992, Pat. No. 5,330,091. This application Mar. 22, 1994, Ser. No. 215,536
Int. Cl.[6] B21B 45/00; B21C 23/24
U.S. Cl. 72—47 5 Claims



1. A method of forming a seamless cylinder shell suitable for finishing into a gas cylinder comprising:
forming a composite sheet by electroplating a layer of nickel to a steel sheet so that said layer of nickel is uniformly bonded to said steel sheet and said composite sheet has two opposed, planar, major surfaces formed from, respectively, said layer of nickel and said steel sheet;
physically and chemically cleaning the two opposed surfaces of the composite sheet so that oil, soil, scale, oxide, and smut is removed from the composite;
pretreating the two opposed surfaces of the composite sheet to retain a lubricant and then, coating the two opposed surfaces of the composite with the lubricant;
heat treating said composite so that plating stresses are relieved; and
cold drawing the composite sheet into the seamless cylinder shell.

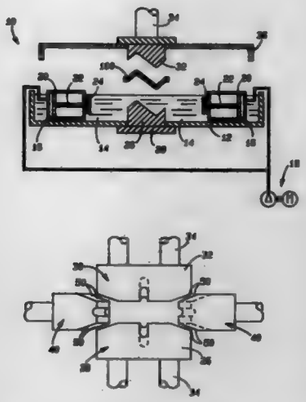
5,485,737

APPARATUS FOR HYDROFORMING A VEHICLE MANIFOLD

Devere C. Dickerson, Hamburg, Mich., assignor to Mascotech Tubular Products, Inc., Hamburg, Mich.

Division of Ser. No. 207,570, Mar. 7, 1994. This application Mar. 22, 1995, Ser. No. 408,742
Int. Cl.[6] B21D 9/15;15/03;26/02
U.S. Cl. 72—57 5 Claims

1. An apparatus for manufacturing a tubular member of a vehicle manifold using hydroforming pressure to prevent deformation of said tubular member, said tubular member having a compound curvature for use in the manifold, the apparatus comprising:
a fluid bath formed by a pan having a predetermined volume of fluid therein;
a pair of hydraulically actuated cylinders disposed within said pan for sealingly retaining ends of a tubular blank, said cylinders including selectively extendable piston rods having seal plugs on the exterior ends of said piston rods for sealingly engaging the ends of said tubular blank;
means for increasing the internal fluid pressure within said tubular blank to a predetermined level;



a first die set disposed between said cylinders for stamping a curvature in said tubular blank along a first plane; and
a second die set disposed between said cylinders for stamping a curvature in said tubular blank along a second plane.

5,485,738

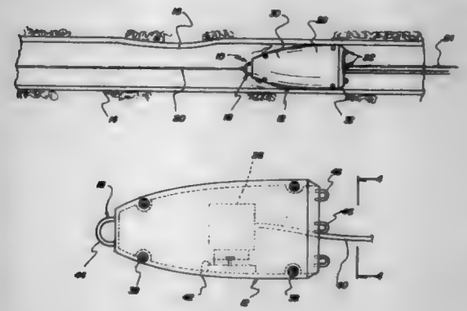
Patent Not Issued For This Number

5,485,739

VIBRATING PIPE STRAIGHTENER

James G. Grimmett, 3027 16th Pl., Forest Grove, Oreg. 97116

Filed Feb. 24, 1995, Ser. No. 393,663
Int. Cl.[6] B21D 1/08
U.S. Cl. 72—466 9 Claims



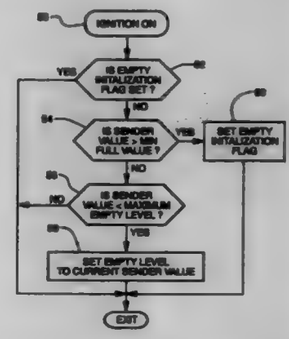
1. A vibrating pipe straightener comprising:
a tapered body positionable within a pipe having a dent, the tapered body being shaped so as to define a maximum outside diameter substantially equal to an inside diameter of the pipe;
a leading line mounting means secured to a front end of the tapered body for coupling to a leading line to facilitate pulling of the tapered body through an interior of the pipe;
a vibrator means mounted within the tapered body which cooperates with the tapered body for effecting vibrating impacting of the tapered body against the dent in the pipe to effect removal of the dent therefrom;
a trailing line mounting means for mounting to a trailing line which can be tensioned to pull the straightener from
wherein the tapered body comprises a cylindrical section; a tapered leading section extending forwardly of the cylindrical section and reducing in diameter so as to define a tapered leading edge which initially contacts a dent to be removed from a pipe; and a trailing section projecting from the cylindrical section of the tapered body in a direction opposite that of the tapered leading section.

5,485,740

METHOD OF CALIBRATION FOR GAUGING FUEL IN AN AUTOMOTIVE TANK

Raymond Lippmann, Ann Arbor; Michael J. Schnars, Clarkston; James E. Nelson, North Branch; Ivan R. Brouwer, Swartz Creek, and Mahlon R. Pachciarz, Grand Blanc, all of Mich., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Dec. 2, 1994, Ser. No. 348,393
Int. Cl.[6] G01F 23/30
U.S. Cl. 73—1 J 6 Claims



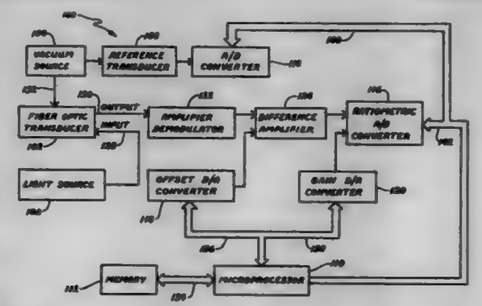
1. In an automotive fuel level measurement system for a fuel tank having a fuel sender referenced to the bottom of the tank for sensing fuel level, a method of calibrating the fuel sender for an Empty value comprising the steps of:
initially storing a maximum empty value;
sampling the fuel level signal prior to fueling the tank when vehicle ignition is turned on;
comparing the fuel level signal to the maximum empty value; and
if the fuel level signal is less than the maximum empty value, storing the sampled fuel level signal as the Empty value.

5,485,741

VACUUM CALIBRATION METHOD FOR AN OPTICAL FIBER PRESSURE TRANSDUCER

Denis S. Madison, Ramsey, Minn., assignor to MedAmicus, Inc., Minneapolis, Minn.

Filed Oct. 19, 1993, Ser. No. 139,204
Int. Cl.[6] G01L 27/00
U.S. Cl. 73—4 R 12 Claims



1. A method for normalizing and calibrating a pressure measurement system of the type having an optical pathway for conducting

light to and from a pressure sensor comprising a pressure sensitive member that modulates the intensity of light returning from the pressure sensor in response to the sensed pressure, wherein the pressure sensor is connected in a calibration circuit including an offset and a gain, said method comprising:

initially normalizing the pressure measurement system transducer prior to calibration thereof by carrying out the steps of:

a. measuring the maximum light intensity returned from the pressure sensor;

b. measuring the minimum light intensity returned from the pressure sensor;

c. subtracting the minimum light intensity from the maximum light intensity to arrive at an intensity difference figure; and

d. adjusting the gain such that the intensity difference figure equals a predetermined constant and thereafter

calibrating the said pressure measurement system by the steps of:

a. transmitting light of known intensity along the optical pathway;

b. applying a preasure differential across the pressure sensitive member;

c. varying the pressure differential;

d. measuring the value of the pressure differential and the returning light intensity a preselected number of times;

e. storing the measured values of pressure and corresponding light intensity signals; and

f. applying a curve fitting formula over a discrete, predetermined range of light intensity signals to the stored values to arrive at a plurality of linear equations of the form y=mx+b, where

y=the pressure to be determined,

m=the slope of the line,

x=the modulated light signal, and

b=a constant,

each said equation applying to one of the said predetermined light intensity signals.

5,485,742

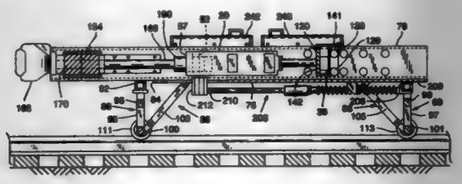
TEST SILL FOR RAILCAR CUSHION UNITS

Glen L. Litten, Springfield, Oreg., assignor to Emerald Hydraulics, Inc., Springfield, Oreg.

Filed Aug. 24, 1994, Ser. No. 296,316

Int. Cl.[6] G01M *17/00*

U.S. Cl. 73—11.06 **19 Claims**



1. An apparatus for supporting a railcar cushion unit during testing, said cushion unit having first and second ends and being movable between an expanded position and a compressed position, the apparatus comprising:

an elongated, horizontal sill member;

a coupler slider slidingly mounted to said sill member;

a coupler mounted on said coupler slider for coupling to a railcar cushion unit tester;

a stop block attached to the sill member for receiving a first end of said railcar cushion unit;

means for attaching a second end of said railcar cushion unit to said coupler slider; and

means for selectively attaching said stop block at any one of a plurality of stationary positions along said sill member.

5,485,743

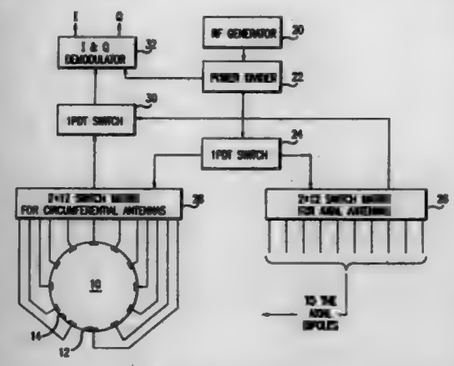
MICROWAVE DEVICE AND METHOD FOR MEASURING MULTIPHASE FLOWS

M. Reza Taherian, Ridgefield, and Tarek M. Habashy, Danbury, both of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Sep. 23, 1994, Ser. No. 311,080

Int. Cl.[6] G01N *22/00*

U.S. Cl. 73—61.44 **19 Claims**



1. A method for measuring multiphase flows in a conduit comprising using series of microwave antennae arranged around the conduit, each antenna being capable of transmitting microwave energy into the conduit and detecting propagated microwave energy in the conduit, transmitting microwave energy from each antenna in turn while detecting said microwave energy at the antennae which are not transmitting after propagation in the conduit so as to generate output signals; and integrating the output signals from all antennae so as to measure the flow in the conduit.

5,485,744

SULFURIC ACID CONCENTRATION SENSOR FOR LEAD STORAGE BATTERY

Tadamasa Akutagawa, 19-8, Kamiikedai 1-chome, Ota-ku, Tokyo 145, and Shigeru Sano, Takatsuki, both of, Japan, assignors to Tadamasa Akutagawa, Tokyo, and Yuasa Corporation, Osaka, both of, Japan

PCT No. PCT/JP92/01178, § 371 Date Mar. 15, 1994, § 102(e) Date Mar. 15, 1994, PCT Pub. No. WO93/06452, PCT Pub. Date Apr. 1, 1993

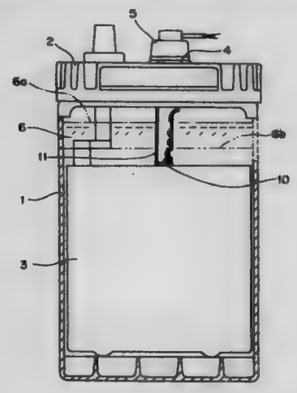
PCT Filed Sep. 16, 1992, Ser. No. 204,418

Claims priority, application Japan, Sep. 18, 1991, 3-237794

Int. Cl.[6] G01N *9/00*

U.S. Cl. 73—61.49 **10 Claims**

1. In a sensor for detecting a sulfuric acid concentration of



electrolyte for a lead storage battery, a sulfuric acid concentration sensor for the lead storage battery comprising:

a quartz resonator changing its characteristic frequency in an approximately linear relationship according to a change of sulfuric acid concentration, and an oscillation circuit coupled to and oscillating the quartz resonator, the quartz resonator being immersed in an electrolyte such that a characteristic frequency of the quartz resonator during oscillation is obtained so as to determine the sulfuric acid concentration;

wherein the quartz resonator further comprises:

electrodes installed on both surfaces of the quartz resonator plate respectively, each electrode being electrically coupled to the oscillation circuit, the quartz resonator plate being so installed that only one side surface of the plate contacts an electrolyte, and an electrode at the side contacting with the electrolyte being grounded through a condenser in respect of alternating current.

5,485,745

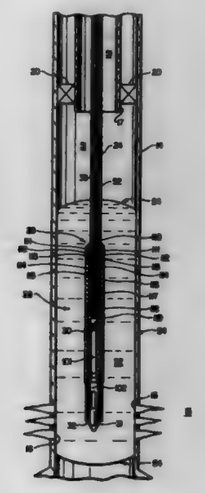
MODULAR DOWNHOLE INSPECTION SYSTEM FOR COILED TUBING

Robert A. Rademaker, The Colony; John J. Goiffon, Dallas; Michael L. Connell, Houston, and Walter K. Olszewski, Garland, all of Tex., assignors to Halliburton Company, Dallas, Tex.

Continuation-in-part of Ser. No. 703,287, May 20, 1991, abandoned. This application Sep. 1, 1992, Ser. No. 938,622

Int. Cl.[6] E21B *47/00*

U.S. Cl. 73—151 **27 Claims**



1. A method of using a downhole inspection tool to inspect the interior of a borehole comprising:

providing a cable head subassembly module attached to the lower end of a length of coiled tubing having an electrical/fiberoptic cable threaded therethrough, said module including means for terminating the electrical and optical conductors within said cable and for mechanical and electrical connection to an inspection module capable of producing an electrical signal indicative of downhole conditions;

connecting an injector feed through boot protector to said the mechanical terminating means of said cable head subassembly module, said protector receiving therein said electrical terminating means of said subassembly module;

inserting said boot protector, cable head subassembly module and coiled tubing attached thereto through a coiled tubing injector;

removing said boot protector from said cable head subassembly module;

attaching an inspection module to said cable head subassembly module to produce a downhole inspection tool; and

running said tool downhole to inspect downhole conditions.

5,485,746

HOT-WIRE TYPE AIRFLOW METER HAVING A FLOW SMOOTHING CARE

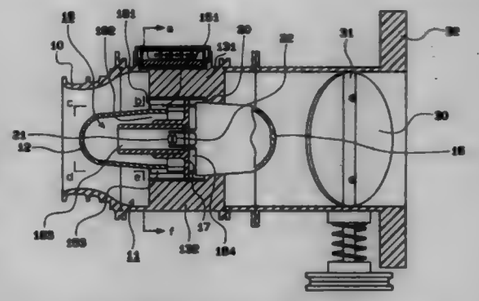
Yukio Mori, Nagoya; Noriyasu Kihara, Chiryu, and Takamitu Suzuki, Anjo, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 8, 1994, Ser. No. 286,249

Claims priority, application Japan, Aug. 10, 1993, 5-198355; Jan. 27, 1993, 5-268769

Int. Cl.[6] G01F *1/68*

U.S. Cl. 73—202 **15 Claims**



1. A hot wire type airflow meter comprising:

a housing defining a main passage through which air passes;

a central member supported in said main passage of said housing, including a flow smoothing core having a shape which has a closed proximal end at an upstream side and spreads out in a downstream direction for introducing air smoothly, and having an inlet portion for taking in a part of air flowing through said main passage and being disposed downstream of said flow smoothing core, a bypass passage communicating with said inlet portion, and an outlet portion for returning air passing through said bypass passage to said main passage; and

sensing means disposed in said bypass passage for measuring an airflow rate in said bypass passage;

wherein said bypass passage comprises an upstream side meander portion which has a meandering passage at an upstream side of said sensing means, a straight tube portion formed as a straight tube and accommodating said sensing means, and a downstream side passage communicating said straight tube portion with said outlet portion.

5,485,747

METHOD OF MEASUREMENT OF RELATIVE HUMIDITY, IN PARTICULAR IN RADIOSONDES, AND HUMIDITY DETECTORS THAT MAKE USE OF THE METHOD

Veijo Antikainen; Ari Paukkunen; Lars Stormbom, all of Vantaa; Hannu Jauhiainen, Espoo, and Jorma Poukala, Ylönkylä, all of, Finland, assignors to Vaisala Oy, Vantaa, Finland

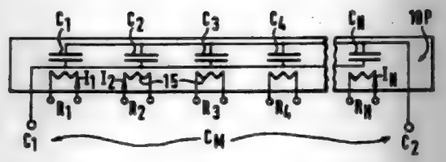
Filed Aug. 23, 1994, Ser. No. 294,327

Claims priority, application Finland, Aug. 23, 1993, 933702

Int. Cl.[6] G01N *25/56*; G01W *1/00*

U.S. Cl. 73—335.03 **8 Claims**

1. Method for measurement of relative humidity by using a combination of detectors (10_1, 10_2, 10P) in each of which detectors, between the capacitor plates, an insulating material (12) is used, whose permittivity is a function of the amount of water vapor absorbed by said insulating material (12), and in which method



said combination of detectors is heated in order to remove any ice, frost, or condensed humidity deposited on the face or in the environment of the detector, each detector characterized by a number of component capacities (C_1 C_2 . . . C_N) which are connected so as to form a detector capacitance (C_M) to be measured and comprising the steps of:

periodically heating the detector capacitance (C_M) or a part (C_1 . . . C_N) of same, in time or in place, by means of electric current (I);

detecting the detector capacitance (C_M) without measurement of the detector temperature after the detector capacitance or a part (C_1 . . . C_N) of same as cooled down substantially to the temperature of the environment;

employing at least two separate detectors (10_1, 10_2) or a coupling of several component detectors (C_1 . . . C_N) in parallel;

heating each detector in its turn, when several separate detectors (10_1, 10_2) are used; and

detecting the relative humidity substantially on the basis of a detector (10_1, 10_2) or its component detectors (C_1 . . . C_N) that has substantially cooled after said heating.

5,485,748

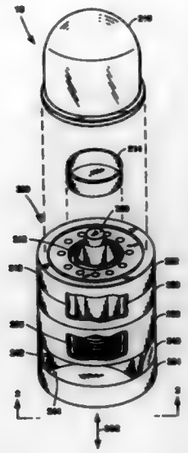
MAGNETICALLY LEVITATED FORCE/WEIGHT MEASUREMENT SYSTEM

Geoffrey H. Zeamer, 583 Winter St., Holliston, Mass. 01746

Filed Jan. 26, 1994, Ser. No. 187,626

Int. Cl.[6] G01P *15/00*

U.S. Cl. 73—862.61 **11 Claims**



1. A mass-levitating system, comprising:

a mass containing means for generating a first magnetic field, the mass being in a stationary levitated position during equilibrium of said system;

means for generating a second magnetic field, said second magnetic field generating means containing electric currents disposed in a manner that impinges on said .first magnetic field to produce a force needed to levitale the mass;

position detecting means for generating a signal indicative of a change in position of the mass; and

signal processing means for transforming said signal into alterations in said electric currents, so as to restore the mass to said stationary position in response to said signal;

wherein operation of said means for generating a first magnetic field and said means for generating a second magnetic field obviates the need for cryogenic temperatures.

5,485,749

ACCELERATION DETECTOR

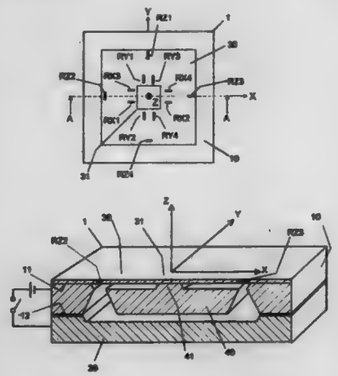
Kazuya Nohara, and Naohiro Taniguchi, both of Hirakata, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed May 18, 1994, Ser. No. 245,695

Claims priority, application Japan, May 26, 1993, 5-124361

Int. Cl.[6] G01P *21/00*

U.S. Cl. 73—517.34 **14 Claims**



1. An acceleration detector for independently detecting three-dimensional components of acceleration applied thereto with respect to X-, Y- and Z-axes of an orthogonal coordinate system, said acceleration detector comprising:

a frame defining an open space therein and having a top face and a bottom face, said frame being made of a semi-conductor material;

a thin-sheet resilient member made of the same semi-conductor material as said frame to extend in a plane over said open space and integrally joining at a periphery of said resilient member to the top face of said frame, said X- and Y-axes being defined to extend in the plane of said resilient member;

a weight made of the same semi-conductor material as said frame to depend from a center of said resilient member through a neck portion, said neck portion being fixed only with a center portion of said resilient member in such a manner that an elastic deformation of said resilient member will occur when said weight is displaced with respect to said frame by receiving said acceleration, said center portion being defined as a region of said resilient member corresponding to an interface between said reailient member and said neck portion;

a plurality of piezo resistance elements formed in said resilient member, the resistance of which varies in response to strain and elastic deformation of said resilient member, said resistance elements consisting of a first set of four resistance elements for detecting a first component of said acceleration with respect to said X-axis, a second set of four resistance elements for detecting a second component of said acceleration with respect to said Y-axis, and a third set of four resistance elements for detecting a third component of said acceleration with respect to said Z-axis, all of said resistance elements of said first and second sets being located within an inner area of said resilient member immediately adjacent to a circumference of said center portion such that one end of each of the resistance elements of the first and second sets reaches the circumference of said center portion, said inner area being capable of a larger elastic deformation than an outer area of said resilient member adjacent to said frame when said weight is displaced by receiving an acceleration having a horizontal direction parallel to said plane of said resilient member; and

acceleration determining means for determining said acceleration in accordance with a variation of electric resistance of said resistance elements.

5,485,750

PROCESS FOR FINDING THE VALUE OF PARAMETERS CAPABLE OF CHANGING THE RESONANCE FREQUENCY OF MICROSTRUCTURES

Werner Schomburg, Karlsruhe, Germany, assignor to Kernforschungszealrum Karlsruhe GmbH, Karlsruhe, Germany

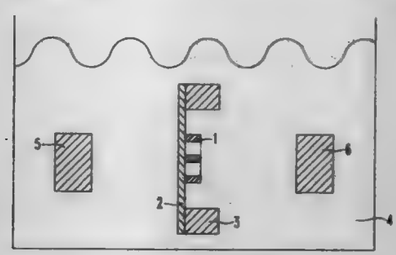
PCT No. PCT/DE92/00364, § 371 Date Sep. 8, 1993, § 102(e) Date Sep. 8, 1993, PCT Pub. No. WO92/19942, PCT Pub. Date Nov. 12, 1992

PCT Filed May 2, 1992, Ser. No. 117,092

Claims priority, application Germany, May 2, 1991, 41 14 268.3

Int. Cl.[6] G01H *13/00*

U.S. Cl. 73—579 **11 Claims**



1. A process for finding with a microstructure having a varying resonance frequency depending on a value of a parameter which changes the resonance frequency of said microstructure, wherein said microstructure includes at least one membrane having a periphery by which it is mounted on said microstructure and wherein at least one resonance frequency of the microstructure is between 100 kHz and 100 MHz, by

a) detecting the value of a characteristic resonance frequency of said microstructure wherein said microstructure is exposed to ultrasound which is transmitted through, or reflected from, said microstructure with a particular intensity and the intensity of the ultrasound transmitted through, or reflected from, said microstructure is determined, and

b) determining the value of said parameter by means of a calibration curve.

5,485,751

METHOD FOR LONGITUDINAL, TRANSVERSE AND OBLIQUE ERROR TESTING OF WORK PIECES BY MEANS OF ULTRASOUND, ACCORDING TO THE IMPULSE-ECHO METHOD

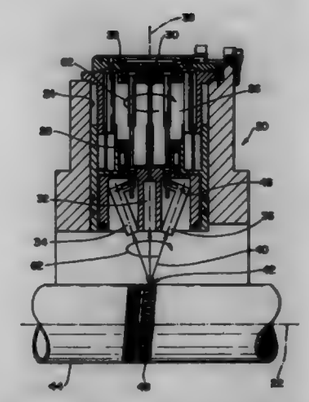
Bernhard Karbach, Erftstadt-Friesheim, and Ottokar Patzke, Erftstadt-Liblar, both of, Germany, assignors to Firma Krautkrämer GmbH & Co., Germany

Filed Jun. 23, 1993, Ser. No. 81,615

Int. Cl.[6] G01N *29/04*

U.S. Cl. 73—618 **12 Claims**

1. Method for longitudinal, transverse and oblique error testing of work pieces, by which a test head support (26) featuring at least one test head (32 to 36) is moved in a translatory direction along the surface of the work piece (44, 64) and where ultrasound impulses are generated in a rapid sequence, which, coming from each test head (32 to 36) impact the surface of the work piece (44, 64) along a sound beam in test areas on the surface of the work piece (44, 64) whereby all of these test areas lie in a linear test path, so that in the case of uninterrupted, translatory movement, all test areas meet in one and the same test area, and whereby the sound beams progress in a given constant angle in relation to one set perpendicular line 38 on each test area, whereby a) the sound beams rotate, on a conical wall, around the respective perpendicular line, 38 forming an axis, b) complete rotation of 360° takes place in time t_r which is shorter than time t, which is required by the translatory movement in order to cross a distance with the dimensions of a test area, and c) per revolution generates and sounds at least ten ultrasound impulses into the surface of the work piece (44, 64).



5,485,752

APPARATUS FOR DETECTING CONTACT WITH ROTATING BODY

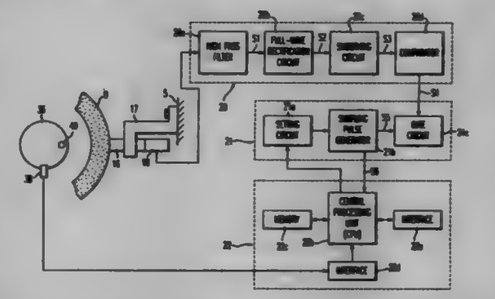
Hiroaki Asano, Okazaki; Yasuhiro Kobayashi, Anjo; Shigeo Hotta; Yoichi Yamakawa, both of Aichi; Akira Ito, and Hirotaka Sugiura, both of Kariya, all of, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 24, 1993, Ser. No. 125,752

Claims priority, application Japan, Sep. 25, 1992, 4-279231; Sep. 30, 1992, 4-261630; Sep. 30, 1992, 4-261631; May 31, 1993, 5-154241; May 31, 1993, 5-154242

Int. Cl.[6] G01M *7/00*

U.S. Cl. 73—660 **7 Claims**



1. An apparatus for detecting contact between a contact detection member and a rotating body, one of said contact detection member and said rotating body being moved toward an other of said contact detection member and said rotating body, comprising:

a sensor responsive to vibrations generated during a time period when said contact detection member is brought into contact with said rotating body for outputting an electric signal;

processing means responsive to said electric signal for processing said output to decide whether the detected contact has actually occurred or caused by disturbance,

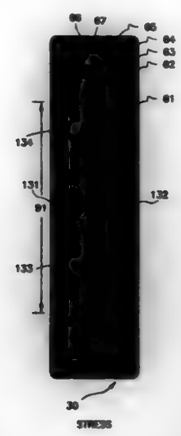
wherein said processing means comprises:
a) a memory having addresses dedicated to different angular positions of a sampling interval of said rotating body and storing at said addresses data based upon a value of said output, and
b) decision means for deciding an occurrence of an actual contact between said rotating body and said contact detection member based on the values of data stored in said addresses of said memory.

5,485,753

PIEZORESISTIVE SILICON PRESSURE SENSOR IMPLEMENTING LONG DIAPHRAGMS WITH LARGE ASPECT RATIOS

David W. Burns, Minneapolis, and Max C. Glenn, Shorewood, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 808,263, Dec. 13, 1991, abandoned. This application Oct. 28, 1993, Ser. No. 144,096
Int. Cl.[6] G01L 9/04
U.S. Cl. 73—720 15 Claims



11. A multiple pressure sensor apparatus having a multiplicity of long rectangular diaphragm plates at least two of which are arranged so as to have their long edges in parallel and being of substantially the same dimensions as each other and each long rectangular plate having two linear sensing resistors each and being configured to provide a fully active wheatstone bridge configuration.

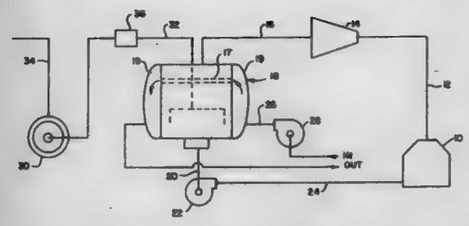
5,485,754

APPARATUS AND METHOD FOR MEASURING THE AIR FLOW COMPONENT AND WATER VAPOR COMPONENT OF AIR/WATER VAPOR STREAMS FLOWING UNDER VACUUM

Joseph W. Harpster, Galena, Ohio, assignor to Intek, Inc., Westerville, Ohio

Filed Apr. 21, 1994, Ser. No. 230,974
Int. Cl.[6] G01F 1/74
U.S. Cl. 73—861.04 12 Claims

1. Method for measuring the flow rate of the gas component and the mass density of water vapor component of a gas/water vapor source stream flowing in a conduit under reduced pressure, which comprises the steps of:
(a) storing a correlation of relative saturation of water vapor in said gas and the output electrical signal of a relative humidity sensor;



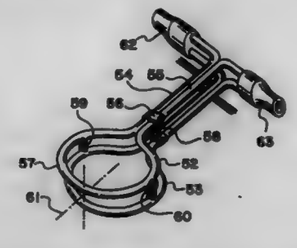
(b) storing a correlation of the flow rate of the gas component of a flowing gas/water vapor reference stream and the output electrical signal of a temperature-compensated flow sensor as a function of water vapor density;
(c) storing a correlation of maximum water vapor saturation in the gas as a function of temperature;
(d) generating an electrical signal of a temperature sensor in contact with said source stream;
(e) generating an output electrical signal of a relative humidity sensor in contact with said source stream;
(f) generating an output electrical signal of a temperature-compensated flow sensor in contact with said source stream;
(g) comparing said signal (e) with said stored correlation (a) to derive a relative saturation value which value is multiplied by the maximum water vapor saturation correlation (c) for the temperature determined from signal (d) in order to derive the mass density of the water vapor component of said source stream; and
(h) comparing said signal (f) with said stored correlation (b) at derived water vapor mass density (g) to derive the flow rate of the gas component of said source stream.

5,485,755

MASS FLOWMETER

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Division of Ser. No. 14,802, Feb. 8, 1993, Pat. No. 5,337,616, which is a continuation-in-part of Ser. No. 693,929, Apr. 29, 1991, Pat. No. 5,241,865, and a continuation-in-part of Ser. No. 617,492, Nov. 21, 1990, abandoned. This application Jan. 5, 1994, Ser. No. 177,382
The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.
Int. Cl.[6] G01F 1/84
U.S. Cl. 73—861.38 18 Claims



1. An apparatus for measuring mass flow rate of media moving through at least one conduit under a flexural vibration, comprising in combination:
a) a conduit with two opposite extremities disposed in a relationship adjacent to one another and having a substantially zero spacing between the two opposite extremities of the conduit and secured to a common region of a supporting structure, said conduit including a curved midsection of a loop angle approximately equal to 360 degrees intermediate the two secured opposite extremities of the conduit, wherein center line of at least a central portion of the curved midsection of the conduit is disposed on a reference plane, said reference plane being a plane defined by the center line of said at least a central portion of the curved midsection of the conduit;
b) means for exerting a vibratory force onto the conduit on a line of action perpendicular to the reference plane and lying on a center plane, said center plane being a plane perpendicularly intersecting with a central portion of the curved midsection of the conduit as well as with the reference plane and dividing the conduit into two substantially equal opposite halves; wherein the vibratory force generates a flexural vibration of the conduit in directions perpendicular to the reference plane; and
c) means for detecting difference in the flexural vibration of the conduit between two opposite halves of the conduit as a measure of mass flow rate of media moving through the conduit.

5,485,756

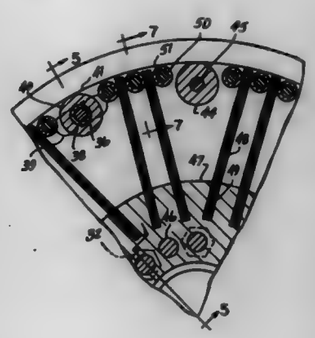
Patent Not Issued For This Number

5,485,757

ENGINE TORQUE SENSING ARRANGEMENT

W. John Foxwell, 2557 Lake Charnwood Blvd., Troy, Mich. 48098-2123

Filed Dec. 28, 1994, Ser. No. 365,415
Int. Cl.[6] G01L 3/10
U.S. Cl. 73—862.321 25 Claims



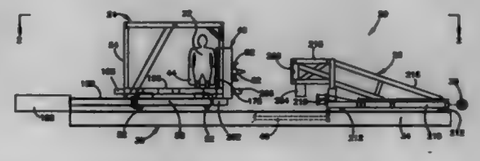
1. A torque sensing arrangement for an engine transmission connection including an engine crankshaft and a torque converter housing, said torque sensing arrangement comprising:
a driving hub connected to said engine crankshaft to be rotated thereby;
a flex plate fixed to said driving hub;
a circumferential series of stop elements fixed to said torque converter housing and passing through respective arcuate slots in said flex plate, limiting relative rotation between said torque converter housing and said flex plate to a predetermined extent;
a series of radially extending blade springs fixedly anchored at their inner ends to a respective one of a series of slots in said driving hub;
a circumferential series of pairs of spaced elements fixed to a driving disc connected to said torque converter housing, each of said blade springs having a radially outward free end passing between pairs of said spaced elements to be captured therebetween; and
sensor means for detecting the extent of relative angular movement between said flex plate and said torque converter housing and generating signals corresponding thereto.

5,485,758

METHOD AND APPARATUS FOR SIMULATING VEHICLE SIDE IMPACTS

Louis R. Brown, Oxford; Charles E. Steffens, Jr., Washington; Charles E. Kroetsch, Troy, and Delmar H. Robbins, Rochester Hills, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Dec. 27, 1993, Ser. No. 174,884
Int. Cl.[6] G01N 3/30;17/00
U.S. Cl. 73—865.8 64 Claims



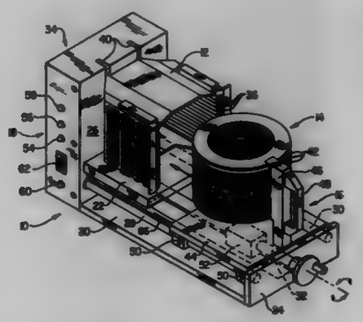
1. An apparatus for use with a test dummy to simulate vehicle side impacts, said apparatus comprising:
a door structure for simulating a vehicle door;
a seat disposed adjacent to an inner side of said door structure for supporting the test dummy in a desired relationship with said door structure;
sled means for impacting against an outer side of said door structure to move said door structure relative to said seat; and
connector means for connecting said door structure with said sled means upon impacting of said sled means against said door structure.

5,485,759

BOAT TEST APPARATUS

Gerald L. Goff; Michael D. Smith, both of Austin, and Michael R. Conboy, Buda, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 28, 1994, Ser. No. 234,395
Int. Cl.[6] E01C 23/01
U.S. Cl. 73—865.9 8 Claims



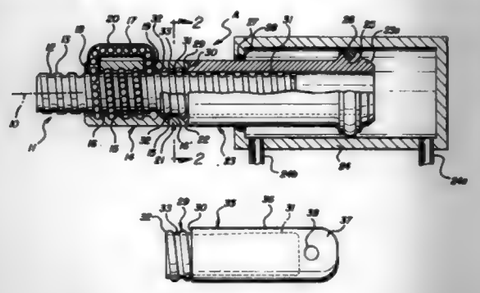
1. A boat test fixture, said boat having a plurality of slots for holding wafers, said boat test fixture comprising:
a base for fixedly holding said boat,
a wafer simulator, said wafer simulator having a plurality of wafers sized to properly seat in said plurality of slots in said boat;
structure for moving said plurality of wafers of said wafer simulator wholly into and out of said plurality of slots in said boat; and
structure for determining whether said plurality of wafers is properly seated in said plurality of slots in said boat when said wafer simulator is moved wholly into said plurality of slots in said boat.

5,485,760

BALL NUT AND SCREW ASSEMBLIES AND METHODS OF ATTACHING EXTENSIONS OR HOUSINGS TO THE BALL NUTS THEREOF

David A. Lange, Bay City, Mich., assignor to Thomson Saginaw Ball Screw Company, Inc., Saginaw, Mich.

Filed May 10, 1994, Ser. No. 240,132
Int. Cl.[6] F16H 25/22
U.S. Cl. 74—459 10 Claims



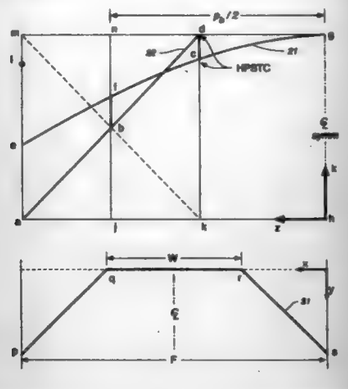
1. In a ball nut and screw assembly
(a) an axially extending screw having exterior helical ball carrying groove portions separated by land portions;
(b) a co-axial nut having complemental, helical interior ball carrying groove portions separated by land portions with the same lead as said screw groove and land portions;
(c) an end attachment for said nut having a reduced diameter sleeve extending axially therefrom;
(d) the sleeve having helical exterior thread portions, of the same lead as said nut groove portions, which are of a matching configuration and threaded into one end of said nut, the sleeve having an interior diameter which receives and passes said screw without interacting with it; and
(e) a recirculating train of load bearing balls accommodated within said nut and screw groove portions axially spaced from said sleeve.

5,485,761

ARTICULATED DIFFERENTIAL CROWNING

William S. Rouverol, Berkeley, Calif., assignor to Axicon Gear Company, Berkeley, Calif.

Continuation-in-part of Ser. No. 43,375, Apr. 6, 1993, Pat. No. 5,341,699. This application Aug. 1, 1994, Ser. No. 283,635
Int. Cl.[6] F16H 55/08
U.S. Cl. 74—462 66 Claims



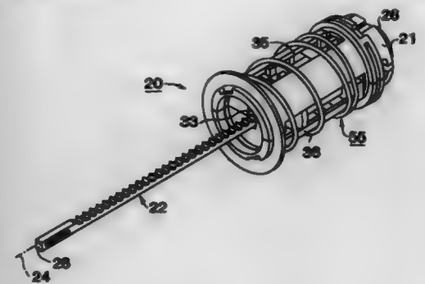
1. A pair of gears having mating teeth with a working surface on at least one of said pair that has a first crown at a first roll angle and a second crown at a second roll angle,
said second crown differing in form from said first crown,
said first crown including (a) a center segment having a length substantially shorter than the face width at said first roll angle, and (b) two outer segments that make an articulation angle with said center segment.

5,485,762

ADJUSTER TO ESTABLISH AND MAINTAIN RESIDUAL TENSION IN A CABLE SYSTEM

Josh L. Rothman, Huntington Beach, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.

Filed Jun. 20, 1994, Ser. No. 263,510
Int. Cl.[6] F16C 1/22
U.S. Cl. 74—501.5 R 5 Claims



1. An adjuster for establishing and maintaining residual tension in a cable system comprising:
a reference body;
a ratchet member having a succession of ratchet teeth, each having a pass face and an abutment face;
a first and a second pawl member, each pawl member and having pawl teeth shaped to permit free passage of the ratchet teeth in the same one direction, and to engage them in the opposite direction;
flexible inelastic linkage means anchored to said body joining said pawl members to one another and when taut providing a multiplying effect whereby said first pawl member moves faster than the second pawl member relative to said body when said ratchet member is forced in a first direction relative to said body to increase the tension in said cable system;
a limit stop on said body limiting the movement of said second pawl in said first direction;
a pawl stop on said body limiting the movement of said second pawl member in the opposite second direction;
tensioning bias means mounted to said body and biasing said first pawl member to tend to draw said second pawl member toward said pawl stop; and
said reference body and said ratchet member being adapted for incorporation into a force system which includes at least one cable segment.

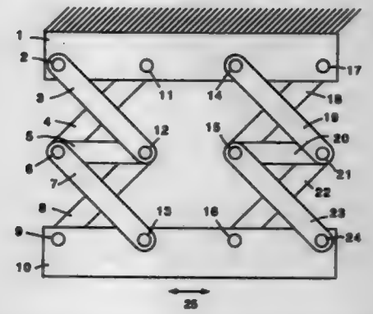
5,485,763

TAILORED MOTION LINKAGE

Cary Pincus, 1011 Aster Ave., Sunnyvale, Calif. 94086

Filed Sep. 26, 1994, Ser. No. 312,089
Int. Cl.[6] G05G 1/04
U.S. Cl. 74—521 7 Claims

1. A linkage comprising a first pivot arm and a second pivot arm, crossed to each other, a first pivot point at one end of the first pivot arm and a second pivot point at the opposite end of the first pivot arm, a first pivot point at one end of the second pivot arm and a second pivot point at the opposite end of the second pivot arm, a third pivot arm and a fourth pivot arm, crossed to each other, a first pivot point at one end of the third pivot arm and a second pivot point at the opposite end of the third pivot arm, a first pivot point



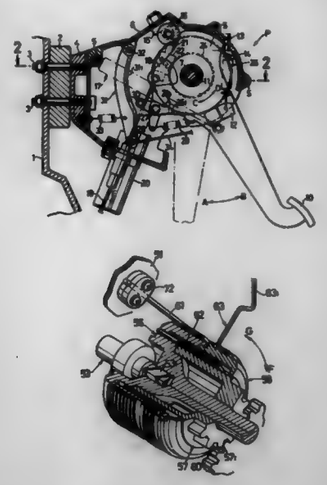
at one end of the fourth pivot arm and a second pivot point at the opposite end of the fourth pivot arm, a first means to maintain a fixed distance between the first pivot point of the first pivot arm and the first pivot point of the second pivot arm, a second means to maintain a fixed distance between the second pivot point of the first pivot arm and the second pivot point of the second pivot arm, said second means to maintain a fixed distance also used to maintain a fixed distance between the first pivot point of the third pivot arm and the first pivot point of the fourth pivot arm, and a third means to maintain a fixed distance between the second pivot point of the third pivot arm and the second pivot point of the fourth pivot arm.

5,485,764

PARKING BRAKE SYSTEM

Akinori Sugimoto; Atsushi Mori, and Kunio Nanno, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1994, Ser. No. 261,918
Claims priority, application Japan, Jun. 16, 1993, 5-145199
Int. Cl.[6] B60T 7/12
U.S. Cl. 74—535 10 Claims



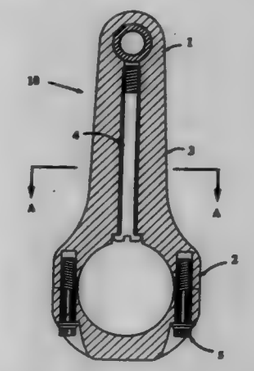
1. A parking brake system for a vehicle comprising:
a brake operating member providing manual operation of the parking brake system;
a drive source for automatically operating the parking brake system; and
a unidirectional connecting member interconnecting said brake operating member and said drive source,
wherein said unidirectional connecting member permits transmission of power from said drive source to said brake operating member and prevents transmission of power from said brake operating member to said drive source,
wherein said unidirectional connecting member is comprised of a first lock spring which is mounted between a drive roller connected to the drive source and a driven roller connected to the brake operating member to permit the relative rotation between both the rollers in one direction and wherein said parking brake system further includes a second lock spring for limiting the rotation of the drive roller in one direction, and a connection-releasing member for expanding the first lock spring to permit the rotation of the driven roller.

5,485,765

CONNECTING ROD WITH IMPROVED FATIGUE LIFE

Mohsen A. Khatiblou, 26522 Meadow Crest, Laguna Hills, Calif. 92653

Filed Jan. 19, 1994, Ser. No. 184,505
Int. Cl.[6] F02B 75/32
U.S. Cl. 74—579 E 4 Claims



1. A connecting rod for an engine having a wrist pin and a crankpin, said connecting rod comprising:
a beam member including a small end having a circular through hole for receiving the wrist pin of the engine, said beam member further including a large end having a circular through hole for receiving the crankpin of the engine;
an elongated bore centrally located within the beam member, said elongated bore extending from the circular through hole of the small end to the circular through hole of the large end, said elongated bore further including a threaded section adjacent the circular through hole of the small end;
a bolt having a threaded end and a rotational axis, wherein the threaded end is received in the threaded section of the elongated bore, and wherein the rotational axis extends through the center of the circular through hole of the small end and through the center of the circular through hole of the large end.

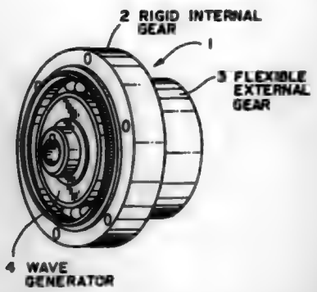
5,485,766

TERTIARY NEGATIVE-DEVIATION FLEXING CONTACT TYPE GEAR DRIVE OF NON-PROFILE-SHIFTED TOOTH PROFILE

Shoichi Ishikawa, Kanagawa, Japan, assignor to Harmonic Drive Systems, Inc., Tokyo, Japan

PCT No. PCT/JP92/01535, § 371 Date Sep. 14, 1994, § 102(e) Date Sep. 14, 1994, PCT Pub. No. WO94/12808, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 24, 1992, Ser. No. 256,721
Int. Cl.[6] F16H 1/32
U.S. Cl. 74—640 3 Claims

1. A tertiary negative-deviated flexing contact type gear drive having a rigid internal gear, a cup-shaped flexible external gear



disposed inside the internal gear, and a wave generator for flexing the external gear into an elliptical shape so that a deflection occurring in the external gear along a direction from a diaphragm to an opening thereof is proportional in value to a distance measured from the diaphragm, a relative rotation of the rigid internal gear and the flexible external gear being generated by a rotation of the wave generator; wherein both the rigid internal gear and the flexible external gear are made to be non-profile-shifted spur gears;

wherein the opening of the flexible external gear is set in a state of negative deviation wherein a deflection of the opening is lower in value than a normal deflection; a moving locus is obtained through a rack approximation of teeth of the external gear to the internal gear at respective sections of rotation of a tooth trace of the flexible external gear; an envelope is obtained by overlapping the moving locus on one of the sections of rotation; another moving locus is obtained in a section of rotation at an end portion of the tooth trace on a side of the diaphragm or in the vicinity of an outside of the end portion and is smoothly connected to the envelope to thereby obtain a composite curve; a curve is obtained by similarity transforming at a reduction ratio of ½ a portion from a starting point of the envelope to a terminating point thereof corresponding to two times a working depth in a direction of a depth from an apex of a moving locus when deviation is zero, using the terminating point as an original point; and the curve is made to be a main portion of a convex tooth profile for tooth faces of the rigid internal gear and the flexible external gear; and

wherein a second composite curve including a straight line having a limited pressure angle associated with a deflection value of the opening inserted in the vicinity of a datum point of a tooth profile and a transient curve smoothly connecting the straight line to the main portion of the convex tooth profile is made to be the tooth profile for the tooth faces of the rigid internal gear and the flexible external gear.

5,485,767

SAW BLADE MACHINING SYSTEM

Glynn A. Ellis, Sutttonfields Dr., Sutton Bonnington, Loughborough, Leicestershire, United Kingdom

PCT No. PCT/GB92/00833, § 371 Date Jan. 4, 1994, § 102(e) Date Jan. 4, 1994, PCT Pub. No. WO92/19406, PCT Pub. Date Nov. 12, 1992

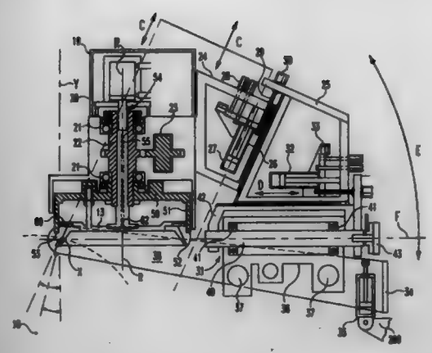
PCT Filed May 7, 1992, Ser. No. 146,146

Claims priority, application United Kingdom, May 7, 1991, 9109832

Int. Cl.[6] B23D *63/14*

U.S. Cl. 76—40 **20 Claims**

1. A machine for performing a plurality of machining operations on each tip of individual teeth of a saw blade comprising: a main frame having a pivot defining a first axis and having locating means for locating a saw blade coincident with a medial plane and so that each tip to be machined is positioned in turn at a machining point coincident with the first axis, a first yoke mounted on the pivot and situated substantially exclusively on a first side of a vertical plane containing the first axis, first machining means for machining at least one face of the tips supported on the first yoke,



a second yoke mounted on the pivot and situated substantially exclusively on a second side of the vertical plane containing the first axis, second machining means for machining at least one other aspect of the saw blade supported on the second yoke, and means coupled to the yokes for independently moving the first and second machining means toward and away from the first axis to permit independent contact of selected portions of each tip by both the machining means while each tip is situated at said machining point.

5,485,768

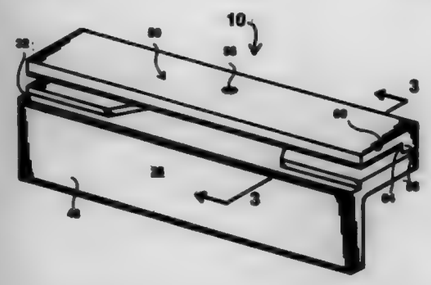
SKI SHARPENING GUIDE

James H. Vermillion, 14220 Orchard Ave., Caldwell, Id. 83605

Filed Oct. 13, 1994, Ser. No. 322,435

Int. Cl.[6] B23D *69/02*

U.S. Cl. 76—83 **8 Claims**



1. A ski sharpening guide to use with a file for sharpening edges of skis, the guide comprising:

an angular member comprising a substantially horizontal outer top surface having a front edge and an opposing rear edge and a substantially vertical outer side surface having an upper edge, the front edge of the top surface being connected to the upper edge of the side surface at a junction,

the angular member having a recess cut into the top surface extending from near the front edge to near the rear edge, the recess being defined by a bottom surface and first and second angled side walls, and the recess having an inlet near the front edge and an outlet near the rear edge, wherein the inlet is wider than the outlet,

wherein the top surface is for supporting the file, the side surface is for placement against and for moving against the ski, and the recess is for collecting filings that drop from the file and ski edge.

5,485,769

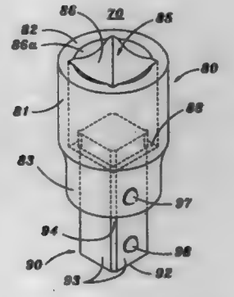
SQUARE DRIVE ADAPTER

Gene E. Olson, Kenosha, and Gerald A. Wridt, Racine, both of Wis., assignors to Snap-on Incorporated, Kenosha, Wis.

Continuation-in-part of Ser. No. 36,321, Mar. 24, 1993, Pat. No. 5,343,786. This application Aug. 3, 1994, Ser. No. 285,093

Int. Cl.[6] B25B *23/16*

U.S. Cl. 81—177.85 **12 Claims**



1. A polygonal drive adapter for transmitting torque between polygonal male and female drive elements of different size comprising: a unitary one-piece socket member having first and second ends and a longitudinal hole therethrough from end-to-end, said hole having a first polygonal portion of a first size adjacent to said first end for receiving an associated male polygonal drive element in mating engagement therewith and a second polygonal portion adjacent to said second end having the same cross-sectional shape as said first portion but of a second size different from said first size, a shoulder in said hole between said first and second portions facing said first end, and an elongated polygonal drive lug having an application end receivable in said second portion of said hole in mating engagement therewith and adapted for mating engagement with an associated female drive element and a coupling end, said drive lug having a plurality of flat planar sides joined by a plurality of corner portions, said drive lug including laterally extending retaining projections respectively formed at spaced-apart corner portions of said drive lug adjacent to said coupling end, said application end of said drive lug being insertable in and removable from said hole from said first end thereof with said projections engageable with said shoulder to limit the depth of insertion at a working position wherein said application end of said drive lug projects outwardly beyond said second end of said socket member.

5,485,770

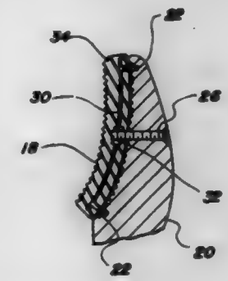
PLIER ENGAGING PAD ASSEMBLY

Douglas Popelak, 2610 Bonnaffon St., Philadelphia, Pa. 19142

Filed Mar. 22, 1995, Ser. No. 408,569

Int. Cl.[6] B25B *7/02*

U.S. Cl. 81—423 **12 Claims**



5. A plier engaging pad assembly comprising:

an engaging pad for securing to a first jaw of a pair of pliers;

a securing fastener threadably engaged to the pad which can be extended through a mounting aperture in the first jaw of the pliers to secure the engaging pad thereto;

wherein the engaging pad comprises a flexible interior strip; a threaded receiving boss positioned in a center of the flexible interior strip and threadably engaging exterior threads of the securing fastener; and a polymeric casing encapsulating the flexible interior strip.

5,485,771

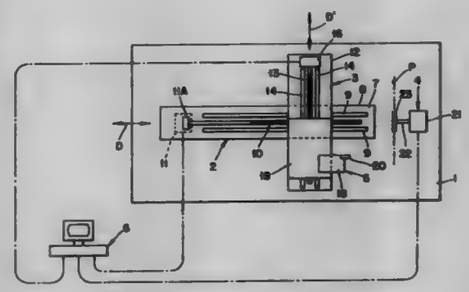
APPARATUS FOR GENERATING OPHTHALMIC PRODUCTS FROM BLANKS AND A METHOD OF OPERATING SAME

William D. Brennan, Muskogee, Okla.; Stephen Kulan, Highland, Ind.; Ronald T. Hyslop, Tulsa, Okla.; Johnny Ellis, Broken Arrow, Okla.; Ray Gregory, Muskogee, Okla.; Larry Penner, Wagoner, Okla., and James K. Hays, Okmulgee, Okla., assignors to Coburn Optical Industries, Inc., Muskogee, Okla.

Continuation-in-part of Ser. No. 11,835, Feb. 2, 1993, abandoned, which is a continuation of Ser. No. 766,394, Sep. 27, 1991, abandoned. This application Mar. 19, 1993, Ser. No. 38,350

Int. Cl.[6] B23B *5/00*

U.S. Cl. 82—1.11 **21 Claims**



1. A method of operating an apparatus for generating ophthalmic products from blanks, comprising the steps of:

rotating a blank about an axis of rotation, said blank having a surface through which said axis extends;

effecting relative movement between said cutter tool and the blank in a first direction oriented parallel to said axis of rotation of the blank for cutting a desired configuration onto said surface of the blank;

effecting relative movement between said cutter tool and the blank in a second direction oriented transverse to said first direction; and

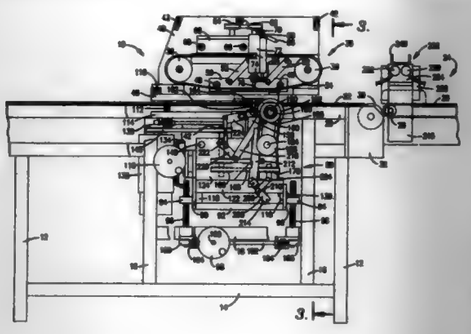
supplying signals from a digital electronic means for controlling the angular displacement of the blank with respect to a reference plane containing the blank and for controlling the relative movement between the cutter tool and the blank in said first and second directions, whereby the relative movements between said cutter tool and said blank in said first and second directions and the angular displacement of the blank about said axis of rotation are all proactively controlled independently of one another without any one of said relative movements and said angular displacement being dependent on a different movement or angular displacement of the cutter tool or the blank, by means of control signals supplied at regular time intervals.

5,485,772

BUN SLICING MACHINE

Paul M. Bastasch, Overland Park, Kans.; Randyl C. Hanson, Lake Lotawana; Laclede L. Hill, Kansas City, both of Mo.; William E. Norton, Edwardsville, Kans., and Hans W. Schoenbuchner, Conyghan, Pa., assignors to United Bakery Equipment Company, Lenexa, Kans.

Filed Feb. 23, 1994, Ser. No. 200,435
Int. Cl.[6] B26D 3/08
U.S. Cl. 83—873 5 Claims



1. A machine for slicing buns arranged in clusters each having a bottom and a pair of outside buns and at least two interior buns connected with each other at a weakened area, said machine comprising:

a frame;

means on said frame for conveying the clusters of buns successively along a predetermined conveyor path;

outside sluicing means mounted on said frame for effecting generally horizontal slices in the outside buns of each cluster conveyed along said path;

a disk having a dull peripheral edge portion;

means for mounting said disk on the frame for rotation about a generally horizontal axis at a location beneath said path wherein each cluster conveyed past the disk is engaged by said edge portion from the bottom near said weakened area;

said mounting means including a linkage mounting said disk on the frame for movement between an operating position wherein the disk is situated to effect said break and a disengaged position wherein said disk is withdrawn below the conveyor path and does not affect the buns conveyed thereon; and an operating lever in said linkage for selectively moving the disk between the operating and disengaged positions;

means for driving said disk about said axis to effect a break along said weakened area of each cluster extending from the bottom thereof and terminating below the top of the cluster;

a slicing blade;

a shaft on which said slicing blade is mounted, said shaft being supported on the frame for rotation downstream from said disk at a location to extend into said break to situate said blade in position to effect generally horizontal slices in the interior buns of each cluster conveyed along said path;

means for rotating said shaft to rotate said slicing blade;

a drive element for holding said shaft and transmitting rotational power thereto;

releasable means for securing said shaft to the drive element; and

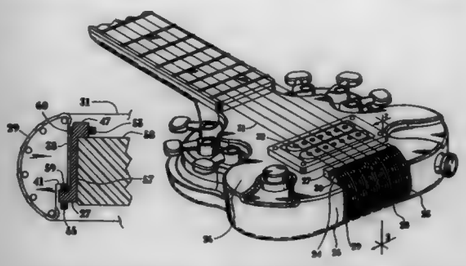
means for automatically releasing said releasable means when the disk is moved to the disengaged position, thereby allowing said shaft to be removed from said drive element.

5,485,773

GUITAR STRING INSTALLATION AND ADJUSTMENT MECHANISM

Terry J. Devitrysmith, 17005 NE. 101st Pl., Redmond, Wash. 98052

Filed Feb. 6, 1995, Ser. No. 386,523
Int. Cl.[6] G10D 1/08
U.S. Cl. 84—267 2 Claims



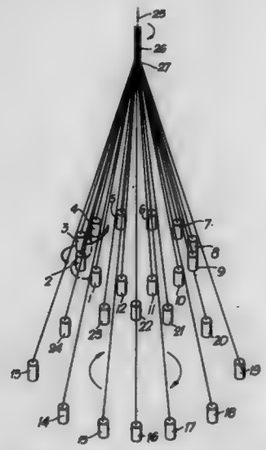
1. Guitar string installation and adjustment apparatus for installation and use on a guitar having a body and at least one electronic pickup, said at least one string having an effective length and being a distance from said pick up, said body having a front, a back, first and second sides and a top and a bottom, said mechanism comprising a carrier assembly, said assembly being installed on said bottom and carrying said at least one string from said front to said back around said bottom, said assembly further comprising means for adjusting said effective length of said string and said distance.

5,485,774

TEXTILE BRAIDS FOR CABLES, FLEXIBLE TUBES AND THE LIKE

Robert Osborne, Brockville, Canada, assignor to Phillips Cables Limited, Ontario, Canada

Filed May 23, 1994, Ser. No. 247,260
Claims priority, application United Kingdom, Jul. 31, 1993, 9315910
Int. Cl.[6] D04C 1/00
U.S. Cl. 87—6 8 Claims



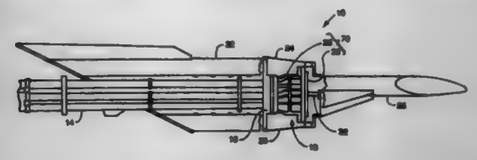
1. A tubular textile braid comprising first and second sets of yarns each yarn made up of a plurality of synthetic monofilaments, the yarns of said first set all extending in one direction around the axis of the braid and the yarns of said second set in the opposite direction, all the yarns of said first set having equal twists and all the yarns of said second set having equal twists but the yarns of said first and second set differing in twist to an extent such that the yarns of said second set have their tensile strength increased by at least 10% but do not have their cover in the braid decreased by more than 25%, both by comparison with an otherwise identical yarn having the same twist as that of said first set.

5,485,775

GUN GAS CONTROL SYSTEM FOR MULTI-BARREL WEAPONS

Steven R. Duke, Williston; Glenn E. Rosier, Ferrisburg, and Richard P. Saganich, Cambridge, all of Vt., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 16, 1994, Ser. No. 357,699
Int. Cl.[6] F41A 21/36
U.S. Cl. 89—14.3 5 Claims



1. A gun gas control system for use on a multi-barrel gatling type gun, said gun gas control system providing torque to rotate the barrels, a recoil counter force, and venting of muzzle gas to a desired location, said gun gas control system comprising:

a gas diverter assembly, said gas diverter assembly connected to a muzzle clamp for holding said barrels of said gatling type gun, said gas diverter assembly providing rotation torque to said barrels and directing muzzle gas in desired directions, said gas diverter assembly comprising:

a gas diverter, said diverter connected to said muzzle clamp, said gas diverter changing the muzzle gas from an axially flowing direction to a radial and tangential directions;

a baffle plate, said baffle plate connected to a front of said gas diverter, said baffle plate restricting the forward flow of muzzle gas, said baffle plate having an exit hole for each barrel of said Gatling type gun; and

a blocking plate assembly, said blocking plate assembly being positioned within said gas diverter and said baffle plate, said blocking plate assembly preventing a flow of muzzle gas into non-firing gun barrels of said Gatling type gun, said blocking plate assembly not rotating with said barrels;

means for collecting and routing said muzzle gas from said diverter assembly to said desired locations.

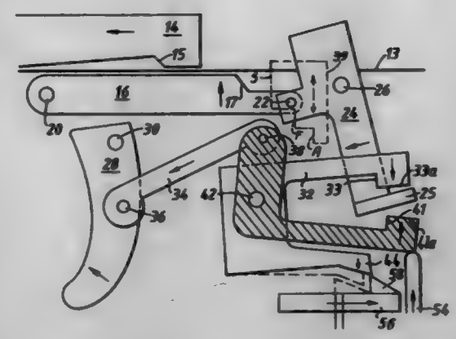
5,485,776

MECHANISM FOR CONTROLLING THE FIRING RATE OF AN AUTOMATIC WEAPON

George Ealovega, Haslemere, Great Britain, assignor to Bushman Limited, United Kingdom

Continuation of Ser. No. 75,334, Jun. 11, 1993, abandoned, which is a continuation of Ser. No. 752,609, Oct. 16, 1991, abandoned. This application Oct. 13, 1994, Ser. No. 322,365
Claims priority, application United Kingdom, Dec. 16, 1989, 8928452
Int. Cl.[6] F41A 19/04
U.S. Cl. 89—130 15 Claims

1. A trigger mechanism for a gun having an ammunition discharge means a main sear lever for controlling movement of the ammunition discharge means, means for actuating the main sear lever, and an arm carded by the means for actuating the main sear lever, and the gun being capable of full), automatic firing, said trigger mechanism comprising a physically displaceable trigger, an arrest means including a cam element and a pair of sears each having a sear face for cooperation with the arm, and a timing device having a complementary cam element, said arrest means operable to interrupt said ammunition discharge means of said gun, wherein said cam element of said arrest means cooperates with said complementary cam element of said timing device, and wherein said timing device comprises an electric motor operable to drive said complementary cam element when said physically displaceable trigger is moved to a firing position to enable fully automatic firing of said gun, said timing device being operable to effect cyclical release of said ammunition discharge means by said arrest means.

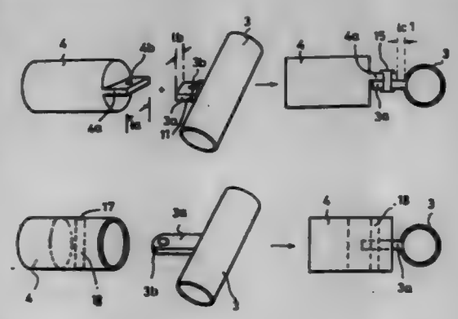


5,485,777

ABRASION PREVENTING DEVICE FOR HERMETIC RECIPROCATING COMPRESSOR

Dong-Hyeon Kim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Sep. 20, 1994, Ser. No. 309,399
Claims priority, application Rep. of Korea, Sep. 21, 1993, 19084/1993
Int. Cl.[6] F16J 1/10
U.S. Cl. 92—84 7 Claims



1. An abrasion preventing device for a hermetic reciprocating compressor comprising:

a cylinder;

a piston received and reciprocating in the cylinder, an end of said piston having a coupling projection;

a shell coupled to said piston, said shell having a coupling projection;

means for coupling the piston to the shell by coupling the projections of both the piston and the shell to each other; and elastic means provided on a coupling portion between the piston and the shell for absorbing an impact moment caused by striking of a slider on the shell during an operation of the compressor.

6. An abrasion preventing device for a hermetic reciprocating compressor comprising:

a cylinder;

a piston received and reciprocating in the cylinder, said piston being axially partially hollowed and having diametrically

opposed radial through holes formed on the side wall of a hollowed section of the piston;

a shell coupled to said piston, said shell having a coupling projection; and

means for coupling the piston to the shell by coupling the projection of the shell to said through holes of the piston.

5,485,778

BEVERAGE BREWING APPARATUS

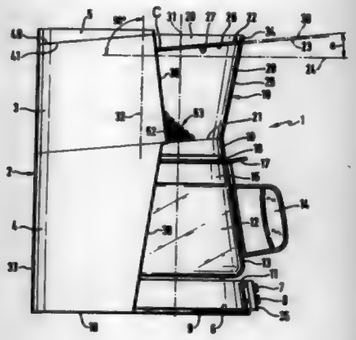
Roland Ullmann, Offenbach, Germany, assignor to Braun Aktiengesellschaft, Kronberg, Germany

Filed May 31, 1994, Ser. No. 251,504

Claims priority, application Germany, Jun. 1, 1993, 4318113.9

Int. Cl.[6] A47J *31/24*

U.S. Cl. 99—295 **9 Claims**



1. A beverage brewing apparatus comprising

a brewer housing including a cover assembly;

a filter assembly which is removable from the brewer housing along a plane of movement, said filter assembly having an upper rim which forms an opening on top, wherein the filter assembly is adapted to receive ingredients such as ground coffee beans or tea leaves for preparing a brew, wherein the opening of the filter assembly is located under the cover assembly when the filter assembly is fully inserted into the brewer housing, wherein the cover assembly has an underside in which there is a discharge port from which a brewing water flows through the opening into the filter assembly and thereafter into a vessel placed under the filter assembly, wherein a predominant portion of the upper rim of the filter assembly lies in a first plane, wherein an area of the underside of the cover assembly cooperates with the predominant portion of the upper rim and lies in a second plane, wherein, with the filter assembly fully inserted into the brewer housing, the first and the second planes are vertically disposed in close proximity to each other, extend essentially parallel to each other, and are inclined relative to the plane of movement by an angle of inclination (a).

5,485,779

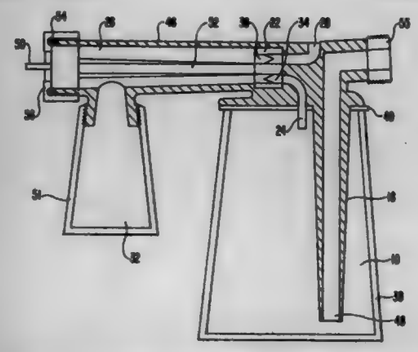
DEVICE FOR SELECTIVELY PRESSURIZING OR EVACUATING A CHAMBER WITH AN OSCILLATING AIR SOURCE BY METERING AIR THROUGH A VALVE SYSTEM AND A DEVICE FOR DRAWING INTO, RETAINING AND EVACUATING MATERIAL FROM A CHAMBER

John P. Evans, 7814 Marion La., Bethesda, Md. 20814, and Robert H. Evans, P.O. Box 191, Angelica, N.Y. 14709

Continuation-in-part of Ser. No. 87,533, Jul. 8, 1993, Pat. No. 5,394,789. This application Mar. 6, 1995, Ser. No. 398,682

Int. Cl.[6] A47J *37/10;43/28*

U.S. Cl. 99—345 **24 Claims**



1. A device for selectively imbibing or expelling materials from a chamber comprising:

a chamber;

a conduit, for collecting or expelling materials, having a distal end exposed to the environment and a proximal end within said chamber;

a valve assembly including a first one-way valve and an oppositely oriented second valve;

a first air passageway coupling said chamber with a first side of the valve assembly;

a second air passageway coupled to a second side of the valve assembly;

an oscillating air source coupled to said second air passageway;

a third air passageway coupled with the first side of said valve assembly.

5,485,780

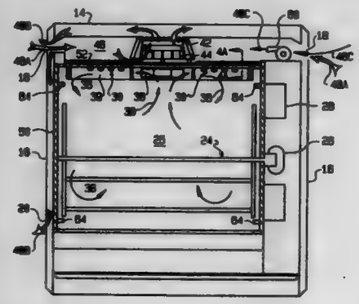
ROTISSERIE OVEN

Bernard Koether, Tequesta, Fla.; George F. Koether, II, Bridgeport, Conn., and Harald Ubert, Raenfeld, Germany, assignors to Food Automation Service Techniques, Inc., Stratford, Conn.

Filed Feb. 26, 1993, Ser. No. 23,949

Int. Cl.[6] A47J *37/04*

U.S. Cl. 99—419 **14 Claims**



7. An oven, comprising:

a cooking chamber for receiving food products to be cooked, defined by at least side walls and top and bottom walls;

an outer casing surrounding said cooking chamber and spaced away from said chamber to define circulation passages between the chamber side and top walls and the casing;

first air flow passage disposed within the cooking chamber and defined by said top wall and a cover secured thereto;

first fan means disposed within said first passage for drawing air therethrough and circulating air within the cooking chamber;

first heating means disposed in said first passage for heating air passing therethrough;

second air flow passage disposed above the cooking chamber communicating with the outside of the casing and said circulation passages;

second fan means disposed within said second passage for drawing air therein and circulating air through said circulation passages;

first fan motor disposed in said second airflow passage for driving both said first and second fans means;

third fan means including a motor separately controllable from said first and second fan means, said third fan means being disposed to direct outside air into the second air flow passage for cooling said first fan motor and the oven casing without creating convection currents in the cooking chamber;

radiant heating means mounted inside the cooking chamber, but outside the first flow passage;

operator interface means for allowing an operator to select between a plurality of operational modes, said modes including

a) convection only mode wherein said first heating means and said first fan motor and first and second fan means are activated,

b) radiant only mode wherein said radiant heating means and third fan means are activated, and

c) combination mode wherein said first and second fans means, said first heating means and said radiant heating means are activated; and

control means responsive to said interface means for activating and controlling each said heating and fan component in accordance with the operator selected modes.

5,485,781

APPARATUS AND METHOD FOR SCREEN PRINTING A RIGID OBJECT WITH CLEANING OF THE PRINT SIDE OF THE FRAME

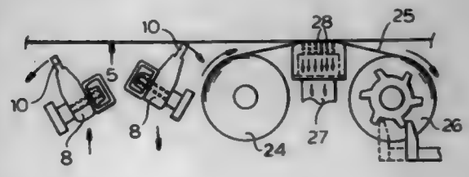
Lorenzo Rovaris, Monza, Italy, assignor to Asco Screen Products S.r.l., Milan, Italy

Filed May 26, 1994, Ser. No. 249,804

Claims priority, application Italy, May 28, 1993, MI93A1113

Int. Cl.[6] B41F *15/12;35/00*

U.S. Cl. 101—129 **7 Claims**



1. An apparatus for screen printing a glass pane, comprising:

a printing bed provided with means for holding a glass pane to be screen printed;

a printing frame disposed above said printing bed and provided with a design for screen printing on said glass pane, said design extending beyond a perimeter of said glass pane;

means for distributing ink on said printing frame;

first scraping means above said printing frame for scraping said ink over said design and forcing said ink through said design to screen print said glass pane;

second scraping means below said frame and including at least one scraper movable in two directions for scraping ink from a lower face of said printing frame in regions beyond said perimeter;

ink removing means at said printing frame engaging with said at least one scraper for removing ink therefrom scraped by said at least one scraper off of said lower face of said frame; and

wiping means for wiping said lower face with absorbent paper subsequent to removal of ink therefrom by said at least one scraper.

5,485,782

APPARATUS FOR PRINTING PROOFS

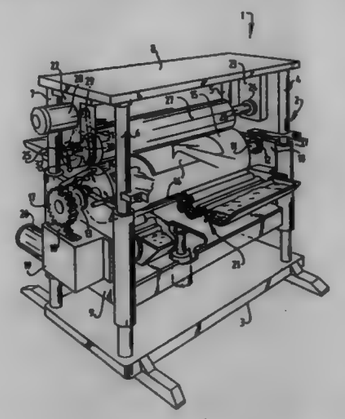
Hans Van Der Horst, Rijnsaterwoude, Netherlands, assignor to AV Flexologic B.V., Alphen A/D Rijn, Netherlands

Filed Mar. 13, 1995, Ser. No. 402,178

Claims priority, application Netherlands, Mar. 14, 1994, 9400397

Int. Cl.[6] B41F *5/00*

U.S. Cl. 101—216 **9 Claims**



1. Apparatus for printing onto a substrate printing plates manufactured from flexible material, comprising:

a frame;

a forme cylinder mounted in the frame and adapted to receive the printing plate;

a counter-pressure cylinder mounted in the frame;

guide means for carrying the substrate for printing between the forme cylinder and the counter-pressure cylinder;

drive means for driving the forme cylinder and the counter-pressure cylinder,

characterized in that the drive means are adapted to drive the forme cylinder and the counter-pressure cylinder at a different peripheral speed.

5,485,783

APPARATUS FOR FASTENING A FLEXIBLE PRINTING PLATE

Gunnar Rau, Königsbrunn; Karl-Heinz Müller, Gersthofen, and Heinrich Schmid, Kutzenhausen, all of, Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach, Germany

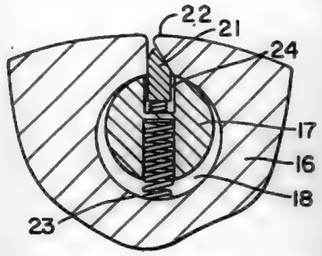
Filed Jun. 9, 1994, Ser. No. 257,343

Claims priority, application Germany, Jun. 9, 1993, 43 19 167.3

Int. Cl.[6] B41F *27/06*

U.S. Cl. 101—378 **10 Claims**

1. An apparatus for fastening a flexible print plate having a width on a printing cylinder of a printing machine, the printing



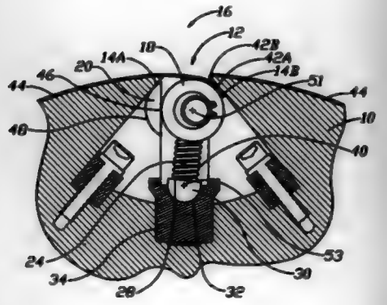
cylinder having a shell with an axially extending groove having a groove wall that is at an angle to an outer surface of the cylinder shell and a groove wall approximately perpendicular to the outer surface of the cylinder shell, the apparatus comprising: a tie beam disposed in the cylinder groove; means for elastically supporting the tie beam against the bottom of the cylinder groove; a clamping body having clamping surfaces that conform to the groove walls, one of the clamping surfaces being approximately perpendicular to the outer surface of the cylinder shell, the clamping body being accommodated in the tie beam so as to be movable in a clamping direction and so that each of the clamping surfaces cooperates with a separate one of the groove walls to engage a separate end of the printing plate therebetween, the tie beam and the clamping body being adapted to extend at least over the width of the printing plate; means for elastically supporting the clamping body in the tie beam so that the clamping body can be extended to a stop, the tie beam being arranged to extend approximately to the end of the cylinder shell; and activating means for acting on the beam so that forces are directed radially on the printing cylinder.

5,485,784

PRINTING PLATE CYLINDER WITH UNIVERSAL LOCKUP APPARATUS

Alan R. Walschlaeger, Sr., 1334 S. Hamilton, Elmhurst, Ill. 60126

Filed Jun. 28, 1994, Ser. No. 267,859
Int. Cl.[6] B41F *1/28*
U.S. Cl. 101—415.1 **20 Claims**



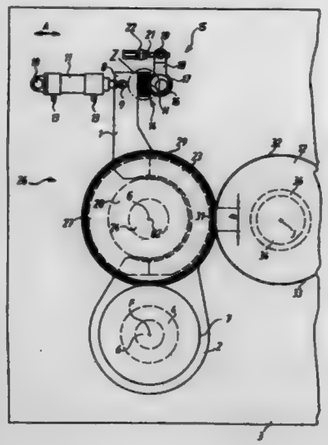
1. In a printing plate cylinder having an elongate mounting slot with a pair of opposite walls, the improvement being a universal lockup apparatus for releasibly holding opposed edges of a printing plate within the mounting slot, comprising:
- a member for clamping at least one of the opposed edges of the plate against one of the opposed walls of the slot;
- a brace member;
- means for mounting the brace member for movement between one operative position in which it is interposed between one of the pair of opposite walls of the slot and the clamping member to brace the clamping member against movement away from the other one of the pair of opposite walls to another operative position in which the brace member is interposed between the other one of the pair of opposite walls of the slot and the clamping member to brace the clamping member against movement away from the one of the pair of opposite walls.

5,485,785

PROCESS AND DEVICE FOR ADJUSTING THE CONTACT PRESSURE OF A SYNTHETIC-BLANKET ROLLER IN ROTARY PRINTING PRESSES

Georg Schneider, Würzburg, and Ewald Röthlein, Retzstadt, both of, Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany

Filed Mar. 23, 1995, Ser. No. 403,849
Claims priority, application Germany, Sep. 25, 1992, 42 32 163.8
Int. Cl.[6] B41F *23/04*
U.S. Cl. 101—487 **8 Claims**



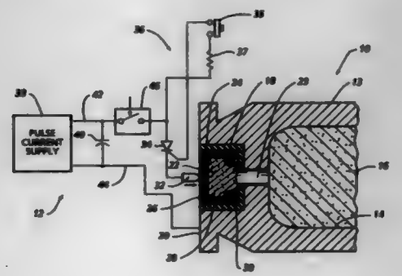
1. A process for maintaining a set contact pressure per defined width of a roller mark of an ink application roller provided with a resilient covering against a printing cylinder of a rotary printing press during temperature changes of the printing cylinder including the steps of:
- supporting said ink application roller in a lever arm having an upper end and a lower end;
- connecting said lever arm to a frame of said press for pivotal movement;
- providing an adjustable stop on said frame;
- using said adjustable stop to shift said lever arm to define said roller mark;
- utilizing means to bias said lever arm against said adjustable stop;
- interposing a temperature compensating element between said lever arm and said adjustable stop; and
- using said temperature compensating element to automatically shift said ink application roller with respect to said printing cylinder in response to heating changes of said ink application roller.

5,485,786

ELECTRONIC PRIMER IGNITION SYSTEM

Philip W. Hesse, Ellicott City; Raymond Goetz, Baltimore, and Daniel Lenko, Monrovie, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 151,695, Nov. 15, 1993. This application May 2, 1995, Ser. No. 433,858
Int. Cl.[6] F41A *19/58*; F42B *5/08*
U.S. Cl. 102—202.5 **11 Claims**



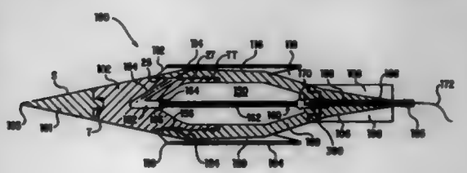
1. In combination with a cartridge case within which a primer mixture is retained by a retention cap and means for ignition of the primer mixture including a firing pin and triggering circuit means for transmission of electrical ignition current to the firing pin and a voltage supply battery, the improvement residing in: converter means connecting the battery to the triggering circuit means for supply thereto of uniform pulsating voltage from which the ignition current is derived and voltage charging means connected to the battery for prolonging said supply of the uniform voltage to the triggering circuit means to continue said transmission of the electrical ignition current to the firing pin following displacement thereof into contact with the retention cap.

5,485,787

GAS GUN LAUNCHED SCRAMJET TEST PROJECTILE

Kevin G. Bowcutt, Irvine, and Harry Shortland, Torrance, both of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Jun. 21, 1994, Ser. No. 264,287
Int. Cl.[6] F42B *15/00*; F02K *7/10*
U.S. Cl. 102—374 **4 Claims**



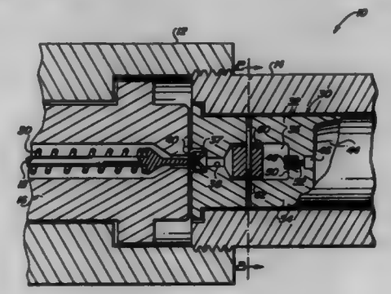
1. A gas gun-launched, propulsion-assisted scramjet projectile adapted to be fired from a gun at velocities greater than Mach 5, comprising:
- a body, including an external compression section, an internal compression section, a combustion section, and a nozzle section,
- a sabot assembly releasable secured about the rear end portion of said body,
- means for providing fuel at said combustion section,
- means, coupled with said sabot assembly, for initiating operation of said fuel providing means when said sabot separates from said projectile as it exits from the barrel of the gun, and means for channeling ambient fluid to an engine in one of the sections of the body,
- said channeling means and said body cooperating with the engine to produce thrust greater than drag when said projectile travels at velocities greater than Mach 5.

5,485,788

COMBINATION EXPLOSIVE PRIMER AND ELECTRO-EXPLOSIVE DEVICE

Martin Corney, Glendora, Calif., assignor to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Sep. 27, 1994, Ser. No. 313,625
Int. Cl.[6] F42B *5/08*
U.S. Cl. 102—472 **26 Claims**



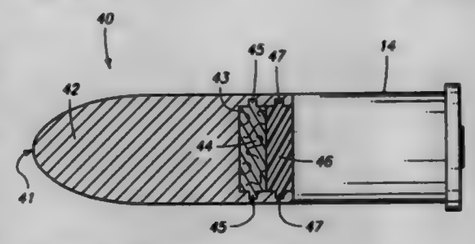
1. A combined explosive primer and electro-explosive device comprising:
- a firearm cartridge having an explosion chamber adjacent a base portion and an electric detonator positioned to detonate a quantity of explosive material to be detonated in said chamber;
- a piezoelectric crystal mounted within an expansion chamber in said base portion in a position to be impacted by the movement of an inertial element which is also mounted within said expansion chamber, said inertial element having a forward end facing the detonator and a rear end remote therefrom, the forward end terminating in a forward wall;
- electric circuit leads for electrically coupling the piezoelectric crystal to the electric detonator; and
- means including an explosive primer for driving said inertial element to a point of impact of the piezoelectric crystal in order to fire said cartridge.

5,485,789

BULLET IDENTIFICATION

William E. Collier, 1601 S. Brand Blvd., Glendale, Calif. 91204

Continuation-in-part of Ser. No. 183,078, Jan. 18, 1994, abandoned. This application Sep. 20, 1994, Ser. No. 309,257
Int. Cl.[6] F42B *12/00*
U.S. Cl. 102—501 **11 Claims**



1. An identifiable bullet, comprising;.
- a main projectile portion having a front nose portion and a first rear wall opposite the front nose portion;
- a chamber extending from the first rear wall;

at least one annular groove, the at least one annular groove extending outward of the chamber;

an identification section mounted within the chamber adjacent the first rear wall of the main projectile portion; said identification section having indicia affixed thereon for identification of the projectile portion after being discharged from a firearm, wherein the identification section extends into and interlocks with the at least one annular groove; and

plug mounted within the chamber adjacent the identification section to secure and maintain the identification section within the chamber and protect the identification section from damage.

5,485,790

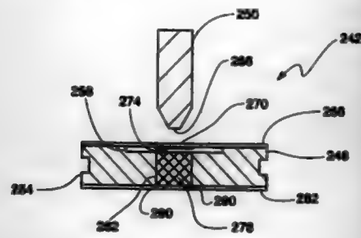
GAS GENERATOR WITH MULTIPLE-CHARGE PRIMER

Brian K. Hamilton, Littleton, Colo., assignor to Oea, Inc., Denver, Colo.

Continuation of Ser. No. 68,889, May 28, 1993, abandoned. This application Mar. 21, 1995, Ser. No. 408,113

Int. Cl.[6] C06D *5/00*

U.S. Cl. 102—531 **22 Claims**



1. A gas generator, comprising:

a gas generator housing comprising at least one gas generator outlet and containing a gas generating propellant;

a primer comprising a primer housing and first and second charges within said primer housing, wherein said primer housing is interconnected with said gas generator housing, wherein said first and second charges are spaced from each other within said primer housing, and wherein said second charge comprises a first surface which projects toward said first charge and has a first surface area, said primer housing further comprising first and second interconnected and aligned bores which collectively extend through said primer housing and input and output discs which close an end of said first and second bores, respectively, said first charge being positioned on an interior surface of said input disc and said second charge being positioned within at least a portion of said second bore;

a firing pin aligned with said primer, said input disc projecting toward said firing pin and said output disc projecting toward said propellant, wherein said firing pin engages said primer to frictionally engage said first and second charges to ignite at least said second charge, said propellant being ignited by said ignition of at least said second charge to generate propellant gases which flow out of said at least one gas generator outlet;

said firing pin concentrating an engaging force between said first and second charges over a region of said first surface of said second charge which is substantially less than said first surface area, wherein a ratio of an area of said region to said first surface area is within the range from about 0.07% to about 2.56%; and

an automotive safety device responsive to said propellant gases.

5,485,791

DEVICE FOR MAINTAINING A REGION OF A CONVEYOR PATH OF AN OVERHEAD CONVEYOR FREE OF CONVEYOR CARRIAGES IN THE EVENT OF AN ALARM

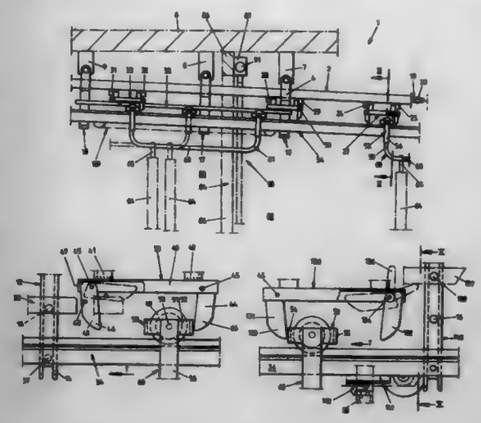
Udo Lubbecke, Detmold; Ralf Schneuing, and Gerhard Schilling, both of Bielefeld, all of, Germany, assignors to Dürkopp Adler Aktiengesellschaft, Germany

Filed Feb. 10, 1994, Ser. No. 194,488

Claims priority, application Germany, Feb. 13, 1993, 43 04 369.0

Int. Cl.[6] B65G *17/00*

U.S. Cl. 104—172.4 **8 Claims**



1. An overhead conveyor with an arrangement for clearing conveyor carriages from a predetermined region of a travel rail in the event of an alarm, the overhead conveyor comprising:

a plurality of conveyor carriages received on said travel rail, for travelling along said travel rail;

a drivable pull line associated with said travel rail and driven by a main drive for driving said conveyor carriages;

a plurality of drivers connected to said pull line, at least one of said drivers having at least one stop pawl which has an operating position in which it is disposed for engaging the conveyor carriages travelling along said travel rail, and a non-operative position for allowing said conveyor carriages to travel along said travel rail without said stop pawl engaging said conveyor carriages;

a rail fixed in position in said region to be cleared of conveyor carriages for engaging and placing each stop pawl into its non-operating position while said driver with said stop pawl is in said region be cleared; and

an auxiliary drive in said region which is selectively operable for engaging any conveyor carriage which is present in said region, and for bringing such conveyor carriage out of said region.

5,485,792

LATENT IMAGE DEVELOPMENT SYSTEM

Patrick J. Keyser, Milwaukee; W. James Bouman, Burlington, and Robert W. Biemeck, Racine, all of Wis., assignors to Western Publishing Co., Inc., Racine, Wis.

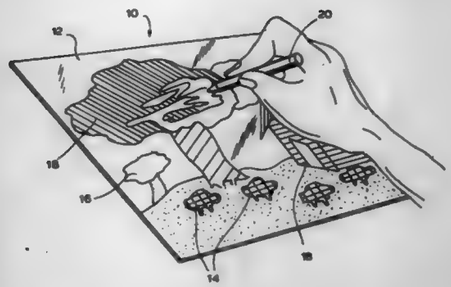
Filed Jul. 7, 1995, Ser. No. 499,680

Int. Cl.[6] G09D *11/02;13/00*

U.S. Cl. 106—21 R **27 Claims**

1. A latent image development system for producing a multicolor image on a substrate, comprising in combination:

(A) a substrate having a colorless or faintly colored latent multicolor image thereon, said latent image being formed by a plurality of different color former compositions, each including a Lewis base color former; and



(B) a dispenser adapted to development of said latent multicolor image on said substrate by marking thereover and reacting with a single color developer composition, said color developer composition being free of inorganic metallic salts and including a Lewis acid color developer operative for each of said color former compositions.

5,485,793

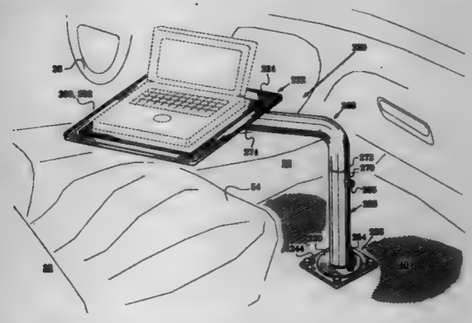
VEHICLE DESK

Anthony D. Crowell, 959 Triunfo Canyon, West Lake Village, Calif. 91361

Continuation-in-part of Ser. No. 14,731, Feb. 8, 1993, abandoned. This application Dec. 29, 1993, Ser. No. 175,288

Int. Cl.[6] A47B *23/00*

U.S. Cl. 108—44 **3 Claims**



1. A vehicle desk, comprising:

a base configured for securement thereof to a vehicle floor;

a first support member having upper and lower ends;

a second support member having inner and outer ends;

a shelf defining a work surface;

an annular rim having inner and outer surfaces, said rim defined by one of said base and said first support member lower end;

an annular groove having inner and outer surfaces, said groove defined by the other of said base and said first support member lower end;

said rim supportingly received in said groove;

said inner and outer surfaces of said rim firmly contacting said inner and outer surfaces of said groove to support said first support member against lateral forces thereon, and to resist rotational disengagement of said first support member from said base;

a first socket defined by one of said first support member upper end and said second support member inner end;

a first pin defined by the other said first support member upper end and said second support member inner end;

said first pin rotatably and selectively lockably received in said first socket;

a second socket defined by one of said second support outer end and said shelf;

a second pin defined by the other said second support member outer end and shelf; and,

said second pin rotatably received in said second socket.

5,485,794

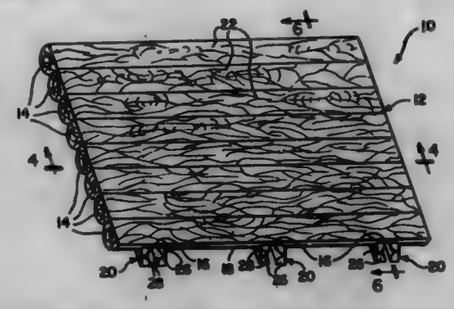
STRUCTURE FOR PALLETS, FLOORING, PANELLING AND FENCING

Peter Sing, P.O. Box 11532, Winslow, Wash. 98110

Filed Apr. 25, 1994, Ser. No. 232,641

Int. Cl.[6] B65D *19/00*

U.S. Cl. 108—51.1 **18 Claims**



18. Structure for pallets, flooring, panelling, and fencing, which comprises:

a plurality of parallelly and adjacently aligned log lengths, each having a planar surface, said log lengths being so oriented that said planar surfaces together form an even level outer surface for the assembled structure, said log lengths being selected from the group consisting of: half-log sections cut longitudinally from small diameter logs, each cut flat surface thereof being part of said outer surface of the assembled structure; and quarter-log sections cut longitudinally, and diametrically twice, into right-angled sectors, said quarter-log sections being attached in pairs so oriented that one of the two cut flat surfaces of each of said attached pairs is in contiguous planar with one of the two cut flat surfaces of its attached quarter-log mate, both being part of said outer surface of the assembled structure;

at least two support rails spacedly and transversely attached to each of said plurality of log lengths on the sides thereof opposite said cut planar surfaces of the structure, said support rails being conventional lumber beams;

means for interlocking each of said plurality of log lengths in said assembly with each of said at least two support rails; and

means for neutralizing variations in thickness, irregularities and taper in each of said plurality of log lengths to ensure the levelness of the assembled structure.

5,485,795

FREE STANDING EXTENSION TABLE AND METHOD OF MANUFACTURE

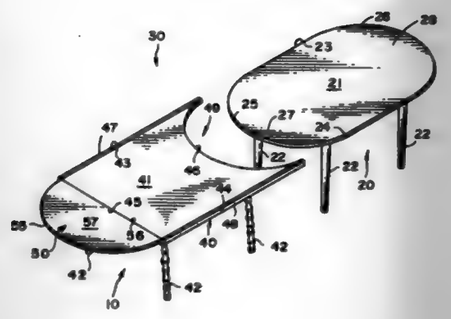
Jeanne L. Williams, 332 So. Gill St., State College, Pa. 16801

Filed Mar. 29, 1995, Ser. No. 412,947

Int. Cl.[6] A47B *1/04*

U.S. Cl. 108—69 **20 Claims**

1. A table comprising a table top, said table top being generally planar and including diametrically opposite table top portions, a first of said diametrically opposite table top portions including an outwardly opening recess, a second of said diametrically opposite table top portions defining an outwardly directed projection, said table second top portion being defined by a part of said table top removed from said table first top portion to define said projection and form said recess, said recess and said projection each including an edge configuration defined by a respective recess edge and a projection edge, said recess edge and projection edge are substantially of the same contour, and hinge means for hinging said projection to said first table top portion along an edge remote from said recess edge.

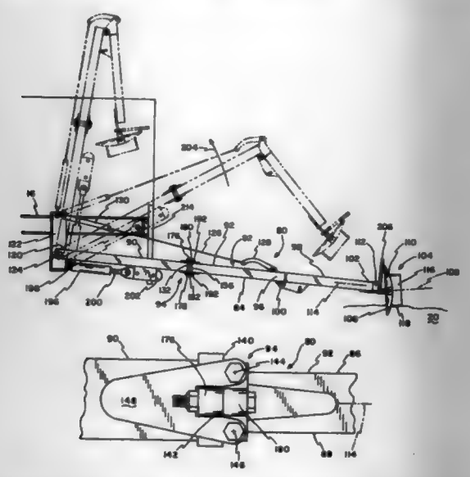


5,485,796

APPARATUS FOR MARKING SOIL

James H. Bassett, Sycamore, Ill., assignor to Dawn Equipment Company, Sycamore, Ill.

Filed Mar. 22, 1994, Ser. No. 215,912
Int. Cl.[6] A01B *39/14;69/02*
U.S. Cl. 111—33 23 Claims



1. An apparatus to be advanced in a travel direction by a vehicle for continuously marking underlying soil, said apparatus comprising:

an elongate body having first and second portions and substantially straight leading and trailing surfaces extending over a substantial length of the elongate body;

means at a first location on said elongate body for engaging and marking underlying soil as the soil marking apparatus is advanced over underlying soil;

means for connecting the elongate body to a vehicle to advance the soil marking apparatus over underlying soil; and

first means cooperating between the first and second elongate body portions for allowing the first portion of the elongate body to reposition relative to the second portion of the elongate body upon the first portion of the elongate body being acted upon by a predetermined force applied in a first direction at a first point,

said first cooperating means including a) a first element having a predetermined tensile strength, b) means for operatively engaging the first element with each of the first and second portions of the elongate body so that a force in excess of the predetermined force applied to the first elongate body portion at the first point in said first direction causes the first element to fall in tension, and c) second means cooperating between the first and second elongate body portions for allowing the first elongate body portion to move guidingly relative to the second elongate body portion under a force applied to the first elongate body portion at the first point in said first direction with the first element failed in tension,

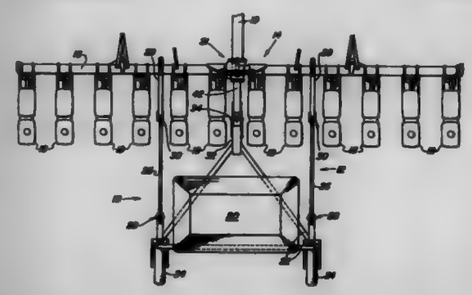
said first element residing between the leading and trailing surfaces of the elongate body.

5,485,797

TRAILING CART FOR AGRICULTURAL TOOLBAR

Lawrence D. Green, Bettendorf, Iowa, and Ronald L. Pratt, Taylor Ridge, Ill., assignors to Deere & Company, Moline, Ill.

Filed Apr. 29, 1994, Ser. No. 236,711
Int. Cl.[6] A01C *1/00;7/00*
U.S. Cl. 111—200 17 Claims



1. A trailing cart for being towed by a transverse toolbar, the cart comprising:

a frame having a pair of caster wheels for supporting the frame as it is moved over a field;

a material carrying hopper being supported on the frame;

first and second draft links pivotally coupled to the frame and extending forwardly from the frame for engagement with said transverse toolbar;

a central hitch located between the first and second draft links and extending forwardly from the frame for engagement with said transverse toolbar; and

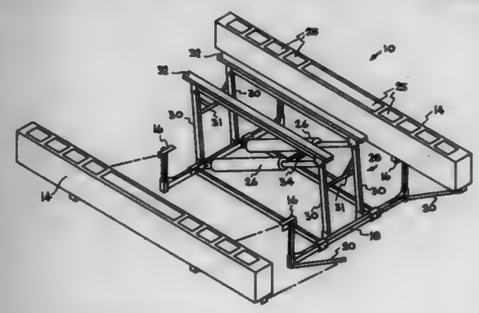
a floating link mounted to the central hitch for coupling the central hitch to said transverse toolbar, the floating link permits the central hitch to move forward and backward relative to said transverse toolbar to which it is attached as the trailing cart moves over uneven terrain.

5,485,798

BOAT LIFT

Ronald P. Samoian, 2022 Montauk Ct., and Scott R. Rister, 2032 Montauk Ct., both of Byron, Calif. 94514

Filed Mar. 24, 1994, Ser. No. 218,062
Int. Cl.[6] B63C *1/00*
U.S. Cl. 114—44 6 Claims



1. A boat lift comprising:

a pair of floats formed of polyurethane foam and a fiberglass casing enclosing the foam;

a plurality of mounting brackets bonded into the floats;

a base frame connected to the mounting brackets;

a pair of hydraulic rams pivotably mounted at one end to the base frame;

a first pair of cantilever arms pivotably mounted to the base frame at the opposite end of the base frame from said one end and having the distal ends of the hydraulic rams pivotably mounted thereto at the ends opposite the ends pivotably mounted to the base frame;

a second pair of cantilever arms pivotably mounted to said one end of the base frame;

a pair of boat hull bunks pivotably and hingedly connected from the first pair to the second pair of cantilever arms;

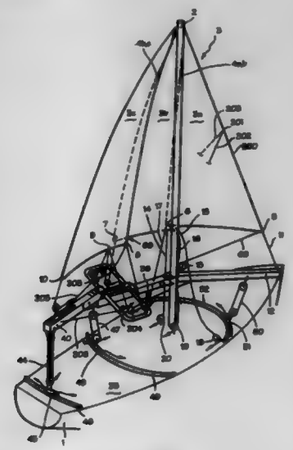
a locking mechanism for locking the hydraulic rams in an extended position with the first and second pair of cantilever arms in a raised position, said locking mechanism comprising a pair of pins and means for inserting and retracting said pins from the hydraulic rams.

5,485,799

DEVICE WITH AT LEAST ONE VARIABLE-GEOMETRY AERODYNAMIC MEMBER INCLUDING A BOUNDARY LAYER CONTROL SYSTEM

Pierre Julien, 13 rue du Maréchal Joffre, 78110 Le Vesinet, France

PCT No. PCT/FR92/00330, § 371 Date Oct. 18, 1993, § 102(e) Date Oct. 18, 1993, PCT Pub. No. WO92/18381, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 14, 1992, Ser. No. 137,085
Claims priority, application France, Apr. 17, 1991, 91 04719; May 3, 1991, 91 05445; Jul. 11, 1991, 91 08750; European Pat. Off., Apr. 14, 1992, 92401041
Int. Cl.[6] B63H *9/04*
U.S. Cl. 114—103 8 Claims



1. A device for a craft comprising:

(a) at least one element of aerodynamic shape, and having a pressure face side and a suction face side, said at least one element including at least one part for being folded up for propulsion and/or lift of the craft using the effect of wind;

(b) said at least one element comprising a sail structure divided into at least two parts along a dividing line, the at least two parts collectively forming a sail structure surface defining at least one opening therein for providing a passage of air from the pressure face side to the suction face side of said at least one element;

(c) guide means for guiding the air emerging from said at least one opening on the suction face side of said at least one element in a direction tangential to said at least one element, said guide means comprising an overlap zone defined between consecutive ones of the at least two parts, and the sail structure including a slit located at the dividing line and defined by the spacing between the consecutive sail structure parts in the overlap zone, said spacing being maintained by at least one spacer fixed to one of the two consecutive sail structure parts;

(d) first positioning means operatively connected to said at least one element for controlling both the position and the geometry of the at least one part of said at least one element, and for adjusting the geometry and the opening/closing of said at least one opening and said guide means of the air passage; and

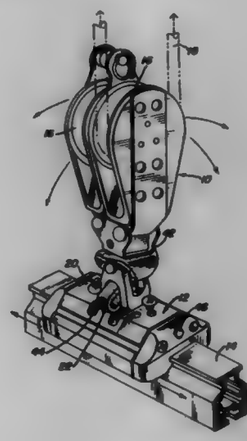
(e) second positioning means for setting the geometry of said at least one element, the geometry including the curvature of said at least one element in terms of hollow and in terms of shape.

5,485,880

RESILIENT STAND-UP DEVICE FOR BEARING BLOCK

Charles J. Lob, Oconomowoc, Wis., assignor to Harken, Inc., Pewaukee, Wis.

Filed Apr. 13, 1994, Ser. No. 227,123
Int. Cl.[6] B63H *9/10*
U.S. Cl. 114—204 11 Claims



1. A device for resiliently mounting an object on a support, said device comprising a hollow rigid member having opposed pairs of outwardly open jaws, one pair of jaws being disposed at right angles to the other, a resilient member disposed in said hollow rigid member and between said jaws, and means between respective jaws for rotatably connecting respective jaws to said object and said support about substantially perpendicular axes, with said resilient member under compression, to resiliently retain the object in an upright position relative to the support, and to resiliently resist rotation about said axes.

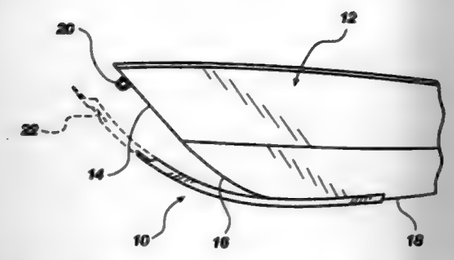
5,485,881

APPARATUS AND METHODS FOR SHIELDING THE KEEL AND/OR BOW OF A WATERCRAFT

Ronnie D. Gibbs, 2415 S. Redwood Rd., Woods Cross, Utah 84087

Filed Nov. 17, 1994, Ser. No. 341,687
Int. Cl.[6] B63B *59/02*
U.S. Cl. 114—219 21 Claims

1. An apparatus for shielding at least a portion of a longitudinally disposed exterior surface of a watercraft from abrasive dam-



age and for improving a hydrodynamic flow of water across said portion of said exterior surface of said watercraft, the apparatus comprising:

means for shielding said portion of said exterior surface of said watercraft, said shielding means having an elongated body, said elongated body having an exterior surface and an opposing contacting surface;

means for securing said contacting surface of said shielding means over said portion of said exterior surface of said watercraft; and

means for reducing drag of said flow of water across said portion of said exterior surface of said watercraft, said drag reducing means comprising at least two elongated channels formed in said exterior surface of said shielding means, wherein each of said elongated channels comprises an angular configuration selectively diverse from said other elongated channel.

5,485,802

METHOD AND APPARATUS FOR PULLING MONOCRYSTALS FROM A MELT

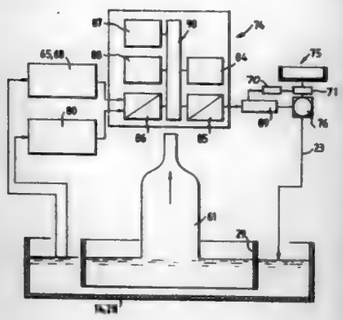
Burkhard Altekrüger, Alzenau; Roland Gesche, Seligenstadt; Martin Flachsel, Bad Vilbel, and Joachim Aufreiter, Alzenau, all of, Germany, assignors to Leybold Aktiengesellschaft, Hanau, Germany

Filed Jan. 18, 1994, Ser. No. 183,005

Claims priority, application Germany, Jan. 16, 1993, 43 01 072.5

Int. Cl.[6] C30B *15/20*

U.S. Cl. 117—14 **12 Claims**



1. Method for pulling monocrystal from a melt, said method comprising

providing a crucible,

feeding material to be melted to said crucible,

heating said material in said crucible to form a bath of molten material,

pulling said molten material from said crucible to form a monocrystal,

providing an empirically determined data field including at least two parameters from a first group and at least one parameter from a second group, said first group comprising bath temperature, bath level, and crystal diameter, said second group comprising material feed rate, pulling rate, and heater power, measuring said at least two parameters from said first group, and controlling said at least one parameter from said second group by means of a fuzzy processor so that said at least two measured parameters from said first group and said at least one parameter from said second group conform to said empirically determined data field.

5,485,803

METHOD OF PREDICTING CRYSTAL QUALITY OF SEMICONDUCTOR SINGLE CRYSTAL AND APPARATUS THEREOF

Ryuichi Habu, Kawasaki, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

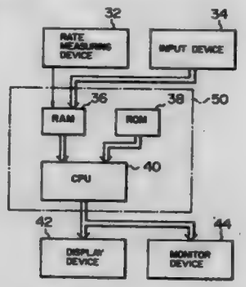
PCT No. PCT/JP94/00006, § 371 Date Sep. 2, 1994, § 102(e) Date Sep. 2, 1994, PCT Pub. No. WO94/16124, PCT Pub. Date Jul. 21, 1994

PCT Filed Jan. 6, 1994, Ser. No. 302,722

Claims priority, application Japan, Jan. 6, 1993, 5-016771

Int. Cl.[6] C30B *15/20*

U.S. Cl. 117—14 **2 Claims**



1. A method of predicting density and distribution of crystal defects that would appear in a semiconductor wafer during heat treatment processes thereof on the basis of respective densities and distributions of interstitial atoms and atom vacancies frozen, during crystal growth, into a semiconductor single crystal which is used as a raw material for said semiconductor wafer, in a section of said semiconductor single crystal corresponding to said semiconductor wafer, said method comprising the steps of:

obtaining a temperature of the material during crystal growth, which temperature is variable as a function of time and location in the crystal as grown, based on a heat-transfer equation; and

deriving said respective densities and distributions of interstitial atoms and atom vacancies under a condition of the temperature as obtained from a first diffusion equation representing a change with time in concentration of interstitial atoms in the semiconductor single crystal in the course of growth from a melt as a function of a position in the crystal and a second diffusion equation representing a change with time in concentration of atom vacancies in said crystal as a function of a position in the crystal, said first diffusion equation including a term representing contribution of ordinary diffusion of interstitial atoms to the change with time in concentration of interstitial atoms in the crystal, a term representing contribution of uphill diffusion of interstitial atoms to the change with time in concentration of interstitial atoms in the crystal, and a term representing contribution of pair annihilation reaction between interstitial atoms and atom vacancies to the change with time in concentration of interstitial atoms in the crystal, said second diffusion equation including a term representing contribution of ordinary diffusion of atom vacancies to the change with time in concentration of atom vacancies in the crystal, a term representing contribution of uphill diffusion of atom vacancies to the change with time in concentration of atom vacancies in the crystal, and a term representing contribution of pair annihilation reaction between interstitial atoms and atom vacancies to the change with time in concentration of atom vacancies in the crystal.

5,485,804

ENHANCED CHEMICAL VAPOR DEPOSITION OF DIAMOND AND RELATED MATERIALS

James J. Adair, and Rajiv K. Singh, both of Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.

Filed May 17, 1994, Ser. No. 245,293

Int. Cl.[6] C30B *29/04*

U.S. Cl. 117—90 **12 Claims**

FIGURE 1A



1. A method for the formation of a film composed of a high surface energy material on a substrate comprising the steps of:

(A) providing a substrate having a surface charge opposite to the surface charge of particles of a high surface energy material;

(B) electrostatically adsorbing a number of said particles onto said substrate by exposing said substrate to an aqueous colloidal suspension of said particles of said high surface energy material;

(C) removing said substrate from said aqueous colloidal suspension; and

(D) depositing a film of said high surface energy material onto said substrate and said adsorbed particles by chemical vapor deposition.

5,485,805

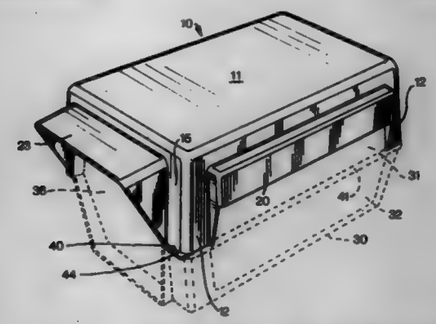
COVER FOR PET CARRIER

Jay P. Meissner, 4704 Brownville Rd., Powder Springs, Ga. 30073

Filed Jan. 14, 1994, Ser. No. 180,971

Int. Cl.[6] A01K *31/00*

U.S. Cl. 119—17 **2 Claims**



1. A cover for mounting on a live animal shipping container having at least one ventilation opening, comprising:

(a) a top wall and one first side wall which extends downwardly therefrom, the first side wall having a cutout with distal side edges formed therein which, when the cover is mounted on the container, overlays and is at least as large as the ventilation opening;

(b) an awning which extends laterally from the first side wall, the awning defining a structure having first and second side protrusions which extend generally perpendicularly from the first side wall and which oppose each other along the distal side edges of the cutout, the awning preventing rain from entering through the cutout formed in the first side wall and into any ventilation opening which the cutout overlays while allowing free circulation of air through the ventilation opening; and

(c) second, third and fourth side walls, the first and second side walls and the third and fourth side walls forming first and second pairs of opposing side walls, respectively; the top wall and the two pairs of opposing side walls defining a watertight cavity.

5,485,806

MOATED PET FOOD TRAY

Masayuki Watanabe, P.O. Box 265194, Daytona Beach, Fla. 32126-5194

Filed Sep. 26, 1994, Ser. No. 318,571

Int. Cl.[6] A01K *5/01;7/00*

U.S. Cl. 119—51.5 **3 Claims**



1. A moated pet food tray comprising:

a main body having a front wall spaced from a rear wall, and an opposed pair of side walls, said main body being shaped so as to define a central cavity;

a divider wall extending across said central cavity to define a water cavity on a first side of said divider wall and a moat cavity on a second side of said divider wall;

and,

a food bowl concentrically positioned within said moat cavity, said food bowl including a food cavity within which food can be positioned,

said main body includes a water cavity floor positioned a first distance from a ground surface upon which said moated pet food tray resides, and a moat cavity floor positioned a second distance from said ground surface,

said main body further includes a transfer hole permitting fluid communication between said moat cavity and said water cavity, said transfer hole being defined by a lower edge of said divider wall extending across an arcuate surface of said main body located between said water cavity and said moat cavity, said arcuate surface integrally connecting said water cavity floor to said moat cavity floor, wherein water positioned within said water cavity will enter said moat cavity through said transfer hole to an equal level on both said of said divider wall.

5,485,807

HAND-HELD BRUSH

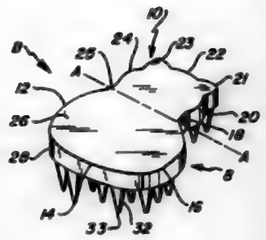
Dale E. Bertwell, Denver, and Joseph P. Markham, Arvada, both of Colo., assignors to B & G Ventures, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 162,269, Dec. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 13,697, Sep. 30, 1993, Pat. No. Des. 356,685. This application Apr. 11, 1994, Ser. No. 225,566

Int. Cl.[6] A01K *13/00*

U.S. Cl. 119—93 **6 Claims**

1. A brush for grooming animals wherein said brush has a top surface and a bottom surface, said brush comprising:



an oval body section;

a smaller oval head section connected to said body section;

a protruding first ear integral with said smaller oval head section; and

a second protruding ear spaced from said first protruding ear and integral with said smaller oval head section; and

a plurality of bristles integral with said bottom surface of said brush.

5,485,808

SYNTHETIC SEA WATER SOLUTION KIT AND METHOD OF MANUFACTURE

David A. Huebner, 724-9th Ave. S., South St. Paul, Minn. 55075

Filed Feb. 26, 1993, Ser. No. 22,993

Int. Cl.[6] A01K *63/04*

U.S. Cl. 119—231 2 Claims

1. A synthetic sea water kit comprising a first container containing a first concentrated aqueous solution of dissolved inorganic salts (Part A) and a second container containing a second concentrated aqueous solution of dissolved inorganic salts (Part B), wherein said Part A optimally contains approximately 89,200 milligrams per liter chloride ion, 52,600 milligrams per liter sodium ion, 25,350 milligrams per liter sulfate ion, 9,450 milligrams per liter magnesium ion, 50 milligrams per liter potassium ion, 1,450 milligrams per liter bicarbonate ion, 250 milligrams per liter borate ion, and 80 milligrams per liter silicate ion, and said Part B optimally contains approximately 99,800 milligrams per liter chloride ion, 52,100 milligrams per liter sodium ion, 3,000 milligrams per liter magnesium ion, 4,000 milligrams per liter calcium ion, 3,950 milligrams per liter potassium ion, 600 milligrams per liter bromide ion, and 100 milligrams per liter strontium ion.

5,485,809

CHEWABLE ANIMAL TOY

Francis C. Carroll, Philadelphia, Pa., assignor to EPP, Inc., Philadelphia, Pa.

Filed May 6, 1994, Ser. No. 239,114

Int. Cl.[6] A01K *29/00*

U.S. Cl. 119—710 19 Claims

1. A chewable animal toy comprised of a single ethylene/methacrylic acid copolymer, ionically cross-linked ionomer resin having a hardness such that when chewed by an intended animal, the toy does not puncture, splinter, shatter, or crack, or prevent biting into said resin but instead shaves off and roughens and bristles whereby the animal is satisfied with the gnawing action and the animal's teeth are scoured and cleaned.

5,485,810

LEASH-CONTROLLABLE DOG HARNESS HAVING PROTECTIVE SLEEVES

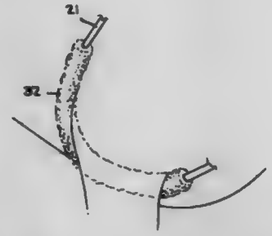
Joseph S. Sporn, 274 W. 86th St. #4B, New York, N.Y. 10024

Continuation of Ser. No. 194,720, Feb. 10, 1994, Pat. No. 5,359,964, which is a continuation-in-part of Ser. No. 23,638, Feb. 26, 1993, Pat. No. 5,329,885. This application Apr. 4, 1994, Ser. No. 222,034

The portion of the term of this patent subsequent to Nov. 1, 2011, has been disclaimed.

Int. Cl.[6] A01K *27/00*

U.S. Cl. 119—792 6 Claims



1. A harness for a dog having right and left foreleg crotches leading to sensitive foreleg pits, and a leash coupled to the harness which extends to the rear of the dog to effect control of the dog; said harness comprising two straps which pass through the respective crotches and are coupled to the leash whereby when the leash is pulled, the straps then ride up the crotches to press against the foreleg pits to control the dog, each strap having mounted thereon a tubular sleeve of flexible material which extends through the related crotch and engages the related foreleg pit, the strap being slidable in the sleeve whose exterior is formed of soft material to prevent chafing of the dog by the sliding strap.

5,485,811

STRETCHABLE MOLDED LEASH

Chris J. Jacobsen, 4020 County Rd. M, Middleton, Wis. 53562, and Kenneth Muderiak, Shorewood, Wis., assignors to Chris J. Jacobsen, Middleton, Wis.

Filed Jul. 28, 1994, Ser. No. 282,039

Int. Cl.[6] A01K *27/00*

U.S. Cl. 119—798 20 Claims



1. A one-piece molded animal leash comprising a handle and a lead, wherein the handle includes a base member, two side members, and a web-like generally planar strengthening piece, wherein the Side members extend from the base member to the lead to define a generally triangular shape for the handle, and further wherein the strengthening piece extends from one side member to the other side member and is oriented generally parallel to the plane defined by the handle.

5,485,812

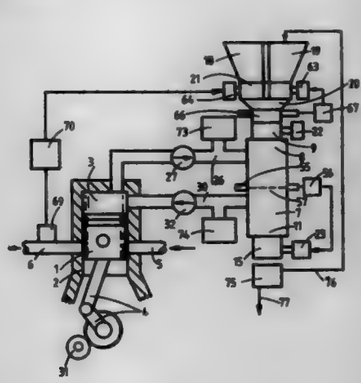
MULTIPLE SOURCES REFUEL MECHANISM

Joseph C. Firey, P.O. Box 15514, Seattle, Wash. 98115-0514

Filed Jan. 26, 1995, Ser. No. 378,639

Int. Cl.[6] F02B *45/00*

U.S. Cl. 123—23 4 Claims



1. A multiple solids sources refuel means for creating a single final premixed refuel material, containing portions from each of said multiple sources, and for inserting said final premixed refuel material into a reaction chamber, and comprising:

at least two separate primary sources of refuel materials contained in separate source hoppers and each said source hopper comprising an outlet;

at least one blender means for proportioning, transferring, and mixing two separate refuel materials, each said blender means comprising;

a blender inlet for two separate refuel materials to be premixed;

proportioner means for proportioning the volumetric ratio of two separate refuel materials, and comprising means for adjusting said volumetric ratio;

mixer means for mixing two separate refuel materials together to create a single premixed refuel material;

a receiving hopper for receiving and containing premixed refuel materials and comprising an outlet;

transfer means for transferring refuel materials from said blender inlet into said receiving hopper through said proportioner means followed by said mixer means, and comprising transfer drive means for driving said transfer means;

said inlet of each said blender means being connected to the outlet of two hoppers for containing refuel materials;

a refuel mechanism means for inserting refuel materials into said reaction chamber, and comprising refuel drive means for driving said means for inserting and adapted to carry out said insertion over a refuel process time interval, and adapted to apply a compression force to the contents of said reaction chamber, at all times when said reaction chamber is operating except during said refuel process time interval, said refuel mechanism means comprising an inlet for refuel materials;

that one final receiving hopper, containing solid materials from all of said at least two separate primary sources of refuel materials, being connected, via its outlet, to the inlet of said refuel mechanism means for inserting materials;

each said source and receiving hopper containing refuel materials, except said one final receiving hopper, being connected via its outlet to the blender inlet of one of said blender means.

5,485,813

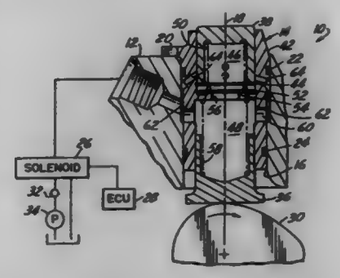
LOST MOTION ACTUATOR WITH DAMPING TRANSITION

Mark R. Molitor, Muskegon, Mich., and James T. Robnett, Royal Oak, Mich., assignors to Siemens Automotive Corporation, Auburn Hills, Mich.

Filed Jan. 11, 1995, Ser. No. 371,250

Int. Cl.[6] F01L *1/16*

U.S. Cl. 123—90.12 8 Claims



1. A lost motion hydraulic actuator for use between a cam and a valve of an internal combustion engine and including a housing defining first and second oppositely opening coaxial cylinders, a first piston reciprocable in the first cylinder and defining a first chamber therein, a second piston reciprocable in the second cylinder and defining a second chamber therein, first biasing means urging the first piston axially outwardly toward operative connection with such cam, second biasing means urging the second piston axially outward toward operative connection with such valve, inlet means for admitting hydraulic fluid into said first chamber, a restrictive orifice continuously interconnecting said chambers for damping valve seating motion during valve closing, one way bypass flow means permitting flow around said orifice from said first chamber to said second chamber during valve opening, and secondary communication means between said chambers including a plurality of ports through said second cylinder and controlled by said second piston, said ports being open during valve lift beyond an initial amount for free flow of fluid between the chambers and said ports being closed by the piston prior to seating of the valve requiring flow from the second chamber to pass through said orifice for damping valve seating, the actuator being characterized in that:

said ports and said second piston are configured to provide sequential closing of the ports during valve closing to limit the rate of change of fluid flow from the second chamber and provide a smooth transition to the inception of damping.

5,485,814

RESETTING IGNITION SWITCH FOR A GASOLINE POWERED CHAIN SAW

Lloyd H. Tuggle, and Paul A. Warfel, both of Shreveport, La., assignors to WCI Outdoor Products, Inc., Cleveland, Ohio

Filed Mar. 1, 1995, Ser. No. 396,676

Int. Cl.[6] F02D *37/02*

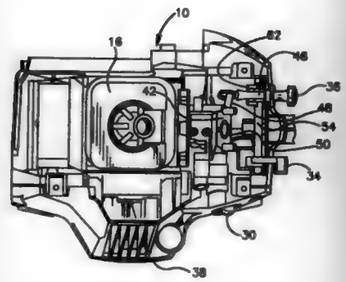
U.S. Cl. 123—179.5 17 Claims

1. An ignition system for a portable power tool, comprising:

a choke assembly manually movable between a normal, first position and a choking, second position;

an ignition switch manually movable between a run position and a stop position; and,

a member operatively interconnecting said choke assembly and said ignition switch whereby movement of said choke assembly into said choking position moves said ignition switch into said run position, and wherein said ignition switch is freely movable independent of said choke assembly when said choke assembly is in said normal position.

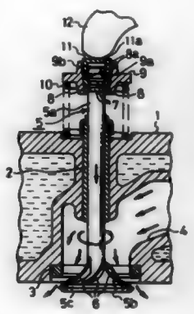


5,485,815

POPPET VALVE DEVICE

Toshimitsu Shida, Fujisawa, Japan, assignor to Fuji Oozx Inc., Fujisawa, Japan

Filed May 12, 1995, Ser. No. 439,789
Claims priority, application Japan, Nov. 25, 1993, 5-295460
Int. Cl.[6] F01L *3/06;3/20*
U.S. Cl. 123—188.3 **7 Claims**



1. A poppet valve device comprising:

a valve which comprises a valve stem and a valve head which is provided at a lower end of the valve stem, a circumferential groove being formed at an upper end of the valve stem;

a valve casing having first and second ports, the valve stem being slidably fitted in the valve casing;

a pair of semicylindrical cotters which are tapered downward, the cotters having a circumferential projection which is engaged in the circumferential groove of the valve stem with a small gap;

a valve spring;

a valve spring retainer which is urged by the valve spring, the cotters being fitted in the retainer so that the cotters and the retainer are engaged with the valve stem;

a press member on the cotters; and

push means for pushing the press member, the press member being pushed by the push means to press the cotters to move the valve downward so that the first port of the valve casing is opened or closed by the valve head, the valve head having a plurality of arcuate fins radially formed around its axis, thereby rotating the valve little by little by pressure of fluid which flows between the fins.

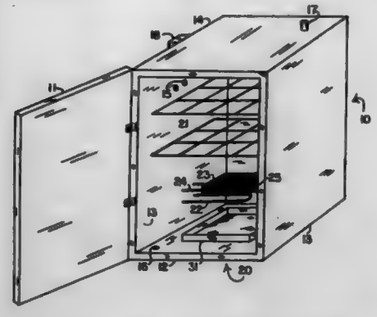
5,485,816

CHARCOAL BURNING COOKING DEVICE

Verlon F. Cox, 1576 Lake Shore Blvd., Jacksonville, Fla. 32210, and Don Chaney, 6086 Gulf Rd. North, Jacksonville, Fla. 32244

Filed Sep. 27, 1994, Ser. No. 312,873
Int. Cl.[6] F24B *3/00*
U.S. Cl. 126—25 R **6 Claims**

1. A food cooking oven which utilizes charcoal to supply the



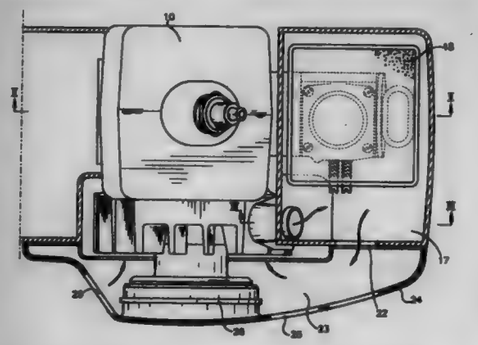
heat to cook the food, said oven comprising a housing, a door, a charcoal container, charcoal ignition means, a thermostat to monitor internal temperature within the housing, and temperature controller means connected to said thermostat and said charcoal ignition means, whereby said temperature controller means activates and deactivates said charcoal ignition means in response to said internal temperature, said charcoal ignition means and said charcoal container being in close proximity to one another such that said charcoal ignition means ignites and reignites charcoal contained in said charcoal container.

5,485,817

ARRANGEMENT IN AN INTERNAL COMBUSTION ENGINE

Sven G. B. Dahlberg, Grönna, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Feb. 21, 1995, Ser. No. 391,549
Claims priority, application Sweden, Mar. 9, 1994, 9400795
Int. Cl.[6] F02B *77/00*
U.S. Cl. 123—198 E **6 Claims**



1. Arrangement in a two-stroke internal combustion engine, said engine comprising a crankcase (12), a fan housing (19) having an impeller (20), and a carburetor chamber (17) having a carburetor (16), said carburetor being connected to said crankcase via an intake passage (15) and said carburetor chamber being connected via an inlet passage (21) to said fan housing on an outlet side of said impeller, wherein the carburetor chamber (17) has an opening (22) connected to a low pressure zone of the housing (19).

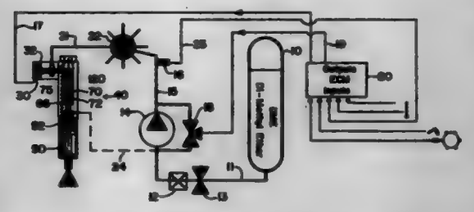
5,485,818

DIMETHYL ETHER POWERED ENGINE

James C. McCandless, Grosse Pointe Park, Mich., assignor to Navistar International Transportation Corp., Chicago, Ill.

Filed Feb. 22, 1995, Ser. No. 393,103
Int. Cl.[6] F02B *3/00*
U.S. Cl. 123—294 **15 Claims**

1. An internal combustion engine of the type that includes at



least one combustion cylinder, a fuel storage tank, an accumulator connected to the fuel storage tank by a conduit and a fuel delivery system for delivering fuel from the accumulator to said at least one combustion cylinder wherein the improvement comprises:

said internal combustion engine being fueled by dimethyl ether;

means for pressurizing said fuel storage tank;

an engine driven fuel pump in said conduit that has the capacity to deliver fuel, during engine start-up, to said accumulator at a pressure in the range of 100–300 bar;

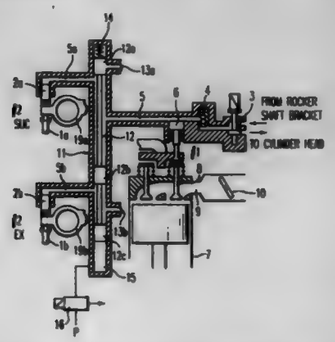
a fuel injection system including a unit injector which injects said dimethyl ether directly into for said at least one combustion cylinder, said injector including a nozzle that can vary the fuel flow rate as a function of injection pressure, said unit injectors including a solenoid that controls injection timing and the duration of the injection cycle.

5,485,819

INTERNAL COMBUSTION ENGINE

Isao Joko; Toshiaki Kakegawa, and Seiji Shundo, all of Hino, Japan, assignors to Hino Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 169,875, Dec. 20, 1993, Pat. No. 5,406,918. This application Aug. 4, 1994, Ser. No. 285,425
Claims priority, application Japan, Aug. 4, 1993, 5-211050; May 23, 1994, 6-108406
Int. Cl.[6] F02D *13/04*
U.S. Cl. 123—321 **8 Claims**



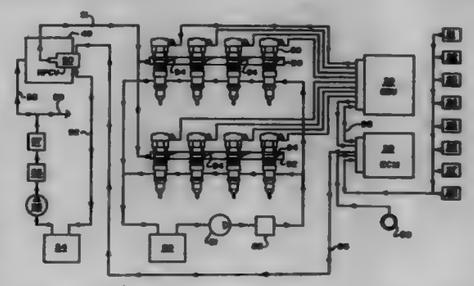
1. A four stroke internal combustion engine, comprising a first cylinder, a first master piston, a first rocker arm in engagement with said first master piston, a first oil passage supplied with oil under pressure, an exhaust valve and an exhaust port on said first cylinder, and a slave piston associated with said first cylinder, a first end of said slave piston communicating with said first oil passage and a second end of said slave piston arranged adjacent said exhaust valve; a first component associated with a second cylinder for actuating said first master piston through said first rocker arm when said first cylinder is near top dead center on a compression stroke; a second oil passage which may be selectively placed in communication with said first oil passage; a first end of said first master piston communicating with said second oil passage whereby when said first oil passage and said second oil passage communicate the actuation of said first master piston causes an increase in the pressure in said first and second oil passages to actuate said slave piston to open said exhaust valve as said first cylinder is near a top dead center position on a compression stroke resulting in the discharge of compressed gas through said exhaust port so that the energy used to compress the gas in said first cylinder is utilized to brake the engine without the loss that would occur due to a compressed gas return force; the improvement comprising a second master piston, a second rocker arm in engagement with said second master piston, said second master piston and said second rocker arm being associated with said first cylinder; a second component associated with said second cylinder for actuating said second master piston through said second rocker arm when said first cylinder is near bottom dead center on a suction stroke; a third oil passage which may be selectively placed in communication with said first oil passage; a first end of said second master piston communicating with said third oil passage whereby when said first oil passage and said third oil passage communicate the actuation of said second master piston causes an increase in the pressure in said first and third oil passages to actuate said slave piston to open said exhaust valve as said first cylinder is near a bottom dead center position on a suction stroke resulting in the flow of exhaust gases into said first cylinder; an oil passage selector valve arranged to selectively opea communication between said second oil passage and said first oil passage or between said third oil passage and said first oil passage whereby when said oil passage selector valve is arranged to permit communication between said second oil passage and said first oil passage said first master piston effects operation of said slave piston and said exhaust valve is opened when the piston of said first cylinder is near a top dead center position on a compression stroke to enhance engine braking and when said oil selector valve is arranged to permit communication between said third oil passage and said first oil passage said second master piston effects operation of said slave piston and said exhaust valve is opened when said first cylinder is near bottom dead center on a suction stroke to effect exhaust-gas-recirculation into said first cylinder of the exhaust gas from another cylinder which is then on its exhaust stroke.

5,485,820

INJECTION CONTROL PRESSURE STRATEGY

Titus Iwaszkiewicz, Woodridge, Ill., assignor to Navistar International Transportation Corp., Chicago, Ill.

Filed Sep. 2, 1994, Ser. No. 300,292
Int. Cl.[6] F02M *41/00*
U.S. Cl. 123—458 **7 Claims**



2. The method of adjusting the rail pressure in a hydraulically-operated, electronically-controlled fuel injector operating system of the type having a plurality of fuel injectors, a high pressure injector fluid pump, a rail pressure control valve for the high

pressure injector fluid pump, a rail connected by a passage to the outlet of said control valve, a passage from said rail to individual injectors, an electronic control module that senses engine conditions and is programmed to use the sensed data to calculate a desired injection fluid rail pressure and to send a duty signal to said rail pressure controlled valve that will cause the control valve to adjust the rail pressure toward the calculated desired injection fluid rail pressure, a fuel supply connected to said injectors, electronically control valves in said injectors for controlling the application of said actuating fluid to cause injection of fuel from said injectors, comprising the steps of:

(a) providing a duty cycle lookup table having desired rail pressure on one axis and rail pressure control valve flow on the other axis;

(b) calculate desired rail pressure;

(c) calculate rail pressure control valve flow;

(d) select the duty cycle from the duty cycle lookup table using the calculated desired rail pressure and rail pressure control valve flow; and

(e) transmit the selected duty cycle to the rail pressure control valve.

5,485,821

ENGINE FUEL INJECTION CONTROLLER

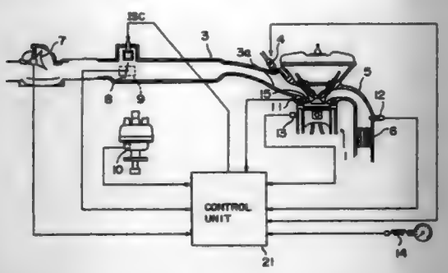
Kodai Yoshizawa, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 15, 1994, Ser. No. 306,621

Claims priority, application Japan, Sep. 22, 1993, 5-236375

Int. Cl.[6] F02M *51/00*

U.S. Cl. 123—478 **8 Claims**



1. A fuel injection controller in an engine comprising a cylinder, an intake passage provided with a valve that aspirates air into said cylinder, a throttle for regulating the flowrate in said passage, and an injector provided between said throttle and said valve for injecting fuel into said passage according to an input signal, said controller comprising:

means for detecting an engine running condition, said detected engine running condition being one of plurality of possible engine running condition,

means for detecting a temperature of a part of said passage to which injected fuel adheres, said detected temperature being one of a plurality of possible temperature,

a processor programmed to perform the following functions,

a) calculating a basic fuel injection amount based on said detected engine running condition,

b) computing and storing short-term delay correction amounts respectively corresponding to said plurality of possible engine running conditions and said plurality of possible temperatures of said part, said short-term delay correction amounts compensating for a delayed flow in said passage having a time constant greater than a predetermined value,

c) computing and storing long-term delay correction amounts respectively corresponding to a said plurality of possible engine running conditions and said plurality of possible temperatures of said part, said long-term delay correction amounts compensating for a delayed flow in said passage having a time constant less than said predetermined value,

d) reading a short-term delay correction amount from said stored short-term delay correction amounts which corresponds to said detected engine running condition and said detected temperature,

e) reading a long-term delay correction amount from said stored long-term delay correction amounts which corresponds to said detected engine running condition and said detected temperature, and

f) correcting said basic fuel injection amount by said short-term and long-term read correction amounts, and

means for applying a signal corresponding to said corresponding fuel injection amount to said injector. correction amount and to an updating amount of said long-term delay correction amount based on said factor.

5,485,822

FUEL INJECTION CONTROLLER FOR USE IN AN INTERNAL COMBUSTION ENGINE

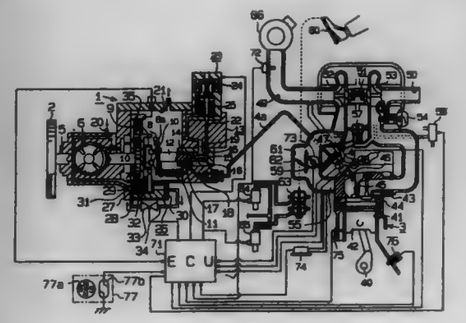
Katsuhiko Hirose; Takao Tate, both of Susono; Norihiko Nakamura, Mishima; Takeshi Sato, Susono; Kazuhiro Iwahashi, Susono; Shinji Kamoshita, Susono, and Akihiro Yamanaka, Susono, all of, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 20, 1993, Ser. No. 109,765

Claims priority, application Japan, Aug. 20, 1992, 4-221640; Aug. 21, 1992, 4-223084; Sep. 4, 1992, 4-237453; Feb. 4, 1993, 5-017642; Mar. 11, 1993, 5-050972; Mar. 11, 1993, 5-050973

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—501 **14 Claims**



1. A fuel injection control apparatus for a combustion engine comprising:

a nozzle for injecting pressurized fuel into the engine when a fuel pressure value is in excess of a predetermined value;

a pump for supplying the fuel to the nozzle;

means for detecting the fuel pressure value in a fuel passage between the pump and the nozzle;

means for computing a rate of increase or decrease in the fuel pressure based on the detected pressure value;

means for determining the fuel injection timing value based on a computed rate of zero, wherein said determining is delayed until a predetermined time has elapsed after the computed rate is changed from a positive value to a negative value.

5,485,823

FUEL PUMP HAVING A LEAKED FUEL CONVEYING STRUCTURE

Edward R. Lintott, London, and Colin T. Timms, Middlesex, both of, England, assignors to Lucas Industries public limited company, West Midlands, England

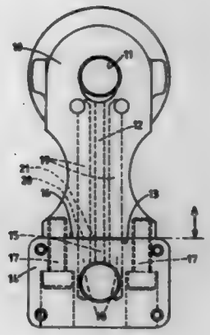
Continuation of Ser. No. 70,375, Jun. 1, 1993, abandoned.

This application Nov. 22, 1994, Ser. No. 343,355

Claims priority, application United Kingdom, Dec. 11, 1990, 9026840

Int. Cl.[6] F02M *59/44*

U.S. Cl. 123—506 **2 Claims**



1. A unit injector for supplying fuel to an engine comprising a main body (10) in which is formed a bore (11) which houses a cam actuated pumping plunger (8), a pumping chamber (7) defined by part of the bore, and an outlet from the pumping chamber which is connected to a fuel injection nozzle mounted on the main body (10), electromagnetically operated spill valve (14) mounted on the main body (10), a spill passage (12) formed in the main body (10) communicating with said pumping chamber (7) under high pressure produced by said pumping plunger and with a connecting passage (15) formed in the spill valve (14), said main body (10) and said spill valve (14) defining surfaces (13,16) which are secured together, a low pressure drain passage (18,19) extending between said main body and said spill valve for transporting fluid leaked from said passages (12,15) at said surfaces (13,16), a fluid collection structure (21) being disposed on one of said surfaces (13,16) surrounding the respective passage (12,15) opening thereon, said fluid collection structure engaging the other surface about the passage opening thereon, said fluid collection structure comprising:

an annular depression (20) formed in said one surface, said annular depression being defined by an inner perimeter which is spaced away from said passages (12,15);

a rim being defined between said annular depression and said passages;

a face of said rim abutting the other of said surfaces (13,16) generally preventing fluid from escaping from said passages (12,15) at the interface of said surfaces (13,16); and

said drain passage (18,19) communicating with said depression for draining fuel which is forced under high pressure between said face of said rim and said other surface into said depression and preventing the leaked fuel from leaking to the exterior of said main body (10) and said spill valve (14).

5,485,824

ELECTRONIC CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

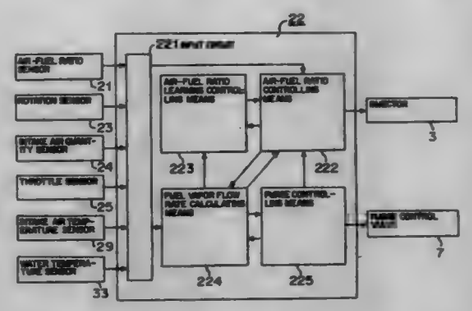
Katsuhiko Kondou, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1994, Ser. No. 308,512

Claims priority, application Japan, Jun. 30, 1994, 6-149755

Int. Cl.[6] F02M *33/02;25/08*

U.S. Cl. 123—520 **12 Claims**



2. An electronic control device for an internal combustion engine comprising:

fuel controlling means for controlling a quantity of fuel supplied to an engine;

an air-fuel ratio sensor for detecting an air-fuel ratio from an exhaust gas;

air-fuel ratio controlling means for calculating an air-fuel ratio correction coefficient such that the air-fuel ratio of fuel vapor supplied to the engine has a predetermined value based on a signal from the air-fuel ratio sensor, and for controlling the fuel controlling means by a feedback control;

a purge passage for supplying to the engine evaporated fuel which has evaporated in a fuel tank;

a canister provided in the purge passage for adsorbing the evaporated fuel;

fuel vapor flow rate calculating means for switching on or off a purge control in correspondence to a running condition of the engine and for calculating a flow rate of the fuel vapor wherein the evaporated fuel which has been adsorbed by the canister is mixed with air in accordance with an operating state of the engine when the purge control is switched on; and

purge controlling means for driving a purge control valve provided between the canister and an intake air passage such that the calculated flow rate of the fuel vapor is supplied to the engine;

wherein the fuel vapor flow rate calculating means corrects the flow rate of the fuel vapor when the purge control is switched on based on at least a period of time that the purge control has been switched off immediately before the purge control is switched on, a degree which the purge control valve was opened during a preceding period of time during which the purge control was switched on, and a length of the preceding period of time.

5,485,825

INTERNAL COMBUSTION ENGINE IGNITION DEVICE

Takashi Shimizu; Masaaki Taruya; Shigemi Murata; Mitsuru Koiwa, and Toshio Maekawa, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1994, Ser. No. 259,682

Claims priority, application Japan, Jul. 9, 1993, 5-170414

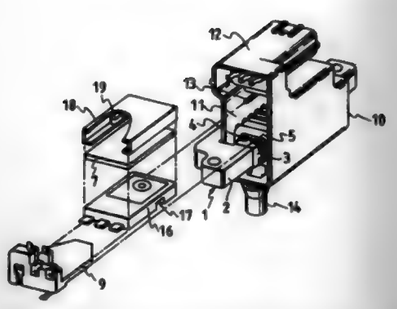
Int. Cl.[6] F02P *3/02*

U.S. Cl. 123—634 **4 Claims**

1. An internal combustion engine ignition device comprising:

an ignition coil;

a preliminary assembly; and



a casing for accommodating and covering said ignition coil and said preliminary assembly with an insulating resin;

said preliminary assembly comprising:

a heat sink;

a control unit comprising a control circuit for controlling a flow of primary current in said ignition coil; and

a cushion cover for covering said heat sink and said control unit, and absorbing thermal stress between said preliminary assembly and the insulating resin, wherein at least one first protrusion is formed on said cushion cover, and at least one first recess is formed on said control unit for engaging with said first protrusion of said cushion cover.

5,485,826

AIR-FUEL RATIO CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE

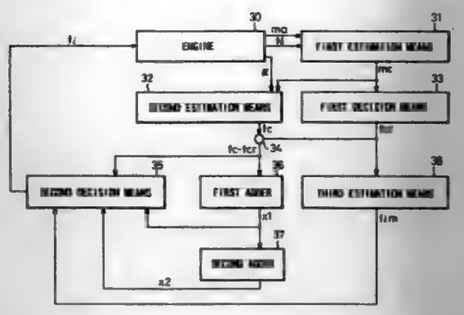
Akira Ohata, Mishima, and Hiroshi Sawada, Gotenba, both of, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Mar. 24, 1994, Ser. No. 217,109

Claims priority, application Japan, Mar. 26, 1993, 5-068391

Int. Cl.[6] F02D *41/14*

U.S. Cl. 123—679 **7 Claims**



1. An air-fuel ratio control device for an internal combustion engine having an intake passage and an exhaust passage with a three way catalytic converter, comprising:

a fuel injector for injecting fuel;

an air-fuel ratio detector for detecting an air-fuel ratio in the engine cylinder, which is arranged in said exhaust passage upstream of said three way catalytic converter;

first estimation means for estimating an amount of intake air actually fed into the engine cylinder;

first decision means for deciding a target amount of fuel which must be fed into the engine cylinder to realize the stoichiometric air-fuel ratio, on the basis of the amount of intake air estimated by said first estimation means;

second estimation means for estimating an amount of fuel actually fed into the engine cylinder, on the basis of the air-fuel ratio detected by said air-fuel ratio detector and the amount of intake air estimated by said first estimation means; and

second decision means for deciding an amount of fuel actually injected by said fuel injector such that a difference between the amount of fuel estimated by said second estimation means and the target amount of fuel decided by said first decision means, and a time integration value of said difference are made to converge to "0" at the same time.

5,485,827

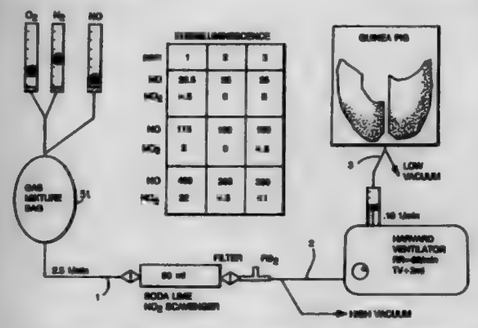
METHODS AND DEVICES FOR TREATING PLUMONARY VASOCONSTRICTION AND ASTHMA

Warren M. Zapol, Concord, Mass., and Claes Frostell, Danderyd, Sweden, assignors to The General Hospital Corporation, Boston, Mass.

Continuation of Ser. No. 767,234, Sep. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 622,865, Dec. 5, 1990, abandoned. This application Feb. 10, 1995, Ser. No. 384,792

Int. Cl.[6] A61M *11/00*

U.S. Cl. 128—200.14 **39 Claims**



1. A method for treating or preventing reversible pulmonary vasoconstriction in a mammal, which method comprises

providing gaseous nitric oxide (NO) mixed, immediately prior to inhalation, with an oxygen-containing gas to form a gas mixture containing a therapeutically effective concentration of NO; and

causing a mammal in need of such treatment or prevention to inhale a therapeutically effective amount of said NO-containing gas mixture.

5,485,828

PORTABLE DEVICE FOR MICROPULVERIZATION GENERATED BY ULTRASOUND WAVES

Jean-Luc Hauser, 1499 chemin S. Maymes, F-06600 Antibes, France

PCT No. PCT/FR93/00411, § 371 Date Dec. 28, 1993, § 102(e) Date Dec. 28, 1993, PCT Pub. No. WO93/22068, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 28, 1993, Ser. No. 170,221

Claims priority, application France, Apr. 29, 1992, 92 05306

Int. Cl.[6] A61M *11/00*

U.S. Cl. 128—200.16 **8 Claims**

1. A micropulverization device for the formation of microdroplets comprising: an ultrasound generator;

a reservoir containing a liquid to be micropulverized;

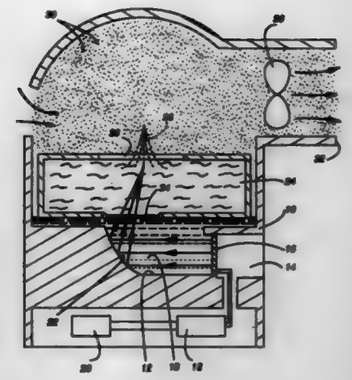
a cell for containing a propagation medium, said cell being located between said ultrasound generator and said reservoir;

means for concentrating ultrasound waves from said ultrasound generator toward a point near the surface of said liquid in said reservoir for micropulverization of said liquid;

a chamber for the formation of microdroplets; and

means for diffusing said droplets;

said propagation medium having an ultrasound attenuation less than or equal to 1 dB/cm.



5,485,829

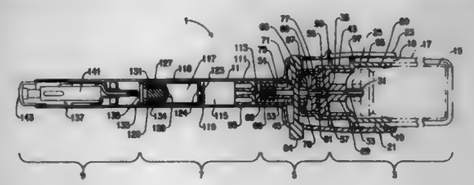
CENTRAL BODY FOR USE IN REGULATION SYSTEMS OF CATALYTIC BURNERS

Daniel Santhouse, Wilton, and H. Roy Taylor, Stratford, both of Conn., assignors to Conair Corporation, Stamford, Conn.

Filed May 31, 1994, Ser. No. 251,755

Int. Cl.[6] F23Q *2/00;2/42*

U.S. Cl. 126—409 **8 Claims**



1. In combination a central body and a gas burner unit, said gas burner unit having a casing, a curling iron barrel, and a control stem with a control stem longitudinal axis, said central body being moldable as an integral piece,

said central body having an outer surface, an inner surface, and a central body longitudinal axis, said central body having a generally rotational symmetry about said central body longitudinal axis,

said outer surface of said central body having spacers thereon dimensioned to position said central body within said casing, said outer surface including an outer surface portion for holding said curling iron barrel, and

said inner surface having an inner surface portion for holding said control stem within said body unit with said control stem longitudinal axis and said central body longitudinal axis being a common axis.

5,485,830

MODULAR FIREPLACE WITH INTERCHANGEABLE BURNER ASSEMBLY AND HEAT EXCHANGE INSERT

Lothar Binzer, 5721 124th Street, Surrey, B.C., Canada

Filed Nov. 17, 1993, Ser. No. 154,285

Int. Cl.[6] F24C *3/00*

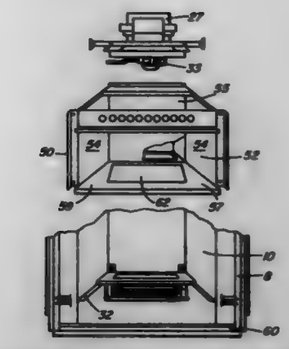
U.S. Cl. 126—512 **11 Claims**

1. A modular gas fireplace assembly for connection to a venting system comprising:

an outer shell into which the venting system extends;

a fireplace unit insertable within the shell having an open front, a pair of side walls, a rear wall and a roof with first predetermined dimensions;

means for generating heat comprising



a heat exchange unit comprising an insert insertable within the fireplace unit having a floor formed by the platform, an open front, a pair of sidewalls, a rear wall, and a roof, and means forming at least one heat exchange air passage extending adjacent the insert, and

a platform with an attached gas burner, means for communicating the gas burner with a source of gas, and a control valve for the gas burner;

a shelf formed in the fireplace unit to support the platform to define a floor with a second predetermined dimension for the fireplace unit; and

means for communicating the fireplace unit with the venting system;

whereby the second predetermined dimension of the shelf and the first predetermined dimensions of the fireplace unit accommodate removable receipt of the platform in a set position that automatically locates the gas burner for safe operation within the fireplace unit to permit interchange of different means for generating heat by insertion of different platforms.

5,485,831

PULSE-INJECTOR FOR QUANTITATIVE ANGIOGRAPHIC BLOOD-FLOW MEASUREMENTS

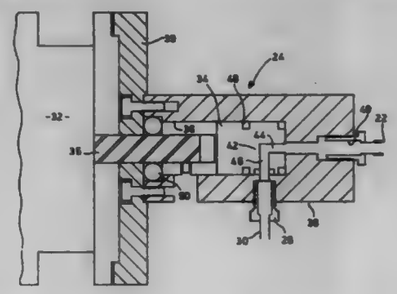
David W. Holdsworth; Maria Drangova, and Aaron Fenster, all of London, Canada, assignors to University Hospital (London) Development Corporation, Ontario, Canada

Filed Nov. 30, 1993, Ser. No. 159,166

Claims priority, application United Kingdom, Nov. 30, 1992, 9225014

Int. Cl.[6] A61M *25/00*

U.S. Cl. 128—654 **35 Claims**



1. Injection apparatus for quantitative angiographic blood flow measurements by injection of a contrast agent into a fluid transporting vessel, said apparatus comprising a pressurized source of contrast agent, a catheter for conducting the contrast agent from the source into the vessel, a control valve to control flow of said agent between said source and said vessel, said control valve having an inlet port connected to said source, an outlet port

connected to said catheter and a valve body within a housing and including a passageway to extend between said inlet and outlet port, said valve body being rotatable within said housing between an open position in which flow between said inlet and said outlet is permitted and a closed position in which flow between said inlet and said outlet is inhibited to connect and disconnect periodically said inlet port and said outlet port and thereby alternately allow and inhibit fluid flow therebetween.

5,485,832

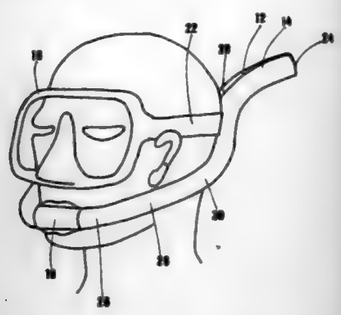
FACE GEAR FOR DIVING AND SWIMMING

Ricardo Joffity, Mail Box No. 7638, Sobradinho-DF-73-001-970, Brazil

Continuation of Ser. No. 922,726, Jul. 31, 1992. This application Mar. 3, 1994, Ser. No. 205,209

Int. Cl.[6] B63C *11/16*

U.S. Cl. 128—201.11 **2 Claims**



1. A diving face gear comprising:
a face mask having an enclosed nose covering;
a breathing tube connected to an air source;
a mouthpiece connected to said breathing tube;
a wind pipe tube connected to said nose covering and to said mouthpiece; and switching means for selectively allowing or not allowing fluid connection through said wind pipe tube enabling a user either to breath through said mouthpiece and through said nose covering at the same time or to breath exclusively through said mouthpiece avoiding water entrance to said nose covering;
an actuator consisting of a water filled pair of bladders appended to said mouthpiece and designed to fit inside a user's mouth so that a user can depress said bladders with the teeth causing water to be expelled from said bladders or release teeth pressure causing water to enter said bladders;
a pipe connecting said bladders through said mouthpiece to a single external connection tube; and nose clamping means controlled by said actuator.

5,485,833

BREATH EXPOSURE SYNCHRONIZER

Henry G. Dietz, 80 Salisbury Ave., Garden City, N.Y. 11530

Filed Jun. 10, 1994, Ser. No. 258,568

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—204.23 **1 Claim**

1. A breath exposure synchronizer for sensing flow during inhalation, exhalation and lack of any breath flow in order to aid a radiographer in properly synchronizing exposure of X-ray film to avoid blurring of radiographs due to voluntary body movement, comprising:
means including a capacitance sensor for sensing a patient's breath flow during inhalation, exhalation and a lack of breath flow;
means including a nasal cannula for applying a patient's breath flow to said capacitance sensor;



said capacitance sensor including a movable pressure responsive vane having opposite sides and a conductive coating on at least one of the sides, the vane being fastened on one side only;
said vane moving in one direction responsive to negative pressure of breath flow being applied thereto during patient inhalation, and moving in another direction responsive to positive pressure of breath flow being applied thereto during exhalation;
said capacitance sensor further including means responsive to sensed patient inhalation and sensed patient exhalation for generating a first visual signal; and means responsive to no breath flow for generating a second visual signal, said visual signals being provided to enable a radiographer to properly synchronize exposure of X-ray film with a patient's respiratory cycles to avoid blurring of radiographs.

5,485,834

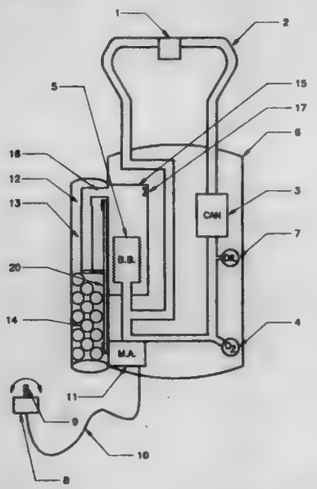
MANUALLY TUNABLE, CLOSED-CIRCUIT UNDERWATER BREATHING APPARATUS

Donald D. Joye, Exton, Pa.; William H. Mintz, Bowie, Md.; John R. Clarke, Panama City, Fla., and Peter Wechgelaer, Kensington, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 10, 1994, Ser. No. 289,022

Int. Cl.[5] A62B *9/00*

U.S. Cl. 128—205.13 **7 Claims**



1. A manually tunable underwater breathing apparatus (UBA) adapted to recirculate breathing gas from a diver, absorb CO_2, add make-up oxygen, and provide capacitance through a breathing bag, comprising:
(a) a breathing bag contained in a fixed-volume container,

(b) a mechanically, manually adjustable length tube with one end connected to said fixed-volume container and the other end moveable, said adjustable length tube forming the passageway for water to flow into and out of said fixed-volume container,
(c) an actuating means connected to said moveable end of said adjustable length tube, such that length can be changed, and
(d) a user controlled initiating means for activating said actuating means to change length of said adjustable length robe,
wherein said breathing bag undergoes changes in volume from gas being exhaled or inhaled by the diver, thereby displacing water through said tube, the length of said tube giving a characteristic inertance for said UBA; changing the length by said actuating and initiating means changes the inertance and thereby the resonant frequency of said UBA to lessen the breathing load on the diver.

5,485,835

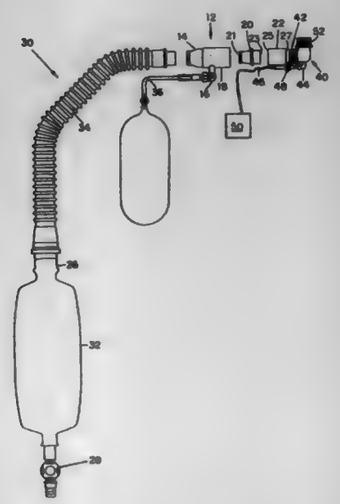
VENTILATION SYSTEM FOR DIAGNOSTIC IMAGING

Penny R. Vande Streek, 4259 Rawhide Rd., Rocklin, Calif. 95677; Tyrone Young, 6602 Munich Rd., San Antonio, Tex. 78256; Frederick L. Weiland, 4950 Keane Dr., Carmichael, Calif. 95608, and Ronald Borchert, 5328 Boulware Ct., Charlotte, N.C. 28277

Filed Oct. 14, 1994, Ser. No. 323,082

Int. Cl.[6] A61M *36/04*

U.S. Cl. 128—205.13 **22 Claims**



1. An adaptor for attachment to a ventilation bag for delivering radioactive gas and oxygen to the lungs of a patient for the purpose of diagnostic imaging and for recovering said gas, wherein said adaptor comprises:
a three-legged connector having a first leg for attachment to a first flexible tubing of a ventilation bag, a second leg for attachment to a second flexible tubing connected to an oxygen source and a third leg;
a one-way valve having an inlet end and an outlet end, wherein said inlet end of said one-way valve is attached to said third leg of said three-legged connector; and
a dose chamber having a first end and a second end, wherein said first end of said dose chamber is attached to said outlet end of said one-way valve and said second end of said dose chamber is an outlet from said adaptor, said dose chamber being made of a composition having self-sealing properties.

5,485,836

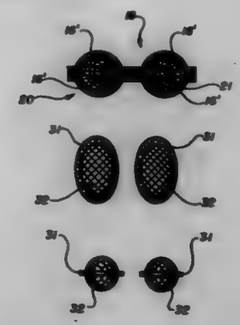
NOSE WORN AIR FILTER

Robert A. Lincoln, 8325 Murphy Rd., Laurel, Md. 20707

Division of Ser. No. 174,393, Mar. 28, 1988, Pat. No. 4,984,302, and a continuation-in-part of Ser. No. 28,702, Mar. 20, 1987, abandoned. This application Dec. 6, 1990, Ser. No. 605,348

Int. Cl.[6] A62B *23/06*

U.S. Cl. 128—206.11 **7 Claims**



1. A nose filter, comprising:
dome shaped filtering material defining individual dome shaped air filtering devices, each said device having an elliptical base and being sized to match an opening of nostril at the base of a nose and having an outer surface; and
an air impervious collar extending radially from said outer surface and extending completely around a perimeter of each said device at said elliptical base of each said device, each said collar being sized to extend laterally beyond said outer surface of the respective device such that said collars will form seals around said air filtering devices thereby preventing air from passing therearound.

5,485,837

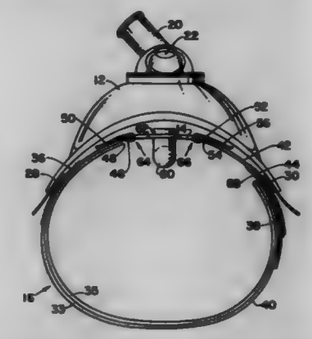
STRAP FOR COMBINING TRACHEOTOMY TUBE AND MOIST AIR MASK

Angela M. Solesbee, and Irene D. Hebert, both of 6 Bethany Woods Dr., Asheville, N.C. 28805

Filed Nov. 23, 1993, Ser. No. 157,388

Int. Cl.[6] A61M *16/00*; A62B *9/06*

U.S. Cl. 128—207.17 **1 Claim**



1. A tracheotomy tube and moist air mask combination comprising a base plate, and a strap arrangement wherein said strap arrangement is adapted to extend about the neck of a patient and having two ends, said base plate being connected between said two ends of said strap arrangement, said base plate having a central hole that receives said tracheotomy tube that extends out of a patient's trachea, said combination further comprising means for permitting attachment and removal of said moist air mask to said

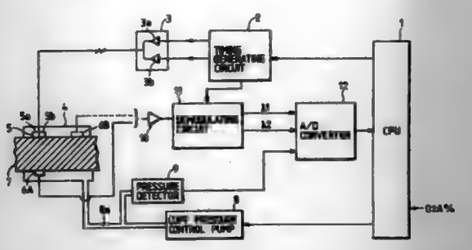
strap arrangement without removal of said strap arrangement or disconnection of said base plate from either said strap arrangement or said tracheotomy tube, said means comprising a first pair of connection members disposed on said strap arrangement on opposing sides of said base plate, and a second pair of connection members on opposing sides of said mask, said first and second pair of connecting members being engageable and disengageable to connect said mask to said single strap arrangement and place said masks over said base plate and tracheotomy tube, and to allow removal of said mask for patient maintenance, respectively.

5,485,838

NON-INVASIVE BLOOD PRESSURE MEASUREMENT DEVICE

Teiji Ukawa, and Tatsuo Yoshida, both of Tokyo, Japan, assignors to Nihon Kohden Corporation, Tokyo, Japan

Filed Dec. 7, 1993, Ser. No. 162,254
Claims priority, application Japan, Dec. 7, 1992, 4-326632; Dec. 7, 1992, 4-326633
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—633 **2 Claims**



1. A non-invasive blood pressure measurement device comprising:

a cuff configured to be attached to a body part of a subject;

a pressure detector operatively connected to said cuff for detecting a cuff pressure applied to the body part by the cuff and outputting a detection output;

pressure applying means for applying pressure to the cuff in response to an input pressure increase control signal and for dropping the cuff pressure in response to an input pressure decrease control signal;

a light-emitting member for injecting beams of light of two different wavelengths, one being a beam of red light and the other being a beam of infrared light, into the body part of the subject to which pressure is applied by said cuff;

a light-receiving member for detecting one of amounts of light transmitted and amounts of light reflected of the beams of light injected into the body part from said light-emitting member, and thereby outputting light-receiving signals for the two different wavelengths;

signal component separating means operatively connected to said light-receiving member for separating a dc component and a pulsatile component from each of the light-receiving signals of the respective wavelengths obtained from said light-receiving member;

oxygen saturation calculating means for calculating a ratio of a pulsation component in absorption of one wavelength due to arterial blood flow to that of the other wavelength from the dc components and the pulsatile components of the respective wavelengths obtained from said signal component separating means, and for calculating an oxygen saturation from the ratio;

permissible range of variance calculating means for obtaining a mean value of oxygen saturation measurements of the subject before said pressure applying means applies pressure to the cuff, and for calculating a permissible range of variance from the mean value, the oxygen saturation measurements being obtained from said oxygen saturation calculating means;

cuff pressure control means for outputting the pressure increase control signal to said pressure applying means while receiving the detection output from said pressure detector, and for outputting the pressure decrease control signals, for dropping the once increased cuff pressure, to said pressure applying means, after the permissible range of variance has been obtained;

determining means for determining whether or not an oxygen saturation obtained in the course of increasing or decreasing the cuff pressure is within the permissible range of variance and for outputting a determination result; and

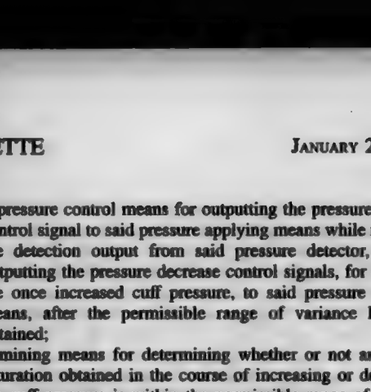
blood pressure measuring means for selecting, based on the determination result output by said determining means, a valid pulse wave signal from the pulsatile components obtained by said signal component separating means in the course of increasing or decreasing the cuff pressure and for calculating a blood pressure value of the subject by a volume oscillometric method from an amplitude of the valid pulse wave signal and the detection output obtained from said pressure detector.

5,485,839

METHOD AND APPARATUS FOR ULTRASONIC WAVE MEDICAL TREATMENT USING COMPUTED TOMOGRAPHY

Satoshi Aida, Tokyo; Mariko Shibata; Katsuhiko Fujimoto, both of Kanagawa; Yoshiharu Ishibashi, Tokyo; Takuji Suzuki, Kanagawa; Kozo Sato, Kanagawa, and Ayao Itoh, Kanagawa, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 22,911, Feb. 26, 1993, abandoned. This application Sep. 2, 1994, Ser. No. 300,199
Claims priority, application Japan, Feb. 28, 1992, 4-043603; Sep. 11, 1992, 4-242886
Int. Cl.[6] A61B *6/00*
U.S. Cl. 128—653.1 **20 Claims**



1. An ultrasonic medical treatment apparatus, comprising:

ultrasonic wave applicator means for applying ultrasonic waves to an object to be treated;

non-ultrasonic computed tomography means for obtaining three-dimensional image information of the object to be treated;

focal point control means for changing a position of a focal point of the ultrasonic waves applied by the ultrasonic wave applicator means without changing a view field of the computed tomography means;

calculating means for determining the position of the focal point changed by the focal point control means in the three-dimensional image information obtained by the computed tomography means; and

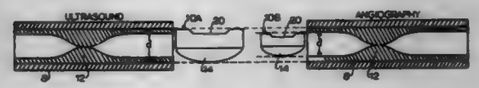
display means for displaying the three-dimensional image information obtained by the computed tomography means in superposition with the focal point at the position determined by the calculation means.

5,485,840

METHOD OF PRECISE GUIDANCE FOR DIRECTIONAL ATHERECTOMY USING ULTRASOUND

Robert P. Bauman, 211 Kirkwood Dr., Chapel Hill, N.C. 27514

Filed Mar. 15, 1994, Ser. No. 213,216
Int. Cl.[6] A61B *8/12*
U.S. Cl. 128—660.03 **12 Claims**



1. A method of performing atherectomy on plaque material at a site within a vessel utilizing a directional atherectomy catheter with a cutter which has a marker which is visualizable with fluoroscopy utilizing an X-ray beam, and which may be used to direct cuts; and an ultrasonic imaging apparatus, said method comprising:

(a) positioning the catheter cutter with fluoroscopy in the vessel such that the directional marker is perpendicular to the X-ray beam;

(b) making an initial reference cut in the plaque material in the vessel;

(c) utilizing the ultrasonic imaging apparatus to locate the initial reference cut to orient the distribution of plaque with respect to the visualized position of the fluoroscopically visualizable directional marker on the cutter window so that subsequent cuts made with the cutter result in plaque removal in a first area having a predetermined spatial relationship to the initial reference cut;

(d) performing a first series of organized cuts of said plaque in said first area, said series of organized cuts comprising one or more passes with the cutter in said first area;

(e) ultrasonically visualizing said vessel to determine the remaining location of plaque after said first series of organized cuts;

(f) performing additional cuts in said first area followed by repetition of step (e) until a desired amount of plaque has been removed in said first area;

(g) performing cuts of said plaque at an additional chosen area of said site, said additional chosen area having a predetermined spatial relationship to the initial reference cut and to the first series of organized cuts;

(h) ultrasonically visualizing said vessel to determine the location of residual plaque after said additional cuts; and

(i) performing additional cuts in said additional chosen area followed by repetition of step (h) until a predetermined desired amount of plaque has been removed from said additional chosen area.

5,485,841

ULTRASONIC LUNG TISSUE ASSESSMENT

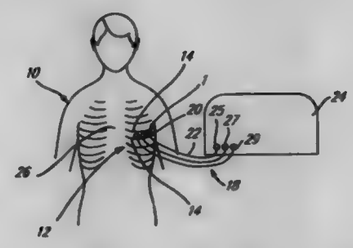
Kenneth L. Watkin, 258 Hollis Road, Beaconsfield, Quebec, Canada, and Peter T. Macklem, 3470 Redpath, #207, Montreal, Quebec, Canada

Filed Feb. 14, 1995, Ser. No. 388,302
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—660.01 **10 Claims**

1. A non-invasive diagnostic method for determining the state of lung tissue housed in a chest cavity of a living subject comprising:

transmitting ultrasonic radiation from an ultrasonic source disposed externally of an external chest wall of the chest cavity, through the chest wall and into the lung tissue, during breathing by the subject,

receiving reflected ultrasonic radiation, reflected dynamically by airspaces in the tissue, and



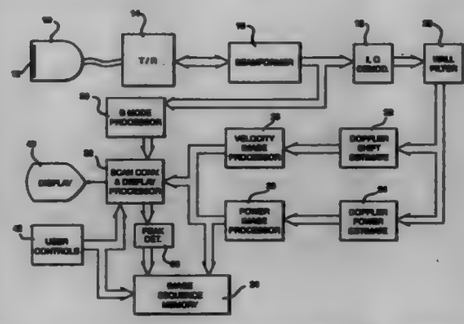
developing a signal from the reflected ultrasonic radiation as a dynamic real-time measure of parameters of the airspaces indicative of the state of the lung tissue.

5,485,842

ULTRASONIC DIAGNOSTIC SCAN CONVERSION FOR THREE DIMENSIONAL DISPLAY PROCESSING

Jens U. Quistgaard, Seattle, Wash., assignor to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed Nov. 30, 1994, Ser. No. 347,828
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—66.07 **24 Claims**



1. A method for producing a perspective view of a volumetric region of the body from a plurality of spatially related planar ultrasonic sector images comprising the steps of:

receiving a plurality of spatially related ultrasonic sector images from said volumetric region;

identifying the angle of said perspective view in relation to a reference plane;

processing each image by a) scaling one or more of the dimensions of said image in proportion to said perspective viewing angle, and b) translating the image in the plane of the image in proportion to the spacing between said spatially related planes and said perspective viewing angle;

combining said processed images to form a composite perspective view image; and

displaying said perspective view image.

5,485,843

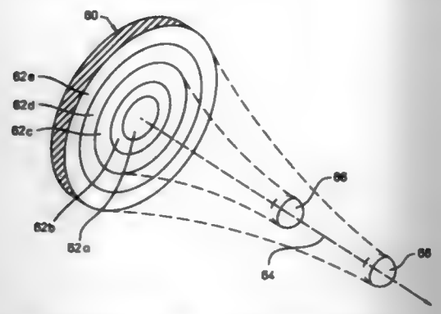
ACOUSTIC ARRAYS AND METHODS FOR SENSING FLUID FLOW

Michael Greenstein, Los Altos; Hewlett E. Melton, Jr., Sunnyvale, and King-Wah W. Yeung, Cupertino, all of Calif., assignors to Hewlett Packard Company, Palo Alto, Calif.

Filed Aug. 9, 1993, Ser. No. 104,510
Int. Cl.[6] A61B *8/06*
U.S. Cl. 128—661.09 **17 Claims**

1. A system for measuring blood flow within a blood vessel or organ comprising:

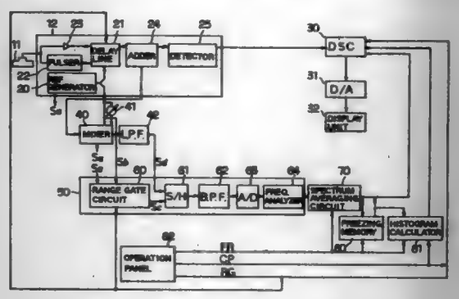
A. an array of piezoelectric transducer elements;



B. signal generation, sensing, and conditioning means:
1. for electronically grouping the transducer elements into a pattern of concentric active aperture regions;
2. for individually and repeatedly applying to the transducer elements in each active aperture region a corresponding pulsed electrical transmit signal to generate a substantially isotropic and spherical ultrasonic interrogation volume within which blood flow is to be measured; and
3. for sensing an ultrasonic return signal that is back-scattered from particles within the interrogation volume; and

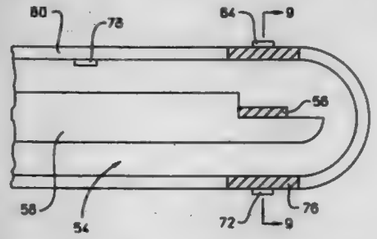
C. processing means for calculating an estimate of a predetermined characteristic of blood flow as a predetermined function of the return signal.

5,485,844
DOPPLER-TYPE ULTRASONIC DIAGNOSTIC APPARATUS
Takanobu Uchibori, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed May 17, 1994, Ser. No. 243,874
Claims priority, application Japan, May 18, 1993, 5-115897
Int. Cl.[6] A61B *8/06*
U.S. Cl. 128—661.09 **19 Claims**



1. A Doppler-type ultrasonic diagnostic apparatus, in which a diagnostic portion of an object being examined is scanned by an ultrasonic beam signal, said diagnostic portion including a fluid such as blood in motion, the apparatus comprising:
means for transmitting the ultrasonic beam signal into the diagnostic portion and receiving an ultrasonic echo signal reflected by the diagnostic portion;
means for converting the ultrasonic echo signal into a corresponding electrical echo signal;
means for extracting a Doppler signal from the electrical echo signal, said the Doppler signal being formed by the fluid;
means for calculating data of a Doppler spectrum consisting of a plurality of instantaneous spectra each including a plurality of Doppler frequency components from the extracted Doppler signal, said Doppler spectrum having two dimensions consisting of a time dimension and a Doppler shift frequency dimension corresponding to a flow speed of the fluid;
means for smoothing the data of the Doppler spectrum in accordance with a speckle duration corresponding to a width of the ultrasonic beam signal; and
means for displaying the smoothed data of the Doppler spectrum.

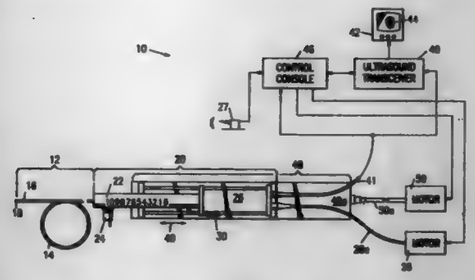
5,485,845
ROTARY ENCODER FOR INTRAVASCULAR ULTRASOUND CATHETER
Edward Verdonk, Redwood City; Michael Greenstein, Los Altos; Hewlett E. Melton, Jr., Sunnyvale, and Mir S. Seyed-Bolorforosh, Palo Alto, all of Calif., assignors to Hewlett Packard Company, Palo Alto, Calif.
Filed May 4, 1995, Ser. No. 434,616
Int. Cl.[6] A61B *8/12*
U.S. Cl. 128—662.06 **22 Claims**



1. An ultrasound device for obtaining an image of an interior of a vessel comprising:
probe means for entering a body, said probe means having a proximal end and a distal end;
signal means for radiating a rotary pattern of ultrasonic energy from said distal end and for receiving reflected ultrasonic energy;
position-identification means for individually identifying a plurality of directions of radiation within said rotary pattern, said position-identification means including a plurality of beacons fixed within said rotary pattern to direct ultrasonic energy toward said signal means; and
adaptive means, operatively associated with said position-identification means, for compensating for variations in angular velocity of said radiating said rotary pattern by said signal means, wherein said adaptive means reduces image distortions due to nonuniform angular velocity of said radiating.

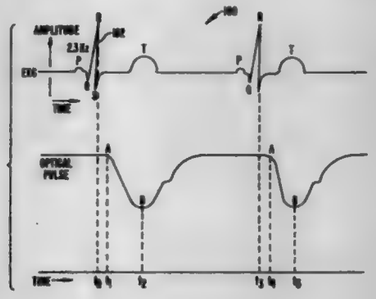
5,485,846
AUTOMATED LONGITUDINAL POSITION TRANSLATOR FOR ULTRASONIC IMAGING PROBES, AND METHODS OF USING SAME
William E. Webler, Costa Mesa, and Mark S. Buhr, Newport Beach, both of Calif., assignors to Cardiovascular Imaging Systems, Inc., Sunnyvale, Calif.
Continuation of Ser. No. 906,311, Jun. 30, 1992, Pat. No. 5,361,768. This application Aug. 4, 1994, Ser. No. 285,969
Int. Cl.[6] A61B *8/12*
U.S. Cl. 128—662.06 **4 Claims**

1. An automated longitudinal position translator for ultrasonic imaging probes having a distally located ultrasound transducer subassembly comprising:
a probe drive module adapted to being operatively coupled to the imaging probe so as to allow for longitudinal shifting of the ultrasound transducer subassembly of the probe between spaced-apart positions;
a motor-driven linear translation module connectable to said probe drive module to effect motor-driven longitudinal translation of said probe drive module to thereby responsively longitudinally shift said ultra sound transducer subassembly; and



a foot-activated switch electrically connected to said motor-driven linear translation module to selectively control the amount of said motor-driven longitudinal translation of said probe drive module when said switch is activated.

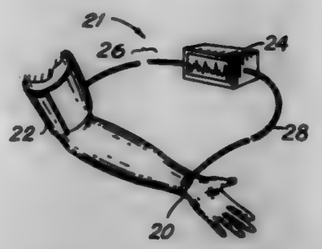
5,485,847
PULSE OXIMETER USING A VIRTUAL TRIGGER FOR HEART RATE SYNCHRONIZATION
Clark R. Baker, Jr., Castro Valley, Calif., assignor to Nellcor Puritan Bennett Incorporated, Pleasanton, Calif.
Filed Oct. 8, 1993, Ser. No. 134,572
Int. Cl.[6] A61B *5/02*
U.S. Cl. 128—666 **28 Claims**



1. An apparatus comprising:
means for generating a first signal from a periodic physical activity;
means for generating a second signal having a first frequency corresponding to said periodic physical activity;
means for generating a virtual trigger having said first frequency, said virtual trigger being generated independent of any feature of said second signal other than said first frequency; and
means for processing said first signal in periods defined by said virtual trigger.

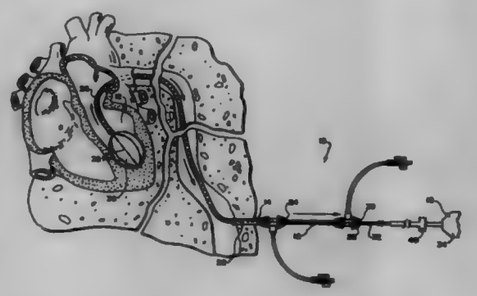
5,485,848
PORTABLE BLOOD PRESSURE MEASURING DEVICE AND METHOD OF MEASURING BLOOD PRESSURE
Sandra R. Jackson, and Harry E. Jackson, both of 424 W. End Ave., Apt. 11B, New York, N.Y. 10024
Continuation-in-part of Ser. No. 648,882, Jan. 31, 1991, abandoned. This application Jun. 4, 1992, Ser. No. 893,287
Int. Cl.[6] A61B *5/021*
U.S. Cl. 128—672 **87 Claims**

1. A method of blood pressure monitoring, comprising the steps of:
mounting a transducer on a user's body so that it detects at least one of spatial displacement and pressure variations caused by blood flow through an artery;



mounting a blood pressure measuring device which provides accurate and diagnostically meaningful blood pressure results on a user's body;
collecting calibration data for the transducer while so mounted by comparing a transducer output signal with an output from said blood pressure measuring device;
determining a base pressure applied to the transducer by the step of mounting the transducer to maintain substantially constant pressure on the transducer within a predetermined range of values;
disconnecting said blood pressure measuring device from the user's body;
after disconnecting said blood pressure measuring device, measuring the output signals of the mounted transducer; and
computing blood pressure from at least said measured transducer output signals and said calibration data.

5,485,849
SYSTEM AND METHODS FOR MATCHING ELECTRICAL CHARACTERISTICS AND PROPAGATION VELOCITIES IN CARDIAC TISSUE
Dorin Panescu, Sunnyvale, and David K. Swanson, Mountain View, both of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.
Filed Jan. 31, 1994, Ser. No. 189,445
Int. Cl.[6] A61C *5/04*
U.S. Cl. 128—699 **19 Claims**



1. A system for examining heart tissue comprising
at least three spaced apart electrodes,
locating means for positioning at least two of the electrodes in contact with a heart tissue region,
first means for transmitting electrical current in a first path through the heart tissue region between a first pair of the electrodes, for transmitting electrical current in a second path through the heart tissue region between a second pair of the electrodes, and for deriving therefrom tissue electrical characteristics based, at least in part, upon sensing impedances of tissue lying in the first and second paths,
second means for sensing timing of local depolarization events in the tissue in which impedance is sensed and for deriving therefrom propagation velocities of the sensed depolarization events, and

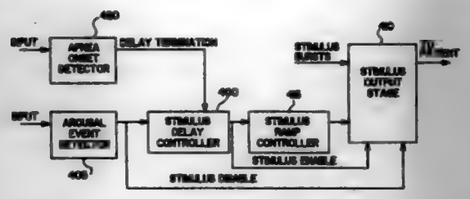
third means for matching derived tissue electrical characteristics with derived propagation velocities in spatial relation to the electrodes to characterize morphology of heart tissue in the heart tissue region.

5,485,850
MONITOR OF LOW PRESSURE INTERVALS WITH CONTROL CAPABILITIES
Henry G. Dietz, 80 Salisbury Ave., Garden City, N.Y. 11530
Filed Aug. 13, 1993, Ser. No. 106,083
Int. Cl.[6] A61B *5/08*; A61M *16/00*
U.S. Cl. 128—716 **2 Claims**



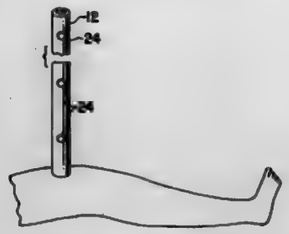
1. An apparatus for monitoring low pressure intervals and controlling delivery of therapeutic gas to be synchronous with inhalation comprising:
a) a source of therapeutic gas;
b) means for delivering the therapeutic gas from the source to nasal cavities of an air breathing animal;
c) sensing means, connected to the means for delivering, for generating a signal indicative of a change in pressure produced at a beginning of inhalation of the air breathing animal, said sensing means including a vane;
d) processing means for receiving the signal and determining a length of inhalation of the animal, said processing means including circuit means for determining a dose of the therapeutic gas to be delivered to the animal, the circuit means including means for automatically adjusting a length of the dose to be a percentage of the length of the inhalation of the animal with the length of the dose never less than 200 mS;
e) means for controlling delivery of the dose of therapeutic gas; and
f) alarm means for generating an alarm when the sensing means does not generate the signal for a predetermined time period.

5,485,851
METHOD AND APPARATUS FOR AROUSAL DETECTION
Donald J. Erickson, Plymouth, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Sep. 21, 1994, Ser. No. 310,125
Int. Cl.[6] A61B *5/08*
U.S. Cl. 128—716 **32 Claims**



1. A method for detecting arousal from sleep in a patient by the steps of:
(a) sensing a signal characteristic of respiratory effort of the patient;
(b) sampling the sensed signal at a predetermined interval to provide a digitized respiratory effort waveform;
(c) monitoring the digitized signal for at least one parameter of the waveform indicating a body movement artifact; and
(d) comparing at least one value for the parameter with a predetermined limit to determine whether the patient is aroused.

5,485,852
PAIN TOLERANCE TESTING DEVICE
Lanny L. Johnson, 2950 E. Mount Hope Rd., Okemos, Mich. 48864
Filed Dec. 12, 1994, Ser. No. 354,786
Int. Cl.[6] A61B *19/00*
U.S. Cl. 128—744 **8 Claims**



1. A device adapted to be used for medical testing purposes, comprising:
a ball;
a cylindrical tube having an inner diameter substantially corresponding to that of said ball and a plurality of apertures spaced along its length, said apertures having diameters substantially corresponding to the diameter of said ball; and
means for supporting said tube in a substantially upright position whereby when the ball is introduced within the tube through any one of said apertures, it will fall by gravity towards a lower end of said tube to impact a body part positioned directly beneath the tube.

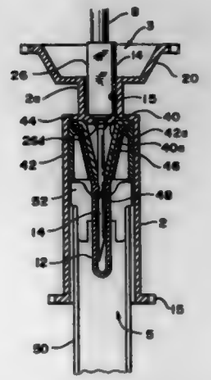
5,485,853
APPARATUS FOR WITHDRAWING FLUID OR TISSUE FROM A PATIENT'S BODY
George Stubbs, 8978 Wonderland Park Ave., Los Angeles, Calif. 90046
Filed Apr. 28, 1994, Ser. No. 233,413
Int. Cl.[6] A61B *10/00*
U.S. Cl. 128—752 **21 Claims**



1. In combination,
a hollow tube,
a collar fixedly disposed on the tube and having an inner periphery and having slots extending radially outwardly from its inner periphery at annularly spaced positions around its inner periphery,
stops disposed on the collar and extending in an axial direction,

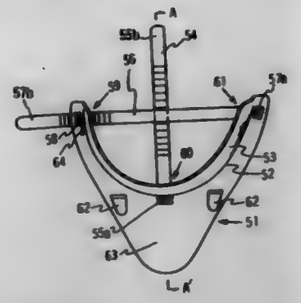
ramps extending from the collar to the stops, and
a piston disposed within the hollow tube for axial movement within the tube and extending axially from the tube and having radially disposed splines disposed in cooperative relationship with the radially disposed slots in the collar to provide for an axial movement of the piston within the tube when the splines are aligned with the slots in the collar,
the splines being grooved to provide for a rotational movement of the piston on the ramps, with the grooves in the piston splines axially aligned with the collar, to dispose the splines against the stops in the collar for a locking relationship, between the collar and the splines.

5,485,854
SAFETY BLOOD COLLECTION TUBE HOLDER AND ASSEMBLY THEREFOR
William H. Hollister, Nelson, N.H., assignor to Smiths Industries Medical Systems, Inc., Keene, N.H.
Filed Apr. 12, 1994, Ser. No. 226,466
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—763 **15 Claims**



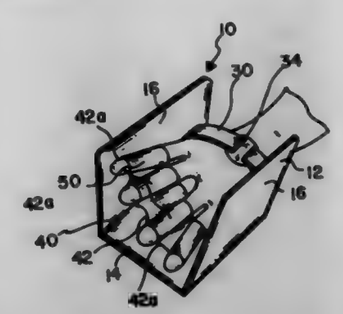
1. A blood collection safety apparatus comprising:
a tube holder having a first and second end for accepting a cannula of a blood collecting device and blood collection robes each sealed with an elastomer, respectively, said first end of said tube holder having a protective shield extending therearound;
an elastic tubular sheath fixedly retained and aligned within said tube holder, said sheath having an open end and a closed pierceable end fixedly located relative to said first and second end of said robe, respectively;
wherein when a cannula is inserted to said first end of said tube holder, at least the tip of said cannula passes through said open end of said sheath so as to be enveloped by said sheath; and
wherein when a blood collection robe is inserted to said second end of said tube holder, said elastomer of said collection tube slidably pushes back said closed end of said sheath so that said closed end and said elastomer are pierced by the tip of said cannula and a fluid communication path is effected from said blood collection tube to said cannula.

5,485,855
INSTRUMENT FOR MEASURING BREAST SHAPE
Norinobu Shirairwa, Shiga, and Tatsuya Kusakabe, Kyoto, both of, Japan, assignors to Wacoal Corp., Kyoto, Japan
Filed Mar. 14, 1994, Ser. No. 209,409
Claims priority, application Japan, Mar. 16, 1993, 5-011223 U
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—774 **19 Claims**



1. An instrument for measuring breast shape comprising:
a base member having first and second free ends which are joined by a substantially half-circular edge part which is to be applied along a verg's line of a breast which is a circular arc underneath each breast;
a vertical tape measure having a predetermined graduation for measuring a vertical length of the breast between a nipple and a verg's line of the breast, having a first end which is fixed on the base member at a position in the vicinity of a lowest position of the substantially half-circular edge part;
a horizontal tape measure having a predetermined graduation for measuring a horizontal length of the breast across the nipple, having a first end which is fixed on the base member at a position in the vicinity of one of the first and second free ends of the base member.

5,485,856
HAND IMMOBILIGING AND POSITIONING APPARATUS FOR X-RAY EXAMINATIONS
Peter E. Buckland, 17835 NW. 63rd Ct., Miami, Fla. 33015
Filed Apr. 22, 1994, Ser. No. 231,235
Int. Cl.[6] A61G *15/00*; A61F *5/37*
U.S. Cl. 128—845 **5 Claims**



1. An apparatus for positioning and immobilizing the hand and fingers of a patient, wherein said fingers comprise all fingers other than the thumb, for antero-posterior and lateral X-ray examination of said selected finger, comprising:
means for supporting having a supporting surface for supporting the back of a hand and a selected finger of said hand,

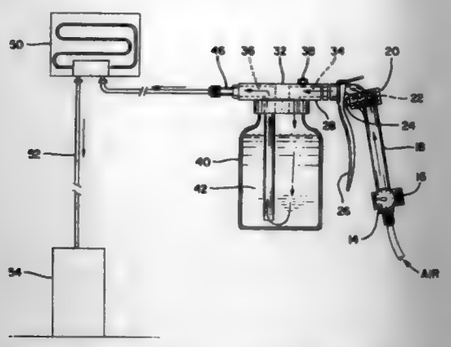
a finger directing member having an abutting end for abutting said support surface and an opposing stepped end having a plurality of step portions for each supporting one of said fingers, such that said steps are each at position laterally distinct from all other said steps and wherein said steps are of sufficient size and are sufficiently staggered to spread said fingers sufficiently to isolate all said fingers on said steps for lateral X-ray examination.

5,485,857

AUTOMATIC TRANSMISSION COOLER FLUSHING DEVICE

Thomas L. Amundsen, 1100 E. Streamwood Blvd., Streamwood, Ill. 60107

Filed Jun. 8, 1994, Ser. No. 255,461
Int. Cl.[6] B08B *9/02*
U.S. Cl. 134—102.2 **20 Claims**



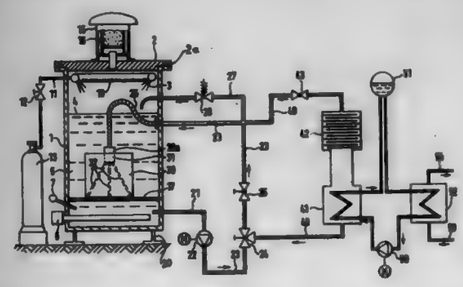
17. In a system for flushing an automobile transmission cooler, the improvement of the system including a hand held portable transmission cooler flushing apparatus for flushing an automobile transmission cooler, cleaning solvent and pressured air means, the hand held portable transmission cooler flushing apparatus comprising a liquid spray gun, said liquid spray gun being connected to a hose, said liquid spray gun comprising an air inlet plug fitting attachment, a handle, said handle having an open passageway through the length of the handle, said handle having an air inlet and an air outlet at opposite ends of the open passageway, said air inlet plug fitting attachment being connected to the air inlet of the handle, an air valve, said air valve being connected near the air outlet to the handle, said air valve having an air passageway that can be opened and closed, said air valve containing a compression spring that acts to keep the air passageway closed, an air valve button, said air valve button being connected at one end of the air valve so that when the air valve button is pressed the air passageway within the air valve is then opened and when the air valve button is released then said compression spring acts to close said air valve passageway within the air valve, a trigger, said trigger being loosely connected about a top end of the handle, said trigger being positioned in such a way that when the trigger is pulled while holding said handle, the trigger then pushes the air valve button into the air valve opening the air passageway within the air valve, a lid structure including a lower lid portion and an upper air and liquid transfer housing portion, a canister for holding said cleaning solvent, said canister having an open end, said canister being covered by the lid structure at said open end in an air tight assembly, said lid structure having an angular high pressure air passageway and an angular high pressure liquid passageway, said angular high pressure air passageway having an entrance in the upper air and liquid transfer housing portion and an exit in the lower lid portion, said entrance of the angular high pressure air passageway being connected to the air outlet of the handle, said exit of the lid air inlet tube being exposed to an inside of the canister, said angular high pressure liquid passageway having an entrance in the lower lid portion and an exit in the upper air and liquid transfer housing portion, said entrance of the angular high pressure liquid passageway being exposed to an inside of the canister, said exit of the angular high pressure liquid passageway being exposed outside of the canister, a pressure tube, said pressure tube being hollow, said pressure tube being attached to the entrance of angular high pressure liquid passageway and extending downwardly to a bottom of the canister for transportation of the cleaning solvent in the canister, and a nozzle, said nozzle being attached to the exit of the angular high pressure liquid passageway, said hose being attached to the nozzle whereby when the liquid spray gun is attached to the pressured air means at the air inlet plug fitting attachment and the hose is attached to one opening of a transmission cooler, said cleaning solvent can be passed through the hose hydraulically in a stream from the liquid spray gun by air pressure from the pressured air means into and through the transmission cooler and out a second opening of the transmission cooler by pulling the trigger to clean and check the flow of the automobile transmission cooler said trigger also enabling a pulsating action of said cleaning solvent through the transmission cooler to provide additional cleaning action in removing stubborn debris, after said cleaning solvent has been forced out of the canister in a stream a further cleaning action can then be performed by forcing pressurized air through the canister and into the transmission cooler, the pressurized air that is passed through the canister mixes with a residue of the cleaning solvent remaining in the canister thereby providing an atomized cleaning action in addition to flushing the transmission cooler with the hydraulic stream of the cleaning solvent.

5,485,858

METHOD OF AND APPARATUS FOR CLEANING OBJECTS OF PLASTICS PROCESSING MACHINES

Rudolf Schmidt, München, Germany, assignor to Caroline Christ Abgasfreie Werkzeugreinigungsapparate für die Kunststoffindustrie, Munich, Germany

Filed Jan. 24, 1994, Ser. No. 187,303
Claims priority, application Germany, Jan. 28, 1993, 43 02 415.7
Int. Cl.[6] B08B *3/10*
U.S. Cl. 134—107 **27 Claims**



20. Apparatus for removing plastic residues from objects of plastics processing machines to which plastic residues adhere; said apparatus comprising:

a closed container defining a treatment chamber for receiving an object to be cleaned, said treatment chamber being filled with a liquid heat transfer fluid;

heating means for raising the temperature of the heat transfer fluid to a level exceeding a melting or decomposition temperature of the plastic residues;

pump means arranged outside said treatment chamber and connected to said treatment chamber via a pressure conduit for circulating heat transfer fluid, said pressure conduit terminating in a hose which projects into said treatment chamber and has a mouth piece securable in a position pointing in direction of the object to be cleaned;

a three-way valve arranged in said pressure conduit;

a bypass connected to one outlet port of said three-way valve;

a filter arranged in said bypass for separating removed residues from the heat transfer fluid; and

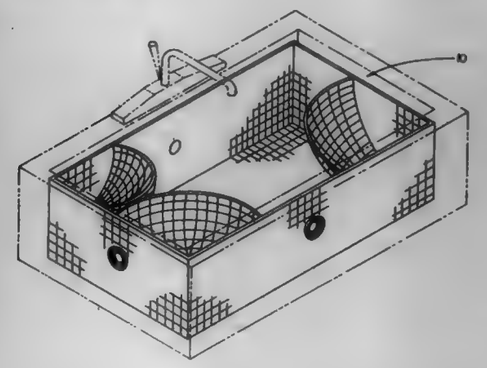
a throttle or pressure reducing valve arranged in said pressure conduit between said three-way valve and a junction with said bypass.

5,485,859

DISHWASHING AID FOR THE HANDICAPPED

Charles D. Johnson, 701 E. Tantallon Dr., Fort Washington, Md. 20744, and Debra Johnson, 909 Watson St. #1B, Baltimore, Md. 21202

Filed Sep. 29, 1994, Ser. No. 314,809
Int. Cl.[6] B08B *13/00*
U.S. Cl. 134—115 R **2 Claims**



1. A new and improved dishwashing aid for allowing a handicapped or physically unable person to wash dishes without frustration comprising, in combination:

a rectangular plastic mesh container having four side walls, a closed bottom, an open top, an inner surface, and an outer surface, a plurality of apertures formed in the four side walls with at least one aperture formed in each of the four side walls, the rectangular container functioning to fit inside of a sink;

a plurality of mesh holding chambers, each holding chamber having a closed bottom, an open top, and a curved sidewall therebetween, the curved sidewall being tapered from the open top to the closed bottom, the curved sidewall having a first end and a second end, the first end integral with the inner surface of one of the four side walls, the second end integral with the inner surface of one of the four side walls adjacent, the holding chambers functioning to hold dishes and pans loosely in place for the user;

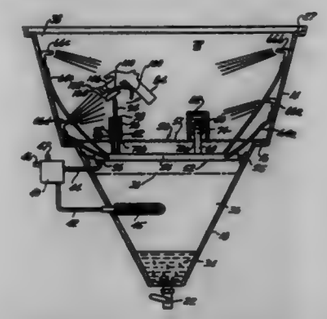
a plurality of suction cups, each of the suction cups having an extension, each extension coupled to the outer surface of the rectangular plastic mesh container through one of the plurality of apertures formed therein by a fastening means, the suction cups functioning to secure the rectangular container inside of a sink.

5,485,860

SPRAY GUN AND ASSOCIATE PARTS WASHER AND RECYCLER

Richard A. Robb, West Bloomfield, Mich.; Michael J. Grubb, London, Canada; John J. Grubb, Calgary, Canada, and James T. Asanger, Carstairs, Canada, assignors to Herkules Equiptment Corp., Walled Lake, Mich.

Division of Ser. No. 362,611, Jun. 7, 1989, Pat. No. 5,174,317, which is a division of Ser. No. 288,466, Dec. 22, 1988, abandoned, which is a continuation of Ser. No. 904,897, Sep. 5, 1986, Pat. No. 4,793,369. This application Sep. 28, 1992, Ser. No. 952,644
Int. Cl.[6] B08B *3/02*
U.S. Cl. 134—166 C **6 Claims**



1. In a paint removal system which includes a housing within which a paint gun is temporally held for removing paint from the paint gun, which paint gun has an outwardly extending paint supply tube through which paint normally flows into the gun for painting, the improvement comprising:

a support member arranged within the housing and having an end portion which is temporarily connectable to, for holding a free, open lower end of the paint supply tube so that the paint gun is substantially supported upon the support member by its paint supply tube;

the support member having a passageway extending through it and through which solvent is flowed;

the support member passageway communicating with the open, lower end of the paint supply tube for flowing solvent through the tube and, therefore, through the gun;

whereby the support member delivers solvent to the gun, while holding the gun, so that no additional support means is needed for holding the gun in its supported position during the passage of the solvent through the gun for cleaning the gun.

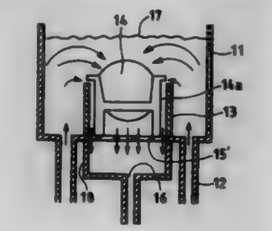
5,485,861

CLEANING TANK

Yutaka Hiratsuka, and Tadashi Akiyama, both of Yokohama, Japan, assignors to Dan Science Co., Ltd., Tokyo, Japan

Filed Oct. 4, 1994, Ser. No. 317,351
Claims priority, application Japan, Jan. 19, 1993, 5-260585
Int. Cl.[6] B08B *11/00*
U.S. Cl. 134—182 **14 Claims**

1. A cleaning tank defining therein a cleaning chamber having a

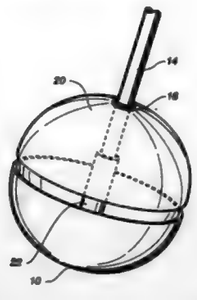


width, a length and a height adapted to receive an article to be cleaned and having an upper opening for carrying the article into and out of the cleaning chamber, a plurality of small holes provided in a bottom wall of the cleaning chamber, an outlet port communicated with the small holes, and at least one inlet port provided in the bottom portion of the cleaning tank and outside of the cleaning chamber for introducing a cleaning liquid into the cleaning tank and to the upper opening of the cleaning chamber.

5,485,862
CANE TIP

Melvin Kahn, 467 Central Ave., Alameda, Calif. 94501

Continuation-in-part of Ser. No. 86,613, Jul. 2, 1993, Pat. No. 5,301,703. This application Apr. 8, 1994, Ser. No. 224,855
The portion of the term of this patent subsequent to Jul. 2, 2013, has been disclaimed.
Int. Cl.[6] A45B *9/04*
U.S. Cl. 135—77 **4 Claims**



1. A tip for a cane for use by the visually handicapped wherein said cane has a shank and said shank has a bottom end, said tip comprising

a contact element including a contact shell having an outwardly facing convex contact surface and a hollow interior region behind said contact surface, said contact surface being relatively broad in relation to the diameter of the bottom end of a shank of a cane to which it is attached, and having a substantially continuous curvature for substantially its entire breath, and said contact element further including a reflector shell having a hollow interior region, said reflector shell being adapted for positioning on the shank of a cane in spaced relation behind said contact shell such that the hollow interior regions of said contact shell and reflector shell face each other to provide a reverberation region between said shells, and

means for rigidly attaching said contact element to the bottom end of a shank of a cane such that the contact surface of said contact element acts as a fixed tip of said cane to which it is attached.

5,485,863
COLLAPSIBLE SHELTER WITH ELEVATED CANOPY

Mark C. Carter, 10131 Kernwood Ct., Alta Loma, Calif. 91737

Continuation-in-part of Ser. No. 42,996, Apr. 5, 1993. This application Jul. 25, 1994, Ser. No. 279,656
Int. Cl.[6] E04H *15/50*
U.S. Cl. 135—145 **10 Claims**

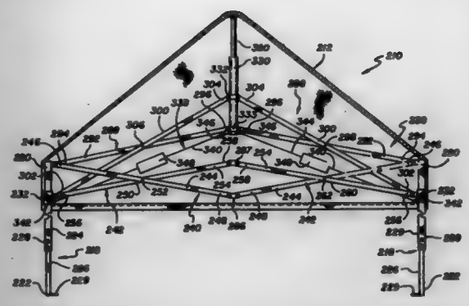
1. A collapsible shelter, comprising:

a canopy having at least three sides and at least three corners;

at least three vertically disposed legs supporting said canopy, with one of said legs disposed under each of said canopy corners, each of said legs having an upper end and a lower end;

at least two perimeter truss pairs of link members connected to each of said legs, each of said perimeter truss pairs of link members including first and second link members, said first link member having an outer end connected to the upper end of one said leg, and said second link member having an outer end slidably connected to said leg, and said first and second link members being pivotally connected together in a scissors configuration so as to be extendable from a first collapsed position to a second extended position extending above said leg; and

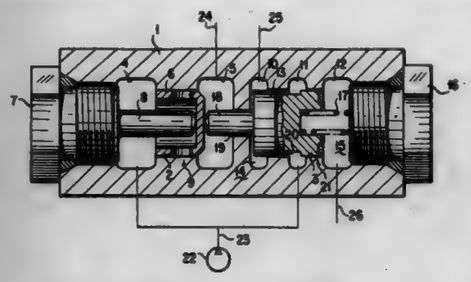
at least two central truss pairs of link members, each said central truss pairs of link members including first and second link members connected together in a scissors configuration, each of said central truss pairs being connected to the inner ends of at least one said perimeter truss pair, said first and second link members being pivotally connected together in a scissors configuration so as to be extendable from a first collapsed position to a second extended position, said second links of the central truss pairs being longer than the first links of the central truss pairs, so that in said second extended position of the shelter, the second link extends above the upper ends of the legs.



5,485,864
PRESSURE COMPENSATION VALVE

Masamitsu Takeuchi; Kazuyoshi Ishihama, and Kazunori Ikei, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Komatsu Siesakusho, Tokyo, Japan

PCT No. PCT/JP93/00724, § 371 Date Nov. 23, 1994, § 102(e) Date Nov. 23, 1994, PCT Pub. No. WO93/24756, PCT Pub. Date Sep. 12, 1993
PCT Filed May 28, 1993, Ser. No. 347,437
Claims priority, application Japan, May 28, 1992, 4-42200 U
Int. Cl.[6] F15B *11/05;11/16*
U.S. Cl. 137—118 **9 Claims**



1. A pressure compensation valve comprising:

a valve body defining therein an inlet port and an outlet port, first, second and third ports, a first pressure chamber communicating with said first port, and a second pressure chamber communicating with said third port;

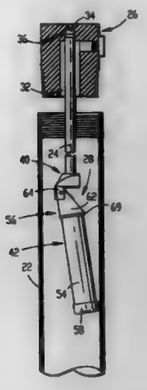
a check valve portion provided in said valve body and including a check valve for establishing and blocking communication between said inlet port and said outlet port; and

a pressure reduction valve provided in said valve body, said pressure reduction valve including a spool establishing communication between said second port and said third port when a predetermined pressure is generated in said first pressure chamber and blocking communication between said second port and said third port when a predetermined pressure is generated in said second pressure chamber, and said pressure reduction valve also including a spring biasing said spool to a position at which said spool will block communication between said second port and said third port while contacting said check valve.

5,485,865
AIR VOLUME CONTROL VALVE FOR WATER SYSTEM PRESSURE TANK

Thomas N. Shirk, Beatrice, Nebr., assignor to Dempster Industries, Inc., Beatrice, Nebr.

Filed Nov. 1, 1994, Ser. No. 333,022
Int. Cl.[6] F16K *31/18*
U.S. Cl. 137—209 **12 Claims**



1. An air volume control valve apparatus for use with a water system pressure tank, the apparatus comprising:

an elongated tubular drop tube presenting first and second axial ends and a passage through the tube;

a support means for supporting the drop tube on the tank with the first end of the tube exposed to an area exterior of the tank and the second end of the tube disposed within the tank;

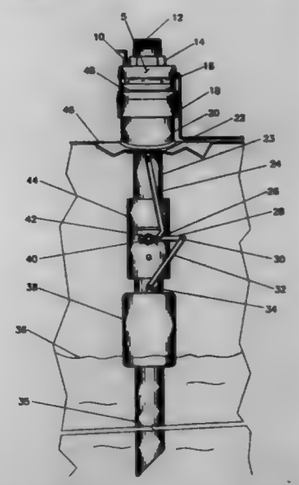
a seat member secured to the second end of the drop tube, the seat member closing off the passage at the second axial end of the drop tube except for a restricted passageway in the seat member, and including a lower surface through which the restricted passageway extends, the seat member including an annular seat surrounding the restricted passageway and protruding from the lower surface; and

an elongated float member having a first axial end supported for pivoting movement on the seat member about a pivot axis extending in a direction transverse to the length of the tube, and a second free end opposite the first end, the float member being buoyant in water so that as the water level rises in the tank beyond the predetermined level, the float member is lifted on the water to an upper pivoted position in which the float member, engages the seat, closing off the restricted passageway, and when the water level drops beneath the predetermined level, the float member pivots to a lowered position in which the restricted passageway is uncovered, the float member being provided with a patch of relatively resilient material that bears against the annular seat of the seat member when the float member is in the upper pivoted position, sealing the restricted orifice.

5,485,866
FLUID SHUT OFF VALVE AND FILL LEVEL INDIDCATION

James H. Bowen, 12190 Richland Dr., Catharpin, Va. 22018

Division of Ser. No. 166,932, Dec. 15, 1993, Pat. No. 5,427,137. This application Apr. 13, 1995, Ser. No. 421,242
Int. Cl.[6] H16K *37/00;31/24;33/00*
U.S. Cl. 137—554 **8 Claims**



5. A valve to cutoff flow and to monitor different fluid level conditions in a storage tank while said tank is being filled comprising in combination:

a valve means to cutoff an incoming flow of fluid when said storage tank that is being filled is at a full level condition;

a float to contact and follow different fill levels of said fluid as said fluid rises in said storage tank;

an actuator to actuate said valve means by the movement of said float;

a first switch disposed above said valve to be connected to a monitoring system to indicate a full condition of said storage tank;

said actuator actuates said first switch by the movement of said float as said fluid rises within said storage tank;

a linkage that connects said float to said actuator;

a second switch disposed above said valve that actuates prior to said first switch, said second switch to be connected to said monitoring system to indicate a near full condition; and

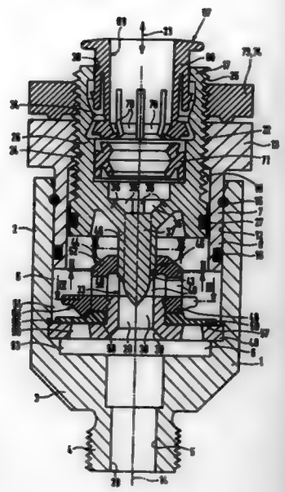
said actuator actuates said second switch by the movement of said float in said storage tank.

5,485,867
CHOKE VALVE

Kurt Stoll, Esslingen, Germany, assignor to Festo KG, Esslingen, Germany

Filed May 26, 1994, Ser. No. 249,814
Claims priority, application Germany, May 27, 1993, 43 17 604.6
Int. Cl.[6] F16K *47/04*
U.S. Cl. 137—599 **13 Claims**

1. A choke valve comprising a housing wherein a choke duct extends to be in communication with two connection ports arranged coaxially in relation to one another and at opposite ends of the housing for the supply and/or removal of a driving fluid and a choke member arranged on the housing to cooperate with the choke duct and able to be set by being moved in two opposite directions for altering the flow aperture thereof in a setting direction in relation to the housing, wherein one of the connection ports is provided on the choke member, the connection port being directed in the setting direction and the connection port on the



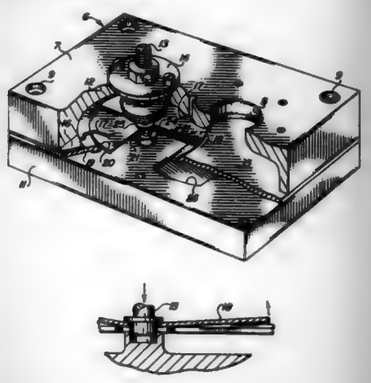
choke member communicating with the choke duct which extends through the choke member, wherein at least one of the connection ports comprises a plug connection device for detachable connection to a fluid power hose, and wherein the choke member comprises a housing of a plug connection device in the form of a gripping ferrule which is able to be freely turned in relation to the choke member, the...plug connection housing being provided in a duct portion associated with the choke member and being able to be actuated externally on the plug connection housing.

5,485,868

FAST ACTING HIGH OUTPUT VALVE

Link C. Jaw, Tempe, and Frank O. Liu, Chandler, both of Ariz., assignors to Scientific Monitoring, Inc., Tempe, Ariz.

Filed Sep. 13, 1994, Ser. No. 305,018
Int. Cl.[6] F16K *1/24;31/44*
U.S. Cl. 137—601 **9 Claims**



1. A fast-acting high-output valve suitable to control flow of a fluid through an opening, said valve comprised of

a valve body in a geometric shape similar to that of said opening, said valve body containing a center and a periphery, and said valve body comprised of a plurality of individual pieces;

a means for applying a force to the center of said valve body;

a means for transforming said force at the center of said valve body to an opposite motion at the periphery of said valve body; and

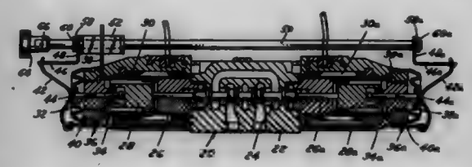
a means for guiding said individual pieces as said force at the center of said valve body is transformed to an opposite motion at the periphery of said valve body, said means capable of preventing said individual pieces from shifting laterally over one another.

5,485,869

HYDRAULIC DUAL SOLENOID DIRECTIONAL CONTROL VALVE WITH MANUAL OVERRIDE LOCK-OUT LINKAGE

Ronald L. Haynes, Searcy, Ark., assignor to Vickers, Incorporated, Maumee, Ohio

Filed Dec. 30, 1993, Ser. No. 175,955
Int. Cl.[6] F15B *13/01;13/044*
U.S. Cl. 137—625.65 **5 Claims**



1. A hydraulic solenoid directional control valve comprising

a valve body,

a valve spool controlling inlet and outlet ports,

a coil at each end,

an armature associated with each coil,

push pin means associated with each armature,

a hinge member fixed to the coil at each end,

a lever mechanically hinged to each hinge member,

an elbow member mechanically hinged to said lever,

a common rod,

each said elbow member having an opening,

said openings being aligned,

said rod extending through said openings,

a sleeve on one end of said rod,

said sleeve having a polygonal cross section,

mechanical means non-rotatably connecting said sleeve to said rod and holding said sleeve against movement relative to said rod,

said hinge member at said one end of said rod having a polygonal opening complementary to the cross section of said sleeve through which said sleeve normally extends such that when the rod is moved in one direction and rotated, the sleeve and rod are moved such that an interference fit is provided at a plurality of positions as the sleeve and rod are rotated relative to the opening such that rotation between the sleeve and the projection on one hinge member causes the lever to yieldingly apply force to the push pin means of the corresponding solenoid actuating the valve in one direction, and

when the rod is actuated in the opposite direction and then rotated after clearing the sleeve from the opening in the hinge member, the sleeve provides an interference fit with the other side of the hinge member at one end such that the lever on the other end of the valve is actuated to apply a force to the other push pin means and hold the push pin means in position having shifted the spool of the valve in the opposite direction.

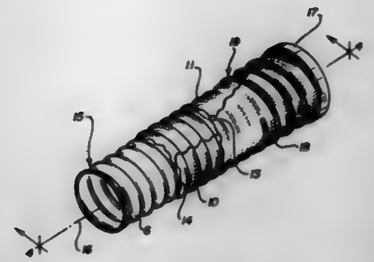
5,485,870

WIRE WRAPPED COMPOSITE SPIRAL HOSE AND METHOD

Newell P. Kralk, 10 Harrowby Crt., Islington, Ontario, Canada

Filed Dec. 5, 1994, Ser. No. 349,205
Int. Cl.[6] F16L *11/10*
U.S. Cl. 138—122 **15 Claims**

1. A composite hose, comprising a preformed plastic hose base structure having an exterior surface comprising a spiral convolution formed therein; a plurality of layers of fabric enveloping said convoluted exterior surface of said base structure; a wire, wrapped along said spiral convolution and engaging and distending said plurality of layers of fabric against said plastic hose base; means for retaining an end of said wire to said hose; said wire engaging said fabric within said spiral convolution of said base structure.

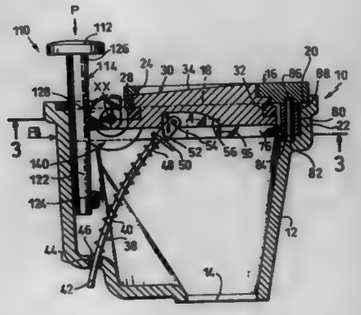


5,485,871

FILLER HEAD FOR A MOTOR VEHICLE FUEL TANK FILING PIPE

Christian Romanek, Nouilles, and Christophe Crepin, Pontoise, both of, France, assignors to Oaul Journee, S.A., Reilly, France

Continuation of Ser. No. 311,152, Sep. 23, 1994, abandoned.
This application Jun. 7, 1995, Ser. No. 479,551
Claims priority, application France, Sep. 29, 1993, 93 11579
Int. Cl.[6] B65D *55/00*
U.S. Cl. 141—312 **7 Claims**



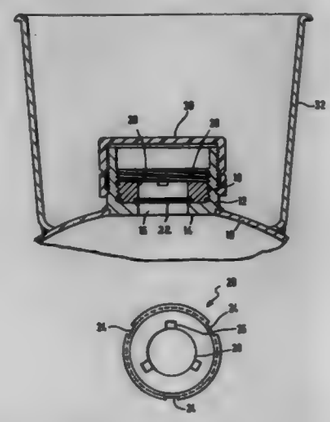
1. A filler head for a motor vehicle fuel tank filling pipe, comprising a bowl-shaped body having an upper face defining a filling orifice, a shut-off flap valve, pivot means mounting the shut-off valve to the body, for pivoting movement of said valve between a rest position in which the valve closes the filling orifice and a withdrawn position in which it lies within said body and wherein the filling orifice is then open; first resilient means carried in said body and connected to the shut-off valve for biassing the latter towards said rest position, whereby introduction of a filling nozzle through the filling orifice moves the shut-off valve to its withdrawn position against the action of the first resilient means; and automatic locking means in the body, comprising an unlocking control member and means for coupling the unlocking control member with the shut-off valve whereby to lock the latter in its rest position, wherein: the shut-off valve defines a lower face thereof; the body defines a seating around the filling orifice whereby said first resilient means urges the shut-off valve into engagement against said seating; the locking means comprises: at least one locking finger; a portion of said lower face of the shut-off valve adapted for receiving said at least one locking finger; second resilient means for urging the latter into engagement with said portion of the lower face of the valve so as to define a locking position; and means for moving the locking finger or fingers from said locking position to an unlocking position in which the locking finger is, or fingers are, laterally retracted from said portion of the lower face of the flap valve; wherein the automatic locking means comprise a locking arm having a first end portion, a second end portion, and a middle portion joining said first and second end portions, the said middle portion having a said locking finger, second end portion defining a control surface, the shut-off valve having a side edge, said body having an upper face for surrounding said side edge of the shut-off valve in the rest position of the edge of the latter, the body defining a pivot axis at right angles to its said upper face, the filler head further comprising means articulating a first end portion of a pivot arm to the body for pivoting of the locking arm about said axis, with said control member defining a control cam cooperating with said control surface of the locking arm.

5,485,872

DEVICE FOR CLOSING A NON-REFILLABLE BOTTLE, AND ADAPTORS FOR FILLING AND DRAINING THROUGH SUCH A DEVICE

Leon Kerger, Helmdange, Luxembourg, assignor to Luxembourg Patent Company S.A., Luxembourg

Filed Jul. 12, 1994, Ser. No. 273,636
Claims priority, application Luxembourg, Jul. 12, 1993, 88378
Int. Cl.[6] B65B *1/04;3/04*
U.S. Cl. 141—329 **14 Claims**



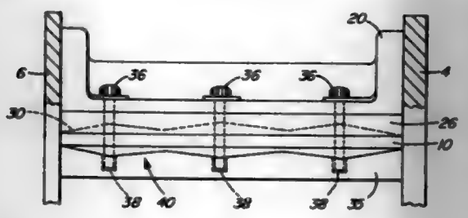
1. Device for closing a non-refillable bottle, characterized by a tubular coupling (12) designed to be rendered integral with the wall of the bottle and exhibiting, at its base, an internal annular shoulder (14) which defines an opening (16) for filling and draining the bottle, via a cylindrical ring (20) closed by a membrane (22), the external diameter of said ring (20) being larger than the diameter of the said opening (16), in that part of the external surface of said ring (20) has an external diameter corresponding to the internal diameter of the coupling (12), in that at least the middle part of the internal surface of the coupling (12) and the said part of the external surface of the ring (20) are equipped with sets of internal and external screw threads, respectively, and in that at least one longitudinal groove (24) passes through one of said sets of screw threads to allow fluid to flow into said bottle when said ring (20) is loosely screwed into said coupling (12).

5,485,873

KNIFE CLAMPING SYSTEM

Patrick J. Crammond, Coquitlam, Canada, assignor to CAE Machinery Ltd., Canada

Filed Aug. 9, 1994, Ser. No. 287,662
Int. Cl.[6] B27C 1/00
U.S. Cl. 144—162 R 15 Claims



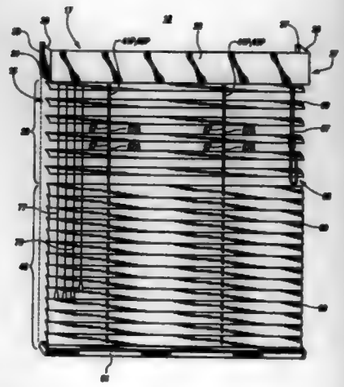
1. In an apparatus for processing wood having:
a rotatable support;
a cutter;
at least one holding location on the rotatable support to receive the cutter;
a clamp to engage and hold the cutter in position at the at least one holding location; and
a surface formed on at least one of the clamp and the at least one holding location having an undulating profile engageable against the cutter, the at least one surface being shaped to deform to engage the cutter with a substantially uniform clamping load upon securing of the fastener with a pre-selected force.

5,485,874

VENETIAN BLIND

William F. Whitmore, 3452 Osborn Dr., Modesta, Calif. 95350

Filed Apr. 18, 1994, Ser. No. 229,163
Int. Cl.[6] E06B 3/48
U.S. Cl. 160—115 10 Claims



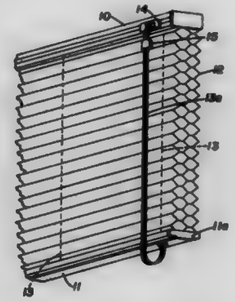
1. A venetian blind, comprising:
a control housing;
a first array of slats suspended from the control housing;
a second array of slats suspended from the control housing below the first array of slats;
a lifting cord for raising and lowering the slats;
a first set of control cords for opening and closing the first array of slats, including a proximate control cord and a distal control cord;
a second set of control cords for opening and closing the second array of slats, including a proximate control cord and a distal control cord;
holding means for holding the two proximate control cords adjacent to one another and for holding the two distal control cords adjacent to one another as the slats in the first array are raised.

5,485,875

WINDOW SHADE WITH BREAK-AWAY ATTACHMENT OF LIFT CORDS TO BOTTOM RAIL

John R. Genova, Madison, Wis., assignor to Springs Window Fashions Division, Inc.

Filed Mar. 31, 1994, Ser. No. 220,663
Int. Cl.[6] E06B 9/30
U.S. Cl. 160—168.1 5 Claims



1. A window shade assembly comprising a header, a bottom rail and expansible and contractable shade means attached to the header and bottom rail, bottom rail operating means including at least two lift cords attached to the bottom rail and extending upwardly to the header and through cord lock means on the header, the bottom rail operating means including at least one operating portion extending downwardly from the cord lock means and manually operable for moving the bottom rail between upper and lower positions, the operating portion having a length sufficient to extend below the lower rail when the latter is in said lower position thereof, a cord end member on a lower end of the operation portion, and means detachably mounting the cord end member on the bottom rail, the detachable mounting means being constructed and arranged to allow the cord end member to detach from the mounting means on the bottom rail when the associated operating portion is subjected to a tensile force in a direction away from the bottom rail.

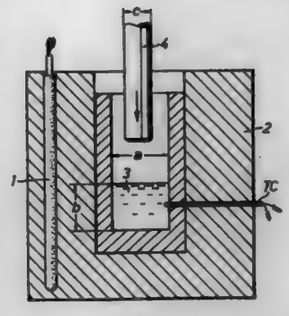
5,485,876

PROCESS FOR PRODUCING METAL MATERIAL WITH EXCELLENT MECHANICAL PROPERTIES

Hiroyuki Horimura, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 25, 1993, Ser. No. 83,832
Claims priority, application Japan, Jun. 30, 1992, 4-172658
Int. Cl.[6] B22D 7/10
U.S. Cl. 164—122 20 Claims

1. A process for producing a metal material with excellent mechanical properties, comprising the steps of:
producing a metal having a melting temperature (Tm) and a glass transition temperature (Tg);
placing the metal in a supercooled liquid state by setting the temperature (T) of the metal in a range of $Tg \leqq T \leqq Tm$;
causing the supercooled liquid metal, which is included in a container and has a basic form defined by the shape of the container, to flow into a second container so that the form of the supercooled liquid is changed to a second form defined by the second container, thereby increasing the temperature of the supercooled liquid;



allowing the temperature of the supercooled liquid metal of a changed form to become uniform, thereby inhibiting the production of non-uniform crystal nuclei; and
thereafter subjecting said supercooled liquid of a changed form to a cooling treatment to solidify said supercooled liquid.

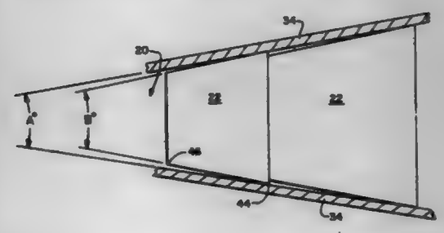
5,485,877

ROTARY REGENERATIVE HEAT EXCHANGER

Mark E. Brophy, Wellsville, N.Y., assignor to ABB Air Preheater, Inc., Wellsville, N.Y.

Filed Oct. 28, 1994, Ser. No. 330,923
Int. Cl.[6] F23L 15/02
U.S. Cl. 165—8 4 Claims

1. A rotor assembly for a vertical shift rotary regenerative heat



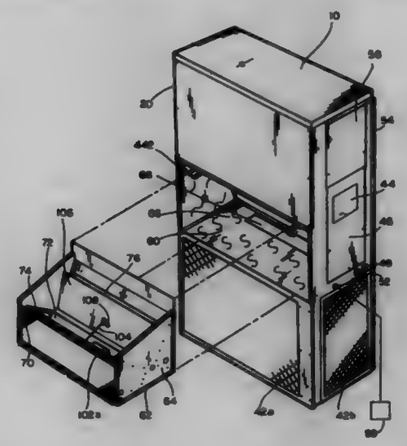
exchanger, said rotor assembly having a center portion, a top and a bottom and mounted on an axially extending rotor shaft and comprising:
a) a cylindrical outer rotor shell;
b) diaphragm plates extending radially in said rotor assembly essentially from said center portion thereof to said outer rotor shell and from said top to said bottom thereof so as to divide said rotor into a plurality of sector-shaped compartments, said diaphragm plates being at a selected angle to each other;
c) a plurality of axially spaced horizontally extending support gratings located in each sector-shaped compartment mounted between said diaphragms, said support gratings being of an open structure to permit fluid flow axially therethrough;
d) a plurality of truncated sector-shaped heat exchange baskets supported on each support grating radially adjacent to each other and extending generally from said center portion to said outer rotor shell, each of said baskets being constructed to have a sector shape with an included angle is greater than said selected angle of said sector-shaped compartment.

5,485,878

MODULAR AIR CONDITIONING SYSTEM

Irvin L. Derks, Bryan, Ohio, assignor to Bard Manufacturing Company, Bryan, Ohio

Continuation-in-part of Ser. No. 16,153, Feb. 5, 1993, Pat. No. 5,301,744. This application Mar. 23, 1994, Ser. No. 216,334
The portion of the term of this patent subsequent to Apr. 12, 2011, has been disclaimed.
Int. Cl.[6] F25B 29/00
U.S. Cl. 165—16 29 Claims



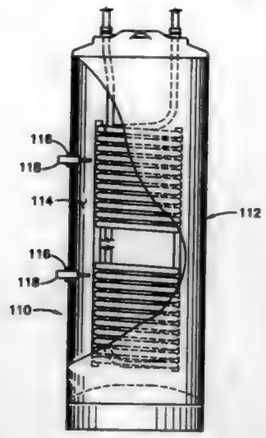
1. In a heating, ventilation, and air conditioning (HVAC) system attachable to a structure, said structure having an interior and an exterior, said air conditioning system, comprising:
a) an elongate housing including;
1) a module receiving chamber inside said housing in communication externally and internally of said housing;
2) a return air opening in said housing in communication with said chamber and with said interior;
3) an air inlet opening in said housing in communication with said chamber and with said exterior;
4) an air exhaust duct in said housing in communication with said chamber and with said exterior for exhausting air from said interior to said exterior;
5) an air supply duct in said housing having a first end in communication with said chamber and a second end in communication with said interior to provide a conduit for passage of conditioned air from said ventilation system to said interior;
6) a ventilation module removably fastenable within said chamber, said ventilation module containing a damper for routing air through said return air opening, said air inlet opening, said air supply duct, and said air exhaust duct;
7) means for conditioning air within said air supply duct;
8) means for circulating air mounted in said air supply duct for drawing fresh air through said air inlet opening and said return air opening, through said chamber, through said air conditioning means, and out said second end of said air supply duct into said interior;
b) temperature responsive means; and,
c) means for controlling said air circulating means and said conditioning air means, said control means receiving and processing signals from said temperature responsive means located in said structure or in said return air opening.

5,485,879

COMBINED WATER HEATER AND HEAT EXCHANGER

Eric M. Lannes, Kentwood, Mich., assignor to Bradford White Corporation, Ambler, Pa.

Continuation-in-part of Ser. No. 84,406, Jun. 29, 1993, Pat. No. 5,372,185. This application Apr. 8, 1994, Ser. No. 225,177
The portion of the term of this patent subsequent to Dec. 13, 2011, has been disclaimed.
Int. Cl.[6] F24D 3/08; F28F 11/00
U.S. Cl. 165—70 24 Claims



1. A system for heating a domestic water supply and a separate recirculating fluid supply for recirculation to a heating system, said heating system comprising:

a water storage tank adapted to contain said domestic water supply, said water storage tank having a top, a bottom, and a wall;

a heat source positioned to heat said domestic water supply within said water storage tank;

a tube connected to contain said recirculating fluid supply, said tube being mounted within said water storage tank in communication with the exterior of said water storage tank, said tube having a double-wall construction with a non-metallic outer wall in contact with a metallic inner wall, said double-wall preventing the mixing of said domestic water and said recirculating fluid; and

a means for sealing between said tube and said tank and preventing the mixing of said domestic water supply and said recirculating fluid supply.

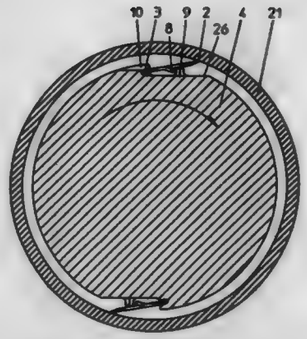
5,485,880

BLADE SYSTEM FOR A SCRAPED SURFACE HEAT EXCHANGER

Klas Zeuthen, Frederiksberg C, Denmark, assignor to Gerstenberg & Agger A/S, Frederiksberg C, Denmark

Continuation of Ser. No. 140,527, Oct. 25, 1993, abandoned.
This application Mar. 27, 1995, Ser. No. 412,201
Claims priority, application Denmark, Jan. 29, 1992, 1323/92
Int. Cl.[6] F25C 1/14
U.S. Cl. 165—94 9 Claims

1. A scraped surface heat exchanger comprising cylindrical wall means for defining an elongated inner treatment chamber through which a material to be treated can flow, said wall means providing an inner surface facing the treatment chamber; an elongated rotor rotatably mounted within said treatment chamber, said rotor defining a peripheral outer surface and mounting a first abutment means and a second abutment means spaced from the first abutment means, said second abutment means comprising a pin which extends away from the peripheral outer surface; and an elongated scraper blade positioned between the rotor and the cylindrical wall means, said scraper blade providing a longitudinal base which



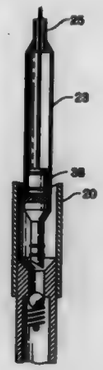
abuts said first abutment means when the rotor is rotated in one direction, and an opposite longitudinal knife edge which is positionable against the inner surface of the cylindrical wall means to scrape said inner surface when the rotor is rotated in said one direction, said scraper blade also including a flap which extends towards said rotor to abut said second abutment means when the rotor is rotated in an opposite, second direction, said scraper blade being removable from the treatment chamber without removal of the rotor by gripping an end thereof and sliding said scraper blade in a longitudinal direction thereof.

5,485,881

GROUNDWATER SAMPLER

Donald A. Toon, Burlington, Canada; Per H. Nielsen, Copenhagen, and Bent Skov, Hedehusene, both of, Denmark, assignors to Solinst Canada Limited, Georgetown, Canada

Filed May 4, 1994, Ser. No. 237,893
Claims priority, application United Kingdom, May 4, 1993, 9309205
Int. Cl.[6] E21B 49/08
U.S. Cl. 166—165 11 Claims



1. System for accessing liquid in a borehole, comprising: a lowerable structure; a push/pull structure; and a down-hole fixture, wherein:

the lowerable structure is lowerable into, and removable from, the bore-hole;

the push/pull structure extends, when the lowerable structure is in the borehole, from the lowerable structure up to the ground surface;

the push/pull structure is attached to the lowerable structure, and comprises a means by which the lowerable structure may, from the surface, be raised and lowered in the bore-hole;

the push/pull structure has such structural rigidity, and is of such a nature that a downwards pushing force may be transmitted therethrough from the surface to the lowerable structure,

whereby the lowerable structure, when in the borehole, may be forcefully pushed downwards and moved downwards by a force exerted at the ground surface;

the lowerable structure includes a lowerable-structure passageway which is so arranged that a sample of the liquid may be transferred therethrough;

the lowerable structure includes a means for closing the lowerable-structure passageway, when the lowerable structure is being raised in the borehole;

the down-hole fixture remains in the borehole, and open to the liquid surrounding the bore-hole;

the down-hole fixture includes a down-hole passageway leading into the borehole;

the down-hole fixture includes a mechanically-operable check-valve, which is effective normally to hold the down-hole passageway closed, but which, when operated, is effective to hold the down-hole passageway open;

the lowerable structure includes a means for mechanically operating the check-valve, which is effective to operate the check-valve when the lowerable structure is being pushed down, by the push/pull structure, into mechanical engagement with the down-hole fixture,

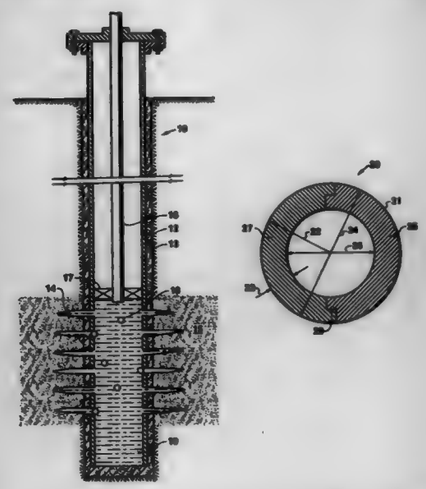
the lowerable structure is engageable mechanically with the down-hole fixture, the nature of the engagement being such that, when so engaged, the passageways are in communication, whereby water may pass via the lowerable-structure passageway and the down-hole passageway between the down-hole fixture and the lowerable structure.

5,485,882

LOW-DENSITY BALL SEALER FOR USE AS A DIVERTING AGENT IN HOSTILE ENVIRONMENT WELLS

James R. Bailey, Missouri City, and Larry E. Harrison, Houston, both of Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Oct. 27, 1994, Ser. No. 329,937
Int. Cl.[6] E21B 33/138;33/10;43/27;43/25
U.S. Cl. 166—284 22 Claims



1. A method of treating a subterranean formation surrounding a cased wellbore wherein the casing has an interval provided with a plurality of perforations, said method comprising:

(a) flowing down said casing to said perforated interval a plurality of ball sealers suspended in a treating fluid, each of said ball sealers having a density less than the density of said treating fluid, in the range of about 0.8 g/cc to about 1.3 g/cc, and being sized to substantially seal said perforations; each of said ball sealers further comprised of a spherical shell formed by two halves, said first half having a mating member designed to sealably engage with the mating member of the second half; and wherein the ratio of the spherical shell outer radius to the spherical shell thickness is less than 10; and

(b) continuing the flow of said liquid until said ball sealers seal at least a portion of said perforations.

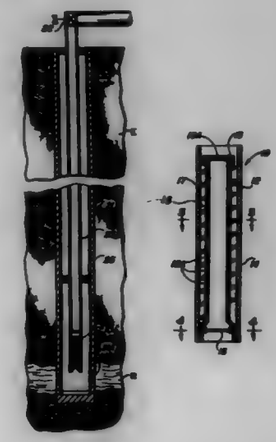
9. A ball sealer for plugging a passage formed through a vessel; said ball sealer being sized to substantially seal said passage and being comprised of a spherical shell having first and second halves designed to sealably engage, wherein the ratio of the spherical shell outer radius to the spherical shell thickness is less than 10, said ball sealer further having a density in the range of about 0.5 g/cc to about 1.3 g/cc, and said spherical shell comprised of a high-strength material.

5,485,883

METHOD AND APPARATUS TO ENHANCE THE RECOVERY OF CRUDE OIL

William W. Rippetoe, Bixby, and David N. Shroff, Broken Arrow, both of Okla., assignors to Universal Environmental Technologies, Inc., Naples, Fla.

Filed Apr. 17, 1995, Ser. No. 423,824
Int. Cl.[6] E21B 37/06;41/02;43/00
U.S. Cl. 166—369 6 Claims



1. Apparatus for enhancing the recovery of crude oil from an oil well having a string of tubing in the well which extends to the level of the underground reservoir of crude oil comprising

a device attached to the lower end of the tubing in the oil well and positioned so that the device lies at the level of the reservoir of crude oil,

said device consisting of two spaced apart cylindrical metal tubes having a common vertical axis,

the innermost cylindrical tube having an open lower end, a capped upper end and a multiplicity of radially bored spaced apart holes in the wall of the inner tube,

the outer cylindrical tube having its lower end joined to the lower end of the inner tube and its upper end remaining open,

the inner tube being made of an alloy of pure copper and pure nickel in which the copper comprises at least 80% of the alloy, and

the outer tube having its entire interior surface made of an alloy of pure copper and pure nickel in which the copper comprises at least 80% of the alloy.

3. A method of enhancing the recovery of crude oil from an oil well having a string of tubing in the well which extends to the level of the underground reservoir of crude oil comprising

attaching a device to the lower end of the tubing in the oil well, said device consisting of two spaced apart cylindrical metal tubes having a common vertical axis,

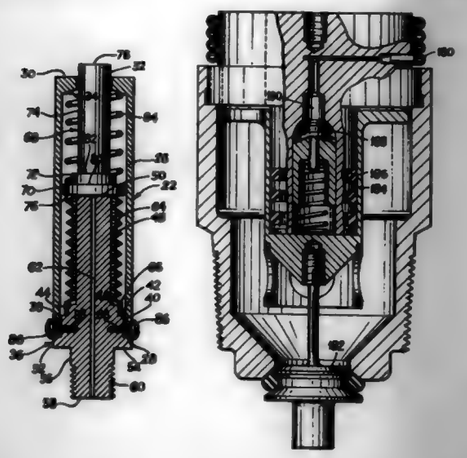
the innermost cylindrical tube having an open lower end, a capped upper end and a multiplicity of radially bored spaced apart holes in the wall of the inner tube,
the outer tube having its lower end joined to the lower end of the inner tube and its upper end remaining open,
the inner tube being made of an alloy of pure copper and pure nickel in which the copper comprises at least 80% of the alloy,
the outer tube having its entire interior surface made of an alloy of pure copper and pure nickel in which the copper comprises at lest 80% of the alloy, and
using the oil reservoir pressure to draw the crude oil into the open lower end of the device and into the interior of the inner tube causing a multiplicity of streams or jets of crude oil to issue from the radially bored holes in the wall of the innermost tube to bombard the copper and nickel walls of the annular chamber between the two tubes of the device whereby electrons freed from the copper in the walls of the chamber combine with molecules of the crude oil itself and with the molecules of the paraffins and other ingredients entrained in the crude oil to alter certain physical characteristics of the crude oil and its entrained ingredients.

5,485,884

HYDRIDE OPERATED REVERSIBLE TEMPERATURE RESPONSIVE ACTUATOR AND DEVICE

David J. Hanley, Bergenfield, N.J.; E. Lee Huston, Tuxedo, and P. Mark Golben, Florida, both of N.Y., assignors to Ergenics, Inc., Ringwood, N.J.

Continuation of Ser. No. 371,092, Jun. 26, 1989, abandoned. This application Feb. 20, 1991, Ser. No. 658,427
Int. Cl.[6] A62C *35/08*
U.S. Cl. 169—19 **2 Claims**



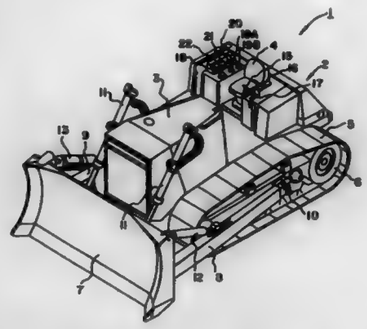
1. An actuator for repeatedly performing a function at a predetermined temperature, said actuator comprising an actuator assembly including an expandable element comprised of a bellows having a closed end, and means outside said expandable element for reversibly liberating hydrogen gas into a sealed system defined in part by said expandable element, said means for liberating hydrogen gas comprising hydride sensor assembly including an outer tube containing tubular means porous to the passage of hydrogen gas and spaced from the inner wall of said outer tube and providing a hydrogen gas passage, and hydriding alloy powder between said outer tube and said tubular means, said outer tube having a closed sealed end and an open end in hydrogen gas communication with the interior of said bellows, so that when the temperature of said powder rises to a predetermined value, desorption of said powder suddenly liberates hydrogen gas into said hydrogen gas passage, internally pressurizing said bellows to a predetermined value, said hydrogen gas passage having a check valve and flow restrictor positioned therein to provide time delay control for shutoff of the hydride sensor.

5,485,885

DOZING SYSTEM FOR A BULLDOZER

Shigenori Matsushita; Shu H. Zhang; Shigeru Yamamoto; Satoru Nishita, and Kazushi Nakata, all of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 25, 1994, Ser. No. 249,235
Claims priority, application Japan, May 31, 1993, 5-129369
Int. Cl.[6] A01B *63/112*
U.S. Cl. 172—7 **13 Claims**



1. A dozing system for a bulldozer comprising:
(a) actual tractive force detector means for detecting an actual tractive force of a vehicle body;
(b) target tractive force setting means for setting a target tractive force for the vehicle body;
(c) tractive force deviation calculator means for calculating a deviation between the actual tractive force detected by the actual tractive force detector means and the target tractive force set by the target tractive force setting means; and
(d) comparison control means for controlling a blade to be lifted or lowered such that the absolute value of the deviation is increased, when at least the absolute value of the deviation is less than a first preset value and the actual tractive force is approaching the target tractive force.

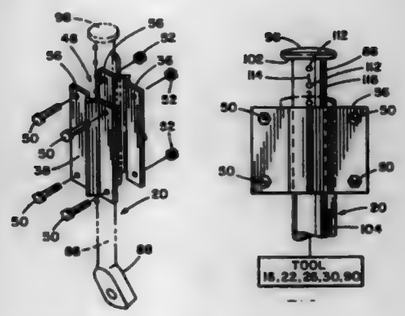
5,485,886

ADJUSTABLE AGRICULTURAL TOOL HOLDER

James H. Bassett, Sycamore, Ill., assignor to Dawn Equipment Company, Sycamore, Ill.

Filed Dec. 9, 1993, Ser. No. 164,153
Int. Cl.[6] A01B *15/00;35/20*
U.S. Cl. 172—763 **8 Claims**

1. An agricultural tool holder assembly, comprising:
a support forming a passageway therethrough and being operable in a capturing position and a releasing position;
an agricultural tool holder forged from a single, continuous metal blank, said tool holder including,
an elongated shaft including an upper end, a lower end, and a peripheral surface bridging said upper and lower ends, said shaft extending through said passageway along a lengthwise axis such that said upper end is disposed above said support and said lower end is disposed below said support, said shaft being fixed relative to said support while said support is in said capturing position and being movable relative to said support while said support is in said releasing position,
an enlarged head disposed at said upper end of said shaft, said enlarged head projecting radially outwardly from and substantially encompassing said peripheral surface to prevent said upper end of said shaft from moving downward along said lengthwise axis into said passageway,
keying means for engaging said support to limit rotation of said shaft relative to said support about said lengthwise axis while said support is in said capturing position, and
a mounting portion disposed in proximity to said lower end of said shaft; and an agricultural tool mounted to said mounting portion of said agricultural tool holder.

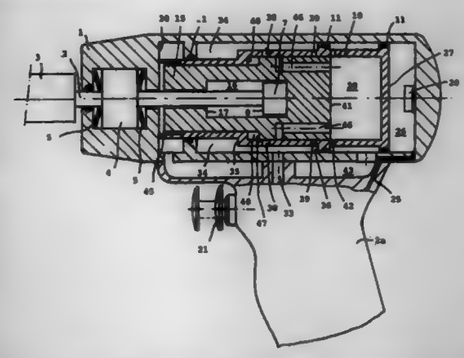


5,485,887

PNEUMATIC IMPACT TOOL AND PISTON FOR A PNEUMATIC IMPACT TOOL

Georges Maudanis, Lacerne, Switzerland, assignor to IMT Integral Medizintechnik AG, Ennetburgen, Switzerland

Filed Mar. 22, 1994, Ser. No. 216,059
Claims priority, application Switzerland, Mar. 30, 1993, *976/93*
Int. Cl.[6] B25D *17/06;17/24*
U.S. Cl. 173—17 **10 Claims**



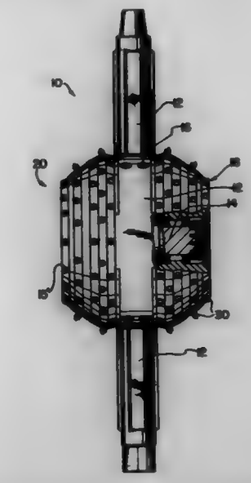
1. A pneumatic impact tool, particularly for surgical use, comprising:
a housing;
a tool holder held by said housing and having a first section inside said housing and a second section outside of said housing, said first section being provided at a free end thereof with a head having a first and a second impact surface, and said second section being provided at a free end thereof with a working tool holding means;
a cylinder provided within said housing;
a piston provided within said cylinder and having an inner hollow space enclosing said head, said piston being driveable by pneumatic pressure to oscillate within said cylinder, and
a manually operable switch means provided for selectively slidably displacing said cylinder within said housing and relative to said head from a first position to a second position, and wherein in said first position of said cylinder said oscillating piston impacts only on said first impact surface of said head and in said second position of said cylinder said oscillating piston impacts only on said second impact surface of said head.

5,485,888

SPHERICAL REAMING BIT

J. Richard England, Sudbury, Canada, assignor to R. H. Woods, Ltd., Watford, Canada

Continuation-in-part of Ser. No. 62,174, May 17, 1993, Pat. No. 5,413,183. This application Feb. 3, 1995, Ser. No. 383,223
Int. Cl.[6] E21B *10/22*
U.S. Cl. 175—53 **22 Claims**



1. A bit for reaming an opening in an earth formation, comprising:
at least one shaft for connection with drive means;
at least three stems on said shaft, each stem for movably mounting a semi-spherical roller cutter; and
a plurality of semi-spherical roller cutters, each stem including a semi-spherical roller cutter, said roller cutters being arranged on said stems such that said semi-spherical roller cutters are circumscribable in a sphere.

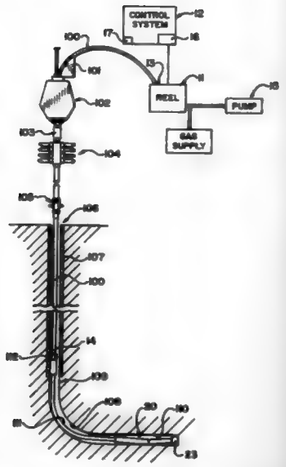
5,485,889

STEERING DRILL BIT WHILE DRILLING A BORE HOLE

Benjamin Gray, Silver Valley, Canada, assignor to Slickkick Tools Inc., Silver Valley, Canada

Continuation-in-part of Ser. No. 279,348, Jul. 25, 1994, abandoned. This application Mar. 3, 1995, Ser. No. 400,106
Int. Cl.[6] E21B *7/04*
U.S. Cl. 175—61 **16 Claims**

1. A method of drilling a bore hole in the earth comprising:
providing a drill string having a trailing end at ground level and a leading end for insertion into the bore hole;
connecting a supply of drilling fluid to the trailing end for pumping the drilling fluid to the leading end;
providing a drilling tool having an elongate tool body defining a longitudinal axis therealong, providing a motor mounted on the tool body to generate drive power, providing a drill bit mounted on the tool body at a leading end thereof for rotation of the drill bit in an angular direction relative to the tool body about the longitudinal axis in responsive to the drive power from the motor, and providing means forming a bend section in the tool body defining a bend axis of the tool body



transverse to the longitudinal axis of the tool body such said rotation of the drill bit tends to steer a longitudinal drilling direction of the tool body in a direction at an angle to a plane containing the bend axis and the longitudinal axis;

connecting a trailing end of the drilling tool body to the leading end of the drill string so as to communicate drilling fluid from the drill string to the tool body to cause rotation of the drill bit;

in order to form a straight section of the bore hole, allowing counter-rotation of the tool body relative to the leading end of the drill string in an angular direction opposite to the angular direction of the drill bit in response to torque generated at the drill bit so as to cause rotation of the tool body and the transverse bend axis about the longitudinal axis, with motive force for the counter-rotation being provided by the torque from the drill bit, and controlling the counter-rotation to be maintained during the formation of the straight section at a rate less than that of the rotation of the drill bit;

and, in order to steer the longitudinal drilling direction by forming a curved section of the bore hole, occasionally halting the counter-rotation to hold the bend axis at a predetermined orientation.

5,485,890

ROCK BIT

Chris E. Cawthorne; Steve Peterson, both of The Woodlands, Tex.; Naresh J. Kar, Westminster, Calif., and Madapusi K. Keshavan, The Woodlands, Tex., assignors to Smith International, Inc., Houston, Tex.

Continuation of Ser. No. 259,433, Jun. 14, 1994, abandoned. This application Apr. 4, 1995, Ser. No. 416,484

Int. Cl.[6] E21B *10/22*

U.S. Cl. 175—228 **27 Claims**

1. A rock bit for drilling subterranean formations comprising:

a bit body including a plurality of journal pins, each journal pin having a bearing surface;

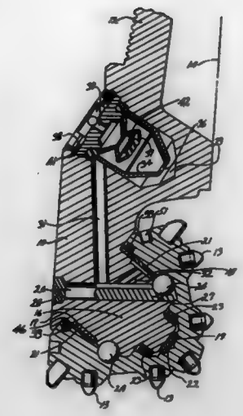
a cutter cone mounted on each journal pin and including a bearing surface;

a pressure-compensated grease reservoir in communication with such bearing surfaces;

a grease in the grease reservoir and adjacent the bearing surfaces;

an elastomeric O-ring seal between the journal pin and the cone for retaining the grease in the bearing; and

a stationary sealing surface adjacent to the O-ring seal having a sealing surface with a Vickers hardness of at least 1000 and a surface finish in the range of from 5 to 32 microinches AA.



5,485,891

CONE DRILL BIT

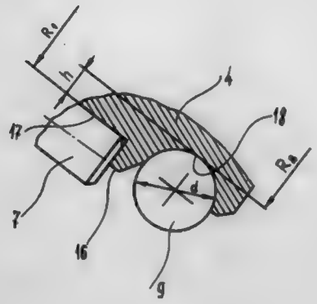
Brazhentsev A. Vladimirovich, Moscow, and Brazhentsev V. Pavlovich, Moskovskaya, both of, Russian Federation, assignors to Obshestvo S Organichennoi Otvetstvennostju "Nauchino-Proizvodstvennaya Firma Spettsstroyservis" , Moscow, Russian Federation

Filed Mar. 21, 1994, Ser. No. 215,078

Claims priority, application Russian Federation, Jan. 11, 1993, 93047140

Int. Cl.[6] E21B *10/00*

U.S. Cl. 175—372 **2 Claims**



1. A cone drill bit comprising

a bit body for thread jointing to a drill string, said body including three extending legs upon it;

trunnions made as an integral part of each said legs and extending transversely therefrom;

a set of inlet and outlet blowing passages interlinked and arranged in the bit body, legs and trunnions;

multi-crown cones mounted on the trunnions and outwardly equipped with hard-alloy inserts attached to the cone body or steel teeth milled on the cone body;

a support unit for rotatably mounting each cone on the trunnion, each support unit including a locking radial thrust ball bearing arranged between a peripheral and end journal roller bearings, and also comprising a lock pin, a diameter (d) of the balls in the locking ball bearing being defined by the relation:

$D/d = 3–13.2$,

where D is a bit diameter.

5,485,892

DRIVE CONTROL SYSTEM FOR AUTOMOBILE

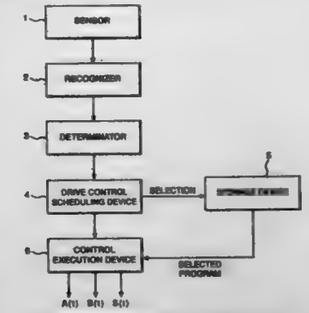
Kenji Fujita, Yokohama, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

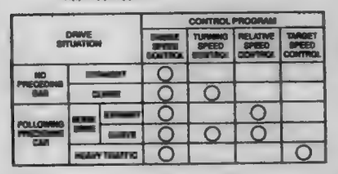
Continuation of Ser. No. 959,915, Oct. 14, 1992, abandoned. This application May 10, 1995, Ser. No. 438,727

Claims priority, application Japan, Jan. 14, 1991, 3-293626

Int. Cl.[6] B62D *6/00*

U.S. Cl. 180—167 **18 Claims**





1. An automatic drive control system for a car comprising:

recognizing means for recognizing external circumstances in a path ahead of the car;

drive situation determining means for determining a drive situation of the car on the basis of circumstances recognized by said recognizing means;

program storage means for storing control programs prepared for a plurality of different drive control modes according to previously specified drive situations;

control scheduling means for selecting at least one of said control programs according to a drive situation determined by said drive situation determining means;

control means for providing control signals in accordance with said at least one of said control programs selected by said control scheduling means; and

actuators for providing said car with speed and direction control in response to said control signals.

5,485,893

VEHICLE

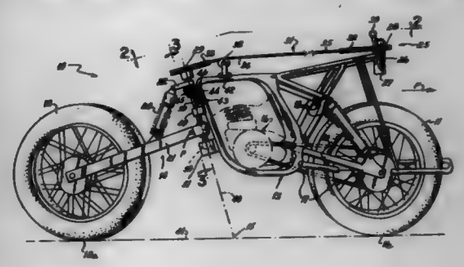
Thomas W. Summers, 757 Logan St., Louisville, Ky. 40204

Filed Jun. 29, 1993, Ser. No. 84,428

Int. Cl.[6] B62K *21/00*

U.S. Cl. 180—219 **29 Claims**

1. A two wheel single track vehicle having a center of gravity



and comprising:

a front frame having support structure including a seat for supporting a vehicle operator thereon;

a rear frame;

a front wheel connected to said front frame and a rear wheel connected to said rear frame;

drive means mounted to said front frame for driving said front wheel; and,

a steering mechanism operable from said front frame for turning said rear wheel about a turn axis, said turn axis being defined by a steering head disposed between said front and rear wheels and connecting said front and rear frames and disposed rearward of said center of gravity, wherein said turn axis is inclined in a longitudinal direction extending downwardly and toward said front wheel.

5,485,894

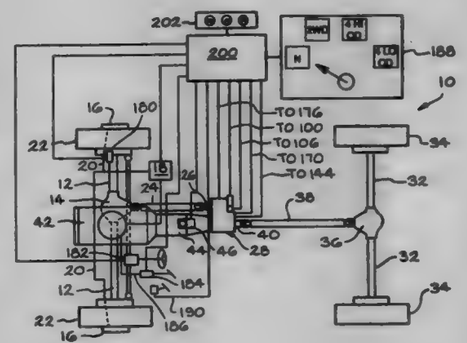
ON DEMAND VEHICLE DRIVE SYSTEM

Will Watson, Southfield, Mich.; Alan L. Miller, Ithaca, N.Y.; Drew A. Sundquist, Canton, Mich.; Roger T. Simpson, Ithaca, N.Y.; Diane K. Ducklow, Farmington, Mich.; Joseph W. Beckerman, Livonia, Mich., and Dan J. Showalter, Plymouth, Mich., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Division of Ser. No. 903,696, Jun. 24, 1992, Pat. No. 5,407,024. This application Feb. 10, 1995, Ser. No. 387,139

Int. Cl.[6] B60K *17/348*

U.S. Cl. 180—248 **20 Claims**



1. An adaptive four-wheel vehicle drive system comprising, in combination,

a primary drive line including a primary drive shaft and primary drive wheels at the front of the vehicle,

a secondary drive line including a secondary drive shaft and secondary wheels at the rear of the vehicle,

a transfer case having a primary output shaft adapted to drive said primary drive wheels, a secondary output shaft adapted to drive said secondary drive wheels, modulating clutch means for selectively transferring torque from said primary output shaft to said secondary output shaft,

means for sensing the rotational speed of said primary drive line,

means for sensing the rotational speed of said secondary drive line, and

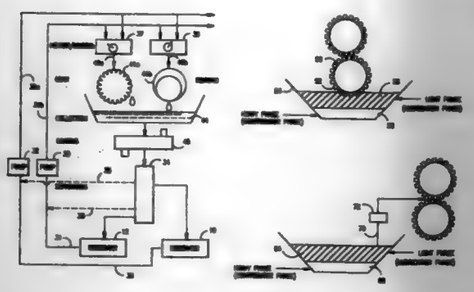
a microcontroller for comparing the speed of said primary drive line with the speed of said secondary drive line and engaging said modulating clutch means in increments when the difference between said speeds is greater than a predetermined value and disengaging said modulating clutch means in increments when said difference is less than said predetermined value.

5,485,895

MULTI-PHASE LUBRICANT PROCESS FOR LUBRICATING WITH MULTI-PHASE LUBRICANTS

Brian K. Peterson, Yardley, Pa., and Andrew Jackson, Pennington, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Oct. 7, 1994, Ser. No. 319,766
Int. Cl.[6] F01M 5/00
U.S. Cl. 184—6.22 23 Claims



1. An apparatus for lubricating an operating component of a system in which the operating component is exposed to a variation in a condition of operation which is benefitted by adjusting at least one physical property of the lubricant which lubricates the component during operation, comprising:

(a) a reservoir comprising a first lubricant of low density and low viscosity and a second lubricant of higher density and higher viscosity than the first lubricant, the second lubricant is at least partially immiscible with the first lubricant under an operating condition suitable for at least partial immiscibility;

(b) a third lubricant comprising at least a partial mixture of the first lubricant and the second lubricant which partial mixture forms within the reservoir under an operating condition suitable for at least partial miscibility of the first lubricant and the second lubricant;

(c) an operating component, at least a portion of the operating component being located within the reservoir, under a condition of immiscibility, and the operating component being in contact with the third lubricant under an operating condition suitable for at least partial miscibility of the first lubricant and the second lubricant, the operating component further being in contact with the first lubricant under an operating condition suitable for immiscibility, the contact of the operating component with the first and the third lubricants occurring without discontinuing system operation.

12. A process for lubricating an operating component of a system in which the operating component is exposed to a variation in a condition of operation during System operation, comprising:

(a) maintaining a first lubricant of low density and low viscosity and a second lubricant of higher density and higher viscosity than the first lubricant in a lubricant zone under an operating condition in which the first lubricant and the second lubricant are at least partially immiscible;

(b) contacting the operating component with the first lubricant under the operating condition of immiscibility;

(c) conducting the contacting of the operating component under an operating condition which is different from the operating condition of step (b) and which operating condition causes at least partial miscibility of the first lubricant and the second lubricant to form a third lubricant which has at least one property which is different from that property of the first lubricant and the second lubricant;

(d) contacting the operating component with the third lubricant, the third lubricant being more appropriate for lubricating the operating component under the different operating condition than the first lubricant or the second lubricant and

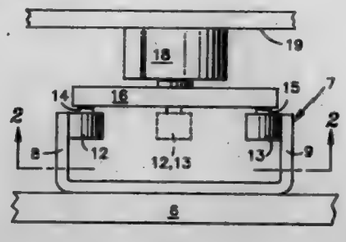
(e) returning the third lubricant to step (a) and repeating steps (b)–(d) without discontinuing system operation.

5,485,896

ROTARY ELEVATOR CAR DOOR COUPLING

Thomas M. Kowalczyk; Thomas M. McHugh, both of Farmington; Edward E. Ahigian, West Hartford; Jerome F. Jaminet, South Windsor; Thomas He, Unionville; Richard E. Peruggi, Glastonbury; Richard E. Kulak, Bristol, and David W. Barrett, East Hartland, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Apr. 6, 1994, Ser. No. 223,926
Int. Cl.[6] B66B 13/12
U.S. Cl. 187—330 4 Claims



1. Apparatus for coupling an elevator hoistway door to an elevator car door so that the two may be operated in unison, comprising:

a pair of parallel vertical walls extending outwardly into the hoistway from a surface of a hoistway door;

a member having a length dimension which is slightly greater than the distance between the mutually facing surfaces of said walls and having a width dimension essentially orthogonal to said length dimension which is significantly less than the distance between said surfaces, said member disposed for rotation adjacent a surface of the elevator car door facing the landing side of the elevator hoistway in a position, when at a landing, to be between said surfaces; and

an actuator for rotating said member from an uncoupled position, in which the length of said member is parallel to said walls, into a coupling position in which the length of said member is substantially orthogonal to and wedged between said walls, thereby to provide horizontally rigid coupling between the elevator car door and the hoistway door throughout the full range of travel.

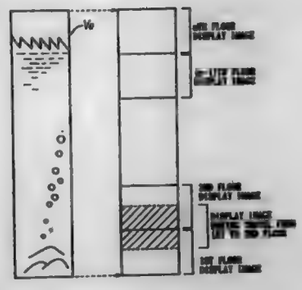
5,485,897

ELEVATOR DISPLAY SYSTEM USING COMPOSITE IMAGES TO DISPLAY CAR POSITION

Kimio Matsumoto, Moriguchi; Ichihiro Sawnike, Neyagawa; Atsuo Nishigakik, Moriguchi; Akitoshi Yamashita, Hirakata, and Tomohiko Tsumura, Osakasayama, all of, Japan, assignors to Sanyo Electric Co., Ltd., and Fujitec Co., Ltd., both of Osaka, Japan

Continuation of Ser. No. 156,074, Nov. 23, 1993, abandoned.
This application Feb. 15, 1995, Ser. No. 389,619
Claims priority, application Japan, Nov. 24, 1992, 4-313165; Nov. 25, 1992, 4-314705; Mar. 15, 1993, 5-052774; Mar. 15, 1993, 5-052775; Mar. 15, 1993, 5-052776
Int. Cl.[6] B66B 3/02
U.S. Cl. 187—399 15 Claims

1. An elevator system having an elevator operation control unit for controlling the upward or downward movement of an elevator car and an image display unit provided inside the car, the elevator system comprising an image reproduction unit for feeding a main image signal for forming a background image to the image display unit, a superimposition image production circuit for producing a subimage signal for forming a floor indicating image based on a floor signal from the elevator operation control unit and a direction indicating image showing whether the car is in an upward or downward movement based upon an elevator operation data obtained from the operation control unit, and an image composition unit for combining the main image signal and the subimage



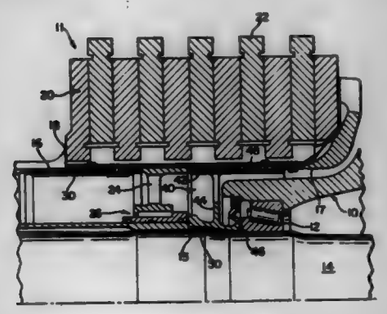
signal into a composite image signal to superimpose the floor indicating image on the background image and feeding the composite image signal to the image display unit.

5,485,898

SPACER MEMBER FOR AIRCRAFT BRAKES

Joseph M. Patko, South Bend, Ind., assignor to AlliedSignal Inc., Morristown, N.J.

Filed Jun. 22, 1994, Ser. No. 263,708
Int. Cl.[6] F16D 55/36
U.S. Cl. 188—71.5 11 Claims



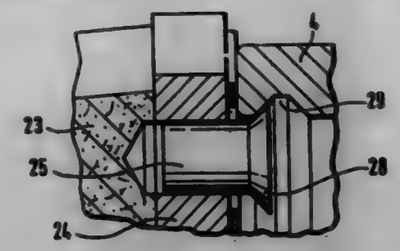
1. An aircraft brake including a spacer member, the aircraft brake comprising a torque tube located about an axle and the torque tube connected with a plurality of discs of the aircraft brake, the torque tube including a pedestal which is integral with the torque tube and extends radially inwardly for support via bushing means by said axle, the spacer member located between an inner diameter surface of the torque tube and an outer diameter surface of the axle, the spacer member having an outer diameter surface including a coating thereabout which supports the inner diameter surface of the torque tube and an inner diameter surface which is supported by the axle, the coating providing improved frictional contact with the inner diameter surface of said torque tube in order to minimize galling, and a support ring disposed between the inner diameter surface of said spacer member and the outer diameter surface of the axle, the support ring and spacer member each including respective splines to effect therebetween a splined interface that prevents rotation relative to one another, whereby the spacer member provides configuration stability and support for the torque tube.

5,485,899

FLOATING-FRAME SPOT-TYPE DISC BRAKE FOR HIGH-TORQUE AUTOMOTIVE VEHICLES

Rudolf Thiel, Frankfurt am Main; Ulrich Klimt, Gross-Umstadt, and Andreas Doell, Frankfurt am Main, all of, Germany, assignors to ITT Automotive Europe GmbH, Frankfurt am Main, Germany

Division of Ser. No. 925,708, Aug. 4, 1992, Pat. No. 5,363,944.
This application Jun. 30, 1994, Ser. No. 269,119
Claims priority, application Germany, Aug. 8, 1991, 41 26 196.8
Int. Cl.[6] F16D 55/225
U.S. Cl. 188—73.1 4 Claims



1. A brake shoe mounting for a spot type disc brake having a frame, said frame having a brake cylinder including a brake piston having an open end;

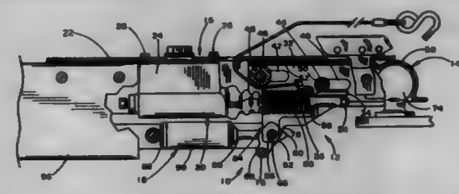
a brake shoe comprising a friction pad and a back plate, said back plate having a front surface having said friction pad attached thereto, said back plate also having a rear surface and a pin projecting from said back plate rear surface, said pin having a broadened end spaced from said rear surface of said back plate; said piston having an annular groove formed within said open end, one side of said pin broadened end received within said annular groove of said piston at one point only along the circumference of said annular groove and spring means for urging and holding the pin end within said annular groove of said piston.

5,485,900

BRAKE LOCKOUT DEVICE

Martin L. Denny, Des Moines, Iowa, assignor to Dico, Inc., Des Moines, Iowa

Filed Mar. 22, 1994, Ser. No. 215,703
Int. Cl.[6] B60T 7/20
U.S. Cl. 188—112 R 3 Claims



1. An automatic brake lockout for restricting operation of a trailer hitch surge suppressor, the automatic brake lockout being of a construction that when engaged, the automatic brake lockout restricts operation of the trailer hitch surge suppressor as a trailer hitch, operably coupled to the trailer hitch surge suppressor, is moved rearwardly, and when engaged, the automatic brake lockout continues to restrict operation of the trailer hitch surge suppressor until the automatic brake lockout is disengaged, the automatic brake lockout apparatus comprising:

a. a trailer connection member operably connected to the trailer hitch surge suppressor, said trailer connection member being provided with a notch;

b. a pulling vehicle connection member operably connected to the trailer hitch surge suppressor and slidably coupled to said

trailer connection member in a manner which activates the surge suppressor upon movement of said trailer connection member toward said pulling vehicle connection member;

c. a lockout pin;

d. a pair of struts operably and pivotally connected to said pulling vehicle connection member and secured to said lockout pin in a manner which allows said pair of struts to be moved into an orientation where said lockout pin engages said notch of said trailer connection member; and

e. means for automatically moving said lockout pin out of said notch upon movement of said trailer connection member away from said pulling vehicle connection member.

5,485,901

ELECTROMAGNETIC BRAKE

Hideo Akima; Yoshikiyo Ishikura, and Takaaki Kishi, all of Yamato, Japan, assignors to Fujitsu Ltd., Kawasaki, and Tokyo Buhin Kogiyo Co., Ltd., Kanagawa, both of, Japan

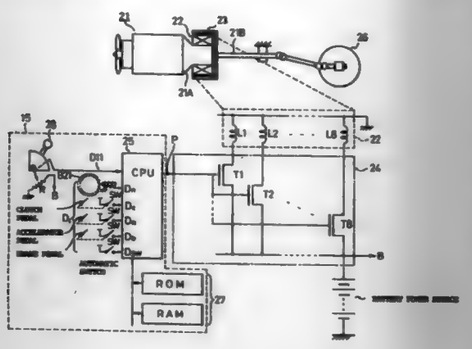
PCT No. PCT/JP91/00177, § 371 Date Oct. 11, 1991, § 102(e) Date Oct. 11, 1991, PCT Pub. No. WO91/12657, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 14, 1991, Ser. No. 768,659

Claims priority, application Japan, Feb. 14, 1990, 2-034871; Feb. 14, 1990, 2-034872

Int. Cl.[6] H02P *15/00*

U.S. Cl. 188—164 **4 Claims**



1. An electromagnetic brake for generating a braking torque on a rotary drive shaft of a drive force supply unit, comprising:

a plurality of electromagnetic coils disposed in fixed relationship to the drive force supply unit, the coils being responsive to the flow of an energizing current therethrough for producing a corresponding magnetic field;

a rotor, made of a conductive material, and affixed to the rotary drive shaft for common rotation therewith and disposed relatively to said coils so as to rotate in the magnetic field produced thereby in response to the flow of energizing current therethrough, the rotation of the rotor in the magnetic field producing an eddy current in the rotor and the eddy current converting the rotational energy imparted to the rotor by the shaft into heat, thereby to generate the braking torque on the rotary drive shaft;

switching means connected to the electromagnetic coils for selectively and controllably supplying the flow of energizing current thereto; and

control means, responsive to external control data, for generating and supplying switching data to the switching means and thereby to cause the switching means to selectively control the ON/OFF ratio of the flow of energizing current supplied by the switching means to the electromagnetic coils.

5,485,902

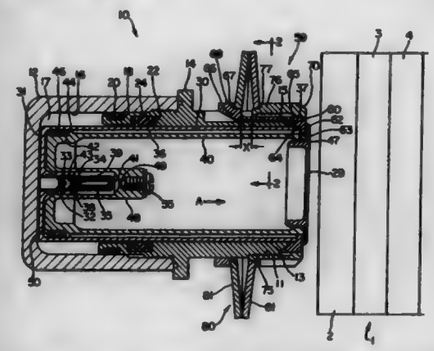
AIRCRAFT BRAKE PISTON HYDRAULIC ADJUSTER ASSEMBLY

Fred W. Berwanger, South Bend, Ind., assignor to AlliedSignal Inc., Morristown, N.J.

Filed Aug. 5, 1994, Ser. No. 286,307

Int. Cl.[6] F16D *65/38*

U.S. Cl. 188—196 A **19 Claims**



1. A brake piston adjuster assembly, comprising a housing having therein a housing bore, a first piston disposed slidably in the bore to be extendible therefrom and including a first piston bore and a first piston end, a second piston disposed slidably within the first piston bore and including a second piston bore and a second piston end, the first piston including relief valve means disposed at an inlet of the first piston end, the second piston end adjacent said inlet and the piston ends defining therebetween an inner piston chamber, and the first piston including a second end which cooperates with a portion of the adjuster assembly comprising return stroke clearance adjustment means connected with the housing, so that fluid pressure received within said housing bore displaces the first and second pistons axially outwardly of the housing bore to operate the clearance adjustment means which terminates displacement of the first piston when the running clearance is achieved, and further fluid pressure received in the housing bore causing said relief valve means to open and permit fluid flow to the inner piston chamber and effect axial displacement of the second piston relative to the first piston.

5,485,903

REVERSAL PREVENTIVE MECHANISM OF A SILENT TYPE FOR USE IN A FISHING REEL

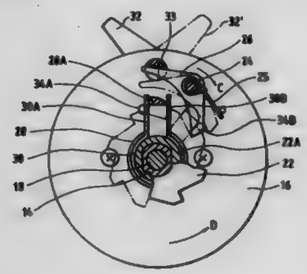
Masaji Saito, and Akira Yamaguchi, both of Saitama, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan

Filed May 17, 1994, Ser. No. 243,802

Claims priority, application Japan, May 19, 1993, 5-031334 U

Int. Cl.[6] A01K *89/02*

U.S. Cl. 192—8 R **6 Claims**



1. A silent type mechanism for preventing reverse rotation, said mechanism comprising:

a rotatable ratchet wheel;

a securing claw pivotally mounted with respect to said ratchet wheel and biased so as to engage with said ratchet wheel;

a spring wound at least partially around said ratchet wheel and frictionally rotatable in conjunction with rotation of said ratchet wheel, said spring having two extension portions extending outward therefrom; and,

a control member rotatable with respect to said ratchet wheel, and driven by said spring so as to separate said securing claw from said ratchet wheel when said ratchet wheel is rotated in a first direction, wherein said control member and said spring are interconnected to each other such that a portion of said control member is held by and interposed between said two extension portions.

5,485,904

CLUTCH BALL RAMP ACTUATOR WITH DRIVE AND COAST APPLY

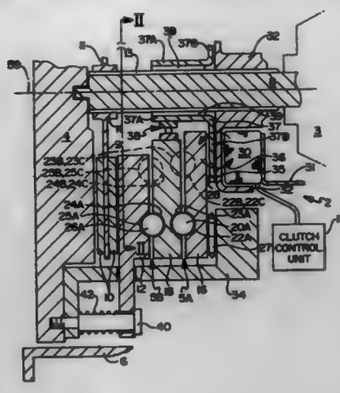
Gregory J. Organek, Dearborn; David M. Preston, Clarkston, and David A. Janson, Plymouth, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 31, 1994, Ser. No. 189,366

Int. Cl.[6] F16D *13/04;27/112;43/20*

U.S. Cl. 192—35 **12 Claims**

1. A ball ramp mechanism for coupling two rotating elements



comprising:

an input element driven by a prime mover and rotating about an axis of rotation;

an output element having an axis of rotation coaxial with said axis of rotation of said input element for rotating an output device;

a first ball ramp actuator for generating an axial movement comprising; an annular control ring adapted to be magnetically coupled to said output element and to rotate therewith, said control ring having at least two circumferential control ramps formed in a first face of said control ring, said control ramps varying in axial depth, an equivalent number of rolling elements one occupying each of said ramps, an activation ring having an axis of rotation along said axis of rotation of said control ring, said activation ring having at least two activation ramps substantially identical in number, shape and a dial position to said control ramps in said control ring where said activation ramps at least partially oppose said control ramps and where each of said rolling elements is trapped between said activation ramp and a respective at least partially opposed control ramp, said control ring axially and rotationally movably disposed relative to said activation ring;

a second ball ramp actuator for generating an axial movement wherein said activation ring has a plurality of opposite acting circumferential activation coast ramps formed in a second face of said activation ring and substantially identical partially opposed plate ramps formed in a pressure plate where said plate ramps and said coast ramps have a variable depth with an equivalent number of rolling elements one occupying each pair of partially opposed ramps which roll along said coast ramps and said plate ramps and operate to axially displace the activation ring from the pressure plate when rotated in a relative direction opposite to the direction of rotation causing axial displacement of said first fall ramp actuator;

coupling means for rotatably joining said input element to said output element where said coupling means varies the degree of rotational Coupling between said input element and said output element according to the axial position of said control ring relative to said activation ring, said coupling means comprising: a flywheel attached to said input element having a friction surface; a clutch disc having a first friction surface for frictionally reacting against said flywheel friction surface and a second friction surface; said pressure plate having a friction surface for frictionally reacting against said clutch disc second friction surface where said pressure plate is nonrotatably connected-to said flywheel;

a locking ring nonrotatably attached to said output element;

a control support element disposed between said control ring and said locking ring, said control support rotatably supported by said output element;

a coil for creating a magnetic field in said locking ring and said control ring and said control support thereby magnetically joining said control ring to said output element, Said coil being electrically energized by a clutch control unit where said activation ring rotates with said input element and said control ring rotates with said output element according to said control means;

control clutch means for limiting the rotation of said activation ring relative to said control ring when said coil is energized, said clutch means attached to said control support and to said activation ring.

5,485,905

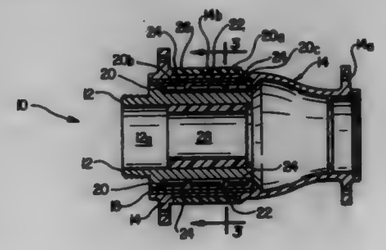
LIGHTWEIGHT OVERRUNNING CLUTCH ASSEMBLY

H. John Rader, III, 4428 Amherst, Dallas, Tex. 75225

Filed Apr. 1, 1994, Ser. No. 222,258

Int. Cl.[6] F16D *23/00;41/06*

U.S. Cl. 192—64 **15 Claims**



1. An overrunning clutch comprising:

a tubular shaft member having an inner surface;

a housing member rotatably sleeved about said shaft member, said housing member having an outer surface;

means for establishing torque communication between said housing member and said shaft member only when relative rotation between said housing member and said shaft member is in a first direction;

a first reinforcing material circumscribing said outer surface of said housing member for containing expansive forces applied to said housing member during said torque communication; and

a second reinforcing material urged against said inner surface of said shaft member for resisting compressive forces applied to said shaft member during said torque communication, said reinforcing materials having high tensile strength and a high modulus of elasticity.

5,485,906

COIN VALIDATORS

Michael E. Newton, Surby, Isle of Man, and Michael D. Nunn, North Ascot, United Kingdom, assignors to Mars Incorporated, McLean, Va.

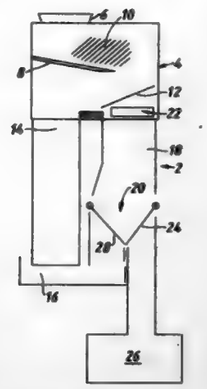
PCT No. PCT/GB91/02149, § 371 Date Jun. 4, 1993, § 102(e) Date Jun. 4, 1993, PCT Pub. No. WO92/10814, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 4, 1991, Ser. No. 70,422

Claims priority, application United Kingdom, Dec. 7, 1990, 9026676

Int. Cl.[6] G07D *5/00*

U.S. Cl. 194—203 **18 Claims**



12. A coin validator comprising:

a testing station;

a flap arranged downstream of the testing station and arranged to be moved away from a first position by a coin moving therepast and which would normally return to its first position thereafter;

a sensing arrangement responsive to the flap returning to its first position for enabling the accumulation of credit;

the flap being arranged to be held away from the first position by a thread attached to the coin and held by a user, thereby to inhibit the accumulation of credit.

5,485,907

PAPER MONEY RECOGNITION AND TRANSMISSION SYSTEM FOR VENDING MACHINES

Yuan F. Chang, Taipei, Taiwan, Prov. of China, assignor to Gamemax Corporation, Taipei, Taiwan, Prov. of China

Filed Aug. 23, 1994, Ser. No. 294,365

Int. Cl.[6] G07D *7/00*

U.S. Cl. 194—203 **4 Claims**

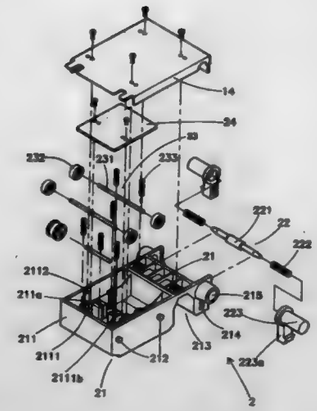
1. A paper money recognition and transmission system for a vending machine, comprising:

a housing having a paper money slot for the insertion of paper money by consumers and a paper money outlet;

an upper mainframe disposed inside said housing, said upper mainframe comprising a casing having a plurality of wheel holders, a plurality of roller sets respectively mounted on said wheel holders and turned to deliver inserted paper money, a cover board covered over said roller sets, a plurality of springs engaged between said cover board and said roller sets, and a locking device;

a lower mainframe disposed inside said housing and connected to the casing of said upper mainframe and locked in position by said locking device;

a transmission unit mounted on said lower mainframe, said transmission unit comprising a step motor engaged to drive a gear transmission mechanism, a belt transmission mechanism and two rubber rollers which operate to deliver inserted paper money;



a paper money recognition circuit controlled to recognize inserted paper money; and

wherein said paper money recognition circuit detects and recognizes inserted paper money, and drives said transmission unit to deliver the inserted paper money forward when the inserted paper money is recognized or drives said transmission unit to deliver the inserted paper money backwards when determined to be counterfeit money;

wherein said locking device comprises a stepped axle mounted within a receiving chamber inside a casing of said lower mainframe, two compression springs mounted around two opposite ends of said stepped axle and two retainers respectively mounted on the two opposite ends of said stepped axle and respectively supported on said compression springs, said retainers each having a hook extending through an opening in said upper mainframe into a respective locating square hole on said lower mainframe at either side to hold said upper mainframe and said lower mainframe together, the hooks of said retainers being released from the locating square holes on said lower mainframe permitting said lower mainframe to be detached from said upper mainframe when said retainers are respectively pushed inwards to compress said compression springs.

5,485,908

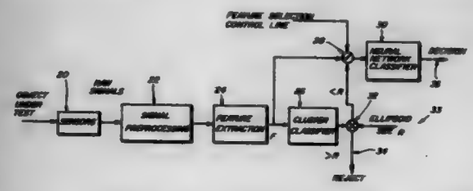
PATTERN RECOGNITION USING ARTIFICIAL NEURAL NETWORK FOR COIN VALIDATION

Chuanming Wang, and Mark H. Leibu, both of St. Louis, Mo., assignors to Coin Acceptors, Inc., St. Louis, Mo.

Filed Jul. 12, 1994, Ser. No. 273,931

Int. Cl.[6] G07D *5/08*

U.S. Cl. 194—317 **18 Claims**



7. In a vending control device for installing on vending machines, improved means for determining if a coin is a valid coin, and if so, its denomination comprising a coin track along which coins move upon entering a vending machine, optical sensor means located along the track for optically sensing the presence of a coin including means for producing a signal when a coin is identified and terminating the signal when the coin has moved past the optical sensor means, other sensor means adjacent to the optical sensor means including means for generating an electromagnetic signal when the coin is adjacent thereto, said signal being affected by the metallic content and physical characteristics of the coin and having features imposed thereon that are representative of the coin, means for extracting from the signals generated by the other sensor means components representative of predetermined coin characteristics imposed on the signal, means for combining preselected ones of the extracted components of the signal, ellipsoidal cluster classifier means connected to the feature extraction means, means to determine if a feature vector falls within the cluster classifier with a predetermined similarity threshold, if the similarity exceeds the threshold the coin is indicated as being a valid coin and otherwise the coin will be rejected, and means for applying the output of the feature extraction means and the output of the comparison means to a neural network classifier device having outputs on which decisions are made as to whether the coin should be accepted or rejected.

5,485,909

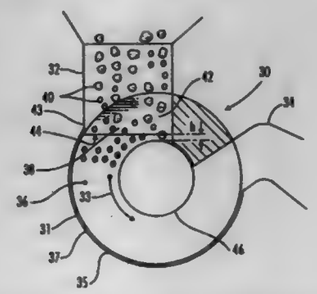
APPARATUS WITH IMPROVED INLET AND METHOD FOR TRANSPORTING AND METERING PARTICULATE MATERIAL

Andrew G. Hay, Gardena, Calif., assignor to Stamet, Inc., Gardena, Calif.

Filed Aug. 31, 1993, Ser. No. 115,173

Int. Cl.[6] B65G *31/04*

U.S. Cl. 198—642 **31 Claims**



1. An improved apparatus for transporting particulate material of the type having a movable wall structure defining a transport channel and having an inlet for receiving particulate material into the channel and an outlet for emitting particulate material from the channel, the inlet defining an inlet channel contiguous with the transport channel to provide a continuous flow path for particulate material to flow through the inlet channel and into the transport channel, wherein the movable wall structure defines at least one wall movable in the direction from the inlet toward the outlet for imparting a force directed toward the outlet on particulate material entering the channel from the inlet, the improvement comprising:

a shroud member assembly having a first member extending at least partially across a portion of the continuous flow path as defined by the inlet channel and the transport channel and covering a portion of the moveable wall adjacent the inlet for inhibiting the movable wall from imparting a force on the particulate material as the material passes through the inlet.

5,485,910

CONVEYOR

Yoshimasa Oda, and Shinji Koyano, both of Narashino, Japan, assignors to Seiko Seiki Kabushiki Kaisha, Japan

Filed Jul. 12, 1994, Ser. No. 273,634

Claims priority, application Japan, Jul. 13, 1993, 5-173312; Jun. 17, 1994, 6-135902

Int. Cl.[6] B65G *15/58*

U.S. Cl. 198—690.1 **6 Claims**

1. A conveyor comprising:

a sleeve-like partition wall;

5,485,911

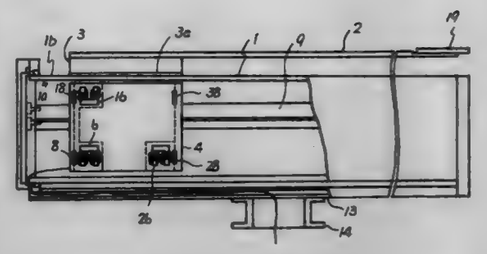
INTERIOR LINE-SHAFT DRIVEN POWERED ROLLER CONVEYOR

Russell W. Kettelson, Drayton Plains, and Dion Sparr, Sterling Heights, both of Mich., assignors to Newcor, Inc., Bloomfield Hills, Mich.

Filed Mar. 9, 1994, Ser. No. 208,606

Int. Cl.[6] B65G *13/06*

U.S. Cl. 198—791 **17 Claims**



a conveying rod on which a workpiece is laid;

a floating member located on an outer peripheral surface side of said partition wall, said floating member having said conveying rod;

a conveying body located on an inner peripheral surface side of said partition wall, said conveying body being movable between both ends of said partition wall;

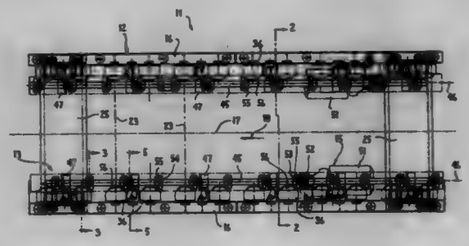
electromagnets provided on said conveying body for generating magnetic forces for supporting said floating member;

sensor portions for detecting positions of said floating member;

targets provided on said floating member so as to face said electromagnets and made of magnetic material;

magnetic support portions composed of said electromagnets, said targets and said sensor portions; and

adjusting means for taking a balance of forces to be applied to said magnetic support portions by said workpiece.



1. A powered roller conveyor for transporting loads, such as pallets, comprising:

a generally horizontally elongate frame defining a generally horizontally extending longitudinal direction and including first and second elongate and generally horizontally extending side frames disposed in generally parallel but sidewardly-spaced relation so as to define a transverse region therebetween;

a plurality of roller units mounted on each said side frame in spaced relation longitudinally along the respective side frame, said roller units being positioned adjacent an inner side of the respective side frame so as to be disposed within the transverse region;

each said roller unit including cantilevered mounting means fixed to the respective side frame and projecting horizontally sidewardly therefrom into said transverse region so as to terminate in a free end which is spaced a substantial distance from the other side frame, and roller means rotatably surrounding and supported on the cantilevered support means for

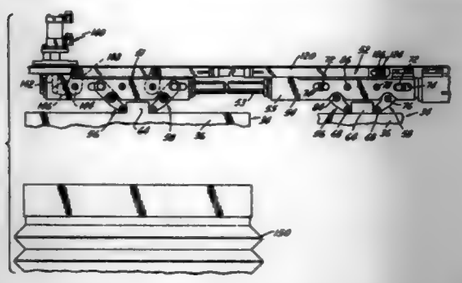
rotation about a substantially horizontal roller axis which extends substantially perpendicularly to the longitudinal direction;

each said roller means including an inner cylindrical drive member which is rotatably supported on said mounting means for rotation about said roller axis, and a sleevelike roller member which is concentric with said roller axis and is exteriorly rotatably supported on said cylindrical drive member, the roller means as mounted on each said side frame being positioned adjacent the inner side of the respective side frame within said transverse region so that the roller means on one said side frame are totally separate from and sidewardly-spaced from the roller means on the other said side frame to define an open load-accommodating space therebetween;

drive means extending longitudinally of said conveyor for rotatably driving said roller units as associated with said side frames, said drive means including first and second rotatably driven and substantially horizontally elongate line shafts associated with the respective first and second side frames, said first and second line shafts being respectively rotatable about substantially parallel first and second drive axes which extend substantially horizontally in perpendicular and intersecting relationship to said roller axes, said drive axes being sidewardly-spaced a substantial distance apart but disposed between said side frames within said transverse region; and

a plurality of longitudinally-spaced gear units drivingly connected between each said line shaft and the roller means associated with the respective side frame, each said gear unit including a toothed drive gear fixed to the respective line shaft for rotation therewith and a toothed driven gear coaxially fixed to said cylindrical drive member adjacent an inner axial end thereof, said drive and driven gears being maintained in direct and continuous meshing engagement with one another.

5,485,912
LATCHING TRANSPORT SYSTEM
William M. Faitel, Oxford, and Victor G. Schoenek, Macomb, both of Mich., assignors to Western Atlas, Inc., Hebron, Ky.
Filed Sep. 9, 1994, Ser. No. 303,471
Int. Cl.[6] B65G *37/00*
U.S. Cl. 198—803.01 **10 Claims**



1. Apparatus for transporting a carrier to a desired location along a predetermined path in a forward direction, wherein the carrier has forwardly and rearwardly facing abutment surfaces, comprising:

a latching mechanism,

means for moving said latching mechanism along said path in a forward direction,

said latching mechanism comprising a housing,

first and second latch arms carried by said housing,

each latch arm having a first end and a second end,

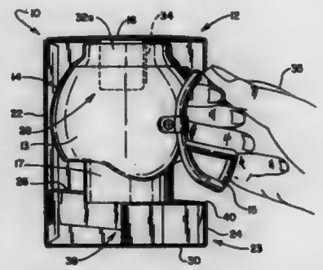
said first ends of said latch arms being engageable with the forwardly and rearwardly facing abutment surfaces, respectively, of the carrier to move the carrier along the path to said desired location,

said latch arms diverging from the first ends thereof in directions away from one another,

a sliding pivotal connection between the second end of each said latch arm and said housing,

and means for moving said latch arms with respect to said housing from extended positions in which the first ends thereof engage the forwardly and rearwardly facing surfaces of the carrier to cause the carrier to move with said housing, to retracted positions in which said first ends are withdrawn from engagement with said forwardly and rearwardly facing surfaces to release the carrier.

5,485,913
PRODUCT ACCESSIBLE DISPLAY CONTAINER
Victor E. Steinfels, III, 8627 Gavinton Ct., Dublin, Ohio 43017
Continuation of Ser. No. 125,648, Sep. 22, 1993, Pat. No. 5,348,145. This application Aug. 4, 1994, Ser. No. 285,810
Int. Cl.[6] B65D *85/44*
U.S. Cl. 206—45.19 **26 Claims**



1. A container for accessibly displaying an article having an article base and a generally annular wall extending therefrom, said container comprising:

a top wall;

an oppositely disposed bottom wall;

a pair of oppositely disposed side walls extending between said top wall and said bottom wall;

a rear wall extending between said top wall and said bottom wall adjacent said side walls;

a retainer assembly extending downwardly from said top wall into said article for retaining the top of said article laterally within said container; and

a base assembly having:

a floating deck portion disposed generally parallel to said bottom wall intermediate said top wall, said floating deck portion having an opening therethrough configured to receive said article base; and

a front wall portion extending generally orthogonally from said floating deck portion to said bottom wall to locate said floating deck portion a predetermined distance above said bottom wall, said floating deck being inwardly folded about said front wall portion.

11. A packaged article comprising a container for accessibly displaying an article packaged therewithin, said article having an article base and a generally annular wall extending therefrom, said container comprising:

a top wall;

an oppositely disposed bottom wall;

a pair of oppositely disposed side: walls extending between said top wall and said bottom wall;

a rear wall extending between said top wall and said bottom wall adjacent said side walls;

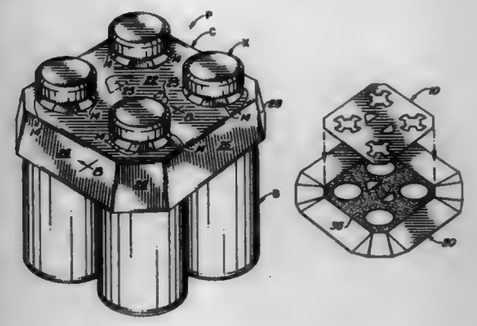
a retainer assembly extending downwardly from said top wall into said article for retaining the top of said article laterally within said container; and

a base assembly having:

a floating deck portion disposed generally parallel to said bottom wall intermediate said top wall, said floating deck portion having an opening therethrough receiving said article base therewithin; and

a front wall portion extending generally orthogonally from said floating deck portion to said bottom wall to locate said floating deck portion a predetermined distance above said bottom wall, said floating deck being inwardly folded about said front wall portion.

5,485,914
COMPOSITE ARTICLE CARRIER
Roger L. Martin, San Jose, Calif., assignor to Jefferson Smurfit Corporation, Clayton, Mo.
Filed Nov. 8, 1994, Ser. No. 336,010
Int. Cl.[6] B65D *75/28*
U.S. Cl. 206—145 **20 Claims**



1. An article package including a plurality of bottles each, including a body, with a necked upper portion presenting a generally cylindrical vertical surface, and an end closure projecting radially outward a slight distance beyond said body vertical surface, and a composite carrier, said carrier comprising:

(a) an outer member formed from a relatively thin, flat, blank of sheet material and including a horizontal top wall panel having side wall panels foldably joined to side edges thereof and extending downwardly therefrom over upper portions of said bottles;

(b) said outer member top wall panel including:

(i) a plurality of circular bottle receiving openings spaced from each other and each having a diameter greater than the diameter of an upper portion of each of said bottles;

(ii) at least one finger opening;

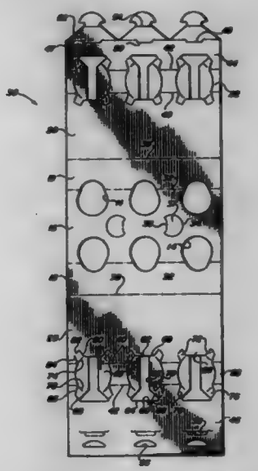
(c) an inner member including a relatively thin, flat, panel formed from a blank of sheet material, and including:

(i) at least one finger opening aligned with a said outer member finger opening;

(ii) a plurality of bottle receiving openings spaced from each other, each opening including a generally circular center portion, having a diameter less than the diameter of a related one of said outer member bottle receiving openings, and a plurality of generally rectangular projections extending radially outward from said center portion;

(iii) said projections defining, with said center portion and with each other, a plurality of article retaining tabs adapted to extend upwardly through related bottle receiving openings in said outer member for engagement with a related one of said bottle end closures.

5,485,915
WRAP-AROUND CARRIER WITH ARTICLE HEEL LOCK
Randall L. Harris, Powder Springs, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.
Filed Sep. 21, 1994, Ser. No. 310,132
Int. Cl.[6] B65D *75/00*
U.S. Cl. 206—147 **7 Claims**



1. A package comprised of a wrap-around carrier containing articles having a bottom and lower portions adjacent the article bottom, the carrier comprising:

opposite side panels foldably connected to top and bottom panels;

the carrier including apertures located opposite the lower portions of adjacent articles, the apertures having side edges;

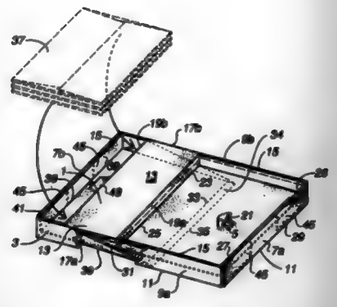
a retainer flap adjacent each side edge of the apertures, the retainer flaps being unconnected to the associated aperture side edge and spaced therefrom, the retainer flaps extending inwardly of the carrier transversely of the side panels and contacting opposite sides of the lower portions of the adjacent articles; and

each retainer flap having an upper portion and a lower portion, the upper portion being connected by a fold line to an upper gusset panel and the lower portion being connected by a fold line to a lower gusset panel, the upper gusset panel of each retainer flap being foldably connected to an associated side panel and the lower gusset panel of each retainer flap being foldably connected to the bottom panel.

5,485,916
COLLATING STRUCTURE
Carl A. Dean, 3824 Garfield St., Carlsbad, Calif. 92008
Filed Feb. 22, 1994, Ser. No. 199,517
Int. Cl.[6] B65D *85/00;5/50;25/10*
U.S. Cl. 206—215 **20 Claims**

1. A foldable insert to collate an open top box for receipt, withdrawal and reinsertion of first and second separate stacks of stationery items therein, the box defined by a flat, horizontal base of overall rectangular shape having a pair of vertical end walls, defining the ends of the box, and a pair of vertical side walls, defining the sides of the box, the end walls and the side walls surrounding the base and attached thereto through means that define the periphery thereof and having common upper side edges atop said side and end walls forming a top marginal edge spaced above and parallel to said base, said insert comprising:

a) a narrow, horizontal planar display portion, defined by a pair of mutually spaced-apart elongated side edges and a pair of mutually spaced-apart shorter end edges, for placement in the



box at the level of said top marginal edge wherein said end edges would lie parallel to the side edges of the box;

b) a first support section extending from one of said elongated side edges for positioning on the base of the box for extending under a said first stack of stationery items and retaining it in horizontal presentation above the base; and,

c) a second elongated support section extending from said other elongated side edge of said display portion beneath said display portion and under a second said stack of stationery items, to separate the second stack from the first stack, said second elongated support section including an upwardly sloping portion to angle the second-stack of items upward at one end thereof;

d) said first and second support sections hingedly connected to said display portion for supporting said display portion co-planar with the top of the box.

5,485,917

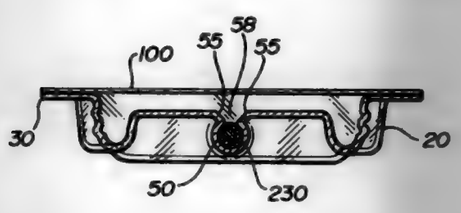
QUICK RELEASE PACKAGE FOR SURGICAL INSTRUMENT

Timothy J. Early, Hamilton, Ohio, assignor to Ethicon-Endo-Surgery, Cincinnati, Ohio

Continuation of Ser. No. 162,687, Dec. 6, 1993, abandoned. This application Apr. 4, 1995, Ser. No. 416,936

Int. Cl.[6] B65D *73/00*

U.S. Cl. 206—363 **3 Claims**



1. A thermoformed blister package, comprising:

a tray having a top, a bottom and a center;

a flange extending outwardly from the tray;

a plurality of cavities in said tray for receiving a surgical instrument wherein each said cavity has a top opening and wherein at least one of the cavities has at least one undercut extending from the tray adjacent to the top of the at least one cavity for retaining at least a portion of a said instrument within the cavity, each undercut partially extending into the top opening of the cavity thereby forming a gap; and,

means for quickly releasing a said instrument from the tray without touching the instrument wherein the means for quickly releasing the instrument from the tray comprises two finger pads extending from the bottom of the tray and spaced sufficiently apart to open up the gap sufficient to release the instrument when the pads are pressed while holding the outwardly extending flange.

5,485,918

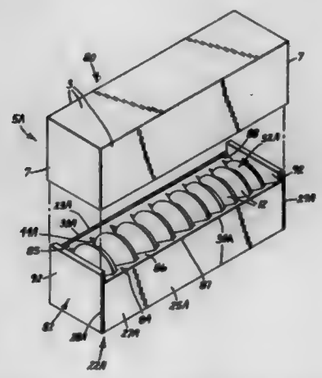
PACKAGING ASSEMBLY

Kyle D. Lasenby, Eagan, and Barry S. Peecher, Vadnais Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 787,380, Nov. 4, 1991, abandoned. This application Jul. 18, 1994, Ser. No. 276,763

Int. Cl.[6] B65D *5/50*

U.S. Cl. 206—372 **20 Claims**



1. In combination, a plurality of back-up pads having a generally disc shaped resilient portion, a circular front surface for having abrasive means attached thereto, and a circular rear surface with structure adjacent thereto for attaching the back-up pad to a source of power, each of said back-up pads having a shape, and a package for enclosing and protecting said plurality of back-up pads;

said package comprising:

an elongate bottom box portion having a longitudinal axis comprising:

three axially elongate bottom side walls each having inside and outside surfaces, opposite first and second ends and opposite edges, each of said bottom side walls being joined along at least one of its edges to the edge of another of said side walls to form an elongate main portion of said bottom box portion, and

a pair of bottom end walls disposed generally radially of said bottom box portion axis and adjacent the first and second ends of said side walls; and

a rack portion having first and second holding walls disposed at an angle relative to one another and disposed at an angle relative to the side walls of the bottom box portion, said rack portion being disposed within said elongate main portion of said bottom box portion,

said rack portion having a plurality of spaced surfaces forming slots that are sized and shaped to afford engagement with surfaces of the back-up pads to retain a spaced relationship between back-up pads and between said back-up pads and said bottom box portion, said plurality of back-up pads being received in said slots; and

top cover means for covering the elongate main portion of said bottom box portion.

5,485,919

CLAMSHELL PACKAGE AND PACKAGING SYSTEM

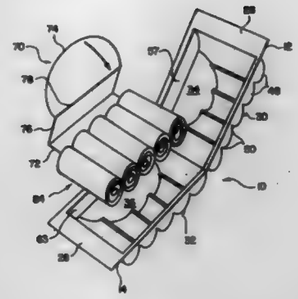
Steve Samberg, and Barry Berger, both of New York, N.Y., assignors to Nantucket Industries, Inc., New York, N.Y.

Continuation of Ser. No. 205,351, Mar. 3, 1994, abandoned, which is a continuation of Ser. No. 23,773, Feb. 22, 1993, abandoned. This application Oct. 14, 1994, Ser. No. 323,510

Int. Cl.[6] B65D *73/00*

U.S. Cl. 206—461 **39 Claims**

33. A system for packaging a plurality of pairs of intimate apparel of various styles, colors, sizes, and fabrics, comprising:



a first half and a second half molded of a transparent, semi-flexible plastic material;

each half comprising a dished out portion having a product receiving portion and an insert-receiving recess overlying said product receiving portion;

a plurality of inserts each having a front flap, a back flap, and a side flap integrally connecting said front flap and said back flap, wherein said front flap and said back flap of said insert have a periphery of a particular geometric shape whereby said particular geometric shape represents a particular style of product.

5,485,920

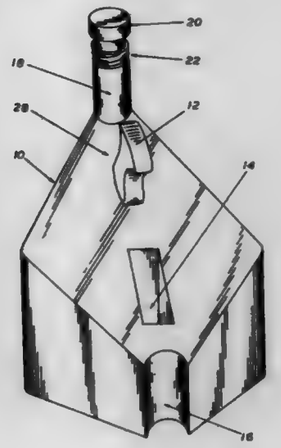
STACKABLE SPACE SAVING CONTAINER

Lawrence E. Fritz, 308 S. Mill St., Apt #207, Fergus Falls, Minn. 56537

Filed Aug. 30, 1994, Ser. No. 298,032

Int. Cl.[6] B65D *21/032;21/036*

U.S. Cl. 206—509 **10 Claims**



1. A stackable space saving container comprising:

a half rectangular body cut substantially diagonally from a corner edge to an opposite edge lower on the cube so as to define the body of said container;

a cylindrical neck extending from the upper edge of said body;

said body further having a portion along the lowest cut edge defining a cylindrical groove;

a handle on the upper half of the diagonal surface defined by said diagonal cut;

and said diagonal surface having on its lower half a portion defining an inward handle receptacle.

5,485,921

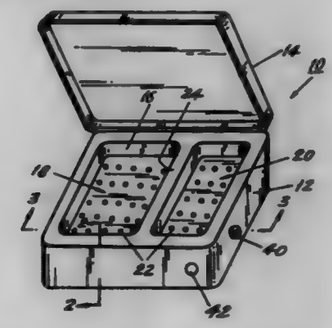
LUNCH BOX

Jacob M. Tolendano, Great Neck, N.Y., assignor to Aristo International Corporation, New York, N.Y.

Filed Sep. 22, 1993, Ser. No. 125,119

Int. Cl.[6] B65D *81/20*

U.S. Cl. 206—545 **9 Claims**



1. A lunch box for maintaining the temperature of stored food, comprising:

an external box housing defining within itself at least one compartment for storing food therein;

the compartment for storing food having inner wall surfaces, means formed on at least a portion of the inner wall surfaces for substantially preventing contact between food stored in the compartment and the inner wall surfaces of the compartment; and

a cover over the housing for enclosing the compartment, whereby transfer of heat between the stored food and the inner wall surfaces of the compartment is substantially eliminated; and

further comprising vacuum creating means in fluid communication with the compartment for creating a vacuum in the compartment.

9. A lunch box for maintaining the temperature of stored food, comprising:

an external box housing defining within itself at least one compartment for storing food therein;

the compartment for storing food having inner wall surfaces, means formed on at least a portion of the inner wall surfaces for substantially preventing contact between food stored in the compartment and the inner wall surfaces of the compartment;

a cover over the housing for enclosing the compartment; and

vacuum creating means in the housing in fluid connection with the inside of the compartment for creating vacuum in the compartment by evacuating substantially all of the air therein, whereby a vacuum is created inside the compartment so as to releasably secure the cover to the housing and to maintain the inside of the compartment below atmospheric pressure.

5,485,922

PORTABLE COMPUTER CARRY CASE ASSEMBLY

Robert A. Butcher, 2500 Parkview Dr., #616, Hallandale, Fla. 33009

Filed Oct. 14, 1994, Ser. No. 323,115

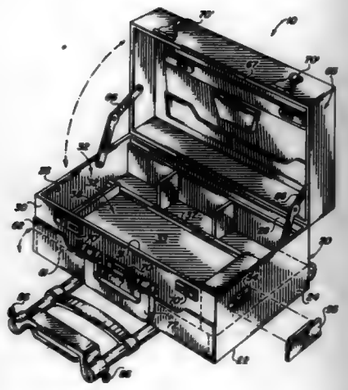
Int. Cl.[6] A45C *3/02;* **B65D** *85/38*

U.S. Cl. 206—576 **19 Claims**

1. To safely and securely contain and transport a portable computer and various accessories therefor, a portable computer carry case assembly comprising:

(a) a main housing including a bottom wall, a first side wall, a second side wall, a rear wall and a front wall defining an open top end and an interior of said main housing,

(b) a divider panel disposed in said interior of said main housing and defining a top compartment and a bottom compartment therein,



(c) said top compartment including:

a pair of spaced longitudinal support members structured and disposed to supportably receive the portable computer thereon such that a keyboard portion of the portable computer is co-planar with a top edge of said front wall of said main housing,

a pair of adjustably positionable latitudinal support members disposed in spaced apart relation from one another and extending between said spaced longitudinal support members so as to straddle the portable computer and prevent the portable computer from moving laterally within said top compartment,

at least one adjustable rear spacer extending from said rear wall of said main housing to a rearmost one of said pair of spaced longitudinal support members so as to securely maintain the portable computer between said front wall and said rear spacer,

said at least one adjustable rear spacer defining at least two auxiliary storage compartments between said rear wall and said rearmost one of said spaced longitudinal support members,

said pair of spaced longitudinal support members and said pair of adjustably positionable latitudinal support members defining a central storage compartment structured and disposed to safely and securely contain computer disks,

(d) a surge suppressor/power conditioner disposed within said interior of said main compartment, said surge suppressor/power conditioner including at least one electric cord outlet and an electric cord input,

(e) a power chord outlet opening disposed in one of said walls of said main housing so as to allow exterior access to said electric cord input of said surge suppressor/power conditioner,

(f) a connector access disposed in said divider panel so as to facilitate access between said top compartment and said bottom compartment,

(g) said bottom compartment being structured and disposed to contain a portable computer printer therein and including a main opening formed in said front wall of said main housing,

(h) a closure flap disposed in covering relation over said main opening of said bottom compartment, said closure flap being movable between a closed position wherein said main opening is substantially covered and an open position wherein said bottom compartment is accessible through said main opening,

(i) a lid hingedly secured to a top edge of one of said walls defining said main housing, said lid being movable between a closed position in covering relation atop said open top end and an open position exposing said top compartment through said open top end,

(j) latch means structured and disposed to secure said lid in said closed position and to secure said closure flap in said closed position,

(k) at least one wheel rotatably disposed on an exterior of said rear wall of said main housing, said wheel being structured and disposed to support said main housing thereon during rotation thereof so as to facilitate transportation of said main housing, and

(l) an extendable handle secured to said bottom wall of said main housing, said extendable handle being structured and disposed to be held by a user so as to maintain said main housing supportably atop said at least one wheel for facilitated transport pulling of said main housing.

15. To safely and securely contain and transport a portable computer and various accessories therefor, a portable computer carry case assembly comprising:

(a) a main housing including a bottom wall, a first side wall, a second side wall, a rear wall and a front wall defining an open top end and an interior of said main housing,

(b) a divider panel disposed in said interior of said main housing and defining a top compartment and a bottom compartment therein,

(c) said top compartment including:

a pair of spaced support members structured and disposed to supportably receive the portable computer thereon such that a keyboard portion of the portable computer is coplanar with a top edge of said front wall of said main housing,

stabilizing means structured and disposed to prevent the portable computer from sliding around within said top compartment,

(d) a surge suppressor/power conditioner disposed within said interior of said main compartment, said surge suppressor/power conditioner including at least one electric cord outlet and an electric cord input,

(e) a power chord outlet opening disposed in one of said walls of said main housing so as to allow exterior access to said electric cord input of said surge suppressor/power conditioner,

(f) a connector access disposed in said divider panel so as to facilitate access between said top compartment and said bottom compartment,

(g) said bottom compartment being structured and disposed to contain a portable computer printer therein and including a main opening formed in a front wall of said main housing,

(h) a closure flap disposed in covering relation over said main opening of said bottom compartment, said closure flap being movable between a closed position wherein said main opening is substantially covered and an open position wherein said bottom compartment is accessible through said main opening,

(i) a lid hingedly secured to a top edge of one of said walls defining said main housing, said lid being movable between a closed position in covering relation atop said open top end and an open position exposing said top compartment through said open top end,

(j) latch means structured and disposed to secure said lid in said closed position and to secure said closure flap in said closed position,

(k) at least one wheel rotatably disposed on an exterior of said rear wall of said main housing, said wheel being structured and disposed to support said main housing thereon during rotation thereof so as to facilitate transportation of said main housing, and

(l) an extendable handle secured to said bottom wall of said main housing, said extendable handle being structured and disposed to be held by a user so as to maintain said main housing supportably atop said at least one wheel for facilitated transport pulling of said main housing.

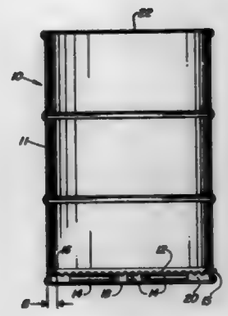
5,485,923

DRUM FOR PARTICULATE HANDLING WITH FINES COLLECTOR

M. W. Schrepfer, Elk Grove Village, Ill., assignor to UOP, Des Plaines, Ill.

Filed Jul. 29, 1994, Ser. No. 282,449
Int. Cl.[6] B07B *1/00*
U.S. Cl. 209—235 **4 Claims**

1. A drum for holding particulate material, said drum comprising:



a cylindrical sidewall, a top and bottom defining an interior volume;

a screen located parallel to and above said bottom and extending toward said sidewall, said screen having openings smaller than said particulate material;

a spacer to support said screen from said bottom;

an angled ring having an inner edge sealed against the top of said screen and an outer edge located above said inner edge and encircling the inside of said cylindrical sidewall;

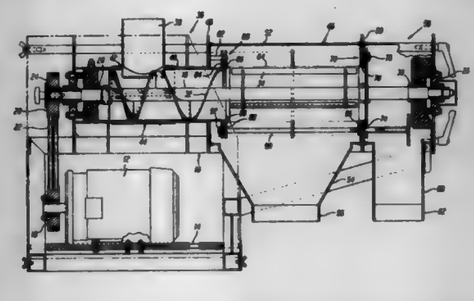
means for removing particulate material from said trap comprising a drain opening in the side of said drum.

5,485,924

CENTRIFUGAL SIFTER AND ELEMENTS THEREOF

Jochim M. Zaun, Ft. Thomas, Ky., assignor to Sweco, Incorporated, Florence, Ky.

Filed May 9, 1994, Ser. No. 239,649
Int. Cl.[6] B07B *1/49*
U.S. Cl. 209—300 **8 Claims**



5. A screen clamp for a cylindrical screen of a centrifugal sifter, comprising

a circular bead attached at one end of the cylindrical screen;

a mounting plate having a cylinder extending laterally from one side of the mounting plate, the cylindrical screen extending closely over the cylinder;

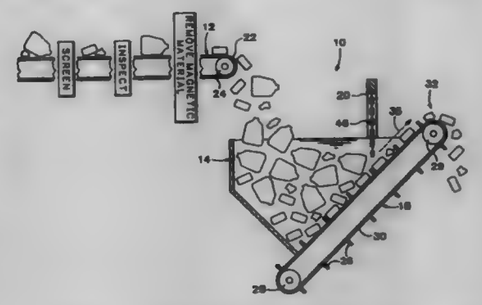
a locking plate having a hole therethrough and being fixed to the mounting plate with the hole extending over the cylindrical screen and the cylinder, the circular bead being between the mounting plate and the locking plate and of greater diameter than the hole.

5,485,925

SYSTEM AND METHOD FOR SEPARATING RECYCLED DEBRIS

Roy R. Miller; Brian K. Clark, and Fred M. Austin, all of Eugene, Oreg., assignors to Bulk Handling Systems, Inc., Eugene, Oreg.

Filed Sep. 21, 1994, Ser. No. 310,265
Int. Cl.[6] B07C *5/36*
U.S. Cl. 209—615 **26 Claims**



1. A system for classifying recycled debris comprising light material and heavy material, said system comprising:

a hopper for receiving such debris, said hopper having a generally upwardly-directed inlet and a generally downwardly-directed outlet;

a conveyor having a generally upwardly-directed substantially planar surface urged against said hopper outlet;

a plurality of substantially rigid members mounted on said conveyor and extending into said hopper for carrying heavy material therefrom; and

a chain screen disposed over the conveyor for preventing the conveyor from carrying light material from the hopper by the conveyor.

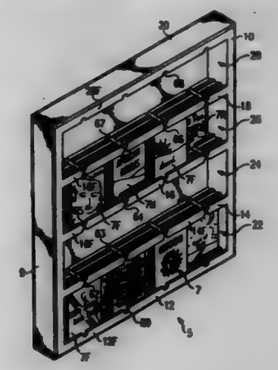
5,485,926

STORAGE AND DISPLAY HOLDER

James W. Kundert, Sudbury, Mass., assignor to Andrew G. Dimock, Dallas, Tex.

Filed Apr. 28, 1994, Ser. No. 234,185
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—40 **17 Claims**

1. A storage and display unit for organizing a plurality of



articles, said articles having a substantially uniform height, a substantially uniform width and a substantially uniform thickness, said storage and display unit comprising:

a first horizontally extending member and a second horizontally extending member, each of said first and second horizontally extending members having a front side, a back side, a first end portion and a second end portion, said first and second horizontally extending members being positioned substantially parallel to each other and spaced apart by a distance greater than the height of said articles;

a first flange on said first horizontally extending member, said first flange extending from said first horizontally extending member toward said second horizontally extending member, said first flange being spaced from the back side of said first horizontally extending member by a distance greater than twice the thickness of one of said articles;

a second flange on said second horizontally extending member, said second flange extending from said second horizontally extending member toward said first horizontally extending member, said first and second flanges being positioned to define an opening therebetween through which said articles can be moved while inclined at an acute angle to said first and second flanges, said opening having a height which is less than the height of one of said articles, said opening having a width which is greater than twice the width of one of said articles,

a first row of articles located between the back side of said first horizontally extending member and said first flange; and

a second row of articles located between said first row of articles and said first flange,

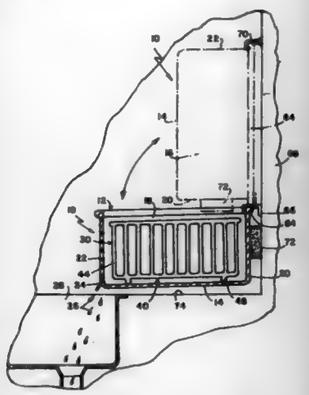
said articles of said first and second rows having a width greater than about ¼ an inch.

5,485,927

DRAINING AND DRYING DEVICE FOR UTENSILS

Michael W. Hubbard, 41C Manchester St., Lawrence, Mass. 01841

Filed Mar. 4, 1994, Ser. No. 205,835
Int. Cl.[6] A47F 5/00
U.S. Cl. 211—41 **10 Claims**



1. A drainer device for draining and drying utensils adjacent to a sink basin comprising:

a base means including a bottom wall and perpendicular side, front and side walls;

an inner means insertable into the base means with a similar configuration of the base means for supporting utensils therein;

said base means and inner means having means for channelling water dripping from said utensils to the sink;

means for releasably attaching said base means to a wall adjacent to the sink basis; and

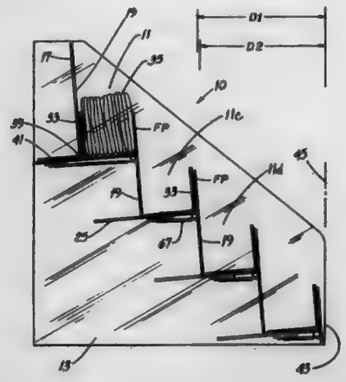
wherein said base means further includes a plurality of open sections positioned along the front portion of the bottom wall and the bottom portion of the front wall.

5,485,928

MERCHANDISE DISPLAY RACK

J. Reed Felton, Milwaukee, Wis., assignor to T. J. Hale Company, Menomonee Falls, Wis.

Filed Dec. 1, 1993, Ser. No. 159,520
Int. Cl.[6] A47F 5/00
U.S. Cl. 211—52 **9 Claims**



1. A rack having a compartment for displaying products, the compartment having a rear panel, a front panel and a follower with a first panel portion mounted for movement toward the front panel when a product is removed from the compartment, the improvement wherein:

the rack includes a mechanism for moving the follower in the compartment;

the first panel portion and the front panel substantially abut one another when the compartment is emptied of products;

the first panel portion and the rear panel substantially abut one another when the compartment is filled with products;

when the compartment contains products, the first panel portion and the front panel support the products forward of the rear panel for display in a way that a product front surface may be easily observed when viewed from a location above the compartment; and

the follower has a second portion extending through a space to a location rearwardly of the rear panel when products are displayed in the compartment.

5,485,929

POINT OF PURCHASE DISPENSER

Joseph Danon, 580 Mountain Ave., North Caldwell, N.J. 07006

Filed Oct. 13, 1994, Ser. No. 322,696
Int. Cl.[6] B42F 13/00
U.S. Cl. 211—57.1 **15 Claims**

1. A point of purchase dispenser comprising:

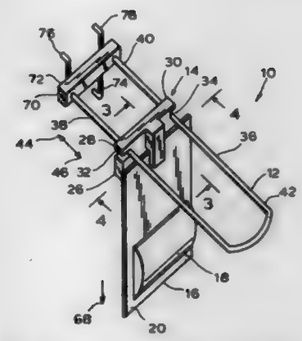
support means having a first end and a second end, first attachment means disposed on said first end of said support means,

a clip assembly, second attachment means disposed on said clip assembly for removable attachment of said clip assembly to said support means,

a first portion formed on said clip assembly,

a second portion formed on said clip assembly, with said first and second portions spaced apart, thereby defining a slot between said first and said second portions,

ball means mounted on said second portion, and



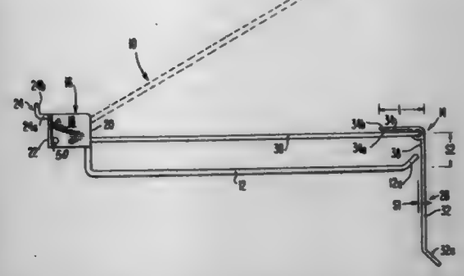
resilient means mounted on said second portion, between said second portion and said ball means, with said resilient means urging said ball means to project through said slot and bear against said first portion.

5,485,930

ANTI-THEFT DISPLAY HOOK

Tatsuo Rushing, Denville, N.J., assignor to HMG Worldwide Corporation, New York, N.Y.

Filed Jul. 14, 1994, Ser. No. 274,959
Int. Cl.[6] B42F 15/00
U.S. Cl. 211—59.1 **14 Claims**



1. A merchandise display device, securable to an upright member, for supporting a plurality of articles, each of said articles defining a centrally positioned aperture, comprising:

an elongated member having a distal end dimensioned and arranged for insertion into a respective aperture of each article, the articles being slidable along said elongated member into superposed relation;

securing means for securing said elongated member to the upright member in an outwardly projecting manner; and

blocking means disposed proximate said distal end, said blocking means including a portion insertable between first and second adjacent articles on said elongated member so as to permit removal of the first adjacent article and prevent removal of the second adjacent article.

5,485,931

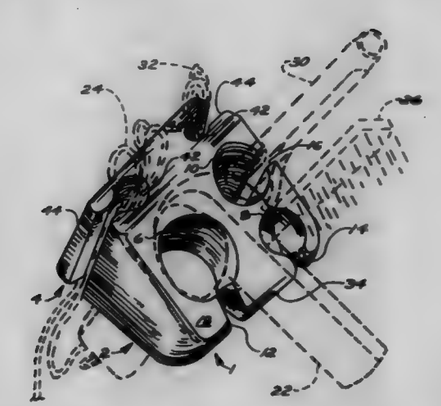
HAIR DRYER CADDY

John F. Barr, Jr., R.R. 3, Box 68, Delanson, N.Y. 12054

Filed Oct. 25, 1993, Ser. No. 141,774
Int. Cl.[6] A47F 7/00
U.S. Cl. 211—70.6 **11 Claims**

1. A hair dryer holder assembly comprising:

a holder having a front section and a rear section;



said front section having a front surface, a first side surface, a second side surface, a top surface and a bottom surface;

said rear section having a rear surface, a top surface and a bottom surface;

at least one bore located in the front section and extending between the top and bottom surface of said section, said at least one bore being open at top and bottom ends thereof, and wherein said at least one bore has a diameter capable of receiving a handle portion of a hair dryer;

at least one bore located in the rear section and extending between the top and bottom surface of said section, said at least one bore being open at top and bottom ends thereof, and wherein said at least one bore in said rear section is capable of receiving and storing a length of electrical cord; and

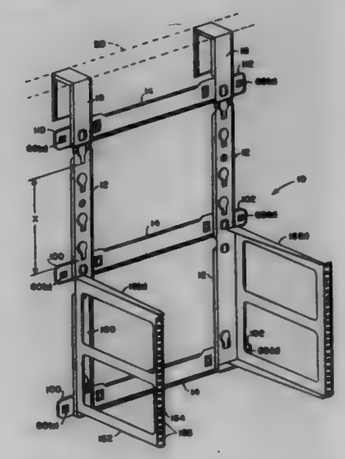
attachment means for attaching said holder to a support means.

5,485,932

WALL MOUNTABLE MODULAR COMPONENT MOUNTING SYSTEM

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Filed May 3, 1994, Ser. No. 237,517
Int. Cl.[6] A47F 5/00
U.S. Cl. 211—87 **7 Claims**



1. A wall mountable modular component mounting system comprising:

wall rails each made of rigid material having a thickness dimension "t" and configured for interlocking engagement with each

other at opposite ends, each rail comprising an elongated central portion and an upstanding wall portion at each of the longitudinal edges of such elongated central portion, the upstanding wall portions extending away from the elongated central portion on the same side of the rail to maintain such central portion in spaced apart relationship with a wall on which the system is mounted, the central portion having opposing elongated major surfaces, the elongated major surface on the side of the rail opposite the upstanding wall portions being outwardly facing surface when the system is mounted on a wall and the other major surface being inwardly wall facing surface, the outwardly facing surface including a main surface portion, an end surface portion narrower in width than the main surface portion, and a transition surface portion, the end surface portion terminating one end of the rail, such end surface portion being parallel to and laterally offset from the main surface portion a distance substantially equal to the thickness dimension "t" in a direction placing the main surface portion further from a wall than the end surface portion when the system is mounted on a wall, the adjacent ends of the end surface portion and of the main surface portion being connected by the transition surface portion, such transition portion extending in inclined relationship with the main and end surface portions, the rail having a hanging/mounting opening through the rigid material at the end of the rail having the end surface portion, such opening being shaped to include a central space with a width dimension "w" and a generally rectangular hanging slot aligned with a mounting slot, the central space extending lengthwise of the rail in the end surface portion and across the transition surface portion, each of the aligned slots being defined by two generally parallel side edges separated by a distance "d" that is smaller in dimension than the width dimension "w" of the central space and an end edge, the aligned slots being in communication with the central space on opposite sides thereof and extending lengthwise of the elongated central portion with the mounting slot being located entirely in the main surface portion and the hanging slot being located entirely in the end surface portion, a pair of wings of rigid material having a thickness dimension "t" located at the other end of the rail, the wings being mounted on the rail in spaced apart parallel relationship with the inwardly wall facing surface to define two generally parallel channels extending lengthwise of the elongated central portion, the channels each having a height dimension "h" greater than the thickness dimension "t" and the wings having a span dimension "s" greater than the distance dimension "d", the end surface portion of each of the rails being sufficiently narrower in width than the width of the other end of each of the rails to allow the inwardly wall facing surface at the other end of a first rail to be placed in contact and in an interlocking position with the end surface portion of a second rail with the upstanding wall portions of the other end of the first rail having its wings located in an immediately outside adjacent relationship with the upstanding wall portions of the end surface portion of the second rail, the wing extending through the central opening of the second rail to the inwardly wall facing surface side of the first rail for movement of the rails relative to each other to establish an interlocking relationship between the wings of the first rail and rigid material of the second rail defining the hanging slot.

5,485,933

SHELVING SUPPORT SYSTEM

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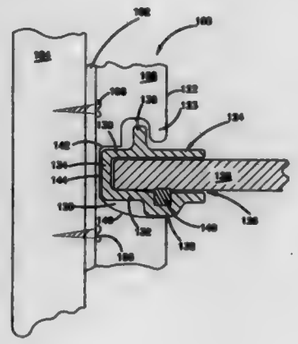
PCT No. PCT/AU93/00363, § 371 Date Dec. 8, 1993, § 102(e) Date Dec. 8, 1993, PCT Pub. No. WO94/02050, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 21, 1993, Ser. No. 162,206

Claims priority, application Australia, Jul. 22, 1992, PL3648/92

Int. Cl.[6] A47F *5/08*

U.S. Cl. 211—90 **7 Claims**



1. A support system for a shelf, said support system being attached to a fixture, said support system comprising:

a plurality of normally vertical, columnar supports, each of said columnar supports having a back adapted for attachment to the fixture and at least one longitudinally-extending flange attached to the back, extending forward therefrom and terminating in a front edge, each of said flanges having a cutout formed along its length, each cutout opening into said front edge, extending rearward therefrom and being shaped so that the upper and forward part of its periphery defines a downwardly-extending upper-lip of flange material, and

means for supporting said shelf, said supporting means including a linear extrusion, said extrusion being oriented normally-horizontal and fitting into a plurality of said cutouts, each extrusion having integral upper, rear and lower walls defining (in section) a forwardly-extending and forwardly-opening shelf-slot which extends along the extrusion and is thereby adapted to receive the rear edge of the shelf to be supported thereby, each of said extrusions also having an upwardly extending thumb-strip formed integrally with said upper wall of the extrusion near the forward open end of said shelf-slot and adapted for location behind said upper lip when the extrusion is placed within said cutout,

whereby, the extrusion may be inserted rearwardly into one of the cutouts by first tilting the extrusion up and back to allow said thumb-strip to pass behind said upper-lip and then tilting the extrusion down and forwards until the forward face of said thumb-strip contacts the upper-lip and the lower and/or rear walls of the extrusion make contact with the periphery of the cutout.

5,485,934

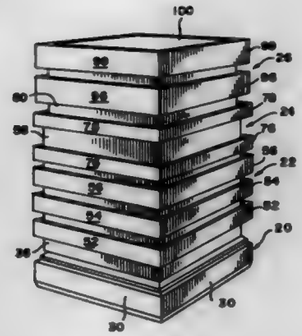
MERCHANDISE DISPLAY ASSEMBLY

William J. Holztrager, Chilhowie, Va., assignor to Display Systems, Inc., Chilhowie, Va.

Filed Jun. 16, 1993, Ser. No. 76,049

Int. Cl.[5] A47B *43/00*

U.S. Cl. 211—194 **18 Claims**



1. A merchandise display assembly, comprising:

a) a plurality of modular sections adapted to be assembled in stacked relationship;

b) each of said modular sections including a plurality of side members;

c) each of said members comprising a body portion having outer and inner surfaces, lateral edge portions and top and bottom edges;

d) said lateral edge portions of each side member being joined together to another side member to form a closed section of geometrical configuration;

e) said top and bottom edges of one said side member being adapted for interfitting with said top and bottom edges of another side member to form the stacked relationship of said modular sections;

f) a plurality of ribs extending outwardly from the outer surface of said modular sections in spaced relationship to each other;

g) a plurality of spaced parallel flange members secured respectively to said ribs, each of said flange members extending vertically; and

h) said ribs and flange members being adapted for securing a merchandise for display.

5,485,935

CAPTURE SYSTEM EMPLOYING DIVERTER FLUID NOZZLE

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Filed Apr. 1, 1994, Ser. No. 222,158

The portion of the term of this patent subsequent to Oct. 24, 2012, has been disclaimed.

Int. Cl.[6] B05S *3/06*; H01L *21/306*; B23K *26/00*; A47L *5/14*

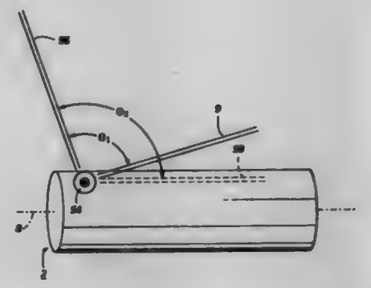
U.S. Cl. 216—65 **10 Claims**

1. A method comprising:

(a) enclosing a portion of the length of a coated substrate in a housing to result in an enclosed coated substrate portion, wherein there exists a gap between the enclosed substrate portion and the housing and the gap is in communication with air outside the housing;

(b) directing radiation at the coating of the enclosed substrate portion;

(c) directing a first fluid stream against the coating of the enclosed substrate portion to remove at least part of the coating in the form of coating debris during or subsequent to (b), whereby the first fluid stream moves a portion of the coating debris outside the housing in the absence of (d);



(d) directing a second fluid stream against the first fluid stream in a direction effective for keeping the coating debris inside the housing, thereby minimizing movement of the coating debris into the air outside the housing;

(e) exhausting the coating debris;

(f) directing a coaxial fluid stream which is coaxial with the radiation during (b) and

(a) rotating the substrate during (b).

5,485,936

SEALING PLATE WITH A FILTER FOR A HIGH PRESSURE LIQUIFIED GAS CARTRIDGE HAVING A SYPHON TUBE

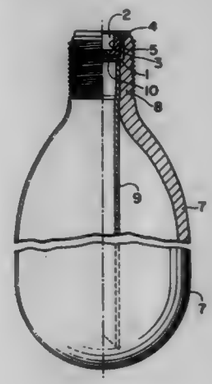
Masao Sato, Koshigaya, Japan, assignor to Nippon Tansan Gas Company Limited, Tokyo, Japan

Continuation of Ser. No. 6,617, Jan. 21, 1993, abandoned. This application Jun. 8, 1994, Ser. No. 255,301

Claims priority, application Japan, Jan. 20, 1992, 4-027473

Int. Cl.[6] B65D *51/16*

U.S. Cl. 220—371 **2 Claims**



1. A sealing plate and filter combination sealing a cartridge containing a liquified gas content under pressure and having a neck with an opening and a syphon tube extending from said neck internally of the cartridge; said sealing plate comprising;

a plate, having a side surface with an annular mounting bracket in fixed assembly with a powdered metal cylindrical filter, said filter having a blind bore with one end open and being disposed on the side surface mounting bracket of said plate and said open end being closed by said side surface of said plate so that an interior space in the filter is defined by the bore of the filter and said plate;

said side surface having an integral annulas centrally disposed thereon and projecting therefrom and into which said filter is pressed as fitted fixedly assembling the filter to said plate with an inner cylindrical surface of said annular disposed circumferentially of the cylindrical filter;

said side surface having a peripheral marginal portion circumferentially of said integral annular centrally disposed thereon; said plate being mountable in use with the peripheral marginal portion overlying said neck and being sealed thereto and closing the neck opening; and said filter with said integral annular circumferentially of the filter extending into said neck toward the syphon tube enabling the outflow of said liquified gas content of the cartridge via said syphon tube and said filter into said interior space of the filter; and said sealing plate consisting of a pierceable material to selectively provide an opening thereon in communication with the interior space of the filter to provide a filtered outflow of the liquified gas content from said cartridge when the cartridge is mounted on a system.

5,485,937

SANITARY CHOPPING PLATE STRUCTURE

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Filed Aug. 2, 1994, Ser. No. 284,854
Int. Cl.[6] B65D *43/00*
U.S. Cl. 220—571 **8 Claims**



1. A sanitary chopping plate Structure, comprising a bottom disk and at least one chopping plate, wherein

a plurality of feet being provided around the lower edge of said bottom disk,

an inclining surface being formed between each said foot and the top edge of said bottom disk,

a plain plane being formed by the top surface of said bottom disk,

and a groove being provided around the periphery of said plain plane; further,

said chopping plates each being formed of a thin slice which is declined from its center area toward its periphery and then raised again to its end edge to form another inclining surface, a water collecting groove thus being formed at the periphery of said slice and being corresponding to said groove of said bottom disk, said groove and said water collecting groove of each slice being matched and being put together, different slices being interchangeable in a simple and quick mode to be matchably and firmly put on said bottom disk.

5,485,938

CUP LID ASSEMBLY

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Filed Mar. 24, 1995, Ser. No. 410,059
Int. Cl.[6] A47G *19/22*
U.S. Cl. 220—714 **25 Claims**

1. A resealable cup and lid assembly comprising:

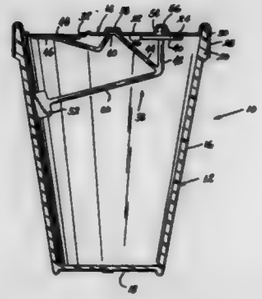
a cup having a flexible side wall and an opening provided on one end of the side wall;

a lid provided on the opening of the side wall, the lid comprising:

a base having a bottom surface;

a fluid opening provided in the base; and

a valve member provided on the bottom surface of the base adapted for movement between open and closed positions, the valve member having a first arm connected to the base, a flapper valve element connected to the first arm and adapted to selectively close the fluid opening and an articulation arm



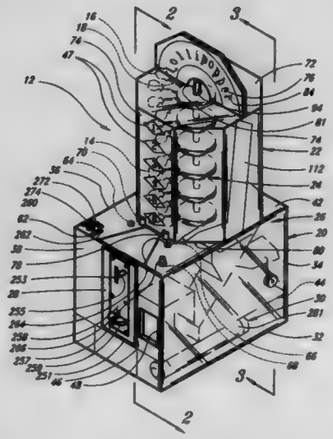
having one end connected to the first arm and the other end positioned closely adjacent the flexible side wall of the cup; wherein the valve member is moved between the closed and open positions by squeezing the cup side wall adjacent the articulation arm a sufficient distance to cause movement of the articulation arm and flapper valve element relative to the fluid opening.

5,485,939

LOLLIPOP DISPENSER APPARATUS

Gary D. Tucker, 304 Otis St., Lakewood, Colo. 80226

Filed Nov. 9, 1994, Ser. No. 336,836
Int. Cl.[6] G07F *11/00*
U.S. Cl. 221—86 **26 Claims**



1. A lollipop dispenser apparatus operable to hold, display, and selectively dispense lollipop members therefrom, comprising:

a) a main support housing having a dispenser housing assembly mounted thereon;

b) a product support and dispensing assembly including a product support and display assembly connected to a product dispensing assembly;

c) said product support and display assembly having a product support and anchor assembly operable to receive and support a plurality of said lollipop members;

d) a product accounting and control assembly operably connected to said product support and dispensing assembly operable to assure positive dispensing of a lollipop member;

e) an electrical control circuit connected to said product support and display assembly;

f) a coin acceptor, selector, and dispenser assembly connected to said electrical control circuit operable, on receiving an impluse signal, to engage said product support and display assembly to dispense a lollipop member from said main support housing assembly; and

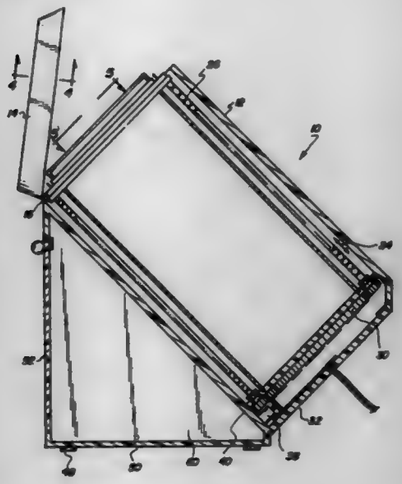
g) said product accounting and control assembly having a product trip lever assembly engaged by a dispensed one of the lollipop members to cease power to said impulse signal to stop a lollipop dispensing operation only after the lollipop member has been dispensed.

5,485,940

BREAD BOXES WITH SLICE DISPENSING MECHANISMS

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Filed Apr. 11, 1994, Ser. No. 225,764
Int. Cl.[6] B65H *3/00*
U.S. Cl. 221—192 **3 Claims**



1. A new and improved bread box for storing sliced bread and for dispensing or replacing such sliced bread one or more slices at a time comprising, in combination:

four side walls oriented in a rectangular configuration about a central vertical axis, a lower base coupling the lateral edges of the side walls, and a lid with a hinge coupled to the top edge of one of the side walls and pivotable from a raised upper orientation having a steel rim for receiving a magnetic gasket located in the top of the outer casing's lid;

a bail mounted on the top side of an invertor collar and hinged to swing in the same direction as the lid on the outer casing, the bail and collar capable of reciprocating along the axis, the bail and collar also capable of enclamping the open end of a bread wrapper;

a pair of parallel worm gears extending parallel with respect to the axis of a box gearing associated with the worm gears capable of receiving collar guides, part of the invertor collar and bail assembly whereby when the guides are on the invertor collar follow a spiraling groove in the worm gears as they are rotated the invertor collar will move up or down to the desired number of bread slices;

a pair of planet gears at the bottom edge of each worm gear with a sun gear rotatable about the axis of the box to rotate the planet gears; and

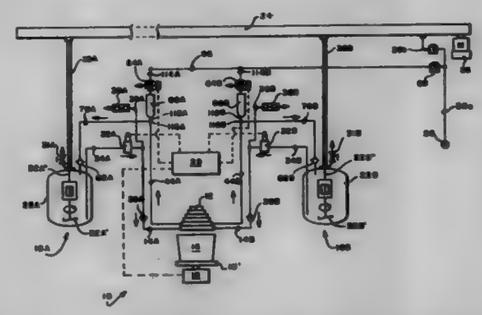
a power source coupled to the sun gear for rotating the sun gear whereby rotation of the sun gear will rotate the planet gears, the parallel worm gears to move the invertor collar upward or down as will the enclamped bread wrapper downward from over the top rim of the inner bread box thus inverting the wrapper and exposing the contents.

5,485,941

RECIRCULATION SYSTEM AND METHOD FOR AUTOMATED DOSING APPARATUS

Daniel Guyonnard, Lamorlaye, France; James L. Anderson, Jr., Howell, Mich.; Alfred Frank, Toledo, Ohio, and Georges Chavallaz, Saint Sulpice, Switzerland, assignors to BASF Corporation, Mt. Olive, N.J., and Cydec S.A., Switzerland

Filed Jun. 30, 1994, Ser. No. 268,929
Int. Cl.[6] B67D *5/08*
U.S. Cl. 222—1 **19 Claims**



1. In an automated dosing apparatus having a dosing head for dispensing a dose of flowable material, a supply canister for maintaining a supply of the flowable material under a pressure P_1, a supply line which fluid-connects the supply canister to the dosing head, and a flow valve disposed in the supply line having at least closed and opened conditions which respectively prevent and allow the flowable material to flow to the dosing head, the improvement comprising a recirculation system which recirculates the flowable material during a recirculation mode to the supply canister, said recirculation system comprising:

a buffer reservoir;

a recirculation channel within the dosing head which is fluid-connected to the supply line;

a recirculation line which fluid-connects the recirculation channel to the buffer reservoir:

a transfer line which fluid-connects the buffer reservoir and the supply canister;

a source of pressurizing fluid at a pressure P_2 greater than the pressure P_1 of the supply canister;

a control valve operatively interconnecting the buffer reservoir to the source of pressurization fluid and having a vent condition wherein the buffer reservoir is vented and a pressurization condition wherein the buffer reservoir is fluid-connected to the source of pressurization fluid; and

an automated controller operatively connected to the flow and control valves for (i) initiating a recirculation mode by issuing a first signal to cause the flow valve to assume its opened condition and thereby allow the flowable material to flow through the recirculation line to the buffer reservoir, whereby a volume of recirculated flowable material is accumulated within the buffer reservoir, and thereafter (ii) initiating a transfer mode by issuing a second signal to cause the control valve to assume its pressurization condition, the buffer reservoir being pressurized by the pressurization fluid in response to the control valve assuming the pressurization condition to thereby cause the volume of recirculated flowable material within the buffer reservoir to be transferred to the supply canister.

5,485,942

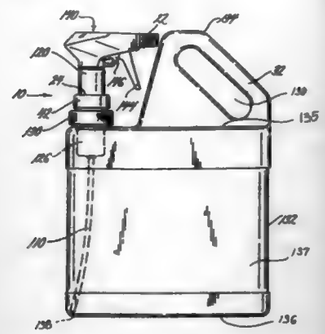
LIQUID DISPENSER ASSEMBLY WITH CONTAINER HAVING A SLOPED HANDLE

Donald D. Foster, St. Charles, Mo., assignor to Contico International, Inc., St. Louis, Mo.

Division of Ser. No. 227,565, Apr. 14, 1994, Pat. No. 5,373,973, which is a continuation of Ser. No. 984,876, Dec. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 829,759, Jan. 31, 1992, abandoned. This application Dec. 19, 1994, Ser. No. 358,692

Int. Cl.[6] B67D *5/42*

U.S. Cl. 222—324 **15 Claims**



1. In combination, a container and a sprayer dispenser having a dip tube, the combination comprising:

a sprayer dispenser having a dip tube;

a container body having a top wall and a bottom wall and at least one sidewall extending between the top wall and bottom wall, the top wall, bottom wall and sidewall all surrounding an interior volume of the container;

an opening in the top wall of the container, the opening being dimensioned to receive the dip tube of the sprayer dispenser therethrough;

means on the container for securing the sprayer dispenser on the top wall of the container with the dip tube inserted through the top wall opening; and,

a crown formed in a portion of the container top wall adjacent the top wall opening, the crown projecting from the top wall adjacent to an beyond the sprayer dispenser when the sprayer dispenser is secured to the container top wall.

5,485,943

HANGER WITH IRREMOVABLE INFORMATION TAB

Andrew M. Zuckerman, Forest Hills, N.Y., assignor to Different Dimensions Inc., Rego Park, N.Y.

Division of Ser. No. 42,811, Apr. 5, 1993, Pat. No. 5,383,583, which is a division of Ser. No. 801,613, Nov. 22, 1991, Pat. No. 5,199,608, which is a continuation of Ser. No. 591,621, Oct. 2, 1990, abandoned. This application Jan. 24, 1995, Ser. No. 377,189

Int. Cl.[6] A47G *25/14*

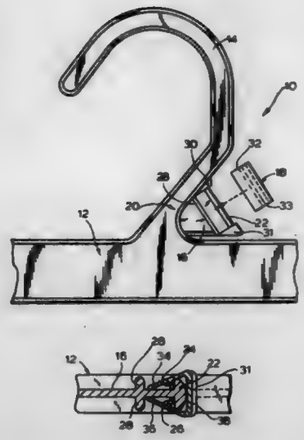
U.S. Cl. 223—85 **17 Claims**

16. A garment hanger including a tab, comprising:

a hanger including a body and a hook member connected to said body;

a tab holder, formed integrally with said hanger, said tab holder having two opposite sides and a free edge, a ridge disposed parallel to said free edge and extending from said two opposing sides, an upper end member formed above said ridge and a lower end member formed below said ridge; and

a tab defining a face member and two opposing sides, each of said two opposing tab sides extending from said face member and terminating in a foremost edge opposite said face member, each of said opposing tab sides having an inwardly projecting portion for engaging said ridge to secure said tab to said tab holder, said face member and said two opposing tab sides forming an upper edge surface and a lower edge surface, said upper and lower end members of said tab holder being located relative to said respective upper and lower edge surfaces of said tab such that, when said tab is located on to said tab holder, said upper and lower end members obstruct access to said respective upper and lower edge surfaces, said upper and lower end members of said tab holder extending substantially the full length of said upper and lower edge surfaces of said tab.



5,485,944

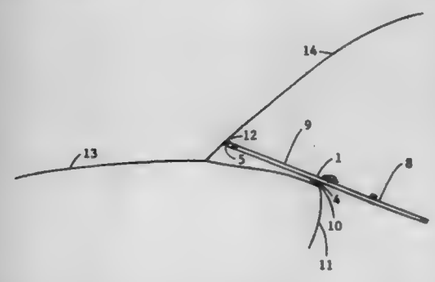
PORTABLE WRITING PLATFORM FOR VEHICLES

Robert C. Kauffman, 342 Windemere Ave., Lansdowne, Pa. 19050

Filed Mar. 18, 1994, Ser. No. 214,536

Int. Cl.[6] B60R *7/00*

U.S. Cl. 224—277 **5 Claims**



1. A device for mounting a note pad in a vehicle having a windshield and a dashboard, said device comprising:

an elongated base having a front end, a back end, a top surface defining a writing area, and a bottom surface;

clamp means on said base top surface for removable retaining said note pad against said top surface writing area;

first fastener means attached to the base bottom surface and the dashboard for securing the base to the dashboard;

second fastener means attached to the base back end and the windshield; wherein

when pressure is applied to said writing area the base pivots from a first position in which the base back end is substantially parallel to a plane defined by said dashboard to a second position where the base back end is wedge between said dashboard and said windshield and is held in a locking position by said second fastener means.

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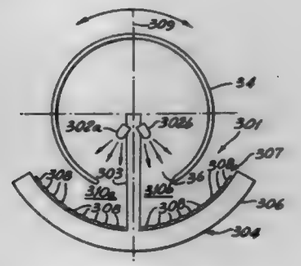
OPENING APPARATUS HAVING AN ALIGNMENT SYSTEM FOR PRODUCING A CONTINUOUS METAL STRIP FROM A SPLIT-TUBE

Thomas L. Linsenbardt, Lomas, Mo., and Daniel H. Hickman, Florence, S.C., assignors to ABB Power T&D Company Inc., Raleigh, N.C.

Division of Ser. No. 121,613, Sep. 15, 1993, Pat. No. 5,406,818, which is a continuation-in-part of Ser. No. 791,103, Nov. 12, 1991, Pat. No. 5,359,874. This application Jan. 25, 1995, Ser. No. 378,200

Int. Cl.[6] B65H *23/02*

U.S. Cl. 226—10 **11 Claims**



1. Apparatus for aligning a tube having an opening in the periphery thereof such that the opening is at a desired angular position, which comprises:

means within the tube for directing light radially outward towards an area encompassing the desired position of the opening, light emanating from the tube if at least part of the opening is within the area, a characteristic of the emanated light being a function of the actual position of the opening relative to the desired position thereof;

means for sensing the light emanating from the tube;

means selectively operatable for rotating the tube; and

means responsive to the light sensing means for controlling the operation of the rotating means to rotate the tube into a position in which the opening is at the desired orientation.

5,485,946

RELEASE LOCKING MEANS OF A DRIVING TOOL FOR FASTENERS

Bernd Jankel, Ahrensburg, Germany, assignor to Joh. Friedrich Behrens AB, Ahrensburg, Germany

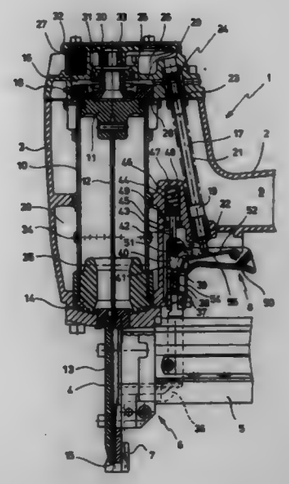
Filed Apr. 15, 1994, Ser. No. 237,206

Claims priority, application Germany, Apr. 16, 1993, 9305760 U

Int. Cl.[6] B25C *1/04*

U.S. Cl. 227—8 **10 Claims**

1. A pneumatically operated driving tool, comprising a working cylinder (10) with a working piston (11) being movable between an upper and a lower dead center, a drive-in tappet (12) mounted on said working piston, a control valve array (18), which, when actuating a valve rod (17), connects a working stroke space above said working piston to compressed air for moving said piston to the lower dead center and, when releasing said valve rod, connects the working stroke space to atmosphere for moving said piston to the upper dead center, a piston return chamber (20) surrounding said working cylinder, said piston return chamber being connected to said working cylinder via a first opening (35) adjacent to the lower dead center and via a second opening (34) spaced apart from the lower dead center, a mouth tool (4) comprising a drive-in channel (13) guiding said drive-in tappet, an outlet and a moving area for the drive-in tappet, a magazine (5) for fasteners having an opening, said magazine opening being adjacent to the moving area of said drive-in tappet, a sensing means (6) comprising a sensor head (7) which extends below the outlet (15) of said mouth tool and is axially slidably movable and a sensor slide portion (37) connected to the sensor head and an abutment portion (41), which extends transversely to the sensor slide portion's direction of displacement, the pneumatically operated driving tool further comprising a trigger lever (8) for displacing said valve rod (17) comprising a pivotally mounted valve lever (50) having a free end and a pivotally mounted end and a control lever (52) mounted thereon and facing said valve rod, said control lever (52) being pivotally mounted adjacent to the free end of said valve lever and having a free control lever end (53) adjacent to the pivotally mounted end of said valve lever, wherein said free control lever end is supported by said abutment portion (41) before displacement of the sensor head, whereby displacing said sensor head (7) by placing the tool upon a workpiece the sensing means is actuated, prior to actuating said trigger lever (8), which is accomplished by pivoting said valve lever (50) towards said valve rod (17), said free control lever end remains supported by said abutment portion (41) when first actuating said sensing means (6) thereafter, when actuating said trigger lever (8) so that said control lever (52) actuates said valve rod (17), said free control lever end slips from said abutment portion (41) so that when actuating said trigger lever (8) after the initial trigger lever actuation without first actuating said sensing means (6), said valve rod (17) is not being further displaced by said control lever (52), the operating tool further comprising a locking means (44, 46) being associated to said sensing means (6), wherein said sensor slide portion (37) is connected to a movable locking piston (44) within a locking cylinder (46), wherein said locking piston (44) is loaded with working pressure forcing the locking piston in the direction in which the sensor slide portion (37) is actuated for locking and is aerated for unlocking, the sensing means being locked by the locking means in the sensing means' operated position in response to actuating said valve rod (17) and unlocks said sensing means when releasing said valve rod.



5,485,947

LINEAR STAPLING MECHANISM WITH CUTTING MEANS

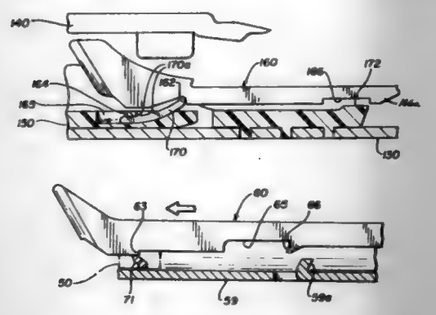
Todd Olson, Loveland; Dan Meiser, Oxford; Gary Steed, Cleves; Eric Huffman, Loveland; Matthew Otten, Cincinnati; Ronald VanOverloop, West Chester; Darrel Powell, Cincinnati; Thomas Knodell, Loveland; Edward Rhad, Fairfield; Ralph Chen, Cincinnati, and Robert Cook, West Chester, all of Ohio, assignors to Ethicon, Inc., Somerville, N.J.

Continuation of Ser. No. 917,636, Jul. 20, 1992, Pat. No. 5,307,976, which is a continuation-in-part of Ser. No. 779,436, Oct. 18, 1992, abandoned. This application Mar. 18, 1994, Ser. No. 215,075

The portion of the term of this patent subsequent to Oct. 10, 2011, has been disclaimed.

Int. Cl.[6] A61B *17/072*

U.S. Cl. 227—176.1 22 Claims



1. A surgical stapler for endoscopic application comprising:

a handle portion, a shaft portion, and a stapling portion connected to the handle portion by said shaft portion,

said stapling portion having a stapling assembly including a replaceable staple-filled staple cartridge, and a movable anvil operable to cooperate with said staple cartridge to clamp and staple tissue disposed therebetween,

said stapling assembly including at least one firing wedge movable distally along a longitudinal axis of said staple cartridge for firing staples therein, and knife means movable distally of said staple cartridge for cutting tissue clamped by said anvil said knife having a first edge portion near said cartridge and a second edge portion near said anvil,

said stapler assembly including a lockout mechanism for preventing refiring of said stapler, including notch means defined along said first edge portion of said knife means, said knife means being movable in a direction generally perpendicular to said longitudinal axis so that said notch means is movable from a first disengaged position to a second engaged position;

said lockout mechanism further including a movable lockout member mounted on said staple cartridge and engageable with said first edge portion,

said lockout member being movable from a first position to a second position during movement of said knife means relative to said cartridge, wherein in said first position of said lockout member, said notch means is disposed in said first disengaged position so that said knife means is movable distally of said staple cartridge, and in said second position of said lockout member, said notch means is positionable in said second engaged position when said knife means is moved proximally to a retracted position when said knife means is moved proximally to a retracted position, wherein said notch means prevents distal movement of said knife means to prevent refiring of said stapler.

5,485,948

SHAFT AND METHOD OF MAKING SAME

Edward J. McCrink, P.O. Box 1429, Rancho Sante Fe, Calif. 92067

Filed Jul. 26, 1993, Ser. No. 97,466

Int. Cl.[6] B23K *101/04;31/02*

U.S. Cl. 228—126 2 Claims



1. A reinforced stainless steel shaft comprising:

a tubular shaft made from air hardening stainless steel;

a coil of air hardening stainless steel wire, said coil forming a tight fit between the outside diameter of the coil and the internal diameter of the shaft; and

brazing material proximal to the loci of intersections of the coil with the tubular shaft.

5,485,949

CAPILLARY FOR A WIRE BONDING APPARATUS AND A METHOD FOR FORMING AN ELECTRIC CONNECTION BUMP USING THE CAPILLARY

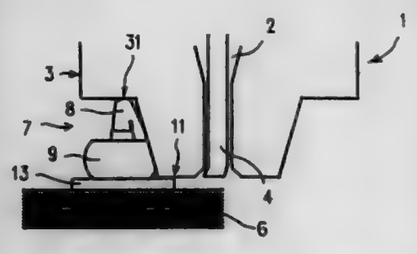
Yoshihiro Tomura, Hirakata, and Yoshihiro Bessho, Higashiosaka, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 26, 1994, Ser. No. 233,829

Claims priority, application Japan, Apr. 30, 1993, 5-103848; Jun. 8, 1993, 5-137090

Int. Cl.[6] H01L *21/603*

U.S. Cl. 228—180.5 19 Claims



1. A capillary for ball bonding for forming a bump on an electrode pad of a semiconductor device, said capillary comprising:

a pressing member including a tip face for pressing a ball-like end of a metal wire against said electrode pad to secure said ball-like end to said electrode pad under pressure;

a bore, provided in said pressing member, for supplying said metal wire; and

a leveling member for making said bump formed on said electrode pad a predetermined height, said leveling member including a bottom face for pressing said bump, wherein said bottom face is positioned a predetermined distance from said tip face to define the predetermined height of said bump.

5,485,950

COMPOSITE MATERIAL, PROCESS FOR PRODUCING COMPOSITE MATERIAL, AND PROCESS FOR PRODUCING COMPOSITE MATERIAL MOLDING

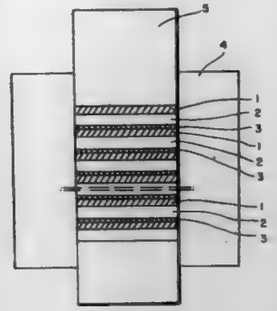
Kenichiro Shibata; Toshiyuki Hatta; Fumio Matsuyama; Masahiro Miyamoto; Manabu Okui, and Masaya Nishi, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 83,291, Jun. 29, 1993, abandoned. This application May 25, 1995, Ser. No. 450,396

Claims priority, application Japan, Jun. 29, 1992, 4-211969; Dec. 12, 1992, 4-360729

Int. Cl.[6] B23K *20/02;20/14*

U.S. Cl. 228—194 18 Claims



1. A process for producing a composite material, comprising:

providing a first plate and a second plate, said first plate comprising a magnetic metal and said second plate comprising aluminum or an aluminum alloy, wherein at least one of said first plate and said second plate has a metal layer formed on a surface thereof, said metal layer having a melting point which is the same as a melting point of either the first or second plates or between said melting points of the first and second plates, respectively,

positioning the plates so that the metal layer is interposed between them, and

cladding the plates by an axial hot pressing under a reduced pressure of 10^{-1} Torr or less at a temperature of from 300° to 450° C.

5,485,951

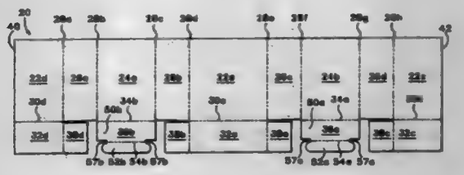
COLLAPSIBLE CONTAINER

Ronald W. Phillips, Durand, Ill., assignor to Longview Fibre Company, Longview, Wash.

Filed Apr. 4, 1995, Ser. No. 416,197

Int. Cl.[6] B65D *5/10*

U.S. Cl. 229—156 1 Claim



1. A collapsible container formed from a blank of foldable sheet material, comprising:

(a) a plurality of upright first wall panels;

(b) a plurality of upright second wall panels;

(c) a plurality of upright corner panels;

(d) each said corner panel foldably connected to and disposed between a first wall panel and a second wall panel;

(e) said first wall panels, said second wall panels, and said corner panels acting together to define a predetermined area;

(f) bottom forming side flaps foldably connected to bottom edges of said first wall panels and exteading therefrom towards one another into said predetermined area, said side flaps extending laterally beyond said first wall panels;

(g) bottom forming end flaps foldably connected to bottom edges of said second wall panels, and exteading therefrom towards one another into said predetermined area, portions of said end flaps overlying portions of said side flaps when both said end flaps and said side flaps are respectively extending towards said predetermined area;

(h) each said end flap being divided into an inner and outer portion by a fold line;

(i) a pair of oppositely disposed notches on either side of each of said end flaps, said notches being aligned with said fold line and being configured to allow the portion of said end flap defined by said fold line to fit between said side flaps; and

(j) said outer portion of each said end flap forming a locking element that fits behind said side flaps when said outer portion is bent along said fold line relative to said inner portion and said side flaps are inserted into said notches.

5,485,952

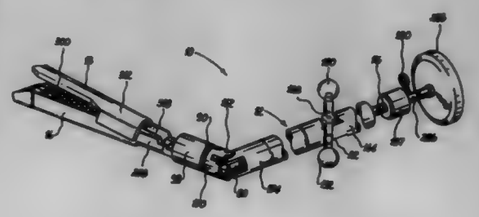
APPARATUS FOR APPLYING SURGICAL FASTENERS

Diego Fontayne, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Sep. 23, 1992, Ser. No. 950,065

Int. Cl.[6] A61B *17/072*

U.S. Cl. 227—178.1 30 Claims



1. Apparatus for driving surgical fasteners comprising:

a) a body having a proximal portion and an articulating distal portion;

b) linkage structure extending between said proximal portion and said distal portion of said body and operatively associated with said proximal portion of said body for moving said distal portion relative to a longitudinal axis of said proximal portion;

c) a cartridge assembly mounted adjacent said articulating distal portion and having a tissue engaging surface thereon;

d) an anvil member having a fastener forming surface thereon, said anvil member mounted adjacent said cartridge assembly for relative movement between an open position wherein said fastener forming surface is spaced from said tissue engaging surface and a closed position wherein said fastener forming surface is in close cooperative alignment with said tissue engaging surface;

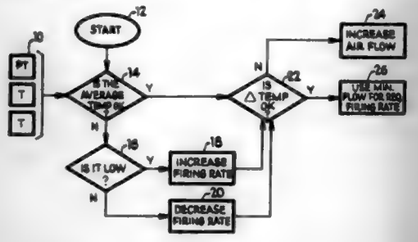
e) camming means associated with said articulating distal portion for moving said anvil member between said open position and said closed position; and

f) means for ejecting said surgical fasteners from said cartridge assembly to form against said fastener forming surface of said anvil member.

5,485,953
METHOD AND APPARATUS FOR CONTROLLING THE CIRCULATION OF HEAT TRANSFER FLUID FOR THERMAL CONDITIONING SYSTEMS FOR SPACES

William W. Bassett, Wheaton, Ill.; Robert M. Russ, Los Altos Hills, and Thomas L. Webster, Piedmont, both of Calif., assignors to Gas Research Institute, Chicago, Ill.

Filed Jan. 26, 1995, Ser. No. 378,517
Int. Cl.[6] F24F *7/00*
U.S. Cl. 236—49.3 16 Claims



1. A method for controlling the circulation of heat transfer fluid for thermal conditioning systems for at least partially thermally separate spaces, in which the thermal conditioning system includes a source of thermal conditioning, and a means for circulating heat transfer fluid from the source of thermal conditioning to the at least partially thermally separate spaces, such that heat may be transferred between the source of thermal conditioning and the heat transfer fluid, and between the heat transfer fluid and the at least partially thermally separate spaces, the method comprising:

sensing the temperature in each of the at least partially thermally separate spaces;

determining, at predetermined intervals of time, a calculated sensed temperature, based upon the temperatures sensed by the sensors;

comparing the calculated sensed temperature against a predetermined range of temperatures; and,

if the calculated sensed temperature is within the predetermined range, the following steps of

determining the differentials between the sensed temperatures,

comparing the determined temperature differential of the greatest absolute value against a predetermined temperature differential absolute value, and

increasing the flow of the heat transfer fluid if the greatest determined temperature differential value exceeds the predetermined temperature differential value.

5,485,954
REDUCED PROFILE THERMOSTAT

Stephen E. Guy, Longview, Tex.; Louis E. Sulfstede, Ft. Wayne, Ind., and Eric Hillmer, Toronto, Canada, assignors to American Standard Inc., Piscataway, N.J.

Filed Jun. 10, 1994, Ser. No. 258,000
Int. Cl.[6] F24F *3/14;* H01H *37/04*
U.S. Cl. 236—78 R 15 Claims

1. A thermostat having a reduced profile designed to control the temperature in an area and having selected components for sensing the temperature and for communicating between an operator and a HVAC system, comprising:

a subbase having a back surface designed to be mounted conformally on a surface and an opposed inner surface having a portion of the selected components or effecting control mounted thereon, such components portion including a first electrical connection, and a first mechanical connection operably coupled thereto;

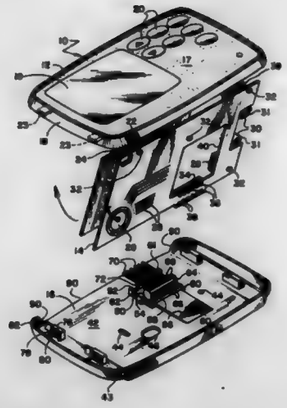
a cover having a front face designed to carry selected components for communication with the operator and an opposed inner surface having a portion of the selected components for effecting control supported thereby, said portion of the selected components for effecting control including a second electrical connection, and the inner surface having a second mechanical connection operably coupled thereto,

wherein the cover is brought into registry with the subbase to form a thermostat housing having a reduced profile that substantially encloses the sensing and communicating components of the thermostat, the first electrical connection being mated with the second electrical connection and the first mechanical connection being mated to the second mechanical connection by motion of the cover with respect to the subbase that is substantially conformal with the back surface of the subbase as the cover is brought into registry with the subbase;

wherein the first electrical connection and the second electrical connection comprise an oppositely directed receiver connector and a bayonet connector respectively, the receiver connector receiving the bayonet connector therein and making electrical connection therewith and the bayonet connector being received within the receiver connector means in compressive sliding engagement therewith;

wherein the receiver connector and the bayonet connector comprise a plurality of individual receiver connectors and a corresponding number of individual bayonet connectors; and

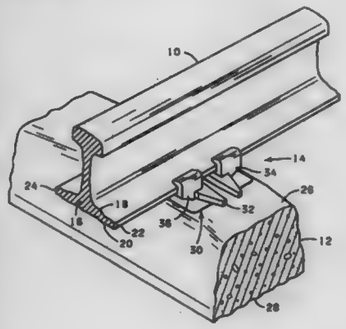
wherein the individual bayonet connectors taken together comprise a set of spaced apart engaging fingers, the fingers designed to electrically engage a corresponding receiver connector and being oriented in a parallel array that is substantially conformal with the back surface of the subbase.



5,485,955
RAIL-TIE FASTENING ASSEMBLY FOR CONCRETE TIE

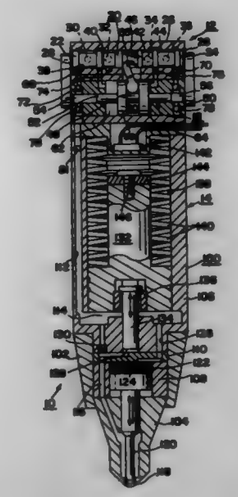
S. Hudson Owen, Marshfield, Wis., assignor to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Jul. 11, 1994, Ser. No. 273,063
Int. Cl.[6] E01B *9/28*
U.S. Cl. 238—265 47 Claims



1. A railway track support and fastening arrangement having a rail, a rail-tie fastening assembly, and a support structure wherein the rail-tie fastening assembly is adapted for cooperating to fasten a rail to a support structure, the rail having a rail flange with an upper surface, a lower surface, a first side and a second side, the rail-tie fastening assembly comprising:

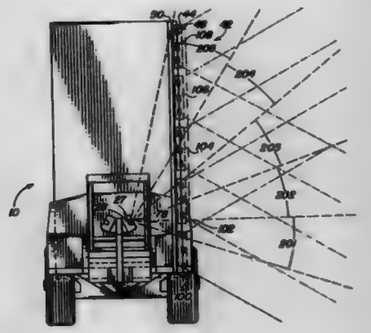
a rail seat having a plate portion and a spade portion, the plate portion adapted to receive the lower portion of the rail flange, the spade portion of the rail seat having a bottom end, the spade portion extending downwardly from the plate portion and at least a portion of the spade portion disposed in the support structure and bonded to the support structure with an elastomeric material such that the spade portion of the rail seat is spaced apart from the support structure, the elastomeric material provided with a void near the bottom end of the spade portion to permit the rail seat to move vertically downward relative to the support structure when a load is applied to the rail seat.



5,485,956
AGRICULTURAL SPRAYER

Theodore F. Leonhardt, Winter Garden, Fla., assignor to Ag-Spray, Immokalee, Fla.

Continuation of Ser. No. 605,083, Oct. 26, 1990, Pat. No. 5,172,861. This application Dec. 21, 1992, Ser. No. 994,557
Int. Cl.[6] B05B *15/00*
U.S. Cl. 239—1 4 Claims



4. A method for detecting foliage to be sprayed and regulating the spraying of foliage, comprising the steps of:

providing a sprayer and a single sensor carried by the sprayer;

sensing with the single sensor a presence of foliage in a first foliage zone and a presence of foliage in a second foliage zone; and

providing outputs from the sensor representing the sensing of foliage in the first and second zones for controlling spraying into those zones.

5,485,957
FUEL INJECTOR WITH AN INTERNAL PUMP

Oded E. Sturman, 3973 Santa Monica Ct., Newbury Park, Calif. 91320

Filed Aug. 5, 1994, Ser. No. 286,641
Int. Cl.[6] F02M *57/02*
U.S. Cl. 239—88 16 Claims

1. A fuel injector, comprising:

a housing which has a fuel port that receives a fuel, a nozzle opening that ejects fuel and a return port that allows fuel to flow out of said housing;

an intensifier that moves between a first position and a second position to increase a pressure of the fuel that is ejected from said housing;

a control valve that controls fuel flow between said intensifier and said return port;

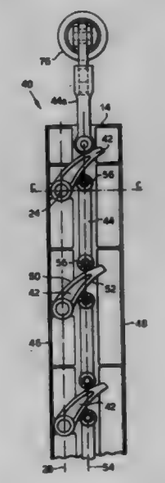
a pressure device that supplies fuel that moves said intensifier to the first position; and,

a spring that moves said intensifier to the second position and pressurizes the fuel when said control valve allows fuel to flow m out of said return port.

5,485,958
MECHANISM FOR OPERATING A CASCADE OF VARIABLE PITCH VANES

Douglas J. Nightingale, Jonesboro, Ga., assignor to Rolls-Royce, Incorporated, Reston, Va.

Filed Jun. 6, 1994, Ser. No. 254,703
Int. Cl.[6] B64C *15/00*
U.S. Cl. 239—265.19 19 Claims



1. A mechanism for operating a cascade of variable pitch vanes comprising:

a plurality of adjacent vanes, each one pivotally mounted about a spanwise axis of rotation spaced apart from the spanwise axis of its neighbor,

a plurality of cam means, each one fixed in relation to a respective one of the vanes,

a plurality of pushrods mounted for axial movement along a pushrod axis, the pushrods being interspaced between the cam means for effecting coordinated pivotal movement of the vanes and urged into end to end abutment with the cam means so that the spacing between neighboring pushrod ends is determined by thickness of the intervening cam means in a plane of intersection of the pushrod axis, the plane of intersection being spaced apart from the spanwise axes of the vanes so that the spacing between neighbouring pushrods alters in accordance with the angular movement of the intervening cam means, and

actuator means for moving the pushrods, whereby for a given actuating input there is a cumulative effect between successive pushrods so that along the cascade the vanes are turned through .progressively greater or lesser angles.

5,485,959

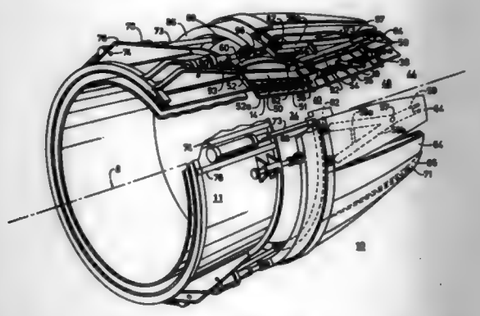
AXISYMMETRIC VECTORING EXHAUST NOZZLE THERMAL SHIELD

Jonathan M. Wood; Thomas A. Hauer, both of West Chester, and William C. Lippmeier, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 708,979, May 16, 1991, abandoned. This application Jun. 7, 1993, Ser. No. 72,678

Int. Cl.[6] B64C *15/06*

U.S. Cl. 239—265.41 **20 Claims**



1. An outer flap and seal assembly for an axisymmetric convergent/divergent nozzle, said outer flap and seal assembly comprising:

a plurality of overlapping outer flaps and outer seals having a general disposition about a longitudinal axis and a means for changing said outer flap and seal disposition from axisymmetrical to asymmetrical.

5,485,960

UNIVERSAL PAINT SPRAYER EXTENDER

Kevin J. Troudt, 6635 Devonshire Dr., Gladstone, Oreg. 97027

Filed Jul. 18, 1994, Ser. No. 277,216

Int. Cl.[6] B05B *15/06*

U.S. Cl. 239—532 **20 Claims**

1. A spray gun extender for extending the reach of a paint spray gun comprising

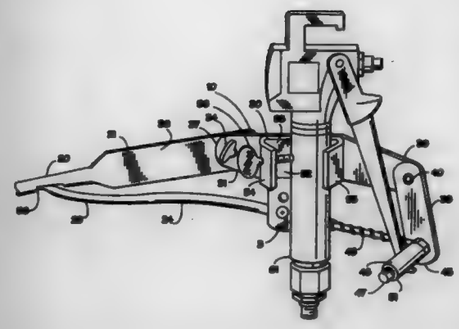
an elongate pole,

a spray gun mounting assembly pivotably mounted on a pole first end, the assembly including

a vertical support plate,

means for pivotably mounting the vertical support plate to the pole with positive and negative pitch angle adjustment,

a grip member spaced on a support plate first side distance from the pivotably mounting means such that the grip member and supporting plate are adjustable in positive and negative pitch without the grip impacting on the pole,



means for removably mounting a spray gun handle in the grip member,

spray gun trigger engaging means extending away from the support plate first side for pulling the spray gun trigger removably mounted thereon,

an actuating member on a pole second end for controlling the spray gun,

a cable running between the actuating member and the spray gun mounting assembly for pulling the trigger engaging means when the cable is pulled by the actuating member.

5,485,961

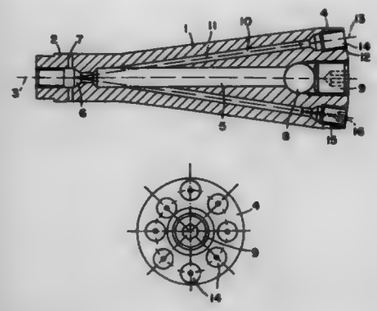
NOZZLE HEAD FOR A JET CLEANING DEVICE

Klaus Reitzig, Issum, Germany, assignor to WOMA Apparatebau GmbH, Duisburg, Germany

Filed Sep. 8, 1994, Ser. No. 303,194

Int. Cl.[6] B05B *3/02;1/14*

U.S. Cl. 239—558 **11 Claims**



7. A nozzle head comprising

a body;

a central bore disposed in said body on a central axis thereof for receiving a pressurized flow of fluid;

a plurality of supply bores communicating with said central bore to receive pressurized fluid therefrom, said supply bores being circumferentially disposed about said central bore;

a plurality of nozzles mounted in a front face of said body circumferentially of said central axis, each said nozzle communicating with a respective supply bore to receive pressurized fluid therefrom and having a bore for expelling a jet of fluid therefrom, at least one bore of a respective nozzle being radially spaced from said central axis a distance different from others of said nozzle bores and each nozzle bore being coaxial of a respective supply bore.

5,485,962

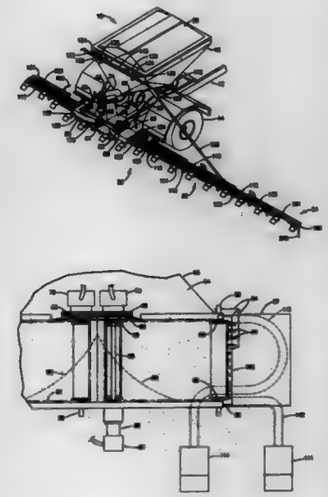
PNEUMATIC APPLICATOR FOR AGRICULTURAL PARTICULATES

Robert W. Moss, Salina, Kans., assignor to Moss Sales & Service, Salina, Kans.

Continuation-in-part of Ser. No. 986,426, Dec. 4, 1992, abandoned. This application Aug. 4, 1994, Ser. No. 285,995

Int. Cl.[6] A01C *15/04*

U.S. Cl. 239—655 **14 Claims**



1. In a device for distributing particulate material, of the type having a hopper to store the material, means for feeding the material from the hopper, an air blower for outputting air along a longitudinal path and means for distributing the material along a lateral path, the improvement comprising:

chamber means for conveying air from the blower to the distribution means and for gradually and aerodynamically redirecting air from the longitudinal path of the blower to the lateral path of the distribution means, said chamber means including a forward section, having a first end located proximate the blower, and a transition chamber attached to an opposite end of said forward section, said transition chamber communicating with end sections attached to the distribution means.

5,485,963

GRANULAR FERTILIZER SPREADER

Joseph J. Walto, Carver; Nathan J. Friberg, Bloomington, and Floyd D. Niskanen, Golden Valley, all of Minn., assignors to The Toro Company, Bloomington, Minn.

Filed May 11, 1994, Ser. No. 241,261

Int. Cl.[6] A01C *15/00*

U.S. Cl. 239—663 **11 Claims**

1. A granular material spreading apparatus, comprising:

(a) a discharge chute, the discharge chute having a first edge, a second edge and a bottom surface, the second edge being adapted to distribute the granular material onto an area of ground with substantially uniform density per unit of ground area that is traversed by the discharge chute;

(b) a hopper, the hopper having a first opening and a plurality of hopper discharge openings, the first hopper discharge opening being adapted to receive the granular material, the hopper discharge openings being adapted to deposit the granular material adjacent to the first edge of the discharge chute;

(c) a series of diverging open channels, the diverging open channels having a first width in a region near the first edge of the discharge chute, the diverging open channels having a second width in a region abutting the second edge of the discharge chute, the first width being less than the second width; and

(d) a plurality of chute discharge openings formed in the bottom surface of the discharge chute such that one chute discharge opening is formed in the bottom surface of the discharge chute underlying each diverging open channel, each chute discharge opening being located along the second edge of the discharge chute and having a width that is more than half the second width of the diverging open channel in which the discharge opening is formed.

11. A method of distributing granular fertilizer while operating a walk behind lawn mower, comprising the steps of:

(a) mounting a hopper behind the lawn mower such that a first pair of drive wheels rotatably affixed to an impeller within the hopper frictionally engages a second pair of rear mower wheels;

(b) resiliently urging the first pair of drive wheels into frictional engagement with the second pair of rear mower wheels; and

(c) mounting at least one adjustable clamp onto a component of the lawn mower such that slidable adjustment of the clamp varies the frictional engagement between the first pair of drive wheels and the second pair of rear mower wheels.

5,485,964

METHOD AND APPARATUS FOR SORTING PLASTIC ITEMS

Hubert J. Booth; Paul H. Steagall, III, and Michael W. Wright, all of Florence, S.C., assignors to Wellman, Inc., Johnsonville, S.C.

Division of Ser. No. 850,850, Mar. 13, 1992, Pat. No. 5,344,026, which is a continuation-in-part of Ser. No. 669,043, Mar. 14, 1992, abandoned. This application Sep. 1, 1994, Ser. No. 299,244

Int. Cl.[6] B02C *13/20;19/00;25/00*

U.S. Cl. 241—27 **17 Claims**

1. An apparatus for disengaging interlocked bottle clusters into single bottles comprising:

(a) a housing;

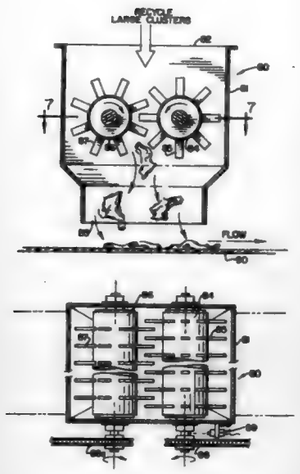
(b) a first movable support for fingers attached within said housing;

(c) a first plurality of fingers each having a base end and a striking end, with said base end attached to said first movable support and said striking end extending away from said support;

(d) a second movable support for fingers attached within said housing;

(e) a second plurality of fingers each having a base end and a striking end, said base end attached to said first movable support, said striking end extending away from said support; and

(f) means for moving said first and second movable supports, said moving means being configured so that said first movable support moves at an angular velocity of at least about three times the angular velocity of said second movable support;



wherein said first movable support and said second movable support are positioned relative to each other so that as said first movable support moves said first plurality of fingers, and as said second movable support moves said second plurality of fingers, said striking ends of said first plurality of fingers intermesh but do not contact said striking ends of said second plurality of fingers.

5,485,965

AUTOMATIC PRODUCT FEED AND METHOD FOR CONTROLLING A MILLING ROLLER MILL

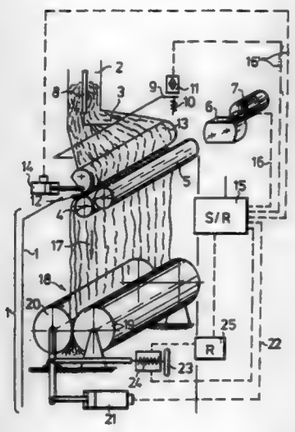
Rene Hostettler, Sirnach, and Ernst Maechler, Uzwil, both of, Switzerland, assignors to Buehler AG, Switzerland

Continuation of Ser. No. 910,187, Aug. 13, 1992, Pat. No. 5,361,995. This application Nov. 4, 1994, Ser. No. 335,980

Claims priority, application Switzerland, Dec. 12, 1990, 3931/90

Int. Cl.[6] B02C *25/00*

U.S. Cl. 241—29 **22 Claims**



1. A method for controlling the grinding in a multiple roll milling roller mill, the mill having two pairs of grinding rollers arranged one above the other, a sensor for sensing product feed, a product feed device for regulating product feed to the grinding rollers, and means for engaging and disengaging each pair of grinding rollers, the method comprising the steps of:

generating an analog signal using the sensor, the analog signal being proportional to the product flow in the mill;

regulating the product feed using the analog signal;

generating an independently adjustable digital signal using the sensor; and

controlling the means for engaging and disengaging the pairs of grinding rollers using the digital signal.

5,485,966

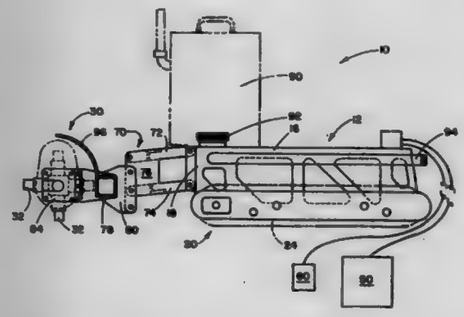
REMOTELY CONTROLLED CHOPPING MACHINE FOR TANK CLEANING

Robert R. Crudeur, Sulphur, La., assignor to Serv-Tech, Inc., Houston, Tex.

Filed May 3, 1994, Ser. No. 237,455

Int. Cl.[6] B02C *13/02;25/00*

U.S. Cl. 241—39 **15 Claims**



1. An apparatus useful for chopping waste on the interior bottom of a storage tank having an entryway adjacent said bottom, comprising:

a frame;

a traction drive means for moving said apparatus, said traction drive means being detachably mounted on said frame;

a support assembly detachably mounted to a forward end of said frame and having a pair of upper and lower arms detachably connected to said frame at a first end of said arms, a plate member fixedly connected to a second end of said arms, and a pair of spaced apart flange mounting plates each fixedly attached to said plate member;

a chopping assembly rotatably mounted in a pair of bearing assemblies, said bearing assemblies being detachably connectable to a respective one of said flange mounting plates of the support assembly, and said chopping assembly being separately insertable through said entryway;

a hydraulic power means for independently powering said traction drive means and said chopping assembly; and,

a hydraulic power means for regulating the operation of said hydraulic power means.

5,485,967

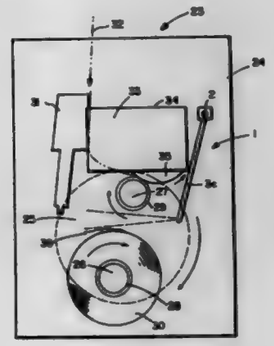
YARN WINDING APPARATUS WITH MANIFOLD ASSEMBLY MOVABLE BETWEEN BLOWING AND STANDBY POSITIONS RELATIVE TO A PAIR OF BOBBIN CARRYING SPINDLES

Billy E. Ray, Liberty; Gregg T. Cox, Central; Fred D. Bryant, Six Mile; Jimmie A. Ray, Pickens; B. Joe Christopher, Easley, and Dan C. Holcombe, Norris, all of S.C., assignors to BASF Corporation, Mt. Olive, N.J.

Filed Feb. 3, 1994, Ser. No. 191,570

Int. Cl.[6] B65H *54/00*

U.S. Cl. 242—18 A **11 Claims**



1. A yarn winding apparatus comprising:

a turret which carries at least one pair of parallel spindles for holding bobbins on which yarn is wound, said turret being rotatable so as to present one of the spindles to a yarn-winding position wherein yarn is wound about the bobbin thereon to form a yarn package, and the other of the spindles to a doffing position wherein a full yarn package with a free yarn end wound around the bobbin may be removed from the spindle; and

a manifold assembly for directing a stream of air between said pair of spindles to prevent entanglement of the free yarn end wound around the bobbin carried by the other of the spindles when in said doffing position from becoming entangled with the yarn being would about the bobbin carried by the one spindle when in said yarn-winding position, said manifold assembly including;

(a) an elongate tubular manifold element positioned parallel to said pair of spindles and having at least one jet which directs a curtain of air between said pair of spindles when said one spindle is in said yarn-winding position and said other spindle is in said doffing position;

(b) a manifold drive for swinging said elongate tubular manifold between blowing and stand-by positions wherein said elongate tubular member is disposed closer and farther from said spindles, respectively, wherein said at least one jet directs the curtain of air between said spindles when said elongate tubular manifold element is in said blowing position; and

(c) a tubular riser having one end fluid-connected to said tubular manifold and an opposite end operatively connected to said manifold drive, wherein said manifold drive pivots said tubular riser which in turn swings said elongate tubular manifold between said blowing and stand-by positions.

5,485,968

TAKE-UP REEL FOR METALLIC FILAMENT

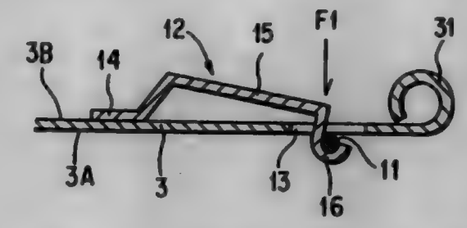
Kaoru Fujioka, Tochigi, Japan, assignor to Bridgestone Metalpha Co., Ltd., Tokyo, Japan

Filed Sep. 22, 1993, Ser. No. 125,376

Claims priority, application Japan, Sep. 28, 1992, 4-282308

Int. Cl.[6] B65H *75/28;51/015*

U.S. Cl. 242—125.2 **8 Claims**



1. A filament take-up reel having a winding drum for accepting a winding of a filament thereon, said take-up reel comprising:

said winding drum having first and second axial ends;

first and second flanges having substantially circular perimeters disposed respectively at said first and second axial ends of the winding drum and having a diameter greater than a diameter of said drum to hold said filament therebetween, said first and second flanges each having facing inner surfaces and outer surfaces;

retaining means for retaining said filament disposed on at least said first flange;

said retaining means including a catcher having base portion at a first end of said catcher fixed to the outer surface of said first flange, a hook portion at a second end of said catcher, an intermediate portion connecting said base and hook portions, and said first flange defining an access hole having a size large enough to accept said hook portion for passage therethrough from a first position outside of said access hole to a second position beyond a plane of said access hole and between said first and second flanges

said hook portion being configured to accept and hold said filament between said hook portion and said inner surface of said first flange;

said intermediate portion extending from said base portion at a trajectory displacing said intermediate portion outwardly from said outer surface of said first flange and toward said access hole in said first flange to position said hook portion in functional alignment with said access hole; and

said catcher having a resiliesce sufficient to permit elastic deflection of said intermediate portion to displace said hook portion from said first position to said second position when a force is applied thereto, thereby allowing said hook portion to return toward said first position upon removal of said force for clamping said filament between said hook portion and said inner surface of said first flange.

5,485,969

REVERSE ROTATION PREVENTIVE MECHANISM FOR FISHING REEL

Nobuyuki Yamaguchi, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Filed Aug. 31, 1993, Ser. No. 114,337

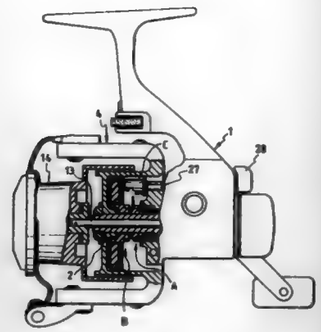
Claims priority, application Japan, Sep. 1, 1992, 4-067063 U

Int. Cl.[6] A01K *89/01;* **F16D** *55/02*

U.S. Cl. 242—247 **11 Claims**

1. A reverse rotation preventive mechanism for a fishing reel having a body and a rotary member rotatably supported on said body, said mechanism comprising:

first preventive means for permitting said rotary member to rotate in a first direction relative to said body and preventing said rotary member from rotating relative thereto in a second



direction opposite to said first direction when rotational torque exerted on said rotary member in said second direction is below a predetermined value, said first preventive means including a roller-type one-way clutch having an inner race member, and outer race member, and a plurality of roller members interposed between said inner and outer race members, wherein at least one of said inner race member, outer race member, and roller members is formed of synthetic resin whereby said rotary member rotates in said second direction against a frictional resistance of said first preventive member when said rotational torque exceeds said predetermined value; and

a second preventive means for permitting said rotary member to rotate in said first direction relative to said body and preventing said rotary member from rotating in said second direction relative thereto when said rotational torque exceeds said predetermined value.

5,485,970

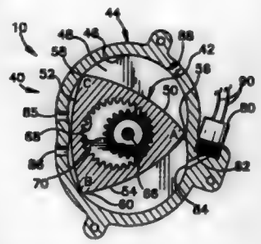
SEAT BELT PRETENSIONER

Charles E. Steffens, Jr., Washington, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Mar. 21, 1994, Ser. No. 210,931

Int. Cl.[6] B60R *22/46*

U.S. Cl. 242—374 **19 Claims**



1. An apparatus for tensioning belt webbing to restrain movement of a vehicle occupant, said apparatus comprising:

a rotary trochoidal motor comprising a housing having a wall with an inner surface defining a chamber, a rotor rotatable and orbitable in said chamber about an axis and having a fluid engagement surface, an output shaft supported for rotation relative to said housing, and means for transmitting rotational force from said rotor to said output shaft to rotate said output shaft;

a fluid source actuatable to supply fluid under pressure;

means for metering and directing fluid under pressure from said fluid source when actuated into said chamber and against said fluid engagement surface of said rotor to rotate said rotor in a first direction of rotation in said chamber and thereby to rotate said output shaft;

a belt webbing engagement member engageable with the belt webbing to tension the belt webbing; and

means for interconnecting said output shaft with said belt webbing engagement member to transmit force from said rotating output shaft to said belt webbing engagement member to tension the belt webbing.

5,485,971

SEAT BELT RETRACTOR

Hidekazu Nakaya, Osaka, and Toshihiro Amatsu, Suita, both of, Japan, assignors to Ashimori Kogyo Kabushiki Kaisha, Osaka, Japan

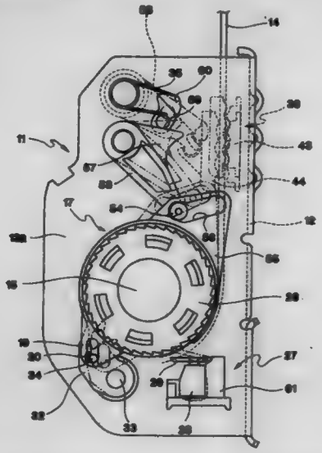
PCT No. PCT/JP93/01260, § 371 Date Apr. 21, 1994, § 102(e) Date Apr. 21, 1994, PCT Pub. No. WO94/05528, PCT Pub. Date Mar. 17, 1994

PCT Filed Sep. 7, 1993, Ser. No. 211,969

Claims priority, application Japan, Sep. 7, 1992, 4-69077 U

Int. Cl.[6] B60R *22/405;22/42*

U.S. Cl. 242—381.1 **7 Claims**



4. A seat belt retractor for mounting on a vehicle body, comprising:

a frame;

a webbing reel shaft rotatably mounted on the frame;

a lock plate rotatably mounted on the webbing reel shaft;

inertial detecting means for detecting acceleration of the vehicle body, abnormal inclination of the vehicle body and/or rapid rotation of the webbing reel shaft in the webbing withdrawal direction and linking the lock plate to the webbing reel shaft;

locking means for locking the rotation of the webbing reel shaft when actuated by a rotation of the lock plate accompanying a rotation of the webbing reel shaft when the lock plate and the webbing reel shaft are linked together, the locking means comprising a ratchet wheel which rotates integrally with the webbing reel shaft and a pawl pivotally mounted on the frame and urged away from the ratchet wheel which pawl engages with the ratchet wheel guided by a guide hole formed in the lock plate;

a clamp device mounted for clamping the webbing withdrawn from the webbing reel shaft and a clamp actuator arm for actuating the clamp device by moving in cooperation with the rotation of the lock plate, the clamp device comprising first and second clamp members disposed facing each other with the webbing between them and a clamp case for holding the first clamp member in such a way that it can move toward and away from the second clamp member and holding both of the clamp members in such a way that they can simultaneously move in the length direction of the webbing, which clamp actuator arm is pivotally mounted on the frame and has its end portion fitted in a channel in the first clamp member and moving in cooperation with the lock plate pivots in the webbing withdrawal direction and pushes the first clamp member toward the second clamp member;

wherein the end portion of the clamp actuator arm has a circular arcuate surface which in cross section forms part of a circle having a diameter greater than the thickness of this end portion and having its center offset toward the webbing reel shaft from a centerline of the clamp actuator arm.

5,485,972

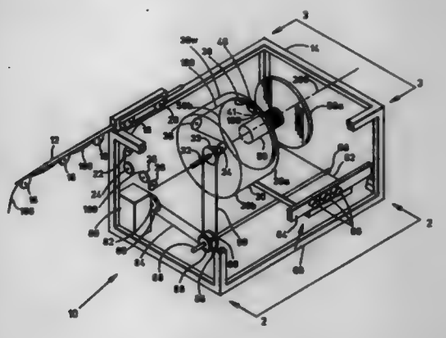
CABLE RECOVERY WINDER

Herbert L. Mummery, deceased, late of Kaneohe; Anthony H. Koyamatsu, Kaneohe, and Michael B. Young, Mililani, all of Hi., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 19, 1993, Ser. No. 155,057

Int. Cl.[6] B65H *75/38*

U.S. Cl. 242—386 **12 Claims**



1. An apparatus for producing a wound cable pack having a uniform pitch and incorporating a twist per turn in a cable, comprising:

a drum having an axis of rotation, said dram being constrained to rotational movement around said axis of rotation;

a non-rotating spool sized to fit within said drum and having a central longitudinal axis coaxial with said drum's axis of rotation, said spool being constrained to linear movement along said axis of rotation within said drum;

a cable feeding assembly mounted to said drum for rotation therewith, said cable feeding assembly leading said cable onto said spool from a feed point such that a twist is induced in said cable as said cable feeding assembly orbits about said spool;

a drive mechanism operatively connected to said drum and said spool for rotating said drum and, in synchronism therewith, for imparting said linear movement to said spool, wherein said twist per turn is induced in said cable for each rotation of said drum, and wherein said uniform pitch is determined by the amount of said linear movement for each rotation of said drum; said drive mechanism comprising:

a linear traversing mechanism operatively connected to said spool;

a drive shaft operatively connected to said linear traversing mechanism and to said drum, wherein rotation of said drive shaft causes said rotational movement of said drum and said linear movement of said spool; and

a motor operatively connected to said drive shaft for rotating said drive shaft.

5,485,973

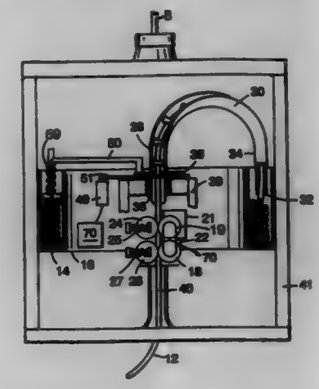
STORAGE OF CABLE

Peter Nellessen, Jr., Palm Beach Gardens, Fla., assignor to Benthos, Inc., North Falmouth, Mass.

Continuation of Ser. No. 14,422, Feb. 5, 1993, abandoned. This application Sep. 26, 1994, Ser. No. 312,500

Int. Cl.[6] B65H *75/34;* **B63G** *8/00*

U.S. Cl. 242—386 **19 Claims**



1. Apparatus for storing cable comprising

a receptacle for the cable, and

a mechanism for coiling the cable in the receptacle, the mechanism comprising

an arm mounted at an axis to receive the cable and to deliver the cable to a feed end,

a cable driver mounted to force the cable into the arm at the axis and toward the feed end causing rotation of the arm about the axis, and

a distinct arm driver mounted to assist rotation of the arm about the axis while the cable is being delivered into the arm at the axis,

the cable driver and the arm being configured to impart a twist to the cable as it passes from the axis to the free end.

5,485,974

DEVICE FOR SLITTING STRIP METAL

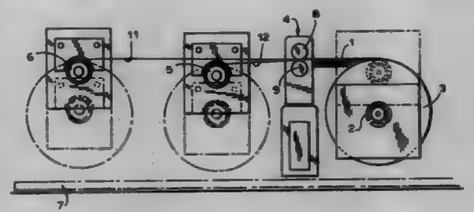
Egon Hohfeld, An der langen Hecke 20, D-58644 Iserlohn, Germany

Filed Jul. 7, 1994, Ser. No. 256,421

Claims priority, application Germany, Jan. 9, 1992, 42 00 351.2

Int. Cl.[6] B65H *35/02*

U.S. Cl. 242—525.6 **3 Claims**



1. A method of splitting a metal strip wound up in a coil on a feed spool, the method comprising the steps of:

supporting the feed spool for rotation about a horizontal axis;

passing the strip along a generally horizontal feed plane through a rotary-blade cutter and subdividing the strip at the cutter into a plurality of even substrips and a plurality of odd substrips interleaved with the even substrips;

guiding the even substrips upward in an upper plane forming an acute angle with the feed plane from the cutter to a respective

even-strip windup spool and winding the even substrips up on the even-strip windup spool;

guiding the odd substrips downward in a lower plane forming an acute angle with the feed plane from the cutter to a respective odd-strip windup spool and winding the odd substrips up on the odd-strip windup spool;

rotatably driving the cutter and the feed spool at substantially the same speed;

rotatably driving both the windup spools at a speed slightly greater than the speed of the cutter and feed spool to pull the substrips from the cutter and the strip from the feed spool; and

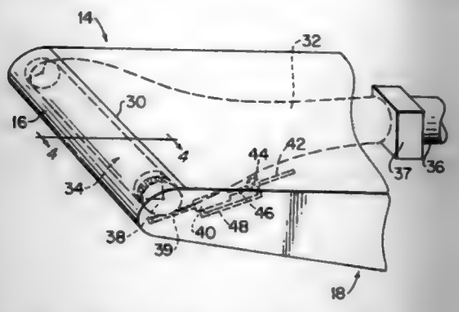
vertically adjusting the positions of the spools to maintain the planes in substantially the same orientation relative to one another.

5,485,975

SLOTTED COWL INLET LIP FOR INTRODUCING HIGH PRESSURE AIR

Runyon H. Tindell, Old Bethpage, N.Y., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Jul. 19, 1994, Ser. No. 277,506
Int. Cl.[6] B64D *29/06*
U.S. Cl. 244—53 B **5 Claims**



1. An air delivery system for an air inlet conduit, the conduit having a lower lip, the system comprising:

a first transverse slot formed through an upper surface of the lower lip and positioned in parallel adjacency to a leading edge of the lip;

a second transverse slot formed through a lower surface of the lower lip and positioned in parallel adjacency to the leading edge of the lip;

vane means transversely located in the interior of the lip, between the upper and lower surfaces, and internally aligned with the first and second transverse slots;

vane members extending from the vane means for selectively blocking one or the other of the slots;

a duct located within the interior of the lower lip for delivering pressurized air to the vane means; and

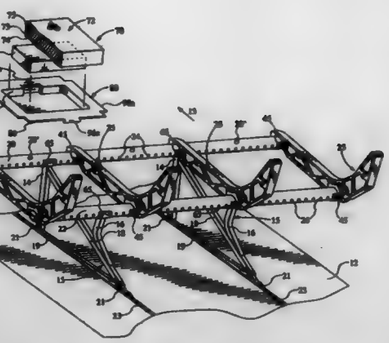
means for selectively displacing the vane means for blocking one or the other of the slots.

5,485,976

PLASTIC BOTTOM DIAPHRAGM FOR AIRCRAFT SEAT

Kevin Creed, and Klay Gilbert, both of Lindsay, Tex., assignors to Weber Aircraft, Inc., Gainesville, Tex.

Filed Jan. 12, 1994, Ser. No. 180,566
Int. Cl.[6] B64D *11/06;25/00*
U.S. Cl. 244—118.6 **22 Claims**



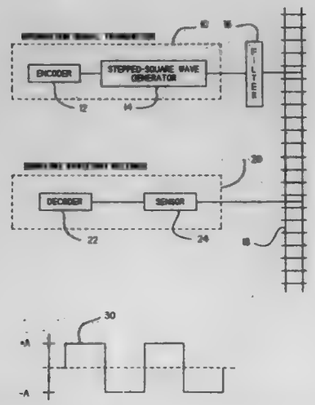
1. A passenger seat comprising: a base frame having a pair of spaced stretcher members and a pair of spreaders; a seat cushion having an energy absorbing portion formed of buoyant material and a comfort portion, said energy absorbing portion being positioned adjacent said comfort portion; a bottom diaphragm extending between said stretcher members, said bottom diaphragm having an open receptacle for receiving said energy absorbing portion of said seat cushion and for positioning said energy absorbing portion below the spinal column of a passenger seated on said comfort portion; and rim means on said bottom diaphragm for engaging said spaced stretcher members and for supporting said comfort portion of said seat cushion.

5,485,977

REDUCED HARMONIC SWITCHING MODE APPARATUS AND METHOD FOR RAILROAD VEHICLE SIGNALING

James P. Brown, Allison Park, and Robert P. Bozio, Pittsburgh, both of Pa., assignors to Union Switch & Signal Inc., Pittsburgh, Pa.

Filed Sep. 26, 1994, Ser. No. 312,536
Int. Cl.[6] B61L *27/00*
U.S. Cl. 246—167 R **9 Claims**



1. A signaling apparatus for transmitting information from wayside to a railway vehicle via rails of a track comprising:

a. an information signal transmitter having a stepped-square wave generator for generating a signaling waveform, said signaling waveform having a plurality of square wave signals;

b. at least a portion of a first preselected duty cycle of at least one of said plurality of square wave signals overlaps at least a portion of a second preselected duty cycle of at-least one other of said plurality of square wave signals so that said signaling waveform is generally a stepped-square waveform, said signaling waveform having information encoded thereupon;

c. said transmitter being a switching-mode transmitter and transmitting said signaling waveform onto such rails; and

d. said stepped-square wave generator further including

(1) a multi-tap transformer having a plurality of transformer inputs and at least one transformer output,

(2) a plurality of semiconductor switches connected to selected ones of said plurality of transformer inputs, said semiconductor switches for selectively impressing a predetermined output voltage across said at least one transformer output,

(3) a switching controller electrically connected to selected ones of said plurality of semiconductor switches, said switching controller for producing a plurality of drive signals for selected ones of said plurality of semiconductor switches, and

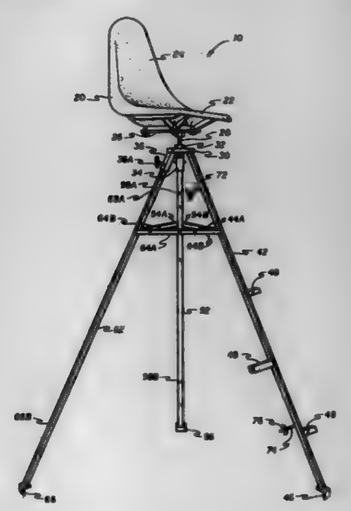
(4) an encoder electrically connected to said switching controller, for encoding said information signal onto said signaling waveform.

5,485,978

HUNTER'S TRIPOD STAND

Harvey Hernandez, 4646 Wales, Corpus Christi, Tex. 78413

Filed Apr. 26, 1994, Ser. No. 233,853
Int. Cl.[6] F16M *11/24*
U.S. Cl. 248—165 **18 Claims**



1. An elevated stand configured for storage or transport comprising:

a rotatable body supporting member;

a support base connected to said rotatable body supporting member, said support base including a base platform and a plurality of legs comprising a first leg and a second leg;

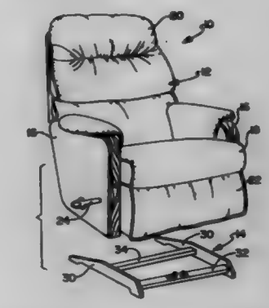
said first leg there to includes at least one storage rod for securing said second leg, a plurality of rungs spaced along a portion of said first leg and a foot rest segment located above said rungs, and said second leg being a detachable leg and further including a foot rest segment, whereby said second leg can be attached to said first leg in a storage or transport configuration.

5,485,979

CHAIR BASE

Larry P. LaPointe, Temperance; Jonathan R. Seul, LaSalle, and Karl J. Komorowski, Petersburg, all of Mich., assignors to La-Z-Boy Chair Company, Monroe, Mich.

Filed Jan. 12, 1994, Ser. No. 180,589
Int. Cl.[6] F16M *11/24*
U.S. Cl. 248—188.2 **22 Claims**



1. In a motion chair having an upholstered chair frame supported for movement on a base assembly, said base assembly comprising:

a pair of laterally-spaced side rails each having a sidewall portion with a front and rear slot formed in said sidewall portion and each of said side rail being of a one piece construction;

a front cross rail having an end portion at each end thereof and a transverse flange portion including first tab means extending outwardly beyond said end portions, Said first tab means adapted for receipt within said front slots of said laterally-spaced side rails;

a rear cross rail having an end portion at each end thereof and a transverse flange portion including second tab means extending outwardly beyond said end portions, said second tab means adapted for receipt within said rear slots of said laterally-spaced side rails;

said front and rear cross rails each being of a one piece construction and being disposed between said laterally-spaced side rails such that said end portions abut said sidewall portions; and

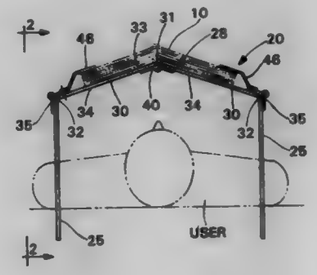
locking means for lockingly retaining each of said first and second tab means within their respective front and rear slots.

5,485,980

INVERTED BOOK STAND

Paul Luccia, 427 W. County Line Rd., Huntingdon Valley, Pa. 19006

Filed Nov. 28, 1994, Ser. No. 345,313
Int. Cl.[6] A47B *23/00*
U.S. Cl. 248—445 **10 Claims**



1. An inverted book stand comprised of

a book support platform having two transparent panels, each having an inner edge, an outer edge, a book support surface and a bottom surface, the panels are pivotally connected along the inner edges and can be moved from a first, stowed/transport position, where the panels are folded together and in close proximity to each other, to a second, in use position, where the panels are opened to form an angle of less than 180°;

integral limiting means at the pivotal connection between the panels to maintain the angle between panels when they are in the open position;

support members pivotally connected to the outer edge of each panel which can be moved from a first, stowed position, wherein each support member is in a closed position parallel and adjacent to the respective panel surface, and a second, in use position, where the support member is pivoted to an angle of more than 90° from the panel surface; and

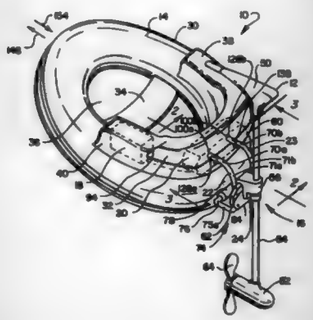
integral limiting means at the pivotal connection between each support member and the panels to limit the angle formed between them when the support members are opened whereby the book stand can be folded to a flat, compact size by folding the panels and the support members to the stowed positions.

5,485,981

MOTOR MOUNT ASSEMBLY FOR FLOAT TUBE

Gregory J. Lindahl, 1614 Montana Ave., Gladstone, Mich. 49837

Filed Aug. 2, 1994, Ser. No. 285,337
Int. Cl.[6] F16M *1/00*
U.S. Cl. 248—641 **19 Claims**



1. A motor mount assembly for supporting an outboard motor of a variety having a mounting clamp and given operational thrust upon a float tube having a backrest portion with a pocket cavity of given widthwise dimension and a closing flap, and a tube portion, comprising:

a thrust transfer member dimensioned in correspondence with said pocket cavity for insertion and retention therein having two spaced apart receiving channels with openings facing horizontally outwardly from said pocket cavity when said thrust transfer member is operatively positioned within said pocket cavity;

first and second suspension members each having a coupling portion slidably insertable within one of said receiving channels, and a thrust transfer portion depending downwardly therefrom; and

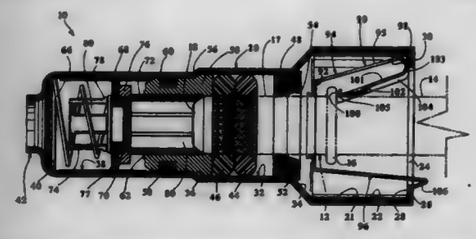
a motor mounting block coupled with said first and second suspension members at said thrust transfer portion thereof, and having an upwardly disposed clamp receiving portion for receiving said mounting clamp.

5,485,982

QUICK CONNECTOR WITH TUBE ACTIVATED CHECK VALVE

Stephen H. Gunderson, Marine City, Mich., assignor to Bundy Corporation, Warren, Mich.

Filed Sep. 16, 1994, Ser. No. 307,378
Int. Cl.[6] F16L *37/00*
U.S. Cl. 251—149.6 **19 Claims**



1. A quick connector coupling for forming a joint in a fluid line system comprising:

a female connector body defining a bore, said bore extending axially inwardly into said connector body from an entrance, a radial rim being defined in said connector body adjacent said entrance, said radial rim defining an interior abutment surface;

a male member received within said bore of said connector body and having an enlarged upset portion;

a retainer disposed within said bore of said connector body and including retention legs having members which extend between said upset portion of said male member and said interior abutment surface to retain said male member within said bore; and

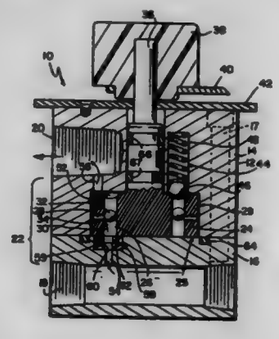
a check valve disposed within said bore of said connector body, said check valve including a guidance sleeve fit within said bore and having a valve seat, and a plunger movable within said guidance sleeve and having a solid central portion, a hollow outer cylindrical portion extending axially outwardly from said central portion and into said guidance sleeve, a hollow inner cylindrical portion extending axially inwardly from said central portion, and a valve seal engagable with said valve seat, said plunger being movable within said guidance sleeve from a checked position, wherein said valve seat contacts said valve seal, to an unchecked position, wherein said valve seat is separated from said valve seal.

5,485,983

SEAL APPARATUS FOR A FLOW CONTROL VALVE

James A. Voege; Richard B. Voege, and John S. Voege, all of Carmel, Ind., assignors to AMP Corporation, Carmel, Ind.

Filed Aug. 23, 1994, Ser. No. 294,622
Int. Cl.[6] F16K *3/32;51/00*
U.S. Cl. 251—206 **16 Claims**



1. In a calibrated gas metering valve including a valve body having a gas inlet and a gas outlet, and a metering element located therebetween, the metering element including a passageway formed therethrough to permit gas flow through the passageway from the gas inlet to the gas outlet, the improvement comprising:

a cylindrical sealing disk formed to include an aperture aligned with the passageway and the gas inlet to permit gas flow through the sealing disk, the sealing disk providing a plastic seal abutting and extending between the valve body and the metering element, the sealing disk being formed to include a recessed portion surrounding the aperture; and

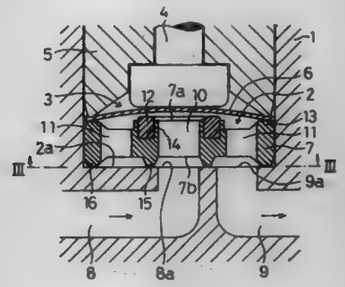
an O-ring located in the recessed portion of the sealing disk.

5,485,984

DIAPHRAGM VALVE

Shigeru Itoi; Michio Yamaji, and Tetsuya Kojima, all of Osaka, Japan, assignors to Masako Kiyohara, Kumamoto, Japan

Filed May 27, 1994, Ser. No. 250,609
Claims priority, application Japan, Jun. 2, 1993, 5-131939
Int. Cl.[6] F16K *7/12*
U.S. Cl. 251—331 **8 Claims**



1. A diaphragm valve comprising:

a valve body having a chamber, a fluid inlet passage and a fluid outlet passage communicating with said chamber through openings in a wall of said chamber;

a diaphragm disposed in said chamber and dividing said chamber into an operating chamber and a valve chamber;

a removable elastic seating ring disposed against said wall in said valve chamber, said seating ring having a first passage extending therethrough and communicating with said fluid inlet passage and second passage means communicating with said valve chamber on opposite sides of said seating ring, said seating ring having a valve seat disposed thereon and surrounding said first passage on a first surface of said seating ring facing said diaphragm;

valve operating means for selectively moving said diaphragm into contact with said valve seat to block flow of a fluid from said fluid inlet passage to said valve chamber; and,

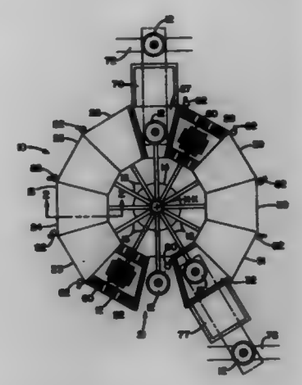
a diaphragm holder for pressing against a peripheral region of a first surface of said diaphragm, said seating ring having a peripheral projection on its first surface against which said diaphragm is pressed to thereby clamp said diaphragm, said seating ring having first and second annular projections on a second surface of said seating ring facing said wall, said first annular projection surrounding said first passage and said second annular projection extending along the periphery of said second surface, said first annular projection extending outwardly from the second surface of the seating ring further than said second annular projection whereby said first annular projection forms a fluid seal with said wall when said diaphragm is pressed against the peripheral projection on the first surface of the seating ring.

5,485,985

METHOD AND APPARATUS FOR HEAT TREATING

John R. Eppeland, St. James, and Jack E. Mannerud, Coon Rapids, both of Minn., assignors to BGK Finishing Systems, Inc., Blaine, Minn.

Division of Ser. No. 59,191, May 6, 1993, Pat. No. 5,306,359, which is a continuation of Ser. No. 824,378, Jan. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 788,252, Nov. 5, 1991, abandoned. This application Jan. 27, 1994, Ser. No. 187,612
Int. Cl.[6] C21D *11/00*
U.S. Cl. 266—87 **30 Claims**



1. An apparatus for metallurgically heat treating a plurality of discreet, individually movable aluminum alloy parts, said apparatus comprising a plurality of successive stations for heat treating said parts, said plurality of stations arranged in a line of travel with means for one of said parts in each of said stations to be heat treated with direct radiation from at least one infrared radiation lamp until said part attains a final desired state of metallurgical heat treatment after heat treatment in said stations, means for placing and holding said part in one of said plurality of stations and heat treating said part in said one of said plurality of stations with a first infrared radiation intensity independent of an infrared radiation intensity in others of said plurality of stations, said first infrared radiation intensity selected, at least in part; in response to a measured initial temperature of said part prior to said part being heat treated in said first station and means for holding said part substantially stationary relative to said line of travel in said first station during said heat treatment for said part to be heated by said first infrared radiation intensity until a temperature of said part is elevated to a temperature greater than said initial temperature and for said part to at least partially attain said desired final state of metallurgical heat treatment, means for moving said part along said line of travel to a second one of said plurality of stations and holding said part substantially stationary relative to said line of travel in said second one of said plurality of stations with a second infrared radiation intensity independent of an infrared radiation intensity in others of said plurality of stations.

5,485,986

FURNACE WITH IN SITU FOAMED INSULATION AND PROCESS FOR ITS MANUFACTURE

Günther Schmidt, Waldbröl; Peter Randel, Langenfeld; Hans-Werner Engels, Troisdorf, and Bernd Geick, Eitorf, all of, Germany, assignors to Huls Troisdorf AG, Troisdorf, Germany

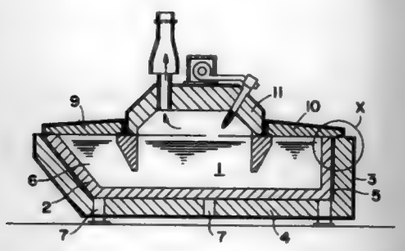
PCT No. PCT/EP92/01826, § 371 Date Jun. 2, 1994, § 102(e) Date Jun. 2, 1994, PCT Pub. No. WO93/04010, PCT Pub. Date Mar. 4, 1993

PCT Filed Aug. 12, 1992, Ser. No. 193,184

Claims priority, application Germany, Aug. 12, 1991, 41 26 628.5

Int. Cl.[6] C21B *7/04*

U.S. Cl. 266—280 **25 Claims**



1. A furnace (1) comprising an inner wall (2), an outer wall (3) and thermal insulation (4) arranged between the inner wall (2) and the outer wall (3), and wherein the thermal insulation (4) comprises an inorganic foam, said foam having been foamed up and hardened in situ from an inorganic hardenable mass, the mass containing,

per 100 parts by weight of a reactive solid stone-forming component,

40–250 parts by weight of a alkaline hardener which effects the hardening reaction of the reactive solid stone-forming component

40–250 parts by weight of fillers, and a blowing agent.

5,485,987

CYLINDER PISTON DEVICE

Klaus-Dieter Jobelius, Boppard; Helmut Morgen, Mannebach; Heinrich Spurzem, Mayen, and Stefan Völpel, Koblenz, all of, Germany, assignors to Stabilus GmbH, Koblenz-Neuendorf, Germany

Filed Jan. 15, 1992, Ser. No. 821,190

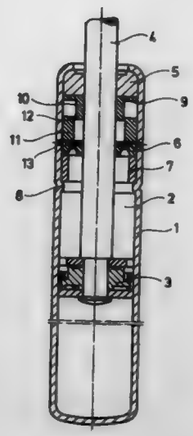
Claims priority, application Germany, Jan. 21, 1991, 41 01 567.3

Int. Cl.[6] F16F *9/02;9/34;* E05F *3/02;15/02*

U.S. Cl. 267—64.28 **55 Claims**

1. A cylinder piston device comprising a cylinder member having an axis, a circumferential wall and two ends and defining a cavity within said cylinder member axially between said two ends, a piston rod member axially guided through at least a first one of said two ends by piston rod guiding and sealing means, a volume of pressurized fluid within said cavity and acting onto said piston rod member and an emergency exit permitting escape of fluid from said cavity under emergency conditions, said piston rod member being telescopically movable with respect to said cylinder member against the action of said pressurized fluid, said cylinder member and said piston rod member having respective basic operational shapes, said basic operational shapes of said cylinder member and said piston rod member being substantially unchangeable in case of an opening of said emergency exit,

said emergency exit comprising fluid passage means for connecting said cavity with atmosphere and a valve member, said valve member being changeable from a closing status to an opening status in response to a predetermined value of at least one of: pressure of said fluid and temperature at a temperature-sensing location of said cylinder piston device,



said fluid passage means being closed by said valve member in said closing status thereof and permitting escape of fluid in the opening status of said valve member,

said valve member being an annular valve member located radially between said circumferential wall and said piston rod member and being subject to pressure by said pressurized fluid, said annular valve member being axially supported against pressure by said pressurized fluid by an annular support face, said annular support face supporting only one of two radially adjacent ring portions of said annular valve member, a second one of said ring portions being unsupported, said first and said second ring portions being axially shearable with respect to each other in response to said predetermined value of said pressurized fluid.

5,485,988

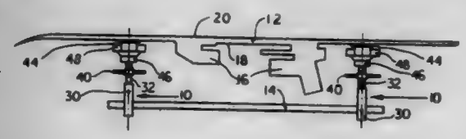
CLAMPING MEANS FOR SKI, OR THE LIKE

Lesław Nobilec, 544 Tennyson Ave., Syracuse, N.Y. 13204

Filed May 31, 1994, Ser. No. 251,085

Int. Cl.[6] B25B *11/00*

U.S. Cl. 269—21 **11 Claims**



1. A device for releasably engaging a workpiece surface to hold the workpiece in a temporarily fixed position in spaced relation to rigid support means, said apparatus comprising:

a) clamp means for releasable attachment to said support means;

b) a resilient suction cup fixed with respect to said clamp means, said suction cup having a peripheral lip engageable with said workpiece surface and surrounding a concave surface having a central axis, said concave surface defining a volume variable in accordance with the degree of concavity of said concave surface;

c) a member having a contact portion movable with respect to said suction cup in outwardly spaced relation to said peripheral lip in a direction substantially parallel to said central axis, whereby movement of said contact portion to urge said workpiece surface in a direction away from said suction cup increases said volume and the clamping force applied to said surface; and

d) means for selectively moving said member and contact portion into and out of engagement with said workpiece surface.

5,485,989

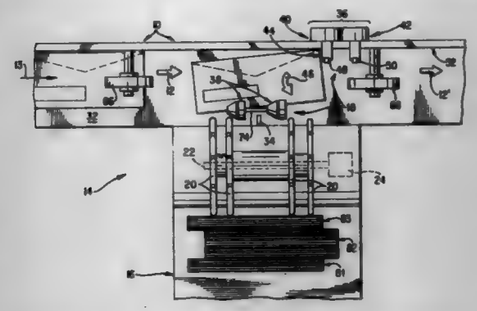
DIVERTER AND ON-EDGE STACKER

Steve W. McCay, Morrisville; Keith A. Harshman, Apex, both of N.C.; Stephen J. Gillette, Whitehall, and Dale A. Wentzel, Blandon, both of Pa., assignors to Bell & Howell Phillipsburg Company, Lehigh Valley, Pa.

Filed Aug. 10, 1994, Ser. No. 288,106

Int. Cl.[6] B65H *5/00*

U.S. Cl. 271—2 **20 Claims**



1. A diverter and on-edge stacker for envelopes, comprising:

a conveying path for envelopes;

a spider wheel having legs and therebetween gaps, said gaps defining an angular pitch therebetween;

means for sensing an envelope being transported into one of said gaps;

means for rotating said spider wheel by said angular pitch in response to sensing by said means for sensing of an envelope being transported into one of said gaps;

means for diverting conveyed envelopes selectively from said conveying path, said means for diverting including:

means for skewing a conveyed envelope, and

means for capturing and transporting the skewed envelope away from said conveying path and into one of said gaps.

5,485,990

IMAGE FORMING APPARATUS

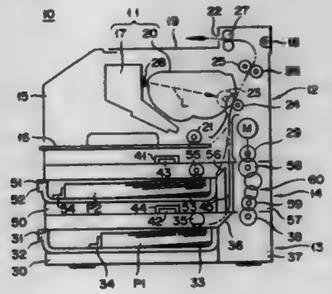
Takeshi Kato, Toyokawa, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Nov. 8, 1994, Ser. No. 337,822

Claims priority, application Japan, Nov. 12, 1993, 5-283766

Int. Cl.[6] B41F *13/58;* G03G *15/00*

U.S. Cl. 271—9.08 **20 Claims**



1. An image forming apparatus comprising:

a main body including an image forming system;

a manual feeding tray included in said main body to feed a recording medium manually;

a motor included in said main body;

a standard feeding unit disposed below said main body and including a feeding system to feed a recording medium accommodated therein and a gear system on an upper part of said standard feeding unit which transmits drive force generated by said motor only to said feeding system, said standard feeding unit being separably connected with said main body so as to optionally dispose an optional feeding unit between said main body and said standard feeding unit, wherein a direction of feeding a recording medium from said manual feeding tray is the same as a direction of feeding a recording medium from said standard feeding unit.

5,485,991

AUTOMATIC SHEET FEEDING APPARATUS

Hirofumi Hirano; Koh Hasegawa, both of Yokohama; Hiroyuki Inoue, Chiba; Toshihiko Bekki, Kawasaki, and Masaharu Ikado, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

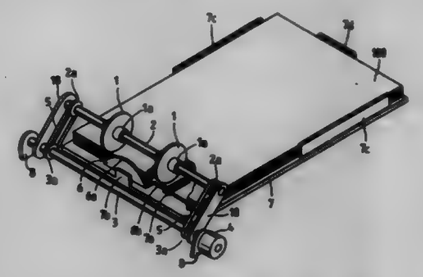
Continuation of Ser. No. 932,217, Aug. 19, 1992, abandoned.

This application Oct. 28, 1994, Ser. No. 330,609

Claims priority, application Japan, Aug. 21, 1991, 3-209475; Aug. 21, 1991, 3-209482

Int. Cl.[6] B65H *3/54;* G03G *15/00*

U.S. Cl. 271—121 **27 Claims**



1. An automatic sheet feeding apparatus, comprising:

sheet supporting means for supporting a plurality of sheets thereon;

sheet supply means for feeding out sheets supported by said sheet supporting means; and

separation means, including a semi-circular plate member disposed downstream of said sheet supply means, for causing one of the sheets fed by said sheet supply means to flex and ride over the semi-circular plate member of said separation means, thereby to separate the sheets one by one;

wherein said sheet supply means comprises a plurality of rotary sheet supply members, and at least one of said rotary sheet supply members is elastically deformable to follow a flexure of the sheet generated when the sheet fed by said sheet supply means is riding over the semicircular plate member of said separation means.

5,485,992

FOLDER APPARATUS

Kevin F. Albert, Barrington; Louis J. Doucet, Salem, and Richard L. McKrell, Rye, all of N.H., assignors to Heidelberger Druckmaschiner AG, Heidelberg, Germany, and Heidelberg Harris, Inc., Dover, N.Y.

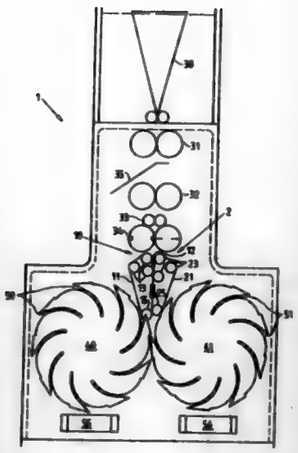
Filed Jul. 8, 1994, Ser. No. 273,043

Int. Cl.[6] B15H *9/14*

U.S. Cl. 271—299 **10 Claims**

1. A folder apparatus comprising:

at least two lead-in tape mechanisms arranged side-by-side to one another for delivering a signature; each lead-in tape mechanism having a left lead-in tape and a left exit roller and a corresponding right lead-in tape and a right exit roller, the right exit roller being at a different height than the left exit roller; and wherein the relative height of the right exit roller



with respect to the left exit roller of one of the at least two lead-in tape mechanism alternates with respect to an adjacent one of the at least two lead-in tape mechanisms.

5,485,993

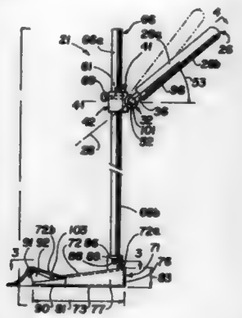
MOVABLE BASKETBALL TRAINING DEVICE

James D. Lipsett, 1248Kerwin La., Manteca, Calif. 95336

Continuation-in-part of Ser. No. 26,268, Mar. 4, 1993, abandoned, which is a continuation of Ser. No. 897,293, Jun. 11, 1992, abandoned. This application Apr. 29, 1994, Ser. No. 236,519

Int. Cl.[6] A63B *69/00*

U.S. Cl. 273—1.5 A **12 Claims**



12. A method for training a basketball player to shoot basketballs under simulated bodily contact with the aid of a basketball training device which simulates an opposing basketball player and includes weighted_base adapted to rest on said basketball floor, an upstanding member mounted to the weighted base and extending upwardly therefrom, first and second elongate padded arms having proximal and distal extremities and mounting means coupled to the proximal extremities of the padded arms for supporting the padded arms on the upstanding member in horizontally spaced apart home positions, the mounting means including first and second yieldable means coupled to the proximal extremities of the padded arms for permitting yieldable pivotal movement of the distal extremities of the padded arms from the home positions and means for positioning the proximal extremities of the padded arms forward of the weighted base, releasable means carried by the upstanding member and the mounting means for positioning the padded arms above the basketball floor at a predetermined elevation, comprising the steps of placing the training device on a basketball floor in the vicinity of an elevated basketball hoop and board so that the padded arms extend away from the hoop and board, causing the basketball player to move beneath the padded arms and to repeatedly shoot the basketball while physically engaging the padded arms and causing the basketball player to change positions between shots so as to shoot from different angles about the training device, whereby the device enables the basketball player to practice drawing a foul while shooting.

5,485,994

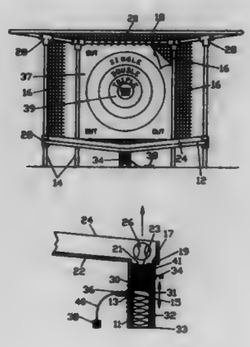
BASEBALL TOSSUP DEVICE

Alfred E. Underwood, and Dolores M. Underwood, both of 2715 Montague Dr., Galesburg, Ill. 61401

Filed Feb. 16, 1994, Ser. No. 197,367

Int. Cl.[6] A63B *69/40*

U.S. Cl. 273—26 R **2 Claims**





1. A batting practice device for tossing a ball vertically into the air, comprising:

A vertically extending tubular member having its lower end resting on a support surface and an upper end; said tubular member having an a plurality of vertically spaced apertures extending through its wall and a longitudinal slot spaced from said apertures and terminating adjacent said upper and lower ends;

a cylindrical piston positioned within said tubular member for longitudinal movement in said tubular member, said piston having a predetermined length less than the length of said tubular member for allowing longitudinal movement in said tubular member;

a coil spring positioned in said tubular member between said support surface and the lower end of said piston for biasing said piston upwards;

pedal means extending through said slot and attached to said piston for a player to manually urging said piston to a downward position against the force of said coil spring;

a spring biased latch means extending through one of said apertures for releasably latching said piston in said downward position against said bias of said spring;

an annular retaining means in said tubular member adjacent said upper end for stopping upward movement of said piston when said piston is released from said latch means;

said tubular member having an inside diameter slightly less than the diameter of a regulation baseball, whereby a baseball may be seated on said upper end of said tubular member;

said piston further having a centrally located projection on the upper end thereof, said projection defining a shoulder for abutting said annular retaining means and a central portion for contacting a ball when said piston is released from said latch means and thrust upwards by said spring; and

means remote from said ball tossing device for releasing said latch means from said piston when activated by a batter.

5,485,995

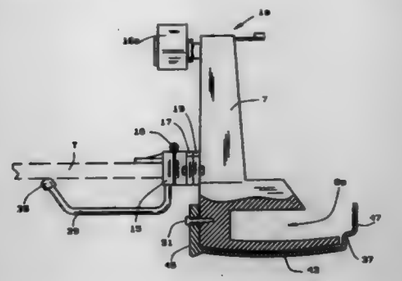
ROBOT TABLE TENNIS BALL SERVER ASSEMBLY

Joseph E. Newgarden, Jr., 400 N. Belvedere, P.O. Box 959, Gallatin, Tenn. 37066

Continuation of Ser. No. 959,276, Oct. 9, 1992, abandoned. This application Apr. 4, 1994, Ser. No. 223,306

Int. Cl.[6] A63B *69/00*

U.S. Cl. 273—30 **4 Claims**



1. A robot server assembly mounted to a table tennis table for collecting and serving table tennis balls to a user comprising:

a tray having a bottom wall, peripherally connected side walls, a front wall adjacent said table tennis table and a rear wall opposed to and spaced from said from wall integral to and extending upwardly from the bottom wall for containing a plurality of table tennis balls;

a table tennis ball robot server removably mounted to said front wall, said robot server having lower table tennis ball receiving means positioned within said tray and located in proximity to the bottom wall of said tray for receiving table tennis balls contained within said tray; and

mounting means for removably mounting said robot server and its attached tray to one end of a table tennis table, said mounting means being hingedly attached to and extending outwardly from a front side of said robot server, and said mounting means having support arms moveable about a hinge for positioning said mounting means in an extended position for engaging said table tennis table or a folded position adjacent said robot server to facilitate carrying and storage of said robot server assembly.

5,485,996

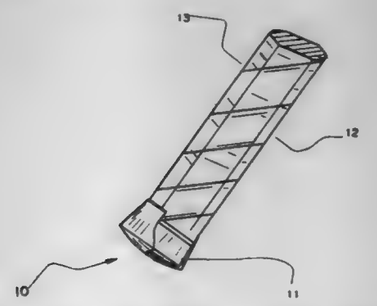
END COVER FOR THE HANDLE OF A SPORTS DEVICE

Gene Niksich, 840 McFarland Rd., Alpharetta, Ga. 30201

Filed Oct. 14, 1994, Ser. No. 323,011

Int. Cl.[6] A63B *49/00;49/08*

U.S. Cl. 273—75 **1 Claim**



1. A cover for the butt extremity of a handle comprising a cup-shaped monolithic structure fabricated of a silicone polymer having a Shore A hardness between 40 and 50 and an elongation to break between 100% and 250%, said cover having a downwardly convex bottom portion of circular perimeter and a sidewall portion upwardly directed from said perimeter and terminating in a circular upper extremity representing the opening of said cover, said sidewall portion contoured as an upwardly convergent conical section bounded by interior and exterior surfaces which are upwardly convergent in a manner causing the thickness of said sidewall portion to diminish progressively with distance from said bottom portion, producing at said upper extremity an extremely thin lip adapted to snugly embrace said handle without presenting a perceptible feeling of structure, said bottom portion being defined by an upper surface and a lower surface having a series of upraised annular ridges.

5,485,997

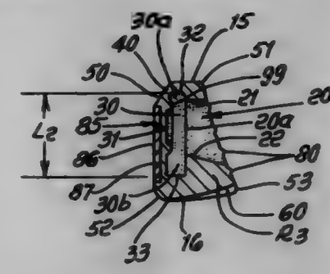
GOLF PUTTER HEAD WITH FACE PLATE INSERT HAVING HEIGHTENED MEDIAL PORTION

Glenn H. Schmidt, Malibu, and Richard C. Helmstetter, Carlsbad, both of Calif., assignors to Callaway Golf Company, Carlsbad, Calif.

Continuation-in-part of Ser. No. 267,885, Jul. 7, 1994, and a continuation-in-part of Ser. No. 286,275, Aug. 15, 1994, which is a continuation of Ser. No. 161,592, Dec. 6, 1993, abandoned, which is a continuation of Ser. No. 999,249, Jan. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 921,857, Aug. 5, 1992, Pat. No. 5,282,625. This application Oct. 17, 1994, Ser. No. 323,892

Int. Cl.[6] A63B *53/04*

U.S. Cl. 273—78 **38 Claims**



21. In a putter head, the combination comprising:

a) a longitudinally elongated putter body in the form of a bar having a rear side, top and bottom walls, a toe and a heel, and a face plate insert having a forward face for striking a golf ball,

b) a main recess sunk forwardly in said rear side, and between peripherally weighted toe and heel regional,

c) and an undercut recess extending generally parallel to said insert forward face and away from an inner extent of said main recess whereby a reduced thickness plate is formed between said recesses and said forward face and extends rearwardly of said insert,

d) said insert being non-metallic,

e) and wherein said insert has a relatively larger height medial portion and relatively lesser height opposite end portions projecting toward the heel and toward the toe.

5,485,998

GOLF CLUB HEAD

Kenji Kobayashi, Tsubame, Japan, assignor to Kabushiki Kaisha Endo Seisakusho, Japan

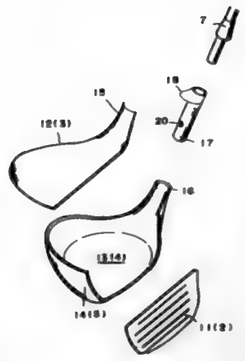
Filed Aug. 16, 1994, Ser. No. 291,188

Claims priority, application Japan, Jul. 20, 1994, 6-168400

Int. Cl.[6] A63B *53/04*

U.S. Cl. 273—80.2 **3 Claims**

1. A golf club head having a hollow interior defined by a face, an upper surface and a sole and side-peripheral surface, comprising;



three separate metal crusts corresponding to the face, the upper surface and the sole and side-peripheral surface respectively, which are to be forged and combined integrally so that a thickness of the face may be 1.5 to 2.5 mm, a thickness of the upper surface be 0.5 to 1.0 mm and a thickness of the sole and side-peripheral surface be 1.0 to 1.2 mm respectively, said hollow interior having a volume of 240 to 350 cc; and

a shaft mounting pipe integrally provided inside the hollow interior, connected to said neck of a golf club head, said shaft mounting pipe being provided with a mounting protrusion connected to a lower surface crust of the upper crust.

5,485,999

COMBINATION GOLF PUTTER, RETRIEVER AND EJECTION SYSTEM

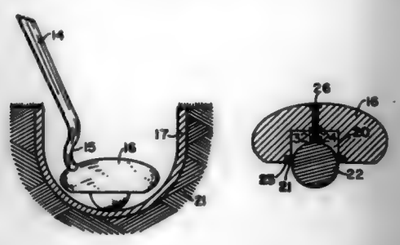
Harold L. Hull, 401 Canyon Way #43, Sparks, Nev. 89434, and Pete Rasner, P.O. Box 2607, Carson City, Nev. 89702

Division of Ser. No. 948,003, Sep. 21, 1992, Pat. No. 5,269,525. This application Aug. 11, 1994, Ser. No. 288,832

The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.

Int. Cl.[6] A63B *53/04*

U.S. Cl. 273—162 E **10 Claims**



1. A combination golf putter and ball retriever device comprising: a handle, a hand grip, said handle having means to attach said hand grip to one of its ends, a golf club head, means to attach said golf club head to the opposite end of said handle, said head having a golf ball striking surface, said head having a top surface and a flat bottom surface, said bottom surface having a circular recess substantially in its center section, said recess extending into the interior of said head from said bottom surface toward said top surface, said recess having peripheral upper surface and having peripheral side walls and being of a size and shape to receive a golf ball through said bottom surface, whereby said peripheral upper surface and peripheral side walls substantially confine a golf ball within said recess, a ring made of resilient material, means to capture said ring within said circular recess and said ring being of a size and shape to accept and frictionally engaged a golf ball.

5,486,000

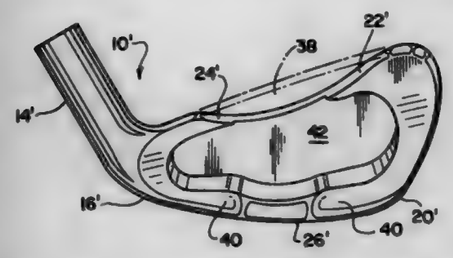
WEIGHTED GOLF IRON CLUB HEAD

Robert Chorne, 99 Russell Pl., Freeport, N.Y. 11520

Continuation-in-part of Ser. No. 886,173, May 21, 1992, Pat. No. Des. 343,216, Ser. No. 729,173, Jul. 17, 1991, Pat. No. 5,186,465, Ser. No. 643,860, Jan. 22, 1991, abandoned, and Ser. No. 469,825, Jan. 24, 1990, Pat. No. Des. 326,130, said Ser. No. 729,173is a continuation-in-part of Ser. No. 643,860, Jan. 24, 0, which is a continuation-in-part of Ser. No. 469,825, Jan. 24, 0. This application Dec. 27, 1993, Ser. No. 173,056

Int. Cl.[6] A63B *53/04*

U.S. Cl. 273—169 **6 Claims**



1. In a golf iron club head of a type having a ball-striking body of weight-imparting construction material inclined at a selected angle for driving a struck golf ball a corresponding selected height during its trajectory, said body having spaced-apart top and bottom surfaces bounding a ball-striking surface therebetween, the method of improving weight distribution comprising removing construction material from said top surface, relocating said removed construction material from said top surface to clearance positions below said top surface located adjacent opposite ends of said bottom, surface whereby said removed construction material from a location not used during ball-striking service of said golf iron, is of no adverse consequence thereto and said removed construction material in said relocated positions contributes to increasing said height attained by a struck golf ball.

5,486,001

PERSONALIZED INSTRUCTIONAL AID

Rick Baker, 10 Dundee Court, Robina Woods Queensland 4226, Australia

PCT No. PCT/AU92/00253, § 371 Date Apr. 21, 1994, § 102(e) Date Apr. 21, 1994, PCT Pub. No. WO92/21412, PCT Pub. Date Dec. 10, 1992

PCT Filed Jun. 1, 1992, Ser. No. 146,016

Claims priority, application Australia, May 30, 1991, PK6405

Int. Cl.[6] A63B *69/36*

U.S. Cl. 273—183.1 **20 Claims**

1. A method for providing an instructional aid for assisting a person to emulate a preferred movement, said method comprising:

capturing and storing initial visual image signals representative of a particular movement at a first location,

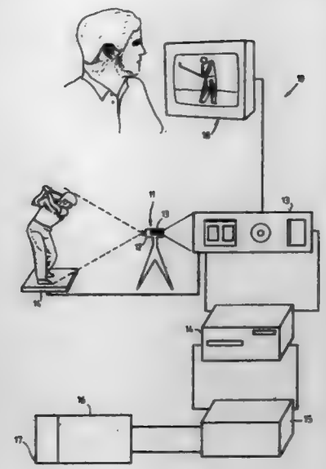
storing preferred image signals representative of a selected preferred movement at a second location remote from said first location in a data base of a computer,

transmitting said captured and stored visual image signals from said first location to said computer at said second location,

comparing said captured and stored image signals with stored preferred image signals in said data base of said computer,

regenerating further visual secondary image signals based on said initial image signals of said particular movement adjusted to emulate said stored preferred image signals of said selected movement in said computer, and

transmitting said regenerated signals from said computer at said remote second location to said first location and stored in image presentation means which permits viewing thereof with dialogue relating to said regenerated visual secondary image signals.



5,486,002

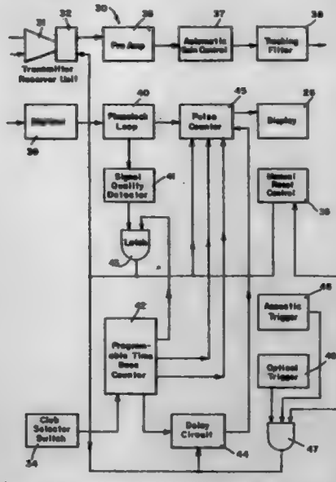
GOLFING APPARATUS

James L. Witler, Eagle-Vail, Colo.; Douglas L. Spike, Jacksonville, Fla., and Douglas C. Talbot, Eagle-Vail, Colo., assignors to Plus4 Engineering, Inc., Minturn, Colo.

Continuation of Ser. No. 170,587, Dec. 21, 1993, which is a continuation-in-part of Ser. No. 758,847, Sep. 11, 1991, Pat. No. 5,290,037, which is a continuation-in-part of Ser. No. 617,573, Nov. 26, 1990, Pat. No. 5,092,602. This application Dec. 23, 1994, Ser. No. 372,431

Int. Cl.[6] A63B *69/36*

U.S. Cl. 273—184 R **22 Claims**



1. A golfing apparatus for determining the carry distance of a golf ball which a golfer has struck, said golfing apparatus comprising:

(a) a speed measuring mechanism which has a boresight and which measures a component of the speed of the golf ball, said speed measuring mechanism being aimed at the golf ball while in flight, wherein said boresight of said speed measuring mechanism is disposed at angle in the range of zero degrees to twenty five degrees with respect to level ground; and

(b) correlating means for correlating said measured component of the speed of the golf ball with an empirically derived factor for use in determining the estimated carry distance of the golf ball, said correlating means being electrically coupled to said speed measuring mechanism.

5,486,003

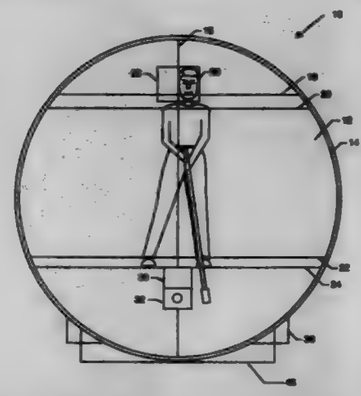
GOLF TRAINING SYSTEM

Ellen G. Loew, 139 E. Hampton Rd., Binghamton, N.Y. 13903, and Joseph D. Gaetani, 22 Helen St., Johnson City, N.Y. 13790

Filed Sep. 9, 1992, Ser. No. 942,300

Int. Cl.[6] A63B *69/36*

U.S. Cl. 273—187 R **21 Claims**



17. A golf training mirror for viewing a golfer's body to determine proper swing alignment comprising:

a. a convex mirror having a reflective surface generally free of lines for viewing reflection of a golfer's body;

b. at least one pair of horizontal lines on the reflective surface for alignment with a specific part of a golfer's body;

c. at least one rectangular box on the reflective surface for alignment with a second specific part of the golfer's body; and,

d. a vertical line generally bisecting the reflective surface for aligning the golfer's body.

5,486,004

RELEVANT CHESS PIECES

Charles P. Fogarty, P.O. Box 254, Commack, N.Y. 11725

Continuation-in-part of Ser. No. 867,272, Apr. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 607,803, Nov. 1, 1990, abandoned. This application Mar. 10, 1994, Ser. No. 209,422

Int. Cl.[6] A63F *3/02*

U.S. Cl. 273—260 **8 Claims**

1. The combination of chess pieces and a square checkered chess board, said chess board comprising peripheral borders defined by a first player end, a second player end and two sides, eight side-by-side rows of squares extending parallel with said ends and eight side-by-side columns of squares extending parallel with said sides, each of said chess pieces comprising a base, a three-dimensional body supported by said base and extending upwardly therefrom along a vertical axis, each said body of each said chess piece being formed to constitute means for indicating all of the directions each said chess piece may be moved from one said square to others of said squares of said board when said board is horizontally oriented and said piece is located within said one said square, said indicating means comprising three-dimensional projections extending radially about a horizontal axis, at least one of said each said body being formed for indicating permissive movement in at least one of the direction toward said second player end along diagonally



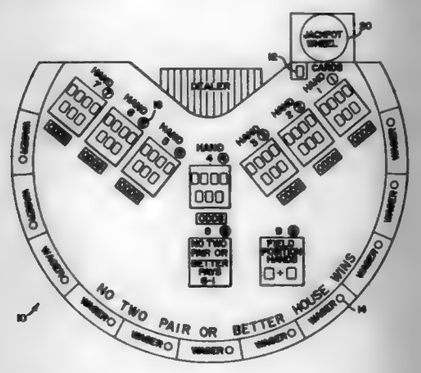
adjacent squares and the direction towards said first player end along diagonally adjacent squares.

5,486,005

METHOD AND APPARATUS FOR PLAYING A POKER-LIKE GAME

Michael D. Neal, Bloomington, Ill., assignor to Judith Neal, Executrix, Bloomington, Ill.

Filed Jan. 3, 1995, Ser. No. 367,835
Int. Cl.[6] A63F *1/00*
U.S. Cl. 273—292 **19 Claims**



18. An apparatus for playing a poker-like game in which at least one player plays against a dealer, said apparatus comprising:

a deck of fifty-two playing cards,

means for indicating each player's wager,

board means for providing predetermined positions for the display of a plurality of cards in a plurality of hands,

means for determining and displaying odds placed on each hand by the dealer, depending on the chance of that hand being the winning hand in accordance with predetermined guidelines, and

means for indicating each players selection of a hand.

5,486,006

MUSIC QUIZ GAME FOR AMUSEMENT

Michael Bruno, 2570 Madison Rd. Ste. #13, Cincinnati, Ohio 45208, and Andy Curran, 1063 Bruce Ave., Cincinnati, Ohio 45230

Filed Nov. 19, 1993, Ser. No. 154,950
Int. Cl.[6] A63F *1/00*
U.S. Cl. 273—301 **11 Claims**



1. A method of playing a music quiz game of amusement, comprising the steps of:

selecting at least two teams consisting of at least one player per team, a first team being the answering team and a second team being the questioning team;

a player from said answering team rolling a die having temporal indicia on at least some of the faces thereof;

a player from said questioning team selecting a card from a set of cards and posing a question to said answering team player requesting said answering team player to identify the artist of a song identified on said card by title and year, said year corresponding to the temporal category showing on the die rolled by said answering team player;

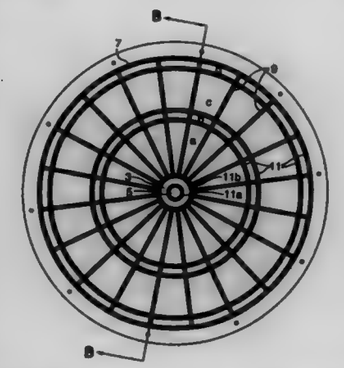
said answering team player responding within a predetermined time period to said question by attempting to identify the correct song artist.

5,486,007

AUTOMATED DART BOARD

Mark F. Stewart, St. Davids; Angelo A. Bonetta, Niagara on the Lake, and Majinder S. Phull, Mississauga, all of, Canada, assignors to High Flyte International Ltd., Bermuda

Filed May 9, 1994, Ser. No. 239,552
Int. Cl.[6] F41J *3/00;5/04*
U.S. Cl. 273—374 **30 Claims**



1. A target for use with a projectile, the target comprising:

a. a web made from conductive material, the web defining a target face, the web having a depth and the web defining one or more segments within the web that open toward the target face;

b. one or more conductive blocks slidably mounted and substantially filling the target face of one or more respective segments of the web, each block contacting the web;

c. a back board mounted to and behind the web, the back board having at least one conductive pad for each of the blocks;

d. a resilient cushion for each of the conductive blocks, between each block and the back board;

wherein the projectile impacting a block at the target face with sufficient force causes the block for that insert to slide within the web and contact a pad beneath that block, and

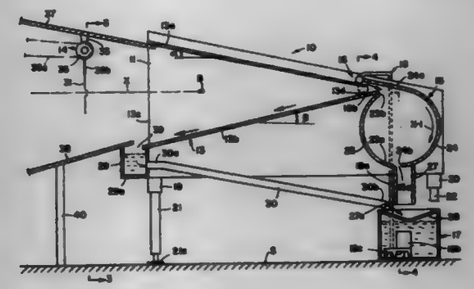
wherein the cushion beneath that block resiliently returns the block substantially to its original position.

5,486,008

BULLET TRAP

Ronald Coburn, Westfield, Mass., assignor to Passive Bullet Traps Limited, Douglas, Isle of Man

Filed Nov. 17, 1993, Ser. No. 154,023
Int. Cl.[6] F41J *1/12*
U.S. Cl. 273—410 **23 Claims**



1. A bullet trap for catching and deenergizing bullets fired along a substantially horizontal path of flight into the trap from manual firearms, which trap includes: a first pair of spaced flat plates located, respectively, above and below said path of flight and oriented at respective opposite angles of inclination of between 0° and about 15° to the horizontal, and a second pair of spaced flat plates arranged transverse to said first plates on opposite sides of said path of flight, with said first and second pairs of plates defining, respectively, upper and lower walls and right and left side walls of a passageway having at its front end an entrance opening and at its rear end a throat through which the bullets can pass, and with said upper and lower walls of said passageway converging toward one another in the direction from said entrance opening of said passageway to said throat; a spent bullet decelerating and energy-dissipating chamber which has a substantially horizontal axis and a circumferential boundary wall of generally spiral configuration, with the opposite end walls of said chamber being constituted by portions of said second plates, and with said passageway communicating with said chamber substantially tangentially of said chamber through said throat; means for directing a liquid lubricating fluid into said chamber for enabling said lubricating fluid to be applied to at least a portion of said circumferential boundary wall of said chamber; and means defining a collecting vessel located at a discharge region of the trap for receiving therefrom spent bullets, bullet fragments, shells, casings and lead dust; wherein the improvement comprises:

(a) said upper and lower walls of said passageway at said rear end of said passageway are connected to said decelerating chamber at a top region of said chamber, with said throat of said passageway located at said circumferential boundary wall of said chamber;

(b) said decelerating chamber is provided in said circumferential boundary wall thereof at said top region of said chamber with an inlet opening extending substantially parallel to said horizontal axis of said chamber and in direct communication with said throat of said passageway; and

(c) said decelerating chamber is provided in said circumferential boundary wall thereof at a bottom region of said chamber with a discharge opening for enabling liquid lubricating fluid, bullets, bullet fragments, shells, casings and lead dust to pass therethrough for movement to said collecting vessel;

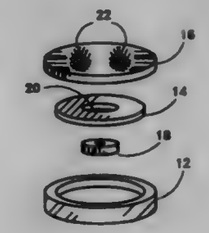
(d) whereby bullets fired into said passageway through said entrance opening of said passageway first enter into said decelerating chamber through said throat and said inlet opening without undergoing a sudden high angle change of direction between said through and said inlet opening and without impacting against any wall surface at a high angle to that surface and then circumnavigate said chamber with gradually decreasing speed, while in contact with said circumferential boundary wall of said chamber and lubricated by said liquid lubricating fluid directed into said chamber, until the energy of the bullets has been substantially dissipated, and the bullets along with any bullet fragments, shells, casings and lead dust ultimately fall through said discharge opening of said chamber and move to said collecting vessel.

5,486,009

SLAMMER FOR USE IN PLAYING MILK CAP TYPE GAMES AND METHOD OF MANUFACTURE

Bruce Browne, Bonita, Calif., assignor to B and P Plastics, National City, Calif.

Continuation of Ser. No. 394,891, Feb. 27, 1995, Pat. No. 5,443,106, which is a continuation-in-part of Ser. No. 305,437, Sep. 13, 1994, Pat. No. 5,421,488. This application Apr. 7, 1995, Ser. No. 418,774
Int. Cl.[6] A63B *65/10*
U.S. Cl. 273—424 **10 Claims**



1. A slammer for playing Milk Caps type games, which comprises:

one apertured metal disk

a first synthetic resin housing portion surrounding a first face of said disk and the outer edges of said disk;

a second synthetic resin housing portion coveting the second face of said disk;

said second housing portion being formed from a softer resin than the resin forming said first housing portion.

5,486,010

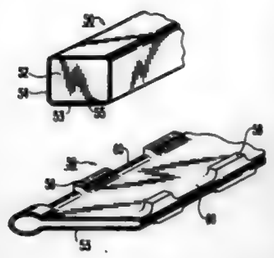
GASKET MATERIAL FOR USE IN PLATE AND FRAME APPARATUS AND METHOD FOR MAKING AND USING SAME

Elizabeth M. Hamilton; Eric W. Lalli, both of Elkton; Cindy B. Lubin, Towson; Wanda F. Sparks, and Alfred F. Waterland, III, both of Elkton, all of Md., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Continuation-in-part of Ser. No. 58,903, Apr. 20, 1993. This application Sep. 8, 1993, Ser. No. 118,372
Int. Cl.[6] F16J *15/10*
U.S. Cl. 277—1 **40 Claims**

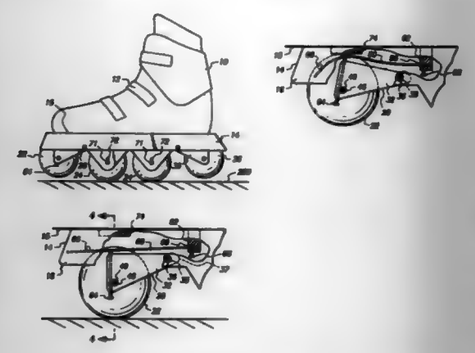
1. A multiple layered plate and frame apparatus including a gasket, said gasket comprises:

a core of elongated polytetrafluoroethylene (PTFE);



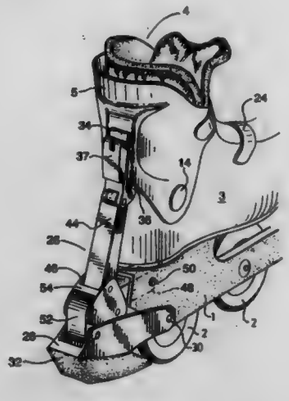
means to constrain the core from lateral flow when placed under compressive pressure to establish and maintain a seal between multiple plates; the means comprising a tight film wrap around the PTFE core of sufficient tensile strength to limit creep of the PTFE core when the gasket is placed under pressure.

5,486,011
SPRING BIASED BRAKING DEVICE FOR IN-LINE ROLLER SKATES
Randy Nelson, 1075 Rollins Rd., #208, Burlingame, Calif. 94010
Filed Jun. 2, 1994, Ser. No. 252,915
Int. Cl.[6] A63C *17/06;17/14*
U.S. Cl. 280—11.2 **20 Claims**



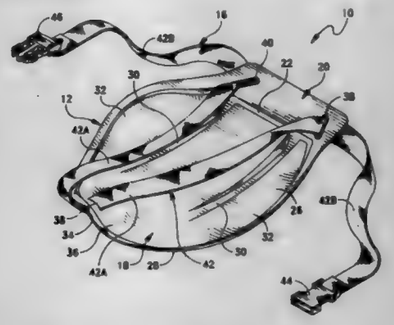
1. A braking device for an in-line roller skate comprising:
a base of said in-line skate extending substantially along a bottom surface of a boot for an in-line skate;
a bracket having substantially identical first and second bracket arms, each of said bracket arms having at a first end a means for mounting a skate wheel axle, and at a second end a means for pivotally mounting said bracket arms to said base wherein said bracket arms are spaced apart and substantially parallel whereby said bracket can pivot about an axis which is substantially transverse to the longitudinal axis of said base and substantially parallel to the plane of said base thus permitting the first end of said bracket arms to pivot towards and away from said base;
a skate wheel which is load bearing during normal skating movements;
an axle rotatably supporting said wheel during normal skating movements which axle is mounted between the first end of said bracket arms;
a braking surface on said base; and
a spring means for biasing said first end of said bracket arms to a position away from said base wherein said skate wheel is disengaged from said braking surface during normal skating movements and such that upon exerting additional downward force to said wheel the biasing is overcome by said additional force wherein said bracket pivots towards said base until said wheel frictionally engages said braking surface thus resulting in braking action.

5,486,012
BRAKING SYSTEM FOR IN-LINE SKATES
Icaro Olivieri, Westmount, Canada, assignor to Canstar Sports Group Inc., Quebec, Canada
Filed Jun. 14, 1994, Ser. No. 260,374
Int. Cl.[6] A63C *17/14*
U.S. Cl. 280—11.2 **9 Claims**



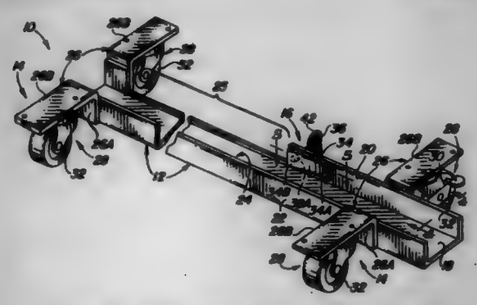
1. A braking system for an in-line skate for a skater, where said skate comprises a boot/chassis assembly including a chassis carrying a plurality of in-line wheels to run on the ground, and a boot mounted above the chassis, said boot/chassis assembly including a plastic cuff securable around the skater's ankle and pivotally connected to said boot/chassis assembly at pivot points generally in the area of the skater's malleoli, said braking system comprising a linkage assembly connected at an upper end thereof to a rear portion of said cuff, and at a lower end thereof to a rotatable brake assembly, which brake assembly pivots about a pivot point mounted on said chassis and carries a replaceable brake pad, said brake assembly pivoting between a retracted position where said brake pad is above the ground, and a braking position where said brake pad is in contact with the ground, said linkage assembly comprising a drive arm, a transfer bracket and a short connector link;
said drive arm having an upper end and a lower end, said upper end being secured to the back of the cuff, to move upwardly and downwardly with rotation of the cuff;
said transfer bracket having three pivot points B, C, and D, where B is a pivotal connection between the lower end of said drive arm and an upper portion of said transfer bracket, C is a pivotal connection between a forward portion of said transfer bracket and support means rigidly positioned with respect to said boot/chassis assembly and extending rearwardly therefrom, and D is a pivotal connection between a rearward portion of said transfer bracket and an upper end of said short connector link;
said short connector link having an upper end and a lower end, said lower end being pivotally connected at a pivot point E to said brake assembly;
said pivot points B, C and D being arranged such that the mechanical advantage provided by said transfer bracket in translating downward movement of said drive arm to downward movement of said connector link and brake assembly is less than one in said retracted position, and increases as said cuff is rotated rearwardly to move said drive arm downwardly and said brake assembly towards the ground.

5,486,013
SLED CONSTRUCTION AND STRAP ASSEMBLY THEREFOR
Rein Klik, Tartu, Estonia, and Madis Idarand, Providence, R.I., assignors to Pindi International, Ltd., Tartu, Estonia
Filed Oct. 17, 1994, Ser. No. 323,548
Int. Cl.[6] B62B *13/00*
U.S. Cl. 280—18.1 **12 Claims**



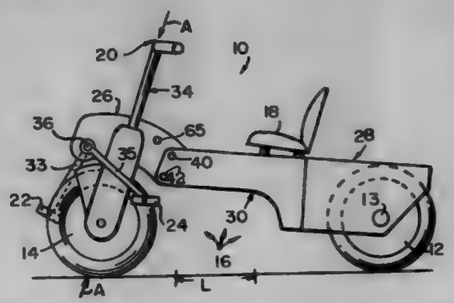
1. A sled construction comprising:
a sled including a generally concave body portion and a substantially planar flange portion which extends from a first end of said body portion, said body portion including an inner contoured surface which is received in conforming relation with the buttocks of a sledder and an outer surface having longitudinal runners extending downwardly therefrom, said body portion further including a second end opposite said first end which tapers inwardly and curves upwardly to form an apex received adjacent to a crotch of the sledder, said flange portion being received adjacent a waist of the sledder, said body portion still further including an opening adjacent said apex, said flange portion including two spaced openings therein; and
a strap assembly including a single strap and a fastening device for releasably fastening opposite ends of the strap together, said strap being threadedly received through said openings in said body portion and said flange portion and said strap extending around the thighs and the waist of the sledder for securing the sled thereto.

5,486,014
DOLLY HAVING ELONGATED CHANNEL WITH RELEASABLE FRICTIONAL SECUREMENT DEVICE
Darald F. Hough, 128 S. Sante Fe, Salina, Kans. 67401
Filed Mar. 8, 1994, Ser. No. 207,928
Int. Cl.[6] B62B *3/04*
U.S. Cl. 280—79.11 **4 Claims**



1. A dolly for use in supporting a lower end portion of a panel-shaped support leg of an upright piano, said dolly comprising:
(a) an elongated rigid support member formed by an elongated narrow bottom wall and a pair of laterally spaced side walls substantially coextensive with and rigidly connected along opposite longitudinal side edges of said bottom wall and extending upwardly therefrom and generally parallel to one another, said support member defining an elongated channel extending between said laterally spaced side walls and above said bottom wall, said channel being open along its upper end for receiving therethrough the lower end portion of the support leg, one of said side walls having a portion located between and spaced from opposite ends of said one side wall being cutout to define an elongated slot through which can extend a horizontal cross member which extends between the support legs at the respective opposite ends of the upright piano;
(b) carriage means mounted to opposite ends of said support member for supporting said support member in a spaced relationship above a support surface and for undergoing movement across the support surface, said carriage means including
(i) a pair of flanges respectively connected to and extending laterally outwardly in opposite directions from upper edges of said side walls of said support member at said opposite ends of said support member, and
(ii) a plurality of caster wheel assemblies mounted to undersides of said flanges for rollably mounting said support member; and
(c) a releasable frictional securement device adjustably mounted to said one of said side walls of said support member adjacent to an end of said slot and extendable into said channel for forceably engaging the lower end portion of the one support leg and thereby secure the dolly thereto, said securement device including
(i) a semi-flexible flat band disposed along the interior of a portion of said one side wall of said support member and attached thereto at one end of said band, and
(ii) an adjustment element mounted to said one side wall for engaging an opposite end of said band at an inner end of said adjustment element for forcing said band into frictional contact with the surface of the lower end portion of the support leg.

5,486,015
HUMAN POWERED GROUND VEHICLE
James C. K. Lau, 19515 Redbeam Ave., Torrance, Calif. 90503
Filed Apr. 13, 1994, Ser. No. 226,898
Int. Cl.[6] B62K *5/04;9/00;15/00;* **B62M** *1/00*
U.S. Cl. 280—236 **12 Claims**



1. A human powered ground vehicle comprising: a vehicle frame having a forward end and a rearward end; a steering column hingedly connected to said vehicle frame and extending across said vehicle frame; a motive power input assembly supported by said frame and adapted to derive motive power from a physical exertion of force by a driver, said motive power input assembly including at least one pedal member adapted to revolve about a laterally extending axis which traverses said vehicle frame through an area located forward of said steering column; a plurality of wheels, including no more than a single front wheel mounted for rotation proximate said steering column; and at least one rear wheel

mounted for rotation proximate said rearward end of said vehicle; and means for transmitting power from said motive power input assembly to said front wheel, thereby permitting said vehicle to be driven, wherein said means for transmitting power includes a gear system positionally fixed with respect to said vehicle frame, a chain arrangement positionally fixed with respect to said steering column, and an intermediate power transmitting assembly mechanically communicating said gear system with said chain arrangement, said intermediate power transmitting assembly including first and second gear members wherein said first gear member is arranged inside of said second gear member to permit a mechanical communication therebetween.

5,486,016

WHEEL ASSEMBLY FOR A WHEELCHAIR, INCORPORATING A CHANGE SPEED HUB

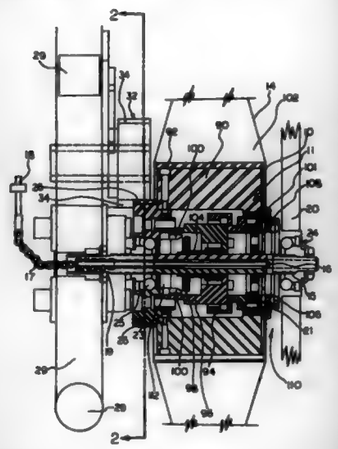
Gary Godin, 16 Francois Street, Paul Bernard Subdivision, Charlo, N.B. E0B 1M0, and Philip Lambert, Fredericton, both of, Canada, assignors to Gary Godin, Charlo, Canada

Filed Apr. 29, 1994, Ser. No. 235,273

Claims priority, application Canada, May 6, 1993, 2095681

Int. Cl.[6] A61G *5/00*; B60K *41/22*; B62M *1/14*

U.S. Cl. 280—250.1 **2 Claims**



1. A wheel assembly for a wheelchair having a frame member on each side of the seat, comprising:

a hollow hub;

a wheel mounted on said hub;

an axle extending through said hub, said axle having inner and outer ends, and means rotatably mounting said hub on said axle;

means for fixedly mounting said axle at its inner end on a frame member of a wheelchair;

means mounting a handwheel on said outer end of said axle;

a multiple speed gear assembly including pawls mounted in said hub, an output of said gear assembly connected to said hub and in input of the gear assembly connected to said handwheel, said gear assembly including axially stationary sun, planet and ring gears and having gears interconnected via said multiple speed gear assembly for both forward and reverse driving, and including gear change actuating means, each group of said pawls being engaged and disengaged by an inside-hub clutch movable by said gear change actuating means and means for moving said actuating means as desired to engage or disengage said clutches thereby change said gear; and

including a free wheel assembly positioned between said handwheel and said input to said gear assembly, to provide a one-way drive from said handwheel to said gear assembly for forward and reverse operation.

5,486,017

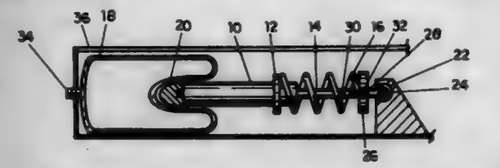
PNEUMATIC SUSPENSION SYSTEM DAMPENER

Franklin S. Goddard, 3111 S. Apache, Amarillo, Tex. 79103

Filed Jan. 31, 1995, Ser. No. 381,652

Int. Cl.[6] B60G *11/30;15/12*

U.S. Cl. 280—711 **8 Claims**



1. In a vehicle pneumatic suspension system including pneumatic suspension elements which absorb road shocks and vibrations for a wheel assembly, the improvement comprising:

a damper including,

a cylinder containing fluid and having a first end and a second end and an inner and an outer surface, said cylinder including a radial flange disposed about said cylinder outer surface,

a piston disposed within said cylinder having an axial bore interposed between a first and a second surface, said piston defining within said cylinder a first and a second volume, said axial bore providing fluid communication between said first and second volumes,

a piston rod interposed between said piston and a first vehicle mount and sealingly extending through an axial bore through said first end of said cylinder, said piston rod having a plurality of transverse holes disposed within that portion of said piston rod external to said cylinder,

a washer disposed about said piston rod having a transverse sleeve through which a pin may be received, said pin also being received in a selected one of said transverse holes disposed within said piston rod, and

a spring having a first end fixed relative to said radial flange disposed about said cylinder outer surface and a second end fixed relative to said washer disposed about said piston rod, wherein said spring biases said piston rod to a normal position relative to said cylinder; and

a variable-volume chamber having a first outer surface fixed to a second vehicle mount and a second outer surface fixed to said second end outer surface of said cylinder of said damper, said variable-volume chamber including a valve which provides communication with the pneumatic suspension elements which absorb road shocks and vibrations for a wheel assembly whereby,

a shock experienced by a vehicle wheel assembly is transmitted from the wheel assembly's pneumatic suspension elements to said variable-volume chamber and is absorbed by gas compression within said chamber and by said variable-volume chamber expanding against said second end outer surface of said cylinder which overcomes said biasing force on said piston rod and compresses said fluid in said cylinder and causes said fluid to flow through said axial bore disposed within said piston, said spring returning said damper to a normal position relative to said cylinder once the pressure impulse has subsided.

5,486,018

SUSPENSION SYSTEM FOR FOUR-WHEELED VEHICLES

Koji Sakai, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

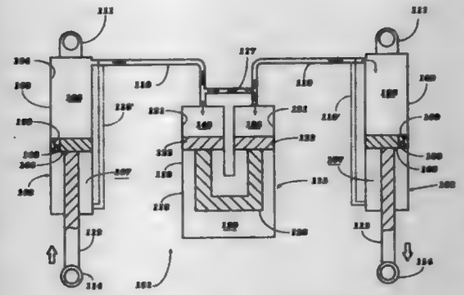
Filed Nov. 18, 1994, Ser. No. 342,248

Claims priority, application Japan, Aug. 5, 1994, 6-184756; Sep. 16, 1994, 6-221526

Int. Cl.[6] B60G *11/26*

U.S. Cl. 280—714 **112 Claims**

1. A suspension system for a vehicle having at least two wheels, each supported for suspension movement by the vehicle body, a



first damping element having a pair of relatively moveable members defining a first fluid chamber and interposed between one of said wheels and the vehicle body for varying the volume of said first fluid chamber upon suspension movement of said one wheel, first damping means for damping the flow of fluid from said first fluid chamber, a second damping element having a pair of relatively moveable members defining a second fluid chamber and interposed between another of said wheels and the vehicle body for varying the volume of said second fluid chamber upon suspension movement of said other wheel, second damping means for damping the flow of fluid from said second fluid chamber, a conduit interconnecting said first and said second fluid chambers, and control means in said conduit for precluding fluid flow through said conduit in response to a first suspension condition and for providing a damped flow through said conduit in response to a second suspension condition.

5,486,019

AUTOMOTIVE VEHICLE INCLUDING A SECURITY ARRANGEMENT PROVIDED WITH AN INFLATABLE PROTECTIVE BAG

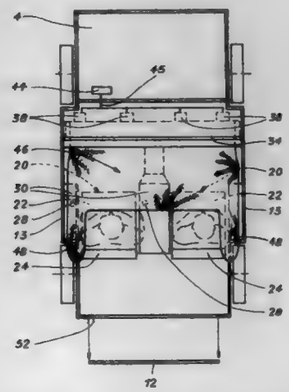
Tristan Chevroulet, Neuchatel, and Claude Beroud, Court, both of, Switzerland, assignors to SMH Management Services AG, Biel, Switzerland

Continuation of Ser. No. 934,721, Aug. 24, 1992, abandoned. This application Mar. 7, 1994, Ser. No. 206,908

Claims priority, application Switzerland, Aug. 23, 1991, 91/10622

Int. Cl.[6] B60R *21/22*

U.S. Cl. 280—730.1 **9 Claims**



1. An automotive vehicle comprising a dashboard, side-by-side driver's and passenger's seats, steering control means for the vehicle including a steering handle positioned in close proximity to the driver's seat, the space between said dashboard and a driver being free, the dashboard having a top portion facing the windshield and a front portion facing the driver's and passenger's seats and comprising a compartment and a flap for closing said compartment, said flap being positioned in said front portion, a protective bag formed of supple material in said compartment, said bag being at least partially gas tight, the vehicle further comprising a gas source, means for coupling the bag to the gas source and means for automatically releasing the gas source in response to abnormal behavior of the vehicle, said bag having a folded non-operating first state in which it is entirely housed within the compartment prior to automatic release of the gas source, and an inflated operating second state in which it extends out of the compartment after automatic release of the gas source, said bag comprising a central portion which in the operating state is arranged so as to spread out over substantially the entire area of the dashboard, the central portion in such state being interposed between occupants of both driver's and passenger's seats and the dashboard.

5,486,020

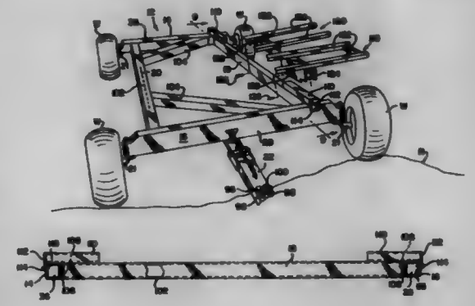
VEHICLE CHASSIS

Abe B. Kuhns, Arthur, Ill., assignor to E-Z Trail, Inc., Arthur, Ill.

Division of Ser. No. 877,414, May 1, 1992, Pat. No. 5,361,724. This application Aug. 5, 1994, Ser. No. 286,535

Int. Cl.[6] B62D *63/08;21/02*

U.S. Cl. 280—789 **16 Claims**



1. A flexible movable vehicle chassis comprising:

a pair of beams spaced from each other and extending substantially transversely to the direction of movement of the vehicle;

wheels mounted adjacent the ends of said transversely extending beams to rollably support the chassis for such movement;

a pair of longitudinally extending beams spaced from each other and extending between said transversely extending beams and substantially parallel to the direction of movement of the vehicle;

one of said longitudinally extending beams being substantially rigidly fixed adjacent each of its opposite ends to each of said transversely extending beams; and

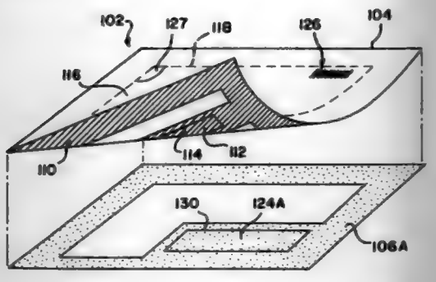
the other of said longitudinally extending beams having at least one of its ends horizontally spaced from and loosely supported upon one of said transversely extending beams for substantial movement of said last mentioned end horizontally relative to said one transversely extending beam when at least one of said wheels encounters a substantial change of elevation of terrain relative to the other of said wheels during movement of the vehicle, said substantial horizontal movement of the end of said other longitudinal beam relative to said one transversely extending beam permitting the chassis to twist about an axis which is substantially parallel to the direction of movement of the vehicle.

5,486,021

LABEL FOR OPERATION CONTROL SYSTEM

David F. Laurash, Bellbrook, Ohio, assignor to The Standard Register Company, Dayton, Ohio

Continuation of Ser. No. 961,377, Oct. 15, 1992, Pat. No. 5,383,686. This application Jul. 18, 1994, Ser. No. 276,262
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—81 5 Claims



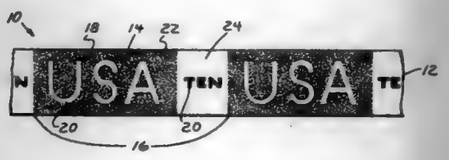
1. A label form comprising:
a first sheet having a first portion on a first surface thereof entirely coated with an adhesive;
a second sheet located adjacent to said first sheet and having a second portion on a second surface thereof which is positioned adjacent to said first portion, said second portion being substantially coextensive with said first portion and having a first section coated with release material and a second section without release material.

5,486,022

SECURITY THREADS HAVING AT LEAST TWO SECURITY DETECTION FEATURES AND SECURITY PAPERS EMPLOYING SAME

Timothy T. Crane, Windsor, Mass., assignor to Crane & Co., Inc., Dalton, Mass.

Filed Apr. 4, 1994, Ser. No. 222,657
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—83 10 Claims



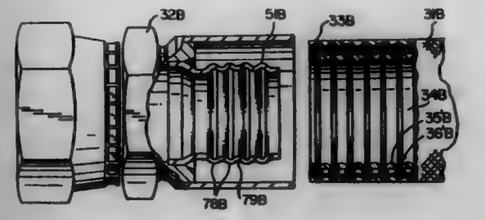
1. A security thread, suitable for at least partial incorporation in and for use on a security document or label which consists essentially of: a plastic thread having a width and having a layer located thereon wherein said layer comprises at least two security detection features, wherein a first security detection feature is a machine-readable feature which comprises a repeating pattern, wherein said pattern comprises at least one metal region and at least one electrically isolating region, in alternating sequence, wherein said metal region(s) and said electrically isolating region(s) extend across the entire width of said plastic thread, and wherein a second security detection feature comprises metal-formed indicia.

5,486,023

HOSE CONSTRUCTION, COUPLING THEREFOR AND METHODS OF MAKING THE SAME

John D. Sanders, Springfield, Mo.; Homer N. Holden, Sylva, N.C., and Randy C. Foster, Springfield, Mo., assignors to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 149,585, Nov. 9, 1993, Pat. No. 5,380,050, which is a division of Ser. No. 988,983, Dec. 11, 1992, Pat. No. 5,297,822, which is a division of Ser. No. 875,865, Apr. 29, 1992, Pat. No. 5,199,752, which is a division of Ser. No. 693,109, Apr. 25, 1991, Pat. No. 5,129,686, which is a division of Ser. No. 408,161, Sep. 15, 1989, Pat. No. 5,037,143. This application Nov. 10, 1994, Ser. No. 337,600
Int. Cl.[6] F16L *33/213*
U.S. Cl. 285—258 8 Claims



1. In a hose construction comprising a tubular hose having an inner peripheral surface means and an outer peripheral surface means, and a coupling secured to one end of said tubular hose, the improvement wherein said inner peripheral surface means of said tubular hose comprises an inner corrugated hose made of polymeric material and having inwardly directed projections with recesses therebetween and extending from said one end of said tubular hose to the other end thereof and wherein said coupling has an insert means disposed in said one end of said tubular hose and being radially outwardly expanded into sealing relation with said inner corrugated hose, said insert means having an outer peripheral surface means defined by a plurality of outwardly directed projections with recesses therebetween, said projections of said insert means being respectively received in said recesses of said inner hose and said projections of said inner hose being respectively received in said recesses of said insert means whereby the interior of said tubular hose is substantially sealed to the interior of said coupling, said projections of said insert means each having a transverse cross-sectional configuration of a certain length that is different from the transverse cross-sectional length of each of said recesses of said inner hose., said insert means comprising a tubular metallic sleeve that has a metallic outer surface that is shaped to define said outer peripheral surface means thereof.

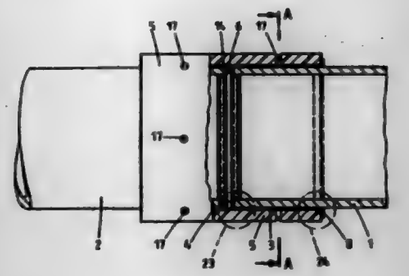
5,486,024

SOCKET FOR CONNECTING PIPE ENDS BY INJECTION OF ADHESIVE

Hans-Rolf Dierdorf, Langenfeld, Germany, assignor to Henkel Kommanditgesellschaft auf Aktion, Duesseldorf, Germany

PCT No. PCT/EP92/01847, § 371 Date Feb. 22, 1994, § 102(e) Date Feb. 22, 1994, PCT Pub. No. WO93/04311, PCT Pub. Date Mar. 4, 1993
PCT Filed Aug. 18, 1992, Ser. No. 196,147
Claims priority, application Germany, Aug. 22, 1991, 41 27 775.9
Int. Cl.[6] F16L *13/10*
U.S. Cl. 285—294 16 Claims

1. A socket for connecting pipe ends comprising, in combination:
(a) a tubular shell having opposing openings for receiving pipe ends to be joined, said tubular shell having an exterior face, an interior face and two end faces;
(b) abutment means integrally connected within said tubular shell for axially positioning said pipe ends within said tubular



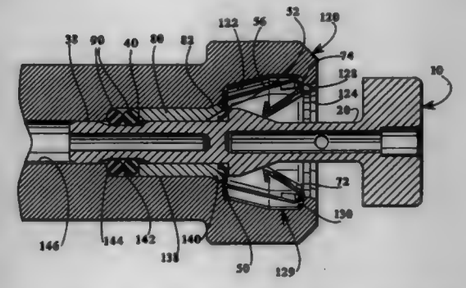
shell, said abutment means extending radially from said interior face of said tubular shell;
(c) annular elements mounted onto said opposing openings of said tubular shell for both centering said pipe ends within said socket and creating an annular space, sealed at one end, between said interior face of said tubular shell and an outer surface of said pipe ends;
(d) annular flanges, separate from said tubular shell, for removable mounting onto said pipe ends and for centering said pipe ends within said socket and sealing said annular space formed between said interior face of said tubular shell and said outer surface of said pipe ends; and
(e) at least one adhesive opening in said tubular shell of said socket for introducing an adhesive into said annular space and thereby joining said pipe ends inserted within said socket.

5,486,025

STUFFER PIN ASSEMBLY FOR QUICK CONNECTOR

Mark G. Ketcham, East China, Mich., assignor to Bundy Corporation, Warren, Mich.

Filed Sep. 29, 1994, Ser. No. 314,892
Int. Cl.[6] F16L *39/00*
U.S. Cl. 285—319 12 Claims



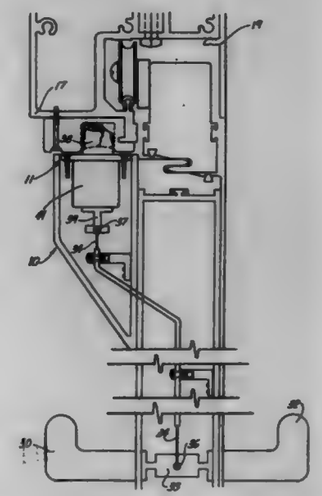
1. A stuffer pin assembly for carrying and loading internal components of a female connector body of a quick connector coupling, said quick connector coupling including a male member sealingly received and secured within said female connector body, said stuffer pin assembly comprising:
a component carrier having a cylindrical body and a radially enlarged portion formed at a first end of said cylindrical body, said body extending from said enlarged portion to a second end remote from said enlarged portion, said body including a frustro-conical nose formed at said second end, a first cylindrical wall extending from said nose to a groove, a second cylindrical wall extending from said groove to a lowermost extent of a radial shoulder, a third cylindrical wall extending from an uppermost extent of said shoulder to a large diameter end of a frustro-conical wall, and a fourth cylindrical wall extending from a small diameter end of said frustro-conical wall to said enlarged portion;
at least one seal secured on said component carrier within said groove;
a hollow spacer secured on said component carrier between said groove and said radial shoulder and surrounding said second cylindrical wall; and
a retainer for retaining said male member in said connector body secured on said component carrier, said retainer including an annular ring surrounding said second cylindrical wall between said spacer and said radial shoulder, said retainer further including a plurality of legs extending away from said ring and toward said first end of said component carrier for engaging said connector body and thereby retaining said male member in said connector body.

5,486,026

DOUBLE-ACTING POSITIVE LATCH SYSTEM FOR SLIDING DOORS

Ronald Borgardt, 2316 Tiffon St., Kenner, La. 70062

Filed Feb. 9, 1994, Ser. No. 193,953
Int. Cl.[6] E05C *19/06*
U.S. Cl. 292—71 9 Claims



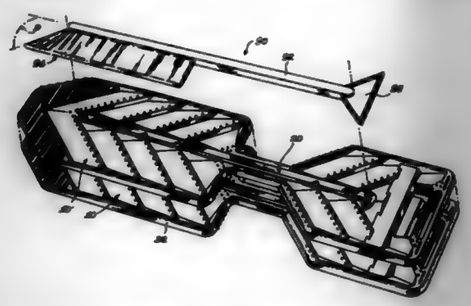
9. In a positive bolt latching system for sliding doors of the type having a breakaway feature, and a first door slidable upon a track between open and closed positions, hinge means for allowing the sliding door to breakaway from the track, and to swing away from the track to effect a greater opening in a passageway; the improvement comprising:
latching means positioned between the door and the door frame, for allowing the door to positively latch closed when the door is slid to the closed position, and to positively latch closed when the door is returned to the track after being broken away from the track, without manual latching in either position, the latching means further comprising a latch bolt engageable in an opening in a latch plate, the latch bolt having at least two beveled surfaces which, when either surface engages the latch plate, allows the bolt to retract so that it can engage into an opening in the latch plate, and effect the automatic positive latch.

5,486,027

COMBINED TRACTION MAT, SHOVEL AND UTILITY DEVICE

Alain Dionne, 1988 DeVilliers, and Benoit Corbeil, 2026 DeVilliers, both of Montreal, Canada

Filed Jul. 21, 1994, Ser. No. 278,321
Int. Cl.[6] A01B *1/20*; E01H *5/02*
U.S. Cl. 294—51 9 Claims



1. A combined shovel-traction and utility device adapted to be manipulated by a first hand and a second hand of a user said combined shovel-traction and utility device comprising:

a substantially flat and elongated body, said body having a top surface and a bottom surface, said body having

a first gripping section,

a second gripping section,

an intermediate section located between said first gripping section and said second section,

a corrugated pattern formed on said top surface of said first gripping section and said second gripping section of said body,

a first handle means for allowing said first hand of said user to grasp said first gripping section, said first handle means being formed in said first gripping section,

a second handle means for allowing said second hand of said user to grasp said intermediate section, said second handle means being formed by said intermediate section.

said body having a longitudinal axis dividing said body into a pair of symmetrical halves sections,

said body further comprising a substantially elongated longitudinal channel, said channel extending substantially colinearly with said longitudinal axis, from said first gripping section across said intermediate section and into said second gripping section,

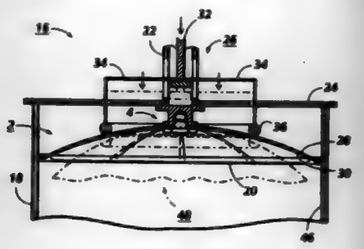
said channel having a substantially "U"-shaped cross-section defining a channel bottom wall and a pair of integrally and substantially perpendicularly extending channel side walls.

5,486,028

SUBSTRATE HOLDING APPARATUS

Eugene A. Swain, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 12, 1994, Ser. No. 304,443
Int. Cl.[6] B66C *1/54*
U.S. Cl. 294—93 14 Claims



1. A substrate holding apparatus comprising:

(a) a member comprised of a top surface, a bottom surface, a center region and a plurality of segments disposed around and integral with the center region, the segments being defined by a plurality of slits in the member, wherein the segments bend and overlap when subjected to a compressive force, thereby decreasing the width of the member, and wherein the extent of bending and overlapping of the segments spontaneously decreases when the compressive force lessens, thereby increasing the width of the member; and

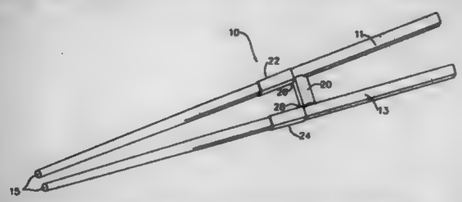
(b) compressive force means operatively associated with the member for controlling the amount of compressive force on the member.

5,486,029

APPARATUS FOR MANIPULATING CHOPSTICKS

David Kobayashi, 12404 Yellowhead Trail, Edmonton, Alberta, Canada

Filed Jan. 20, 1995, Ser. No. 375,671
Int. Cl.[6] A47G *21/10*; A47J *43/28*
U.S. Cl. 294—99.2 2 Claims



1. An apparatus for manipulating chopsticks, comprising:

a tubular polymer plastic body divided into a central portion and two wing portions by two transverse cuts, the size of the central portion being selected in accordance with a desired spacing between two chopsticks, each of the wing portions having axially extending bores of a size sufficient to accommodate a chopstick in friction fit relation, the transverse cuts extending only partially through the thickness of the tubular body leaving connective strips between the central portion and each of the two wing portions that serve as living hinges.

5,486,030

APPARATUS AND METHOD FOR LIFTING AND DEPOSITING BOTTLES HAVING HANDLES

Vincent Cobelo, Oldsmar, Fla., assignor to ABC Packaging Machine Corporation, Tarpon Springs, Fla.

Filed May 4, 1994, Ser. No. 238,219
Int. Cl.[6] B66C *1/66*
U.S. Cl. 294—113 33 Claims

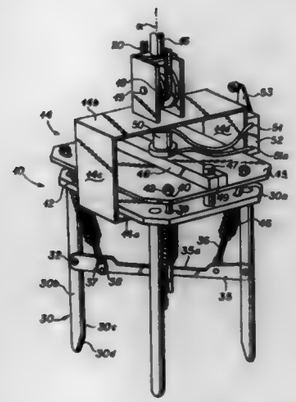
1. Apparatus for selectively engaging and disengaging a container having a handle protruding from it for transporting the container by its handle from one place to another, comprising:

(a) a movable frame;

(b) a plurality of fingers, each of said fingers having a proximal end and a distal end, said fingers being supported by their proximal end portions on said frame and protruding inwardly toward each other so that their distal ends terminate in a normal position adjacent to each other;

(c) means for moving said movable frame toward and away from said container when said container is in an initial position;

(d) means for manipulating said fingers to permit withdrawal of the distal ends of said fingers in an upwardly path with respect to said frame from each other for passing on opposite sides of said handle when said frame is moved downward toward said container and for enabling the distal ends of said fingers to move toward each other and to said normal position and between said handle and said container after said fingers have passed said handle;



(e) said means for moving said frame being adapted to move said frame away from said initial position of said container so that said container is carried by said fingers in said normal position with said fingers engaging said handle;

(f) said means for moving said frame being adapted to position said container on a receiving surface;

(g) said means for manipulating said fingers, being adapted for moving said distal ends of said fingers in a downward path and away from each other for releasing said handle; and

(h) said means for moving said frame being adapted to move said frame away from said container while said distal ends of said fingers are moved downwardly and away from each other for thereby releasing said container on its receiving surface.

5,486,031

SLIDEABLE MOUNTING ASSEMBLY FOR PICKUP TRUCK TOPPERS

David K. Ronchetti, 14201 Aspen Ave. NE., Prior Lake, Minn. 55372; Robert A. Ronchetti, 3018 - 6th Ave. East, and William L. Ronchetti, 1110 E. Howard St., both of Hibbing, Minn. 55746

Filed Mar. 15, 1994, Ser. No. 213,261
Int. Cl.[6] B60P *3/32*
U.S. Cl. 296—10 36 Claims



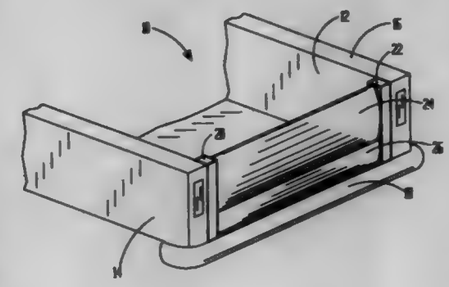
1. Assembly comprising, in combination: a first slide having a first slide surface, a first end, and a second end; a second slide having a first slide surface, a first end, and a second end, with the first slide surfaces of the first and second slides having complementary shapes allowing relative sliding of the first and second slides parallel to the first slide surfaces and allowing separation of the first and second slides by movemeat perpendicular to the first slide surfaces; means secured adjacent the first ends of the first and second slides and secured adjacent the second ends of the first and second slides for interlocking the ends with the slides in an interlocking position, with the interlocking means when secured to the slides preventing separation of the slides in the interlocking position by movement perpendicular to the first slide surfaces, with the interlocking means when secured to the slides preventing the slides from sliding parallel to the first slide surfaces beyond the interlocking position in a first direction, with the interlocking means when secured to the slides allowing sliding of the slides parallel to the first slide surfaces from the interlocking position opposite to the first direction; and means for preventing relative sliding of the first and second slides parallel to the first slide surfaces opposite to the first direction.

5,486,032

TAILGATE WITH AIR FOIL

Russ A. Reed, 506 Cranbrook, and Brian A. Jones, 1602 Lancelot Cir., both of Grand Prairie, Tex. 75050

Filed Nov. 22, 1994, Ser. No. 343,777
Int. Cl.[6] B62D *35/00*
U.S. Cl. 296—50 8 Claims



1. A tailgate with an integrated air foil mechanism for a pickup truck having an open top cargo area defined by three side walls and an open trailing end, comprising:

first and second control frames mounted on opposite ones of the pickup truck side walls, respectively, proximate to the open trailing end of the cargo area;

a main air foil wing having two ends, a convex side and a concave side, each end pivotally mounted to one said control frame, such that said main air foil wing spans the open trailing end between said control frames; and

a control apparatus mounted in at least one of said control frames, said control apparatus operable to cause said air foil to be positioned substantially parallel with said control frames in a substantially vertical position until the pickup truck reaches a sufficient speed wherein said control apparatus permits the main air foil wing to pivot such that it is substantially horizontal;

said control apparatus having:

a timing sprocket mounted on said pivot shaft inside of said first and second control frames,

a toothed tensioner pulley mounted on a tensioner spring, and

a toothed timing belt positioned around a portion of the circumference of said timing sprocket and said toothed tensioner pulley.

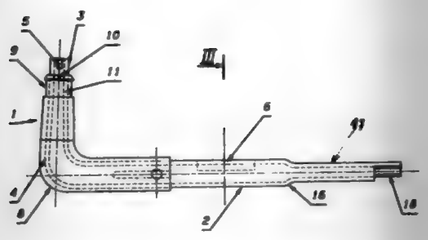
5,486,033

SUPPORT SHAFT FOR A VEHICLE SUN VISOR

René Lecorvaisier, Hombourg-Haut, and Christian Buchheit, Ham Sous Varsberg, both of, France, assignors to Gebr. Happich GmbH, Germany

Filed Oct. 3, 1994, Ser. No. 316,858
Claims priority, application Germany, Nov. 13, 1993, 43 38 860.4
Int. Cl.[6] B60D *3/00*
U.S. Cl. 296—97.13 10 Claims

1. A support shaft assembly for a sun visor of a vehicle, the vehicle having a ceiling provided with a bearing bracket for receiving the support shaft assembly, the sun visor having a body with a mounting housing formed therein, the mounting housing having a detent spring disposed thereon, the sun visor body being pivotable around a swing axis extending axially through the mounting housing, the support shaft assembly comprising:



an L-shaped support shaft having a diameter, the support shaft including:

a short arm having a free end, the free end having a diameter smaller than the diameter of the shaft, the short arm being receivable within the bearing bracket disposed on the vehicle;

a long arm adapted to be received within the mounting housing along the swing axis of the sun visor body, such that the sun visor body is rotatable around the long arm, the long arm including a flat for receiving the detent spring so that the sun visor body rests against the ceiling of the vehicle when the sun visor is not in use, the long arm further including a free axial end provided with a radial opening; and

a bend joining the short arm and the long arm; and

a plastic body formed over the bend of the support shaft, the plastic body including:

a first end disposed over the short arm of the support shaft and terminating before the free end of the short arm, the first end of the plastic body having a mounting shank formed thereon for mounting the support shaft to the bearing bracket; and

a second end disposed over the long arm of the support shaft and terminating before the flat of the long arm.

5,486,034

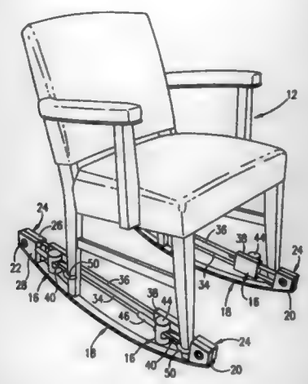
ROCKER APPARATUS

Donell R. Dalke, 1832 N. McComas, Wichita, Kans. 67203

Filed Nov. 10, 1994, Ser. No. 336,993

Int. Cl.[6] A47C *3/02*

U.S. Cl. 297—272.1 **15 Claims**



1. A rocker apparatus configured for detachably coupling with a piece of furniture having at least two legs depending therefrom for converting the furniture into a rocking device, comprising:

an arcuate rocker member including an elongated curved rocker bar presenting opposed distal and proximal ends and an adjustment rail extending between said ends;

a grasping assembly attached to said arcuate rocker member for grasping the furniture legs and coupling said arcuate member to the furniture, said grasping assembly including a grasping arm which is pivotal between a leg securing position wherein said grasping assembly grasps the furniture and a leg release position wherein said grasping assembly releases the furniture; and

adjustment means for selectively positioning said grasping assembly along the length of said adjustment rail.

5,486,035

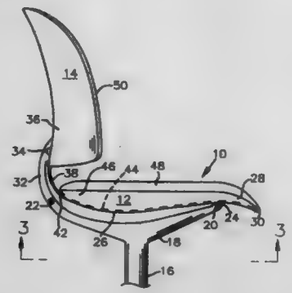
OCCUPANT WEIGHT OPERATED CHAIR

Marcus C. Koepke, 302 Farwell, and Earl H. Koepke, 65896 Scenic View Dr., both of Sturgis, Mich. 49091

Filed Aug. 1, 1994, Ser. No. 283,553

Int. Cl.[6] A47C *1/02*

U.S. Cl. 297—320 **7 Claims**



1. An occupant weight operated chair having a seat and a reclining back wherein the force required to recline the back is substantially uniform throughout the range of reclining movement and is controlled by the chair occupant's weight comprising, in combination, a seat formed of a stiffly flexible material having front and rear portions, and a concave upper configuration and a convex lower configuration between said portions, a back having upper and lower portions and a rear exterior surface, a transition connection portion formed of a stiffly flexible material interposed between and interconnecting said seat rear portion and said back lower portion, said transition connection having a concave upper configuration and a convex lower configuration between said seat and back, a support having a front attachment to said seat front portion and a rear pivot located rearwardly of the point of attachment of said seat rear portion to said transition connection portion, a link pivotally mounted on said support rear pivot and affixed to said back lower portion at a fixed predetermined position defining a rear attachment, the dimension between said front attachment to said rear attachment along the configuration of said seat and transition connection being greater than the straight line dimension between said front and rear attachments whereby reclining of said back about said pivot to deform said transition connection and seat rear portion raises said seat rear portion, the chair occupant's weight upon said seat rear portion automatically adjusting the force required to recline said back.

5,486,036

SEAT-HEIGHT ADJUSTING DEVICE

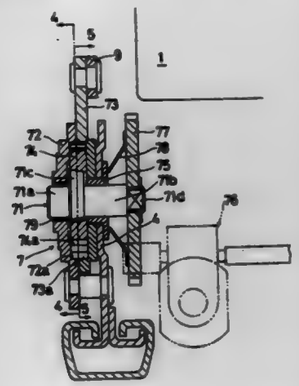
Sadao Ito, and Hiroshi Nawa, both of Aichi, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Sep. 17, 1993, Ser. No. 123,089

Claims priority, application Japan, Sep. 18, 1992, 4-249323

Int. Cl.[6] A47C *1/02*

U.S. Cl. 297—339 **8 Claims**



1. A seat height adjusting device disposed between a frame supporting a seat-cushion and an upper rail slidably supported by a lower rail for fixing to a vehicle-floor, the seat height adjusting device comprising:

a bush secured to the upper rail;

a supporting shaft having a first true round portion, a tapered eccentric portion and a second true round portion, the second true round portion being rotatably mounted in the bush, the bush and the rotatably mounted supporting shaft being movable in a lateral direction along the vehicle floor;

a first gear secured to the upper rail rotatably supporting the supporting shaft at the first true round portion and having an inner teeth portion;

a second gear linked to the frame and supported on the bush, and having an inner teeth portion having teeth differing in number from that of the inner teeth portion of the first gear;

an intermediate gear mounted on the tapered eccentric portion of the supporting shaft, having an outer teeth portion in engagement with the inner teeth portions of the first gear and the second gear and having a different number of teeth than each of the inner teeth portions of the first and second gears; and

means for urging the supporting shaft axially in order to tighten connection between the tapered eccentric portion of the supporting shaft and the intermediate gear.

5,486,037

INFANT HEADREST FOR CHILD SAFETY SEAT

Marge Harper, Littleton, Colo., assignor to Century Products Company, Macedonia, Ohio

Filed Nov. 4, 1994, Ser. No. 334,520

Int. Cl.[6] A47C *7/38*

U.S. Cl. 297—397 **7 Claims**

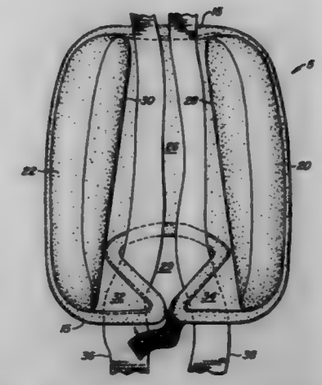
1. An infant headrest support for automobiles comprising, in combination:

a pair of automobile shoulder belts;

a headrest comprising a front portion for engaging an infant's head, said front portion being substantially flat and planar, and a back portion, said back portion having a pair of pillow sections spaced apart from one another and extending along the length of said headrest to form a recess running the length of said headrest along said back portion, and a pair of flaps;

an opening in said headrest, said flaps allowing access to said opening, said automobile shoulder belts passing through said opening, behind said front portion and passing through said recess formed between said pillow sections in said back portion;

wherein said flaps are selectively opened and secured to allow access to said opening by said shoulder belts, in order to secure said pair of automobile shoulder belts to said headrest.



5,486,038

Patent Not Issued For This Number

5,486,039

ELECTRO-HYDRAULIC BRAKING CORRECTOR

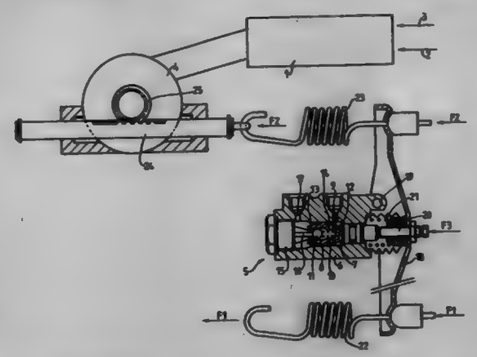
Jean-Paul Petiet, Marcoussis, France, assignor to Automobiles Peugeot, Paris, and Automobiles Citroen, Neuilly sur Seine, both of, France

Filed Jul. 13, 1993, Ser. No. 90,956

Claims priority, application France, Jul. 28, 1992, 92 09589

Int. Cl.[6] B60T *8/18*

U.S. Cl. 303—22.6 **4 Claims**



1. Electro-hydraulic braking corrector for an electrically-powered vehicle, comprising:

means for sensing the braking torque of an electric propulsion motor;

means for modifying the hydraulic pressure exerted by a braking system as a function of the sensed braking torque of the electric propulsion motor, being connected to the means for sensing the braking torque;

wherein the means for modifying the hydraulic braking pressure as a function of the braking torque of the electric motor comprises means that is mobile as a function of said sensed braking torque, and a servo-controlled braking compensator

operable for connection in the brake system between a master cylinder and a slave cylinder, and connected to the mobile means; and

wherein the compensator is connected to an articulated link having two ends, one end of the link being connected to the vehicle suspension by a first spring and the other end of the link being connected to said mobile means by a second spring.

5,486,040

BRAKE PRESSURE CONTROLLER FOR A HYDRAULIC VEHICLE BRAKE SYSTEM

Erhard Beck, Weilburg, and Dieter Dinkel, Eppstein, both of, Germany, assignors to ITT Automotive Europe GmbH, Germany

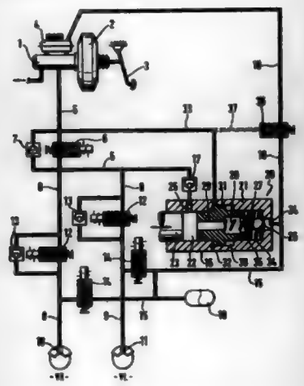
PCT No. PCT/EP92/01863, § 371 Date Aug. 25, 1994, § 102(e) Date Aug. 25, 1994, PCT Pub. No. WO93/08053, PCT Pub. Date Apr. 29, 1993

PCT Filed Aug. 14, 1992, Ser. No. 211,741

Claims priority, application Germany, Jan. 16, 1991, 41 34 214.3

Int. Cl.[6] B60T *8/34;8/48;8/42*

U.S. Cl. 303—113.2 **10 Claims**



1. A brake system for controlling fluid pressure in a wheel brake during normal braking, brake slip control and traction slip control, said brake system comprising:

a wheel brake;

a brake pedal;

a pressure fluid reservoir containing a pressure fluid;

a master brake cylinder in fluid communication with said pressure fluid reservoir and responsive to movement of said brake pedal for developing a pressure build up of pressure fluid in said master brake cylinder in response to actuation of said brake pedal;

a pump having an inlet and an outlet;

an auxiliary source of pressure fluid containing pressure fluid in fluid communication with said inlet of said pump;

first control means extending between said master brake cylinder and said wheel brake for:

(a) controlling pressure fluid flow from and to said master brake cylinder,

(b) permitting pressure fluid flow between said master brake cylinder and said wheel brake during normal braking as said brake pedal is actuated and without sensing a tendency of wheel lock,

(c) regulating pressure fluid flow to said wheel brake during brake slip control as a tendency of wheel lock is sensed, and

(d) preventing pressure fluid flow through said first control means to said master brake cylinder during traction slip control as wheel slippage is sensed;

second control means extending between said inlet of said pump and said pressure fluid reservoir for:

(a) preventing pressure fluid flow between said pressure fluid reservoir and said inlet of said pump during normal braking and brake slip control, and

(b) permitting pressure fluid flow between said pressure fluid reservoir and said inlet of said pump during traction slip control;

a pressure holding valve, disposed at said inlet of said pump, including a housing defining a cylindrical bore and including:

(a) a piston axially slidable within said cylindrical bore,

(b) a valve ball taking support on said piston through a first and a second compression spring which are arranged in series,

(c) a stop sleeve coupled to said piston, and

(d) a spring retainer disposed between said first and second compression springs and supported by said stop sleeve for placing said first compression spring under a greater preload than said second compression spring;

said pressure holding valve for:

(a) permitting pressure fluid flow from said wheel brake to said pump only when the pressure of said wheel brake exceeds an opening pressure in excess of atmospheric pressure:

(i) when pressure fluid flow between said master brake cylinder and said wheel brake is permitted during normal braking, and

(ii) when pressure fluid flow between said master brake cylinder and said wheel brake is regulated during brake slip control, and

(b) permitting pressure fluid flow from said pressure fluid reservoir to said pump upon activation of said pump in the absence of pressure fluid flow from said master brake cylinder to said first control means when said brake pedal is not actuated during traction slip control; and

third control means extending between said outlet of said pump and said first control means for conducting pressure fluid flow from said outlet of said pump to said first control means during brake slip control and traction slip control.

5,486,041

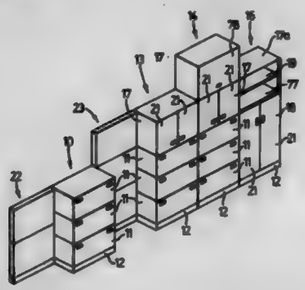
CABINET STRUCTURES COUPLED TO ADJACENT CABINET STRUCTURES AND TO RECTANGULAR FRAME ELEMENTS, AND EQUIPPED WITH ANTI-TILT MECHANISMS AND ROLLING AND SLIDING BASES

Christopher C. Sykes, Toronto, Canada, assignor to International Fuel Cells Corporation, South Windsor, Conn.

Filed May 26, 1994, Ser. No. 249,606

Int. Cl.[6] F16B *12/10*

U.S. Cl. 312—111 **14 Claims**



1. Cabinet structure coupling to a superadjacent similar cabinet structure, each such cabinet structure comprising interconnected side, top and back panels, and base structure comprising a downwardly facing channel connected at least to the side panels, the side and top panels having interengaging bevelled edge surfaces, and at least one channel section recess formed in at least one of said bevelled edge surfaces and extending outwardly to define an opening on an outer corner edge of the cabinet structure, and, in

combination therewith, a coupling member connecting to the base structure of said superadjacent cabinet structure and having a rectangular tab portion inserted in said opening and an elongated web portion seating in said downwardly facing channel of said superadjacent similar cabinet structure and said tab portion inclining generally longitudinally away from one end of said web portion generally toward an opposite end thereof.

5,486,042

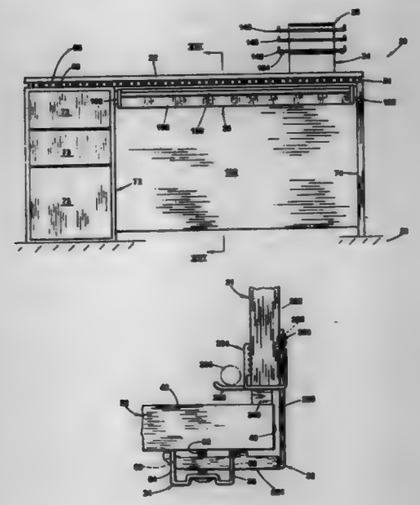
FURNITURE ARRANGEMENT

William A. Heisler, East Grand Rapids; David A. Shipman, Grand Rapids; Anthony A. Stachowiak, Belmont, all of Mich.; Kurt S. Bodden, Hudson, Ohio; Michael E. Wurth, Grand Rapids, Mich., and Norbert Dellekoenig, Effingham, Ill., assignors to Steelcase, Inc., Grand Rapids, Mich.

Filed Sep. 9, 1993, Ser. No. 118,895

Int. Cl.[6] A47B *17/00*

U.S. Cl. 312—196 **29 Claims**



1. A furniture unit for workstations, comprising:

a worksurface including a top surface, a bottom surface, and marginal edges extending therebetween;

a rail attached to the bottom surface of said worksurface, and extending along at least one of said marginal edges, said rail including a plurality of first apertures;

a support connected to said rail for supporting said worksurface at a predetermined height above a floor surface;

a plurality of accessory units configured for use on said workstation; and

means for releasably selectively mounting at least one of said accessory units to said rail along the one marginal edge of said worksurface, and positioning said one accessory unit above said worksurface, said means for releasably selectively mounting including a bracket with a bayonet-like leg releasably engageable with one or more of said first apertures whereby said one accessory unit can be located to personalize and equip said furniture unit.

5,485,843

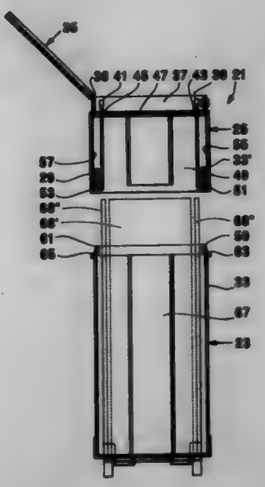
CARRYING CASE HAVING DETACHABLE STEP STOOL

Arthur G. Carr, Washington, D.C.; Christopher A. Durgin, Springfield, Va.; William D. Griffiths, Annandale, Va., and J. Alexander Hill, Alexandria, Va., assignors to Nomadic Structures, Inc., Springfield, Va.

Filed Feb. 18, 1994, Ser. No. 198,775

Int. Cl.[6] A47B *81/00*

U.S. Cl. 312—235.1 **23 Claims**



1. A carrying case assembly having a detachable step stool, comprising:

a carrying case portion including one or more first side walls, the first side walls defining a first interior space and a first top opening;

a step stool portion including a top portion and one or more second side walls, the second side walls defining a second interior space and a bottom opening;

means for attaching the step stool portion to the carrying case portion such that the first and the second interior spaces, together, form a third interior space;

the step stool portion being removable from the carrying case portion and being adapted to support a person thereon; and

one or more removable panels for defining vertical spaces in the first interior space, an interior surface of the first side walls being formed with one or more pairs of vertical grooves for receiving opposite edge portions of the panels.

5,486,044

COOLER DOOR DISPLAY RACK

James L. Bennett, 7516 Hayes Cir., Ralston, Nebr. 68127

Continuation-in-part of Ser. No. 833,107, Feb. 10, 1992, Pat. No. 5,330,261. This application Apr. 29, 1994, Ser. No. 235,644

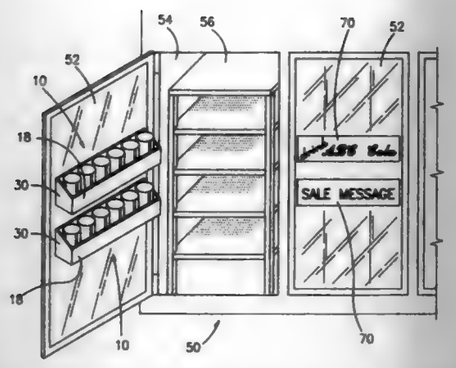
The portion of the term of this patent subsequent to Jul. 19, 2011, has been disclaimed.

Int. Cl.[6] A47F *5/00;3/06*

U.S. Cl. 312—321.5 **13 Claims**

1. A cooler door display rack for a cooler having a frame at least partially defining a cooling compartment, a transparent door pivotally mounted on said frame and having interior and exterior faces, storage racks mounted in vertically spaced apart relation within the cooling compartment and in horizontally spaced relation from the door, the space between the door and the storage racks defining a cooling air flow zone, the cooler door display rack comprising,

an elongated support shelf of a shape for supporting a plurality of beverage containers generally in a row, said shelf having front, back and side peripheral edges,



retention means operatively associated with said support shelf for retaining beverage containers thereon and obstructing sliding movement of beverage containers off of said shelf, said retention means including a first front wall, rear retention means and side retention means, said first front wall attached to said elongated support shelf adjacent said front edge, said first front wall extending upwardly from said elongated support shelf,

said first front wall having a greater surface area than said rear retention means and said side retention means,

advertising display means operatively associated with said support shelf for removably and replacebly receiving and supporting advertising indicia in upright relation adjacent said front edge,

said advertising display means being of a size and shape such that advertising indicia supported therein cover at least half the area of said first front wall, and

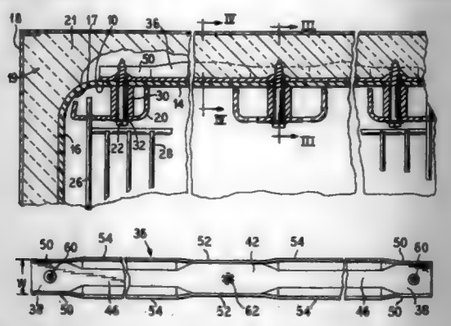
securement means for securing said shelf to the inside surface of a transparent door such that advertising indicia supported on said advertising display means is arranged adjacent to and visible through the transparent door.

5,486,045

SHELF LADDER REINFORCEMENT MEMBER FOR A REFRIGERATION APPLIANCE

James F. Dasher, Center Township, Vanderburgh County, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Nov. 1, 1993, Ser. No. 143,587
Int. Cl.[6] A47B *96/04*
U.S. Cl. 312—406 **13 Claims**



1. A shelf ladder reinforcement member comprising:

a member with a length greater than a width and with end portions having a first flat face with a width substantially the same as the width of said member,

at least one intermediate portion having a second flat face adjoining said first flat faces, said second flat face having a width less than the width of said member,

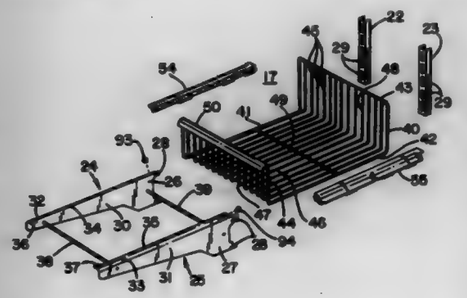
side walls extending from said first flat face at approximately 270°, and alternatingly side walls extending from said second flat faces at an angle in the range of 185°–265°.

5,486,046

CANTILEVER SLIDE OUT REFRIGERATOR SHELF

Nana B. Jernstrom, and Jeffrey N. Wilson, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jun. 24, 1994, Ser. No. 265,215
Int. Cl.[6] A47B *96/06*
U.S. Cl. 312—408 **10 Claims**



1. A refrigerator storage assembly comprising:

a pair of elongated support members for mounting in spaced apart, side-by-side relationship within a refrigerator; each of said support members including an elongated storage structure support surface extending front to rear within the refrigerator and a flange extending along said support surface and projecting toward the other of said support members;

a storage structure of open wire construction including a bottom having a plurality of longitudinally elongated rods extending in spaced apart, side-by-side relationship front to rear of said storage structure;

a pair of elongated mounting members, each of said mounting members including elongated walls forming a recess to receive one of a corresponding pair of rods along a corresponding lateral edge of said storage structure and each of said mounting members also including an additional wall and ribs forming spaced apart detents to receive the other of said corresponding pair of rods for mounting said mounting member to said storage structure by inserting its recess around said corresponding one of said corresponding pair of said rods and then rotating said mounting member to bring its detents into register with said corresponding other of said corresponding pair of said rods;

each of said mounting members having an elongated mounting surface resting on said support surface of a corresponding support member for. Sliding movement of said storage structure between a first position fully received within the refrigerator and a second position partially out of the refrigerator; and

each of said mounting members having at least one lip extending downward inside and outward under said flange of said corresponding support member.

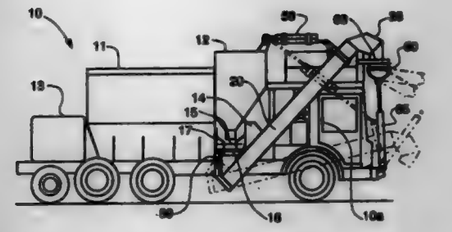
5,486,047

MIXING AUGER FOR CONCRETE TRUCKS

Harold M. Zimmerman, R.D. #1, Wabash Rd., Ephrata, Pa. 17522

Filed Jun. 5, 1995, Ser. No. 465,460
Int. Cl.[6] B28C *5/24*; B01F *7/08*
U.S. Cl. 366—50 **20 Claims**

1. A mixing auger apparatus for use in combining a plurality of material components to create a mixture, at least one of said component materials including chunks, comprising:



a mixing auger having an elongated central shaft and spiral flighting affixed thereto, said shaft being mounted for rotation and having an inlet end and a discharge end;

a flexible housing circumferentially surrounding said mixing auger and defining a chamber cooperable with said flighting to permit said flighting to convey said materials from said inlet end to said discharge end upon rotation of said shaft, said flexible housing being operable to flex radially relative to said shaft to prevent said material chunks from wedging between said flighting and said housing, said housing defining an inlet opening corresponding to said inlet end of said mixing auger to permit the introduction of said component materials to said inlet end and a discharge opening corresponding to said discharge end of said mixing auger to permit said mixture to be discharged from said discharge end; and

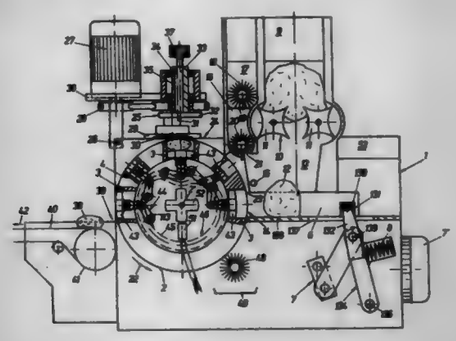
means for rotating said central shaft.

5,486,048

APPARATUS FOR TREATING DOUGH

Helmut König, deceased, late of Graz, Austria, and Elisabeth König, heiress, Ursprungweg 70, Graz, Austria

PCT No. PCT/AT92/00089, § 371 Date Jan. 10, 1994, § 102(e) Date Jan. 10, 1994, PCT Pub. No. WO93/00818, PCT Pub. Date Jan. 21, 1993
PCT Filed Jul. 9, 1992, Ser. No. 178,289
Claims priority, application Austria, Jul. 12, 1991, 1412/91
Int. Cl.[6] A21C *5/04; 7/06; 7/04; 9/04*
U.S. Cl. 366—76.8 **15 Claims**



1. Apparatus for the treatment of dough comprising:

a drum having a longitudinal axis, said drum being mounted for rotation around said axis, said drum including radially inwardly extending openings on an outer peripheral surface of the drum for receiving dough portions;

a first station for introducing dough portions into said openings;

a second station for treating the dough portions received in the openings;

a third station for ejecting the dough portions from the openings, said first, second and third stations being disposed near the periphery of the drum and further being spaced circumferentially around the periphery of the drum;

means for rotating the drum in stepwise increments;

a plurality of pistons, each respectively arranged for sliding radial movement within a corresponding one of said openings;

curved guide means associated with said plurality of pistons for positively guiding inward and outward radial movement of the pistons during at least one phase of treatment, said guide means being mounted for rotation around the axis of drum, said guide means having a predetermined starting rotational position, said guide means comprising at least two curved path sections carried on at least two cam members, said cam members being received in assembled relation such that said curved path sections cooperate to form said guide means, said cam members being adjustable relative to each other independently of their rotational motion;

means for rotating the guide means relative to the drum at least during phases when the drum is not being rotated, said means comprising at least two concentrically bearingly supported shafts respectively associated with said cam members;

adjustment means for adjusting the starting rotational position of the guide means; and

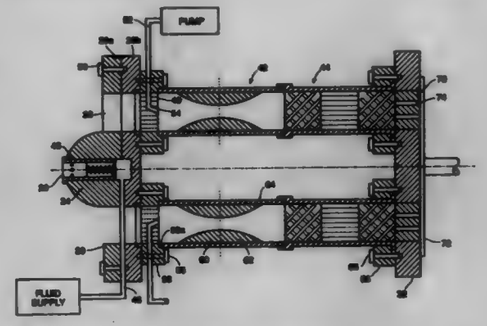
adjustment means for adjusting rotational positions of said shafts relative to each other.

5,486,049

APPARATI FOR MIXING FLUID SUBSTANCES

Jack K. Boatman; John T. Farnsworth; Roger D. Johnson, all of St. Joseph, Mo., and Linda A. Young, Roxbury, Conn., assignors to Nestec S.A., Vevey, Switzerland

Filed Jan. 28, 1994, Ser. No. 188,437
Int. Cl.[6] B01F *5/04*
U.S. Cl. 366—175.2 **27 Claims**



18. An apparatus for treating fluid materials comprising:

an extruder for extruding a flow of a fluid substance from an extruder discharge end to obtain an extrudate flow;

an adapter means integrated with the extruder discharge end to converge the extrudate flow to mute lateral flow of the extrudate flow due to effects of screw rotation to obtain a converged extrudate flow;

means positioned for partitioning the converged extrudate flow into a plurality of extrudate flow streams;

conduits connected to the partitioning means and having conduit boundaries for receiving, confining and transporting the partitioned extrudate flow streams so that each conduit receives and the boundary of each conduit confines and transports one extrudate flow stream;

plate means integrated with at least one conduit and having a portion disposed centrally with respect to a cross-section of the conduit boundary and having a plurality of apertures therethrough which are positioned about the centrally disposed portion for segmenting the fluid substance flow transported for forming segmented substance matrix flow containing a network of voids; and

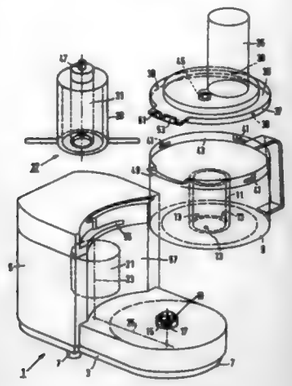
means associated with each plate means for discharging a flow of a fluid additive at a position substantially coincident with the centrally disposed plate means portion for introducing the additive into the segmented substance matrix flow to obtain a combined substance and additive flow.

5,486,050

KITCHEN MACHINE COMPRISING A LID LOCK WITH A CENTRIFUGAL MEMBER

Gerard J. Lenting, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 2, 1994, Ser. No. 284,968
Claims priority, application Belgium, Aug. 4, 1993, 09300811
Int. Cl.[6] B01F 7/16
U.S. Cl. 366—314 11 Claims



1. A kitchen machine with a housing and a bowl which can be placed on the housing and can be closed by means of a lid, while a rotatable tool can be placed in the bowl and driven by means of an electric motor arranged in the housing, the kitchen machine being provided with a locking device for locking the lid during rotation of the tool, characterized in that the locking device is provided with a centrifugal member which is rotatably coupled to a shaft which is drivable by the electric motor and which is movable from a first into a second position under the influence of a rotation of said drivable shaft, and with a safety member which cooperates with the lid and with the centrifugal member, the safety member releasing the lid in the first position of the centrifugal member and locking the lid in the second position of the centrifugal member.

5,486,051

CLOSURE ARRANGEMENT HAVING A BREAKAWAY SEAL

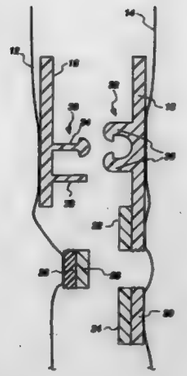
Timothy J. May, Greenville, Wis., assignor to Reynolds Consumer Products Inc., Appleton, Wis.

Filed Apr. 11, 1994, Ser. No. 225,866
Int. Cl.[6] B65D 33/16
U.S. Cl. 383—200 33 Claims

1. A closure arrangement for a polymeric bag having first and second opposing films, comprising:

first and second generally parallel base strips substantially co-planar with each other and laterally spaced from each other, each of said first and second base strips having an inner and outer surface, said outer. Surface of each of said first and second base strips being adapted for attachment to the first film;

a breakaway strip disposed generally parallel to and substantially co-planar with said first and second base strips said breakaway strip having opposing inner and outer surfaces and opposing upper and lower sides extending between Said inner and outer surfaces, said breakaway strip disposed between said spaced first and second base strips such that said upper side of said breakaway strip is detachably connected to said first base strip to form a first breakaway seal and said lower side of said breakaway strip is detachably connected to said second base strip to form a second breakaway seal, said inner surface of said breakaway strip adapted for attachment to the second film: and



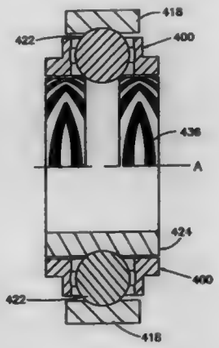
a heat resistant strip attached to said outer surface of said breakaway strip.

5,486,052

SOLID-LUBRICATED BEARING ASSEMBLY

Lewis B. Sibley, Paoli, and C. Brian Kelly, Secane, both of Pa., assignors to Tribology Systems, Inc., Paoli, Pa.

Continuation of Ser. No. 794,152, Nov. 18, 1991, Pat. No. 5,356,227, which is a continuation-in-part of Ser. No. 374,167, Jun. 29, 1989, Pat. No. 5,066,145. This application Oct. 4, 1994, Ser. No. 317,798
Int. Cl.[6] F16C 33/66;33/38
U.S. Cl. 384—463 9 Claims



1. A solid lubricated bearing assembly comprising:

a. a pair of axially aligned mutually facing rotatable bearing members comprising:

i. radially mutually facing bearing surfaces; and

ii. radially mutually facing annular surfaces substantially adjoining said bearing surfaces;

b. rotatable bearing elements retained between and in facing rotatable contact with said mutually facing bearing surfaces;

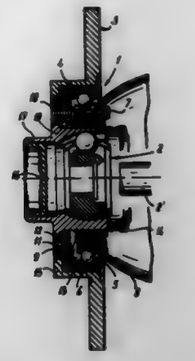
c. at least one of said facing annular surfaces being etched sufficiently to generate circumferential air currents resisting axial travel of solid lubricant material in said bearing assembly during relative rotation of said members respecting one another.

5,486,053

BEARING UNIT FOR A VEHICLE WHEEL

Thomas Beagley, La Membrolle Sur Choisille, France; Hendrikus J. Kapaan, Nieuwegein; Leslie Berryman, Vianen, both of, Netherlands, and Olivier Message, Tours, France, assignors to SKF Industrial Trading & Development Company B.V., Nieuwegein, Netherlands

Filed Mar. 17, 1993, Ser. No. 32,809
Claims priority, application Netherlands, Mar. 19, 1992, 9200511
Int. Cl.[6] F16C 33/64; B60K 17/30
U.S. Cl. 384—513 29 Claims



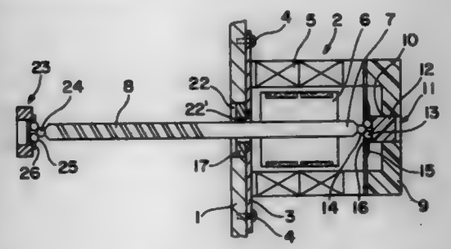
1. Bearing unit for a vehicle wheel, comprising a three-point or four-point bearing with an inner and an outer race, each with a single bearing groove containing a single series of rolling elements, which inner race has means for fixing to the suspension construction for the wheel, characterised in that at least the outer race has a radially inward pointing bearing flange, which outer race bearing flange is provided with fixing means for fixing a wheel or drive means or brake means thereto.

5,486,054

BEARING SYSTEM IN A MOTOR FOR A FLOPPY DISK DRIVE APPARATUS

Toshihiko Nagata, Ogasa; Hiroshi Sano, Iwata; Takayuki Yamawaki, Kakegawa, and Kunitake Matsushita, Toyohashi, all of, Japan, assignors to Minebea Co., Ltd., Kitasaku, Japan

Filed Sep. 12, 1994, Ser. No. 304,545
Int. Cl.[6] F16C 19/10
U.S. Cl. 384—610 3 Claims



1. A bearing system in a motor for a floppy disk drive apparatus in which a rotary shaft, having a rotor fixedly mounted thereto, extends to an outside portion of the motor to act as a leadscrew, the bearing system comprising:

a protective cap mounted to one side of the motor;

a first pivot bearing arranged movable to and from the protective cap in an axial direction of the rotary shaft;

a second pivot bearing mounted to a base for installation of the motor;

a plate to which the motor is secured;

a thrust spring to urge the first pivot bearing in the axial direction of the rotary shaft;

the rotary shaft being rotatably supported at one end by the first pivot bearing and at the other end by the second pivot bearing; and

an alignment bushing arranged through which the rotary shaft of the motor extends without direct contact and closely fitted into a positioning hole provided in the plate to which the motor is secured.

5,486,055

OUTPUT METHOD AND APPARATUS

Hirotsugu Oka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 685,640, Apr. 16, 1991, abandoned.
This application Apr. 5, 1994, Ser. No. 223,126
Claims priority, application Japan, Apr. 20, 1990, 2-105622
Int. Cl.[6] B41J 5/00
U.S. Cl. 400—61 24 Claims



1. An apparatus for controlling a printer to output a plurality of documents on a display of labels, comprising:

first input means for inputting the absolute position of a predetermined fixed standard position for printing a plurality of labels after setting a label sheet having the plurality of labels in the printer;

second input means for inputting the size of a label and the position of the next label to determine the relative position of print information to be printed on the plurality of labels with respect to the absolute position of the fixed standard position;

first guide means for controlling the position of the printer for outputting a document for a first label on the basis of the absolute position input by said first input means; and

second guide means for controlling the position of the printer for outputting a document for a second label on the basis of the relative position input by said second input means.

5,486,056

ADJUSTABLE, LOCKABLE DAMPER

Richard P. Thorn, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Jun. 30, 1993, Ser. No. 85,853
Int. Cl.[6] A47C 1/024
U.S. Cl. 403—322 20 Claims

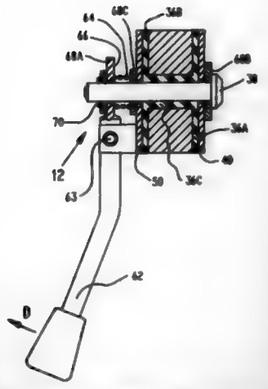
1. An adjustable, lockable damping device for damping motion between a first member relative to a second member, comprising:

(a) a first relatively thin flat plate having inwardly and outwardly facing planar surfaces and attachment means for attaching to one of said first and said second members;

(b) a second relatively thin flat plate having inwardly and outwardly facing planar surfaces and attachment means for attaching to one of said first and said second members, said second plate being attached to the same one of said first and said second members as said first plate;

(c) a center plate having two opposed outwardly facing planar surfaces and attachment means for attaching to a remaining one of said first and said second members;

(d) a first elastomer element sandwiched between the inwardly facing planar surface of said first plate and an outwardly facing planar surface of said center plate;



(c) a second elastomer element sandwiched between the inwardly facing planar surface of the second plate and another outwardly facing planar surface of said center plate;

(f) user-operable clamping means compressing said outwardly facing planar surfaces of said first and said second plates against said elastomer elements with a first compression force in a first non-user-engaged position, lever means for moving said user-operable clamping means to a second position substantially reducing said first compression force, such that said first and second members can be selectively locked relative to said center plate to restrain relative movement between said first and said second members; and

(g) surface effect damper means provided for maintaining damping between said first and said second members even when said clamping means is in said second position, such that rotational motion of said first member is damped relative to said second member whereby said first and said second members move relative to each other at a controlled rate.

5,486,057

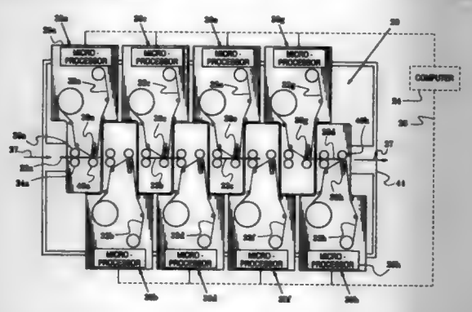
MULTICOLOR PRINTER SYSTEM HAVING MULTIPLE PRINT HEADS

Donald K. Skinner, West Hills; Yoshi Yagi, North Hill, and Wilfried Zogg, La Crescenta, all of Calif., assignors to Eltron International, Inc., Simi Valley, Calif.

Continuation of Ser. No. 879,034, May 6, 1992, abandoned. This application May 10, 1994, Ser. No. 240,260

Int. Cl.[6] B41J *2/32*

U.S. Cl. 400—120.02 **14 Claims**



1. A system for successively transporting discrete cards, each card having a predetermined length, along a card path from an upstream entrance to a downstream exit, and for printing on both faces of each card as it is being transported along said path, said system comprising:

a plurality of substantially identical printer modules arranged in succession along a path, each of said printer modules including;

(a) print means including a transfer ribbon for printing one of a plurality of colors on a face of a card transported therepast; and

(b) drive means for incrementally transporting each card along a portion of said path, past said print means, to the drive means of a succeeding printer module;

said plurality of printer modules arranged in succession along said path alternately comprising a printer module from a first set having its print means mounted adjacent a first side of said path to print on a first face of each card transported therepast, and a printer module from a second set having its print means mounted adjacent a second side of said path to print on a second face of each card transported therepast, successive ones of said printer modules being closely positioned so that the respective drive means thereof are spaced by a distance less than said predetermined card length.

5,486,058

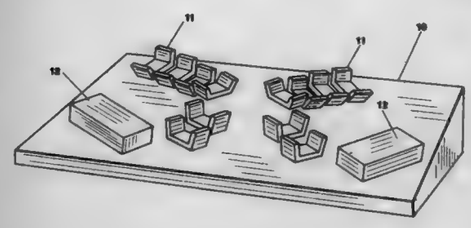
CONTINUOUS TOUCH KEYBOARD

Donald E. Allen, 1012 W. Eskridge Ave., Stillwater, Okla. 74075

Filed Aug. 9, 1994, Ser. No. 287,785

Int. Cl.[6] B41J *5/10;5/28*

U.S. Cl. 400—485 **2 Claims**



1. A keyboard for in-putting data into an information processing device, and which keyboard may be operated by the operator without removing the hands from the keyboard, comprising:

a keyboard base or enclosure;

a plurality of four position actuators mounted on said keyboard base or enclosure arranged conformably to the natural position of both right and left hands of an operator;

each of said actuators comprising a truncated vee cap, and a stem terminating in a shutter, shaped to permit selective blocking of light impulses to either the inner or the outer of two transversely mounted optic fibers or of both fibers, by inward, outward or downward movement of the actuator cap by the respective fingers;

two of said actuators being mounted on said keyboard conformably under the right and left palms of the operator, the said actuator caps being covered by palm rests with means to activate said actuators by motion of the palms;

means for assigning letters, numerals, symbols and functions to each of said positions of said actuators;

means for sensing each of the four positions of each of said actuators; and

where said ten base actuators are arranged on said keyboard in three dimensions to conform to the arc of fingertips and to their differences in length between the thumb and the other four fingers in a cupped pendant hand, and the actuators for fingers **2**, **4**, and **5** and the thumb are elevated above the other actuators.

5,486,059

KEYBOARD HAVING IMPROVED KEYTOP

Seiichi Iwasa; Hideyuki Motoyama, and Makoto Yoshioka, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 23, 1993, Ser. No. 21,227

Claims priority, application Japan, Feb. 27, 1992, 4-041582

Int. Cl.[6] B41J *5/08*

U.S. Cl. 400—488 **34 Claims**



1. A keyboard comprising:

a keyboard body;

a plurality of keys arranged in rows and columns; and

switching means, coupled to the keys, for turning switching elements ON and OFF in response to operations on the plurality of keys,

a special key among the plurality of keys having a keytop which is at least a stroke length of the special key higher than keytops of keys arranged in a row in which the special key is located.

5,486,060

Patent Not Issued For This Number

5,486,061

PAPER FEEDING METHOD AND APPARATUS FOR PREVENTING THE DOUBLE FEEDING OF PAPERS

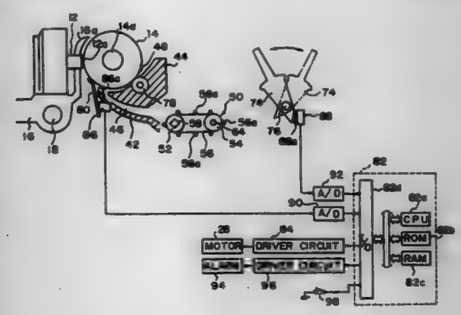
Kazuhiro Kakuguchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 572,273, Aug. 24, 1990, abandoned. This application Jan. 7, 1994, Ser. No. 178,629

Claims priority, application Japan, Aug. 25, 1989, 1-219135

Int. Cl.[6] B41J *11/00*

U.S. Cl. 400—605 **27 Claims**



1. A paper feeding apparatus for selectively feeding at least first and second papers to a paper-processing station through at least a first and second paper guide path, comprising:

first feeder means for selectively feeding the first paper through said first paper guide path to said paper-processing station;

second feeder means for feeding the second paper through said second paper guide path to said paper-processing station;

selecting means for selecting one of said first feeder means and said second feeder means;

monitor means for monitoring a paper fed by said first and second feeder means to said paper-processing station through said first and second paper guide paths and includes means for generating, in the event of a double feeding of both papers, a signal indicating an occurrence of the double feeding of the papers, wherein said monitor means also monitors whether said first feeder means is selected to feed the first paper through said first paper guide path to said paper-processing station; and

alarm means for receiving said signal from said monitor means and warning of the occurrence of the double feeding of the papers on the basis of the signal generated by said monitor means.

5,486,062

PRINTER-CONTAINING APPARATUS

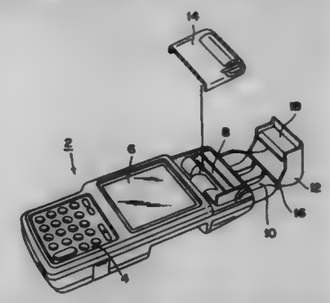
Shinichiro Tsurumaru, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 17, 1994, Ser. No. 291,860

Claims priority, application Japan, Jan. 29, 1993, 5-271487

Int. Cl.[6] B41J *15/16*

U.S. Cl. 400—618 **4 Claims**



1. An apparatus in which a printer in which roll paper is used as a printing paper is contained, comprising:

a roll paper accommodation section for receiving roll paper having a leading end having a rib for reducing the friction between said roll paper accommodation section and the roll paper;

a printer housing having a roll paper introduction portion opened therein for introducing the leading end of the roll paper into said printer therethrough;

a cover pivotally mounted for opening and closing movement on said roll paper accommodation section, said cover having a rib for reducing the friction between said cover and the roll paper; and

a guide provided integrally on said cover for limiting the width of the passage of the leading end of the roll paper at said roll paper introduction portion.

5,486,063

METHOD AND APPARATUS FOR SENSING THE LENGTH OF LABEL OR TAG MEDIA BY DETECTING CHANGES IN RELATIVE THICKNESS

Duane M. Fox, Snohomish, and Joel A. Schoen, Woodinville, both of Wash., assignors to Intermec Incorporated, Everett, Wash.

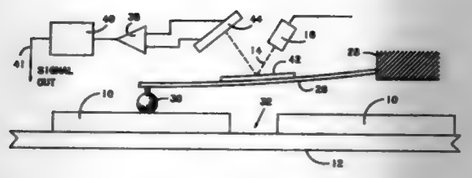
Filed Jan. 9, 1995, Ser. No. 370,989

Int. Cl.[6] G01N *21/86*

U.S. Cl. 400—708 **8 Claims**

1. Sensing apparatus for determining edge-indicating changes in thickness of a moving web from a fixed surface over which the web is moving comprising:

a) a sensor disposed above the fixed surface measuring the distance to a surface passing beneath it and outputting a first signal reflecting said distance;



b) an amplifier amplifying said first signal to a usable level second signal; and,

c) a detector sensing changes in said second signal beyond a pre-established threshold amount and outputting a third signal indicating an edge has been found; wherein said sensor comprises:

d) a beam fixedly carried above the fixed surface on one end and having a free end in contact with the web, said beam being self-biased to have said free end contact the web for all thicknesses thereof whereby said beam flexes in response to changes in thickness of the web;

e) a mirror carried by said beam to flex therewith;

f) a light source directing a light beam onto said mirror to be reflected thereby; and,

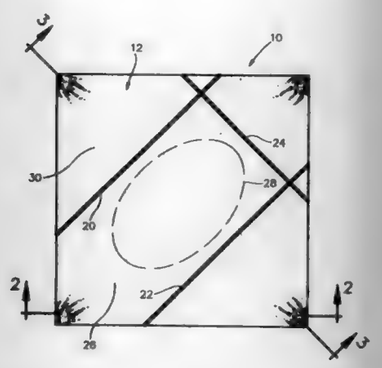
g) a light sensor having a sensing surface positioned to have said light beam reflected by said sensing surface thereof in at least one position of said free end, said light sensor having a signal output being said first signal.

5,486,064

SOAP GRIP FOR BATHING

Eugene L. Schulte, 8301 16½ Mile Rd., Sterling Heights, Mich. 48312

Filed Sep. 15, 1994, Ser. No. 306,682
Int. Cl.[6] A47K *7/03*
U.S. Cl. 401—201 **4 Claims**



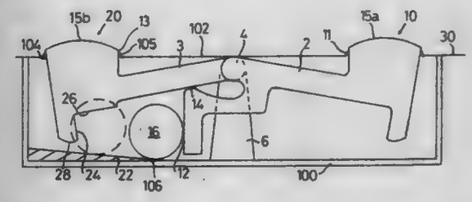
1. A reusable soap holder and grip for use in sudsing and lathering by a user while bathing, said holder being comprised of separate integral first and second panels of cloth positioned in overlying relation, a seam connecting the panels together in a generally U-shaped seam to provide a pocket closely receiving a bar of soap, said first and second panels extending outwardly around said seam to form disconnected and separate flaps extending from each of said panels, said flaps being completely free on exterior edges, said panels having a porous quality to promote sudsing and lathering from the bar of soap inside the pocket when wetted, the cloth being comprised of stretchable non-woven polyester felt, the seam being formed by a heat seal of the polyester felt and said pocket being stretchable to receive various sizes of bars of soap.

5,486,065

TRAFFIC SPEED CONTROL UNIT AND ASSEMBLY

Richard M. James, 30 Holly Lane, Erdington, Birmingham, England

Filed Dec. 1, 1994, Ser. No. 343,583
Claims priority, application United Kingdom, Jun. 3, 1992, 9211749
Int. Cl.[6] E01F *9/047*
U.S. Cl. 404—15 **13 Claims**



12. A traffic speed control unit for mounting in a housing recessed in a traffic surface to provide a jolt to a wheel of a vehicle travelling on the traffic surface faster than a predetermined threshold speed, comprising:

a first support surface and a second support surface mounted in the housing, said first support surface being positioned so as to be moved by contact with the wheel of the vehicle and said second support surface being positionable in an abutment position proud of the road surface for disrupting smooth travel of the wheel of the vehicle; and

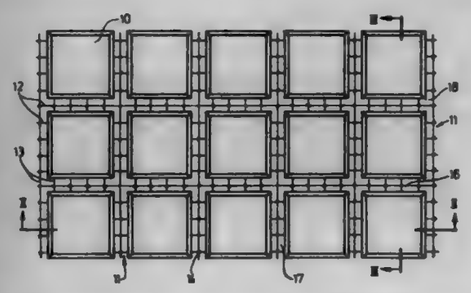
mechanical control means adapted to be removably positioned by said first support surface into weight transmitting relation with said second support surface long enough to provide a jolt to a wheel of a vehicle travelling faster than the threshold speed, but not long enough to provide a jolt to a wheel of a vehicle travelling slower than the threshold speed.

5,486,066

PAVING STONE SET AND PROCESS AND DEVICE FOR THE MANUFACTURE THEREOF

Gerhard Hagenah, Worpswede, Germany, assignor to SF-Kooperation GmbH Beton Konzepte, Bremen, Germany

PCT No. PCT/EP92/02670, § 371 Date May 19, 1994, § 102(e) Date May 19, 1994, PCT Pub. No. WO93/10310, PCT Pub. Date May 27, 1993
PCT Filed Nov. 20, 1992, Ser. No. 244,103
Claims priority, application Germany, Nov. 23, 1991, 41 38 564.0
Int. Cl.[6] E01C *11/16*
U.S. Cl. 404—45 **9 Claims**



1. A device for the manufacture of paving stone sets comprising concrete paving stones which are spaced apart and are joined together by a holding grid,

said device comprising a concrete mold having a flask defining die cavities for respective concrete paving stones, which flask rests on a molding plate, wherein

a) the flask is divided along a horizontal partition plane extending at a distance from a lower limit of the die cavities and running approximately parallel to the molding plate,

b) the flask comprises a top part-flask, fixed against horizontal movement, and a bottom part-flask which is horizontally movable relative to said top part-flask,

c) the bottom part-flask comprises only transverse mold walls extending in the direction of a drawing motion of the bottom part-flask, and

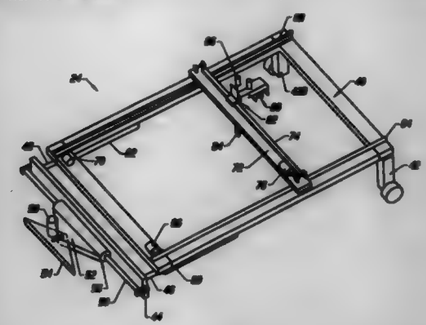
d) means for drawing off the bottom part-flask from the molding plate, relative to the fixed top part-flask, in the horizontal direction.

5,486,067

APPARATUS AND METHOD FOR MARKING A SURFACE

Duc Huynh, Fremont; Daniel D. Sieben, Menlo Park, and Donald W. Nusbaum, Woodside, all of Calif., assignors to Pavement Marking Technologies, Inc., Menlo Park, Calif.

Filed Dec. 14, 1993, Ser. No. 167,662
Int. Cl.[6] E01C *23/16;* **E01F** *9/04*
U.S. Cl. 404—84.05 **48 Claims**



32. In an apparatus for marking a surface, the combination comprising:

a surface marking mechanism supporting a material dispenser, said surface marking mechanism including

means for securing said surface marking mechanism to a transport vehicle,

means for manipulating said material dispenser relative to a plane substantially parallel to said surface,

means for moving said material dispenser along a z-axis generally orthogonal to said surface, and

means for rotating said material dispenser around a w-axis substantially normal to said surface; and

a controller which generates control signals, which are conveyed to said surface marking mechanism, to cause said surface marking mechanism to generate a predetermined pattern on said surface, said predetermined pattern being selected from a pattern library stored in a memory device of said controller, which pattern library includes a plurality of patterns, each of which has a corresponding set of execution instructions that result in said control signals.

5,486,068

PROCESS FOR TREATING WASTE MATERIALS WITH CONCENTRATED ACID AND THE PRODUCT PRODUCED THEREBY

Harold W. Wilson, El Paso, Tex., assignor to Soil and Water Management, Inc., Chicago, Ill.

Filed Nov. 3, 1993, Ser. No. 145,218
Int. Cl.[6] B09B *3/00;* **C05F** *11/00*
U.S. Cl. 405—129 **33 Claims**

1. A process for treating lignocellulose or cellulose containing materials comprising applying a concentrated acid selected from the group consisting of concentrated sulfuric acid, concentrated phosphoric acid and mixtures thereof in a constant stream to said materials to thoroughly admix said concentrated acid and said materials, and drying the resultant mixture at a temperature between about 225° and 300° F.

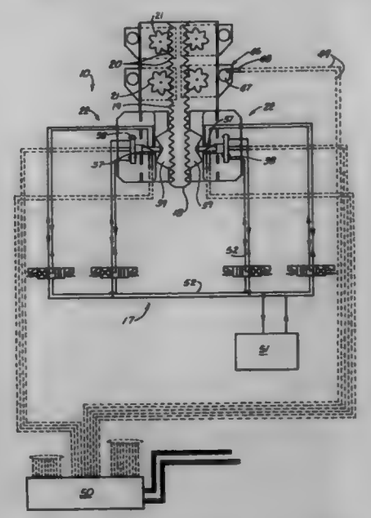
25. A product for treating agricultural soil or for use as a landfill material prepared by the process of applying a concentrated acid selected from the group consisting of concentrated sulfuric acid, concentrated phosphoric acid and mixtures thereof in a constant stream to lignocellulose or cellulose containing materials to thoroughly admix said concentrated acid and said materials, and drying the resultant mixture at a temperature between about 225° and 300° F.

5,486,069

OFFSHORE JACK-UP RIG LOCKING SYSTEM

John Breeden, 810 N. Beach Blvd., Bay St. Louis, Miss. 39520

Filed Jun. 6, 1994, Ser. No. 254,121
Int. Cl.[6] E02B *17/00;17/06*
U.S. Cl. 405—198 **23 Claims**



1. A fixation system for fixing the leg of a mobile jack up drilling platform with the hull of the platform comprising:

a) a hull having a plurality of at least three legs, each movable into different elevational positions relative to the hull so that the hull can be elevated upon the legs;

b) jacking towers that enable the legs to be elevated and lowered and the hull to be elevated on the legs when the legs have engaged the underlying seabed;

c) each of the legs having a longitudinal axis and a toothed rack that extends longitudinally along the leg;

d) each of the jacking towers including means supported upon the hull adjacent each of the legs for engaging the toothed rack;

e) upper, middle and lower actuators associated with each leg jacking tower positioned to travel between retracted and extended positions, each of the actuators having a first end portion that is connected to the jack tower and a second end portion including bearing surfaces thereon, wherein the extended position places the bearing surfaces adjacent the toothed rack;

f) a chock member attached to the middle actuator, with a plurality of teeth thereon that correspond in shape and spacing to the teeth of the toothed rack of the leg, wherein the extended position places the chock member adjacent the toothed rack;

g) the chock member having upper and lower bearing surfaces that correspond to the upper and lower actuator bearing surfaces respectively;

h) wherein each leg can be fixed relative to the hull when the upper and lower actuators travel to the extended position and engage the bearing surfaces of the chock; and

i) means for remotely and automatically aligning the chock teeth and leg teeth without requiring a human visual confirmation of alignment.

5,486,070

METHOD FOR CONDUCTING OFFSHORE WELL OPERATIONS

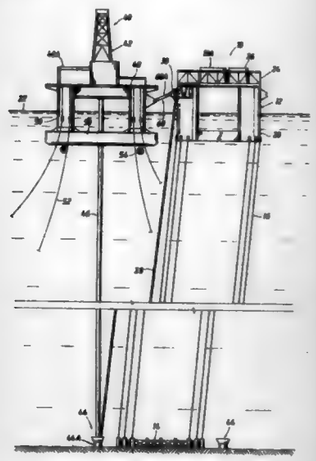
David A. Huete, Spring, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 35,847, Mar. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 919,630, Jul. 24, 1992, Pat. No. 5,199,821, which is a continuation of Ser. No. 624,866, Dec. 10, 1990, abandoned. This application Sep. 30, 1994, Ser. No. 316,200

The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.

Int. Cl.[6] E02B *17/00*

U.S. Cl. 405—202 **12 Claims**



1. A method for conducting offshore well operations, comprising:

installing a compliant platform having a normal position in substantially vertical alignment with a well site;

positioning the offshore drilling vessel over a selected well site, comprising:

biasing the compliant platform out of substantially vertical alignment with the well site and securing this position with respect to the ocean floor; and substantially vertically aligning a drilling derrick of the offshore drilling vessel over the well site and securing this position with respect to the ocean floor and the well site situated thereon for well operations while continuing to restrain the relative position of the offshore drilling vessel with respect to the compliant platform by their respective positions as defined in relation to the ocean floor; and

conducting well operations from the offshore drilling vessel through a riser.

5,486,071

METHOD AND APPARATUS FOR SUPPORTING A LOAD

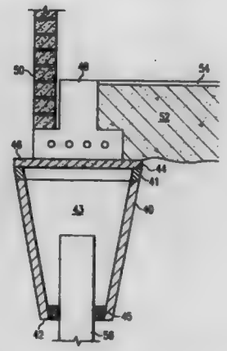
Roger A. Bullivant, Burton-on-Trent, England, assignor to Roger Bullivant of Texas, Inc., Grand Prairie, Tex.

Filed Feb. 17, 1993, Ser. No. 19,120

Claims priority, application United Kingdom, Feb. 19, 1992, 9203481; Apr. 11, 1992, 9208059

Int. Cl.[6] E02D *5/60;7/02*

U.S. Cl. 405—229 **12 Claims**



1. A load bearing assembly for supporting a structure on the ground, said assembly comprising:

an axially extending preformed pile member adapted to be located at least generally vertically in the ground;

a separate preformed load bearing pile head adapted to be supported on the upper end portion of said pile member, with the transverse dimensions of said pile head being substantially greater than the corresponding transverse dimensions of said pile member;

wherein said pile member is located at least substantially vertically in the ground with the upper end portion of said pile member being surrounded by a recess in the ground, said recess being filled with particulate material up to at least the level of said pile head, said recess having an at least generally frustoconical configuration with the top of said recess being larger than the bottom of said recess;

wherein the transverse cross section of the upper end portion of said pile member perpendicular to the longitudinal axis of the pile member is smaller than the transverse cross section of the portion of said pile member immediately below said upper end portion perpendicular to the longitudinal axis of said pile member so as to form an upwardly facing shoulder; and

wherein said pile head has an opening therethrough with the dimensions of said opening being larger than the corresponding dimensions of said upper end portion of said pile member and smaller than the corresponding dimensions of the portion of said pile member immediately below said upper end portion, the pile head being fitted over said upper end portion of said pile member and supported on said shoulder and said pile head being bonded to said pile member.

5,486,072

CUTTING TOOLS OF COMPOSITE CONSTRUCTION

Geoffrey C. Green, Bristol, Great Britain, assignor to British Aerospace PLC, Farnborough, England

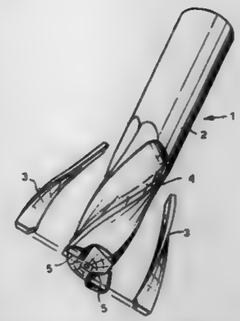
Filed Aug. 6, 1993, Ser. No. 102,901

Claims priority, application United Kingdom, Aug. 6, 1992, 9216699

Int. Cl.[6] B23C *5/10*

U.S. Cl. 407—32 **3 Claims**

1. A composite cutting tool constructed and arranged to be rotated to cut a workpiece, the cutting tool comprising a body of tungsten carbide material and having at least one flute in a periphery thereof and extending therealong defining a tooth, and a strip of tungsten carbide material attached to the tooth and ground to form a cutting blade.



5,486,073

CUTTING INSERT FOR A MILLING CUTTER TOOL

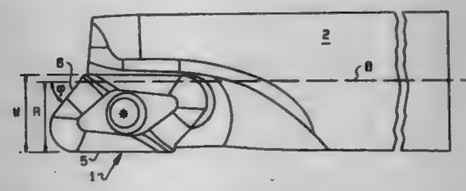
Amir Satran, Kfar Havradim, and Rafael Margulis, Karmiel, both of, Israel, assignors to ISCAR Ltd., Migdal, Israel

Filed Jul. 12, 1993, Ser. No. 90,839

Claims priority, application Israel, Sep. 1, 1992, 103008

Int. Cl.[6] B23C *5/02*

U.S. Cl. 407—113 **9 Claims**



1. A cutting insert for a rotary routing cutter tool, said insert being of substantially parallelopipedal shape and having a first pair of elongated cutting edges substantially parallel to a rotary axis of the insert, each cutting edge of said first pair being defined between contiguous rake and relief surfaces of said insert; a second pair of cutting edges transversely directed with respect to said first pair, each cutting edge of said second pair comprising first and second successive cutting edge portions, said first cutting edge portion merging with an adjacent cutting edge of said first pair via a rounded insert corner, the adjacent cutting edges defining at said corner a substantially acute angle; said second cutting edge portion sloping towards a base of said insert so as substantially to intersect said rotary axis and so as to merge with an adjacent cutting edge of said first pair via a coupling portion which slopes away from said insert base wherein said first cutting edge portion slopes toward said insert base.

5,486,074

PORTABLE DRILLING APPARATUS

John M. Jordan, 104A Overlook Pass, Clifton Park, N.Y. 12065

Filed Sep. 15, 1994, Ser. No. 306,393

Int. Cl.[6] B23B *45/14;41/00*

U.S. Cl. 408—77 **6 Claims**

1. A portable apparatus for drilling holes in a workpiece, comprising:

a first frame member comprising a substantially rectangular frame comprising a first elongated element, a second elongated element attached at a first end of said first element at a substantially right angle thereto, a third elongated element attached at a second end of said first element at a substantially right angle thereto so that said second and third elements are parallel to each other, and a fourth elongated element slidably mounted on said second element and said third element so that said fourth element is parallel to said first element;

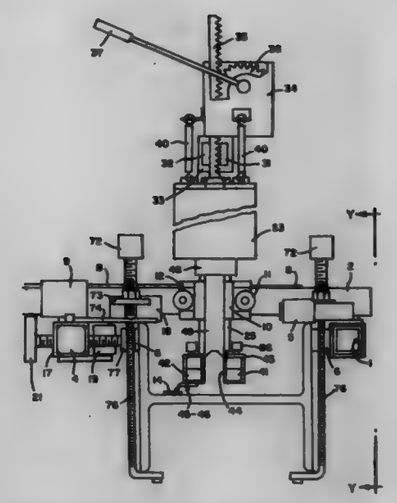
a second frame member slidably attached to and substantially perpendicular to said first frame member;

a plurality of rollers attached to said first frame member and positioned so that said first frame member is movably supported on the workpiece;

a first clamping device to secure said first frame member to the workpiece at a desired location;

a second clamping device to secure said second frame member to said first frame member at a desired location; and

a drill mounted on said second frame member.



5,486,075

BORING TOOL

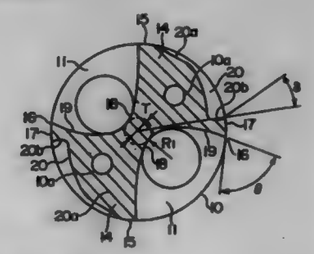
Shinichi Nakamura, and Takashi Kubota, both of Gifu, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Jul. 27, 1994, Ser. No. 280,876

Claims priority, application Japan, Jul. 27, 1993, 5-185314; Jul. 27, 1993, 5-185315

Int. Cl.[6] B23B *51/02*

U.S. Cl. 408—230 **19 Claims**



1. A boring tool, comprising:

a tool body rotatable about an axis in a tool rotation direction;

a pair of chip discharge flutes formed in the outer peripheral surface of said tool body;

cutting edges formed on edge lines where the wall surfaces of said flutes facing forwardly in the tool rotation direction intersect end relief surfaces of said tool body;

a pair of lands formed on the trailing sides of the respective chip discharge flutes from the direction of tool rotation;

first margins formed on ends of the respective lands adjacent to the respective chip discharge flutes;

second margins formed on ends of the respective lands adjacent to heels thereof;

said first and second margins being arranged substantially at a constant spacing in the circumferential direction of said tool body; and

recesses formed in the respective lands with the depth of each recess progressively increasing from the first margin towards the second margin of the associated land, said recesses including convex curved surface portion (**20***a*) and a concave curved surface portion (**20***b*).

5,486,076

RADIUS-MILLING FIXTURE FOR MACHINING WORKPIECES

Bernhard Hauschopp, Franz-Simon-Strasse 19, D-65934 Frankfurt (Main), Germany

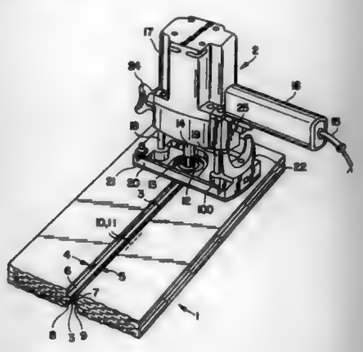
PCT No. PCT/DE93/00087, § 371 Date Aug. 10, 1994, § 102(e) Date Aug. 10, 1994, PCT Pub. No. WO93/15873, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 3, 1993, Ser. No. 290,795

Claims priority, application Germany, Feb. 8, 1992, 42 03 721.2

Int. Cl.[6] **B23C** *1/20;* **B27C** *5/10*

U.S. Cl. 409—179 **13 Claims**



1. Radius-milling fixture for machining of workpieces by means of a manual surface milling cutter, with

a plate (**1**),

which has a slot (**3**),

a fastening device (**30–35**), which can be guided in the slot (**3**) and connected to the workpiece (**40**) being machined,

an upper guide groove (**6**, **7**) provided in the upper region of the slot (**3**),

a bottom plate (**20**, **21**) for the manual surface milling cutter, characterized in that;

the plate (**1**) serves as a bearing surface for the bottom plate (**20**, **21**) of the manual surface milling cutter,

a lower guide groove is provided in the lower region of the slot (**3**),

a borehole is provided in the plate (**1**), through which the milling head of the manual surface milling cutter can be guided,

the slot (**3**) with the upper and lower guide grooves (**6**, **7**, **8**, **9**) terminates in the borehole (**12**), and

the fastening device (**30–35**) has a projection (**33**, **34**) that projects past the bottom side of the plate (**1**).

5,486,077

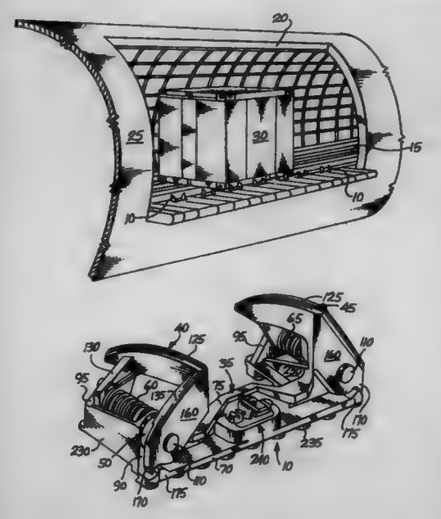
CARGO HANDLING SYSTEM ROLLOUT STOP ASSEMBLY

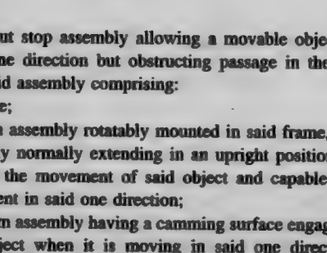
Harold E. Nutting, Everett, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 17, 1994, Ser. No. 340,777

Int. Cl.[6] **B60P** *7/135*

U.S. Cl. 410—69 **12 Claims**





1. A rollout stop assembly allowing a movable object to pass over it in one direction but obstructing passage in the opposite direction, said assembly comprising:

(a) a frame;

(b) an arm assembly rotatably mounted in said frame, said arm assembly normally extending in an upright position into the path of the movement of said object and capable of slight movement in said one direction;

(c) said arm assembly having a camming surface engagable with said object when it is moving in said one direction, said camming surface being configured to cause said arm assembly to translate in said one direction and to rotate in a downward direction and out of the path of said object upon engagement therewith, said arm assembly rotating about an axis lying substantially parallel to the direction of movement of said object;

(d) a dog clutch assembly releasably connecting said arm assembly to said frame and normally preventing said arm assembly from rotating, said dog clutch assembly disengaging said arm; assembly from said frame when said object engages said arm assembly camming surface whereby when said object engages said camming surface, said arm assembly translates in said one direction and rotates in said downward direction;

(e) means for rotating said arm assembly back into the path of the object after the object has passed beyond said arm assembly, and

(f) said arm assembly having an abutment surface for engaging said object after said arm assembly has been rotated back to its normal upright position to prevent movement of said object in said opposite direction.

5,486,078

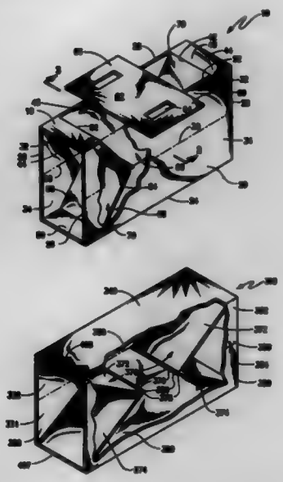
REUSABLE VOID FILLER AND CONSTRUCTION METHOD THEREFORE

Frederick M. Wise, Arvada, and Carl F. DeWitt, Westminster, both of Colo., assignors to Capitol Packaging Corporation, Denver, Colo.

Filed Apr. 23, 1993, Ser. No. 52,563

Int. Cl.[6] **B61D** *45/00;* **B63B** *25/24*

U.S. Cl. 410—155 **21 Claims**



1. A void filling device collapsible into a flattened state and expandable into an erect state and adapted to be interposed between spaced cargo when in the erect state to inhibit relative movement during transit, comprising:

(a) a pair of side panels each having longitudinally extending first and second side edges, said pair of side panels being spaced apart from one another to define an interior therebetween when said void-filling device is in the erect state, each of said side panels including side panel portions constructed to fold about a longitudinal axis between a folded state when said void-filling device is collapsed and an unfolded state when said void-filling device is erect;

(b) a first base panel hingedly secured to the first side edges of said side panels to extend transversely therebetween and a second base panel hingedly secured to the second side edges of said side panels to extend transversely therebetween such that said first and second base panels move toward one another when said side panels are folded into the folded state and move away from one another when said side panels are unfolded into the unfolded state whereby said first and second base panels are closely spaced with one another when said void-filling device is collapsed and spaced-apart from one another when said void-filling device is erect; and

(c) a foldable beam structure located in the interior between said side panels and oriented transversely thereto, said beam structure hingedly connected to said first and second base panels to extend therebetween, said beam structure including first and second beam panels foldable with respect to one another about a transverse axis so that, as said first and second base panels move toward and away from one another, said first and second beam panels fold to allow said void-filling device to collapse and expand, said beam structure operative when said void-filling device is in the erect state to support said side panels against transverse compression forces, said void filling device being integrally formed as a single-piece construction.

5,486,079

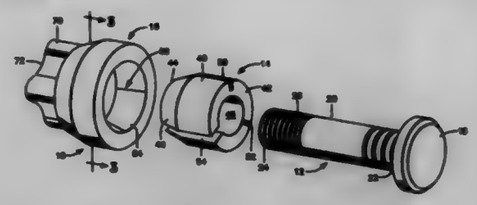
BREAKABLE BOLT ASSEMBLY

Dennis C. Martin, Gold Hill, and Mark A. Reeh, Grants Pass, both of Oreg., assignors to Advanced Parts Technology, Inc., Grants Pass, Oreg.

Filed Jul. 5, 1994, Ser. No. 270,439

Int. Cl.[6] **F16B** *19/00;35/00*

U.S. Cl. 411—392 **19 Claims**



1. A break-apart bolt assembly comprising:

a pin member comprising an elongated pin body and a pin head, said pin body having a proximal end and a distal end, said proximal end of said pin body having a plurality of flutes transverse to the length of said pin body and spaced from each other, said pin body having external threads along a length portion at said distal end thereof;

a collet member body having proximal and distal ends, said collet member body having an internal passage for receiving said distal end of said pin body and being compressible around the pin body and said distal end having a length portion which is tapered inward for a predetermined length of said collet member body;

threaded abutment member having an internal passage for receiving said distal end of the collet member body, said internal passage having a mouth which opens to a first length portion which is tapered inward from said mouth, and a second length portion having internal threads which mate with said external threads of said pin body of said pin member, said first length portion engaging said tapered length portion of said collet member body to lock onto said collet member body and pin body.

5,486,080

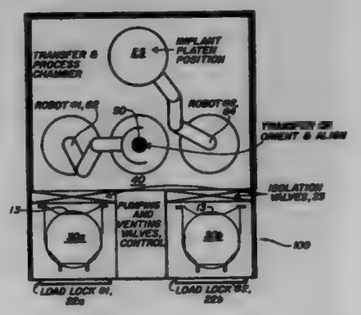
HIGH SPEED MOVEMENT OF WORKPIECES IN VACUUM PROCESSING

Manny Sieradzki, Gloucester, Mass., assignor to Diamond Semiconductor Group, Inc., Glouster, Mass.

Filed Jun. 30, 1994, Ser. No. 269,159

Int. Cl.[6] **B65G** *1/04*

U.S. Cl. 414—217 **20 Claims**



1. Apparatus for processing semiconductor wafers from cassettes in vacuum, said apparatus comprising

a vacuum chamber maintained at high vacuum and containing a first robot, a second robot and a wafer transfer station for transferring a wafer from one robot to the other robot,

a first load lock and a second load lock through each of which a cassette of wafers can be loaded and unloaded from atmospheric pressure to be selectively introduced in said vacuum chamber,

pumping and venting means for pumping down and for venting each of said load locks,

a process station at said vacuum chamber for receiving wafers from and providing wafers to both the first and the second robot, and

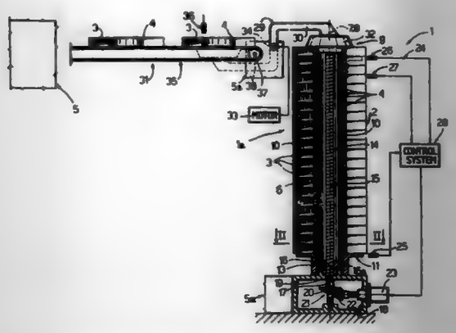
control means for controlling said first and second robots to successively and continuously move wafers from one load lock to the process station and back via the transfer station while operating said pumping and venting means to pump down or vent the other load lock.

5,486,081

DEVICE FOR FEEDING REELS ON TO A USER MACHINE

Florenzo Draghetti, Medicina, Italy, assignor to G.D Societa' Per Azioni, Bologna, Italy

Filed May 24, 1993, Ser. No. 66,722
Claims priority, application Italy, May 26, 1992, BO92A0211
Int. Cl.[6] B65H *3/00*
U.S. Cl. 414—225 **7 Claims**



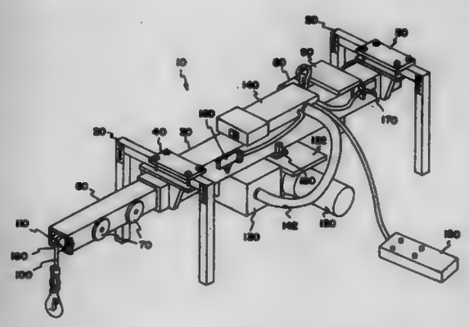
1. A device for feeding reels to a user machine, comprising a vertical lifting device having a top end and designed to receive a stack of said reels; a substantially horizontal feed conveyor for feeding a succession of said reels to said user machine; said feed conveyor having an input end; and transfer means for successively transferring the reels from said top end of the lifting device to an unloading position at said input end of said conveyor; said lifting device comprising means for step feeding the reels to said top end, with the reels laid flat and substantially parallel to a transportation surface defined by said conveyor, said step feeding means comprising a guide and a slide; said guide extending through the slide and having a first substantially vertical axis; said slide being coupled in axially sliding manner to the guide to travel along the first axis, and defining a supporting surface for supporting said stack of reels along a second axis coinciding with said first axis; drive means for moving the slide between first and second limit positions, so as to feed the reels successively towards the top end of the lifting device and means for controlling said drive means; said drive means comprising screw-nut screw transmission means and a motor for driving said transmission means; said transmission means comprising a powered, axially fixed screw mounted for rotation about said first axis, and a nut screw threadably engaged with said powered screw and integral with said slide; said powered screw extending along said aligned first and second axes; said slide comprising an annular plate element, which defines within said plate two openings on opposite sides of said nut screw; said guide being a tubular guide comprising two rods, each engaged in a respective said opening in axially sliding manner with said slide.

5,486,082

REMOTELY CONTROLLED EXTENDABLE LIFT APPARATUS FOR A VAN

Zelyilk Y. Feldman, 941 No. Sierra Bonita #2, Los Angeles, Calif. 90046, and Yakov Z. Feldman, 7311 Kester Ave., #3, Van Nuys, Calif. 91405

Filed Jul. 7, 1994, Ser. No. 271,198
Int. Cl.[5] B60P *1/54*
U.S. Cl. 414—542 **14 Claims**



1. An extendable lifting apparatus for a vehicle having a frame with a longitudinal axis, a floor, and a body with a door opening along one side, comprising:

support means, secured to and extending from the floor of the vehicle, the support means being disposed within and on opposite sides of the vehicle;

a boom, extendable out the door opening of the vehicle along an axis perpendicular to the axis of the vehicle frame and beyond the exterior of the vehicle, for supporting a cable for lifting heavy objects;

boom receiving means, secured to the support means perpendicular to the axis of the vehicle frame and coupled to the extendable boom, for receiving the extendable boom, the boom receiving means comprising a substantially rectangular tube, the tube having an axial slot extending along the bottom of the tube forming an axial opening, the boom telescoping from a retracted position to an extended position, wherein the boom is wholly received in the tube when the boom is in the retracted position, the slotted wall of the tube forming a floor opposite an inner ceiling;

wherein the boom further comprises a plurality of spaced apart wheels on opposite sides of the boom, the plurality of wheels engaging the floor and the ceiling of the tube to facilitate movement of the boom between the retracted and extended positions and to maintain the position of the boom parallel to the tube;

winch means, coupled to the extendable boom, for successively winding and unwinding the cable for alternately raising and lowering objects;

first drive means, coupled to the receiving means, for moving the boom from a retracted position wholly within the receiving means to an advanced position;

second drive means, coupled to the winch means, for controlling the winding and unwinding of the winch means; and

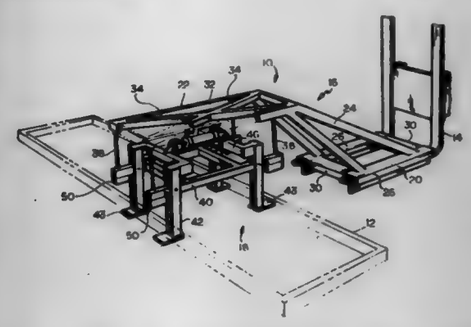
remote control means, electrically coupled to the first and second drive means, for independently activating and arresting the first and second drive means.

5,486,083

PROCESS AND APPARATUS FOR HANDLING A VEHICLE FRAME

Terry L. Thompson, Perrysburg, Ohio, assignor to J Star Consolidated, Stony Ridge, Ohio

Filed Oct. 6, 1994, Ser. No. 319,129
Int. Cl.[6] B66F *9/12*
U.S. Cl. 414—607 **12 Claims**



1. An apparatus for a lift truck for handling a frame of a vehicle, the apparatus comprising:

a support frame operatively connected to and cantilevered from the lift truck, said support frame including a lower frame, an upper frame and brace members, said brace members connected to said lower frame for supporting said upper frame in a raised position and cantilevered from the lift truck;

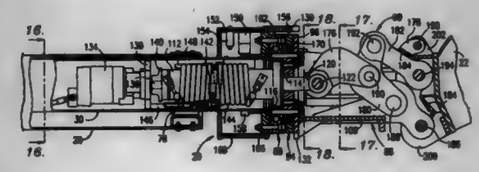
a carriage suspended from said upper frame by chain segments secured to said upper frame and to said carriage to allow said carriage to shift and sway, said carriage including at least two pairs of oppositely acting depending legs having feet members which extend laterally from said legs to engage an underside of the frame for handling the vehicle frame, said legs pivot about two parallel spaced cross members which are suspended from said support frame, said pairs of legs being connected by a cross brace which is actuated by a hydraulic device which extends between and connects said opposing pairs of legs.

5,486,084

MULTIPLE PURPOSE MATERIAL HANDLING AND WORKING APPARATUS

Raymond F. Pitman, 11400 Brookwood, Leawood, Kans. 66211; Richard J. Stallbaumer, Overland Park, Kans., and James A. Rusk, Kansas City, Mo., assignors to Raymond F. Pitman, Leawood, Kans.

Filed Jun. 7, 1993, Ser. No. 72,914
Int. Cl.[6] E02F *3/39*
U.S. Cl. 414—694 **11 Claims**



1. A mobile vehicle provided with a multiple purpose material handling and working apparatus for use with one or more tools, the apparatus comprising:

an articulated boom defining a longitudinal axis and including a free distal end;

a tool supporting boom extension supported on the free distal end of the articulated boom for rotation about an axis parallel to the longitudinal axis of the boom;

the boom extension including a body, a linkage structure movable between unpivoted and pivoted positions relative to the body, a coupling means for coupling each of the one or more tools to the linkage structure, and a linkage drive means mounted on and movable with the body for moving the linkage structure between unpivoted and pivoted positions, the linkage drive means including a cylinder-and-piston assembly supported on the body and extending beyond the body into the boom; and

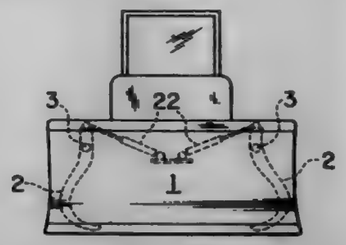
a rotary drive means supported on the boom for rotating the boom extension relative to the boom, the cylinder-and-piston assembly defining a central longitudinal axis about which the boom extension is rotated.

5,486,085

BLADED VEHICLE WITH LOAD GRIPPING ARMS

Daniel C. Gagne, Box 996, Invermeere, British Columbia, Canada, and Arie A. Pronk, Box 310, Fairmont Hotsprings, British Columbia, Canada

Filed Jul. 1, 1993, Ser. No. 84,585
Claims priority, application Canada, Sep. 21, 1992, 2078750
Int. Cl.[6] B66C *3/00*
U.S. Cl. 414—724 **13 Claims**



1. A vehicle having an earth working blade with load gripping means thereon,

said blade being substantially rectangular and having a front working surface, a back surface and first and second side edges, said load gripping means including an arm having a curved load engaging portion,

mounting means pivotally connecting said arm to said back surface of said blade adjacent said first edge thereof,

hydraulic means connecting said arm and said blade for providing movement to said arm relative to said blade,

said arm being adapted to move in a plane parallel to and adjacent to said back surface of said blade,

said curved portion of said arm being adapted to co-act with said first edge of said blade to form a pair of load gripping jaws therebetween and

wherein said load engaging portion of said arm is positionable in an area adjacent said back surface of said blade and between said ends of said blade.

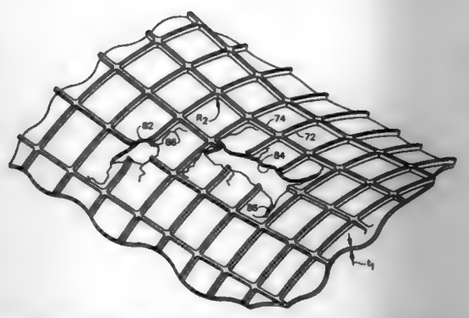
5,486,086

BLADE CONTAINMENT SYSTEM

Donald L. Bella, West Chester; Christopher C. Glynn, Hamilton, and Brian J. Hunike, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jan. 4, 1994, Ser. No. 177,297
Int. Cl.[6] F01D *25/24*
U.S. Cl. 415—9 **16 Claims**

1. In a gas turbine engine having a plurality of radially extending blades mounted on an annular disk, the blades and disk being rotatable about a longitudinal axis of the engine, a blade containment system comprising an annular casing positioned radially outward of the blades and in surrounding relationship therewith, said annular casing including a plurality of ribs on a radially outer



surface thereof, wherein at least one of said ribs is axially oriented with respect to said longitudinal axis and said ribs limit the propagation of cracks and holes formed in said annular casing.

5,486,087

UNIT FOR DELIVERING FUEL FROM A SUPPLY TANK TO AN INTERNAL COMBUSTION ENGINE

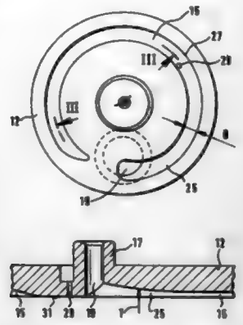
Juergen Treiber, Munich; Michael Kuehn, Bietigheim-Bissingen; Mathias Rollwage, Ditzingen; Dietrich Trachte, Leonberg, and Willi Strohl, Beilstein, all of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 14, 1994, Ser. No. 339,689

Claims priority, application Germany, Dec. 16, 1993, 43 43 078.3

Int. Cl.[6] F04D *29/40*

U.S. Cl. 415—55.1 **18 Claims**



1. A unit for delivering fuel from a supply tank to an internal combustion engine, comprising an intake cap (**12**), a disk-shaped impeller (**7**), that revolves in a pump chamber (**11**), a number of blades (**5**) extending radially outward are disposed on a circumference of said impeller, at least one supply conduit (**15**), which is open toward the impeller (**7**) and disposed in a region of the blades (**5**) of the impeller (**7**) in chamber walls (**13** and **16**) defining the pump chamber (**11**) on a face end and axially adjoining the impeller (**7**), said supply conduit (**15**) extends via a split ring around a pivot axis of the impeller (**7**) from an inlet opening (**19**) into the pump chamber (**11**) to an outlet opening (**21**) out of said pump chamber and has a different flow cross section in the flow course between the inlet opening (**19**) and the outlet opening (**21**), the cross section of the supply conduit (**15**), from an end that covers the inlet opening (**19**) toward the outlet end, decreases continuously over a certain angular range initially, forming a compression conduit (**25**), and once a certain value is reached continues constant as far as an end of the supply conduit (**15**) that covers the outlet opening (**21**), and between an inlet end and an outlet end of the supply conduit (**15**), a web (**31**) is formed in the intake cap (**12**) at a level of the blades (**5**) of the impeller (**7**), in which web a degassing bore (**29**) is provided that communicates with a low-pressure chamber.

5,486,088

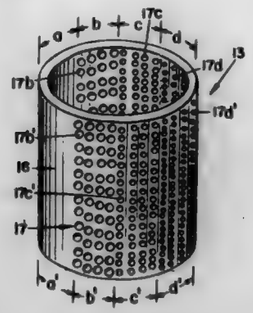
STEAM TURBINE STEAM STRAINER

Ronald E. Brandon, 627 Jubilee St., Melbourne, Fla. 32940

Filed Nov. 25, 1994, Ser. No. 344,862

Int. Cl.[6] F03B *11/08*

U.S. Cl. 415—121.2 **3 Claims**



1. In a steam turbine inlet which includes an annular steam strainer stationarily positioned therein for stopping the passage into the turbine of large metal particles, the improvement in the strainer which comprises:

a plurality of spaced through holes in a major portion of the strainer circumference, the through holes being of differing diameters, with holes of like diameter being positioned in longitudinally-extending, circumferential zones, holes of the largest diameter being disposed in zones where metal particles are least likely to enter the holes, holes of smaller diameter being disposed in zones where metal particles are most likely to enter the holes, and a longitudinally-extending, circumferential zone in the strainer without holes where the particle velocity and direction of movement would be damaging to any holes located in such a zone.

5,486,089

DIRECTIONAL CHANGEOVER PUMP

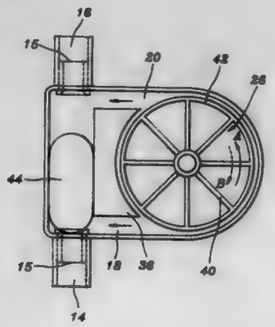
Ui-Shik Chung, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 15, 1994, Ser. No. 290,455

Claims priority, application Rep. of Korea, Feb. 28, 1994, 94-3827

Int. Cl.[6] F04D *1/00*

U.S. Cl. 415—146 **1 Claim**



1. A directional changeover pump for changing the direction of a fluid flow, which comprises:

a main body having a pair of discharge ports in opposite relationship, each of the discharge ports having a rubber seal inserted thereinto, a pair of guide channels in fluid communication with the discharge ports, a hole in which a shaft of a motor is inserted, and a first guide member protruding between the guide channels;

an impeller aligned with the hole to be engaged with the shaft for supplying the fluid flow to one of the guide channels depending upon the rotational direction thereof;

a reciprocable member having an elongated configuration provided with a pair of semi-spherical portions at its opposite ends, for opening one discharge port and closing the other discharge port depending upon the rotational direction of the impeller; and

a cover having an inlet for supplying the fluid flow to the impeller and a second guide member incorporated with the first guide member to form a circular passageway for guiding the reciprocable member to move to and fro between the discharge ports.

5,486,090

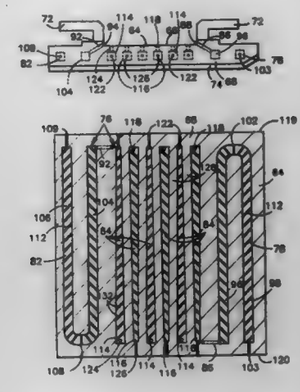
TURBINE SHROUD SEGMENT WITH SERPENTINE COOLING CHANNELS

Ralph J. Thompson, and Daniel E. Kane, both of Tolland, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 30, 1994, Ser. No. 220,316

Int. Cl.[6] F01D *25/12*

U.S. Cl. 415—173.1 **18 Claims**



1. A shroud segment for a gas turbine engine having an annular flow path disposed about a longitudinal axis, a rotor assembly having a plurality of rotor blades extending radially through the flow path, and a shroud assembly including a plurality of the shroud segments being spaced circumferentially to define a flow surface radially outward of the rotor blades to bound a portion of the flow path, and means to inject cooling fluid onto the plurality of shroud segments, the shroud segment including a first surface, a back side disposed oppositely of the first surface, a pair of axial edges defining a leading edge and a trailing edge, first retaining means adjacent the leading edge and extending from the back side, second retaining means adjacent the trailing edge and extending from the back side, and a serpentine channel including an outer passage extending along one of the edges and outward of the retaining means extending adjacent that edge, an inner passage being inward of the outer passage and in fluid communication with the outer passage, and a duct extending to the inner passage from a location inward of the adjacent retaining means, the duct permitting fluid communication between the back side of the shroud segment and the serpentine channel such that a portion of the cooling fluid injected onto the back side flows through the serpentine channel.

5,486,091

GAS TURBINE AIRFOIL CLOCKING

Om P. Sharma, Vernon, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 19, 1994, Ser. No. 229,979

Int. Cl.[6] F01D *1/00*

U.S. Cl. 415—194 **7 Claims**



1. In a gas turbine engine having N first stage vanes, a plurality of rotating first stage blades, and N second stage vanes there being an arcuate span between each of said second stage vanes, the method of establishing the circumferential position of said second stage vanes with respect to said first stage vanes comprising:

selecting the anticipated longest term operating condition;

determining at said operating condition the path of the wake flow from said first vane to said first blade;

determining at said operating condition the further path of said wake flow passing through said first blades;

determining at said operating condition the further flowpath of said wake flow to said second stage vanes; and

locating the leading edge of said second stage vanes within 25% of the pitch of said second stage vanes with respect to said wake flow.

5,486,092

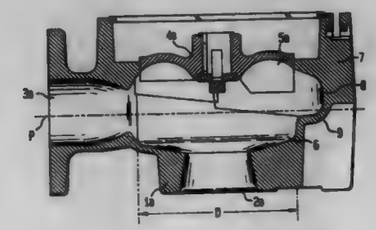
HOUSING FOR A VORTEX-FLOW TYPE PUMP

Torolf Borg, Hasselby, and Per E. Strinning, Spanga, both of, Sweden, assignors to ITT Flygt Ab, Solna, Sweden

Filed Oct. 3, 1994, Ser. No. 317,079

Int. Cl.[6] F04D *17/00*

U.S. Cl. 415—225 **10 Claims**



1. An improved pump housing of the so-called vortex-flow type, having an impeller with vanes, an axial inlet, a tangential-to-radial outlet, and upper and lower housing portions, wherein the improvement comprises:

said lower housing portion is essentially of circular design; and

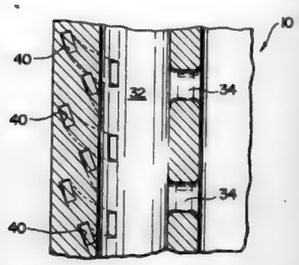
said upper housing portion has a volute conformation, with a continuously increasing radius in the direction of said outlet.

5,486,093

LEADING EDGE COOLING OF TURBINE AIRFOILS

Thomas A. Auxier, Palm Beach Gardens, and Kenneth B. Hall, Jupiter, both of Fla., assignors to United Technologies Corportion, Hartford, Conn.

Filed Sep. 8, 1993, Ser. No. 118,158
Int. Cl.[6] B63H 1/14
U.S. Cl. 416—97 R 4 Claims



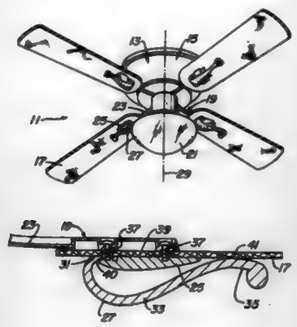
1. An air cooled airfoil for a turbine blade of a gas turbine engine, said airfoil having a root section, a tip section, a leading edge, a pressure side, a suction side and a trailing edge, a longitudinal passageway extending from said root section to said tip section for leading cooling air internally of said airfoil, said longitudinal passageway being disposed between said suction side and said pressure side, another longitudinal passage extending adjacent said leading edge and including longitudinally spaced holes interconnection said longitudinal passageway and said another longitudinal passageway, and means for supplying air to be admitted into said root section, the improvement comprising a plurality of helical shaped holes extending from said another longitudinal passageway to the exterior of said airfoil adjacent to said leading edge for discharging cooling air from said airfoil and each helical shaped holes being curved toward said leading edge, whereby heat transfer by convection in the leading edge is enhanced.

5,486,094

CEILING FAN BLADE MOUNTING BRACKET AND SUPPORT ARMS PROVIDING TWO FAN BLADE SUPPORT POINTS

William S. Davis, Jr., and Julia A. Morrow, both of Fort Worth, Tex., assignors to Davoll, Inc., Fort Worth, Tex.

Filed Feb. 9, 1995, Ser. No. 386,281
Int. Cl.[6] F04D 29/34
U.S. Cl. 416—210.R 9 Claims



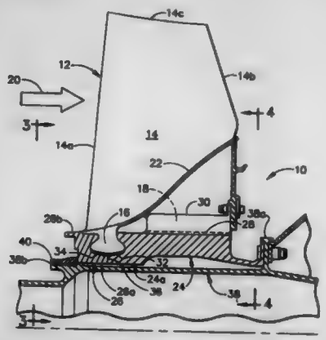
8. A ceiling fan, comprising in combination:
a motor;
a plurality of mounting brackets;
a plurality of fan blades, each having an upper surface and a lower surface;
mounting means for mounting each of the fan blades to one of the mounting brackets;
the mounting means for each of the fan blades comprising a plate having an inward edge containing a shoulder, the plate being in abutment with the lower surface of the fan blade, and a plurality of fasteners extending from the plate, through the blade and into the mounting bracket; and
the mounting means for each of the fan blades further comprising a support arm having an inward portion which is clamped by the fasteners between the shoulder of the plate and the lower surface of the fan blade, the support arm having a central portion extending below the plate, and the support arm further having an outer portion extending upward into contact with the blade at a point outward of the plate.

5,486,095

SPLIT DISK BLADE SUPPORT

James E. Rhoda, Mason; Thomas A. Bradley, Milford, and Mark J. Mielke, Blanchester, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 8, 1994, Ser. No. 351,997
Int. Cl.[6] F01D 5/14
U.S. Cl. 416—214 A 9 Claims



1. A blade support comprising:
a first disk having a plurality of circumferentially spaced apart, axial dovetail slots at one end thereof, and a circumferential dovetail first half-slot at an opposite end thereof;
a plurality of rotor blades each having an airfoil and axially spaced apart circumferential and axial dovetails integrally joined thereto, said axial dovetail being disposed in a respective one of said axial dovetail slots in said first disk, and said circumferential dovetail being disposed in part in said first half-slot of said first disk;
a second disk having a circumferential dovetail second half-slot at one end thereof disposed in abutting contact with said blade circumferential dovetails and said first disk for receiving a remaining part of said circumferential dovetails, with said first and second half-slots collectively defining a complete circumferential dovetail slot for supporting said blade circumferential dovetails therein; and
means for retaining together said first and second disks.

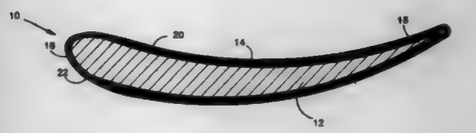
5,486,096

EROSION RESISTANT SURFACE PROTECTION

Christopher J. Hertel, Glastonbury, and Charles R. Watson, Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 30, 1994, Ser. No. 268,592
Int. Cl.[6] F01D 5/28; B64C 27/473; B05D 3/02; B32B 27/38
U.S. Cl. 416—224 11 Claims

1. An erosion resistant surface coating for an epoxy matrix composite airfoil comprising a toughened epoxy film co-cured on the surface of the composite airfoil.

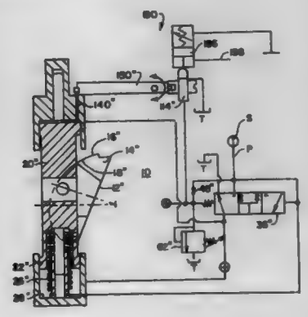


5,486,097

CONTROL FOR A VARIABLE DISPLACEMENT AXIAL PISTON PUMP

Larey D. Schaffner, Baltimore, Ohio, assignor to Denison Hydraulics Inc., Marysville, Ohio

Filed Jan. 26, 1995, Ser. No. 378,712
Int. Cl.[6] F04B 1/26
U.S. Cl. 417—222.1 8 Claims



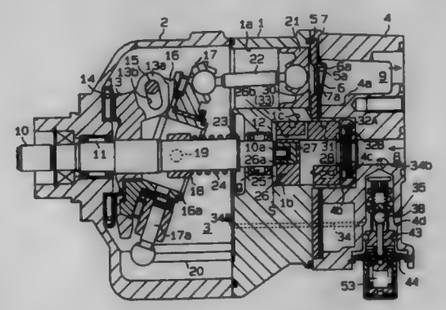
1. A torque limiter control for setting the power output of a variable displacement, pressure compensated pump having an inlet and a working pressure fluid outlet, a movable swash plate, a movable control piston mounted in a first bore and attached to said swash plate for setting the displacement of the pump and movable between a first control position of maximum pump displacement and a second control position of minimum pump displacement and spring means for spring biasing said control piston toward said first position which comprises:
a housing having a second bore for receiving a metering compensator spool, a tank port adapted to be connected to case which opens into said second bore, an outlet port adapted to receive control pressure fluid which opens into said second bore, and a control port adapted to be connected to said first bore of said control piston and said second bore;
a metering compensator spool slidable mounted in said second bore having a metering orifice and a metering land and movable between a first spool position in which said outlet port is in fluid communication with said control port such that control pressure fluid is directed to said control piston to move said control piston toward said second control position, a second spool position in which said tank port is in fluid communication with said control port such that pressure fluid is drained from said control piston to enable said spring means to bias said control piston toward said first control position and an intermediate position in which said control port is blocked by said land;
a source of control pressure fluid connected to said metering orifice and said second bore;
a hollow vent sleeve having a vent port slidable in a third bore which bore is downstream of and in fluid communication with said metering orifice such that said vent port receives control pressure fluid which passes through said metering orifice;
a slidable clevis which receives said vent sleeve and overlies said vent port;
a torque limiter set adjustment which applies a torque setting force to said vent spool to bias said vent sleeve such that said clevis overlies said vent port to prevent fluid in said vent port from exiting said vent port and thereby causing a pressure drop across said metering orifice until the pressure of said control fluid provides a force which exceeds that of said torque limiter set adjustment;
a feedback pin connected to and movable with said control piston to indicate pump displacement; and
a pivotal feedback link drivingly connected to said feedback pin and to said vent sleeve such that said feedback link causes said clevis to slide along said vent sleeve in response to movement of said control piston and thereby modulate said torque setting force at the interface of said vent port and said clevis as pump displacement changes.

5,486,098

SWASH PLATE TYPE VARIABLE DISPLACEMENT COMPRESSOR

Kazuya Kimura; Masafumi Ito; Hideki Mizutani; Yoshihiro Makino; Suguru Hirota; Taro Ozeki; Keiichi Kato, and Hiroaki Kayukawa, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Dec. 23, 1993, Ser. No. 173,506
Claims priority, application Japan, Dec. 28, 1992, 4-347843
Int. Cl.[6] F04B 1/12
U.S. Cl. 417—222.2 12 Claims



1. A swash plate type variable displacement compressor comprising:
a casing containing a plurality of cylinder bores;
a separate piston disposed in each of said cylinder bores for reciprocation therein, each of said pistons varying the volume of a separate working chamber in front of the piston head in the cylinder bore that contains the piston, said volume varying in accordance with the reciprocation of the respective piston;
a suction chamber and a discharge chamber provided in said casing;
suction valve means for admitting a low pressure gas into each of said working chambers by enabling communication between each of said working chambers and said suction chamber during a suction stroke when movement of the associated one of said pistons increases the volume of the associated working chamber;
discharge valve means for allowing high pressure gas in each of said working chambers to pass into said discharge chamber by establishing communication between each of said working chambers and said discharge chamber during a compression stroke when movement of the associated one of said pistons decreases the volume of the associated working chamber;
a crank chamber communicating with each of said cylinder bores to the rear of said pistons;
a drive shaft rotatably provided in said crank chamber;
a swash plate tiltably supported on said drive shaft and connected to each of said pistons through associated rods, said swash plate making said pistons reciprocate in response to its undulating swing motion and varying its inclination angle based upon the pressure differential between pressure in said suction chamber and pressure in said crank chamber, whereby

the stroke of each of said pistons varies for adjusting discharge displacement in relation to said pressure in said suction chamber;

a gas supply passage for connecting each of said cylinder bores with said crank chamber in order to supply gas to said crank chamber from said cylinder bores during said compression stroke;

a gas bleed passage for connecting said crank chamber to said suction chamber in order to pass gas from said crank chamber to said suction chamber;

a pressure control valve provided in at least one of said gas passages for controlling the pressure of gas in said crank chamber by opening and closing said at least one of said gas passages; and

a gas control valve for opening and closing said gas supply passage in the middle of said compression stroke of each of said pistons.

5,486,099

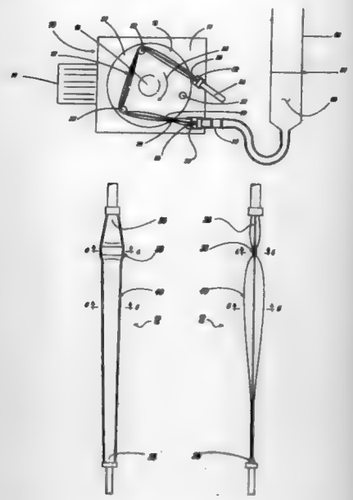
PERISTALTIC PUMP WITH OCCLUSIVE INLET

Jean P. Montoya, Ann Arbor, Mich., assignor to Michigan Critical Care Consultants, Inc., Ann Arbor, Mich.

Filed Dec. 14, 1994, Ser. No. 355,700

Int. Cl.[6] F04B *43/08*; F16L *11/08*

U.S. Cl. 417—477.13 **17 Claims**



1. A peristaltic pump for pumping fluids comprising:

a frame having a plurality of rollers and carrier means for carrying said rollers in spaced apart relation along a predetermined path;

drive means for causing movement of said carrier means thereby inducing said rollers to move along said predetermined path;

a flexible conduit having integrally formed first and second segments located between an inlet end and an outlet end, said first segment located upstream from said second segment and said first segment being collapsed and a passageway therethrough being substantially completely occluded in a free condition when pressure within said first segment is equal to pressure acting on the outside of said first segment thereby preventing the transmission of fluids therethrough, said first segment assuming an inflated condition having an unobstructed passageway when pressure within said first segment is greater than the pressure acting on the outside of said first segment thereby permitting the transmission of fluids therethrough, said second segment being biased to exhibit an inflated condition with an open passage therethrough in a free condition when pressure within said second segment is equal to pressure acting on the outside of said first segment thereby permitting the transmission of fluid therethrough; and

mounting means for engaging said inlet and outlet ends and for mounting said conduit about said rollers whereby said conduit cooperates along part of its length with said rollers without use of a stator to thereby transmit fluid through said conduit by peristaltic movement.

5,486,100

PASTA MAKER WITH DUAL KNEADING BLADES

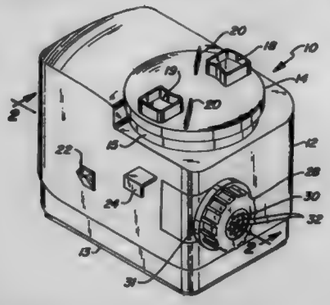
Maxwell Hsu, Taipei, Taiwan, Prov. of China, assignor to Airlux Electrical Co., Ltd., Taipei, Taiwan, Prov. of China

Continuation-in-part of Ser. No. 182,008, Jan. 14, 1994, Pat. No. 5,401,159. This application May 13, 1994, Ser. No. 242,413

The portion of the term of this patent subsequent to Mar. 28, 2012, has been disclaimed.

Int. Cl.[6] B29B *1/06*; B01F *7/18*

U.S. Cl. 425—190 **13 Claims**



1. An improved pasta maker for preparing fresh pasta and other farinaceous pastes comprising:

a container having a circular shaped bottom wall, a cylindrical shaped side wall perpendicular to and attached to said bottom wall, and an open top side, said side wall, open top side and bottom wall being symmetrical about a vertical axis;

a spindle protruding upwardly through said bottom wall defining said vertical axis, said spindle having a top and bottom end;

a pair of opposed kneading blades attached adjacent to said bottom end of said spindle, said blades positioned on opposing sides of said bottom end and extending radially away from said vertical axis, said kneading blades each having a leading edge and a trailing edge, which are substantially parallel to said bottom wall;

at least one mixing blade attached adjacent to said spindle above said kneading blade and extending radially away from said vertical axis; and

a drive means connected to said spindle for spinning said spindle.

5,486,101

DEVICE FOR CLAMPING A HALF-MOULD ONTO A PLATEN OF A MOULDING MACHINE, AND MOULDING MACHINE FITTED WITH SUCH A DEVICE

Jean-François Guyon, Grolssiat, France, assignor to Billion S.A., Bellignat, France

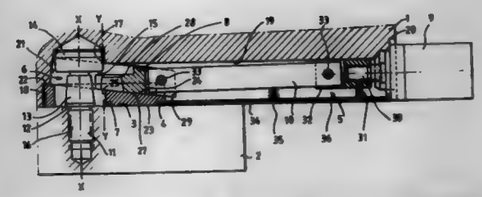
Filed Jun. 23, 1994, Ser. No. 264,619

Claims priority, application France, Jun. 23, 1993, 93 07647

Int. Cl.[6] B29C *33/30*

U.S. Cl. 425—192 R **16 Claims**

1. Device for clamping a half-mold (2) onto a platen (1) of a molding machine, comprising a peg (6) which projects from the half-mold and which is received in a recess (17) in the platen, and a clamping mechanism (5) including a transverse cylinder (9) operatively associated with a wedge (8) designed to interact with



the peg in order to removably clamp the half-mold onto the platen, the clamping mechanism (5) comprising a bearing block (7) removably fixed at an entrance of the recess (17) and including a passage (25) for the peg (6) and an incline (24) for the bearing of the wedge (8), said incline being provided on a face of the block which points towards the recess in the platen, the peg (6) being axisymmetric and including a widened head (14) on an inner face (15) of which the wedge acts.

5,486,102

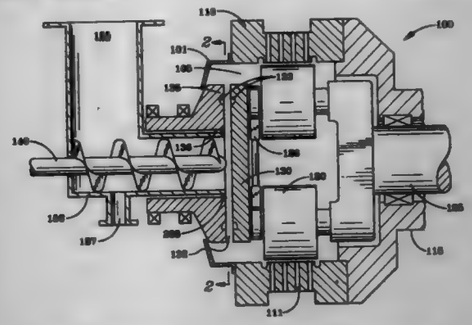
HIGH INTENSITY PELLET MACHINE

Gordon E. Ettle, Minneapolis, Minn., and Donald M. Wilhelm, Novato, Calif., assignors to California Pellet Mill Company, San Francisco, Calif.

Filed May 2, 1994, Ser. No. 236,866

Int. Cl.[6] B29B *7/38*; *9/00*

U.S. Cl. 425—202 **14 Claims**



1. A pellet mill for pelleting feed product, comprising:

a pelleting die having a plurality of extrusion holes for extroding said feed product;

roller means, rotatable relative to the pelleting die, for forcing feed product through said extrusion holes;

means for mixing and shearing the feed product before introducing said feed product to said pelleting die, the means for mixing and shearing the feed product comprising a solid round disc occluding all but a narrow annular region adjacent to the pelleting die; an annular disc, facing said solid round disc and spaced therefrom by a narrow adjustable gap, and having an open center through which feed product is introduced; and substantially radial grooves arrayed about the proximal faces of said discs, at least one of said discs being rotatable; and

means for positively conveying the feed product into said means for mixing and shearing.

5,486,103

BLOW MOLD CLAMP ASSEMBLY

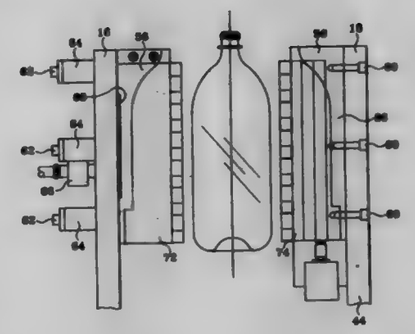
David P. Meiring, Troy, and Lynn E. Maggert, Arcanum, both of Ohio, assignors to Electra Form, Inc., Vandalia, Ohio

Filed May 9, 1994, Ser. No. 239,501

Int. Cl.[6] B29C *49/00*

U.S. Cl. 425—541 **18 Claims**

1. A blow mold assembly comprising a first and second carriage, motive means for moving at least one of the first and second carriages between an open position and a closed position, guide means for guiding the movement of the at least one carriage along a line of movement between the open and closed positions, at least one first and second mold half coupled respectively to the first and second carriages for movement therewith to define in the closed position at least one blow mold cavity, and mounting means movably mounting said at least one first mold half to the first carriage, the mounting means including biasing means for biasing the first mold half away from the second mold half and displacement means for displacing the first mold half away from the first carriage and toward the second mold half when the carriages are in the closed position to insure continuous mating of the two mold halves defining said at least one blow mold cavity.



5,486,104

HYDRAULIC RAM OPERATED EXTRUDERS

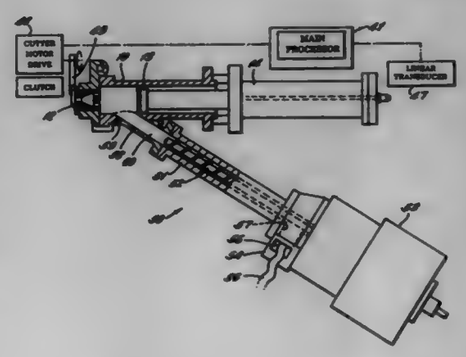
Richard C. Cowley, Ely, United Kingdom, assignor to Barwell International Limited, Swavesey, United Kingdom

Continuation of Ser. No. 144,761, Oct. 28, 1993, abandoned. This application May 2, 1995, Ser. No. 432,685

Claims priority, application United Kingdom, Jan. 29, 1992, 9222751; Jul. 19, 1993, 9314984

Int. Cl.[6] B29C *47/92*

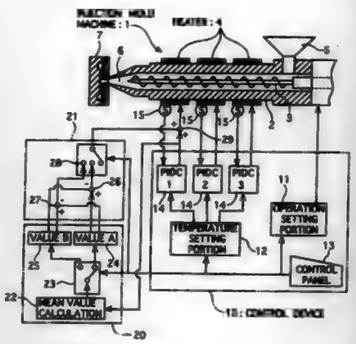
U.S. Cl. 425—142 **11 Claims**



1. A hydraulic ram operated extruder comprising a cylinder, a ram movably disposed within said cylinder, an extrusion die from which an extrudate is delivered, substantially continuously moving cutter means at the die to sever the extrudate repeatedly to produce individual pieces of extrudate, means to drive the cutter means at a controlled speed, means to deliver hydraulic fluid to the ram at a substantially constant volume flow rate, means to monitor movement of the ram in the cylinder, means to determine from said ram movement the speed of advance of the ram, and a control means responsive to said speed of advance of the ram in the cylinder for controlling the speed of operation of the cutter means whereby the

volume of individual blanks is controlled and blanks of substantially equal volume are produced.

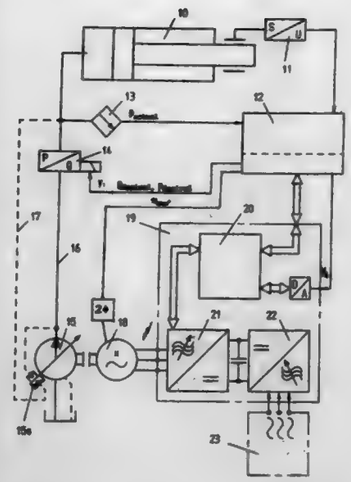
5,486,105
APPARATUS FOR CONTROLLING A HEATING TEMPERATURE
Hirofumi Katsumata, Numazu, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 13, 1993, Ser. No. 165,472
Claims priority, application Japan, Dec. 14, 1992, 4-332755
Int. Cl.[6] B29C *45/78*
U.S. Cl. 425—143 **11 Claims**



1. An apparatus for controlling a heating temperature of an object being heated, the object having several operation states, said apparatus comprising:
control means for controlling heating of the object while in one of said several operation states;
heating means for heating the object;
calculation means for calculating a mean value of control inputs sent from said control means to the heating means during every state of said several operation states; and
compensation means for adding to the control input a calculation result as compensating input resulting from a predetermined calculation using two values among the mean values of the control inputs processed in said calculation means,
wherein the mean values calculated by said calculation means are successively stored for every state of said several operation states, and wherein the mean values are selected by said compensation means corresponding to an operation state of the object before and after alteration thereof.

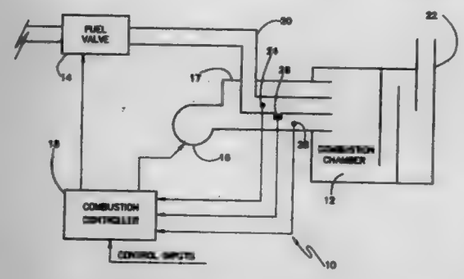
5,486,106
HYDRAULIC DEVICE FOR SUPPLYING A HYDRAULIC DRIVING UNIT
Karl Hehl, Arthur-Hehl-Str. 32, D-72290 Lossburg, Germany
Filed Oct. 14, 1994, Ser. No. 321,893
Claims priority, application Germany, Jan. 18, 1993, 43 35 403.3
Int. Cl.[6] B29C *45/80*
U.S. Cl. 425—145 **5 Claims**

1. A hydraulic device for supplying a hydraulic driving unit in an injection molding machine for processing synthetic materials comprising
at least one variable capacity pump,
a main line extending from said variable capacity pump to said driving unit,
at least one control valve arranged in said main line and adapted to determine a quantity and a pressure of hydraulic fluid in said main line,
a controlling mechanism connected with said variable capacity pump for control of said pressure,



a control conduit which connects said controlling mechanism of said variable capacity pump with said main line downstream of said control valve,
at least one pressure transducing means arranged for transducing an actual pressure value downstream of said control valve; comparing means for comparing said actual pressure value with a nominal pressure value and supplying a first correcting variable for said controlling mechanism in dependency of result of said comparing means,
said variable capacity pump being driven by a rotary current motor which is connected to a current source, and a speed of rotation of said rotary current motors being regulated via a frequency converter arranged between said current source and said rotary current motor.

5,486,107
DETERMINATION OF FUEL CHARACTERISTICS
Ulrich Bonne, Hopkins, Minn., assignor to Honeywell, Inc., Minneapolis, Mich.
Continuation of Ser. No. 828,135, Jan. 30, 1992, abandoned.
This application Sep. 6, 1994, Ser. No. 301,225
Int. Cl.[6] F23N *5/00*
U.S. Cl. 431—12 **26 Claims**



1. A method for determining thermophysical or thermochemical property values of a natural or other hydrocarbon-based gaseous fuel gas with microbridge type sensors, comprising the steps of:
applying the fuel to a static microbridge type sensor to obtain the thermal conductivity value of the fuel wherein the microbridge type sensor is fluidly coupled to receive the fuel and provide a signal value, thermal conductivity, k, of the fuel;
applying the fuel to a static microbrid type sensor to obtain the specific heat value of the fuel wherein the microbridge type

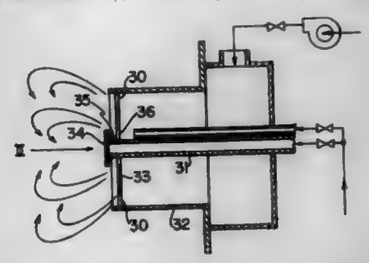
sensor is fluid coupled to receive the fuel and provide a signal value, specific heat, c_p, of the fuel;
correcting the values of signals k and c_p through the use of a plurality of measured sensor signal values k and c_p taken at different temperatures so as to be able to process these values to obtain corresponding values at reference conditions for the fuel;
processing the plurality of measured different temperature values of c_p to obtain a value for dc_p/dT at the said reference condition of c_{ps},
processing the plurality of measured different temperature values of k, to obtain a value for dk/dT at the said reference condition of k_s,
processing in a processor the values obtained in the previous steps to obtain the desired property of the fuel according to a relationship selected from:

$$Y_s = A_0 + A_1 k_s^{n1} c_{ps}^{m1} x_s^{p1} y_s^{q1} T_s^{r1} p_s^{s1} + A_2 k_s^{n2} c_{ps}^{m2} x_s^{p2} y_s^{q2} T_s^{r2} p_s^{s2} + \ldots .$$

$$= \Sigma_i A_i k_s^{ni} c_{ps}^{mi} x_s^{pi} T_s^{ri} p_s^{si}$$

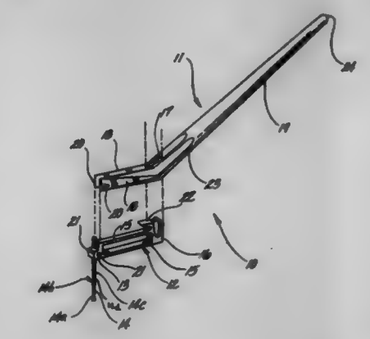
where
Y_s represents a thermophysical or thermochemical parameter of interest selected from any of the higher heating value, H; oxygen demand, D; Wobbe Index, Wo; relative density or specific gravity, ρ; absolute density, ρ_m; inerts, I; compressibility factor, Z; critical compression ratio, R_c; viscosity, η;
A_0, A_1 ... A_i are constants or coefficients,
n_i, m_i, p_i, q_i, r_i, s_i are exponents of values from −20 to 20, including zero, with the number of terms, i, ranging from 1 to 15,
k_s and c_{ps}, represent their values at a predetermined reference condition of temperature and pressure,
x_s represents dk/dT at the reference condition,
Y_s represents dc_p/dT at a reference condition,
T_s represents temperature at the reference condition,
P_s represents absolute pressure at the reference condition.

5,486,108
GAS BURNER
Norikazu Kubota, Gunma, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan
Continuation of Ser. No. 880,129, May 7, 1992, abandoned.
This application Nov. 6, 1992, Ser. No. 972,706
Claims priority, application Japan, May 7, 1991, 3-101514; May 27, 1991, 3-121123; Jun. 27, 1991, 3-157156; Jan. 22, 1991, 3-301229; Nov. 20, 1991, 3-304751
Int. Cl.[6] F23D *14/46*
U.S. Cl. 431—181 **14 Claims**



1. A gas burner comprising:
a gas nozzle having a first flame stabilizer mounted to a front end thereof, said nozzle having a plurality of gas blow apertures adjacent said first flame stabilizer for discharging fuel gas spaced at equal intervals around its outer surface,
a plate forming a second flame stabilizer through which said gas nozzle front end extends, said second flame stabilizer having a plurality of secondary combustion air passages around its periphery for discharging secondary combustion air and a primary combustion air passage around said gas nozzle which extends through said second flame stabilizer for discharging primary combustion air,
a burner housing having a front end, said second flame stabilizer plate being mounted within said housing front end; and
a mixture of fuel gas from said nozzle gas blow apertures and primary combustion air from said second flame stabilizer primary air passage flowing radially outward of said nozzle between said first and second flame stabilizers as guided by said first flame stabilizer, which mixture mixes with a portion of the secondary combustion air supplied from the secondary combustion air passages of said second flame stabilizer, said second flame stabilizer being spaced from and located inward of said front end of the burner housing in which the secondary combustion air flows straight and said first flame stabilizer being located closer to said front end of said burner housing than said second flame stabilizer.

5,486,109
CLINICAL APPLIANCE AND HANDLE
Kelly A. Hunter, and Frank Hunter, both of 93 Ocean View Drive, Tarrigal, New South Wales 2260, Australia
Division of Ser. No. 941,128, Dec. 22, 1992, Pat. No. 5,322,437. This application Mar. 25, 1994, Ser. No. 218,371
Claims priority, application Australia, May 7, 1990, PK0089
Int. Cl.[6] A61C *19/04;3/00*
U.S. Cl. 433—72 **5 Claims**



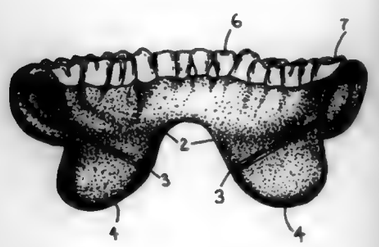
1. A clinical appliance for application to a tissue, or a tissue associated material comprising a head, a handle and a pressure sensitive means which comprises the attachment of the head and the handle by a resiliently deformable member, and an instrument adapted to be retained in said head, said head and said handle each having disposed thereon a mark which when no force is exerted on the instrument are out of alignment, but when a selected force is exerted will be aligned, said instrument comprising a sampling apparatus with a portion for application to a tissue or tissue associated material, the portion being an elongate member having calibrations with increment markings to indicate depth, the increment markings defining zones therebetween, each zone having a unique color, said portion being useful for sampling tissue, fluid or other matter from said tissue or tissue associated material.

5,486,110

DENTURE RETAINING DEVICES

Christopher M. Wilson, R.R.2 Box 1230, Morrisville, Vt. 05661, and Bryan S. Booth, 58 N. Main St., Rutland, Vt. 05701

Continuation of Ser. No. 163,751, Dec. 7, 1993, Pat. No. 5,354,201. This application Oct. 7, 1994, Ser. No. 319,664
The portion of the term of this patent subsequent to Oct. 11, 2011, has been disclaimed.
Int. Cl.[6] A61C *13/02*
U.S. Cl. 433—177 15 Claims



1. In combination, a dental appliance having a substantially rigid flanged section and a device for securing and stabilizing the appliance, said combination further comprising:

at least one substantially rigid flange extension having a surface dimensioned and configured to continuously contact intraoral tissue;

means for hingedly attaching said flange extension to the flanged section of the dental appliance; and

biasing means for providing positional memory to said flange extension with respect to the flanged section of the dental appliance; whereby

said flange extension provides pressure to the intraoral tissue to stabilize the dental appliance.

5,486,111

FOREIGN LANGUAGE TEACHING AID AND METHOD

C. Kay Watkins, 2809 San Medina, Dallas, Tex. 75228

Continuation-in-part of Ser. No. 828,777, Jan. 30, 1992, Pat. No. 5,275,569. This application Jan. 4, 1994, Ser. No. 177,079
Int. Cl.[6] G09B *19/06*
U.S. Cl. 434—157 14 Claims

14. A language translation teaching method comprising the steps of:

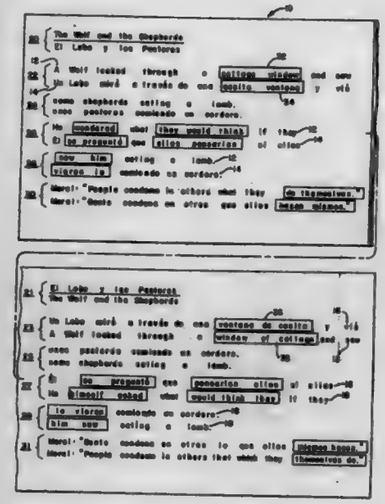
(a) presenting on a first page, a first line of words printed in a first language and having a first meaning according to the normal rules of syntax and grammar of said first language;

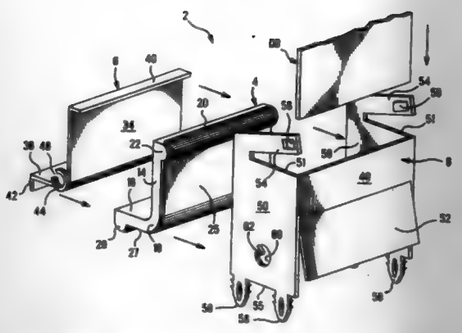
(b) translating said first line of words in a second language both in a word-for-word translation and into an accurate translation of said first meaning in said second language according to normal rules of syntax and grammar of said second language;

(c) presenting on said first page, printed below said first printed line of words, said word-for-word translation in a second language;

(d) presenting on a second page, a third line of words, printed in second language as said accurate translation of said first line on said first page, having a meaning in said second language according to the normal rules of syntax and grammar of said second language which is the same as said first meaning; and

(e) presenting on said second page, printed below said third printed line of words, a word-for-word translation of said third line in said first language.





each having a first contact surface on the first node and a second contact surface on the second node;

and a housing receiving the connector element, the housing having means for securing it to the mother board with the second contact surfaces engaging respective ones of the first conductors, and means for latching the daughter board to the housing in a latched position with the first contact surfaces engaging respective ones of the second conductors;

characterized in that the elastomeric connector element is mounted in the housing on a spring support so as to be rockable against the action thereof by the act of latching the daughter board to the housing, whereby in the latched position of the daughter board the first contact surfaces are spring loaded by said spring support against the second conductors.

5,486,115

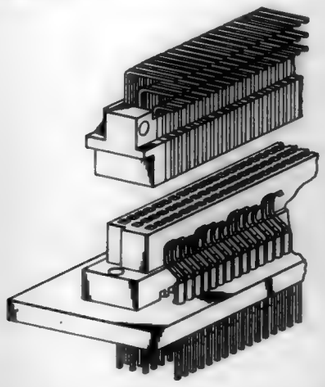
CONNECTOR ASSEMBLY

William A. Northey, Etters, and James R. Koser, Elizabeth, both of Pa., assignors to Berg Technologies, Inc., Reno, Nev.

Continuation of Ser. No. 149,475, Nov. 9, 1993, Pat. No. 5,403,196. This application Apr. 3, 1995, Ser. No. 415,189

Int. Cl.[6] H01R *13/648*

U.S. Cl. 439—108 **4 Claims**



1. A receptacle for mating with a pin header, comprising:

(a) an insulative body comprising an outer surface;

(b) a plurality of contact pins extending through said insulative body;

(c) a plurality of enhancement contacts disposed externally to said insulative body; and

(d) a board structure holding said insulative body and enhancement contacts in a fixed position relative to each other;

wherein at least two of said enhancement contacts are of unequal lengths, whereby, when said pin header is mated with said receptacle, said at least two enhancement contacts make contact with corresponding terminals of said pin header at different times.

5,486,116

PLUG AND SOCKET CONNECTION SYSTEM FOR AN ELECTRONIC UNIT

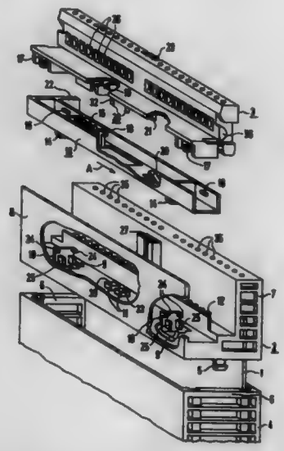
Werner Meiler, Ebermannsdorf, and Günther Deinhardt, Amberg, both of, Germany, assignors to Siemens Aktiengesellschaft, München, Germany

Filed Oct. 12, 1993, Ser. No. 135,612

Claims priority, application European Pat. Off., Jan. 14, 1992, 92117567

Int. Cl.[6] H01R *4/50*

U.S. Cl. 439—347 **16 Claims**



1. A plug and socket connection system comprising:

a) a connection plug for the coupling of a plurality of connecting lines, said connection plug having a first linear guiding element and a first locking element; and

b) a socket for mating with said connection plug, said socket having a second linear guiding element, and having a second locking element, wherein said first and second guiding elements cooperate to guide the connection plug and the socket into a correct position when mating the connection plug and the socket, the first and second locking elements permit the connection plug to be detachably locked in the socket, and the first and second locking elements cooperate by engaging in at least two positions;

wherein the connection plug is isolated electrically from the socket in one of the engaged positions.

5,486,117

LOCKING SYSTEM FOR AN ELECTRICAL CONNECTOR ASSEMBLY

Wei-Sun Chang, Taipei, Taiwan, Prov. of China, assignor to Molex Incorporated, Lisle, Ill.

Filed Aug. 9, 1994, Ser. No. 287,987

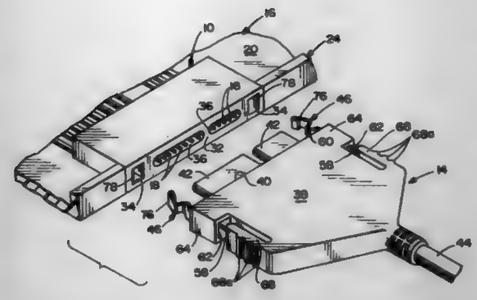
Int. Cl.[6] H01R *13/627*

U.S. Cl. 439—357 **9 Claims**

1. A locking system for an electrical connector assembly, comprising:

a first electrical connector including a housing having a mating face and a latching surface facing in a direction generally opposite said mating face; and

a second electrical connector including a housing having a complementary mating face for interfacing with the mating face of the first connector and a metal spring latch arm cantilevered from a rearward portion of the second connector with a radiused hook portion for latchingly engaging the latching surface of the first connector, the latch arm being located for manual deflection to move said hook portion out of engagement with the latch shoulder to allow unmating of the connectors with a minimal force, and the hook portion



intersecting the latching surface along a radius to produce a lateral force for deflecting the latch arm in response to an unmating force applied directly to the connectors that is greater than said minimal force.

5,486,118

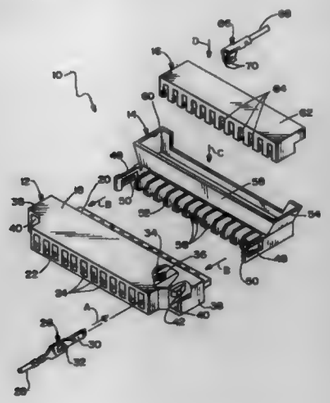
ELECTRICAL CONNECTOR WITH TERMINAL POSITION ASSURANCE DEVICE AND GUIDE MEANS FOR A MATING CONNECTOR

Stephen A. Colleran, Lisle; Jeffrey J. Pawlicki, Downers Grove, and John O. Higgins, Jr., Berwyn, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Oct. 3, 1994, Ser. No. 316,785

Int. Cl.[6] H01R *13/436;13/629*

U.S. Cl. 439—374 **13 Claims**



1. An electrical connector assembly, comprising:

a housing having a forward mating end and a rearward terminating end and a plurality of terminal-receiving cavities extending therebetween;

a plurality of terminals received in said cavities; and

a TPA device selectively engageable with the housing at said mating end thereof, the TPA device having guide means for guiding a complementary connecting device into mating engagement with the mating end of the connector housing; and

wherein said guide means comprises a funnel-type structure defining a relatively wide mouth to receive and guide the complementary connecting device into mating engagement with the mating end of the connector housing.

5,486,119

MATABLE CONNECTOR

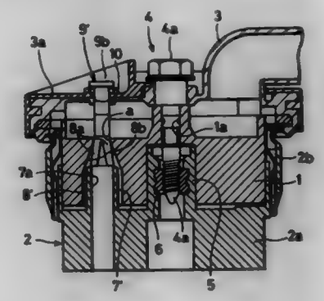
Akira Nabeshima; Kaoru Watanabe, and Toshikazu Saba, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Feb. 18, 1994, Ser. No. 198,282

Claims priority, application Japan, Mar. 19, 1993, 5-018644 U; Mar. 19, 1993, 5-018645 U; Mar. 19, 1993, 5-018646 U

Int. Cl.[6] H01R *3/00*

U.S. Cl. 439—489 **7 Claims**



1. A connector wherein a first connector housing and a second connector housing are displaced relative to each other in a connecting direction so that said first and second connector housings can be fitted together, the connector further comprising:

a pin insertion aperture formed in said first connector housing and having opposite open ends;

a fitting detection pin having a resiliently inwardly-deformable insertion piece at a distal end thereof, said detection pin being inserted into said pin insertion aperture from one end of said pin insertion aperture; and

a projection portion formed on said second connector housing, said projection portion being inserted into said pin insertion aperture from the other end thereof in accordance with the displacement of said first and second connector housings in the connecting direction, said projection pin retaining said fitting detection pin at a distal end thereof to urge said detection pin toward the one end of said pin insertion aperture,

wherein when said fitting detection pin is urged by said projection portion, said insertion piece is gradually resiliently deformed inwardly, in a fitting-uncompleted condition of said first and second connector housings, said fitting detection pin is retained from further insertion by said projection portion, and in a fitting-completed condition of said two connector housings, the amount of deformation of the insertion piece is large, so that the retaining thereof by said projection portion is released, and therefore said fitting detection pin can be inserted within the distal end of said projection portion.

5,486,120

COAXIAL CABLE CONNECTION PROTECTION SYSTEM WITH MULTIPLE CHAMBERED, FLEXIBLE-WEBBED SHROUD

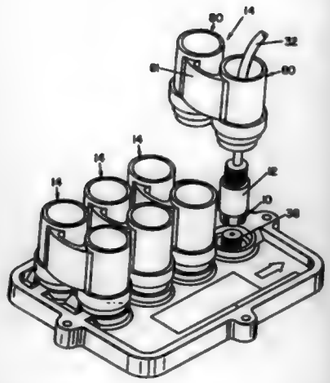
Corey McMills, Los Altos; John Mattis, Sunnyvale, both of Calif., and Dieter Fremgen, Wulfrath, Germany, assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 911,427, Jul. 10, 1992, Pat. No. 5,277,598. This application Aug. 13, 1993, Ser. No. 106,276

Int. Cl.[6] H01R *14/639;17/04*

U.S. Cl. 439—521 **9 Claims**

1. A system for protectively connecting a plurality of coaxial cable termini to standard coaxial cable connection jacks, wherein each connection jack comprises (1) an externally threaded body with a connection jack aperture, and (2) an internal electrical



conductor disposed within, but insulated from, the body proximate to the connection jack aperture, the system comprising:

a. an electrically conductive connection jack connector comprising a connection jack attachment moiety and a cable attachment moiety, the connection jack attachment moiety having a collet structure with a base, a base aperture and a plurality of flared fingers, and the cable attachment moiety having an open ended hollow cylinder which communicates with the collet base aperture, wherein the connection jack attachment moiety is attached tightly around the threaded body of the connection jack and the cable attachment moiety is attached to the coaxial cable terminus in such a way that the cable attachment moiety is in electrical contact with the concentric conductor and in such a way that the central conductor protrudes axially through the collet base aperture, through the connection jack aperture, and is in electrical contact with the internal electrical conductor;

b. a hollow, open-ended swagging shell comprising a compression moiety and a retraction moiety, the compression moiety being disposed tightly over the flared fingers of the connection jack connector thereby applying hoop stress to the flared fingers so as to urge the flared fingers into tight connection with the threaded body of the connection jack; and

c. a hollow locking shroud having elongated side walls which define a plurality of locking shroud chambers each with an open end, each locking chamber being attached to one other locking shroud chamber by a flexible web disposed in a curved plane, the locking shroud being disposed in such a way that the side walls can surround each connection jack, connection jack connector and swagging shell.

5,486,121

ELECTRICAL CONNECTOR ASSEMBLY

Vernon R. Miller, Atlanta, Ga., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 7, 1994, Ser. No. 271,683

Int. Cl.[6] H01R *25/00*

U.S. Cl. 439—652 **22 Claims**

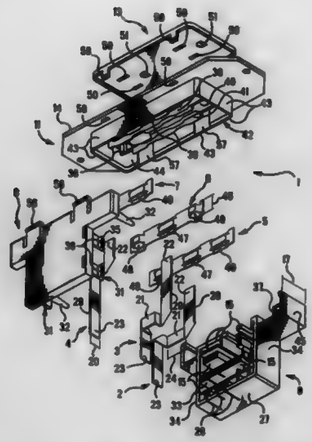
1. A connector assembly comprising:

a socket subassembly removably attached to a distribution subassembly in predetermined interposition;

said distribution subassembly including a bus housing accommodating and retaining distribution blade buses in respective predetermined pathways, and a bus housing cover secured to the bus housing and providing means for further supporting and retaining said distribution blade buses within the bus housing;

said socket subassembly including a socket housing retaining socket buses in predetermined positions;

each of said distribution blade buses comprising an integral metal bus strip having a substantial uniform width, each of said bus strips includes a connection end and a terminal end,



respectively, at least one said bus strip being folded across its width to define first and second portions on respective sides of said fold extending to respective ones of said connection and terminal ends, the first and second portions extending in different directions complementary to a said respective predetermined pathway for said bus strip in the bus housing; and

each of said socket buses comprising an integral metal socket strip, respectively, each socket strip having a respective first opening for receiving the connection end of the respective bus strip, thereby providing electrical connection of each socket bus to the respective distribution blade bus.

5,486,122

BOLT-TIGHTENED CONNECTOR

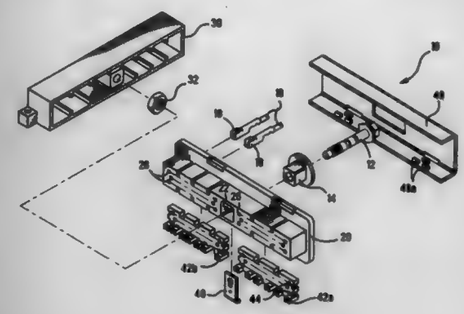
Kenzo Oda, Hatano, and Shinji Amemiya, Kanagawa, both of, Japan, assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 21, 1993, Ser. No. 95,384

Claims priority, application Japan, Aug. 21, 1992, 4-058841 U

Int. Cl.[6] H01R *13/514*

U.S. Cl. 439—752 **34 Claims**



1. An electrical connector half comprising:

a plug housing having apertures for receiving contacts, and which is matable to a cap housing;

the plug housing includes at least one opening for receiving a two-position double-lock member, the opening including at least one projection for engaging and retaining the double-lock member in a tentatively latched first position or a fully latched second position; and

the cap housing is fitted to the plug housing by the cap housing covering the double-lock member when the double-lock member is in the fully latched second position wherein the

double-lock member includes a resiliently deflectable latching arm which deflects in response to engaging said at least one projection as the double-lock member is moved to said first position.

5,486,123

CONNECTOR TERMINAL

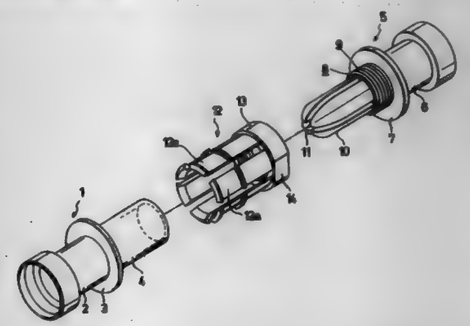
Sho Miyazaki, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Mar. 9, 1994, Ser. No. 207,675

Claims priority, application Japan, Mar. 18, 1993, 5-085784

Int. Cl.[6] H01R *13/05*

U.S. Cl. 439—825 **10 Claims**



1. A connector terminal comprising a first terminal having a cylindrical tubular portion, and a second terminal that can be fitted in said tubular portion, wherein an outer terminal member and an inner terminal member for contacting respectively with outer and inner surfaces of said tubular portion are attached to said second terminal in coaxial relation, said outer terminal member being displaced radially from the axis of said cylindrical tubular portion and radially displaced and separated throughout from said inner terminal member when attached to said second terminal, and said outer terminal member being selectively removable from said second terminal without deformation of said outer terminal member or any portion of said second terminal.

5,486,124

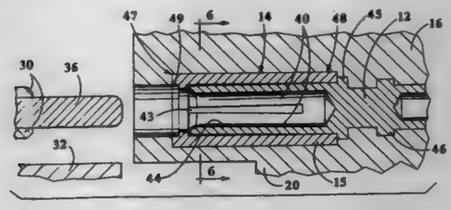
RIGID PLASTIC HOOD FOR SOCKET CONTACTS

David Wandler, Lockport, Ill., assignor to Methode Electronics, Inc., Chicago, Ill.

Filed Aug. 4, 1994, Ser. No. 285,900

Int. Cl.[6] H01R *13/187*

U.S. Cl. 439—843 **12 Claims**



1. A socket contact assembly for mating with a male contact pin, said socket contact assembly comprising:

(a) an elongated socket contact of resilient conductive material and having a forward male contact pin mating end and a rearward end, said forward end including a plurality of semi-circularly shaped fingers extending from said socket contact and forming a bore having an inner diameter; and

(b) a rigid cylindrical hood disposed over the fingers and having a first end and a second end, said first end having a flash ring adjacent thereto with an opening adapted to allow insertion of said male contact pin, and said second end press-fit mounted onto said socket contact and causing said diameter of said bore to be bounded and to decrease at said forward male contact pin mating end.

5,486,125

DRIVE TRANSMISSION SYSTEM FOR VESSEL PROPELLING EQUIPMENT

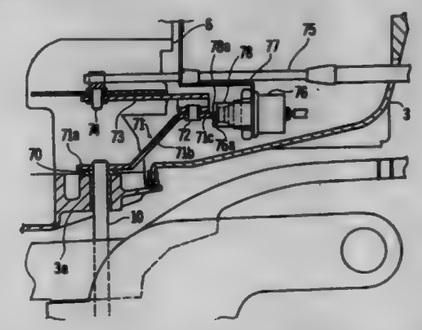
Chiharu Seda; Yasushi Fujita; Yoshihiko Fukuda, and Kaoru Ichihashi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1994, Ser. No. 247,980

Claims priority, application Japan, May 25, 1993, 5-144430; Jun. 3, 1993, 5-834884 U; Jun. 3, 1993, 5-834885 U; Jun. 3, 1993, 5-156332

Int. Cl.[6] B63H *20/20*

U.S. Cl. 440—75 **9 Claims**



1. A drive transmission system for a vessel propelling equipment in which a propeller shaft having a propeller on one end is rotatably supported within a gear case; a pair of gears including an ahead gear and an astern gear which rotate in opposite directions are rotatably supported on said propeller shaft; and a clutch gear slidably supported on said propeller shaft and rotating together with said propeller shaft is clutch coupled to either one of said pair of gears, thereby turning said propeller normally or reversely to propel a vessel ahead or astern; said drive transmission system, comprising:

a shift slider axially slidable within said propeller shaft to move said clutch gear through a clutch shifter pin inserted through said propeller shaft; and

an operating member capable of operating said shift slider from above said gear case;

said operating member including:

a shift fork engaged with a fork engaging portion of said shift slider for moving said shift slider;

a guide member supporting said shift fork and movable in a specific direction;

a rotatable rod member engaged with a rod engaging portion of said shift fork for moving said shift fork in response to rotation of said rotatable rod member; and

a support member drivably supporting said rod member and fixedly supporting said guide member, thereby subassembling said rod member and said guide member for transmitting the operation of said rod member to said shift fork;

said support member being fitted in a fitting portion of said gear case from above.

5. A drive transmission system for a vessel propelling equipment in which a propeller shaft having a propeller on one end is rotatably supported within a gear case; a pair of gears including an ahead gear and an astern gear which rotate in opposite directions are rotatably supported on said propeller shaft; and a clutch gear

slidably supported on said propeller shaft and rotating together with said propeller shaft is clutch coupled to either one of said pair of gears, thereby turning said propeller normally or reversely to propel a vessel ahead or astern; said drive transmission system, comprising:

a shift rod rotatable about its axis for moving said clutch gear through a transmission mechanism for clutching motion;

a shift arm having a base end portion fitted on said shift rod so as to rotate integrally with said shift rod; and

a neutral switch composed of a limit switch for detecting a neutral state;

said neutral switch positioning said shift arm at a neutral position of said shift arm by disengageably engaging with said shift arm to detain said shift arm.

6. A vessel propelling equipment having an engine with a vertical output shaft, a drive gear integrally connected to said output shaft, front and rear driven gears each engaged with said drive gear, and a clutch gear fitted on a propeller shaft by splines, said clutch gear sliding back and forth along said propeller shaft and engaging with either of said driven gears to rotate a propeller in a normal or reverse direction for forward or backward motion of the vessel, comprising:

a clutch shifter pin engaging with said clutch gear;

an outer shift slider axially slidably put within said propeller shaft and having an elongate hole which said clutch shifter pin penetrates through having some surplus spaces at before and behind;

an inner shift slider axially slidably put within said outer shift slider and having an elongate hole which said clutch shifter pin penetrates through having some surplus spaces at before and behind;

a spring interposed between said outer and inner shift sliders;

a shift fork moving back and forth to give a force and move either of said inner and outer shaft sliders according to the moving direction; and

positioning means for positioning said clutch gear at a neutral position.

7. A vessel propelling equipment having an engine with a vertical output shaft, a drive gear integrally connected to said output shaft, front and rear driven gears each engaged with said drive gear, and a clutch gear fitted on a propeller shaft by splines, said clutch gear sliding back and forth along said propeller shaft and engaging with either of said driven gears to rotate a propeller in a normal or reverse direction for forward or backward motion of the vessel, comprising:

a shaft holder provided in a casing of said vessel propelling equipment for supporting said propeller shaft rotatably;

a bearing provided on a cylindrical portion of one of said driven gears extending along said propeller shaft;

a circular ring-shaped bearing holder having a T-shaped section interposed between an outer periphery of said bearing and an inner periphery of said shaft holder, in a state that a front surface and outer peripheral surface of an outer race of said bearing are fittedly supported by said bearing holder; and

a flange portion of said propeller shaft abutting against a rear side surface of an inner race of said bearing;

said bearing holder having a front side surface abutting against a shoulder portion formed on an inner surface of said casing so that a thrust force of said propeller shaft is transmitted to said casing by means of said bearing and said bearing holder.

5,486,126

SPACERS FOR LARGE AREA DISPLAYS

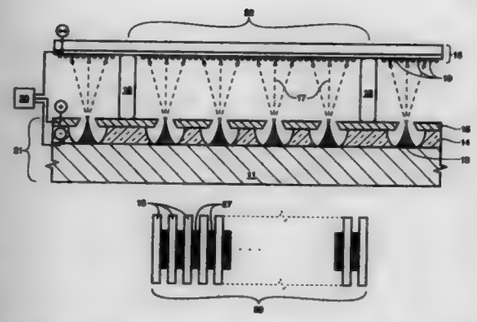
David A. Cathey; James J. Hofmann; Danny Dynka, and Daryl M. Stansbury, all of Boise, Id., assignors to Micron Display Technology, Inc., Boise, Id.

Filed Nov. 18, 1994, Ser. No. 349,091

Int. Cl.[6] H01J *9/18*

U.S. Cl. 445—25 **28 Claims**

1. A process for forming spacers, useful in large area displays, said process comprising the following steps of:



forming bundles comprising fiber strands, said fiber strands being held together with a binder;

slicing said bundles into slices;

placing said slices on a plate of the display; and

removing said binder.

5,486,127

CONFIGURED OR KEYED CONNECTOR SYSTEM

Michael Wolfe, 101 W. 90th St., New York, N.Y. 10024

Filed Dec. 30, 1994, Ser. No. 366,832

Int. Cl.[6] A63H *33/06;3/16;* A41F *1/00;* A43C *11/00*

U.S. Cl. 446—120 **6 Claims**



1. A system for coupling components comprising:

(a) a first component part with a male connector extending therefrom, the male connector comprising:

(i) a button head connector with a circular end having a diameter, a shaft, having a diameter and an axis, connecting the button head end to the component part, with the circular end having a larger diameter than the attaching shaft, and

(ii) at least one key adjoining and extending radially outwardly from at least one of the button head end, the shaft, and the component part; and

(b) a second component part with a female receptor integrally formed in the second component part having a central opening surrounded by scalloped edges between which are configured at least one positioning slot, the positioning slot(s) radiating from the central opening to receive said key(s) as the male button head connector is engaged in the female receptor.

wherein the key of the male connector when the male connector is engaged with the female receptor restrains rotational movement about the axis of the male and female connectors.

5,486,128

POWDER BEAM ETCHING MACHINE

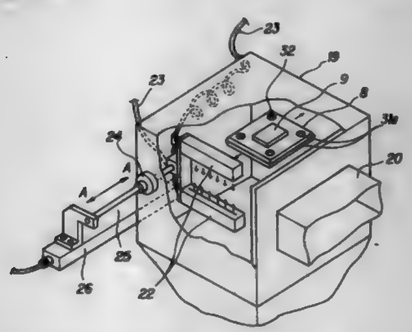
Takashi Tsuchiya, Tokyo, and Osamu Ishii, Kanagawa, both of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 18, 1993, Ser. No. 137,516

Claims priority, application Japan, Jan. 30, 1992, 4-316582

Int. Cl.[6] B24C *3/00*

U.S. Cl. 451—3 **3 Claims**



1. A powder beam etching machine comprising:

an injection chamber for etching a work laid on a support member by injecting powders to the work, said support member having at least one side which is sloped relative to a surface of said support member on which the work is laid;

a cleaning chamber for cleaning the work which has been etched, by air toward said support member in a direction substantially perpendicular to the surface thereof;

wherein the air is directed toward the at least one sloped side of said support member at an acute angle.

5,486,129

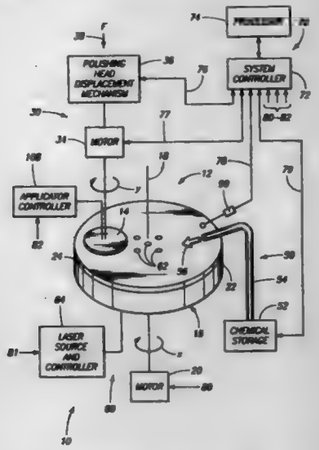
SYSTEM AND METHOD FOR REAL-TIME CONTROL OF SEMICONDUCTOR A WAFER POLISHING, AND A POLISHING HEAD

Gurtej S. Sandhu, and Trung T. Doan, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Aug. 25, 1993, Ser. No. 112,759

Int. Cl.[6] B24B *49/00*

U.S. Cl. 451—5 **41 Claims**



28. A method for polishing a semiconductor wafer comprising the following steps:

providing a wafer polishing assembly for polishing a face of a semiconductor wafer at a polishing rate and a polishing uniformity, the wafer polishing assembly including a platen subassembly rotatable about a first axis, a polishing head which supports the semiconductor wafer for rotation about a second axis, and a polishing head displacement mechanism which moves the polishing head and wafer across the platen subassembly at an adjustable rate;

using the wafer polishing assembly to polish a face of a semiconductor wafer at a polishing rate and a polishing uniformity according to a set of controllable operational parameters that upon variation change the polishing rate and polishing uniformity;

monitoring in situ at least one of the operational parameters of the wafer polishing assembly;

determining a set of desired operational parameters based upon the monitored operational parameters and outputting control information indicative of the desired operational parameters; and

adjusting in situ at least one of the operational parameters in response to the control information to effectuate a new polishing rate and a new polishing uniformity and then continuing polishing of the semiconductor wafer face according to the new polishing rate and new polishing uniformity.

5,486,130

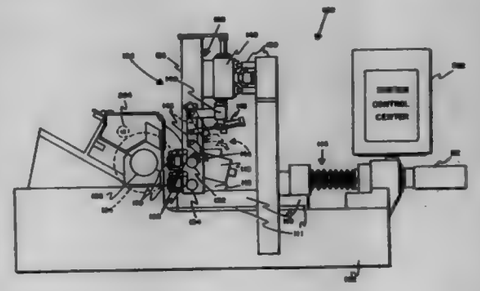
METHOD AND APPARATUS FOR SIMULTANEOUSLY GRINDING MULTIPLE SLEEVES

Mark C. Kilmer, Sr., Southgate, Ky., assignor to Goldcrown Machinery, Inc., Cincinnati, Ohio

Filed Sep. 6, 1994, Ser. No. 301,359

Int. Cl.[6] B24B *29/00*

U.S. Cl. 451—11 **21 Claims**



1. A grinding system for simultaneously grinding multiple sleeves in a single grinding operation, said grinding system comprising:

a fixed machine bed;

a grinding wheel mounted upon said fixed machine bed for controlled rotation about a fixed axis defined by bearings at each end of said wheel, said grinding wheel being sufficiently wide to simultaneously grind all of said multiple sleeves with said multiple sleeves being axially aligned;

a friction bearing slide mounted upon said machine bed for movement toward and away from said grinding wheel in a direction generally perpendicular to said fixed axis;

a headstock mounted to said slide;

a grinding arbor having a proximal end mounted to said headstock to cantilever support said grinding arbor and a distal end, said grinding arbor supporting multiple sleeves thereon with axes of said multiple sleeves being collinear along said grinding arbor and parallel to the fixed axis of said grinding wheel;

a retractable steady rest for engaging the distal end of said grinding arbor during grinding operations; and

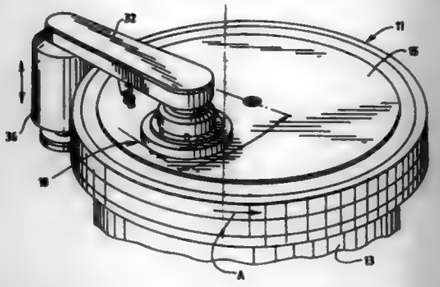
a servo drive connected between said machine bed and said friction bearing slide for moving said slide upon said machine bed toward and away from said grinding wheel.

5,486,131

DEVICE FOR CONDITIONING POLISHING PADS

Joseph V. Cesna, Niles, Ill., and Anthony G. Van Woerkom, Gilbert, Ariz., assignors to Speedfam Corporation, Des Plaines, Ill.

Filed Jan. 4, 1994, Ser. No. 177,156
Int. Cl.[6] B24B *1/00*
U.S. Cl. 451—56 10 Claims



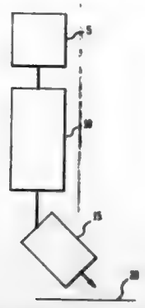
1. A process for simultaneously truing and dressing a polishing pad covering a platen mounted on a polishing machine for rotation about a vertical axis which comprises while said polishing pad is being rotated bringing under pressure into contact with the top exposed surface of said polishing pad and oscillating over the said pad surface a carrier element adapted for vertical movement into and out of substantially perpendicular engagement with the surface of a polishing pad and for oscillating radial movement over the surface of the polishing pad, said carrier element being in the shape of a ring and carrying on its bottom surface cutting means disposed in a circular ring configuration for truing and dressing the polishing pad by contact therewith.

5,486,132

MOUNTING APPARATUS FOR CRYOGENIC AEROSOL CLEANING

William A. Cavaliere, Verbank; Robert P. Kuder, II, Hopewell Junction, and Jin J. Wu, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1993, Ser. No. 76,065
Int. Cl.[6] B24C *3/00*
U.S. Cl. 451—75 20 Claims



1. An apparatus for mounting to a tool which has a surface to be cleaned, and for producing aerosol from a substance for cleaning the surface, comprising:

a flange for mounting to a tool having a surface to be cleaned;

a nozzle mounted to said flange for receiving a substance, said nozzle having at least one exit opening which allows passing of the substance therethrough for expanding the substance from a first pressure to a second pressure which is lower than the first pressure for solidifying at least a substantial portion of the substance and producing aerosol for cleaning the surface;

maneuvering means comprising a swivel-type joint connected to said nozzle for allowing maneuvering of said nozzle during cleaning of said tool;

condensation preventing means for preventing condensation from forming on surfaces of the apparatus and the surface to be cleaned; and

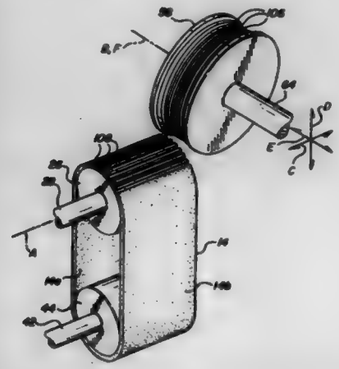
contamination preventing means for preventing contaminants from re-contaminating the surface subsequent to removal therefrom.

5,486,133

TIMING BELT GRINDING APPARATUS AND METHOD

Jerry Russell, 95 Windsor Rd., Rochester, Mich. 48307

Filed May 31, 1994, Ser. No. 251,024
Int. Cl.[6] B24B *7/00*
U.S. Cl. 451—150 26 Claims



1. Apparatus for cutting teeth into an endless belt blank (14) of predetermined width to produce a timing belt (12), said apparatus comprising:

belt support means (24, 24') for supporting the endless belt blank (14) for selective rotation about a first axis (A);

a cutting wheel (58, 58') having a plurality of peripheral tooth cutting portions (106, 106') spaced laterally from one another; and characterized by wheel rotation means (60) for rotating said wheel (58, 58') about a second axis (B) transverse to said first axis (A) and translating means (66) for translating said wheel (58, 58') relative to said belt support means (24, 24') across the width of the belt blank (14) along a path generally parallel to said first axis (A) for cutting a plurality of transverse teeth (108) into the belt blank (14) with said tooth cutting portions (106, 106').

5,486,134

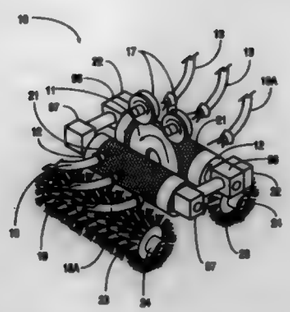
SYSTEM AND METHOD FOR TEXTURING MAGNETIC DATA STORAGE DISKS

Oliver D. Jones, Santa Cruz, and Donald E. Stephens, Westlake Village, both of Calif., assignors to Oliver Design, Inc., Scotts Valley, Calif.

Filed Feb. 27, 1992, Ser. No. 842,695
Int. Cl.[6] B24B *29/02*
U.S. Cl. 451—209 29 Claims

1. A unit for texturing a data storage disk, said unit comprising:

a pair of cylindrical members oriented such that their axes are substantially parallel, said members being capable of sandwiching a data storage disk between them such that the area of contact between each of said cylindrical members and a surface of a disk extends between first and second segments of an outside edge of said disk, the surface of each of said members being designed to support an abrasive material;



a first drive mechanism for rotating said cylindrical members in opposite directions so as to impose, by means of said abrasive material, a frictional force on the surfaces of said disk;

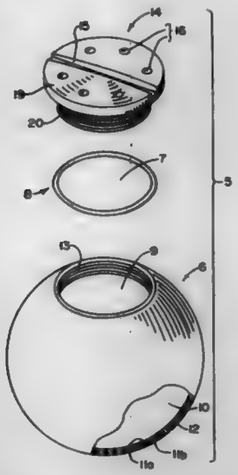
a second drive mechanism for rotating said disk, said second drive mechanism being designed to operate by applying a tangential force to the outside edge of said disk.

5,486,135

VIBRATORY TUMBLING MACHINE VESSEL FOR BURNISHING OR CLEANSING METAL, PLASTIC OR CERAMIC ELEMENTS

Jerry Arpaio, 72 Heller Hill Rd., Blairstown, N.J. 07825

Filed Oct. 31, 1994, Ser. No. 332,141
Int. Cl.[6] B24B *31/00*
U.S. Cl. 451—326 34 Claims



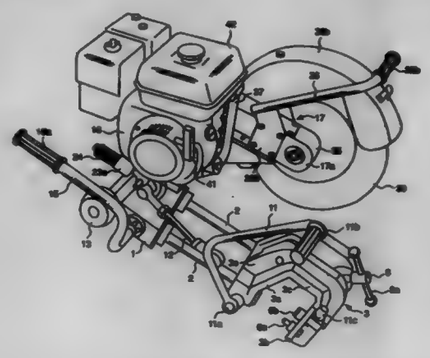
1. A vibratory vessel for use conjunction with a vibratory tumbling machine utilizing a burnishing or cleansing media, for burnishing or cleansing metal, plastic and ceramic elements comprising in combination: a substantially globe-forming structure having a substantially globally-shaped exterior surface and having an inner wall surface forming a globally-shaped inner space separate and apart from outer space exterior to said globe-forming structure, said substantially globe-forming structure having at-least one female closure opening-forming structure forming at-least one female closure-opening therein, said substantially globe-forming structure being wall structure of at least one of a plastic; and at-least one male closure member of a shape effective to sealably close said female closure-opening, said at-least one female closure opening-forming structure and said at-least one closure member being jointly and coordinately structured such that said at-least one of said female closure opening-forming structure is intermittently mountable within said at-least one female closure-opening, said substantially continuous wall structure being retainable of at-least one of metal, plastic and ceramic elements within said globally-shaped inner space, said female closure-opening being of a first predetermined size sufficiently large for passage therethrough at-least one of metal, plastic and ceramic elements within said globally-shaped inner space, said substantially continuous wall structure includes a plurality of small aperture extending between and through said substantially globally-shaped exterior surface and having an inner wall surface, each of said plurality of small apertures being of a predetermined maximum size sufficiently small to retain at-least one of metal, plastic and ceramic elements within said globally-shaped inner space.

5,486,136

CUTTING MACHINE FOR RAILROAD RAIL

Hirotoshi Noda, Kanagawa, Japan, assignor to Kabushiki Kaisha Yamazaki Hagurama Seisakusho, Kanagawa, Japan

Continuation of Ser. No. 119,237, Sep. 24, 1993, abandoned.
This application May 26, 1995, Ser. No. 451,383
Claims priority, application Japan, Jun. 15, 1992, 4-180419
Int. Cl.[6] B24B *23/00;27/08*
U.S. Cl. 451—347 5 Claims



1. A cutting machine for cutting railroad rails comprising:

clamping means for clamping a railroad rail from both transverse sides of said railroad rail;

a pair of juxtaposed guide rods secured to and exteading in parallel from said clamping means, said guide rods being brought into horizontal and perpendicular placement relating to a lengthwise direction of said railroad rail when said clamping means clamps said railroad rail;

a main body mounted for slide movement on said juxtaposed guide rods;

a cutting arm having a support bracket defined at a first end thereof, pivotally mounted on said main body;

an engine supported on said support bracket and secured to said main body by said support bracket;

a grinding disk saw supported at a second end of said cutting arm;

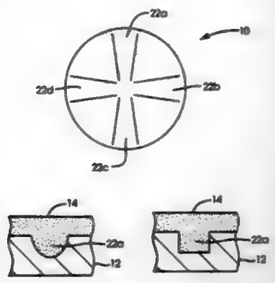
means for operationally coupling said grinding disk saw to said engine;

a stroke handle pivotally connected to said clamping means; and

connecting means, pivotally connected at one end to said main body and at another end to said stroke handle, for transferring movement of said stroke handle to said main body to produce said slide movement;

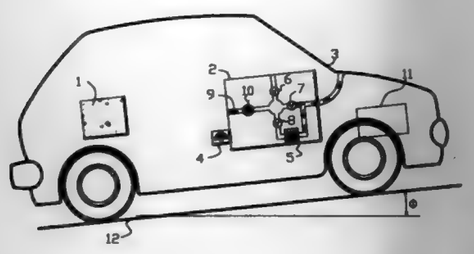
said slide movement bringing said grinding disk saw into and out of engagement with said railroad rail.

5,486,137
ABRASIVE TOOL INSERT
Gary M. Flood, Canal Winchester; David M. Johnson, Westerville, and Henry S. Marek, Worthington, all of Ohio, assignors to General Electric Company, Worthington, Ohio
Continuation-in-part of Ser. No. 108,523, Aug. 11, 1993, and a continuation-in-part of Ser. No. 93,631, Jul. 21, 1993. This application Jul. 6, 1994, Ser. No. 271,387
Int. Cl.[6] E21B *10/46*
U.S. Cl. 451—540 5 Claims



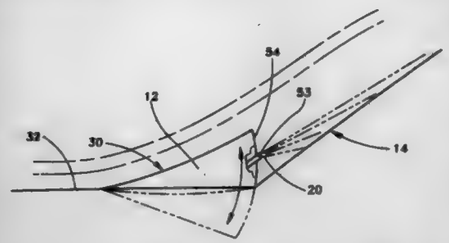
1. An abrasive tool insert comprising:
a substrate having an end face,
a continuous abrasive layer having a center, a periphery forming a cutting surface, an upper surface and a lower surface integrally formed on said end face of said substrate and defining an interface there between, said lower surface of said abrasive layer having at least one protrusion extending from said interface into the substrate and from said center to said periphery, said end face of said substrate having at least one slot for receiving said protrusion of said abrasive layer,
wherein said interface includes at least one region extending from said cutting surface such that said abrasive layer is thicker at said cutting surface than at regions immediately and radially interior to said cutting surface.

5,486,138
AIR-POLLUTION REDUCTION METHOD AND SYSTEM FOR THE INTERIOR OF AN AUTOMOBILE
Jens O. Sorensen, P.O. Box 2274, Rancho Santa Fe, Calif. 92067
Filed Jul. 20, 1994, Ser. No. 277,963
Int. Cl.[6] B60H *3/06*
U.S. Cl. 454—75 20 Claims



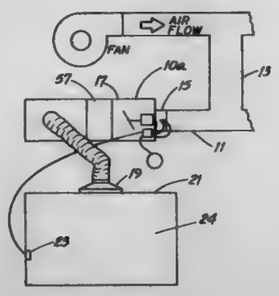
1. A method of reducing the level of air pollution in the interior of a vehicle having a controllable air intake system leading to said interior of the vehicle, comprising the steps of (a) detecting the physical inclination of the vehicle or a change of such physical inclination and (b) controlling air intake to said interior of the vehicle in response to such detection.

5,486,139
EXTERIOR WINDSHIELD SURFACE BLOWER
George W. Papp, 537 Spring Lake Dr., Melbourne, Fla. 32940
Filed Oct. 25, 1993, Ser. No. 140,563
Int. Cl.[6] B60S *1/54*
U.S. Cl. 454—123 14 Claims



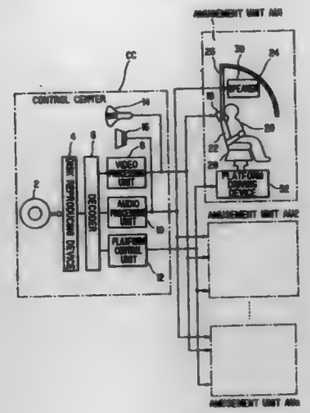
1. An exterior windshield surface blower system, disposed on a vehicle, to direct a flow of air at a windshield of the vehicle to remove rain and snow therefrom, said system comprising:
(a) an air deflector disposed along a lower edge of said exterior windshield surface, having an upper surface and having a generally vertical face in proximity with the exterior windshield surface;
(b) an air directing means disposed in said face so as to direct forced air against said windshield;
(c) said air directing means comprises a plurality of fan spray jets; and
(d) an air supply means to supply forced air to said air directing means.

5,486,140
VARIABLE AIR VOLUME TERMINAL UNIT WITH EXTERIOR INSULATION
Thomas A. Abbott, Apex, N.C.; Stephen E. Cooley, and Michael S. MacDonald, both of Madison, Wis., assignors to Venturedyne, Ltd., Milwaukee, Wis.
Filed Oct. 21, 1993, Ser. No. 139,092
Int. Cl.[6] F24F *7/00*
U.S. Cl. 454—333 11 Claims



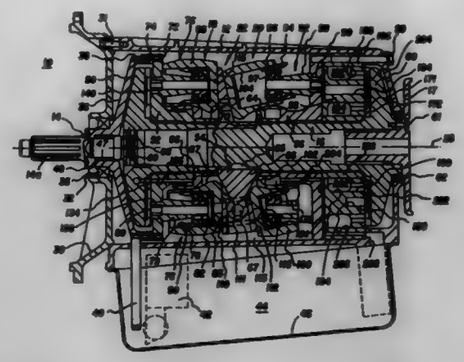
1. A method for applying insulation to a variable air volume terminal unit having (a) an actuator coupled to a damper for controlling the volume of air flowing through the unit, and (b) a compartment with plural compartment surfaces, the method including the steps of:
forming a plurality of insulating components; and,
securing a separate component to each of at least two compartment surfaces,
and wherein:
the securing step includes applying a ribbon of flat flexible securing material to the insulating components, thereby retaining such components against the compartment surfaces.

5,486,141
AMUSEMENT MACHINE AND RECORDING MEDIUM FOR USE IN THE SAME
Norio Ohga, Tokyo, and Koichi Takeuchi, Kanagawa, both of, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Sep. 21, 1993, Ser. No. 124,009
Claims priority, application Japan, Sep. 22, 1992, 4-278000; May 14, 1993, 5-112537
Int. Cl.[6] A63G *31/16*
U.S. Cl. 472—60 11 Claims



1. An amusement machine for displaying a picture to a user and allowing the user to be bodily sensate to a provided motion, including:
a display for displaying the picture to the user, the display including a screen positioned in front of the user and a projector positioned on a front side of the screen whereat the user is located and in line-of-sight communication with the screen;
support means for supporting the user, the screen being fixedly connected to said support means;
motion providing means for moving the support means and the screen and for providing the user with a sense of bodily motion;
a disk-shaped recording medium on which a video signal representing the picture displayed on said display and a control signal for controlling said motion providing means are recorded; and
means for reproducing the video signal and the control signal from said disk-shaped recording medium and for controlling said display and said motion providing means, wherein both of the video signal and the control signal associated with the video signal are recorded as code information on the disk-shaped recording medium, the video signal and the control signal being arranged in frames so as to be synchronized with each other upon reproducing,
wherein said disk-shaped recording medium has a first annular area on which a control signal for controlling said motion providing means is continuously recorded and a second annular area on which a signal representing the picture is continuously recorded, and wherein said means for reproducing and controlling includes storing means for storing the control signal reproduced from the first annular area and synchronizing means for outputting the control signal from said storing means in synchronism with the signal representing the picture reproduced from the second annular area.

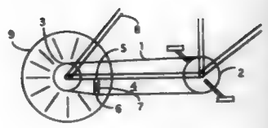
5,486,142
HYDROSTATIC TRANSMISSION INCLUDING A SIMPLIFIED RATIO CONTROLLER
Lawrence R. Folsom, Pittsfield, Mass., assignor to Martin Marietta Corporation, King of Prussia, Pa.
Filed Nov. 21, 1994, Ser. No. 342,472
Int. Cl.[6] F16H *61/00*; F16D *31/02*
U.S. Cl. 474—69 20 Claims



1. A continuously variable hydrostatic transmission comprising, in combination:
a housing;
an input shaft journaled in the housing to receive torque from a prime mover;
a pump unit including a first carrier driven by the input shaft and mounting an annular array of pump pistons, and a first cylinder block providing an annular array of pump cylinders for respectively receiving the pump pistons;
a motor unit including a second carrier fixed to the housing and mounting an annular array of motor pistons, and a second cylinder block providing an annular array of motor cylinders for respectively receiving the motor pistons;
an output shaft journaled in the housing and adapted for driving connection to a load;
an annular swashplate surrounding the output shaft and having an input face and an output face arranged at an acute angle relative to each other, the input face confronting the first cylinder block and the output face confronting the second cylinder block, the swashplate further including slots accommodating pumped fluid flow between the pump cylinders and the motor cylinders through openings in the first and second cylinder blocks;
a connector pivotally coupling the swashplate to the output shaft in torque-coupled relation; and
a ratio controller selectively exerting coordinated axial forces on the first and second cylinder blocks to adjustably set an angle of the swashplate relative to an axis of the output shaft according to a desired speed ratio between the input and output shafts.

5,486,143
BELT DRIVE TRANSMISSION
David C. Ashby, 610 Fox Valley Dr., Longwood, Fla. 32779
Filed Aug. 12, 1992, Ser. No. 928,450
The portion of the term of this patent subsequent to Aug. 4, 2009, has been disclaimed.
Int. Cl.[6] F16H *7/00*; *55/00*
U.S. Cl. 474—148 12 Claims

1. A bicycle transmission comprising:
a belt communicating with a first gear and a second gear, said communication being substantially on a circumferential surface of said first gear and said second gear;





said first gear having first angled means for frictionally communicating with said belt and for urging said belt against a first gear wall adjacent to the circumferential surface of said first gear; and

said second gear having second angled means for frictionally communicating with said belt and for urging said belt against a second gear wall adjacent to the circumferential surface of said second gear.

5,486,144

COUPLING ARRANGEMENT

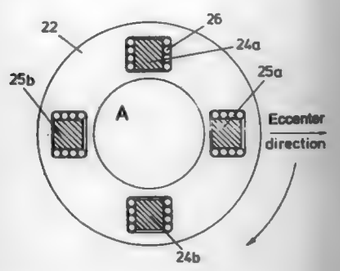
Gustav Rennerfelt, Nilstorpsvägen 53, Lidingö , Sweden

Filed Oct. 5, 1993, Ser. No. 131,599

Claims priority, application Sweden, Jan. 22, 1992, 9203101

Int. Cl.[6] F16H *1/32*

U.S. Cl. 475—179 **1 Claim**



1. A coupling mechanism for translating low rotational speed of a gearwheel around its center from a high planetary rotational speed about a first axis to a centric rotation about a second axis comprising:

a gearwheel which is mounted upon a first shaft;

a second shaft;

a plate which includes a first pair of wall apertures, and a second pair of wall apertures, disposed generally equidistantly on the plate;

a first pair of axially extending studs mounted on said gearwheel;

a first and second block each of which is journalled to a respective stud of said first pair of axially extending studs and is displaceable radially relative to said plate in a respective wall aperture of said first pair of wall apertures;

a second pair of axially extending studs mounted on said second shaft;

a third and fourth block each of which is journalled to a respective stud of said second pair of axially extending studs and is displaceable radially relative to said plate in a respective wall aperture of said second pair of wall apertures; and

a plurality of sets of cylindrically shaped rolling bodies, each set of cylindrically shaped rolling bodies of said plurality extending in a linear row and being positioned between a side surface of a respective block and a side surface of a corresponding wall aperture in which said respective block is displaceable radially relative to said plate; said cylindrically shaped rolling bodies having a diameter and a mutual diameter difference such as to obtain a high bias and a generally uniformly distributed load when the plate is subjected to a given torque-load deformation.

5,486,145

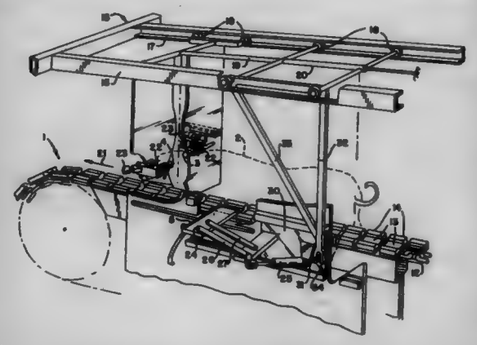
METHOD AND DEVICK FOR STUNNING AN ANIMAL FOR SLAUGHTER

Wilhelmus A. Bernardus, Lichtenvoorde, and Hendrik J. Pardijs, Winterswijk, both of, Netherlands, assignors to Stork RMS B.V., Lichtenvoorde, Netherlands

Continuation of Ser. No. 33,185, Mar. 16, 1993, abandoned. This application May 5, 1995, Ser. No. 435,172

Int. Cl.[6] A22B *3/06*

U.S. Cl. 452—58 **19 Claims**



1. A method for stunning an animal which has a head, a neck, and a main body, comprising the steps of:

a) providing the animal for slaughter on a conveyor;

b) moving the animal on the conveyor toward a destination;

c) causing a first current pulse to flow through the head and/or neck of the animal to stun the animal; and

d) causing a second current pulse to flow through the body of the animal to cause a cardiac arrest;

wherein step c) is carried out with an effective voltage of a maximum of 1000 volts and with the first current pulse having a maximum duration of 10 seconds;

wherein steps (c) and (d) are executed during step (b); and

wherein step (d) has a duration of a maximum of 10 seconds.

5,496,146

HYDRAULIC CONTROL CIRCUIT FOR AUTOMATIC TRANSMISSION

Norimi Asahara, Aichi; Kagenori Fukumura, Toyota; Yasuo Hojo, Nagoya, and Kazuhisa Ozaki, Aichi, all of, Japan, assignors to Aisin AW Co., Ltd., Japan

Filed Sep. 7, 1994, Ser. No. 301,896

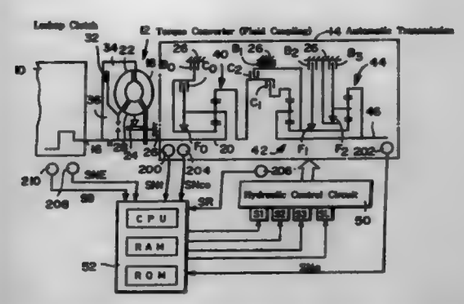
Claims priority, application Japan, Sep. 7, 1993, 5-221889

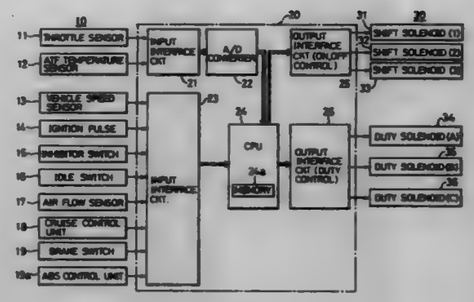
Int. Cl.[6] F16H *61/14*

U.S. Cl. 477—65 **4 Claims**

1. A hydraulic control circuit for an automatic transmission having gearing, a plurality of hydraulic frictional engagement elements for establishing plural gear stages, and a hydraulic power transmission device with a lockup clutch for transmitting power from an engine to the gearing, the lockup clutch having an application side oil chamber and a release side oil chamber, said hydraulic control circuit comprising:

a lockup relay valve for switching an oil pressure between the application side oil chamber and the release side oil chamber of the lockup clutch to apply and release the lockup clutch;





lockup switching means for switching said lockup relay valve;

a lockup control valve for increasing the pressure difference between the pressure in the application side oil chamber and the pressure in the release side oil chamber at the time of application of the lockup clutch, in accordance with rise of a signal pressure;

a transient pressure control valve for controlling transient pressure to the hydraulic frictional engagement elements in accordance with the signal pressure;

a single pressure regulator valve for regulating the signal pressure fed to said lockup control valve and said transient pressure control valve;

a signal pressure relay valve having:

a first input port for receiving the signal pressure;

a second input port for receiving a substitution pressure, in place of said signal pressure, for output to said lockup control valve to apply the lockup clutch;

a first output port connected to said lockup control valve;

a second output port connected to said transient pressure control valve;

a valve member movable between a first position, in which it provides communication between said first input port and said second output port and communication between said second input port and first output port, and a second position in which it provides communication between said first input port and said first output port; and

signal pressure switching means for moving the valve member of said signal pressure relay valve selectively to either said first position or said second position.

5,486,147

FAILURE DETECTING SYSTEM AND METHOD FOR AUTOMATIC TRANSMISSION

Ryuzo Sakakiyama, Tokyo; Kiminaga Shirakawa, Kitatsuru, and Kazunari Tezuka, Niiza, all of, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1994, Ser. No. 282,310

Claims priority, application Japan, Jul. 29, 1993, 5-188196; Jul. 29, 1993, 5-188197; Aug. 30, 1993, 5-214284; Dec. 27, 1993, 5-332180

Int. Cl.[6] F16H *61/12;59/42*

U.S. Cl. 477—125 **8 Claims**

1. A failure detecting system for an automatic transmission of a vehicle employing an engine rotational speed as one of control signals to control said automatic transmission, the system comprising:

engine speed detecting means for detecting said engine rotational speed;

air amount detecting means for detecting an amount of induction air; and

transmission control prohibiting means for prohibiting a transmission control based on said engine rotational speed, when said amount of induction air detected by said air amount detecting means is larger than a predetermined value, and when said engine rotational speed detected by said engine speed detecting means continues to be smaller than a predetermined value for more than a predetermined time.

5,486,148

FLEXIBLE CYCLING APPARATUS

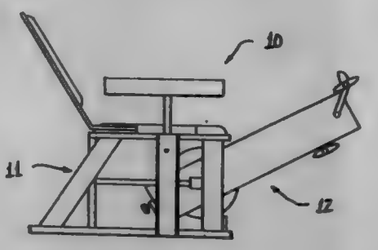
Gary L. Johnston, P.O. Box 183, Cowarts, Ala. 36321

Continuation-in-part of Ser. No. 131,396, Oct. 5, 1993, Pat. No. 5,342,261. This application Apr. 6, 1994, Ser. No. 223,714

The portion of the term of this patent subsequent to Aug. 30, 2011, has been disclaimed.

Int. Cl.[6] A63B *22/06*

U.S. Cl. 482—57 **9 Claims**



9. A flexible cycling apparatus which comprises:

a structural frame unit comprising a rigid frame, a seat mounted on said rigid frame and having a back support means moveable along said rigid frame in a substantially horizontal direction, and an assembly support;

a pedal mechanism assembly unit having a pedal assembly and attachment means, wherein said assembly unit is coupled to said assembly support of said structural frame unit to be pivoted in either the upward or downward direction, the point of pivot being moveable along said assembly support in a substantially horizontal direction;

wherein said apparatus is collapseable into a more compact configuration by positioning said pedal mechanism assembly unit such that at least a majority of said assembly unit is within said structural frame unit.

5,486,149

FRICTION RESISTANCE EXERCISE DEVICE

Fred T. Smith, and Fred P. Smith, both of Alpine, Utah, assignors to F. S. New Products, Inc., Alpine, Utah

Continuation of Ser. No. 21,186, Feb. 22, 1993, abandoned. This application May 19, 1994, Ser. No. 246,310

Int. Cl.[6] A63B *21/018*

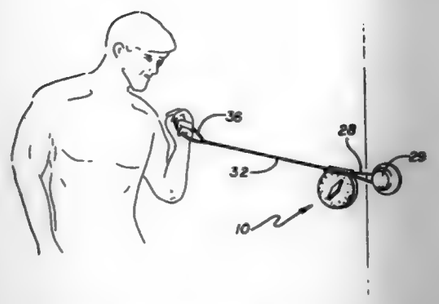
U.S. Cl. 482—120 **49 Claims**

1. In combination for use in exercise apparatus attachable to restraining means,

a rotatable disc having a first surface,

at least one brake liner having first and second surfaces and having its first surface disposed in frictional relationship to the first surface of the disc,

a rotatable sleeve having an annular configuration,



a constrainable spring operatively coupled to the sleeve for imposition of a constraint on the spring, and a release of the constraint on the spring, in accordance with the rotation of the sleeve,

a first cable movable in first and second opposite directions and operatively coupled to the sleeve for constraining the spring upon a movement of the cable in the first direction,

first means operatively coupled to the sleeve and the disc during the movement of the cable in the first direction for moving the disc in accordance with the movement of the sleeve, and

second means for providing a release of the constraint on the spring, without moving the disc, upon the release of the first cable,

a casing enveloping the rotatable disc, the brake liner, the constrainable spring, the first means and the second means,

a second cable attached at one end to the casing for the imposition of a constraining force in a first direction substantially tangential to the annular periphery of a sleeve and constructed at the second end for coupling to the restraining means, and

the first cable extending through the casing for operative coupling to the sleeve and for the imposition of a force on the sleeve in a second direction tangential to the annular periphery of the sleeve but opposite to the first tangential direction.

5,486,150

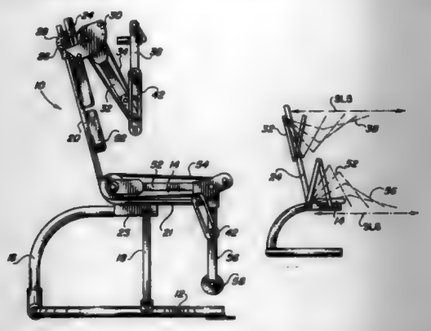
EXERCISE SYSTEM, APPARATUS AND METHOD

Lucian Randolph, 11456 Peachstone La., Orlando, Fla. 32821-7971

Filed Apr. 30, 1993, Ser. No. 56,845

Int. Cl.[6] A63B *21/02;23/035*

U.S. Cl. 482—133 **37 Claims**



33. A multiple purpose system for exercising different muscles and for limiting a single exercise to a single straight line for a selected muscle, the system comprising:

an exercise frame including an upstanding back rest and a seat extending generally lateral from the back rest;

a pair of exercise arm assemblies, each arm assembly supported along one side of the back rest and having a proximal end adjacent the back rest and a distal end;

a pair of exercise leg assemblies, each leg assembly supported along one side of the seat and having a proximal end adjacent the seat-back rest intersection, each leg assembly also including a distal end;

means for limiting movement of the distal end of each exercise assembly along a straight line which passes through the corresponding proximal and distal ends; and

means for applying an exercise resistance to movement of the exercise arm assembly along the corresponding straight line.

5,486,151

MACHINING CENTER FOR MACHINING A WORKPIECE BY MEANS OF AT LEAST TWO INTERCHANGEABLE TOOLS

Klaus Bergmann, Melinde; Jacques Schwab, and Martin Frauenfelder, both of Breganzona, all of, Switzerland, assignors to Mikron S. A. Agno, Switzerland

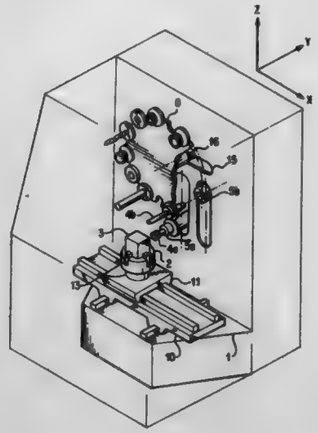
PCT No. PCT/EP92/02125, § 371 Date Sep. 10, 1993, § 102(e) Date Sep. 10, 1993, PCT Pub. No. WO93/05926, PCT Pub. Date Apr. 1, 1993

PCT Filed Sep. 16, 1992, Ser. No. 64,026

Claims priority, application Switzerland, Sep. 19, 1991, 2780/91; Feb. 27, 1992, 603/92

Int. Cl.[6] B73Q *3/157*

U.S. Cl. 483—1 **3 Claims**



1. A method for machining a workpiece on a table, comprising the steps of interchangeably inserting one of at least two tools into respective individually driven work spindles, and operating with at least one automatic tool changer with magazine such that simultaneous numerically controlled movements allows tool changing in one spindle while another spindle is operating on the workpiece such that the spindles can sequentially perform cutting with linear movements other than movements being required for tool change essentially determining the chip-to-chip time being performed parallel in time independent of total changing time, whereby said tool magazine and said spindles are mounted to be movable for selective juxtaposition of said magazine with each of said spindles, with the table having at least two linear and orthogonal axes of movement and each of the spindles being movable along at least one axis orthogonal to the at least two linear table axes.

5,486,152

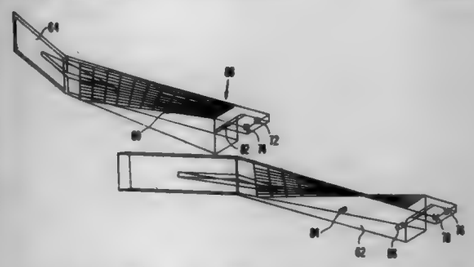
CARTON CLOSING PLOUGH AND PROCESS

Daniel J. Heinz, Joppa; Gregory A. Lathrop, Manchester, both of Md.; Lawrence W. Caldwell, Hanover, Pa., and Pasquale Buzzeo, Westminster, Md., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation of Ser. No. 17,065, Feb. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 15,951, Feb. 10, 1993, abandoned. This application Oct. 6, 1994, Ser. No. 319,356

Int. Cl.[6] B65H *45/22*

U.S. Cl. 493—468 **7 Claims**



1. A plough having a contour with a surface having the curvature necessary for closing a flap of a carton at or within 90% of constant angular velocity when the carton is conveyed at constant velocity.

5,486,153

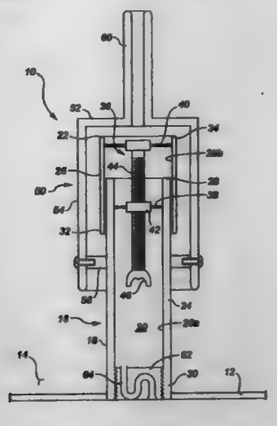
EXTERNALLY ADJUSTABLE LIQUID INTERFACE FOR A CENTRIFUGAL SEPARATOR

Earl Gingras, Eckville, Canada, assignor to Gingras Separators Inc., Edmonton, Canada

Filed May 19, 1995, Ser. No. 444,742

Int. Cl.[6] B04B *11/00*

U.S. Cl. 494—57 **4 Claims**



1. An externally adjustable liquid interface for a centrifugal separator having a rotatably mounted drum with a circumferential sidewall, characterized by:

a. a tubular liquid outlet extending into the drum, the outlet having an exterior surface, an interior bore, and a top lip which represents an interface for liquids of differing densities, the tubular liquid outlet comprising:

i. a first tubular member having a first end, a second end and an interior bore, the first end extending into the drum and the second end affixed to the sidewall of the drum;

ii. a second tubular member having a first end, a second end and an interior bore, the first end of the second tubular member telescopically mating with the first end of the first tubular member, such that the interior bore of the second tubular member is co-axial with the interior bore of the first tubular member, the second end of the second tubular member serving as the top lip of the tubular liquid outlet;

iii. a threaded coupling between the first tubular member and the second tubular member, such that upon rotation of the second tubular member the relative telescopic position of the second tubular member and the first tubular member is altered; and

iv. a fitting disposed in the interior bore of the tubular liquid outlet and non-rotatably coupled with the second tubular member and adapted to receive a working end of a tool, such that a tool extended from exterior of the drum through the interior bore of the tubular liquid outlet can be used to rotate the second tubular member thereby altering the relative telescopic position of the first tubular member and the second tubular member to raise and lower the position of the top lip of the tubular liquid outlet which serves as the liquid interface; and

b. a cap covering the top lip of the tubular liquid outlet, the cap having a top and an annular sidewall, a plurality of flow passages extending between the annular sidewall of the cap and the tubular liquid outlet whereby liquid communicates with the top lip, the top of the cap having a vent.

5,486,154

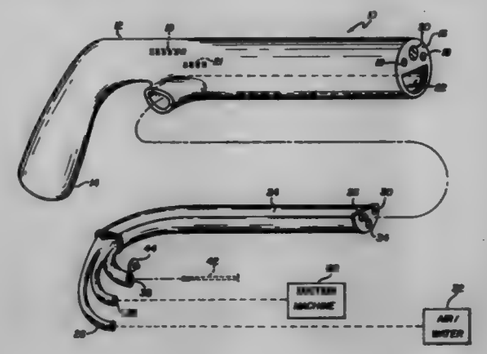
ENDOSCOPE

Brian S. Kelleher, 733 Genter St., La Jolla, Calif. 92037

Filed Jun. 8, 1993, Ser. No. 72,935

Int. Cl.[6] A61B *1/00*

U.S. Cl. 600—104 **41 Claims**



1. An endoscope for inspecting or applying therapy to an inner body cavity of a patient, including,

a shell,

illuminating means fixedly positioned in the shell,

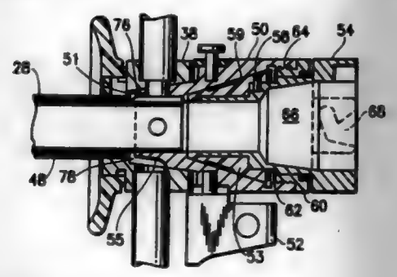
imaging means fixedly positioned in the shell,

there being a lumen within the shell, and

a core removably disposed within the lumen in the shell in sealing relationship with the shell with the illuminating means and the imaging means exterior in the shell to the core,

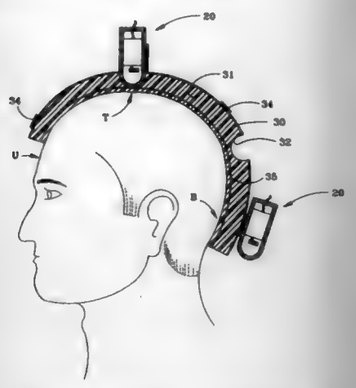
the core including a first passageway disposed within the core for providing for a removal of materials from the inner body cavity of the patient.

5,486,155
ROTATABLE ENDOSCOPE SHEATH
Richard P. Muller, Bronx, N.Y., and Richard J. O'Hare, Wilton, Conn., assignors to Circon Corporation, Santa Barbara, Calif.
Filed Jul. 15, 1994, Ser. No. 275,845
Int. Cl.[6] A61B *1/012;1/307*
U.S. Cl. 600—137 16 Claims



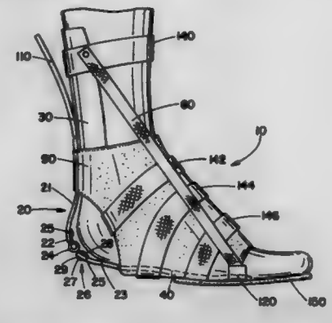
1. An endoscope comprising:
a working element; and
a first sheath covering a portion of the working element, the first sheath having a first section and a second section, the first section having a tube and means for connecting a second sheath over a portion of the tube, the second section being rotatably attached directly to the first section and being directly stationarily connected to the working element, wherein the working element is rotatable relative to the tube.

5,486,156
HEAD VIBRATOR
Stephen J. Takach, 3 Durban Ave., Hopatcong, N.J. 07843
Filed Feb. 7, 1994, Ser. No. 192,621
Int. Cl.[6] A61H *1/00*
U.S. Cl. 601—70 9 Claims



1. A vibrating body massage unit comprising;
a unitary pad means for snugly fitting about an area of a user's body, said pad means having a smooth unbroken surface facing the user and comprising a pliable material firmly fitting around a body portion of the user wherein said smooth unbroken surface is a coated rubber-like foam material;
multiple vibration generation means with each generation means including control means; and
attachment means on both said pad means and said vibration generation means for detachably connecting each of said vibration means to said pad means;
said attachment means including means for selectively attaching each of the vibration generation means at a plurality of different locations on the outside of said pliable material
said means for selectively attaching comprising depressions in an outer surface of said pliable material and protrusions on said vibration generation means for detachably interconnecting with said depressions; whereby
said control means on each of said vibration generation means enables a user to predetermine the frequency and the amplitude of each said vibration generation means such that a beat is generated within the user's body corresponding to the differences between the various predetermined frequencies produced by said multiple vibration generation means.

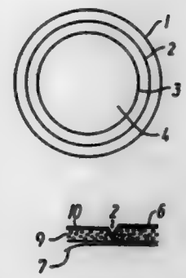
5,486,157
DYNAMIC MULTI-ANGULAR ANKLE AND FOOT ORTHOSIS DEVICE
Anthony DiBenedetto, 7306 Yellow Creek Dr., Poland, Ohio 44514
Continuation-in-part of Ser. No. 190,985, Feb. 3, 1994, abandoned. This application Dec. 9, 1994, Ser. No. 353,089
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—27 14 Claims



1. An ankle and foot orthosis device adaptable for use in a human ankle and foot complex to allow movement of a foot having a posterior heel and a toe, the device comprising:
a calf plate;
a foot plate; and,
an upright supporting the calf plate and the foot plate, the upright having a contour portion adapted to conform to the posterior heel of the foot, the contour portion having a hinge for facilitating dorsiflexion and plantar flexion and a pivot point located on the contour portion spaced from the hinge for facilitating inversion, eversion, pronation and supination of the foot.

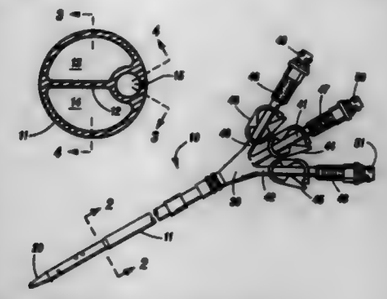
5,486,158
GROOVED HYDROCOLLOIDAL DRESSING
Peter B. Samuelsen, Rungsted Kyst, Denmark, assignor to Coloplast A/S, Denmark
PCT No. PCT/DK92/00197, § 371 Date Jan. 10, 1994, § 102(e) Date Jan. 10, 1994, PCT Pub. No. WO93/00056, PCT Pub. Date Jan. 7, 1993
PCT Filed Jun. 23, 1992, Ser. No. 167,983
Claims priority, application Denmark, Jun. 24, 1991, 1227/91
Int. Cl.[6] A61F *13/00*
U.S. Cl. 602—46 14 Claims

1. A dressing having a skin-friendly moisture absorbing sheet adhering to skin and mucous membranes, the dressing comprising:
a layer of a water swellable colloid which is dispersed in or mixed with a water insoluble viscous elastomer binder, the layer having a central part, a distal, having a contour formed therein that at least partially surrounds the central part of the layer, and an opposing proximal surface;
a non-adhesive cover layer disposed on the distal surface and following the contour of the at least one groove, the cover layer being water impervious; and



a removable protecting sheet, disposed on the proximal surface.

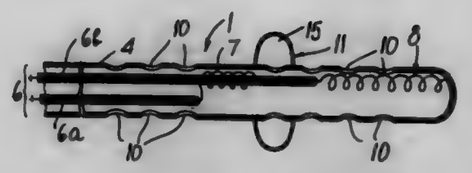
5,486,159
MULTIPLE-LUMEN CATHETER
Sakharam D. Mahurkar, 6171 N. Sheridan Rd., Ste. 1112, Chicago, Ill. 60660
Filed Oct. 1, 1993, Ser. No. 130,279
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—4 43 Claims



1. A blood purification system comprising:
a dialysis system for purifying a patient's blood; and
a multiple-lumen catheter coupled to said dialysis system comprising an elongated cylindrical tube having an internal diametral septum extending along the length thereof, said septum and the walls of said tube forming at least three longitudinal lumens, first and second of said lumens having substantially semi-circular transverse cross-sections occupying the major portion of the transverse cross section of the interior of said tube, and a third lumen having a small transverse cross-section and located at the intersection of one diametral end of said septum with said tube, between a pair of adjacent corners of said first and second lumens.

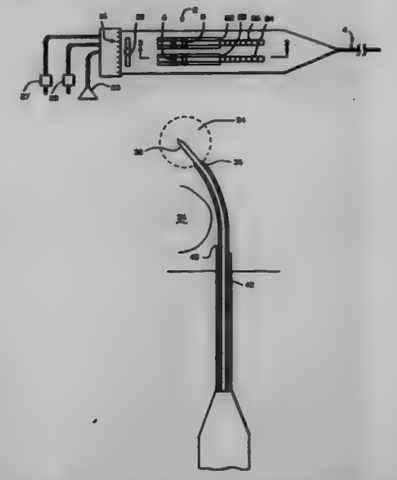
5,486,160
DEVICE AND METHOD FOR THE COMBINED ELECTROPHARMACOLOGICAL TREATMENT OF THE BLADDER AND THE PROSTATIC URETHRA
Ciao Rossi, Rome; Silvio Eruzzi, Mantova, both of, Italy; Robert L. Stephen, Salt Lake City, Utah, and Franco Lugnani, Trieste, Italy, assignors to Physion S.r.l., Italy
Filed May 4, 1994, Ser. No. 237,672
Int. Cl.[6] A61N *1/05*
U.S. Cl. 604—21 16 Claims

1. Device for the combined electropharmacological treatment of the bladder, urethra and prostate comprising a bougie that comprises a flexible tubular body having a distal tip which is provided, at a proximal end, with a connector having at least one inlet, said body having, at a distal end, openings for connection to an outside,



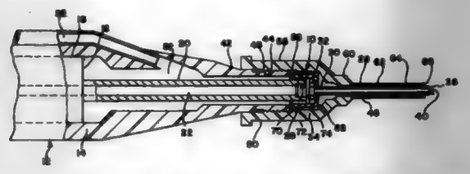
an opening in its tip and elastic sealing means for obstructing a prostatic urethra arranged perimetrically around it, said bougie being internally provided with an electrode that comprises at least two indepeandent conductors that slide axially, each conductor having an insulated portion and conducting portions that are mutually spaced.

5,486,161
MEDICAL PROBE DEVICE AND METHOD
Ronald G. Lax, Grass Valley; Stuart D. Edwards, Los Altos, and Hugh R. Sharkey, Redwood Shores, all of Calif., assignors to ZoMed International, Menlo Park, Calif.
Continuation-in-part of Ser. No. 929,638, Aug. 12, 1993, abandoned, and a continuation-in-part of Ser. No. 12,370, Feb. 2, 1993, Pat. No. 5,370,675, and a continuation-in-part of Ser. No. 62,364, May 13, 1993, Pat. No. 5,435,805, and a continuation-in-part of Ser. No. 61,647, May 13, 1993, Pat. No. 5,421,819, and a continuation-in-part of Ser. No. 61,872, May 14, 1993, Pat. No. 5,385,544. This application Nov. 8, 1993, Ser. No. 148,441
Int. Cl.[6] A61B *17/39*
U.S. Cl. 604—22 3 Claims



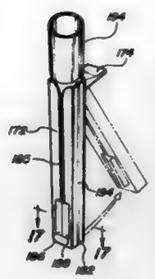
1. An Rf ablation device for inserting an Rf ablation electrode through tissue to a tissue site to be ablated, the Rf ablation device comprising:
a rigid hollow needle having a needle lumen and an open, sharpened distal end adapted to penetrate tissue:
a hollow Rf electrode positioned within the needle lumen and extendable beyond the distal end of the needle lumen, the Rf electrode having an electrode lumen and an open, distal end, the electrode lumen serving as a fluid conduit for delivering fluid through the open, distal end of the electrode;
a fiber optic positioned within the electrode lumen for providing visualization during ablation, the fiber optic having a distal end proximally distanced from the electrode distal end; and
a fluid delivery source for delivering fluid through the electrode lumen to simultaneously cleanse the fiber optic and irrigate the tissue ablation site.

5,486,162
BUBBLE CONTROL DEVICE FOR AN ULTRASONIC SURGICAL PROBE
Joseph F. Brumbach, Niles, Ill., assignor to FibraSonics, Inc., Chicago, Ill.
Filed Jan. 11, 1995, Ser. No. 371,145
Int. Cl.[6] A61B *17/00*
U.S. Cl. 604—22 18 Claims



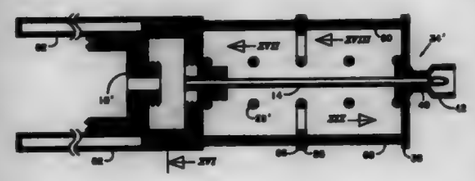
1. A bubble control device for an ultrasonic surgical probe having a needle and a sleeve spaced from the needle for at least a portion of the length of the needle and between which is an annular passage to which fluid is supplied, said device comprising a cylindrical hollow body having a bore defined therein and adapted to be positioned in the annular passage between the needle and the sleeve with the needle being received in said bore, said bore defined by said body having a first portion of greater diameter at one end and extending axially for more than half the length of the body and forming a cavity about the needle which is adapted to receive fluid supplied to the passage, said bore defined by said body tapering to a second portion of lesser diameter, which lesser diameter is greater than the outside diameter of the needle, said second portion extending to the opposite end of the body, and said body having at least one groove formed on the peripheral surface thereof extending from one end of the body to the other, whereby fluid supplied to the annular passage between the needle and the sleeve is restricted in its passage by being forced through said at least one groove formed on the peripheral surface of the body and through the space between said second portion of the body and the needle, thereby reducing the passage of bubbles formed in the fluid.

5,486,163
PROTECTIVE SHIELD FOR HYPODERMIC SYRINGE
Don A. Haynes, Okemos, Mich., assignor to Haynes-Miller, Inc., Okemos, Mich.
Continuation-in-part of Ser. No. 65,807, May 21, 1993, Pat. No. 5,312,368. This application May 16, 1994, Ser. No. 243,562
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—192 52 Claims



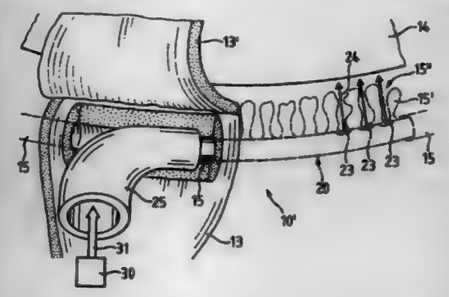
1. A shield for protecting the needle of a syringe, said syringe having a body portion and a needle, said shield comprising:
a connector for connecting the shield to the syringe;
at least one protective arm hinged to said connector;
biasing means normally biasing said arm to a closed position wherein said arm conceals said needle, said protective arm being manually displacable with respect to said syringe to an open position to expose said needle; said protective arm automatically traveling from the open position to the closed position and being unhindered throughout its travel from the open position to the closed position;
said protective arm and said connector being integrally formed as a one piece unit, with said biasing means being defined by a living hinge formed between said protective arm and said connector.

5,486,164
PASSIVE PROTECTOR FOR HYPODERMIC NEEDLES
Donald A. Streck, Kailua, Hi., assignor to Showa Hatsumei Kaisha, Ltd., Kailua, Hi.
Filed May 6, 1993, Ser. No. 57,514
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—198 8 Claims



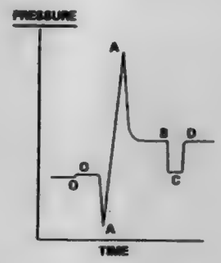
1. Apparatus for providing passive protection against accidental needle-stick for a hypodermic needle extending from a hub comprising:
a) a tip protector comprising a cross-piece disposed transverse to the needle having an elongated first bore therethrough through which the needle passes and having a bell-shaped tip-guard extending from the cross-piece concentrically about said first bore and covering a tip portion of the needle with said tip protector in an extended position, said tip protector being slidably moveable along the needle supported by said elongated first bore between said extended position and a retracted position with said tip portion exposed for use, said first bore being close adjacent and behind said tip portion when in said extended position and behind and removed from said tip portion when in said retracted position;
b) guide means for guiding said tip protector between said extended position and said retracted position, said guide means comprising,
b1) a pair of guide tubes extending from the hub away from said tip protector and parallel to the needle, and
b2) a pair of support rails integrally formed as part of and extending from said cross-piece towards said pair of guide tubes and parallel to the needle, said pair of support rails being slidably disposed within respective ones of said pair of guide tubes;
c) a helical spring concentrically disposed about the needle between the hub and said cross piece biasing said tip protector to said extended position; and,
d) releasable locking means for automatically releasably locking said tip protector in said extended position when said tip protector moves to said extended position from a position retracted therefrom.

5,486,165
METHOD AND APPLIANCE FOR MAINTAINING THE NATURAL INTRAOCULAR PRESSURE
Robert Stegmann, 88, Copacaine, Lynnwood Glen, Pretoria, 0181, South Africa
Filed Jan. 13, 1994, Ser. No. 181,174
Claims priority, application Switzerland, Jan. 10, 1992, 062/92
Int. Cl.[6] A61M *5/00*
U.S. Cl. 609—294 13 Claims



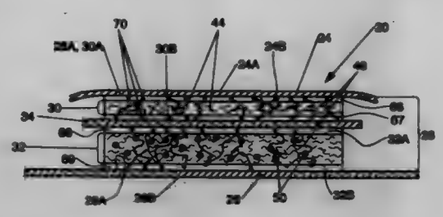
1. An apparatus for injecting a highly viscous medium into Schlemm's canal for maintaining a constant pressure of the aqueous humor circulating from the posterior chamber to the anterior chamber of the eye of an organism, said apparatus comprising an injection unit and a tube which has a closed end and is made of biocompatible material, said tube being connected to the injection unit and designed in the form of an arc of a circle defined by a single curvature with a radius in the range of about 12 mm to 14 mm to generally conform to the curvature of the Schlemm's canal, said tube having one end provided on the inside of the arc facing the tubular tissue with at least one orifice and another end provided with a coupling for connection of the tube to the injection unit for introduction of viscous medium into the Schlemm's canal to thereby hydraulically expand the Schlemm's canal and burst it at one or more points for creating a corresponding number of openings to form a connection between the Schlemm's canal and the trabecular tissue for drainage of aqueous humor.

5,486,166
FIBROUS NONWOVEN WEB SURGE LAYER FOR PERSONAL CARE ABSORBENT ARTICLES AND THE LIKE
David F. Bishop, Dunwoody, and Clifford J. Ellis, Woodstock, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Continuation of Ser. No. 206,986, Mar. 4, 1994, abandoned. This application Feb. 9, 1995, Ser. No. 386,244
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—366 16 Claims



1. A fibrous nonwoven web comprising:
a plurality of thermoplastic fibers heat bonded to one another to form a lofty nonwoven web having a basis weight of at least 20 grams per square meter, a void volume of between about 80 and about 117 cubic centimeters per gram of web at 689 dynes per square centimeter pressure, a permeability of about 8,000 to about 15,000 darcy, a porosity of about 98.6% to about 99.4% and a surface area per void volume of about 10 to about 25 square centimeters per cubic centimeter.

5,486,167
ABSORBENT ARTICLE HAVING BLENDED MULTI-LAYER ABSORBENT STRUCTURE WITH IMPROVED INTEGRITY
Jerry L. Dragoo, Fairfield; Michael S. Bogdanski, Cincinnati; Nicholas A. Ahr, Cincinnati, and John R. Noel, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of Ser. No. 153,739, Nov. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 911, Jan. 6, 1993, Pat. No. 5,300,054, Ser. No. 637,571, Jan. 3, 1991, abandoned, Ser. No. 810,774, Dec. 17, 1991, abandoned, Ser. No. 874,871, Apr. 28, 1992, abandoned, Ser. No. 874,872, Apr. 28, 1992, abandoned, Ser. No. 882,738, May 14, 1992, abandoned, Ser. No. 915,133, Jul. 23, 1992, Ser. No. 915,134, Jul. 23, 1992, abandoned, Ser. No. 915,201, Jul. 23, 1992, abandoned, Ser. No. 915,202, Jul. 23, 1992, abandoned, Ser. No. 915,284, Jul. 23, 1992, abandoned, Ser. No. 915,285, Jul. 23, 1992, abandoned, Ser. No. 944,764, Sep. 14, 1992, Ser. No. 957,575, Oct. 7, 1992, Ser. No. 966,240, Oct. 26, 1992, abandoned, Ser. No. 108,861, Aug. 18, 1993, Pat. No. 5,439,458, and Ser. No. 931,122, Aug. 17, 1992, Pat. No. 5,304,161, which is a continuation of Ser. No. 637,090, Jan. 3, 1991, abandoned. This application Apr. 12, 1995, Ser. No. 427,181
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—384 24 Claims



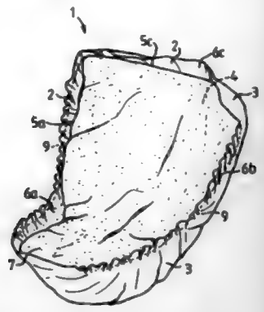
1. An absorbent article comprising:
a liquid pervious topsheet;
a liquid impervious backsheet joined to said topsheet;
an absorbent core positioned between said topsheet and said backsheet, said absorbent core comprising a mixture of absorbent gelling materinl and fibers, said fibers comprising a blend of cellulose fibers and liquid inseasitive crimped synthetic fibers comprising about 5% to about 90% by weight of the fibers in said absorbent core, said crimped synthetic fibers having a length of between about 0.6 cm and about 5 cm, a denier of between about 1 ½ and about 40 denier per fiber, and a crimp angle of between about 70° and about 91° as measured between the adjacent portions of a fiber that have a crimp formed therebetween; and an acquisition layer positioned between said topsheet and said absorbent core.

5,486,168

INCONTINENCE GUARD FOR MEN

Bo Runeman, Partille, and Peter Rönnberg, Mölndal, both of, Sweden, assignors to Molnlycke AB, Gothenburg, Sweden

Continuation of Ser. No. 855,042, Jun. 1, 1992, abandoned. This application Dec. 13, 1994, Ser. No. 354,805
Claims priority, application Sweden, Nov. 17, 1989, 8903868
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—385.1 **23 Claims**



1. A male incontinence guard, comprising:
an inner, liquid permeable casing layer;
an outer, liquid impermeable casing layer;
an absorbent pad having a first end, said casing layers enclose said pad so as to include a first casing end and a second casing end opposite to said first casing end, a first side edge along one side of said pad and a second side edge along an opposite side of said pad;
said absorbent pad narrows at the first end;
a first elastic device attached in a prestretched state to the inner casing layer and extending from the first casing end along at least a part of said first side edge; and,
a second elastic device attached in a prestretched state to the inner casing layer and extending from the first casing end along at least a part of said second side edge;
said elastic devices arranged such that contraction of said elastic devices causes a curvature such that said inner casing layer at the first casing end of said pad takes a concave shape and said outer casing layer at said first casing end of said pad takes a convex shape, the curvature being more pronounced at the first casing end and decreasing away from the first casing end along the side edges because local resistance of the pad to bending increases toward the second casing end.

5,486,169

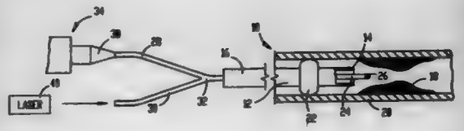
Patent Not Issued For This Number

5,486,170

MEDICAL CATHETER USING OPTICAL FIBERS THAT TRANSMIT BOTH LASER ENERGY AND ULTRASONIC IMAGING SIGNALS

Thomas R. Winston, Leawood, and John M. Neet, Shawnee, both of Kans., assignors to Ultrasonic Sensing and Monitoring Systems, Leawood, Kans.

Division of Ser. No. 966,279, Oct. 26, 1992, Pat. No. 5,350,377. This application Sep. 22, 1994, Ser. No. 310,498
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—16 **7 Claims**



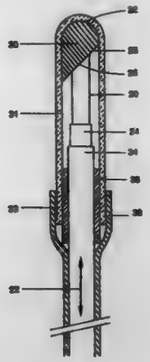
1. A catheter for insertion into the body to effect medical treatment, comprising:
an elongated catheter having opposite ends;
an optical fiber extending through said catheter and terminating in a tip adapted to be disposed in the body with the catheter, said optical fiber having an input end opposite said tip;
an ultrasonic transducer means for generating and receiving ultrasonic signals;
a means for generating laser energy; and
a directing means for directing both ultrasonic signals and laser energy to the optical fiber at the input end for transmission through the fiber to said tip and for directing reflected ultrasonic signals from said tip through said optical fiber to said ultrasonic transducer means, the reflected ultrasonic signals providing information regarding the treatment area adjacent the tip of the optical fiber, the laser energy being applied to effect treatment to the same area.

5,486,171

TRANSPARENT CAP FIBER OPTICA LASER BEAM ANGLE DELIVERY DEVICE

Marilyn M. Chou, Piedmont, Calif., assignor to Xintec Corporation, Oakland, Calif.

Continuation-in-part of Ser. No. 87,981, Jul. 7, 1993, Pat. No. 5,354,294, and a continuation-in-part of Ser. No. 67,566, May 26, 1993, and a continuation-in-part of Ser. No. 14,814, Feb. 8, 1993, Pat. No. 5,366,456. This application Oct. 7, 1994, Ser. No. 319,954
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—16 **42 Claims**



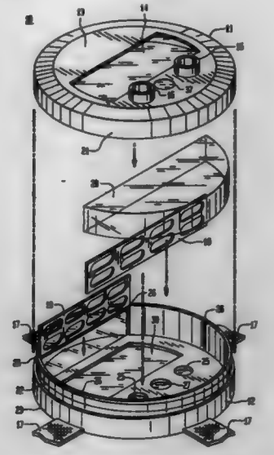
1. A transparent cap fiber optic laser beam angle delivery device, said device comprising:
an optical fiber, said fiber having:
a receiving end,
a central axis, and
a transmitting end, said transmitting end having a bias cut end surface, said bias cut end surface defining a predetermined operative angle with said central axis of said fiber;
a transparent cap, said transmitting end disposed within said transparent cap such that said transmitting end of said optical fiber is protected from exposure to operating debris and fluids; and
an attaching means, said attaching means securing said transparent cap to said fiber.

5,486,172

APPARATUS FOR TREATING CUTANEOUS VASCULAR LESIONS

Cyrus Chess, 49 Blue Spruce Cir., Weston, Conn. 06883

Continuation-in-part of Ser. No. 706,243, May 28, 1991, Pat. No. 5,282,797, which is a continuation of Ser. No. 358,890, May 30, 1989, Pat. No. 5,057,104. This application Jan. 31, 1994, Ser. No. 189,942
Int. Cl.[6] A61N *5/06*
U.S. Cl. 606—20 **21 Claims**



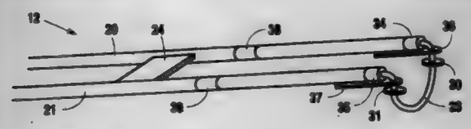
1. An apparatus adapted to be secured to a patient for treating cutaneous vascular lesions in a target area of the patient, said apparatus comprising:
a lower housing having a bottom with an opening therethrough,
an upper housing removably connected in liquid tight engagement to said lower housing, said upper housing having a top with an opening therethrough and substantially in alignment with the opening of said lower housing;
means for connecting said lower housing to said upper housing;
a pair of glass windows, one of said pair of glass windows removably secured in the opening of said lower housing, the other of said pair of glass windows being removably secured in the opening of said upper housing; and
at least one fenestrated wall removably positioned at an inner surface of said lower housing to form a first and a second chamber when said upper housing and said lower housing are connected together, said first chamber being adapted to receive a cooling medium, the second chamber for preventing the cooling medium from obstructing a passage of a laser beam between said pair of glass windows,
wherein the at least one fenestrated wall permits any portion of the cooling medium that is in liquid form to pass through the apparatus.

5,486,173

SELF-GUIDING ELECTRODE AND CUTTING TIP FOR TISSUE RESECTION

Thierry G. Vancaillie, 133 Pin Oak Forest, San Antonio, Tex. 78232

Filed Dec. 8, 1993, Ser. No. 164,107
Int. Cl.[6] A61B *17/39*
U.S. Cl. 606—45 **6 Claims**



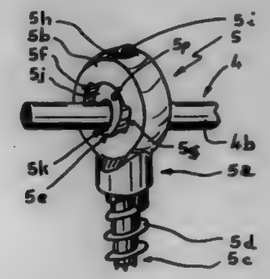
1. An electrode, comprising
first and second electrical conductors, each said conductor having a lateral compliance, a proximal end and a distal end, said conductors being spaced apart and oriented proximal end to proximal end and distal end to distal end;
at least one spring centered joint having a predetermined lateral compliance in series with each said first and second electrical conductor;
a tissue cutting loop having first and second ends;
coupling means for coupling said cutting loop first end to said first conductor distal end and said cutting loop second end to said second conductor distal end; and
at least one tissue skid coupled to each said first and second electrical conductor proximate each said distal end.

5,486,174

FASTENER FOR THE OSTEOSYNTHESIS OF THE SPINAL COLUMN

Jacques Fournet-Fayard, Valence; Olivier Galland, Meylan; Christophe Garin, Lyons, and Alain Lacet, Dijon, all of, France, assignors to Soprane S.A., Lyons, France

Filed Feb. 23, 1994, Ser. No. 200,409
Claims priority, application France, Feb. 24, 1993, 93 02357; Feb. 9, 1994, 94 01661
Int. Cl.[6] A61B *17/70;17/86*
U.S. Cl. 606—61 **15 Claims**



1. A fastener for implanting to spaced vertebrate for relieving stress on a vertebral disc of a vertebral stage of patient's spinal column which is adjacent at least two vertebral stages which are mechanically united to one another and wherein each of the vertebral stages includes a vertebra having pedicles, the fastener comprising, a fastener rod having first and second portions, said second portion having a diameter which is less than the diameter of said first portion, at least two pedicle screw means, each pedicle screw means having a portion which is adapted to be anchorable into adjacent pedicles of the vertebrae of the at least two vertebral stages, each of said pedicle screw means including tightening means for securing said first portion of said rod to said at least two pedicle screw means so as to be in fixed relationship to the at least two vertebral stages when said fastener is in use, a guidance means having a screw portion which is adapted to be anchored into a pedicle of the vertebra of the next adjacent vertebral stage and a head portion, said head portion having an open passageway, said second portion of said fastener rod being continuously slidably engaged within said open passageway when said fastener is implanted in the vertebrae and said first portion of said rod is secured to said at least two pedicle screw means which are fixed to the at least two vertebral stages and said guidance means is secured to the next adjacent vertebral stage, whereby said fastener relieves stress on the disc adjacent the at least two vertebral stages when in use.

5,486,175

Patent Not Issued For This Number

5,486,176

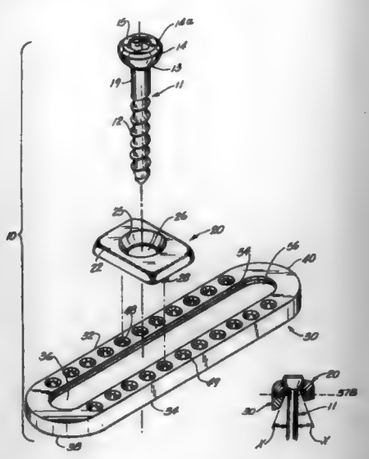
ANGLED BONE FIXATION APPARATUS

Bryan D. Hildebrand, Cleveland Heights, Ohio; Laura C. Small, Memphis, Tenn.; Hansen A. Yuan, Fayetteville, N.Y.; B. Thomas Barker; Matthew M. Morrison, both of Memphis, Tenn.; Abraham Salehi, Bartlett, Tenn., and Forrest C. Smith, Collierville, Tenn., assignors to Smith & Nephew Richards, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 856,707, Mar. 24, 1992, abandoned, and Ser. No. 62,825, May 14, 1993, abandoned, each , May 14, 0which is a continuation-in-part of Ser. No. 675,740, Mar. 27, 1991, Pat. No. 5,129,899. This application Feb. 23, 1994, Ser. No. 200,700

Int. Cl.[6] A61B *17/80;17/70*

U.S. Cl. 606—71 21 Claims



1. An angled bone fixation apparatus, comprising:

a) a plurality of bone screws having a first end portion and a second end portion, said first end portion configured to be surgically implantable into a patient's vertebral bone mass and at first and second spaced apart positions on the bone mass, said second end portion having a head portion with a load transfer surface thereon and a top portion;

b) an elongated plate member having upper and lower surfaces angled with respect to each other and an elongated plate slot having a longitudinally extending axis, a transverse cross section and a vertical centerline, said slot being surrounded by a peripheral portion having outer opposed edges;

c) said slot defining an opening for receiving the bone screws, the plate member having a first and second angled sidewall at the slot, said sidewalls each forming an acute angle relative to the vertical centerline of the plate member whereby the slot is wider at the lower surface than at the upper surface.

d) a washer interfacing with the plate member and each bone screw, for distributing load from each bone screw to the plate member, said washer including a central opening having a vertical centerline and upper and lower surfaces, said lower surface having a pair of laterally spaced apart projections extending therefrom;

e) said plate member having a plurality of adjustment openings in the upper surface, and each of the washer projections sized and shaped to fit in selected pairs of adjustment openings;

f) said angled plate sidewalls being angled to constrict bone screw angulation in a medial/lateral transverse plane when each bone screw interfaces with the washer and the washer interfaces with the plate member.

5,486,177

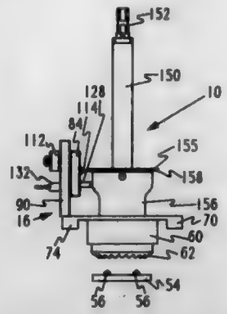
PATELLA PLANER WITH ADJUSTABLE STOP

Charles W. Mumme, and Philip Gold, both of Austin, Tex., assignors to Intermedics Orthopedics, Inc., Austin, Tex.

Filed Dec. 20, 1994, Ser. No. 359,873

Int. Cl.[6] A61B *17/17*

U.S. Cl. 606—79 14 Claims



1. A surgical apparatus for preparing a surface on a patella of a patient to receive a prosthetic implant, said apparatus comprising:

a circularly driven surface planer,

a base plate for supporting said patella,

guide means connected to said base plate for guiding said surface planer against said patella to cut away a portion of said patella, and

stop means connected to said guide means for limiting said portion of said patella to be cut away by said surface planer, said stop means having

means for selecting a depth of cut into said patella, and

an adjustable pointer for setting said means for selecting a depth of cut to an initial zero condition dependant on the thickness of said patella.

5,486,178

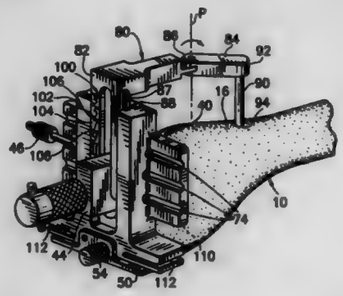
FEMORAL PREPARATION INSTRUMENTATION SYSTEM AND METHOD

W. Andrew Hodge, 120 Clarke Ave., Palm Beach, Fla. 33480

Filed Feb. 16, 1994, Ser. No. 197,387

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—82 17 Claims



1. An improvement in a femoral preparation instrumentation system for preparing a femur, at the distal femur thereof, for the implant of a femoral knee prosthesis, the femoral preparation instrumentation system including an intramedullary alignment rod and a femoral sizing guide for placement on the intramedullary alignment rod which is to be seated generally axially within the femur and which includes a rod portion for projecting from the distal femur in a longitudinal direction when the intramedullary alignment rod is seated within the femur, the improvement comprising:

a sizing guide block;

axially projecting foot means on the sizing guide block for engaging the posterior distal femur;

block mounting means for mounting the sizing guide block upon the rod portion of the intramedullary alignment rod for selective movement in altitudinal directions relative to the longitudinally directed rod portion, the block mounting means including engaging means for precluding rotation of the sizing guide block relative to the rod portion about the longitudinal direction when the sizing guide block is mounted upon the rod portion;

selective locking means for selectively locking the sizing guide block against altitudinal movement relative to the rod portion when the sizing block is in a sizing position wherein the foot means of the sizing guide block is located against the posterior distal femur, such that the sizing guide block is selectively locked in place upon the seated intramedullary alignment rod in the sizing position;

a stylus for engaging the anterior cortex;

stylus mounting means for mounting the stylus upon the sizing guide block for unrestricted movement in altitudinal directions relative to the sizing guide block to enable location of the stylus against the anterior cortex with the stylus mounted upon the sizing guide block;

size indicator means for providing an indication, when the sizing guide block is in the sizing position and the stylus is located against the anterior cortex, of the size of the femoral knee prosthesis to be implanted; and

a posterior femoral cutting guide on the sizing guide block for guiding a cutting instrument to establish a preliminary posterior femoral cut when the sizing guide block is in the sizing position.

5,486,179

Patent Not Issued For This Number

5,486,180

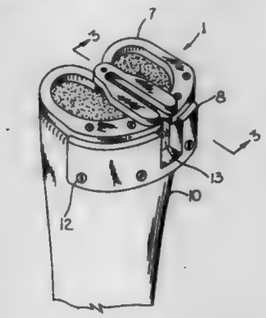
APPARATUS FOR MILLING BONE

Terry L. Dietz, Columbia City, and Richard D. Vanlaningham, Milford, both of Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Continuation-in-part of Ser. No. 832,098, Feb. 6, 1992, Pat. No. 5,344,423. This application Jun. 10, 1994, Ser. No. 258,114

Int. Cl.[6] A61F *5/04*

U.S. Cl. 606—87 7 Claims



1. An apparatus for producing a planar surface on a portion of a bone, the apparatus comprising a milling device, a guide, and means for attaching the guide to the bone, the guide having a reference surface and a non-linear track, the reference surface being adapted to engage the milling device to constrain the milling device to motion in a plane, the non-linear track having a width approximately equal to the width of a portion of the milling device, said portion engageable within the track, the close fit of said portion within the track forcing the milling device to move in a non-linear motion along the non-linear track such that when the milling device is guided along the track, the milling device will form the planar surface on the bone parallel to the reference surface.

5,486,181

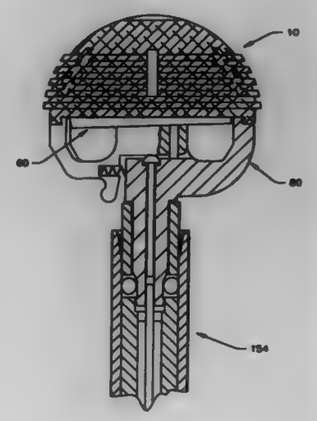
ACETABULAR CUP, METHOD AND TOOL AND INSTALLING THE SAME

Robert C. Cohen, Rockaway Township, and Rafal Zubok, Midland Park, both of N.J., assignors to Implex Corporation, Allendale, N.J.

Filed Aug. 4, 1994, Ser. No. 286,803

Int. Cl.[6] A61F *2/46;* A61B *17/88*

U.S. Cl. 606—91 5 Claims



1. A tool for installing an acetabular cup having an outer shell of a hard material with a cavity circumscribed by a peripheral surface, and a bearing insert of a material which is softer than said material of said outer shell disposed within said cavity of said shell, said tool comprising:

handle means for aligning and driving the acetabular cup into said acetabulum;

adaptor means for coupling said handle means to said acetabular cup, said adaptor means having leg means for engaging corresponding leg receiving means positioned on the peripheral surface of the outer shell when said leg means are brought into contact with the peripheral surface of the outer shell and said adaptor means is rotated relative to said acetabular cup, said leg means including a pair of substantially parallel oriented leg members unitarily formed with said adaptor means,

and locking means for preventing relative rotation between said adaptor means and the acetabular cup when said leg means of said adaptor means are engaged with the leg receiving means of the outer shell, said locking means being slidably oriented between said pair of leg members.

5,486,182

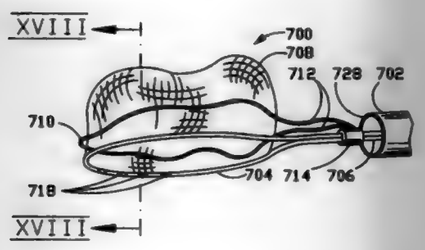
POLYP RETRIEVAL ASSEMBLY WITH SEPARABLE WEB MEMBER

Naomi L. Nakao, and Peter J. Wilk, both of New York, N.Y., assignors to Wilk & Nakao Medical Technology Inc., New York, N.Y.

Continuation-in-part of Ser. No. 12,657, Feb. 1, 1993, Pat. No. 5,336,227, which is a continuation-in-part of Ser. No. 788,035, Nov. 5, 1991, Pat. No. 5,201,740, and Ser. No. 892,214, Jun. 2, 1992, Pat. No. 5,190,542. This application Mar. 14, 1994, Ser. No. 213,196

Int. Cl.[6] A61B *17/22;17/36*

U.S. Cl. 606—114 **15 Claims**



1. An endoscopic surgical instrument for use in snare cauterization operations, comprising:

a tubular sheath member;

loop means made at least in part of an electrically conductive material for forming an alternately expandable and contractible cauterization loop;

an electrically conductive wire operatively connected to said loop means and extending longitudinally through said sheath member, said wire being slidable longitudinally through said sheath;

electrical connector means at a proximal end of said wire for coupling said wire to a source of electrical energy;

a flexible web member connected to said loop means essentially around a circumference thereof to form a capture pocket, said loop means defining a mouth opening of said pocket, said web member being attached to said loop means in a manner so as to expose said loop means to enable effective cauterization of organic tissues by said loop means, said web member being removably attached to said loop means along a major portion thereof; and

means on said sheath member at a distal end thereof for at least substantially separating said web member from said loop means upon a proximally directed stroke of said wire at the termination of a cauterization operation.

5,486,183

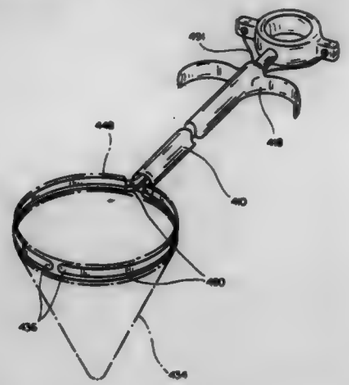
DEVICE OR APPARATUS FOR MANIPULATING MATTER

Lee M. Middleman, Portola Valley; Walter R. Pyka, Redwood City; Michael Buhler, Los Gatos; Philippe Poncet; Karl Van Dyk, both of Fremont, and James E. Jervis, Atherton, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 594,768, Oct. 9, 1990, abandoned, Ser. No. 608,117, Nov. 1, 1990, abandoned, Ser. No. 594,769, Oct. 9, 1990, abandoned, Ser. No. 608,121, Nov. 1, 1990, abandoned, Ser. No. 594,871, Oct. 9, 1990, abandoned, Ser. No. 594,896, Oct. 9, 1990, abandoned, Ser. No. 594,874, Oct. 9, 1990, abandoned, Ser. No. 594,873, Oct. 9, 1990, abandoned, and Ser. No. 656,651, Feb. 15, 1991, abandoned. This application Oct. 9, 1991, Ser. No. 774,016

Int. Cl.[6] A61B *17/22*

U.S. Cl. 606—127 **21 Claims**



1. A surgical apparatus for manipulating matter at an intended manipulation temperature in a confined or inaccessible space, comprising:

(i) manipulator means at least partly constructed of an elongate shape memory alloy member said shape memory alloy member having a distal end said shape memory alloy member having two arms at said distal end thereof, said two arms having tips that approach but are not fixed to one another, said shape memory alloy member having pseudoelasticity at the intended manipulation temperature, and

(ii) a barrier member spanning said two arms;

(iii) a hollow cannula initially holding the shape memory alloy member in a relatively straightened state, and

(iv) actuating means for extending the shape memory alloy member with said barrier member from the housing to manipulate matter within said space and for withdrawing the shape memory alloy member into the housing, the arrangement being such that the shape memory alloy member bends or twists pseudoelastically in a lateral or helical sense to manipulate the matter on extending from the housing at said manipulation temperature, and the shape memory alloy member becomes relatively straightened on withdrawal into the housing at said temperature.

5,486,184

Patent Not Issued For This Number

5,486,185

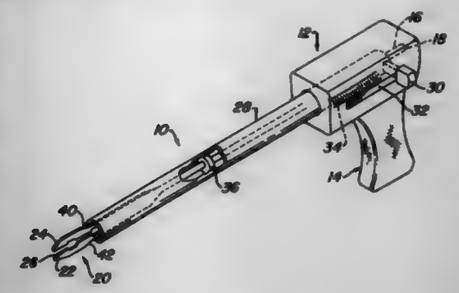
SURGICAL APPARATUS

Michael W. Freitas, Irving, and Wayne D. Miller, Bedford, both of Tex., assignors to Dexide, Inc., Fort Worth, Tex.

Continuation of Ser. No. 629,993, Dec. 19, 1990, abandoned, which is a continuation of Ser. No. 303,850, Jan. 30, 1989, abandoned. This application Jun. 28, 1991, Ser. No. 723,190

Int. Cl.[6] A61B *17/12;17/28;17/32*

U.S. Cl. 606—142 **8 Claims**



1. A surgical instrument for use in applying clips to tissue, the instrument adapted for passage through a surgical sleeve or cannula and into a bodily cavity, the instrument comprising:

a handle for gripping by a user's hand;

an elongate probe extending from the handle and adapted for passage through the surgical sleeve, the probe including:

a generally tubular probe sleeve extending from the handle; and

a probe member extending from the handle, generally concentrically through the probe sleeve, and terminating in an end;

a pair of jaws rotatably coupled to the end of the probe member, the jaws for selectively compressing the surgical clip about a portion of tissue in the bodily cavity, the jaws including a pair of camming surfaces and extending a fixed axial distance from the handle, at least the jaws being freely rotatable relative to the handle to permit the handle to be rotated with the jaws in a selected position in the bodily cavity;

seal means disposed in the probe to prevent escape of fluid from the bodily cavity through the surgical instrument; and

actuator means coupled to the probe to selectively actuate the jaws by longitudinal movement of the probe sleeve over the camming surfaces of the jaws, wherein the jaws remain at the fixed longitudinal distance from the handle.

5,486,186

LIGATING INSTRUMENT AND METHODS OF LIGATING TISSUE IN ENDOSCOPIC OPERATIVE PROCEDURES

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Division of Ser. No. 930,320, Aug. 17, 1992, Pat. No. 5,334,199. This application Feb. 14, 1994, Ser. No. 195,491

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—148 **35 Claims**



1. A ligating instrument for ligating anatomical tissue comprising

a tubular member having a distal end, a proximal end and a lumen;

a length of ligature material extending through said lumen and having a proximal end and a distal end forming a loop disposed externally of said tubular member distal end for being positioned around anatomical tissue to be ligated;

a handle mounting said tubular member proximal end for being grasped by a hand of a surgeon;

an operating member coupled with said ligature material for moving said ligature material in a proximal direction within said tubular member to tighten said loop around the anatomical tissue to form a ligature in response to manual movement of said operating member by the hand grasping said handle; and

a cutter mounted by said tubular member for cutting said ligature material away from the thusly formed ligature.

5,486,187

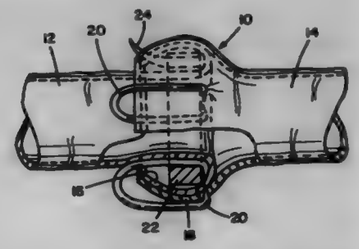
ANASTOMOSIS DEVICE AND METHOD

Robert R. Schenck, 1100 N. Lake Shore Dr., Chicago, Ill. 60611

Filed Jan. 4, 1994, Ser. No. 177,260

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—153 **6 Claims**



1. An apparatus for anastomosing a prepared first living vessel end to a prepared second living vessel end comprising:

an encircling member having an interior surface and an exterior surface and through which the first vessel end of the first living vessel extends to pass the interior surface to evert over the exterior surface and the second end of the second living vessel extends over the encircling member to engage the everted first vessel end of the first living vessel to interconnect the living vessels in apposition at the encircling ring; and

at least one needle-like projection extending from the encircling member back toward the first living vessel as the vessel extends through the encircling member for holding the first and second vessel ends in a sealed apposition at the encircling member;

the encircling member further comprising a plurality of fasteners having each an elongated wire-like body with a substantially enclosing configuration, a pair of opposing ends for impaling the vessels and flexibility to change from a first position in which the ends are spaced for enabling the fastener to be moveable by the surgeon to substantially encompass the encircling member and the vessel ends and a second position in which the ends impale the vessels adjacent the vessel ends while the fastener secures the vessel ends against the encircling member for securing the vessels in a sealed apposition at the encircling member.

5,486,188

KERATOSCOPIC SURGICAL INSTRUMENT FOR MAKING RADIAL AND ARCUATE CORNEAL INCISIONS

Alan D. Smith, 1406 French Ave., Odessa, Tex. 79761

Filed Nov. 15, 1993, Ser. No. 151,996

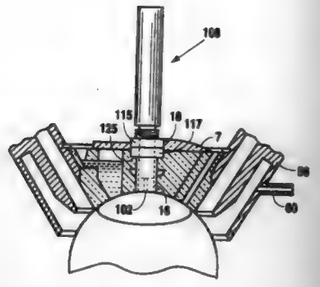
Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—166 **39 Claims**

1. An ophthalmic surgical instrument comprising:

a) a lens support means:

b) a light-transmissive guide lens having a central axis mounted on said lens support means and including:



1) a conclave lower surface shaped to matingly receive the cornea of an eye. and
2) a linear slot extending through said guide lens, adapted for receiving and guiding a narrow surgical incision-forming means extending through said guide lens and into the cornea of the eye for movement along a desired radial incision path in the cornea; and

c) visual confirmation permitting means comprising mirror surface means for permitting the user to view the incision in a radial direction through the cornea to provide visual confirmation of the penetration depth of a corneal surgical incision made by said incision forming means concurrently with the making of the incision.

5,486,189

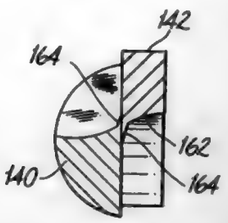
ENDOSCOPIC SURGICAL INSTRUMENT

Matthew Mudry, Fairfield; Ernie Aranyi, Easton, and David A. Nicholas, Trumbull, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 781,064, Oct. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 593,670, Oct. 5, 1990, abandoned. This application Oct. 22, 1993, Ser. No. 141,417

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—171 **21 Claims**



1. An endoscopic surgical instrument including a handle assembly, a body assembly extending from said handle assembly, said body assembly including an narrow tube member and a rod member, said rod member moveable in response to movement of said handle assembly and having a bearing post at a distal end portion thereof, said endoscopic surgical instrument comprising:

a tool mechanism including a pair of reciprocating members pivotally secured at a pivot pin to a distal end portion of said body assembly and movable toward and away from each other in face-to-face planar engagement in response to movement of said handle assembly, one of said reciprocating members being provided with a pair of camming members extending proximally thereof and defining an elongated slot receiving said bearing post and defining a camming surface for slidable engagement with said bearing post; and

collar means coupled to a distal end portion of said body assembly and disposed about said pivot pin for urging said reciprocating members towards each other to restrict lateral separation at said pivot point.

5,486,190

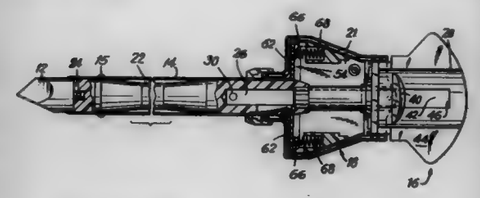
SAFETY TROCAR

David T. Green, Westport, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 176,001, Dec. 30, 1993, abandoned, which is a continuation of Ser. No. 693,582, Apr. 30, 1991, Pat. No. 5,295,993. This application Dec. 7, 1994, Ser. No. 352,274

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—184 **7 Claims**



1. A trocar comprising:

(a) a trocar assembly which includes a piercing tip mounted to an obturator shaft and a trocar housing, the obturator shaft being movably mounted with respect to the trocar housing;

(b) an actuating member which includes delatching structure and which defines a passage into which the piercing tip and at least a portion of the obturator shaft are adapted to pass to define an assembled condition, the actuating member and the piercing tip being slidably mounted with respect to each other when in the assembled condition such that the piercing tip is movable between an extended position and a retracted position relative to the actuating member;

(c) a first spring which abuts the obturator shaft and which biases the piercing tip and the obturator shaft proximally toward the trocar housing;

(d) a second spring which abuts the actuating member and which biases the actuating member distally; and

(e) a latching member extending from the obturator shaft which releasably maintains the piercing tip in the extended position against the bias of the first spring;

wherein the delatching structure of the actuating member releases the latching member as the actuating member slides relative to the piercing tip, thereby allowing the piercing tip to move proximally from the extended position to the retracted position under the bias of the first spring.

5,486,191

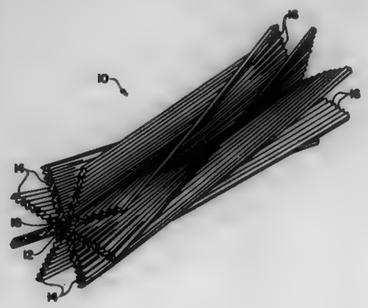
WINGED BILIARY STENT

Pankaj J. Pasricha, and Anthony N. Kalloo, both of Columbia, Md., assignors to John Hopkins University, Baltimore, Md.

Filed Feb. 2, 1994, Ser. No. 190,465

Int. Cl.[6] A61M *5/00;27/00*

U.S. Cl. 606—191 **20 Claims**



1. A stent comprising:

an elongated main body member having first and second longitudinal ends and a longitudinal axis extending therebetween;

a plurality of wing elements extending outwardly from said main body member, said wing elements being substantially uniformly distributed about an outer circumference of said main body member, each said wing element having a length at least about as great as a length of said main body member and a width substantially greater than a cross-sectional dimension of said main body member, wherein each said wing element has a plurality of longitudinally extending grooves defined on each Side face thereof.

5,486,192

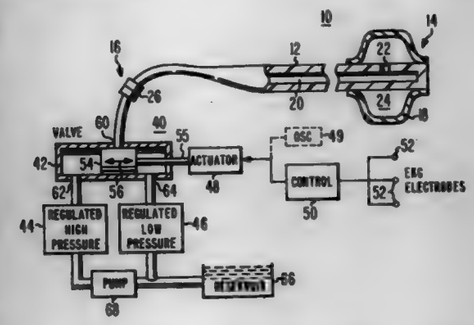
CYCLIC CORONARY ANGIOPLASTY SYSTEM

Paul Walinsky, 8910 Carlisle Rd., Wyndmoor, Pa. 19118, and William H. Meise, P.O. Box 344, Penns Park, Pa. 18943

Filed Jun. 3, 1994, Ser. No. 253,720

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—194 **3 Claims**



1. A method for performing balloon angioplasty on a patient,

inserting into a coronary artery of said patient a balloon catheter including a balloon inflation orifice at a proximal end thereof; and

generating and coupling to said balloon catheter balloon inflation and deflation pressures, which cycle in an automatic manner between said inflation and deflation pressures in such a manner as to inflate said balloon during systole, and deflate said balloon during diastole.

5,486,193

SYSTEM FOR THE PERCUTANEOUS TRANSLUMINAL FRONT-END LOADING DELIVERY OF A PROSTHETIC OCCLUDER

George Bourne, Libertyville, Ill.; Randall W. Davis, Chelmsford, Mass.; George Duval, New Ipswich, N.H.; Dennis Goodine, Dracut, Mass.; James E. Lock, Newton, Mass.; Gerry Ouellette, Framingham, Mass.; Stanton B. Perry, Marblehead, Mass.; Maria Wagner, Groton, Mass., and Gregory R. Whittaker, Burlington, Mo., assignors to C. R. Bard, Inc., Murray Hill, N.J.

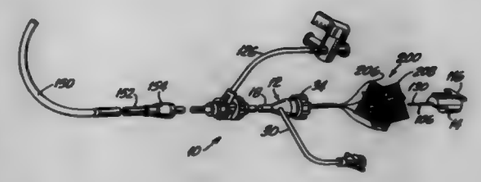
Continuation of Ser. No. 49,162, Apr. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 824,019, Jan. 22, 1992, abandoned. This application May 1, 1995, Ser. No. 432,971

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—194 **59 Claims**

1. A front-end loading delivery device for transluminal delivery of a collapsible prosthetic occluder, comprising:

a front-end loading portion comprising a main body having a distal end, a proximal end and a lumen extending therethrough, a portion of said lumen being tapered inwardly toward a smaller diameter distal portion;



an infusion port extending through said main body and in direct communication with said distal portion of said lumen;

a valve for sealing said lumen proximally of said small diameter distal portion; and

a control assembly comprising:

an elongated shaft having a proximal end, a flexible distal end and a lumen extending therethrough;

a locking wire extending through said lumen of said elongated shaft having a proximal end and a locking member at a distal end which is extendable beyond said flexible distal end of said elongated shaft;

a portion of said flexible distal end of said elongated shaft being adapted to lockingly hold said locking member and a locking member of a collapsible prosthetic occluder.

5,486,194

COMPRESSIVE HEMOSTATIC BELT

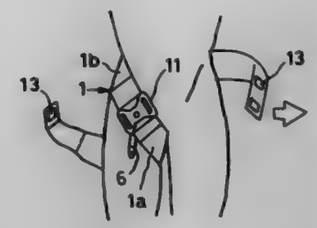
Atsuko Kawasaki, Akashi; Takefumi Nakashita, Kobe; Yoshiharu Inui, Takarazuka, and Toshimichi Shirouzu, Akashi, all of, Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Dec. 2, 1993, Ser. No. 160,214

Claims priority, application Japan, Dec. 4, 1992, 4-325049; Aug. 4, 1993, 5-193233; Aug. 4, 1993, 5-193234; Aug. 4, 1993, 5-193235; Aug. 17, 1993, 5-202450; Jan. 4, 1993, 5-247647

Int. Cl.[6] A61B *17/12*

U.S. Cl. 606—203 **11 Claims**



1. A compressive hemostatic belt comprising

a single band of non-stretchable or low-stretchable fiber, non-woven fabric or film;

a rigid case attached to a predetermined position on one side of said band;

a balloon received in said rigid case adapted to be inflated by being filled with a fluid;

a buckle attaching plate having engaging means on the opposite sides thereof, said buckle attaching plate being rotatably attached to said rigid case on an opposite side of said band; and

a pair of buckles attached to opposite ends of said band and engagable with said engaging means of said buckle attaching plate to form a crossed relationship of said band on said rigid case receiving said balloon;

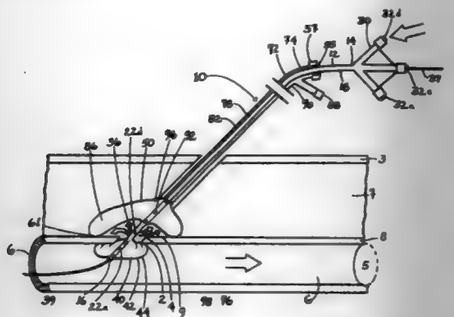
adjacent angles of said crossed relationship of said band being adjustable by rotation of said buckle attaching plate.

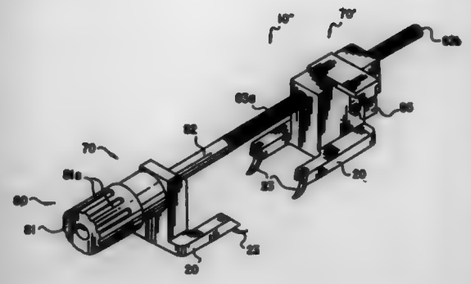
5,486,195

METHOD AND APPARATUS FOR ARTERIOTOMY CLOSURE

Gene Myers, 2727 S. Tamiami Trail, Suite 2A, Sarasota, Fla. 34239, and William S. Coury, 2830 Bay Shore Cir., Sarasota, Fla. 34234

Filed Jul. 26, 1993, Ser. No. 97,401
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—213 **20 Claims**





1. An apparatus for sealing an arteriotomy site in a patient comprising:

a. a first elongated flexible catheter having a proximal end, a distal end, an external surface, and a wall portion defining at least one lumen extending substantially the entire length of said first catheter, and at least one opening through the external surface of said first catheter located adjacent the distal end, whereby a proximal end of at least one lumen is in fluid communication with the external surface of said first catheter via said opening;

b. means located adjacent the distal end of said first catheter for temporarily occluding an intravascular opening of the arteriotomy site when said occluding means is positioned in an intravascular space of the patient's artery proximate to the arteriotomy site;

c. a second elongated flexible catheter having a front end, a rear end, an outer surface a body portion, and a central bore defined by the body portion extending through the length of said second catheter communicating the front end with the rear end;

d. means located on said second catheter for debriding subcutaneous tissue from an exterior surface of the anterior arterial wall proximate to the arteriotomy site; and

e. means located on a selected one of said catheters for delivering a material to the arteriotomy site that is capable of forming a substantially fluid tight seal of the arteriotomy site.

5,486,196

APPARATUS FOR THE CLOSURE OF WIDE SKIN DEFECTS BY STRETCHING OF SKIN

Bernard Hirshowitz; Amnon Levy; Alexander R. Gilat; Eitan Rogel, all of Haifa, Israel; Jeffrey Stein, Milford, Conn., and Julian Borgia, Belle Mead, N.J., assignors to Medchem Products, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 835,636, Feb. 13, 1992, Pat. No. 5,263,971, and a continuation-in-part of Ser. No. 3,751, Dec. 3, 1992. This application May 3, 1993, Ser. No. 55,413
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—218 **46 Claims**

5. A skin closing apparatus for closing skin defects comprising:

at least two retaining members, each of said retaining members exhibiting a coaxial bore and a plurality of skin insertion elements for insertion into the skin along margins of the skin defect;

a substantially rigid contracting mechanism extending through each said coaxial bore and connecting said retaining members; and

a clutch operatively engaging said contracting mechanism and configured so a force applied along the margins of the skin defect by said contracting mechanism is limited to a predetermined value.

5,486,197

TWO-PIECE SUTURE ANCHOR WITH BARBS

Thu A. Le, Matawan; Izi Bruker, Flemington; Brian H. Luscombe, Warren, and Dennis D. Jamiolkowski, Long Valley, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Mar. 24, 1994, Ser. No. 216,997
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—232 **15 Claims**



1. An apparatus for holding a suture comprising

a head;

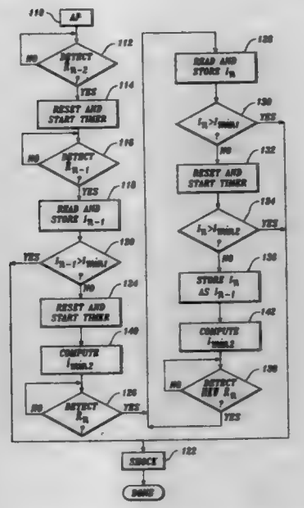
an expandable body extending distally from said head comprising at least two legs; and, wedging means for expanding said body by proximal relative movement of said wedging means within said expandable body comprising a substantially spherical object defining a hole therethrough for receipt of a suture and a suture received within said hole passing beyond said head to permit gripping of said suture for movement of said wedging means.

5,486,198

ATRIAL DEFIBRILLATOR AND METHOD FOR PROVIDING INTERVAL TIMING OF SUCCESSIVE INTERVALS PRIOR TO CARDIOVERSION

Gregory M. Ayers, 28308 NE. 146th St., Duvall, Wash. 98052; Clifton A. Alferness, 2202-236th Pl. NE., Redmond, Wash. 98053, and Harley G. White, 937-210th Ave. NE., Redmond, Wash. 98053

Filed Aug. 12, 1994, Ser. No. 289,701
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **17 Claims**



1. An atrial defibrillator for providing cardioverting electrical energy to atria of a human heart, said atrial defibrillator comprising:

detecting means for detecting ventricular activations of the heart;

interval determining means for determining time intervals between immediately successive ventricular activations; and

cardioverting means for applying the cardioverting electrical energy to the atria of the heart when a second time interval between a third ventricular activation and a second ventricular activation immediately preceding the third ventricular activation satisfies a predetermined criteria with respect to a first time interval between the second ventricular activation and a first ventricular activation immediately preceding said second ventricular activation.

5,486,199

SYSTEM AND METHOD FOR REDUCING FALSE POSITIVES IN ATRIAL FIBRILLATION DETECTION

Jaeho Kim, 13323 NE. 69th Way, Redmond, Wash. 98052, and Harley G. White, 937-210th Ave. NE., Redmond, Wash. 98053

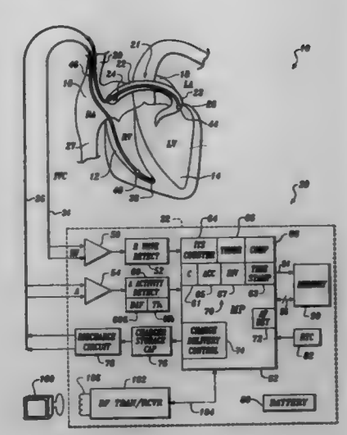
Filed Jul. 20, 1994, Ser. No. 278,055
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **25 Claims**

1. A system for use in an implantable atrial defibrillator for reducing false positives in the detection of atrial fibrillation, said system comprising:

sensing means associated with the atria of the heart for sensing activity of the heart and generating a cardiac signal;

a first detector responsive to the cardiac signal for detecting cardiac events; and

a second detector responsive to the first detector and time spans between immediately successive detected cardiac events which are greater in duration than a preselected interval for detecting an absence of potential atrial fibrillation.

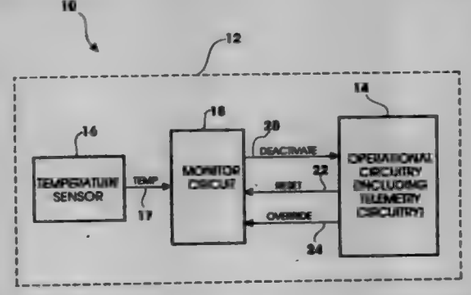


5,486,200

AUTOMATIC POSTMORTEM DEACTIVATION OF IMPLANTABLE DEVICE

Fredric W. Lindemans, Sittard, Netherlands, assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 28, 1994, Ser. No. 233,905
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **15 Claims**



1. A postmortem deactivation circuit for a body-implantable medical device which is automatically functional to deliver treatment, comprising:

an operational circuit to control the body-implantable medical device and direct delivery of treatment;

a sensor providing an output signal having a level which varies according to a physiological parameter known to change at time of death wherein said physiological parameter is body temperature;

a monitor circuit coupled to said operational circuit, said monitor circuit further coupled to said sensor to receive said output signal, said monitor circuit responsive to said output signal varying below a predetermined threshold to provide a deactivation signal to said operational circuit and suspend said delivery of treatment.

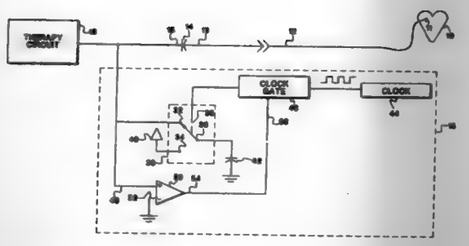
5,486,201

ACTIVE DISCHARGE OF A COUPLING CAPACITOR IN AN IMPLANTABLE MEDICAL DEVICE

Lyle D. Canfield, Lake Hughes, Calif., assignor to Pacesetter, Inc., Sylmar, Calif.

Filed Sep. 12, 1994, Ser. No. 303,800
Int. Cl.[6] A61N *1/37*
U.S. Cl. 607—13 **24 Claims**

23. An implantable medical device comprising:



a therapy circuit for providing therapeutic stimulation pulses to body tissue;

a coupling capacitor coupled between the therapy circuit and body tissue; and

a discharge circuit comprising:

a source of electrical charge;

a transfer capacitor; and

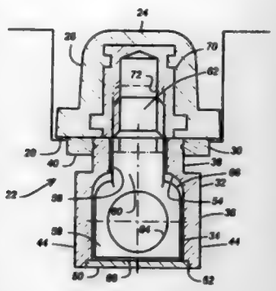
switching means for selectively electrically interconnecting the transfer capacitor between ground and one of said charge source and said coupling capacitor, whereby when connected to the charge source, the transfer capacitor is charged by the charge source and when connected to the coupling capacitor, the transfer capacitor causes charge to be transferred between the transfer capacitor and the coupling capacitor so as to discharge the coupling capacitor.

5,486,202

CARDIAC STIMULATOR LEAD CONNECTOR

James I. Bradshaw, Surfside, Tex., assignor to Intermedics, Inc., Angleton, Tex.

Filed Dec. 17, 1993, Ser. No. 169,673
Int. Cl.[6] A61N *1/372*
U.S. Cl. 607—37 **12 Claims**



1. In an implantable cardiac stimulator, a connector for receiving and retaining an electrical connector pin of an electrical lead adapted for conducting electrical signals between said cardiac stimulator and cardiac tissue, said connector comprising:

a first member having a first bore sized to receive said connector pin;

a second member having a second bore sized to receive said connector pin, said second member being movable relative to said first member between a first orientation in which said second bore is axially aligned with said first bore, and a second orientation in which said second bore is offset transversely relative to said second bore; and

manipulable means engaging said first and second members for causing said second member to move between said first and second orientations in response to manipulation of said manipulable means, such that a connector pin disposed within each of said first and second bores is urged transversely by said second bore against said first bore and thereby frictionally engaged by said first and second bores to retain said connector pin against axial withdrawal from said bores, said manipulable means comprising threaded means for engaging one of said first and second members in threaded relationship.

5,486,203

Patent Not Issued For This Number

5,486,204

METHOD OF TREATING A NON-PENETRATING HEAD WOUND WITH HYPOTHERMIA

Guy L. Clifton, Houston, Tex., assignor to University of Texas Health Science Center Houston, Houston, Tex.

Filed Sep. 20, 1994, Ser. No. 309,202
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—96 **6 Claims**

1. A method of treating brain injury in a human patient comprising the steps of

(1) beginning to cool the patient within 6 hours of the brain injury;

(2) beginning the introduction of a muscle relaxant and a sedative during the cooling step (1);

(3) continuing to cool the patient to 33° C. intravascular temperature;

(4) maintaining the patient at 32°–33° C. for 48 hours, continuing the introduction of muscle relaxant and sedative during the maintaining step (4);

(5) warming the patient at a rate of 1° C. per 4 hours;

(6) discontinuing the introduction of muscle relaxant and sedative when intravascular temperature reaches 35° C.; and

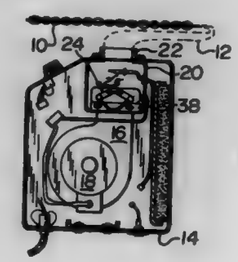
(7) discontinuing the warming step when the patient reaches normal body temperature.

5,486,205

DIFFUSED AIR HEATING SYSTEM

Jeffrey L. Cornell, Coldwater, and Thomas H. Philpot, Jackson, both of Mich., assignors to Progressive Dynamics, Inc., Marshall, Mich.

Filed Apr. 18, 1994, Ser. No. 229,382
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—104 **15 Claims**



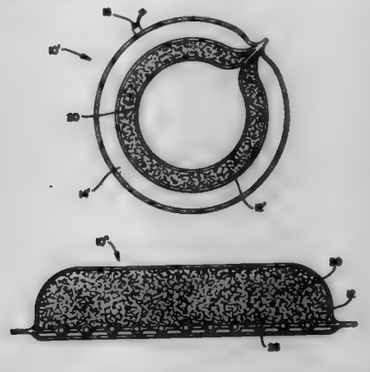
1. An air diffuser system for a medical thermal blanket comprising, in combination, a plenum having an air inlet having an axis and an outlet, an elongated heat exchanger within said plenum in alignment with said inlet axis, an air diffuser located within said plenum in alignment with said inlet axis located intermediate said inlet and said heat exchanger receiving air discharged into said plenum from said inlet, said diffuser including an elongated opening having a length and a width, said opening length being substantially parallel to the length of said heat exchanger and of such configuration as to diffuse air received from said inlet substantially uniformly throughout the length of said heat exchanger.

5,486,206

REUSABLE THERMAL PACK AND FLOW RETARDANT GEL FOR USE THEREIN

John R. Avery, Athens, Tenn., assignor to P.I., Inc., Athens, Tenn.

Continuation of Ser. No. 32,531, Mar. 15, 1993, abandoned, which is a continuation of Ser. No. 794,726, Nov. 15, 1991, abandoned. This application Jul. 12, 1994, Ser. No. 273,608
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—104 **9 Claims**



1. A thermal pack used for therapeutic hot and cold treatment, comprising:

a. a first flexible permanently sealed bag having at least one chamber;

b. a semi-rigid, non-flowing, viscous gel comprising a colloidal dispersion of a solid with a liquid and being sealed in said first bag, said gel being capable of retaining heat or cold, and said gel comprising a mixture of materials including clay, a liquid and a fibrous material, said clay being a clay substrate in an amount of from about 15% to 30% by weight, the liquid including glycol and water wherein the water is in an amount of from about 0% to 75% by weight, and said fibrous material being of sufficient concentration to impart a negligible flow rate in said gel and to provide uniform contact between the thermal pack with an affected area, wherein said sufficient concentration is about 1% to 10% by weight;

c. a second flexible sealed bag containing at least one open chamber which can be inflated, said second bag being disposed adjacent and coextensive with said first bag and being connected thereto; and

d. a means for inflating and sealing said second flexible sealed bag.

5,486,207

THERMAL PAD FOR PORTABLE BODY HEATING/COOLING SYSTEM AND METHOD OF USE

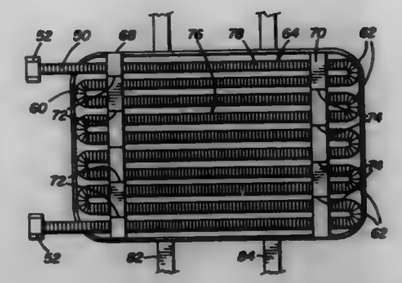
Imad Mahawili, 1603 Laraway Lake South East, Grand Rapids, Mich. 49546

Filed Sep. 20, 1994, Ser. No. 309,360
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—104 **22 Claims**

1. A thermal pad for use with a portable body heating/cooling apparatus for thermal treatment of selected body portions including a reservoir, supply and return tubes for interconnection between the reservoir and pad and pump means for continually circulating fluid from the reservoir to the pad and back, the thermal pad comprising

a single corrugated tube including means for connection with the supply and return tubes, the single corrugated tube being folded on itself to form at least three parallel passes providing a treatment surface for the pad,

said at least three parallel passes having outermost tube passes, means securing adjacent end portions of the folded tubes, and a cover extending transversely of the parallel passes opposite the treatment surface and operatively secured to the outermost tube passes whereby central parallel portions of the passes are movably restrained only by the cover in order to permit manipulation of the passes across the treatment surface.

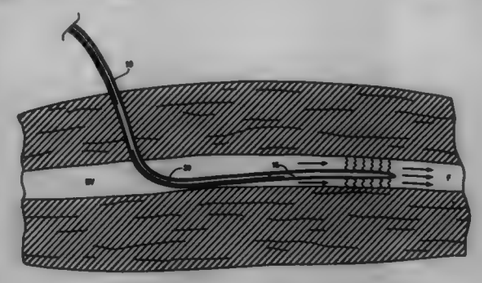


5,486,208

METHOD AND APPARATUS FOR CONTROLLING A PATIENT'S BODY TEMPERATURE BY IN SITU BLOOD TEMPERATURE MODIFICATION

Robert Ginsburg, 5100 S. Steele St., Greenwood Village, Colo. 80121

Continuation of Ser. No. 15,774, Feb. 10, 1993, abandoned. This application Oct. 18, 1994, Ser. No. 324,853
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—106 **7 Claims**



1. A method for increasing a patient's body temperature by warming blood within the patient, the method comprising the steps of:

inserting a catheter having a heating element into a blood vessel of the patient so that the heating element lies within the blood vessel;

providing heat transfer fins projecting radially outward from the catheter in the region of the heating element;

transferring heat to the blood through the heating element, wherein heat transfer is enhanced by the presence of the heat transfer fins.

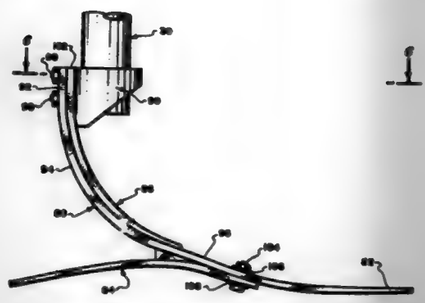
5,486,209

FOOT PROSTHESIS HAVING AUXILIARY ANKLE CONSTRUCTION

Van L. Phillips, 4702 San Jacinto Ter., Fallbrook, Calif. 92028

Continuation of Ser. No. 977,654, Nov. 17, 1992, abandoned, which is a continuation of Ser. No. 337,374, Apr. 13, 1989, Pat. No. 5,181,932. This application Jul. 1, 1994, Ser. No. 270,231
Int. Cl.[6] A61F *2/66*
U.S. Cl. 623—52 **18 Claims**

1. A lower limb prosthesis adaptable to a socket fitted to the stump of a lower-limb amputee for providing resilient kinematic



support to said amputee during normal walking, running and jumping activities, comprising:

a substantially rigid tubular pylon member providing substantially the sole support for said amputee and having a proximal end adapted to engage said socket and a distal end extending substantially vertically and terminating at about the location of said amputee's normal ankle joint, said distal end having front and rear sides; and

a detachable flexible foot prosthesis comprising a spring-like foot member adapted to be selectively attached to said distal end of said tubular pylon member according to a particular desired activity or a particular desired degree of kinematic resilience, said foot member further comprising:

an upper attachment section having a substantially vertical mounting surface adapted to closely receive a corresponding substantially vertical mounting surface disposed on said rear side of said distal end of said tubular pylon member;

an intermediate ankle section formed integrally with and curving substantially continuously downward and forward from said upper attachment section such that bending stress is distributed substantially evenly therethroughout;

a toe section having a proximal end and a distal end, said proximal end being formed integrally with said intermediate ankle section and said distal end extending forwardly to correspond to the toe of the user, said toe section curving substantially continuously forward from said proximal end to said distal end thereof such that bending stress is distributed substantially evenly therethroughout, said toe section meeting the ground at a point near said distal end of said toe section to define, together with said ankle section, a forward lever arm for said foot member for returning substantial energy to said user during toe off; and

a heel member extending substantially continuously rearward and downward from a point tangential to said intermediate ankle section such that bending stress is distributed substantially evenly throughout said heel member, said heel member providing a rearward lever arm for said foot member;

said heel member and said toe section providing substantially the sole support for loads incurred by said flexible foot prosthesis during heel strike and toe off, respectively;

whereby said foot member can be readily detached from said tubular pylon member and is interchangeable with like feet members having different resiliency characteristics without having to change or adjust said socket or the length of said tubular pylon member, such that a wide range of varying activity levels may be sustained in a single prosthetic device.

5,486,210

AIR BAG FABRIC CONTAINING GRAFT POLYMER THEREON

Richard C. Kerr, Rutherfordton, N.C.; John R. Damewood; Jill Menzel, both of Spartanburg, S.C.; Paul Thottathil, New Hyde Park, and Mohan L. Sanduja, Flushing, both of N.Y., assignors to Reeves Brothers, Inc., Spartanburg, S.C.

Filed Jan. 30, 1992, Ser. No. 828,973

The portion of the term of this patent subsequent to Apr. 18, 2012, has been disclaimed.

Int. Cl.[6] B60R *21/16;* D06M *13/00;14/00*

U.S. Cl. 8—115.66 55 Claims

1. A method for making an air bag which comprises:

forming a fabric structure of filaments or yarns in a predetermined configuration representative of an air bag; and

grafting a first component onto the filaments or yarns to provide increased resistance to fraying, and filament or yarn pull-out or distortion, during manufacture or use of the air bag compared to non-grafted filaments or yarns,

wherein either the grafting or the forming step is performed first.

5,486,211

WOOL PURIFICATION

John L. Glidden, Sr., 6 Mill St., Ashland, N.H. 03217

Filed Sep. 26, 1994, Ser. No. 312,135

Int. Cl.[6] D06L *1/02;1/08*

U.S. Cl. 8—142 9 Claims

9. A process of producing purified wool fabric substantially free of polypropylene contamination comprising the steps of:

supplying a wool fabric containing polypropylene contamination;

treating said fabric with a chlorinated hydrocarbon solvent to solubilize the polyolefin characterized in that said treatment is conducted at a temperature and pressure that does not cause degradation to the fabric, and

removing the solvent containing polyolefin contamination and recovering the purified fabric.

5,486,212

CLEANING THROUGH PERHYDROLYSIS CONDUCTED IN DENSE FLUID MEDIUM

James D. Mitchell, Alamo; Vincent E. Alvarez, Livermore; Daniel T. Carty, Danville, and James R. Latham, Livermore, all of Calif., assignors to The Clorox Company, Oakland, Calif.

Division of Ser. No. 754,809, Sep. 4, 1991, Pat. No. 5,431,843. This application Mar. 15, 1995, Ser. No. 404,656

Int. Cl.[6] D06L *1/18*

U.S. Cl. 8—142 21 Claims

1. A method for the removal of stains from a substrate comprising:

contacting said stains with a cleaning composition comprising the combination of a cleaning-effective amount of a fluid medium which is either densified carbon dioxide or supercritical fluid; a source of hydrogen peroxide and an organic bleach activator therefor; and

removing said stains.

5,486,213

PROCESS FOR THE DYEING OF LEATHER WITH DYE MIXTURES

Peter Moser, Binningen, Switzerland; Campbell T. Page, Efringen-Kirchen, Germany, and Alois Püntener, Rheinfelden, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Jun. 22, 1993, Ser. No. 80,795

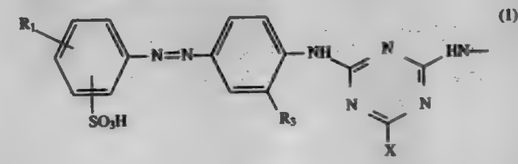
Claims priority, application Switzerland, Jun. 30, 1992, 2039/92

Int. Cl.[6] D06P *1/06*

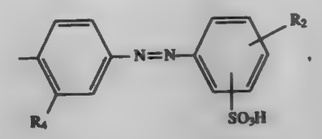
U.S. Cl. 8—437 31 Claims

1. A process of dyeing leather with a dye mixture, which comprises applying a tinctorally effective amount of a dye mixture to the leather, which dye mixture comprises at least two metal-free dyes having a different color from each other, which color is selected from the group consisting of yellow, red and blue, which dyes are selected from the group consisting of

a) a yellow dye of the formula



(1)

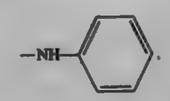


in which

R_1 and R_2, independently of one another, are each hydrogen, C_1–C_4alkyl or C_1–C_4alkoxy,

R_3 and R_4, independently of one another, are each C_1–C_4alkyl or C_1–C_4alkoxy and

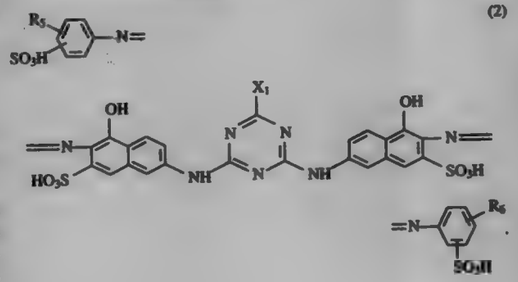
X is halogen or



the phenyl radical being unsubstituted or substituted by C_1–C_4alkyl or C_1–C_4alkoxy,

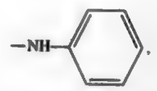
b) a red dye of the formula

(2)

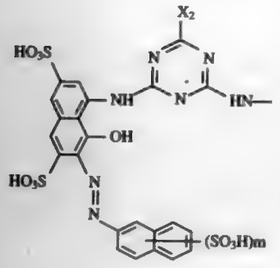


in which

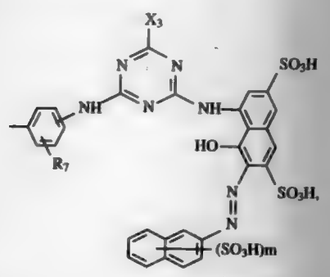
R_5 and R_6, independently of one another, are each hydrogen, C_1–C_4alkyl or C_1–C_4alkoxy and
X_1 is halogen or



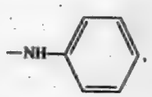
the phenyl radical being unsubstituted or substituted by C_1–C_4alkyl or C_1–C_4alkoxy, or of the formula



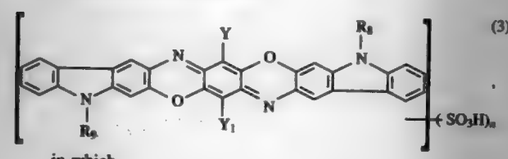
(2a)



in which
X_2 and X_3, independently of one another, are each halogen or



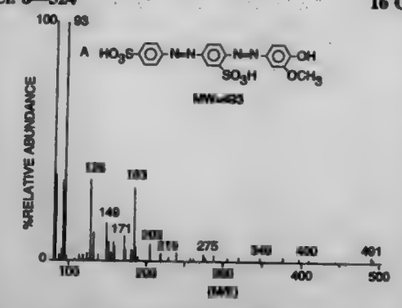
the phenyl radical being unsubstituted or substituted by C_1–C_4alkyl or C_1–C_4alkoxy,
R_7 is hydrogen, C_1–C_4alkyl or C_1–C_4alkoxy and
m is 1 or 2, and
c) a blue dye of the formula



(3)

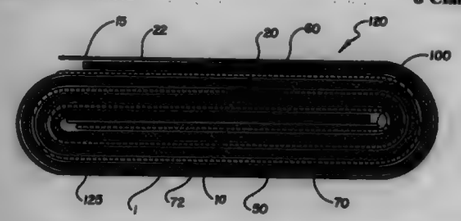
in which
n is 3 or 4,
R_8 and R_9, independently of one another, are each hydrogen or C_1–C_4alkyl and
Y and Y_1, independently of one another, are each hydrogen, halogen, C_1–C_4alkyl, C_1–C_4alkoxy, phenyl or phenoxy, it being possible for the phenyl radical in the last two groups to be substituted by C_1–C_4alkyl or C_1–C_4alkoxy.

5,486,214
BIODEGRADABLE AZO DYES
Andrzej Paszczynski; Stefan Goszczynski; Ronald L. Crawford; Donald L. Crawford, and Maria B. Pasti, all of Moscow, Id., assignors to Idaho Research Foundation, Inc., Moscow, Id.
Continuation-in-part of Ser. No. 675,514, Mar. 27, 1991. This application Aug. 12, 1992, Ser. No. 930,162
Int. Cl.[6] C09B *67/02*
U.S. Cl. 8—524 **16 Claims**



1. A biodegradable composition comprising:
an azo dye having first and second nitrogen atoms linked to first and second aromatic rings, the first ring having a first substituent R_1 selected from the group consisting of hydroxy, alkoxy and amino, and a second constituent R_2 selected from the group consisting of hydrogen, lower alkoxy, lower alkyl and halogen;
an amount of lignin peroxidase effective to degrade said dye, wherein lignin peroxidase is converted to lignin peroxidase II as the dye is degraded; and
at least about 20 micromoles of veratryl alcohol, which amount is effective to recycle lignin peroxidase II to lignin peroxidase.

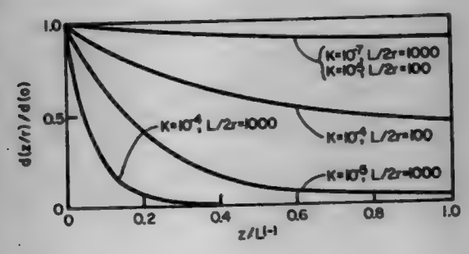
5,486,215
ELECTRODE ASSEMBLY AND METHOD
Roger W. Kelm, New Richmond, Wis., and Vernon L. Herting, Andover, Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Division of Ser. No. 155,404, Nov. 19, 1993. This application Apr. 27, 1995, Ser. No. 429,986
Int. Cl.[6] H01M *6/00*
U.S. Cl. 29—623.1 **8 Claims**



1. A method for making an electrode assembly for an electrochemical cell comprising the steps of:
(a) providing an anode comprising an elongated strip of alkali metal;
(b) pressing a porous separator material into the strip of alkali metal;
(c) providing a cathode assembly comprising a metal strip with a reactive cathode material bonded to the metal strip; and
(d) winding the anode and the cathode assembly together in an elongated unidirectional winding by the steps of:
(1) placing a mandrel having opposing flat sides with one of the flat sides contacting one side of the cathode assembly such that the contacting flat side of the mandrel is aligned with an end of the cathode assembly;

(2) placing the anode against the cathode assembly on a side of the cathode assembly opposite to that against the mandrel such that a first end of the anode extends beyond the end of the cathode assembly substantially the same amount as the length of the opposing flat side of the mandrel;
(3) bending the anode over the end of the cathode assembly and over the end of the mandrel such that the first end of the anode is brought against the opposing flat side of the mandrel;
(4) bending both the anode and cathode assembly around the mandrel until the cathode assembly rests against the first end of the anode;
(5) continuing to wind the anode and cathode assembly together around the mandrel in the same direction while maintaining flat sides on the resulting winding until a second end of the anode is brought against the winding until a second end of the anode is brought against the winding; and
(6) removing the mandrel from the completed winding.

5,486,216
COKE HAVING ITS PORE SURFACES COATED WITH CARBON AND METHOD OF COATING
Yoshihito Shigeno, Wakabayashi, Japan, and James W. Evans, Alameda County, Calif., assignors to The Regents of the University of California, Oakland, Calif.
Continuation of Ser. No. 228,723, Apr. 18, 1994, abandoned, which is a continuation of Ser. No. 893,505, Jun. 4, 1992, abandoned. This application Jan. 6, 1995, Ser. No. 370,215
Int. Cl.[6] C10L *5/32*
U.S. Cl. 44—591 **10 Claims**



1. The method of treating coke having large pores with radii greater than 10 μm and small pores with radii less than 10 μm throughout the coke after it is processed to improve its oxidation resistance characteristics which comprises the steps of:
infiltrating substantially all the pores of the coke with a hydrocarbon gas, and
cracking the hydrocarbon to form a carbon deposit on the surface of substantially all of the pores, said deposit coating substantially all of the pores and substantially closing the entrance to the small pores, thereby decreasing the surface area of the small pores as compared to the large pores to thereby reduce the oxidation rate of the coke.

5,486,217
CELLULOSIC COMPOSITION
Brent G. Biehl, P.O. Box 30 B, and Michael J. Biehl, P.O. Box 81, both of Paradise, Mich. 49768
Filed Oct. 23, 1992, Ser. No. 965,499
Int. Cl.[6] C10L *5/06;5/40*
U.S. Cl. 44—597 **20 Claims**

1. A method for making a cellulosic composition, said method comprising the steps of:
obtaining a quantity of cellulosic particles having a certain moisture content;
heating said quantity of cellulosic particles, effective to remove a certain and predetermined amount of said moisture content therefrom;
pulverizing said partially dried particles;
heating said pulverized and partially dried particles effective to remove a second certain and predetermined amount of said moisture content;
compacting and heating said heated and pulverized particles with a predetermined and certain temperature and with a certain and predetermined compacting force;
separating said heated and pulverized particles into a first group of dust particles and a second group of coarse particles as said heated and pulverized particles are heated to remove said second and predetermined amount of said moisture content;
mixing said separated dust particles with said separated coarse particles; and
compacting said mixed dust particles and said coarse particles with a second compacting force effective to produce said cellulosic composition.

5,486,218
OXYGENATED ANALOGS OF BOTANIC SEED
William C. Carlson, Olympia; Jeffrey E. Hartle, Federal Way, both of Wash., and Barbara K. Bower, Hot Springs, Ark., assignors to Weyerhaeuser Company, Tacoma, Wash.
Continuation of Ser. No. 604,656, Oct. 26, 1990, Pat. No. 5,236,469. This application Jun. 1, 1993, Ser. No. 69,560
The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.
Int. Cl.[6] A01C *1/00;1/06;* A01H *5/10*
U.S. Cl. 47—57.6 **24 Claims**

1. An analog of a botanic seed comprising totipotent plant tissue encapsulated in a substantially non-phytotoxic hydrated gel, the hydrated gel comprising a perfluorocarbon compound so as to enable the gel to absorb or carry molecular oxygen and thereby produce a concentration of molecular oxygen in the gel that is higher than a concentration of molecular oxygen that would otherwise be present in a hydrated gel, that lacks the perfluorocarbon compound, solely by absorption of oxygen from the atmosphere at standard temperature and pressure, the higher concentration of molecular oxygen in the hydrated gel allowing the seed analog to exhibit a higher germination rate than exhibited by an otherwise similar control seed analog lacking the higher concentration of molecular oxygen.

5,486,219
COATABLE UREA-ALDEHYDE SOLUTIONS CONTAINING A COCATALYST, COATED ABRASIVES MADE USING SAID SOLUTIONS, AND METHOD OF MAKING COATED ABRASIVES
Jeffrey E. Ford, Woodbury; Ellen Y. Chu, Stillwater, and Harold E. Rude, Roseville, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 945,126, Sep. 15, 1992, abandoned. This application Sep. 6, 1994, Ser. No. 300,854
Int. Cl.[6] C09K *3/14*
U.S. Cl. 51—298 **25 Claims**

1. A coated abrasive having a binder and abrasive particle attached to a backing, at least one layer of the binder comprises a cured urea-aldehyde binder, the cured urea-aldehyde binder derived from a coatable urea-aldehyde binder precursor composition comprising a urea-aldehyde resin and a cocatalyst, the urea-aldehyde resin having a aldehyde/urea mole ratio ranging from about 1.0 to about 2.0 and a free aldehyde content ranging from about 0.1 to about 1.0 weight percent based on weight of total aldehyde, said cocatalyst consisting essentially of a Lewis acid and a salt, said salt selected from the group consisting of organic amine salts and ammonium ion salts.

5,486,220

EXHAUST GAS PURIFICATION FILTER

Masaaki Honda, and Tomohiko Ihara, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Jun. 6, 1994, Ser. No. 254,169
Claims priority, application Japan, Jun. 18, 1993, 5-172366
Int. Cl.[6] B01D *39/20*
U.S. Cl. 55—487 6 Claims

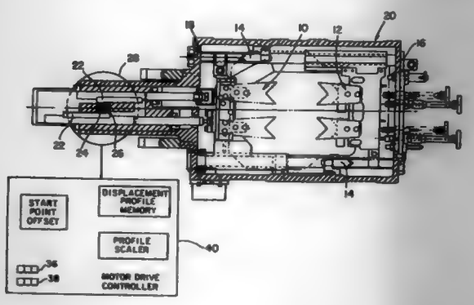
1. An exhaust gas purification filter comprising a porous body obtained by packing and fixing fibers formed of a metal, excluding metal oxides and ceramics, and having a mean fiber diameter of 5 to 40 μm in a dispersed state, into pores of a foamed structure porous body made of a heat-resistant metal, excluding metal oxides and ceramics, whereby a packing density of said porous body is 5 to 20%.

5,486,221

SHEAR MECHANISM FOR GLASS FORMING MACHINE

Marty J. Grant, Kensington, and Steven J. Pinkerton, Avon, both of Conn., assignors to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Filed Dec. 24, 1991, Ser. No. 814,121
Int. Cl.[6] C03B *7/10*; B26D *5/08*
U.S. Cl. 65—163 3 Claims



1. A shear mechanism for shearing discrete gobs from at least one runner of molten glass comprising

a pair of opposed shear assemblies mounted for reciprocating displacement,

means for conjointly displacing said shear assemblies including a servo motor,

means for controlling the operation of said servo motor including

means for storing a displacement profile for displacing said shear assemblies a predetermined stroke from a retracted location to an advanced shearing location,

means for determining whether the cycle rate of said shear assemblies is above or below a selected rate,

means for scaling said displacement profile by a selected percentage when cycle rate exceeds said selected rate so that said shear assemblies will be displaced a stroke which is said selected percentages of said predetermined stroke, and

means for relocating said retracted location by the difference between the length of said predetermined and scaled strokes to maintain said advanced shearing location.

5,486,222

SINTERED COMPOSITE MATERIALS FOR ELECTRIC CONTACTS IN POWER TECHNOLOGY SWITCHING DEVICES AND PROCESS FOR PRODUCING THEM

Franz Hauner, Röttenbach, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE93/00052, § 371 Date Jul. 18, 1994, § 102(e) Date Jul. 18, 1994, PCT Pub. No. WO93/15517, PCT Pub. Date Aug. 5, 1993
PCT Filed Jan. 22, 1993, Ser. No. 256,643
Claims priority, application Germany, Jan. 24, 1992, 42 01 940.0
Int. Cl.[6] C22C *29/12*
U.S. Cl. 75—232 18 Claims

1. A sintered composite material for electric contacts comprising an $AgSnO_2Bi_2O_3CuO$ base composition with a separately added metal oxide selected from stannic oxide (SnO_2), an oxide of iron and at least one element from group VIB of the periodic table of elements, and a mixture of stannic oxide and an oxide of iron and at least one element from group VIB of the periodic table of elements.

5,486,223

METAL MATRIX COMPOSITIONS AND METHOD OF MANUFACTURE THEREOF

Robin A. Carden, Costa Mesa, Calif., assignor to Alyn Corporation, Costa Mesa, Calif.

Filed Jan. 19, 1994, Ser. No. 183,728
Int. Cl.[6] C22C *29/14;29/16*
U.S. Cl. 75—244 10 Claims

1. An improved metal matrix composite comprising:

a base material metal and boron carbide in a ratio of approximately between 6 and 10 to 1 by weight, the boron carbide being substantially homogeneously distributed among the metal, forming close grain boundaries therewith; and less than about 1.5% by weight of at least one metal additive having an inter-metallic phase temperature lower than the melting point of said base material metal, said metal additive being added to the boron carbide during its production to provide a chelating opportunity for the base material metal.

5,486,224

POWDER MIXTURE FOR USE IN COMPACTION TO PRODUCE RARE EARTH IRON SINTERED PERMANENT MAGNETS

Yoshihisa Kishimoto, Ikoma; Nobushige Hiraishi; Wataru Takahashi, both of Nishinomiya; Masakazu Ohkita, Ashiya; Naoyuki Ishigaki, Otsu, and Yutaka Matsuura, Hyogo, all of, Japan, assignors to Sumitomo Metal Industries, Ltd., and Sumitomo Special Metals Co., Ltd., both of Osaka, Japan

Filed Dec. 27, 1994, Ser. No. 364,315
Claims priority, application Japan, Dec. 28, 1993, 5-335406; Jan. 19, 1994, 6-253904
Int. Cl.[6] B22F *1/00*
U.S. Cl. 75—254 23 Claims

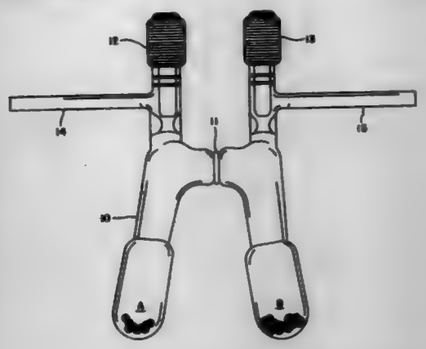
1. A powder mixture for use in compaction to produce rare earth iron sintered permanent magnets, which consists essentially of a fine R—Fe—B alloy powder and at least one boric acid ester compound substantially uniformly mixed with the alloy powder, the R—Fe—B alloy powder being comprised predominantly of 10–30 atomic % of R (wherein R stands for at least one elements selected from rare earth elements including yttrium), 2–28 atomic % of B, 65–82 atomic % of Fe, and 0 to 41 atomic % of Co.

5,486,225

PROCESS FOR PRODUCING AN ALLOY

James L. Dye, East Lansing; Ahmed S. Ellaboudy, Midland, and Kuo-Lih Tsai, East Lansing, all of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Division of Ser. No. 950,290, Sep. 24, 1992, abandoned, which is a division of Ser. No. 522,661, May 11, 1990. This application Apr. 4, 1994, Ser. No. 222,637
Int. Cl.[6] C22B *3/44*
U.S. Cl. 75—351 10 Claims



1. A process for the production of an alloy which comprises:

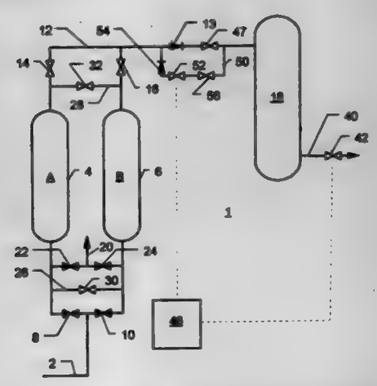
reducing in a reaction mixture a first metal salt containing a first metal and a second metal salt containing a second metal different from the first metal with a reducing agent selected from the group consisting of an electride and an alkalide in an organic solvent and in the absence of an oxidizing atmosphere to produce a first and second metal compound as an alloy of the first and second metals in finely divided form.

5,486,226

SEPARATION OF GASEOUS MIXTURES

Ian A. Ross, Guildford, and Michael B. Pooley, New Milton, both of, England, assignors to The BOC Group plc, Windlesham, England

Filed Dec. 8, 1993, Ser. No. 164,088
Claims priority, application United Kingdom, Dec. 9, 1992, 9225680
Int. Cl.[6] B01D *53/053*
U.S. Cl. 95—11 6 Claims



1. A method of producing a product gas from a feed gas mixture including the product gas by pressure swing adsorption, which method comprises repeatedly performing the following sequence of steps:

a) passing the feed gas mixture into one end region of a bed of adsorbent material that adsorbs preferentially at least one other component of the gas mixture relative to the product gas;

b) withdrawing from the opposite end of the bed the product gas and passing said product gas into a receiver vessel;

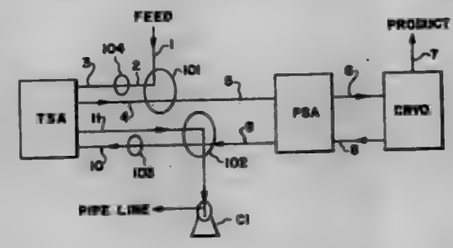
c) desorbing said at least one other component of the feed gas mixture from the adsorbent bed by placing the adsorbent bed in communication with atmosphere or with a vacuum; and in that, the level of purity of the product gas is sensed so that when it falls below a predetermined level the product gas is passed back from the receiver vessel into the bed of adsorbent material during a back-fill step.

5,486,227

INTEGRATED PROCESS FOR PURIFYING AND LIQUEFYING A FEED GAS MIXTURE WITH RESPECT TO ITS LESS STRONGLY ADSORBED COMPONENT OF LOWER VOLATILITY

Ravi Kumar, Allentown; Eric W. Scharpf, Emmaus, and Charles M. Woods, Germansville, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 132,397, Oct. 6, 1993, abandoned. This application Dec. 8, 1994, Ser. No. 352,256
Int. Cl.[6] B01D *53/047*
U.S. Cl. 95—41 6 Claims



1. Regarding a feed gas mixture consisting of a strongly adsorbed component, a moderately strongly adsorbed component, a first less strongly adsorbed component, and a second less strongly adsorbed component of lower volatility than the first less strongly adsorbed component, a process for purifying and liquefying the feed gas mixture with respect to the second less strongly adsorbed component comprising the steps of:

(a) passing the feed gas mixture through a temperature swing adsorption bed containing an adsorbent selective for the retention of the strongly adsorbed component to produce an adsorption bed saturated with the strongly adsorbed component and a temperature swing effluent stream enriched in the moderately strongly adsorbed component, the first less strongly adsorbed component and the second less strongly adsorbed component;

(b) regenerating the temperature swing adsorption bed wherein said regenerating in this step (b) comprises the steps of:

(1) heating the temperature swing adsorption bed by heating a first regeneration gas and subsequently passing the heated first regeneration gas through the temperature swing adsorption bed in order to vaporize and desorb at least a portion of the strongly adsorbed component from the temperature swing adsorption bed; and

(2) cooling the temperature swing adsorption bed to the temperature of the temperature swing adsorption bed in step (a) by passing a second regeneration gas through the adsorption bed;

(c) passing the temperature swing effluent stream through a pressure swing adsorption bed containing an adsorbent selective for the retention of the moderately strongly adsorbed component to produce an adsorption bed saturated with the moderately strongly adsorbed component and a pressure

swing effluent stream enriched in the first less strongly adsorbed component and the second less strongly adsorbed component;

(d) regenerating the pressure swing adsorption bed wherein said regenerating in this step (d) comprises the steps of:

(1) depressurizing the pressure swing adsorption bed to produce a depressurization effluent stream enriched in the moderately strongly adsorbed component wherein a first portion of said depressurization effluent stream is used as at least a portion of the first regeneration gas in step (b)(1) and wherein a second portion of said depressurization effluent stream is used as at least a portion of the second regeneration gas in step (b)(2); and

(2) repressurizing the pressure swing adsorption bed to the pressure of the pressure swing adsorption bed in step (c) with a third regeneration gas;

(e) passing the pressure swing effluent stream into a distillation column to produce an overhead stream enriched in the first less strongly adsorbed component and a liquid bottoms stream enriched in the second less strongly adsorbed component wherein at least a portion of said overhead stream is used as at least a portion of the third regeneration gas in step (d)(2).

5,486,228

WASHABLE COLOR CHANGING COMPOSITIONS

Richard E. Miller, Nazareth, Pa.; Charlene R. Couch, Richmond, Va., and Cheryl D.. Krieger, Bangor, Pa., assignors to Binney & Smith Inc., Easton, Pa.

Continuation-in-part of Ser. No. 89,503, Jul. 16, 1993, Pat. No. 5,326,388, and Ser. No. 78,722, Jun. 16, 1993, Pat. No. 5,352,282, which is a continuation of Ser. No. 923,308, Jul. 31, 1992, Pat. No. 5,232,494, said Ser. No. 89,503is a continuation-in-part of Ser. No. 923,308, Jul. 31, 0. This application Jul. 5, 1994, Ser. No. 270,485

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—22 B **52 Claims**

1. A washable multiple coloring composition system comprising:

(a) an undercolor aqueous coloring composition comprising a compatible surfactant in an amount sufficient to provide washability to said undercolor aqueous coloring composition and an undercolor dye whose coloring ability is destroyed in the presence of a pH of about 10 or greater; and

(b) an overcolor aqueous coloring composition comprising a compatible surfactant in an amount sufficient to provide washability to said overcolor aqueous coloring composition, a colorant capable of maintaining its characteristic color in the presence of a pH of about 10 or greater and an effective amount of a base sufficient to yield a pH of said overcolor aqueous coloring composition of about 10 or greater.

5,486,229

RAW MATERIAL FOR PRODUCING FERRITE DUST FOR FRICTION ELEMENTS AND METHOD OF REDUCING THE SAME

Ki Ju An, Sunchun, Rep. of Korea, assignor to Kumsan Material Co., Ltd., Chonlla Nam-Do, Rep. of Korea

Filed Jul. 29, 1993, Ser. No. 99,222

Claims priority, application Rep. of Korea, Jul. 29, 1992, 92-13577; Jul. 30, 1992, 92-13678

Int. Cl.[6] C09K *3/14;* **C22B** *5/18*

U.S. Cl. 106—36 **4 Claims**



1. A method of producing a reduced ferrite dust material which is used as a raw material for friction elements, comprising the steps of:

providing a sludge containing solids consisting essentially of 35 to 50% total Fe including Fe in iron oxides and no more than 2% metallic Fe, 1.0 to 8.0% SiO_2, 0.3 to 2.5% MgO, 1.0 to 6.0% CaO, 1.0 to 5.0% Al_2O_3, 20 to 40% fixed carbon, and 0.1 to 1.0% ZnO, all percentages being based on percentages by weight, said sludge having grain size of 20 to 250 mesh, apparent specific gravity of 1.2 to 2.0 g/cc, real specific gravity of 3.3 to 4.3 g/cc, and porosity of 40 to 65% measured by a mercury porosimeter;

treating the sludge under reduction conditions by exposing the sludge to a reduction gas at a charge rate of 8 to 20 Nl/min., a reduction temperature of 1,000° to 1,200° C., a reduction time to 20 to 60 minutes and a reduction gas-to-solid material ratio of 0.5 to 2.5; and

annealing the reduced sludge at an annealing temperature of 650° to 800° C.

5,486,230

STABLE MOULDING MATERIAL AND SPINNING MATERIAL CONTAINING CELLULOSE

Wolfram Kalt, Lenzing; Johann Mlnner, Weyregg; Dieter Eichinger, Vöcklabruck, and Christoph Schrempf, Bad Schallerbach, all of, Austria, assignors to Lenzing Aktiengesellschaft, Austria

PCT No. PCT/AT94/00055, § 371 Date Dec. 6, 1994, § 102(e) Date Dec. 6, 1994, PCT Pub. No. WO94/25492, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 29, 1994, Ser. No. 351,466

Claims priority, application Austria, May 5, 1993, A886/93

Int. Cl.[6] C09D *101/24;101/22;101/08;101/00*

U.S. Cl. 106—165 **5 Claims**

1. A stable composition for moulding or spinning containing cellulose, a tertiary amine-oxide, particularly N-methylmorpholine-N-oxide, and a stabiliser, and optionally water, characterized in that as said stabiliser a mixture of glucosides of gallic acid and m-digallic acid is provided.

5,486,231

WATER REPELLENT SOLUTION FOR WOOD AND METHOD

Donald C. Dulaney, 5109 Comanche Way, Madison, Wis. 53704

Filed May 2, 1994, Ser. No. 236,329

Int. Cl.[6] C09K *3/18;* **C09D** *191/00;7/12*

U.S. Cl. 106—243 **23 Claims**

1. A water repellent solution having a long shelf life and that is suitable for treatment of wood, the solution comprising:

an organo-metallic complex of a hydrophobic fatty acid coordinated with a halogenated trivalent chromium; and

water having a pH reduced by a pH reducing component that is distinct from the organo-metallic complex and that is a strong reducing acid.

5,486,232

GLASS FIBER TACKING AGENT AND PROCESS

Edward J. Griffith, Manchester, and Toan M. Ngo, Eureka, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 8, 1994, Ser. No. 287,037

Int. Cl.[6] C09D *1/00*

U.S. Cl. 106—286.5 **24 Claims**

1. A process for preparing a tacking agent useful as a glass fiber tacking agent which comprises:

a. forming a first composition comprising an aqueous solution of aluminum orthophosphate;

b. forming a second composition comprising a condensed covalently bonded phosphate polymer and;

c. combining said first and second compositions whereby the amount of condensed phosphate polymer in the resulting composition comprises from about 25 to about 75 percent by weight of the total phosphate and the Al:P molar ratio is less than 1.

5,486,233

PIGMENT EXTENDERS

Lance S. Mitchell, Mount Hawthorn, Australia; Mary Ann Nordhauser, Franklin Lakes, N.J., and Justin M. Willis, Dalkeith, Australia, assignors to Western Mining Corporation Limited, Melbourne, Australia

Filed Oct. 28, 1993, Ser. No. 141,953

Int. Cl.[6] A61K *7/035;* **C07C** *3/08*

U.S. Cl. 106—416 **22 Claims**

1. A powdered pigment composition for application to the skin including

finely divided, hydrophobic pigment extender particles; and

optionally finely divided, hydrophobic pigment particles;

and wherein the pigment extender particles and optional pigment particles are coated by a coating of non-hydrogenated, amphiphilic, lecithin phospholipid material, and a surface modifying agent selected from the group consisting of fatty acids, fatty acid esters, fatty acid triglycerides, and mixtures thereof, said coating having a weight percent composition of greater than 50% phospholipid material, said coated pigment extender having an increased hydrophilicity permitting said phospholipids to be adsorbed by the skin of a user.

5,486,234

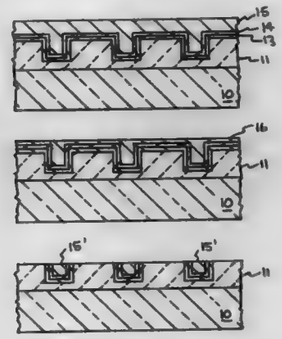
REMOVAL OF FIELD AND EMBEDDED METAL BY SPIN SPRAY ETCHING

Robert J. Contolini, Pleasanton; Steven T. Mayer, San Leandro, and Lisa A. Tarte, Livermore, all of Calif., assignors to The United States of America as represented by The United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 92,090, Jul. 16, 1993, abandoned. This application Jan. 19, 1995, Ser. No. 375,054

Int. Cl.[6] H01L *21/00*

U.S. Cl. 216—91 **20 Claims**



1. A process for uniformly removing metal from a metal surface located on a substrate surface and from a metal surface located above metal containing trenches formed in the substrate for producing an essentially planar surface across the substrate and the metal containing trenches therein, comprising:

providing an etchant capable of etching the metal;

rotating the substrate; and

directing the etchant onto the metal surfaces.

5,486,235

PLASMA DRY CLEANING OF SEMICONDUCTOR PROCESSING CHAMBERS

Yan Ye, Campbell; Charles S. Rhoades, Los Gatos, and Gerald Z. Yin, Cupertino, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Aug. 9, 1993, Ser. No. 104,318

Int. Cl.[6] B08B *7/00*

U.S. Cl. 134—1.1 **2 Claims**

1. A method for the plasma cleaning of surfaces of a semiconductor process chamber having involatile contaminants deposited thereon, said process comprising the steps of:

(a) removing any semiconductor workpiece present from said semiconductor process chamber;

(b) placing a non-gaseous source of reactive-species-generating material within said processing chamber, at a location which had been occupied by a workpiece during processing of said workpiece;

(c) exposing said non-gaseous source of reactive-species-generating material to a plasma generated from a gas fed into said processing chamber, whereby volatile reactive species are generated; and

(d) contacting said surfaces of said semiconductor processing chamber with a plasma comprising said volatile reactive species generated in step (c) from said non-gaseous source, whereby at least a portion of said involatile contaminants residing on said surfaces are converted to volatile molecules.

5,486,236

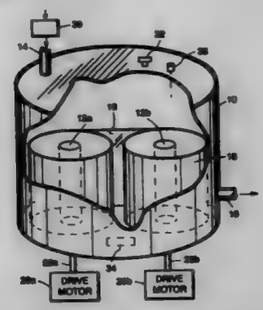
ACCELERATED EXTRACTION OF ROLLED MATERIALS

Carl W. Townsend, and Edna M. Purer, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 6, 1994, Ser. No. 239,057

Int. Cl.[6] B08B *1/02;1/04;3/10;3/12*

U.S. Cl. 134—13 **12 Claims**



1. A process for removing undesired constituents from a chosen material, comprising the steps of:

(a) placing a first roll comprising multiple single layers of said material containing said undesired constituents in a cleaning chamber for containing cleaning fluid wherein cleaning takes place;

(b) providing a means for unrolling said material from said first roll and re-rolling said material onto a second roll, wherein said first and second rolls are located within said cleaning chamber;

(c) introducing into said cleaning chamber said cleaning fluid comprising either a liquefied gas or a supercritical fluid and contacting said first roll of said material containing said undesired constituents with said cleaning fluid; and

(d) unrolling said material containing said undesired constituents from said first roll and re-rolling said material onto said second roll in said cleaning chamber while exposing single layers of said material containing said undesired constituents and said first and second rolls to said cleaning fluid for a period of time sufficient to remove said undesired constituents

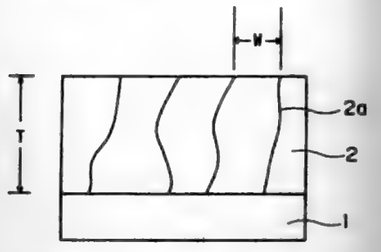
from said material and to provide cleaning fluid containing said undesired constituents.

5,486,237

POLYSILICON THIN FILM AND METHOD OF PREPARING POLYSILICON THIN FILM AND PHOTOVOLTAIC ELEMENT CONTAINING SAME

Keiichi Sano, and Yoichiro Aya, both of Moriguchi, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jun. 22, 1994, Ser. No. 263,528
Claims priority, application Japan, Jun. 24, 1993, 5-153692
Int. Cl.[6] H01L *31/04;31/0392;31/0368*
U.S. Cl. 136—258 **31 Claims**



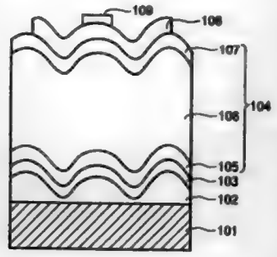
10. A photovoltaic element comprising: a substrate; a polysilicon thin film obtained by forming an amorphous silicon thin film on said substrate and crystallizing said amorphous film through heat treatment, wherein said polysilicon thin film has a thickness of at least 3 μm, and has crystal grains with an inplane crystal width in the plane of said thin film of about 0.1 to about 1 times said thickness, and wherein substantially all grain boundaries of said crystal grains extend substantially in the direction of said thickness; and a semiconductor layer forming a semiconductor junction with said polysilicon thin film.

5,486,238

PHOTOVOLTAIC DEVICE

Katsumi Nakagawa, and Noboru Toyama, both of Nagahama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 964,284, Oct. 21, 1992, abandoned. This application Nov. 21, 1994, Ser. No. 347,204
Claims priority, application Japan, Jan. 22, 1991, 3-273974
Int. Cl.[6] H01L *31/04;31/0224;31/0232*
U.S. Cl. 136—259 **14 Claims**



1. A photovoltaic device comprising a metal layer, a transparent conductive layer formed on said metal layer, and a semiconductor layer provided on said transparent layer and capable of photoelectric conversion, wherein said metal layer is composed of aluminum containing at least one element selected from copper, zinc, and manganese.

5,486,239

METHOD OF MANUFACTURING MAGNETICALLY ANISOTROPIC R-T-B-M POWDER MATERIAL AND METHOD OF MANUFACTURING ANISOTROPIC MAGNETS USING SAID POWDER MATERIAL

Ryoji Nakayama; Takuo Takeshita, and Yoshinari Ishii, all of Saitama, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Oct. 29, 1993, Ser. No. 145,956
Claims priority, application Japan, Jan. 29, 1992, 4-314202
Int. Cl.[6] H01F *1/03*
U.S. Cl. 148—101 **19 Claims**

1. A method of manufacturing a magnetically anisotropic R-T-B-M powder material for an R-T-B-M anisotropic magnet having a recrystallized fine aggregate structure of an $R_2T_{14}B$ intermetallic compound phase comprising:

providing an R-T-B-M raw alloy material, in one of a hydrogen atmosphere, a mixed hydrogen/inert gas atmosphere, a vacuum atmosphere and an inert gas atmosphere, having a c-axis crystal orientation of an $R_2T_{14}B$ intermetallic compound phase consisting of, as main components, at least one of a rare-earth element including Y (hereinafter referred to as "R"), one of a Fe and a component obtained by partially substituting Fe with Co (hereinafter referred to as "T"), and B;

said R-T-B-M raw alloy material being of a main phase that is an $R_2T_{14}B$ intermetallic compound phase containing one or more of Si, Ga, Zr, Nb, Mo, Hf, Ta, W, Al, Ti and V (hereinafter referred to as "M") in an amount of from 0.001 to 5.0 atomic %;

one of heating said R-T-B-M raw alloy material from the room temperature up to 500° C. in said atmosphere, and maintaining said R-T-B-M raw material alloy at a temperature not exceeding 500° C. for about one hour after heating;

further heating said R-T-B-M raw alloy material in a hydrogen atmosphere or a mixed hydrogen/inert gas atmosphere up to a temperature ranging from 500° to 1,000° C., and maintaining said raw alloy material at said temperature for a time sufficient to cause said R-T-B-M raw alloy material to occlude hydrogen;

maintaining said further heated R-T-B-M raw alloy material in a vacuum atmosphere of up to 1 Torr at a temperature for a time sufficient to cause said R-T-B-M raw alloy material to release hydrogen; and

cooling and crushing said vacuum maintained R-T-B-M raw alloy material to form a magnetically anisotropic R-T-B-M powder material.

5,486,240

CARBIDE/NITRIDE GRAIN REFINED RARE EARTH-IRON-BORON PERMANENT MAGNET AND METHOD OF MAKING

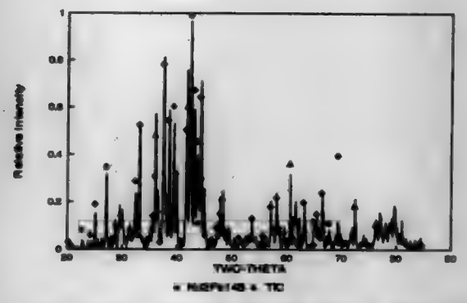
R. William McCallum, and Daniel J. Branagan, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Apr. 25, 1994, Ser. No. 232,837
Int. Cl.[6] H01F *1/057*
U.S. Cl. 148—102 **13 Claims**

1. A method of making a permanent magnet having a base alloy composition comprising RE, at least one of Fe and Co, and B wherein RE is one or more rare earth elements, comprising:

a) forming a melt having said base alloy composition in which TR, where TR is a transition metal selected from the group consisting of Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, and Al and at least one of C and N are provided as additives to form upon melt solidification a compound that is more thermodynamically stable than a compound otherwise formable between the additives and the base alloy components, whereby the base alloy components are not involved in formation of said compound,

b) rapidly solidifying the melt in a manner to form particulates having at least one of a substantially amorphous structure and



micro-crystalline structure, including forming primary precipitates comprising said compound by reaction of said TR and said at least one of said C and N, said precipitates being dispersed in said structure,

c) heating the solidified particulates above the crystallization temperature of the base alloy composition to improve a magnetic property of said structure, including forming secondary precipitates comprising said compound at grain boundaries by reaction of said TR and said at least one of said C and N, and

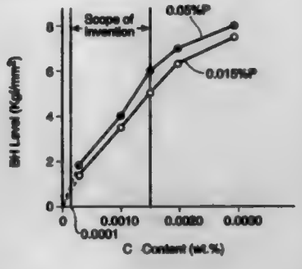
d) consolidating the particulates at an elevated temperature, said precipitates resisting grain growth in said structure at said elevated temperature.

5,486,241

NON-AGING AT ROOM TEMPERATURE FERRITIC SINGLE-PHASE COLD-ROLLED STEEL SHEET AND HOT-DIP GALVANIZED STEEL SHEET FOR DEEP DRAWING HAVING EXCELLENT FABRICATION EMBRITTLEMENT RESISTANCE AND PAINT-BAKE HARDENABILITY AND PROCESS FOR PRODUCING THE SAME

Kohsaku Ushioda; Naoki Yoshinaga; Yoshikazu Matsumura; Osamu Akisue, all of Futtsu; Kunio Nishimura, and Hidekuni Murakami, both of Kitakyusyu, all of, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

PCT No. PCT/JP93/01314, § 371 Date Jun. 29, 1994, § 102(e) Date Jun. 29, 1994, PCT Pub. No. WO94/06948, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 14, 1993, Ser. No. 240,782
Claims priority, application Japan, Sep. 14, 1992, 4-245306; Sep. 14, 1992, 4-245307; Jan. 20, 1993, 5-007817; Mar. 19, 1993, 5-060782
Int. Cl.[6] C22C *38/06;* **C21D** *8/02*
U.S. Cl. 148—330 **14 Claims**



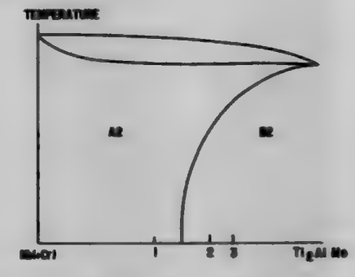
1. A non-aging at room temperature ferritic single-phase cold-rolled steel sheet for deep drawing having excellent fabrication embrittlement resistance and paint-bake hardenability, comprising, in terms of % by weight, 0.0001 to 0.0015% of C, not more than 1.2% of Si, 0.03 to 3.0% of Mn, 0.01 to 0.15% of P, 0.0010 to 0.020% of S, 0.005 to 0.1% of Al, 0.0001 to 0.0080% of N and 0.0001 to 0.0030% of B with the balance consisting of Fe and unavoidable impurities, said fabrication embrittlement resistance of said steel sheet being a ductility-embrittlement transition temperature of −55° C. or below.

5,486,242

NIOBIUM OR TANTALUM BASED HIGH SPECIFIC STRENGTH INTER METALLIC COMPOUNDS AND ALLOYS

Shigehisa Naka; Tauddiuq Khan, both of Jouy-en-Josas; André Walder, L'Hay les Roses; Michel Marty, Buc; Christophe Delaunay, Paris, and Pierre Thevenin, Evry, all of, France, assignors to Office National d'Etudes et de Recherches Aerospatiales, Chatillon Cedex, France

Continuation of Ser. No. 340,446, Nov. 14, 1994, abandoned, which is a continuation of Ser. No. 50,245, Jul. 16, 1993, abandoned. This application May 15, 1995, Ser. No. 440,659
Claims priority, application France, Nov. 26, 1990, 90 14760
Int. Cl.[6] C22C *27/02*
U.S. Cl. 148—422 **4 Claims**



1. Niobium-based alloy made up entirely of a crystalline medium exhibiting a substantially continuous centered cubic structure, comprising an intermetallic compound of formula Ti_2AlMo, and having a composition on an atomic basis in the following domain:

Nb + Cr	20 to 40%
Cr	0 to 5%
Ti	30 to 40%
Al	15 to 20%
Mo	15 to 20%,

the ratio Ti:Al:Mo being approximately 2:1:1, and the concentration of Nb being not more than 37%.

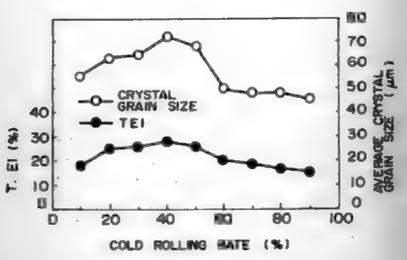
5,486,243

METHOD OF PRODUCING AN ALUMINUM ALLOY SHEET EXCELLING IN FORMABILITY

Koichi Hashiguchi; Yoshihiro Matsumoto; Makoto Imanaka; Takaaki Hira; Risei Ikeda; Naoki Nishiyama; Nobuo Totsuka, all of Chiba; Yoichiro Bekki, and Motohiro Nabae, both of Tokyo, all of, Japan, assignors to Kawasaki Steel Corporation, and The Furukawa Electric Co., Ltd., Japan

Filed Oct. 12, 1993, Ser. No. 135,260
Claims priority, application Japan, Jan. 13, 1992, 4-274044; Aug. 10, 1993, 5-198207
Int. Cl.[6] C22F *1/04*
U.S. Cl. 148—552 **11 Claims**

1. A method of producing aluminum alloy sheets having satisfactory formability, said method comprising the steps of: preparing aluminum scrap consisting essentially of a total of about 0.3 to 2.0 wt % of Fe and Si, and the balance Al except for incidental impurities; melting the prepared scrap and then adjusting its composition to attain an Mg content of about 3 to 10 wt %; subjecting the resulting material to hot rolling, cold rolling at a total reduction of about 20 to 50% and continuous annealing; and applying a



lubricant surface coating so as to impart to the resulting material a sliding resistance of not more than about 0.11.

5,486,244

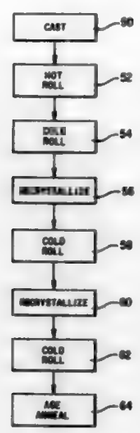
PROCESS FOR IMPROVING THE BEND FORMABILITY OF COPPER ALLOYS

Ronald N. Caron, Branford, and John F. Breedis, Trumbull, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 135,760, Oct. 18, 1993, Pat. No. 5,370,840, which is a continuation of Ser. No. 971,499, Nov. 4, 1992, Pat. No. 5,306,465. This application Apr. 25, 1994, Ser. No. 233,147

Int. Cl.[6] C22F *1/08*

U.S. Cl. 148—554 **9 Claims**



1. A method for the manufacture of a copper alloy, comprising the steps of:

a) casting a precipitation hardenable copper alloy containing from about 0.001% to about 2.0% by weight chromium and from about 0.001% to about 2.0% by weight zirconium;

b) heating said copper alloy for at least partial homogenization;

c) hot rolling said copper alloy to an area reduction in excess of about 50%;

d) cold rolling said copper alloy to an area reduction in excess of about 25%;

e) recrystallizing said copper alloy for a first time;

f) cold rolling said copper alloy to a cross sectional area reduction of from about 40% to about 90%;

g) recrystallizing said copper alloy for a second time at a temperature effective to produce the desired aging response during precipitation aging;

h) cold rolling said copper alloy to final gauge; and

i) precipitation aging said copper alloy.

5,486,245

METHOD FOR RAISING WELDED RAIL CONNECTIONS LYING BELOW THE TRAVELING SURFACE ON RAILROAD TRACKS

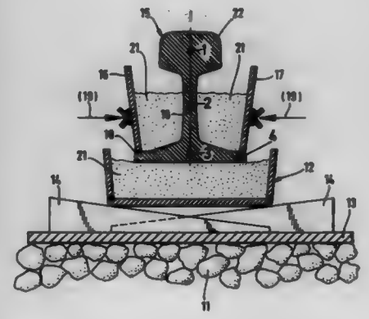
Gerhardus J. Mulder, Essen, and Frank Kuster, Ratingen, both of, Germany, assignors to Elektro-Thermit GmbH, Essen, Germany

Filed Jun. 9, 1994, Ser. No. 257,613

Claims priority, application Germany, Jun. 11, 1993, 43 19 416.8

Int. Cl.[6] C21D *9/04*

U.S. Cl. 148—582 **3 Claims**



1. Method of raising of rail joint welds which lie below a traveling surface of railroad tracks, by heating a weld with an ignited aluminothermic mixture which solidifies after reacting, said method comprising the steps of:

providing the aluminothermic mixture in an amount that, measured in kilograms, is equal to from one-fifth to one-tenth of the weight per meter of the rail, likewise measured in kilograms;

distributing the aluminothermic mixture so that a rail base is heated by using 30 to 60% of the aluminothermic mixture, and a rail web is heated by using a remaining amount of the aluminothermic mixture evenly distributed on both sides of the rail web;

igniting the aluminothermic mixture and leaving the aluminothermic mixture on the rail for a number of minutes equal to 0.7 to 1.5 times the weight in kilograms of the amount of aluminothermic mixture, whereby, due to a pattern of distribution of the aluminothermic mixture along the rail base and the rail web, the rail base and the rail web are heated to different temperatures resulting in raising of the weld; and

removing the reacted aluminothermic mixture from the rail base and web.

5,486,246

HIGH DENSITY AMMONIUM NITRATE PRILL AND METHOD OF PRODUCTION OF THE SAME

David A. Kelley, Savannah, Ga., assignor to Arcadian Fertilizer, L.P., Memphis, Tenn.

Filed Sep. 15, 1994, Ser. No. 306,824

Int. Cl.[6] C06B *45/00*

U.S. Cl. 149—2 **21 Claims**

1. A high density ammonium nitrate prill comprising a porous ammonium nitrate matrix having a density of at least about 54 pounds per cubic foot (0.86 kg/L) and a concentration of greater than about 99.5 wt.% ammonium nitrate with an alkylaryl sulfonate as an internal additive, wherein the prill has an oil absorption capacity of at least about 4 percent by weight based on the total weight of prill and oil.



5,486,247

EXPLOSIVE COMPOSITION, MANUFACTURE AND USE THEREOF

Björn Engsbråten, Dolomitvägen 8, S-703 74 Öbrebro, Sweden

Filed Feb. 4, 1993, Ser. No. 13,434

Int. Cl.[6] C06B *31/28*

U.S. Cl. 149—46 **16 Claims**

16. In a porous pulverulent explosive composition comprising free-flowing solid particles of an oxidizing agent of prilled ammonium nitrate, the improvement of providing 0.5 to 30 percent by weight of the total composition of a water-soluble hydroxyacid selected from the group consisting of malonic acid, tartaric acid, and citric acid which is capable of neutralizing liberated ammonia from within said porous pulverulent explosive composition thereby rendering said composition particularly suited for usage in a basic environment while enhancing the quality of the nearby environment.

5,486,248

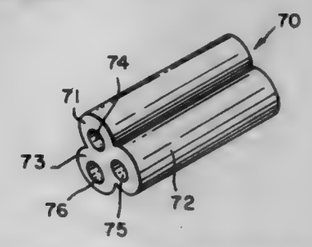
EXTRUDABLE GAS GENERANT FOR HYBRID AIR BAG INFLATION SYSTEM

Robert D. Taylor, Hyrum, and Marc R. Andros, North Ogden, both of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed May 31, 1994, Ser. No. 251,559

Int. Cl.[6] D03D *23/00;43/00*

U.S. Cl. 149—109.6 **8 Claims**



1. A method for forming a gas generant grain for an air bag inflation system, said method comprising mixing an amount of an oxidizer sufficient to convert all available carbon to carbon dioxide and all available hydrogen to water, a curing agent, and at least one thermosetting resin selected from the group consisting of an acrylate terminated polybutadiene, an ester formed by the reaction of a polybutadiene polycarboxylic acid with an epoxy modified polybutadiene, an ester formed by the reaction of a polybutadiene polycarboxylic acid with a hydroxyl-terminated polybutadiene, a styrene/polyester copolymer, and a hydroxy-terminated polybutadiene/diisocyanate reaction product, charging the mixture into an extruder in which a temperature of from about room temperature to about 200° F. is maintained, and pushing the mixture through the extruder.

5,486,249

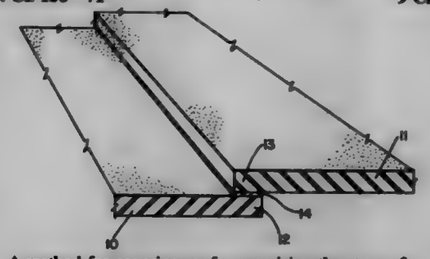
THERMOPLASTIC FILMS FOR HEAT SEAMING ROOF SHEETING AND METHOD FOR COVERING ROOFS

Joseph K. Valaitis, Brecksville; James A. Davis, Uniontown, and Frederick Lohr, Akron, all of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 133,522, Oct. 8, 1993, abandoned, which is a division of Ser. No. 741,915, Aug. 8, 1991, Pat. No. 5,260,111. This application Dec. 5, 1994, Ser. No. 349,139

Int. Cl.[6] B32B *31/26;* C09J *5/10*

U.S. Cl. 156—71 **9 Claims**



1. A method for covering roofs comprising the steps of:

applying a thermoplastic film to the edge area of at least one layer of a flat rubber sheet material, said sheet material consisting essentially of a polymeric composition of matter consisting essentially of a semi-crystalline polyolefin rubber having more than about 2 percent by weight crystallinity and an ethylene content in excess of 60 percent, selected from the group consisting of ethylene-propylene copolymers and terpolymers; from about 20 to 300 parts by weight of a filler selected from the group consisting of reinforcing and non-reinforcing materials and mixtures thereof, per 100 parts of said polymer; and from about 20 to 150 parts by weight of a processing material and mixtures thereof, per 100 parts of said polymer;

applying a second layer of said flat rubber sheet material overlapping said thermoplastic film and the edge area of said first layer of flat rubber sheet material, at least one of said first and second layers of flat rubber sheet material being uncured;

heating the overlapped areas to slightly above the peak melt temperature of the thermoplastic film, said uncured layer of flat rubber sheet material remaining uncured after heating; and

seaming the overlapped area under sufficient heat and pressure for less than about 5 minutes to provide a seam, said sheet material exhibiting a seam peel adhesion value of at least 2 pounds/inch and a shear adhesion value of at least about 15 pounds/square inch, in the absence of a pressure sensitive adhesive.

5,486,259

METHOD OF PREPARING FIBER REINFORCED GLASS COMPOSITES

Roger Y.-K. Leung, Schaumburg, and Stephen T. Gonczy, Mt. Prospect, both of Ill., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Oct. 25, 1989, Ser. No. 426,820

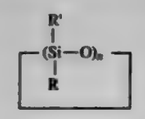
The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.

Int. Cl.[6] C03B *29/00*

U.S. Cl. 156—89 **4 Claims**

1. A method of preparing fiber reinforced glass composites comprising:

(a) reacting (1) a cyclosiloxane monomer having the formula



where n is an integer from 3 to 30, R is hydrogen, and R' is an alkene of from 2 to 20 carbon atoms in which one vinyl carbon atom is directly bonded to silicon or (2) two or more different cyclosiloxane monomers having the formula of (1) where for at least one monomer R is hydrogen and R' is an alkyl group having from 1 to 20 carbon atoms and for the other monomers R is an alkene from 2 to 20 carbon atoms in which one vinyl carbons directly bonded to silicon and R' is an alkyl group of from 1 to 20 carbon atoms, said reaction taking place in the presence of an effective amount of hydrosilylation catalyst;

(b) applying the reaction product of (a) to at least one refractory fiber selected from the group consisting of boron, silicon carbide, graphite, silica, quartz, S-glass, E-glass, alumina, alumino silicate, boron nitride, silicon nitride, boron carbide, titanium boride, titanium carbide, zirconium oxide, and zirconium-toughened alumina to form a prepreg;

(c) laying-up plies of the prepreg of (b) to form a green structure;

(d) curing the green structure of (c) at a temperature not greater than 250° C.;

(e) pyrolyzing the cured structure of (d) at a temperature of about 800° C. to about 1400° C. in non-oxidizing atmosphere;

(f) recovering the pyrolyzed product of (e) as the fiber reinforced glass composite;

(g) impregnating the pyrolyzed product of (f) with the reaction product of (a);

(h) pyrolyzing the impregnated product of (g) at 800° C.–1400° C.;

(i) repeating steps (g) and (h) to achieve the desired density.

5,486,251

HIGH FLEXURAL STRENGTH CARBON FIBER REINFORCED SILICON CARBOXIDE COMPOSITE

Roger Y. Leung, Schaumburg, Ill., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 464,470, Jan. 12, 1990, and Ser. No. 523,620, May 15, 1990. This application Dec. 19, 1990, Ser. No. 629,923

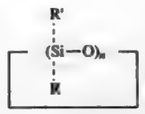
The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.

Int. Cl.[6] C03B *29/00*

U.S. Cl. 156—89 **2 Claims**

1. A method of preparing fiber reinforced glass composites having a non-brittle failure mode comprising:

(a) polymerizing (1) a cyclosiloxane monomer having the formula



where n is an integer from 3 to 30, R is hydrogen, and R' is an alkene of from 2 to 20 carbon atoms in which one vinyl carbon atom is directly bonded to silicon or (2) two or more different cyclosiloxane monomers having the formula of (1) where for at least one monomer R is hydrogen and R' is an alkyl group having from 1 to 20 carbon atoms and for the other monomers R is an alkene from 2 to 20 carbon atoms in which one vinyl carbon is directly bonded to silicon and R' is an alkyl group of from 1 to 20 carbon atoms, said polymerization taking place in the presence of an effective amount of hydrosilylation catalyst;

(b) applying the polymerization product of (a) to a carbon fiber having a high degree of graphitization to form a prepreg;

(c) laying-up plies of the prepreg of (b) to form a green structure;

(d) curing the green structure of (c) at a temperature not greater than 250° C.;

(e) pyrolyzing the cured structure of (d) at a temperature of about 800° C. to about 1400° C. in non-oxidizing atmosphere;

(f) recovering the pyrolyzed product of (e) as the fiber reinforced glass composite;

(g) impregnating the pyrolyzed product of (f) with the polymerization product of (a);

(h) pyrolyzing the impregnated product of (g) at 600° C.–1400° C.;

(i) repeating steps (g) and (h) until the composite reaches the desired density.

5,486,252

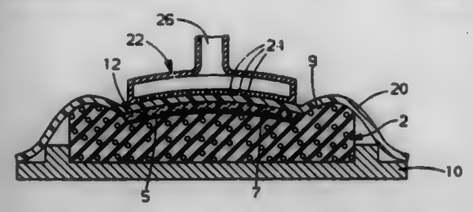
METHOD OF ADHESIVELY BONDING A SEAT COVER TO A SEAT CUSHION

Daniel K. C. Wong, Rochester Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 14, 1994, Ser. No. 209,800

Int. Cl.[6] B32B *31/20*

U.S. Cl. 156—212 **6 Claims**



1. A method of bonding a contoured steam-impermeable seat cover with a first surface to a seat cushion with a second surface comprising:

coating the second surface with a heat-activated adhesive;

placing a flexible planar electric coil heating member between the first and second surfaces;

pressing the first and second surfaces together against the heater with a force of one to five pounds per square inch with a press fixture with an internal cavity with venting holes connected thereto, the press fixture having a contour matching the seat cushion;

heating the adhesive with the heating member to a working to a working temperature of the adhesive;

removing the heating member while the first and second surfaces are still pressed together; and

allowing the adhesive to solidify by blowing forced air passing through the press fixture holes onto the cover and then relieving the pressure between the seat cover and the seat cushion.

5,486,253

METHOD OF LABELING CONTAINERS

Svatoboj Otruba, Ceres, Calif., assignor to B&H Manufacturing Company, Ceres, Calif.

Filed May 17, 1995, Ser. No. 443,317

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—215 **15 Claims**

1. A method of labeling containers comprising:

providing a web of labeling material;

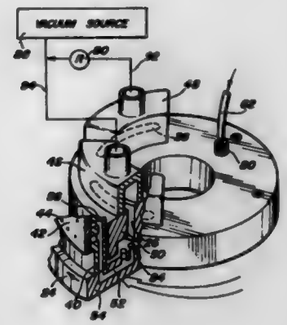
severing the web into label segments;

feeding the label segments to a vacuum drum;

picking up the label segments by the vacuum drum with a first level of vacuum supplied through a first cavity located within the vacuum drum;

holding the label segments on the vacuum drum with a second level of vacuum supplied through a second cavity located within the vacuum drum, said second cavity being separate from the first cavity, and wherein said second level of vacuum is greater than the first level of vacuum;

acting on the label segments while the label segments are being held on the vacuum drum by the second level of vacuum; and



applying the label segments to said containers.

5,486,254

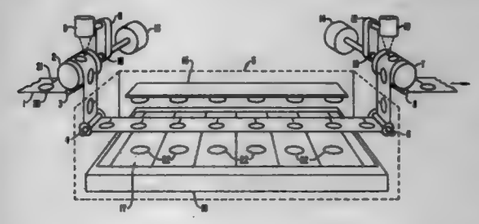
DUAL DRIVE REGISTRATION SYSTEM

John E. Gallagher, and Terence J. Gallagher, both of Brookfield, Conn., assignors to Total Register, Inc., Brookfield, Conn.

Filed Jan. 21, 1993, Ser. No. 6,565

Int. Cl.[6] B32B *31/00*; B44C *1/16*; B65H *23/18*

U.S. Cl. 156—229 **12 Claims**



1. A method of moving a continuous length of an elastic web in a direction along its length through a work station, said web including a plurality of positions and registration features periodically spaced along the length of the web, and said work station including a plurality of locations which are periodically spaced along a path of the movement of the web in the direction of its length, said method comprising:

choosing a distance between said plurality of positions along the length of the web, when the web is unstretched to be less than a distance between said plurality of workstation locations,

advancing the web at each of two spaced apart places along its length an incremental distance in a direction along its length through said work station past two spaced apart registration feature detectors until a predetermined number of registration features passes each of the detectors, and

prior to advancing the web, positioning said detectors a distance apart along the length of the web to cause the web to be stretched, when advanced within said workstation, an amount along its length that is sufficient to register at least some of said plurality of web positions with said plurality of locations within the work station.

5,486,255

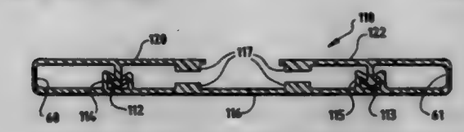
RECLOSEABLE PROFILE STRIP WITH JOINING WEBS

Steven H. Simonsen, Neenah, Wis., assignor to Reynolds Consumer Products Inc., Appleton, Wis.

Division of Ser. No. 166,676, Dec. 14, 1993, Pat. No. 5,358,334, which is a continuation of Ser. No. 16,364, Feb. 11, 1993, abandoned. This application Jul. 15, 1994, Ser. No. 272,991

Int. Cl.[6] A44B *19/16*; B29C *47/00*

U.S. Cl. 156—244.15 **1 Claim**



1. A method of making a reclosable profile strip comprising the steps of:

extruding a single strip of molten material that forms a bottom web having a first interlocking member and a second interlocking member and a pair of peel seal strips positioned between said interlocking members, a first top web and a second top web located at opposite ends of the bottom web with each of the top webs having an interlocking member and a peel seal strip positioned adjacent the outer edge thereof, and a first joining web and a second joining web, each joining web being substantially thinner than said top webs and said bottom web, wherein the first joining web joins the first top web to the bottom web and the second joining web joins the second top web to the bottom web;

cooling the strip of molten material;

positioning the first top web and the second top web above the bottom web;

interlocking the interlocking members of the top webs with a corresponding interlocking member of the bottom web; and

heat sealing the peel seal strips of the top webs with a corresponding peel seal strip of the bottom web.

5,486,256

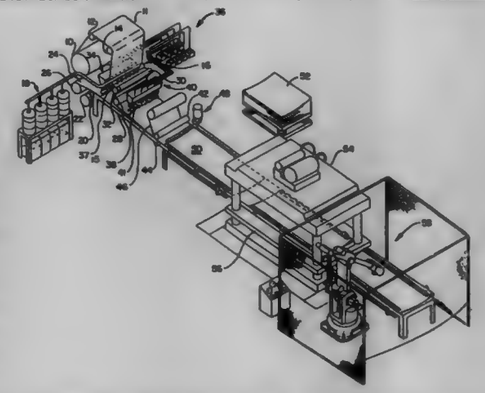
METHOD OF MAKING A HEADLINER AND THE LIKE

Floyd E. Rousesberg, Saint Louisville, and David M. Steinke, Baltimore, both of Ohio, assignors to Process Bonding, Inc., Johnstown, Ohio

Filed May 17, 1994, Ser. No. 243,944

Int. Cl.[6] B32B *31/04;31/08;31/18;31/20*

U.S. Cl. 156—251 **12 Claims**



1. A process for making a flexible laminated sheet of foamed resin and fiber glass comprising,

(a) providing layers of open celled polyurethane foam and non-woven scrim, said foam having a thickness in the range of about 0.1 to 1.1 inches, and ILD in the range of 10–80, a density in the range of 0.7–2 pounds per ft^3, and a permeability in the range 2–8 cfm,

(b) providing a layer of material over said scrim layer,
(c) chopping strands of fiber glass to a length in the range 1.5–3 inches and depositing by gravity a first layer of fiber glass over said layer of material, said fiber glass being applied in a density in the range 4–16 gm/ft^2, said layer of material between said first fiber glass layer and said scrim layer confining and supporting said first fiber glass layer.
(d) impregnating said layer of foam with a liquid polyurethane resin, said liquid resin comprising a mixture of about 40–50 volume percent aromatic isocyanate, about 50–60 volume percent polyether polyol, and about 0.0–0.2 volume percent of a catalyst,
(e) running said impregnated foam layer between a first pair of rollers to provide a uniform non-saturating dispersion of said liquid resin in said foam layer,
(f) depositing a second layer of fiber glass over said foam layer, said second fiber glass layer having similar physical characteristics as said first fiber glass layer and being chopped and deposited on said foam layer in the same way as said first fiber glass layer is deposited on said layer of material,
(g) applying said impregnated foam layer and second fiber glass layer over said first fiber glass layer with the foam layer sandwiched between said two fiber glass layers,
(h) compressing all layers together between a pair of calendar rollers to form a laminate with said liquid resin being squeezed from said foam layer into the adjoining fiber glass layers,
(i) applying a cover layer over said second layer of fiber glass, said cover layer being selected from the group consisting of a woven fabric, a permeable vinyl sheet, and an impermeable vinyl sheet,
(j) placing said laminate and cover layer between a pair of molds for a period of about ½–3 min. and at a temperature in the range of about 230°–375° F. to form a preform to a desired shape, and
(k) severing the peripheral edges of said preform to a desired configuration.

5,486,257

METHOD FOR BONDING SUBSTRATES WITH SILICONE RUBBER COMPRISING BOTH A THERMAL AND MOISTURE CROSSLINKING COMPONENT

Masayuki Onishi, Chiba, Japan, assignor to Dow Corning Toray Silicone Company, Ltd., Tokyo, Japan

Filed Apr. 21, 1994, Ser. No. 230,673
Claims priority, application Japan, May 18, 1993, 5-139332
Int. Cl.^{6} C09J *5/06;183/04;183/14*
U.S. Cl. 156—305 **1 Claim**

1. A method for bonding substrates with silicone rubber comprising filling a space between two substrates with a silicone rubber composition that comprises a thermal-crosslinking component that is an addition reaction-crosslinking silicone rubber composition comprising a polydiorganosiloxane that has at least 2 alkenyl groups in each molecule, an organosiloxane that has at least 2 silicon-bonded hydrogen in each molecule, and a hydrosilylation catalyst, and a moisture-crosslinking component comprising a combination of trialkoxysiloxy-terminated polydiorganolsiloxane, curing catalyst, and organotrialkoxysilane, where the thermal-crosslinking component and moisture-crosslinking component are present in amounts such that heating the silicone rubber composition results in a silicone gel with a penetration of 10 to 600 according to JIS K 2207, and the silicone moisture cures to a silicone rubber with a hardness of 4 to 80 according to JIS K 6301 using the spring type A test, then heating the silicone rubber composition to give a silicone gel, and finally forming a silicone rubber by moisture-crosslinking the silicone gel.

5,486,258

METHOD FOR BONDING SUBSTRATES WITH SILICONE RUBBER COMPRISING BOTH A THERMAL AND MOISTURE CROSSLINKING COMPONENT

Masayuki Onishi, Ichihara, Japan, assignor to Dow Corning Toray Silicone Company, Ltd., Tokyo, Japan

Division of Ser. No. 230,673, Apr. 21, 1994. This application May 18, 1995, Ser. No. 444,339
Claims priority, application Japan, May 18, 1993, 5-139332
Int. Cl.^{6} C09J *5/06;183/04;183/14*
U.S. Cl. 156—307.5 **1 Claim**

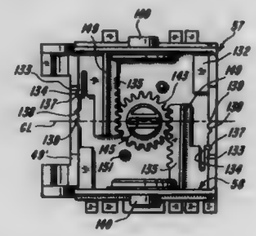
1. A method for bonding substrates with silicone rubber comprising coating a substrate with a silicone rubber composition comprising a thermal-crosslinking component that is an addition reaction-crosslinking silicone rubber composition comprising a polydiorganosiloxane that has at least 2 alkenyl groups in each molecule, an organosiloxane that has at least 2 silicon-bonded hydrogen in each molecule, and a hydrosilylation catalyst, and a moisture-crosslinking component comprising a combination of trialkoxysiloxy-terminated polydiorganosiloxane, curing catalyst, and organotrialkoxysilane, where the thermal-crosslinking component and moisture-crosslinking component are present in amounts such that heating the silicone rubber composition results in a silicone gel with a penetration of 10 to 600 according to JIS K 2207, and the silicone gel cures to a moisture cured silicone rubber with a hardness of 4 to 80 according to JIS K 6301 using the spring type A method, then heating the silicone rubber composition to give a silicone gel, then subsequently bringing another substrate into contact with the silicone gel, and finally forming a silicone rubber by moisture-crosslinking the silicone gel.

5,486,259

LABELER WITH ADJUSTABLE ROLL MOUNTING MEANS

Brent E. Goodwin, Middletown; Thomas P. Keller, Centerville; James A. Makley, Springboro, and Mark W. Moore, Miamisburg, all of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Jan. 5, 1994, Ser. No. 177,887
Int. Cl.^{6} B65C *11/02*
U.S. Cl. 156—384 **20 Claims**



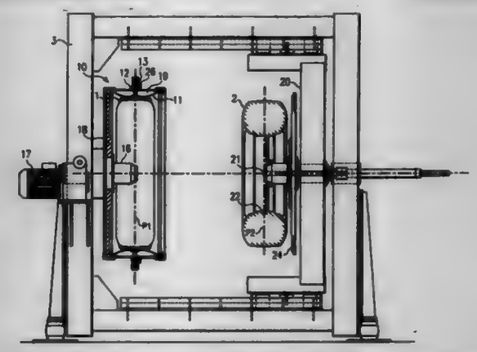
1. Apparatus for printing on a web of record members, the printing apparatus comprising a print head, a platen cooperable with the print head, and means for mounting a roll of a web of record members, wherein the mounting means includes a pair of roll mounting members, means for moving the mounting members in unison toward or away from each other to different selected positions to mount rolls of different predetermined widths, and means for releasably holding the mounting members in the selected position.

5,486,260

DEVICE FOR ASSEMBLY OF A TIRE CASING AND AN ANNULAR TREAD MEMBER EXTENDED BY CENTRIFUGATION

Michel Garmy, Le Cendre, France, and Bernard Ravel, Nohanent, both of, France, assignors to Compagnie Generale Des Etablissements Michelin - Michelin et Cie, Clermont-Ferrand

Filed Jun. 21, 1994, Ser. No. 263,301
Claims priority, application France, Jun. 25, 1993, 93 07883
Int. Cl.^{6} B29D *30/56*
U.S. Cl. 156—406.2 **18 Claims**



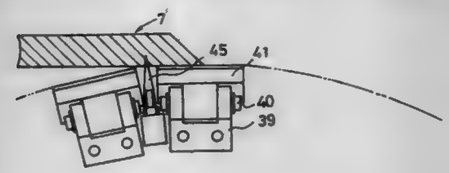
1. Device for assembling tire casing and a prevulcanized annular tread member, comprising:
a frame;
first means of support of said annular tread member;
second means of support of said tire casing;
means for relative displacement of said first and second means of support to make the circumferential planes of reference of said annular tread member and of said tire casing substantially coincide; and
said first and second means of support being mounted rotatably to the frame and having means for putting, at least, said first means of support into rotation to cause centrifugal expansion of said annular tread member, wherein, sold first means of support of said annular tread member have means for engaging the radially exterior surface of said annular tread member initially before rotation of said annular tread member and thereafter continuing to engage said annular tread member during rotation thereof.

5,486,261

METHOD OF AND APPARATUS FOR AUTOMATICALLY ASSEMBLING BEAD APEX

Nobuyuki Kikuchi; Katsuaki Ookochi, both of Shirakawa; Masatsugu Onuki, Fukushima, and Kazuaki Yarimizu, Shirakawa, all of, Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Division of Ser. No. 120,333, Sep. 14, 1993, Pat. No. 5,403,418. This application Oct. 14, 1994, Ser. No. 321,858
Claims priority, application Japan, Sep. 29, 1992, 4-260121
Int. Cl.^{6} B29D *30/50*
U.S. Cl. 156—422 **12 Claims**



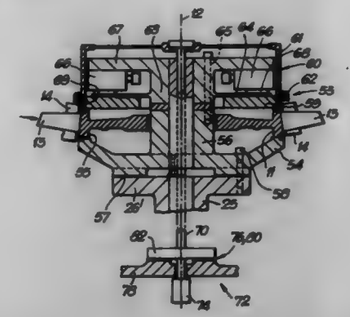
1. An apparatus for automatically assembling a bead apex comprising:
a means for joining a pair of longitudinal ends of a strip apex, said strip apex having substantially a triangular section with a short side and first and second long sides and a specified length, to each other, and for forming said strip apex in a cylindrical body such that said first and second long sides become inner and outer peripheral surfaces;
a means for forming said cylindrical body into a disk shape such that said short side becomes an inner peripheral surface thereof and said first and second long sides become first and second axial end surfaces, respectively, said cylindrical body formation means including needles which project radially outwardly of a cylindrical outer peripheral surface thereof for sticking said apex; and
a means for joining the inner peripheral surface of said disk shape apex to an outer peripheral surface of a bead ring.

5,486,262

FRICTION WELDING

John G. Searle, Cannock, England, assignor to Rolls-Royce plc, London, England

Filed May 13, 1994, Ser. No. 242,458
Claims priority, application United Kingdom, May 13, 1993, 9309819
Int. Cl.^{6} B23K *20/12*
U.S. Cl. 156—580 **11 Claims**



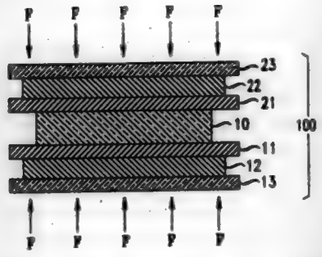
1. A workpiece tooling assembly for holding a first component during friction welding, the first component having first and second opposite end faces spaced apart from each other and a peripheral surface to which at least one further component is to be friction welded, the workpiece tooling assembly being driven in an angularly reciprocating movement and comprising:
a driven workpiece mounting member;
an axially extending structure mounted to and operatively connected with the driven workpiece mounting member; and
a workpiece clamping assembly mounted to the axially extending structure, the workpiece clamping assembly having:
a first clamp member disposed concentrically with and operatively connected to the axially extending structure to engage the first end face of the first component around a first annular region,
a second clamp member disposed concentrically with and operatively connected to the axially extending structure to engage the second end face of the first component around a second annular region opposite the first annular region, the first and second clamp members being arranged to leave exposed the peripheral surface, and
clamp force generating means operative to urge the first and second clamp members towards each other in an axial direction to engage and to exert a frictional clamping force of sufficient magnitude on the first component to resist welding and frictional heating forces applied perpendicular to the peripheral surface, wherein the axially extending structure transmits clamping loads from the first and second clamp members to the driven workpiece mounting member.

5,486,263

ETCHING A DIAMOND BODY WITH A MOLTEN OR PARTIALLY MOLTEN METAL

William C. Dautremont-Smith, Westfield, N.J.; John E. Graebner, New York, N.Y.; Sungho Jin, Millington, and Avishay Katz, Westfield, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 2, 1992, Ser. No. 908,130
Int. Cl.[6] H01L 21/00
U.S. Cl. 216—33 18 Claims



1. A method of removing a thickness of material from a diamond body having at least one face, including the steps of

(a) maintaining at least a portion of the face in direct physical contact with a molten or partially molten material comprising a rare earth metal or a rare earth metal mixture that dissolves carbon; and

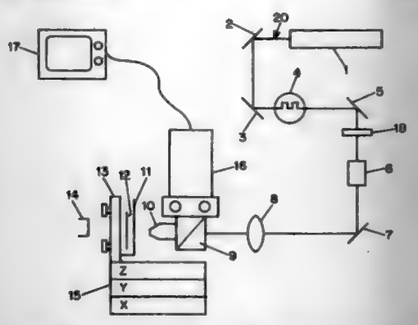
(b) maintaining the molten or partially molten material, within a temperature range between about 700° C. and about 1300° C., whereby a thickness of the body located at the portion of the face thereof is removed.

5,486,264

LASER ETCHING OF SEMICONDUCTORS

Osman A. Ghandour, New York, N.Y., assignor to The Trustees of Columbia University, New York, N.Y.

Continuation-in-part of Ser. No. 857,449, Mar. 25, 1992, abandoned. This application Apr. 22, 1994, Ser. No. 231,886
Int. Cl.[6] H01L 21/306
U.S. Cl. 156—635.1 7 Claims



1. A process for etching a region of a semiconductor substrate immersed in an etchant solution and illuminated with light of an appropriate wavelength, comprising the steps of:

placing the substrate in the etchant solution in a selected orientation; and

applying an intermittent focused light beam having a selected direction on said region until a desired level of etching has occurred;

wherein the orientation of the substrate and the direction of the light beam are selected such that bubbles formed during etching escape from the substrate during intermission of the light beam, and such that the bubbles escape without blocking the light beam, and

wherein the light beam has a beam waist with a diameter, and wherein the beam waist is in front of the substrate by a distance which equals 2½ times the diameter of the beam waist,

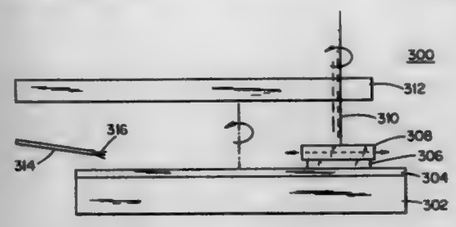
whereby a via hole is etched in the substrate, having a constant diameter over a major portion of hole depth.

5,486,265

CHEMICAL-MECHANICAL POLISHING OF THIN MATERIALS USING A PULSE POLISHING TECHNIQUE

Isidore Salugsugan, Fremont, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 6, 1995, Ser. No. 383,737
Int. Cl.[6] H01L 21/304
U.S. Cl. 156—636.1 16 Claims



1. A method of manufacturing a semiconductor device wherein a surface on a wafer is planarized, comprising:

placing the wafer to be planarized on a polishing pad;

applying a polishing slurry to the polishing pad;

chemical-mechanical polishing the surface to effect planarization while applying a first pressure to the wafer; and

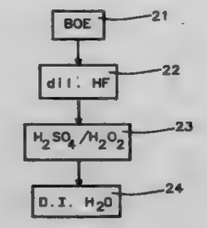
intermittently reducing the first pressure to a second pressure a plurality of times during chemical-mechanical polishing to reduce starvation.

5,486,266

METHOD FOR IMPROVING THE ADHESION OF A DEPOSITED METAL LAYER

Chia S. Tsai, and Tien C. Chang, both of Hsin Chu, Taiwan, Prov. of China, assignors to Taiwan Semiconductor Manuf. Company, Hsinchu, Taiwan, Prov. of China

Filed Sep. 1, 1994, Ser. No. 299,267
Int. Cl.[6] H01L 21/00
U.S. Cl. 156—657.1 26 Claims



1. A method for cleaning the surface of a partially manufactured integrated circuit, just prior to the deposition of a metallic layer onto said surface, comprising:

dipping said surface in a buffered oxide etch composed of 1 part by volume of hydrofluoric acid, 1 part of ammonium fluoride, and water;

immersing said surface in a solution of hydrofluoric acid in water;

then immersing said surface in a mixture containing sulphuric acid, hydrogen peroxide, and water; and

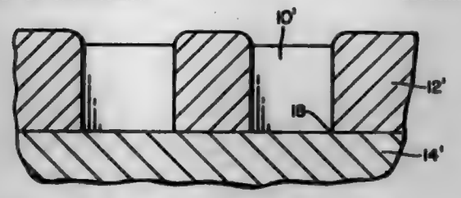
rinsing said surface in deionized water and then drying it.

5,486,267

METHOD FOR APPLYING PHOTORESIST

Stephen E. Knight, Essex Junction; Stephen E. Luce, Cambridge, and Thomas L. McDevitt, Underhill, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 28, 1994, Ser. No. 202,418
Int. Cl.[6] H01L 21/00
U.S. Cl. 156—659.11 11 Claims



1. A method for substrate preparation comprising:

providing a substrate comprising a film selected from the group of silicon dioxide and silicon nitride;

treating said substrate with ozone; then

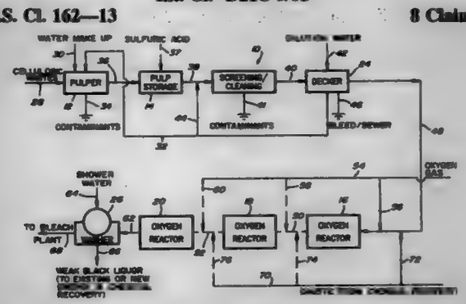
applying a resist to said treated substrate and patterning said resist over said treated substrate.

5,486,268

OXYGEN DELIGNIFICATION OF OLD CORRUGATED CONTAINERS

Xuan T. Nguyen, Montreal, Canada, assignor to Domtar Inc., Montreal, Canada

Division of Ser. No. 170,154, Dec. 20, 1993, Pat. No. 5,350,493, which is a division of Ser. No. 837,870, Feb. 18, 1992, Pat. No. 5,302,244. This application Jun. 16, 1994, Ser. No. 260,876
Int. Cl.[6] D21C 5/02
U.S. Cl. 162—13 8 Claims



1. A process for producing a wood-free white paper product comprising:

a) bleaching a cellulosic fiber pulp having an ISO brightness of at least 30 and a fiber strength of at least 11 km, derived by oxygen delignification of old corrugated containers having a kappa number of at least 70 and consisting essentially of recycled fibers of the old corrugated containers and having a viscosity of at least 10 cp and a kappa number of 15 to 35 to provide a bleached pulp having a viscosity of at least 10 cp suitable as the sole pulp component in white paper product manufacture,

b) forming the bleached pulp into a white paper product on a paper machine in a paper making operation, and

c) taking the formed white paper product from the paper machine,

wherein said cellulosic fiber pulp is produced in a process consisting essentially of:

i) reslushing said old corrugated containers with water,

ii) subjecting the reslushed old corrugated containers from i) to a pretreatment with an aqueous mineral acid,

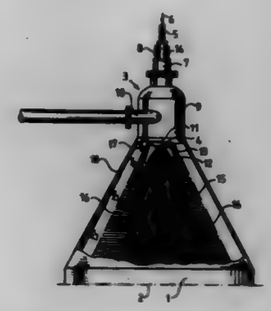
iii) subjecting the thus pretreated, reslushed, old pretreated corrugated containers from ii) to said oxygen delignification in the presence of alkaline material at a temperature of 80° C. to 120° C., and an oxygen pressure of 60 to 120 psig for a time effective to lower the kappa number to 15 to 35, said oxygen delignification consisting essentially of exposing said pretreated old corrugated containers in an aqueous vehicle, to oxygen gas in the presence of said alkaline material, in a plurality of sequential oxygen delignification stages, in which the pretreated old corrugated containers are exposed to said alkaline material in sequentially introduced dosages of the alkaline material, such that in each of said sequential oxygen delignification stages, the dosage is less than the required total dosage based on the weight of lignin in the old corrugated containers, said pretreated, reslushed, old corrugated containers and aqueous vehicle flowing sequentially through said stages and having a residence time in each stage to permit delignification.

5,486,269

GASIFICATION OF CARBONACEOUS MATERIAL IN A REACTOR HAVING A GASIFICATION ZONE AND A COMBUSTION ZONE

Bengt Nilsson, Skoghall, Sweden, assignor to Chemrec Aktiebolag, Karlstad, Sweden

Filed Apr. 28, 1994, Ser. No. 232,069
Claims priority, application Sweden, Nov. 4, 1991, 9103217
Int. Cl.[6] D21C 11/12
U.S. Cl. 162—31 16 Claims



1. A method of thermally decomposing a carbonaceous raw material to recover gas for energy or manufacture of chemicals in solid or liquid form, which comprises:

(a) feeding the raw material into a reaction chambers,

(b) gasifying the raw material under controlled understoichiometric conditions, wherein the gasification is carried out in an inner gasification zone at a pressure from atmospheric pressure up to about 150 bar and at a temperature within the range 500°–1600° C.,

(c) combusting a fuel which is supplied to the reaction chamber at a point located at a distance from the point of feeding the raw material to provide at least a part of the thermal energy required to maintain the endothermic reactions in the gasification zone wherein the combustion of the fuel is carried out in a combustion zone in gaseous contact with the inner gasification zone to surround the inner gasification zone

(d) maintaining a zone of oxygen-containing gas close to and outside of the combustion zone by supplying oxygen-containing gas to the reaction chamber at one point located at a distance from the point for supplying of the fuel and in an amount sufficient to oxidize at least substantially all the fuel supplied to the combustion zone.

5,486,270

ANGULARLY ADJUSTABLE DRAINAGE FOIL FOR PAPER MACHINES

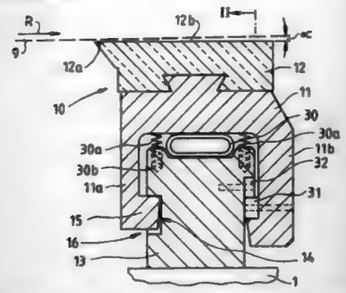
Christian Schiel, Heidenheim, Germany, assignor to J.M. Voith GmbH, Heidenheim, Germany

Filed Mar. 3, 1994, Ser. No. 205,575

Claims priority, application Germany, Mar. 3, 1993, 43 06 503.1

Int. Cl.[6] D21F *1/54*

U.S. Cl. 162—352 **9 Claims**



1. An angularly adjustable drainage foil for a revolving dewatering wire of a paper machine, comprising:

a facultatively two-part support structure extending across the width of the machine, said two-part support structure comprising a first beam and a backing shape mounted on said beam, said support structure having a top side, an approach-side backing surface and a departure-side backing surface;

a facultatively two-part cover strip extending across the width of the machine, said two-part cover strip having an underside and having claw-like members, one of said claw-like members being configured and arranged for engaging said approach-side backing surface and another of said claw-like members being configured and arranged for engaging said departure-side backing surface, said cover strip further comprising an upper, wear-resistant foil strip and a support shape supporting said foil strip, said foil strip having a drainage surface;

a moving device for effecting a relative longitudinal motion between said cover strip and said support structure;

means for influencing an angle of incidence α between said drainage surface and a surface of said wire running over said drainage surface, upon relative movement between said cover strip and support structure; and

compression means between said underside of the cover strip and said top side of the support structure for forcing said claw-like members and said backing surfaces into said engagement;

said cover strip being configured such that it grips the backing shape in claw-like fashion, and wherein the approach-side claw-like engagement of the support structure by the cover strip comprises a joint parallel with the longitudinal axis; and the departure-side claw-like engagement of the support structure by the cover strip on the side of the cover strip and on the side of the support structure includes a plurality of paired, inclines.

5,486,271

PROCESS FOR PREPARING PERFLUOROALKANESULFONYL FLUORIDES

John C. Hansen, Lakeland, and Herward A. Vogel, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Oct. 11, 1994, Ser. No. 320,527

Int. Cl.[6] C25B *3/00;3/08*

U.S. Cl. 204—59 F **20 Claims**

1. A process of preparing perfluoroalkanesulfonyl fluorides comprising electrochemically fluorinating in the presence of anhydrous hydrogen fluoride a compound of the formula $(RSO_2)_nX$ wherein R is alkyl of 1 to 20 carbon atoms in which the carbon chain may be interrupted by one or more ether oxygen atoms;

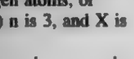
(a) n is 1, and X is $—R^i$, $—OR^i$, $—NR^{ii}R^{iii}$ or $—SO_2R$, in which R is as defined above; R^i is R; R^{ii} and R^{iii} are each independently hydrogen or alkyl of 1 to 8 carbon atoms in which the carbon chain may be interrupted by one or more ether oxygen atoms, or when taken together with the nitrogen atom form a five to seven membered heterocyclic ring optionally interrupted by a heteroatom selected from nitrogen, oxygen and sulfur; with the proviso of excluding dimethylsulfone and diethylsulfone;

(b) n is 2, and X is $—R^i—$, $—OR^i—$, $—OR^{iv}O—$ or



in which R^i is an alkylene of 1 to 20 carbon atoms optionally containing one or more ether oxygen atoms; R^{iv} is alkylene of 1 to 8 carbon atoms; R^{ii} is hydrogen or alkyl of 1 to 8 carbon atoms in which the carbon chain may be interrupted by one or more ether oxygen atoms, or

(c) n is 3, and X is



in which R is as defined above but with 3 bond sites, with the proviso that the electrochemical fluorination is conducted under the following conditions: current density of about 10 to 600 amps per square meter of anode surface; and a temperature sufficient to maintain a boiling hydrogen fluoride liquid phase during the fluorination.

5,486,272

ELECTROPLATING METHOD AND APPARATUS

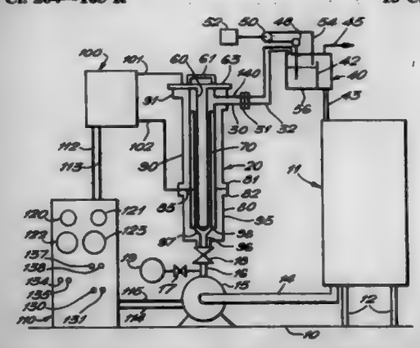
John D. C. Hemsley, Old Woking; Albert W. Gale, Yateley, and Adrian Schwalb, Crowthorne, all of, Great Britain, assignors to Enthone-Omi Inc., West Haven, Conn.

Filed May 31, 1994, Ser. No. 251,152

Claims priority, application United Kingdom, May 28, 1993, 9311055; Aug. 5, 1993, 9316215

Int. Cl.[6] C25C *1/00*

U.S. Cl. 204—105 R **13 Claims**



1. A method of removing metal from a feedstock solution containing dissolved metal ions which comprises passing the feedstock through an annular gap formed by an inner cathode tube and an outer anode tube at a flow rate which is turbulent and which, in conjunction with the cross section of the gap, provides Re value (as defined herein) of the flow of at least 2100, the inner surface of the gap being cathodic to the metal ions in the solution and formed of a metal which is smooth and is not attacked by the solution, the outer surface of the gap being smooth and anodic to the metal ions in the solution, inducting the solution flow into the annular gap by means of a pump coupled directly to the gap, the end of the inner cathode tube being closed by a non-conductive domed plug which faces the incoming flow of solution and distributes it evenly to the annular gap and depositing the metal ions in the feedstock solution on the cathodic surface.

5,486,273

RESILIENT MATERIAL AND DISPOSABLE, ABSORBENT ARTICLE COMPRISING SUCH A MATERIAL

Urban Widlund, Mölnlycke, and Roy Hansson, Mölndal, both of, Sweden, assignors to Mölnlycke AB, Göteborg, Sweden

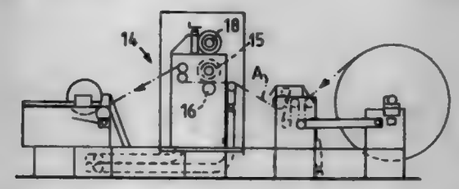
PCT No. PCT/SE90/00475, § 371 Date Dec. 27, 1991, § 102(e) Date Dec. 27, 1991, PCT Pub. No. WO91/00720, PCT Pub. Date Jan. 24, 1991

PCT Filed Jul. 3, 1990, Ser. No. 781,141

Claims priority, application Sweden, Jul. 6, 1989, 8902457

Int. Cl.[6] B28B *1/48*

U.S. Cl. 264—154 **9 Claims**



1. A method of imparting varying degrees of resilience to different areas of an elastic material for absorbent, disposable articles, comprising providing an elastic material, removing material from areas of the elastic material which are to be given a lesser degree of resilience than remaining areas of said elastic material while also leaving attached material-parts in the areas of said elastic material from which material has been removed in order to give different areas of the elastic material different properties upon being stretched.

5,486,274

POLY-SUBSTITUTED PHTHALOCYANINES

Dean Thetford, Manchester, and Peter Gregory, Bolton, both of, England, assignors to Zeneca, Limited, London, United Kingdom

Continuation of Ser. No. 777,719, Oct. 21, 1991, abandoned. This application Nov. 17, 1994, Ser. No. 344,682

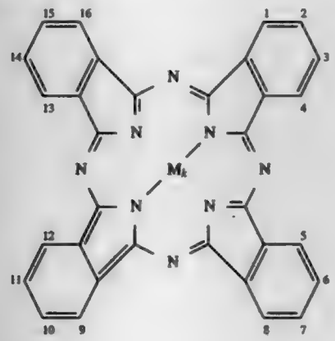
Claims priority, application United Kingdom, Nov. 2, 1990, 9023894; Nov. 21, 1990, 9025280

Int. Cl.[6] C07D *487/22*

U.S. Cl. 204—157.5 **9 Claims**

1. A process for the generation of singlet oxygen comprising irradiating, in the presence of oxygen, a phthalocyanine having formula (1):

Formula (1)



wherein M is selected from H, metal, halometal, oxymetal and hydroxymetal; and

k is the inverse of ½ of the valency of M; and wherein at least one of the peripheral carbon atoms in the 1–16 positions of the phthalocyanine nucleus (M_kPc) of formula (1) is linked via an oxygen atom to an organic radical selected from the group consisting of phenyl, naphthyl, pyridyl, thiophenyl, furanyl, quinolinyl, thiazolyl, benzothiazolyl, pyrimidyl, C_{1-10}-alkyl, C_{3-10}-alkenyl and cyclohexyl which is unsubstituted or is substituted by a group selected from the group consisting of C_{1-20}-alkyl, C_{1-20}-alkoxy, C_{2-20}-alkenyl, C_{1-20}alkylthiol, C_{1-20}-alkoxycarbonyl, hydroxyC_{1-4}-alkoxy, phenyl, benzyl, phenylthio, fluoro, chloro, bromo, —CN, $—NO_2$, $—CF_3$, $—COR^2$, $—COOR^2$, $—CONR^2R^3$, $—SO_2R^2$, $—SO_2NR^2R^3$, $—NR^2R^3$ and $—OR^2$ in which R^2 and R^3 are each independently —H, C_{1-4}-alkyl or phenyl and $—SO_3A$ in which A is —H, a metal or an ammonium ion and the remaining peripheral carbon atoms are unsubstituted or substituted by a member selected from the group consisting of hydrogen, halogen and $—SO_3A$ wherein A is H, a metal or an ammonium ion.

5,486,275

NITROGEN-CONTAINING PERFLUOROALKYL BROMIDE AND METHOD FOR PRODUCTION THEREOF

Haruhiko Fukaya, Oobe; Takashi Abe, Kasugai; Eiji Hayashi, Konan; Yoshio Hayakawa, Aichi, and Hajime Baba, Nagoya, all of, Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Division of Ser. No. 22,463, Feb. 25, 1993, abandoned. This application Aug. 24, 1994, Ser. No. 293,963

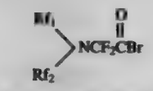
Claims priority, application Japan, Feb. 28, 1992, 4-75887

Int. Cl.[6] C07C *2/00*

U.S. Cl. 204—157.6 **12 Claims**

1. A method for producing a nitrogen-containing perfluoroalkyl bromide, comprising the step of:

decarbonylating, by exposure to ultraviolet light, a nitrogen-containing perfluorocarboxylic acid bromide represented by the formula:



(II)

wherein Rf_1 and Rf_2 independently stand for a perfluoroalkyl group of one to five carbon atoms, provided that

1) Rf_1 and Rf_2 are separated from each other,

2) Ff_1 and Rf_2 are directly bonded to each other,

3) Rf_1 and Rf_2 are bonded to each other through the medium of an oxygen atom to form a heterocycle, or

4) Rf_1 and Rf_2 are bonded to each other through the medium of a nitrogen atom to form a heterocycle.

5,486,276

METHOD FOR MANUFACTURING SMALL MAGNETIC DISKS FROM A LARGE DISK

Yoshito Kitamoto; Masahiro Takagi; Hiroshi Akiba, and Kazuyuki Seki, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 10, 1993, Ser. No. 120,149

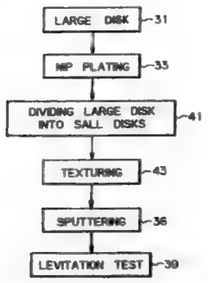
Claims priority, application Japan, Sep. 10, 1992, 4-241790; Sep. 29, 1992, 4-259513

Int. Cl.[6] C23C *14/34;* B05D *3/12*

U.S. Cl. 204—192.2 **15 Claims**

1. A method for manufacturing small magnetic disks having an outer diameter, said method comprising the steps of:

preparing a nonmagnetic large disk having an outer diameter and an inner diameter, one half of the difference between the outer



and inner diameters of said large disk being greater than said outer diameter of said small disks to be manufactured;

subjecting said large disk to at least one step of a manufacturing process necessary for manufacturing a magnetic disk from a nonmagnetic substrate; and

dividing said large disk into a plurality of said small disks.

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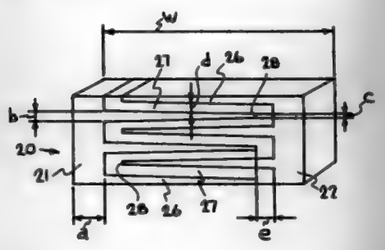
HIGH PERFORMANCE CAPACITORS USING NANO-STRUCTURE MULTILAYER MATERIALS FABRICTION

Troy W. Barbee, Jr., Palo Alto; Gary W. Johnson, and Dennis W. O'Brien, both of Livermore, all of Calif., assignors to Regents of the University of California, Oakland, Calif.

Division of Ser. No. 122,940, Sep. 20, 1993, Pat. No. 5,414,588. This application Feb. 6, 1995, Ser. No. 384,096

Int. Cl.[6] C23C *14/00;14/32*

U.S. Cl. 204—192.15 **19 Claims**



1. A method for fabricating nano-structure multilayer capacitors, comprising:

depositing at least one layer of conductive material by magnetron sputtering in an inert atmosphere;

masking selected areas of the thus deposited layer of conductive material;

depositing a layer of dielectric material on at least the unmasked areas of the conductive material;

removing the maskant;

depositing by magnetron sputtering at least another layer of conductive material on at least the dielectric material;

masking selected areas of the thus deposited layer of conductive material;

depositing a layer of dielectric material on at least unmasked areas of the conductive material; and

removing the maskant.

5,486,278

TREATING PREBAKED CARBON COMPONENTS FOR ALUMINUM PRODUCTION, THE TREATED COMPONENTS THEREOF, AND THE COMPONENTS USE IN AN ELECTROLYTIC CELL

Fausto Manganiello, Portoscuso, Italy; Jean-Jacques Duruz, Geneva, Switzerland, and Vittorio Bello, Portoscuso, Italy, assignors to Moltech Invent S.A., Luxembourg

Filed Mar. 28, 1994, Ser. No. 218,679

Claims priority, application European Pat. Off., Jun. 2, 1993, 93810401; Aug. 2, 1993, 93810545

Int. Cl.[6] C25C *7/00;3/08*

U.S. Cl. 204—243 R **28 Claims**

1. A method of treating a carbonaceous cell component of an electrolytic cell for the production of aluminium, to improve the resistance of said component to deterioration during operation of the cell by attack of air and anodically-releasing oxidizing gases, by treating a surface of said carbonaceous cell component with a boron-containing solution, wherein said solution is at temperatures up to 120° C., wherein the method comprises intaking the boron-containing solution to a selected depth of 1–10 cm into the component to be protected.

18. An electrolytic cell for the production of aluminium by the electrolysis of alumina in a molten fluoride electrolyte, comprising a component treated by the method of claim 1, the component being installed with its treated surface in contact with air and oxidizing gases released during operation of the cell.

5,486,279

ELECTROCHEMICAL MEASURING PROBE

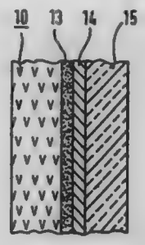
Karl-Hermann Friese, Leonberg; Helmut Weyl, Schwieberdingen, and Hans-Martin Wiedenmann, Stuttgart, all of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Continuation of Ser. No. 842,378, Mar. 26, 1992. This application Apr. 14, 1994, Ser. No. 227,568

Claims priority, application Germany, Jan. 17, 1989, 39 34 586.6

Int. Cl.[6] G01N *27/407*

U.S. Cl. 204—429 **8 Claims**



1. Electrochemical measuring probe for determining the oxygen content of gases comprising: a solid-electrolyte body having at least one cermet electrode on the side of the solid-electrolyte body exposed to the gas to be measured with said at least one electrode having a supporting matrix composed of a finely divided ion-conducting ceramic material, a porous ceramic protective layer on the cermet electrode exposed to the gas to be measured, and a finely porous ion-conducting covering layer disposed between and directly adherent to the cermet electrode and the porous ceramic protective layer; and wherein the finely porous ion-conducting covering layer is comprised predominately of the same ion-conducting supporting matrix material as that of the cermet electrode exposed to the gas to be measured, with the porosity of said covering layer being substantially the same as that of said cermet electrode, with said covering layer being at least ½, and not greater than 3 times, as thick as said at least one cermet electrode, and with the pore diameters in said covering layer being not larger than the layer thickness of said covering layer.

5,486,280

PROCESS FOR APPLYING CONTROL VARIABLES HAVING FRACTAL STRUCTURES

Jonathan S. Bullock, IV, Oak Ridge, and Roger L. Lawson, Oliver Springs, both of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Oct. 20, 1994, Ser. No. 326,425

Int. Cl.[6] C25D *1/00*

U.S. Cl. 205—67 **17 Claims**



10. A process for electroforming, comprising the steps of:

applying a pulsed-current waveform across a substrate and an electrode located in an electrolyte to cause the deposition of a material on a surface of the substrate;

the pulsed-current waveform having a fractal waveform selected to achieve a desired characteristic of the material deposited on the surface of the substrate,

wherein the fractal waveform comprises a first pulsed-current waveform and a second pulsed-current waveform.

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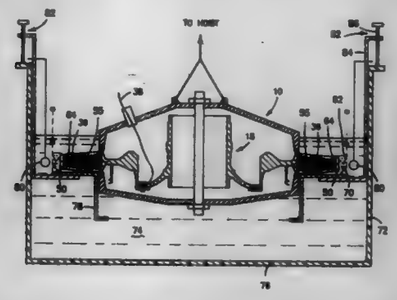
METHOD FOR CBN TIPPING OF HPC INTEGRALLY BLADED ROTORS

Gary A. Gruver, South Windsor; Joseph J. Parkos, Jr., East Haddam, and Robert G. Adinolfi, Manchester, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 15, 1993, Ser. No. 138,530

Int. Cl.[6] C25D *5/02*

U.S. Cl. 205—110 **9 Claims**



1. A method for forming abrasive surfaces on the tips of a plurality of airfoils integrally joined to a disc structure, said method comprising the steps of:

providing a mechanical masking device having a plurality of openings arranged around the circumference thereof;

installing said airfoils and disk structure within said mechanical masking device so that said disk structure is protected by said masking device and portions of said airfoils including tip portions thereof extend through said openings;

forming a coating containing abrasive particles on said tip portions of said airfoils;

said forming step comprising immersing said mechanical masking device with said installed airfoils in a plating solution containing a matrix material and an abrasive grit material, said airfoils lying in a substantially horizontal plane and said tip portions each being oriented in a substantially vertical plane during the coating forming step; and

said forming step further comprising applying an electrical current through said plating solution so as to cause said matrix material and said grit material to be deposited onto said tip portions.

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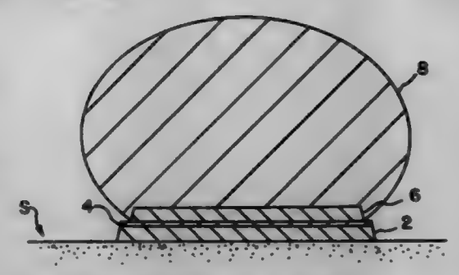
ELECTROETCHING PROCESS FOR SEED LAYER REMOVAL IN ELECTROCHEMICAL FABRICATION OF WAFERS

Madhav Datta, Yorktown Heights, and Ravindra Shenoy, Peekskill, both of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Nov. 30, 1994, Ser. No. 346,996

Int. Cl.[6] C25D *5/10;* C25F *3/02*

U.S. Cl. 205—123 **5 Claims**



1. A method of preparing wafers comprising:

depositing a metallic seed first layer composed of a first metal onto a substrate surface;

depositing a metallic seed second layer composed of a second metal onto the first layer;

depositing a metallic seed third layer composed of a third metal onto the second layer;

selectively masking areas of the surface of said third layer with masking material;

depositing a plurality of solder bumps formed on the third layer distal the first layer, each one of the plurality of bumps masking a respective one of a plurality of discrete non-contiguous regions over the substrate surface;

removing said masking material; and

electroetching in an electrolyte the third seed layer and the second seed layer sufficiently to remove the third metal and the second metal from the wafer over the areas between the solder bumps;

and removing said first layer between said solder bumps.

5,486,283

METHOD FOR ANODIZING ALUMINUM AND PRODUCT PRODUCED

Jason G. Maich, Riverside, Calif., assignor to Rohr, Inc., Chula Vista, Calif.

Filed Aug. 2, 1993, Ser. No. 100,891

Int. Cl.[6] C25B *1/00*

U.S. Cl. 205—174 **23 Claims**

1. A chromium free method of anodizing an unroughened aluminum alloy workpiece to produce an oxide surface receptive to the formation of strong and durable bonds with epoxy adhesives and coatings and resistant to corrosion comprising the steps of:

providing a first aqueous anodizing solution consisting essentially by weight of about 10–20% phosphoric acid;

maintaining said first anodizing solution at a temperature from about 75° to 90° F.;

immersing said workpiece in said first anodizing solution;

applying a direct electric current having a voltage of about 5 to 15 volts across the workpiece in said solution, such that the current density is substantially uniform across the workpiece and does not exceed about 10 amperes per square foot, for a period of time sufficient to produce a thin, porous, highly adherent oxide at least 5000 angstroms thick on the surface of said workpiece;

providing a second aqueous anodizing solution consisting essentially by weight of 3–5% sulfuric acid and 0.5–1.5% boric acid;

maintaining said second anodizing solution at a temperature from about 75° to 85° F.;



removing the workpiece from the first anodizing solution and immersing it in the second anodizing solution;

applying a direct electric current having a voltage of about 15 volts across the workpiece in said solution, such that the current density is substantially uniform across the workpiece and does not exceed about 10 amperes per square foot, for a period of time sufficient to produce a further growth of a less porous oxide on the workpiece with the final oxide coating having a weight of around about 250 to 650 milligrams per square foot and a thickness of about 15,000 to 31,000 angstroms, which final oxide coating does not substantially reduce the fatigue resistance of the workpiece.

5,486,284

CATALYTIC CRACKING WITH MCM-49

Thomas F. Degnan, Moorestown, N.J.; Terry E. Helton, and Darin N. Lissy, both of Glen Mills, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Aug. 15, 1994, Ser. No. 297,468
Int. Cl.[6] C10G *11/05*
U.S. Cl. 208—120 **17 Claims**

10. A process for catalytically cracking a hydrocarbon feed boiling above 650° F. comprising:

a. charging said hydrocarbon feed to a riser catalytic cracking reactor;

b. charging a hot fluidized solids mixture from a catalyst regenerator to the base of said riser reactor, said mixture comprising a physical mixture of:

95 to 50 wt % base FCC catalyst containing at least one of zeolite Y, zeolite beta or both in a matrix, and

5 to 50 wt. % MCM-49 additive catalyst containing a catalytically effective amount of MCM-49 in an amorphous support;

c. catalytically cracking said feed at catalytic cracking conditions including a riser outlet temperature of about 925° to 1100° F. to produce catalytically cracked products including C3 and C4 olefins and a catalytically cracked naphtha fraction having an octane number and a spent solids mixture comprising base FCC catalyst and MCM-49 additive catalyst which are discharged from said outlet of said riser reactor;

d. separating in a vessel containing said riser outlet a cracked product rich vapor phase, which is withdrawn from said vessel, from a spent solids mixture rich phase containing base FCC catalyst and MCM-49 additive catalyst;

e. stripping said spent solids mixture in a stripping means at stripping conditions to produce a stripped solids phase;

f. decoking said stripped solids phase in a catalyst regeneration means operating at catalyst regeneration conditions to produce said hot fluidized solids mixture, which is recycled to the base of said riser reactor, and

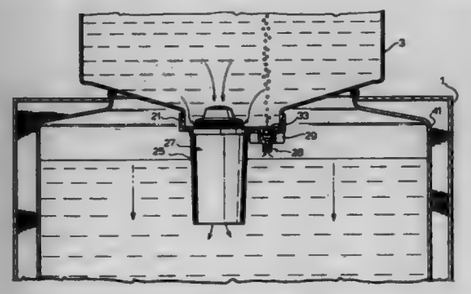
g. fractionating said cracked product rich vapor phase in a product fractionation means to produce an overhead vapor fraction, a liquid fraction containing at least one of C3 and C4 olefins and a catalytically cracked naphtha fraction.

5,486,285

AIR INLET VALVE FOR WATER COOLER

Brian Feeney, Toronto, Canada, assignor to The Clorox Company, Oakland, Calif.

Filed Jun. 10, 1994, Ser. No. 258,459
Claims priority, application Canada, Jun. 10, 1993, 2098127
Int. Cl.[6] B01D *35/143;35/027*
U.S. Cl. 210—85 **6 Claims**



5. For use in a water cooler having a reservoir adapted to receive a neck portion of an inverted water tank, a filter system comprising attachment means for removable connection to said neck portion and forming a water-tight seal therewith, sleeve means projecting from said attachment means for receiving a replaceable water filter adapted to pass water from said neck portion of said tank into said reservoir, and a one-way valve projecting from said attachment means for admitting air into said neck portion of said tank responsive to water flowing out of said neck portion of said tank via said water filter, said one-way valve including movable bead means adapted to prevent water from flowing therethrough while permitting air to pass therethrough, further comprising a rotatable indicator mounted to said one-way valve for monitoring replacement intervals of said replaceable water filter.

5,486,286

APPARATUS FOR PERFORMING A SELF-TEST OF KIDNEY DIALYSIS MEMBRANE

Bruce A. Peterson, Milwaukie; Mark E. Connell, Sandy; Robert A. Bedient, Portland, all of Oreg.; Raymond Elsen, Antwerp, Belgium; Michael E. Hogard, Oregon City, Oreg.; Harley D. Johnson, Portland, Oreg.; Thomas D. Kelly, Portland, Oreg.; Jean M. Long, Portland, Oreg.; William G. Preston, Jr., Portland, Oreg., and Dalibor J. Smejtek, Beaverton, Oreg., assignors to Althin Medical, Inc., Miami Lakes, Fla.

Division of Ser. No. 688,174, Apr. 19, 1991, Pat. No. 5,247,434.
This application Sep. 14, 1993, Ser. No. 122,047
Int. Cl.[6] B01D *61/34*
U.S. Cl. 210—87 **16 Claims**

1. A kidney dialysis machine comprising:

(a) a dialyzer having a dialysate compartment, a blood compartment separated from the dialysate compartment by a dialysis membrane, a dialysate input, a dialysate output, a blood input, and a blood output;

(b) means for preparing dialysate and means for circulating the dialysate through a dialysate circuit, the dialysate circuit including the dialysate compartment, the dialysate input and the dialysate output of the dialyzer;

(c) means for effecting extracorporeal circulation of blood from a dialysis patient through a blood circuit, the blood circuit including the blood compartment, the blood input, and the blood output of the dialyzer;

(d) means for delivering a first volume of dialysate to the dialysate compartment of the dialyzer;

(e) means for removing, simultaneously with delivering the first volume, a second volume of dialysate, equal to the first volume, from the dialysate compartment of the dialyzer;

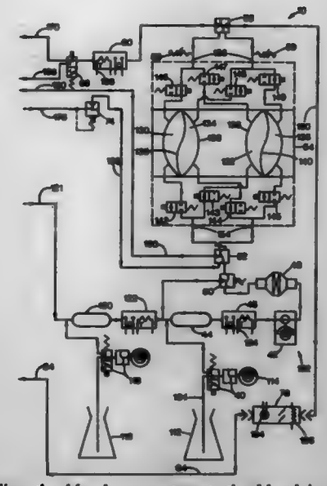
(f) means for creating a volumetrically closed hydraulic loop in the dialysate circuit between said means for delivering the first volume and said means for removing the second volume;

(g) pressure-monitoring means for monitoring hydraulic pressure in the closed loop against pressure alarm limits;

(h) means for effecting a preselected net passage of liquid from the blood compartment through the dialysis membrane to the dialysate compartment, said means comprising ultrafiltrate removal means situated in the closed loop, said ultrafiltrate removal means being operable to remove a preselected volume of liquid from the closed loop; and

(i) self-test means operative to perform, upon actuation, an automatic test of said means for effecting a preselected net passage of liquid from the blood compartment through the dialysis membrane to the dialysate compartment, wherein, during the test, said ultrafiltrate removal means removes a preset volume of liquid from the closed loop and said pressure monitoring means monitors a corresponding drop in pressure in the closed loop for a preset amount of time.

2. A kidney dialysis machine as recited in claim **1** wherein said ultrafiltrate removal means comprises an ultrafiltration flow meter situated in the dialysate circuit between said means for delivering the first volume and said means for delivering the second volume, the ultrafiltration flow meter operable to remove a preselected volume of liquid from the dialysate circuit between said means for delivering the first volume of dialysate and said means for delivering the second volume of dialysate.



5,486,287

WASTEWATER STRAINING DEVICE

Gary Murphy, San Diego, and Raymond Matthias, Vista, both of Calif., assignors to Murphy Marketing, Inc., San Diego, Calif.

Filed Sep. 26, 1994, Ser. No. 317,138
Int. Cl.[6] B01D *29/35*
U.S. Cl. 210—164 **20 Claims**

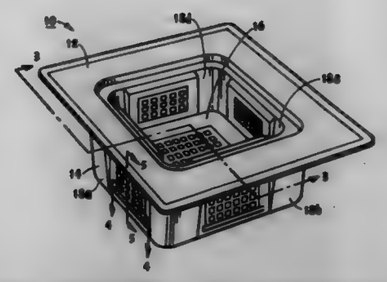
1. A device for preventing the passage of particulate matter into a wastewater drainage system, said device comprising:

a strainer frame including a base portion, an annular flange portion substantially parallel to said base portion and four side walls interconnecting said base portion and said annular flange portion, said annular frame portion defining an inlet, said base portion defining a primary outlet and at least one of said side walls defining a secondary outlet;

a primary filter covering said primary outlet such that said primary filter prevents passage of particulate matter through said primary outlet;

a secondary filter covering said secondary outlet such that said secondary filter prevents passage of particulate matter through said secondary outlet; and

a linear handle rigidly attached to said frame, said handle being positioned to be substantially coplanar with said annular flange portion of said frame.

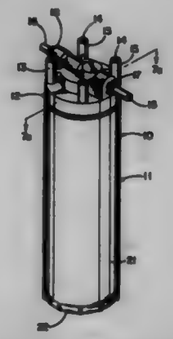


5,486,288

MOUNTING HEAD WITH SAFETY SHUT-OFF VALVE FOR REPLACEABLE FILTER CARTRIDGE

Ralph F. Stanford, Clinton, Iowa, and Stephen E. Gatz, Galt, Ill., assignors to Elkay Manufacturing Company, Oak Brook, Ill.

Division of Ser. No. 9,566, Jan. 26, 1993, Pat. No. 5,336,406.
This application Apr. 12, 1994, Ser. No. 226,639
Int. Cl.[6] B01D *27/08;27/10*
U.S. Cl. 210—235 **14 Claims**



1. A mounting head for receiving a replaceable filter cartridge enclosing a filter medium and having at one end concentric entrance and exit passages confined within an axially outwardly projecting annular wall and a concentric, axially outwardly projecting hollow stem, respectively, and said filter cartridge also having radially outwardly projecting mounting means disposed on said annular wall for securing and locking said filter cartridge to said mounting head,

said mounting head comprising, in combination,

means defining inlet and outlet ports in said mounting head and inlet and outlet passages connected thereto for communicating fluid respectively to and from said entrance and exit passages of said filter cartridge,

an outer cavity and an intermediate cylindrical recess formed in said mounting head for sealingly receiving said annular wall of said filter cartridge therein, said mounting head inlet passage communicating with said cylindrical recess,

a hollow inner sleeve having a central bore disposed concentrically within said cylindrical recess, said central bore communicating with said mounting head outlet passage and being

dimensioned and disposed to sealingly receive said hollow stem of said filter cartridge therein,

circumferentially disposed mounting means located in said outer cavity for cooperating with said filter cartridge mounting means for permitting quick locked connection and unlocked disconnection of said filter cartridge to and from said mounting head incident to axial rotation of said filter cartridge in opposite directions, respectively, relative to said mounting head,

and valve means disposed in said inlet passage, said valve means being biased to a normally closed position and adapted to be opened incident to axial rotation of said filter cartridge into fully locked connection with said mounting head.

5,486,289

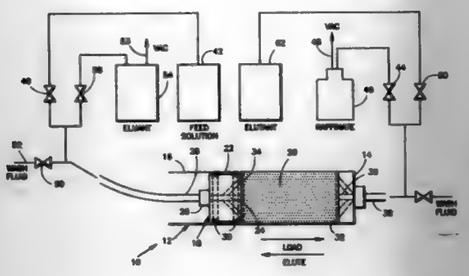
SYSTEM FOR MECHANICALLY STABILIZING A BED OF PARTICULATE MEDIA

Edward D. McCullough, Riverside, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Sep. 6, 1994, Ser. No. 301,106

Int. Cl.[6] B01D *15/04;15/08;53/02*

U.S. Cl. 210—289 **4 Claims**



1. A system for mechanically stabilizing a bed of particulate media which undergoes changes in volume during operation, comprising:

a) a tubular column being closed and ported at a first end and having an open second end, said tubular column containing a bed of particulate media;

b) a piston assembly supported in said column for retaining said bed of particulate media, said piston assembly, comprising:

i) a piston having at least one opening therethrough for conveying a fluid through said piston to said bed;

ii) means for attaching a fluid connection to said piston in fluid communication with said opening, wherein said fluid connection is movable relative to said tubular column;

iii) resilient sealing means arranged about said piston to provide sealing engagement of said piston and said column and to provide proper alignment therebetween; and,

iv) porous barrier elements positioned in said column and defining means for preventing the undesired escape of particulate media through said tubular column port and through said piston opening;

said tubular column port and fluid connection being connectable to either a source of fluid or vacuum wherein said connection of said tubular column port and said fluid connection to either said source of fluid or vacuum defines means for drawing fluid, through said bed in either direction generally parallel to the longitudinal axis of said tubular column at a pressure below ambient, and for causing said piston to respond at said pressure below ambient to changes in volume of the particulate media so as to continually compress and compact the particulate media regardless of the direction of fluid flow.

5,486,290

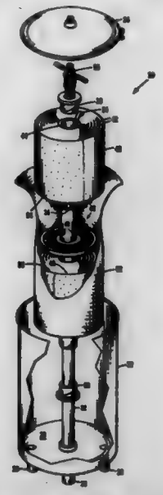
FLUID FILTER COLLECTOR WITH OPPOSED RIBS

Edward A. McGinness, New Philadelphia, Ohio, and Gary McHone, Beloit, Wis., assignors to Harvard Corporation, Evansville, Wis.

Continuation of Ser. No. 862,783, Jan. 9, 1992, abandoned. This application Feb. 28, 1995, Ser. No. 396,348

Int. Cl.[6] B01D *29/54;35/00*

U.S. Cl. 210—323.2 **9 Claims**



1. A pressurized axial flow fluid filter having a liquid tight container with at least one inlet port and outlet port, and a plurality of filter elements having wound layers of tissue, said filter elements having a generally cylindrical shape and an inner core defining flow path extending from the filter elements to the outlet port, and a fluid collector located between and engaging the two filter elements, the fluid collector comprising:

a) an annulus arranged perpendicular to the flow path and which has a top surface which is engaged against a first filter element, the top surface extending substantially perpendicular to the flow path;

b) a plurality of concentric annular ribs coaxial with the annulus and having a top surface substantially coplaner with the top surface of the annulus, the outer annular rib having a rim annulus;

c) a plurality of radial ribs which extend between the annulus and the annular ribs, wherein the radial ribs extend axially beneath the rim annulus and annular ribs, and wherein the radial ribs have a bottom surface substantially parallel to and beneath the top surface of the annular ribs, the radial rib bottom surfaces engaged against an axial end of a second filter element having wound layers of tissue beneath the first filter element, wherein the radial ribs define a plurality of radial flow passages between the first and second filter elements which direct fluid from the filter elements to the flow path and the annular ribs define a plurality of axial flow passages which direct fluid into the radial flow passages.

5,486,291

ECOLOGICAL FLUIDIZED BED METHOD FOR THE TREATMENT OF POLLUTED WATER

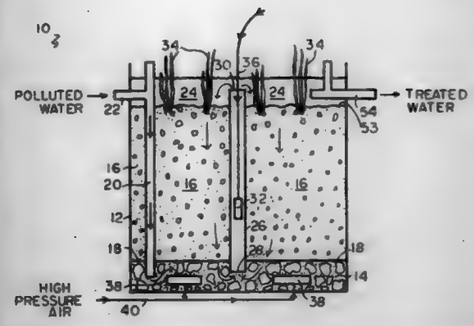
John H. Todd, Falmouth, Mass., and James M. Shaw, Shelburne, Vt., assignors to Ocean Arks International, Inc., Falmouth, Mass.

Filed Nov. 10, 1993, Ser. No. 149,964

Int. Cl.[6] C02F *3/08*

U.S. Cl. 210—602 **27 Claims**

1. A method for the treatment of polluted water in a fluidized bed system to provide treated water, which method comprises:



a) providing a housing having first and second adjacent chambers therein, said first and second chambers connected to permit the flow of circulated polluted water between said first and second chamber in said housing;

b) introducing polluted water to be treated at a flow-through rate into said first chamber;

c) maintaining in said second chamber circulating polluted water with semi-buoyant particulate media, having a specific gravity of about 0.9 to 1.0, in the presence of an ecosystem means for the treatment of the polluted water;

d) maintaining in said first chamber circulating polluted water essentially free of particulate media;

e) circulating the polluted water between the first and second chambers at a rate about ten times or greater than the flow-through rate of the polluted water; and

f) withdrawing from the housing a treated water essentially free of particulate media.

5,486,292

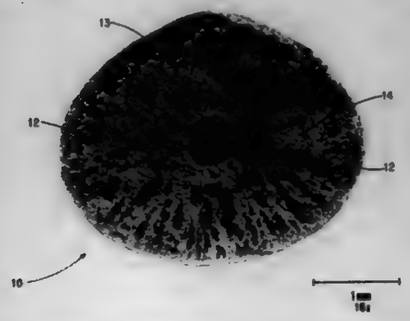
ADSORBENT BIOCATALYST POROUS BEADS

Thomas I. Bair, Wilmington, Del., and Carl E. Camp, Ponca City, Okla., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 3, 1994, Ser. No. 205,689

Int. Cl.[6] C02F *3/10*

U.S. Cl. 210—616 **7 Claims**



5. A process for detoxification of an aqueous waste stream containing an organic chemical contaminant, comprising the steps of

passing the waste stream through, a bioreactor in which bacterial biocatalyst material is supported within porous synthetic organic polymeric beads and activated carbon powder is dispersed throughout the polymer of the beads, wherein the beads are formed from an aramid polymer and have a microporosity characterized by a BET specific surface area of at least 400 m^2/g amd macropores characterized by a mercury intrusion volume in the range of 1.8 to 2.5 cubic centimeters per gram

adsorbing the organic contaminant onto the activated carbon powder particles of the bioreactor bead,

bacteria located in the macropores of the bead being the biocatalyst metabolizing the adsorbed chemical contaminant to water, carbon dioxide and/or nitrogen and thereby regenerating adsorbent capacity of the carbon powder, and

discharging from the bioreactor an aqueous stream that is substantially free of the contaminant.

5,486,293

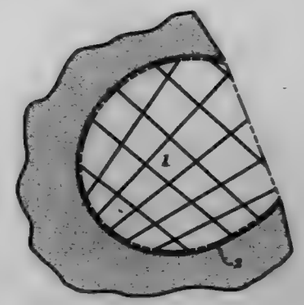
REMOVAL OF SMALL EXOGENOUS MOLECULES FROM BIOLOGICAL FLUIDS

Egisto Boschetti, Croissy; Pierre Girot, Paris, and Luc P. Guerrier, Chilly-Mazarin, all of, France, assignors to Hemasure, Inc., Marlborough, Mass.

Filed Mar. 21, 1994, Ser. No. 215,201

Int. Cl.[6] B01D *15/00;15/08*

U.S. Cl. 210—635 **16 Claims**



1. A method for removing contaminants from a biological fluid comprising bringing said biological fluid into contact with a cross-linked hydrophobic polymer network overlaying, but not covalently bound to a porous mineral oxide matrix, said mineral oxide matrix having interior porous volume substantially filled by said hydrophobic polymer network, said mineral oxide matrix having interior porous volume free or hydrophilic polymers, whereby hydrophobic and amphiphilic molecules of molecular weight below 10,000 daltons are simultaneously removed from said biological fluid.

5,486,294

METHOD OF INHIBITING BARIUM SULFATE AND STRONTIUM SULFATE SCALE AT LOW PH

J. Michael Brown, The Woodlands, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Sep. 30, 1994, Ser. No. 316,611

Int. Cl.[6] C02F *5/10*

U.S. Cl. 210—674 **4 Claims**

1. A method of controlling the formation and deposition of barium and strontium scale forming salts in an aqueous water softening system resin regeneration stream interface zone having a pH of from about 1 to about 4, wherein acid regenerant is neutralized with oilfield produced water, comprising adding to said aqueous system a substoichiometric amount sufficient for the purpose of a treatment solution comprising polyepoxysuccinic acid.

5,486,295

METHOD FOR TREATING POLYMER-CONTAINING WATERS TO ALLOW USE AS COOLING TOWER MAKEUP

Paul R. Young, Wheaton, Ill., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Dec. 12, 1994, Ser. No. 354,389
Int. Cl.[6] C02F *5/12*
U.S. Cl. 210—701 11 Claims

1. A method for recycling boiler blowdown water containing a water soluble polymer which forms deposits on heat transfer surfaces when said water is added to a recirculating cooling water system, the water in said cooling water system containing at least 100 ppm of hardness calculated as $CaCO_3$, which comprises the steps of:

a) adding to the boiler blowdown water containing the water soluble polymer from 0.01 to 10 parts by weight of a water soluble persulfate salt per each part by weight of polymer contained in the water;

b) reacting the persulfate salt with the water soluble polymer contained in the water for a sufficient period of time to reduce the molecular weight of the water soluble polymer; and then,

c) adding the water to said recirculating cooling water system wherein the amount of deposit formed on the heat transfer surfaces of the recirculating cooling water system is reduced.

5,486,296

DETOXIFICATION FOR QUATERNARY AMMONIUM COMPOUNDS WITH LIGNOSULFONATES

Joseph C. Petrille, III, North Wales; Stephen R. Vasconcellos, Doylestown, and Michael W. Werner, Warrington, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Mar. 1, 1995, Ser. No. 396,941
Int. Cl.[6] C02F *1/66*
U.S. Cl. 210—749 6 Claims

1. A method of detoxifying water containing quaternary ammonium compounds toxic to aquatic organisms comprising adding thereto an amount of a lignosulfonate sufficient to neutralize the toxicity of the quaternary ammonium compounds to aquatic organisms.

5,486,297

DYE FADING PROTECTION FROM SOIL RELEASE AGENTS

Edgar M. Marin-Carrillo; Luis A. Amestica; Francisco R. Figueroa, all of Caracas, and Ana M. Ramirez-Semeco, El Valle, all of, Venezuela, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 14, 1994, Ser. No. 259,724
Int. Cl.[6] D06M *10/08;* C11D *3/37*
U.S. Cl. 252—8.6 12 Claims

1. A method of reducing dye fading of a fabric comprising depositing on the fabric a soil release agent having an absorptivity of at least about 1×10^{-5} $(ppm\text{-}cm)^{-1}$ in the wavelength range between about 200 nanometers and about 700 nanometers, the soil release agent being a water-soluble or water-dispersible soil release agent comprising at least about 10% by weight of a substantially linear sulfonated poly-ethoxy/propoxy end-capped ester having molecular weight ranging from about 500 to about 8,000, the ester consisting essentially of on a molar basis:

i) from about 1 to about 2 moles of sulfonated poly-ethoxy/propoxy end-capping units of the formula:

$(MO_3S)(CH_2)_m(CH_2CH_2O)(RO)_n$ — wherein M is a salt-forming cation, m is 0 or 1, R is ethylene, propylene or a mixture thereof, and n is from 0 to 2; and mixture thereof;

ii) from about 0.5 to about 66 moles of units selected from the group consisting of:

a) oxyethyleneoxy units;

b) a mixture of oxyethyleneoxy and oxy-1,2-propyleneoxy units wherein said units are present in an oxyethyleneoxy to oxy-1,2-propyleneoxy mole ratio ranging from 0.5:1 to about 10:1; and

c) a mixture of a) or b) with poly(oxyethylene)oxy units wherein said poly(oxyethylene)oxy units have a degree of polymerization of from 2 to 4; provided that when said poly(oxyethylene)oxy units have a degree of polymerization of 2, the mole ratio of poly(oxyethylene)oxy units to total group ii) units ranges from 0:1 to about 0.33:1; and when said poly(oxyethylene)oxy units have a degree of polymerization of 3, the mole ratio of poly(oxyethylene)oxy units to total group ii) units ranges from 0:1 to about 0.22:1; and when said poly(oxyethylene)oxy units have a degree of polymerization of 4, the mole ratio of poly(oxyethylene)oxy units to total group ii) units ranges from 0:1 to about 0.14:1;

iii) from about 1.5 to about 40 moles of terephthaloyl units; and

iv) from 0 to about 26 moles of 5-sulfoisophthaloyl units of the formula —(O)C(C_6H_3)(SO_3M)C(O)— wherein M is a salt forming cation.

5,486,298

FIBER TREATMENT COMPOSITIONS

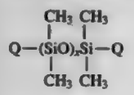
Takayuki Aso; Isao Ona, and Masaru Ozaki, all of Chiba Prefecture, Japan, assignors to Dow Corning Toray Silicone Company, Ltd., Tokyo, Japan

Filed Feb. 24, 1995, Ser. No. 393,757
Claims priority, application Japan, Feb. 25, 1994, 6-052774
Int. Cl.[6] D06M *13/50;* C08K *5/54*
U.S. Cl. 252—8.6 22 Claims

1. A fiber treatment composition comprising:

(A) 100 weight parts of dimethylpolysiloxane having a viscosity of 3 to 30 mm^2/s at 25° C.;

(B) 0.5 to 50 weight parts of a polyoxyalkylene-functional diorganopolysiloxane having the formula:



wherein Q is a group having the formula:

$$—RO(C_3H_6O)_a(C_2H_4O)_bR^1$$

wherein R denotes an alkylene group having from 2 to 5 carbon atoms, R^1 is a radical selected from the group consisting of a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms, a —$COCH^3$ group, and —COR^2COOH groups wherein R^2 is a divalent hydrocarbon group having from 1 to 15 carbon atoms, a has a value of 1 to 15, b has a value of 1 to 15, with the proviso that the ratio of a to b is from 0.1 to 10, the units expressed by $(C_3H_6O)_a$ in the formula constitute a block, the units expressed by $(C_2H_4O)_b$ constitute a block, and x has a value of at least 1; and

(C) 0.003 to 1 weight parts of an antioxidant selected from the group consisting of:

(i) an amine-containing antioxidant;

(ii) a phenol-containing antioxidant; and

(iii) a mixture of (i) and (ii).

5,486,299

WEAR-RESISTANT LUBRICANT COMPOSITION

Yoshio Fuwa; Kouji Saitou, both of Aichi, and Jiro Yamashita, Kanagawa, all of, Japan, assignors to Dow Corning Asia, Ltd, Tokyo, and Toyota Motor Company, Aichi, both of, Japan

Filed Nov. 2, 1994, Ser. No. 333,462
Claims priority, application Japan, Nov. 2, 1993, 5-274576
Int. Cl.[6] C10M *107/44;* C02F *1/00;3/10*
U.S. Cl. 252—12 1 Claim

1. A wear resistant lubricant composition comprising from 50 to 73 weight percent of a binder consisting essentially of at least one member selected from the group consisting of polyamidimide resins and polyamide resins, and, as solid lubricants, from 3 to 15 weight percent of polytetrafluoroethylene, from 20 to 30 weight percent of molybdenum disulfide, and from 2 to 8 weight percent of graphite; wherein the total concentration of said solid lubricants constitutes from 27 to 50 percent of the total weight of said composition.

5,486,300

LUBRICATING COMPOSITIONS

Mary F. Salomon, Mayfield Village; Kirk E. Davis, Chester Township; Jack L. Karn, Richmond Heights, and John M. Cahoon, Mentor, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 688,195, Apr. 19, 1991, abandoned. This application Jul. 21, 1994, Ser. No. 278,344
Int. Cl.[6] C10M *125/00*
U.S. Cl. 252—18 45 Claims

1. A lubricating oil composition, comprising: a major amount of an oil of lubricating viscosity; and

(A) an amount of at least one alkali metal overbased salt of an acidic organic compound sufficient to provide at least about 0.005 equivalents up to about 0.025 equivalents of alkali metal per 100 grams of the lubricating composition;

(B) at least about 1.13% by weight up to about 5% by weight of at least one dispersant;

(C) at least one metal dihydrocarbyl dithiophosphate; and

(D) at least one antioxidant, provided that the lubricating oil composition is free of calcium overbased sulfonate; provided that the composition contains less than about 0.08% by weight calcium; and provided that (C) and (D) are not the same.

5,486,301

MODIFIED SUCCINIMIDES AS DISPERSANTS AND DETERGENTS AND LUBRICANT AND FUEL COMPOSITIONS CONTAINING SAME

Guy P. Abramo, Herndon, Va.; David A. Blain, Mount Laurel, and Angeline B. Cardis, Florence, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 912,369, Jul. 13, 1992, Pat. No. 5,435,812, and a continuation-in-part of Ser. No. 540,722, Jun. 21, 1990, abandoned. This application May 12, 1995, Ser. No. 440,398
Int. Cl.[6] C10M *133/56*
U.S. Cl. 252—51.5 A 6 Claims

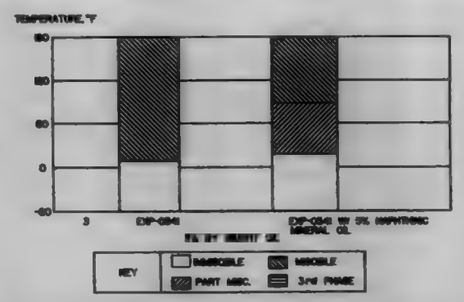
1. A lubricant composition comprising a major amount of an oil of lubricating viscosity or grease prepared therefrom and between about 0.1 to about 10% by weight of the total compositions of a reaction product obtained by reacting an aromatic acid bis(polyether ester) and a substituted succinimide in molar, less than molar or more than molar amounts, where the pressure is autogenous or varies from ambient to slightly higher pressures of about 100 psi, and at temperatures of from about 85° to about 225° C. for a time sufficient to obtain a desired aromatic acid bis(polyether ester) modified succinimide which time varies from 1 to about 24 hours or more.

5,486,302

LUBRICANT COMPOSITION FOR FLUORINATED REFRIGERANTS USED IN COMPRESSION REFRIGERATION SYSTEMS

Glenn D. Short, Midland, Mich., assignor to CPI Engineering Services, Inc., Midland, Mich.

Continuation of Ser. No. 770,615, Oct. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 642,464, Jan. 17, 1991, abandoned. This application Dec. 19, 1994, Ser. No. 358,968
Int. Cl.[6] C10M *105/34*
U.S. Cl. 252—56 S 3 Claims



1. A fluid composition comprising a non-chlorinated, fluorinated hydrocarbon refrigerant and an ester lubricant base having a viscosity suitable for compression refrigeration and miscible in said non-chlorinated, fluorinated, hydrocarbon refrigerant in the range from 20° F.–80° F. at a percent by weight of lubricant base to refrigerant of at least 3%, said lubricant base consisting essentially of an ester made by reacting mono-pentaerythritol with an acid blend consisting of substantially 70% branched 3, 5, 5, trimethylhexanoic acid and a remainder comprising a mixture of substantially linear carboxylic C_7, C_8, and C_{10} acid.

5,486,303

PROCESS FOR MAKING HIGH DENSITY DETERGENT AGGLOMERATES USING AN ANHYDROUS POWDER ADDITIVE

Scott W. Capeci, North Bend; James W. Osborn, Cincinnati, both of Ohio; Adrian J. W. Angell, Strombeek-Bever, and Paul van Dijk, Putte, both of, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 113,572, Aug. 27, 1993, Pat. No. 5,366,652. This application Aug. 3, 1994, Ser. No. 283,131
Int. Cl.[6] C11D *11/00;17/06*
U.S. Cl. 252—89.1 16 Claims

1. A process for preparing high density detergent agglomerates comprising the steps of:

(a) charging a viscous surfactant paste into a mixer/densifier wherein said surfactant paste has a viscosity of from about 5,000 cps to about 100,000 cps and contains from about 70% to 95%, by weight of said surfactant paste, of a detersive surfactant and the balance water;

(b) adding from about 1% to about 70% by weight of an anhydrous material selected from the group consisting of carbonates, sulfates, carbonate/sulfate complexes, tripolyphosphates, tetrasodium pyrophosphate, citrates, aluminosilicates, cellulose-based materials and organic synthetic polymeric absorbent gelling materials into said surfactant paste just prior to entrance into said mixer/densifier to absorb at least a minor amount of said water from said surfactant paste; and

(c) agglomerating said surfactant paste and said anhydrous material by treating said surfactant paste and said anhydrous material initially in a high speed mixer/densifier and subsequently in a moderate speed mixer/densifier so as to form detergent agglomerates having a density of at least about 650 g/l.

5,486,304

FRAGRANT DENTURE CLEANSER COMPOSITION

Anthony B. Eoga, Boonton, and Richard G. Moran, Lake Hopatcong, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 160,378, Dec. 1, 1993, Pat. No. 5,384,062. This application Oct. 13, 1994, Ser. No. 322,889

Int. Cl.[6] A61K *7/30;* C11D *3/39;3/48;17/00*

U.S. Cl. 252—99 41 Claims

1. A denture cleansing composition derived from a mixture comprising:

(a) a pregranulated compressed mixture of an anhydrous perborate in an amount of from about 5% to about 25% by weight of said composition, a perborate monohydrate, and a lubricant and compression aid, wherein the weight ratio of anhydrous perborate to said perborate monohydrate in said pregranulated mixture is from about 1:3 to about 1:1, the amount of perborate monohydrate in the premixture being reflected by the ratio; and

(b) a monopersulfate compound in an amount of from about .15% to about 27% by weight of said composition; and

(c) non-granulated perborate monohydrate wherein the total amount of granulated and non-granulated perborate monohydrate is in an amount of from about 30% to about 60% by weight of said denture cleansing composition; and

(d) an effective amount of a sequestering agent to remove calcium deposits and calculus deposits.

5,486,305

NAIL POLISH REMOVER

Joseph R. Faryniarz, Oxford, and Philip E. Miner, Newtown, both of Conn., assignors to Chesebrough-Pond's USA Co., Greenwich, Conn.

Filed Sep. 19, 1994, Ser. No. 308,233

Int. Cl.[6] C09D *9/00;* C11D *7/50*

U.S. Cl. 252—162 9 Claims

1. A polish-lacquer removing composition consisting essentially of:

(i) from about 60 to about by 80% by weight of a volatile organic solvent selected from the group consisting of acetone, ethyl acetate and combinations thereof;

(ii) from about 3 to about 20% by weight of a C_4–C_{30} diester exhibiting a vapor pressure of less than 0.1 mm at 20° C.;

(iii) from about 5 to about 20% by weight of water;

(iv) optionally from 0 to about 20% by weight of propylene carbonate;

(v) optionally from 0 to about 20% by weight of a humectant; and

(vi) optionally from 0 to about 10% by weight of an emollient.

5,486,306

FOAM CONTROL AGENTS

Jacqueline L'Hostis, Woluwe-Saint-Lambert; Franck A. D. Renauld, Gistoux, and George C. Sawicki, Rixensart, all of, Belgium, assignors to Dow Corning, S.A., Seneffe, Belgium

Filed Jun. 25, 1993, Ser. No. 81,873

Claims priority, application United Kingdom, Jul. 9, 1992, 9214567

Int. Cl.[6] B01D *19/04;* C11D *3/00*

U.S. Cl. 252—174.15 20 Claims

1. A foam control agent which is free from hydrocarbon oils and comprises (A) from 70 to 99.9 parts by weight of an organopolysiloxane of which the siloxane units consist essentially of 0 to 60% of units of the general formula (i)

$$R_aSiO_{\frac{4-a}{2}}$$

wherein R denotes a hydrocarbon group having up to 8 carbon atoms and a has a value of from 0 to 3, and for 40 to 100% of units of the general formula (ii)

$$R_bR^*_cSiO_{\frac{4-b-c}{2}}$$

wherein R is as defined above R* denotes a group $—Z_z—R'$ wherein R' denotes an alkyl group having from 9 to 35 carbon atoms, Z denotes a linking group between silicon and R' and z has a value of 0 or 1, b has a value of 0, 1, or 2, c has a value of 1 or 2, and b+c has a value of 1, 2, or 3, provided more than 70% by weight of the carbon content of the organopolysiloxane is due to the groups R*; and (B) from 0.1 to 30 parts by weight of a finely divided hydrophobic particulate material.

5,486,307

LIQUID CLEANING COMPOSITIONS WITH GREASE RELEASE AGENT

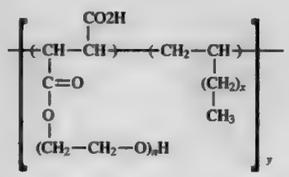
Anne-Marie Misselyn, Villers-l'Eveque; Marianne Mahieu, Ferrieres, and Rita Erilli, Rocourt, all of, Belgium, assignors to Colgate-Palmolive Co., Piscataway, N.J.

Continuation-in-part of Ser. No. 155,358, Nov. 22, 1993. This application Nov. 15, 1994, Ser. No. 336,935

Int. Cl.[6] C11D *3/37;3/04;3/12;1/02*

U.S. Cl. 252—174.24 28 Claims

1. A stable microemulsion composition comprising approximately by weight: 0.1% to 20% of an anionic surfactant, 0.1% to 50% of a cosurfactant, 0.1% to 10% of a grease release agent, 0.1% to 10% of a water insoluble hydrocarbon or a perfume and the balance being water, wherein said grease release agent is selected from the group consisting of a copolymer characterized by the formula:



wherein n is 5 to 14, x is 7 to 19, and y is of such a value as to provide a molecular weight 10,000 to 30,000.

5,486,308

COMPOSITIONS COMBINATIONS OF DESSICANTS AND VAPOR-CORROSION INHIBITORS

Donald P. Mayeaux, Prairieville, La., assignor to A+ Corp., Denham Springs, La.

Division of Ser. No. 990,041, Dec. 14, 1992, Pat. No. 5,324,448. This application Apr. 4, 1994, Ser. No. 222,709

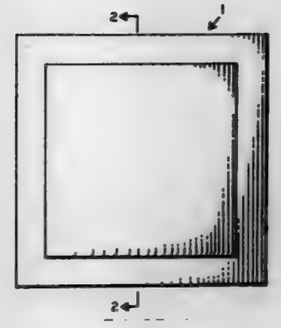
Int. Cl.[6] C23F *11/14;11/173*

U.S. Cl. 252—194 2 Claims

1. A composition for extending the service life of a vapor-corrosion inhibitor, the composition consisting essentially of:

(a) from about ten to about ninety-nine and nine-tenths percent by weight of a granular dessicant which gels upon exposure to water vapor and which is a sodium or potassium salt of poly(acrylic) acid; and

(b) from about one-tenth to about ninety percent by weight of a granular vapor-corrosion inhibitor which is chemically compatible with the dessicant and which is at least partially soluble in the gelled dessicant, the corrosion inhibitor being benzotriazole, tolytriazole, and dicyclohexylamine nitrite.



5,486,309

CHIRAL LIQUID CRYSTAL COMPOUNDS

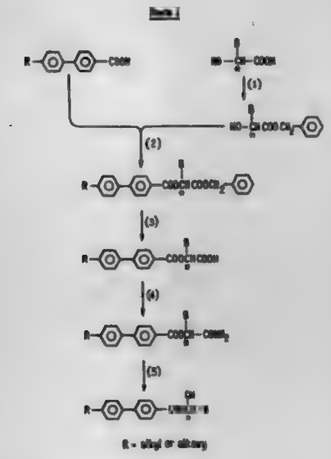
George W. Gray; David Lacey; Kenneth J. Toyne; Richard M. Scrowston, all of Hull; Ibrahim G. Shenouda, Hull; Lawrence K. M. Chan, Northolt; Madeline J. Bradshaw, Nr Newent; Victoria Brimmell, Earls Croome; Jennifer Constant, Powick; Edward P. Raynes, Malvern, all of, England; Adam Jackson, Trondheim, Norway, and Amarjit K. Samra, Wares, England, assignors to The Secretary of State for Defence in Her Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Division of Ser. No. 3,827, Jan. 3, 1993, Pat. No. 5,384,071, which is a continuation of Ser. No. 734,105, Jul. 24, 1991, abandoned, which is a continuation of Ser. No. 305,730, Feb. 1, 1989, abandoned. This application Sep. 22, 1993, Ser. No. 105,675

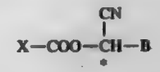
Claims priority, application United Kingdom, Jun. 23, 1986, 8615316

Int. Cl.[6] C09K *19/06;19/12;19/30;* G02F *1/13*

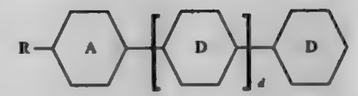
U.S. Cl. 252—299.60 8 Claims



1. A ferroelectric smectic liquid crystal mixture comprising an optically active dopant, said dopant having the structure



in which X is a group having the formula:



where R is selected from hydrogen C_{1-12} alkyl or alkoxy, each of the rings D is the same or different and are independently selected from phenyl and halogen substituted phenyl, A is selected from phenyl, halogen substituted phenyl and trans-cyclohexyl, d is 0 or 1 and B is selected from C_{1-12} straight chain or branched chani alkyl and cyclohexyl provided that when d is 0 neither A nor D is halogen substituted phenyl.

5,486,310

LIQUID CRYSTALLINE MIXTURES HAVING A CHIRAL TILTED SMECTIC PHASE

Richard Buchecker, Zurich, Switzerland; Nina I. Chernova, Moscow, U.S.S.R.; Alexander V. Ivanchenko, Moscow, U.S.S.R.; Marina V. Loseva, Moscow, U.S.S.R.; Olga S. Petrashevich, Moscow, U.S.S.R.; Evgenij P. Pozhidaev, Moscow, U.S.S.R.; Arnold Z. Rabinovich, Moscow, U.S.S.R., and Martin Schadt, Seltisberg, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J., and Niopic Moscow Research and Production Association, Moscow, U.S.S.R.

Continuation of Ser. No. 68,489, May 27, 1993, abandoned, which is a division of Ser. No. 883,245, May 7, 1992, Pat. No. 5,242,619, which is a continuation of Ser. No. 343,477, Apr. 26, 1989, abandoned. This application Feb. 18, 1994, Ser. No. 198,689

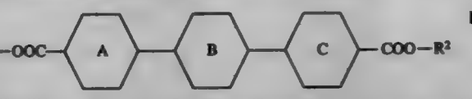
Claims priority, application Switzerland, Apr. 27, 1988, 1570/88

Int. Cl.[6] C09K *19/34;19/12;* C07C *69/76;* C02F *1/13*

U.S. Cl. 252—299.61 12 Claims

1. An optically active compound of the formula

I



wherein rings A, B and C each independently are 1,4-phenylene, which is unsubstituted or substituted with halogen, or is pyrimidin-2,5-diyl or pyridin-2,5-diyl, with the proviso that no more than one of the rings A, B or C is pyrimidin-2,5-diyl or pyridin-2,5-diyl; R^1 is a group $—(CH_2)_m—C^*HX^1—R^3$; R^2 is a group $—(CH_2)_n—C^*HX^2—R^4$; m and n each independently stand for the number 0 or 1; C^* denotes a chiral carbon atom; X^1 and X^2 each independently are methyl or methoxy; R^3 and R^4 each independently are a group R, provided that R^3 is different from X^1 and R^4 is different from X^2; R is an C_{1-15} alkyl or an C_{2-15} alkenyl group, provided that R^1 and R^2 are not simultaneously 2-alkyl when rings A, B and C together are unsubstituted p-terphenyl.

5,486,311

OPTICALLY ERASABLE READ-AND-WRITE LIQUID CRYSTAL/SIDE-CHAIN LIQUID CRYSTALLINE POLYMER COMPOSITION AND METHOD OF MAKING RECORDATION ON THE SAME

Ging-Ho Hsiue; Jow-Tsong Shy, both of Hsinchu; Jang-Jeng Liang, and Wen-Chang Chiang, both of Taoyuan, all of, Taiwan, Prov. of China, assignors to National Science Council, Taipei, Taiwan, Prov. of China

Filed Sep. 15, 1993, Ser. No. 121,768

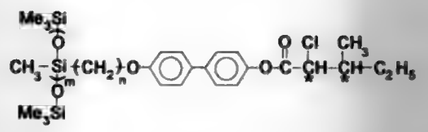
Int. Cl.[6] C09K *19/12;19/20*

U.S. Cl. 252—299.66 17 Claims

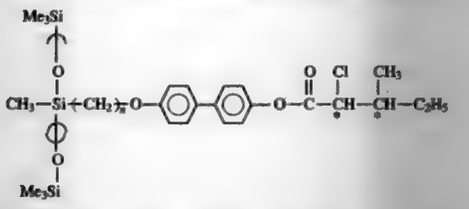
1. A liquid crystal/side chain liquid crystal polymer composition for use as an optical recording medium comprising:

(1) 45 to 85 wt % of a nematic ester liquid crystal; and

(2) 15 to 55 wt % of a side-chain polymethylsiloxane liquid crystal polymer having a molecular weight between 4,000 to



10,000, wherein said side-chain polymethylsiloxane liquid crystal polymer is represented by the following formula:



where n and m are integers less than 30 and 120, respectively, and said n and m are selected such that the molecular weight of said side-chain polymethylsiloxane liquid crystal polymer is between 4,000 and 10,000.

5,486,312

HIGH TEMPERATURE STABLE GELS

Burton B. Sandiford, Balboa Island; Honi T. Dovan, Yorba Linda, and Richard D. Hutchins, Placentia, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 940,301, Aug. 31, 1992, Pat. No. 5,246,073. This application Sep. 10, 1993, Ser. No. 119,715

Int. Cl.[6] B01J *13/00;* **C08F** *8/32;* **C09K** *3/00*

U.S. Cl. 252—315.1 **58 Claims**

22. A composition comprising:

(a) an ingredient selected from the group consisting of a water soluble, crosslinkable polymer selected from the group consisting of polymethacrylamides, polyacrylamides, acrylic acid-acrylamide copolymers, and acrylic acid-methacrylamide copolymers and polymerizable monomers capable of forming a crosslinkable polymer selected from the group consisting of polymethacrylamides, polyacrylamides, acrylic acid-acrylamide copolymers, and acrylic acid-methacrylamide copolymers;

(b) a crosslinking agent comprising hexamethylenetetramine;

(c) water; and

(d) a stabilizing agent selected from the group consisting of buffering agents having a buffering capacity at a pH greater than about 8, chelating agents, and mixtures thereof,

provided that, when the stabilizing agent comprises a buffering agent, the composition comprises at least 0.05 weight percent buffering agent; and, when the stabilizing agent comprises a chelating agent, the composition comprises at least 0.75 mole of chelating agent per mole of divalent cations dissolved in the composition.

34. A gel formed from the composition of claim 22.

5,486,313

PROCESS FOR THE PREPARATION OF CARBON MONOXIDE AND/OR HYDROGEN

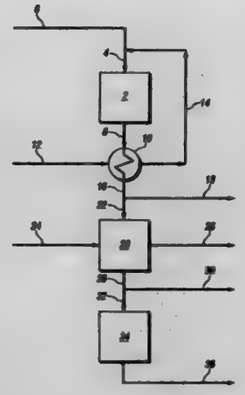
Krijn P. De Jong; Peter W. Lednor; Anna E. M. Oud; Ronald J. Schoonebeek; Koert A. Vonkeman, and Gerardus P. Van Der Zwet, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 21, 1994, Ser. No. 361,358

Claims priority, application European Pat. Off., Dec. 27, 1993, 93203705

Int. Cl.[6] C07C *1/02*

U.S. Cl. 252—373 **14 Claims**



1. A process for the preparation of carbon monoxide and/or hydrogen from a hydrocarbon feedstock, which process comprises subjecting the hydrocarbon feedstock in a first stage to a catalytic partial oxidation process comprising contacting a gaseous mixture comprising the hydrocarbon feedstock and an oxygen-containing gas, which gaseous mixture also comprises nitrogen, with a catalyst comprising as a catalytically active metal rhodium, iridium or platinum and subjecting at least a portion of the products of the first stage in a second stage to a process in which ammonia and/or hydrogen cyanide is removed.

5,486,314

CLEANING AGENT CONTAINING GLYCOL ETHERS

Oskar K. Wack, Stammham-Westerhofen, and Martin Hanek, Hilpoltstein, both of, Germany, assignors to O. K. Wack Chemie GmbH, Germany

Filed Jul. 16, 1993, Ser. No. 92,707

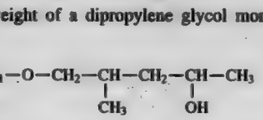
Claims priority, application European Pat. Off., Aug. 7, 1992, 92113503; Aug. 7, 1992, 92113504

Int. Cl.[6] C11D *7/32;7/26;7/50;* **C23G** *5/036;5/02*

U.S. Cl. 252—542 **13 Claims**

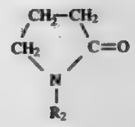
1. A cleaning agent for precision mechanics, optical and electronic components, circuit boards and electronic assembly units consisting of:

10–90% by weight of a dipropylene glycol monoether of the formula:



as carrying agent, whereby R_1 is a chain of carbon atoms of a length between 1 and 6 atoms, and

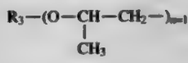
a compound selected from the group consisting of, a) 30–70% per weight of N-alkyl-lactame of the formula:



whereby R_2 is chain of carbon atoms of a length between 1 and 10 atoms,

b) 10–70% per weight of dihydro-2(3H) - furanone and

c) 10–50% per weight of at least one polypropylene glycol ether of the formula:



whereby R_3 is a chain of carbon atoms of a length between 1 and 6, and R_4 is hydrogen or a chain of carbon atoms of a length between 1 and 6 atoms.

5,486,315

LOW FOAM BRANCHED ALKYLDIMETHYLAMINE OXIDES

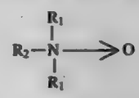
Chuen-Ing J. Tseng, Lawrenceville, N.J., assignor to Lonza Inc., Fair Lawn, N.J.

Filed May 20, 1994, Ser. No. 246,688

Int. Cl.[6] C11D *1/75;1/88;* **C07C** *291/04*

U.S. Cl. 252—547 **17 Claims**

1. An amine oxide having the formula:



wherein the R_1 groups are independently selected from C_1–C_4 alkyl or alkoxy groups and R_2 is a branched chain C_{11}–C_{16} alkyl group having from 3 to 4 methyl branches.

5,486,316

AQUEOUS LUBRICANT AND SURFACE CONDITIONER FOR FORMED METAL SURFACES

James P. Bershas, West Bloomfield; Timm L. Kelly, Birmingham, and Gary L. Rochfort, Troy, all of Mich., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 143,803, Oct. 27, 1993, which is a continuation-in-part of Ser. No. 109,791, Sep. 23, 1993, which is a continuation-in-part of Ser. No. 910,483, Jul. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 785,635, Oct. 31, 1991, abandoned, which is a continuation of Ser. No. 521,219, May 8, 1990, Pat. No. 5,080,814, which is a continuation of Ser. No. 395,620, Aug. 18, 1989, Pat. No. 4,944,889, which is a continuation-in-part of Ser. No. 57,129, Jun. 1, 1987, Pat. No. 4,859,351. This application Sep. 21, 1994, Ser. No. 309,839

Int. Cl.[6] C10M *173/02;133/04*

U.S. Cl. 252—547 **20 Claims**

1. A process for cleaning and finishing the surfaces of aluminum cans, said process comprising steps of:

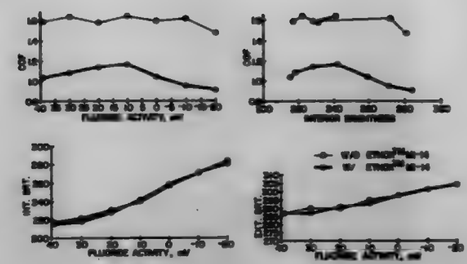
(B) contacting aluminum cans bearing surface contamination selected from the group consisting of can drawing lubricants and aluminum fines with an aqueous alkaline cleaning composition having a pH in the range from about 11.0 to about 12.5 and containing at least 0.05 g/L of a mobility enhancer selected from the group consisting of quaternary ammonium salts and ethoxylated phosphate esters, the alkaline cleaning composition being maintained during the contacting at a cleaning effective temperature and contacting being maintained for a cleaning effective time;

(C) removing the cans as treated in step (B) from contact with the alkaline cleaning composition and rinsing the surfaces of the cans that have been in contact with the alkaline cleaning composition with an aqueous rinse solution having a pH lower than that of the alkaline cleaning composition;

(G) removing the cans, subsequent to step (C), from contact with any aqueous liquid and drying the cans to produce cleaned and dried cans; and

(H) conveying the cleaned and dried cans from the end of step (G) via automatic conveying equipment to a location where the cans are lacquered or decorated by printing or both,

wherein the surfaces of the cleaned and dried cans conveyed in step (H) have a coefficient of surface friction not greater than about 1.0.



5,486,317

PROCESS FOR MAKING DETERGENT GRANULES BY NEUTRALIZATION OF SULPHONIC ACIDS

Andrew Dorset, Kingston Park, Great Britain, and Olivier Paquatte, Strombeek-Bever, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US93/00736, § 371 Date Aug. 10, 1994, § 102(e) Date Aug. 10, 1994, PCT Pub. No. WO93/16154, PCT Pub. Date Aug. 19, 1993

PCT Filed Jan. 27, 1993, Ser. No. 284,591

Claims priority, application European Pat. Off., Feb. 14, 1992, 92870026

Int. Cl.[6] C11D *1/12;11/00;11/04;17/06*

U.S. Cl. 252—549 **9 Claims**

1. A process for making detergent particles comprising the steps of:

providing a particulate neutralizing agent comprising 50% by volume of particles less than 5 μm in diameter and 90% by volume of particles less than 10 μm in diameter;

mixing a stoichiometric excess of said particulate neutralizing agent in a high shear mixer with an anionic surfactant in its acid form so as to neutralize said anionic surfactant; and

forming said detergent particles.

5,486,318

LIQUID-VAPOR CONTACT COLUMN

Kevin McKeigue, New York, and Ramachandran Krishnamurthy, Chestnut Ridge, both of N.Y., assignors to The BOC Group, Inc., New Providence, N.J.

Filed Dec. 29, 1994, Ser. No. 366,350

Int. Cl.[6] B01F *3/04*

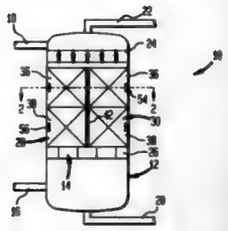
U.S. Cl. 261—112.2 **6 Claims**

1. A liquid-vapor contact column comprising:

a column shell;

at least one bed of structured packing located within said column shell;

said at least one bed of structured packing including a plurality of vertical stacks each formed by at least one pair of upper and lower levels of said structured packing;



said structured packing formed of a plurality of corrugated sheets oriented so that liquid-vapor contact occurs in a vertical direction of said column shell and said corrugated sheets of said upper level of said structured packing oriented at right angles with respect to said corrugated sheets of said lower level of said structured packing; and

means associated with each of said vertical stacks for inhibiting migration of liquid in a transverse, horizontal direction of said column shell thereby to promote constant liquid and vapor flow characteristics through each of said vertical stacks of said structured packing.

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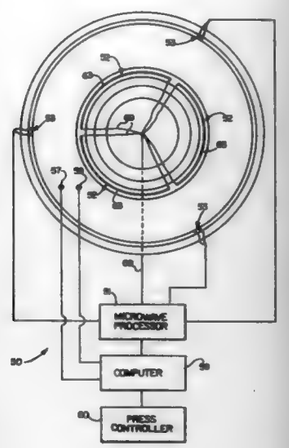
TIRE CURE CONTROL SYSTEM AND METHOD

W. Ross Stone, La Jolla; Robert L. Palmer, San Diego, both of Calif.; Virgil D. Mochel, Wadsworth, and Robert P. Karpinski, North Canton, both of Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Filed Dec. 29, 1993, Ser. No. 174,819

Int. Cl.[6] B29C *35/04*; G01N *22/00*

U.S. Cl. 264—406 **19 Claims**



1. A method of controlling the cure of a rubber compound containing a reinforcing agent or filler, comprising the steps of closing a mold with the rubber compound therein, applying heat to the rubber compound to initiate curing of the rubber compound, passing a microwave signal through the rubber compound, measuring the attenuation of the microwave signal, calculating from the microwave attenuation measurements the rate of change of microwave attenuation, using the rate of change of microwave attenuation to determine when to issue a press opening signal, and automatically initiating a press opening sequence in response to the press opening signal.

5,486,320

METHOD OF DEPOLARIZING A FERROELECTRIC MATERIAL USING ELECTRICAL MEANS AND ITS APPLICATION TO OBTAIN A FERROELECTRIC MATERIAL OF REINFORCED DIELECTRIC STRENGTH

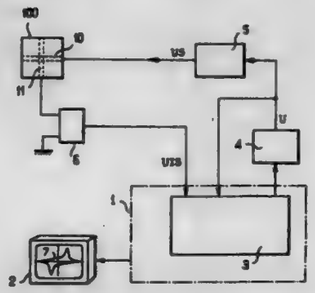
François Bauer, Saint-Louis, France, assignor to Institut Franco-Allemand de Recherches de Saint-Louis, Saint-Louis Cedex, France

Filed Jan. 5, 1994, Ser. No. 177,544

Claims priority, application France, Jan. 6, 1993, 93 00061

Int. Cl.[6] B29C *71/04*

U.S. Cl. 264—408 **11 Claims**



1. Method of depolarizing a ferroelectric material using electrical means, said material having been pre-polarized along a specific axis in at least one of its regions during a preceding phase; said method comprising the steps of:

applying a low-frequency alternating electric field to said material with the maximum amplitude of the field exceeding the coercive polarization field (E_c) of the said material parallel to a specific axis;

effecting a step-by-step decrease of the said amplitude to a specific minimum value of the amplitude of the applied electric field so that a predetermined value of residual polarization of said material is achieved; and

displaying residual polarization values of said material at each step of said step-by-step decrease, and comparing said displayed values to said predetermined value;

whereby said predetermined value of residual polarization can be reproducibly achieved for a plurality of said ferroelectric materials, and whereby an increased dielectric strength can be imparted to said ferroelectric materials.

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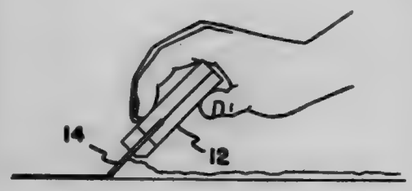
METHOD FOR AUTO BODY REPAIR

Gary W. Spatenka, Rte. 1, Box 271, Owatonna, Minn. 55060

Continuation of Ser. No. 160,894, Dec. 1, 1993, abandoned. This application Mar. 30, 1995, Ser. No. 415,144

Int. Cl.[6] B32B *35/00*

U.S. Cl. 264—36 **11 Claims**



1. A method of auto body damage repair, comprising the steps of:

(a) distributing filler material over a damaged area;

(b) allowing the filler material to harden to a semi-pliable state;

(c) drawing a toothed tool across the filler material in substantially linear motion without back and forth stroking action to smooth and shape the filler material without sanding, wherein the teeth lag behind and are drawn along by the rest of the tool;

(d) allowing the shaped material in the damaged area to harden to a sandable hardness; and,

(e) sanding the hardened filler material to a smooth finish to effect repair of the damaged area.

5,486,322

PRODUCTION OF MULTILAYER PRODUCTIVE COVERINGS ON CONVENTIONAL DIP MOLDING LINES

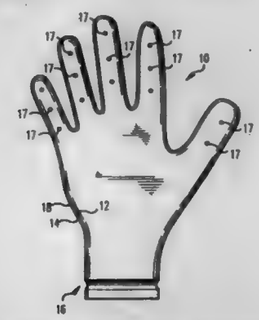
Ingbert E. Fuchs, Desoto, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

PCT No. PCT/US91/08954, § 371 Date Oct. 1, 1993, § 102(e) Date Oct. 1, 1993, PCT Pub. No. WO92/17124, PCT Pub. Date Oct. 15, 1992

Continuation-in-part of Ser. No. 678,838, Apr. 1, 1991, which is a continuation-in-part of Ser. No. 422,913, Oct. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 359,474, May 22, 1989, abandoned. This PCT application Nov. 27, 1991, Ser. No. 129,111

Int. Cl.[6] B29C *41/14*; *44/06*

U.S. Cl. 264—46.5 **48 Claims**



1. A method for making a multilayer glove, comprising the steps of:

dipping a substantially hand-shaped form into a first layer-forming solution to form a first layer on the hand-shaped form;

dipping the first layer into a gas-releasing solution that releases gas when heated to deposit a single substantially continuous layer of the gas-releasing solution on the first layer;

dipping the first layer into a second layer-forming solution to form a second layer, such that the gas-releasing solution is disposed between the first and second layers; and

heating the first or second layer such that gas is released from the gas-releasing solution to form a single substantially continuous gas-filled layer separating the first and second layers.

5,486,323

METHOD OF FORMING COMPACTED LAYER

Joseph A. McWilliams, Droitwich, United Kingdom, assignor to Ceramaspeed Limited, United Kingdom

Filed Nov. 14, 1994, Ser. No. 339,006

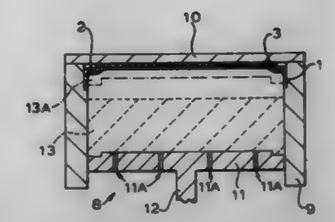
Claims priority, application United Kingdom, Nov. 25, 1993, 9324272

Int. Cl.[6] B29C *43/18*

U.S. Cl. 264—112 **46 Claims**

1. A method of forming a layer of compacted powdery microporous material in a container of substantially air-impervious material, which method comprises the steps of:

providing a container of substantially air-impervious material, the container having a base, side walls and at least one air outlet region;



providing a press tool for compacting powdery microporous material into the container, the press tool being movable in a direction toward and away from the base of the container;

providing barrier means adjacent at least the base of the container, the barrier means being adapted and arranged to substantially prevent passage therethrough of microporous material during compaction thereof, whilst permitting permeation of air displaced therefrom during such compaction;

providing means to enable the displaced air permeating at least part of the barrier means during compaction of the microporous material to flow laterally of the direction of movement of the press tool between the at least part of the barrier means and at least the base of the container;

introducing powdery microporous material between the container and the press tool; and

compacting the microporous material into the container by means of the press tool whereby air is displaced from within the microporous material, permeates the at least part of the barrier means, and flows laterally between the at least part of the barrier means and at least the base of the container toward the at least one air outlet region so as to be displaced from the container therethrough.

5,486,324

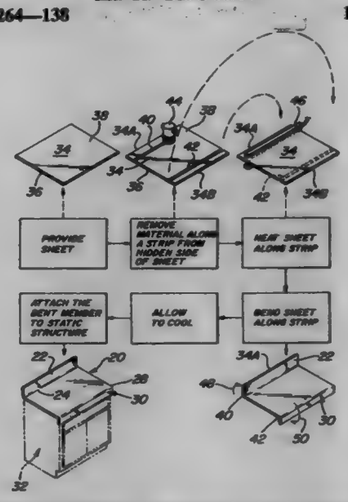
METHOD OF MAKING TIGHT RADIUS PLASTIC CORNER COMPONENTS FOR STATIC STRUCTURES

Frederick H. Klein, Jr., P.O. Box 411, Oley, Pa. 19547

Filed Jun. 6, 1994, Ser. No. 254,824

Int. Cl.[6] B29C *53/04*

U.S. Cl. 264—138 **12 Claims**



1. A method of forming a component for fixed securement to the interior of a static structure to provide a decorative surface, said method comprising the steps of:

(a) providing a molded unitary, non-laminated generally planar panel of a predetermined thickness of at least ¼ inch (0.64 cm) having an inner and an outer surface, said panel being molded of a filled thermoplastic material selected from the

group consisting of filled acrylics, filled polyesters, and filled acrylic-polyester blends to form a homogeneous body, said panel having a radius-cornered recess in one of said surfaces extending along a first predetermined line, whereupon the thickness of said panel along said first line is substantially less than the thickness of contiguous portions of said panel;

(b) heating said panel along said first line; and

(c) bending said panel along said first line at said recess to form a corner thereat, with a radius of curvature of said corner being no greater than 1 inch (2.54 cm) and without said corner being damaged.

5,486,325

SEAL MOLDING METHOD AND DEVICE

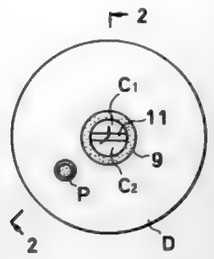
Hidetoshi Arima, Ohbu, Japan, assignor to Tokai Kogyo Co., Ltd., Aichi, Japan

Continuation of Ser. No. 73,341, Jun. 7, 1993, abandoned, which is a division of Ser. No. 689,697, Apr. 19, 1991, Pat. No. 5,244,704. This application Nov. 14, 1994, Ser. No. 338,897

Claims priority, application Japan, Apr. 27, 1990, 2-112258

Int. Cl.[6] B29C *47/22*

U.S. Cl. 264—167 **6 Claims**



1. A molding method for a seal comprising the steps of forming a first extrusion passage using a core disposed in an extrusion opening of a molding die for extruding a molding material to be molded into a hollow portion of said seal, supplying molding material to the first extrusion passage by a first molding material supply passage to continuously mold said hollow portion, forming a separate second extrusion passage in said extrusion opening for extruding a molding material to be molded into a bridge in the hollow portion of said seal, moving a molding material discharge pipe inserted into said molding die relative to a second molding material supply passage disposed in the molding die communicated with said second extrusion passage so as to intermittently supply molding material to said second extrusion passage independently of supply of molding material to said first extrusion passage so that the molding material is intermittently extruded from said second extrusion passage, whereby a first seal portion having no bridge in said hollow portion and a second seal portion having said bridge in said hollow portion are continuously molded.

2. A molding device for a seal comprising a molding die having an extrusion opening, a core disposed in said extrusion opening for defining a first extrusion passage for a seal, a first molding material supply passage communicated to said first extrusion passage, a second extrusion passage in the molding die for extruding a molding material to be molded into a bridge of said seal, a molding material flow control member movably mounted on said molding die relative to a second molding material supply passage in the molding die independently communicated to said second extrusion passage, said second molding material supply passage being closed and opened relative to said second extrusion passage by movement of said molding material flow control member.

5,486,326

PROCESS FOR CONVERTING POLYKETONES TO POLYESTERS

Palanisamy Arjunan, Houston, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 220,774, Apr. 11, 1994, Pat. No. 5,466,780. This application May 17, 1995, Ser. No. 443,137

Int. Cl.[6] B29C *47/00*

U.S. Cl. 264—176.1 **3 Claims**

1. A method to produce an article of manufacture comprising the steps of:

(a) contacting at least one polyketone, at least one peroxidizing agent, and a liquid carrier in a slurry oxidation reaction to produce a polyester product; and

(b) forming said article from the polyester product of step (a).

5,486,327

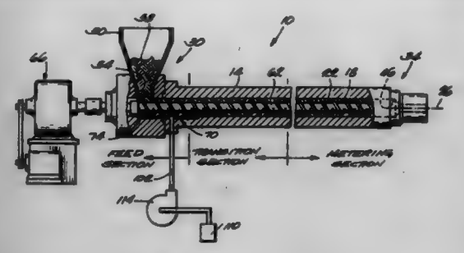
APPARATUS AND METHOD FOR INJECTING OR EXTRUDING COLORED PLASTIC

Peter F. Bemis; Loren C. Albrecht, and Steven F. Schick, all of Sheboygan, Wis., assignors to Bemis Manufacturing Company, Sheboygan Falls, Wis.

Filed Jan. 21, 1994, Ser. No. 184,826

Int. Cl.[6] B29B *7/24*; B29C *47/10*

U.S. Cl. 264—211.21 **42 Claims**



1. Apparatus comprising

a barrel including a generally cylindrical inner wall defining a generally cylindrical chamber having a longitudinal axis, an inlet end for receiving solid material, and an outlet end for discharging molten material, said inner wall having therein a recess extending longitudinally of said chamber,

a screw which extends along said longitudinal axis and which is rotatably housed in said chamber,

a drive mechanism for rotating said screw about said axis, and

a conduit for introducing a liquid additive into said chamber, said conduit having a downstream end communicating directly with said recess so that additive flowing from said conduit flows directly into said recess prior to flowing from said recess into said chamber.

5,486,328

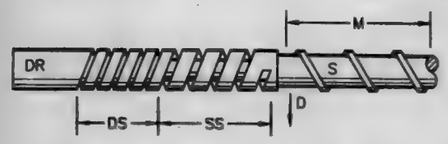
EXTRUSION SURGE SUPPRESSOR AND METHOD

Keith Luker, Little Falls, N.J., assignor to Randcastle Extrusion Systems, Inc., Cedar Grove, N.J.

Filed May 31, 1994, Ser. No. 250,909

Int. Cl.[6] B29C *47/46;47/50*

U.S. Cl. 264—211.23 **24 Claims**



1. An apparatus for extruding a polymer which is subject to periodic surges of pressure or flow rate, said apparatus comprising:

a barrel having an upstream portion and a downstream portion;

a hopper positioned and connected for delivering said polymer to said upstream portion of said barrel;

a shaft mounted for rotational movement about a longitudinal axis within said barrel;

drive means connected for rotating said shaft;

said shaft having a conveying screw flight and a metering screw flight arranged for conveying and metering said polymer downstream from said hopper through said barrel, wherein said surges are developed within said barrel;

said barrel having a discharge port located downstream of said hopper;

a surge suppressor connected to said shaft for reducing said surges in said polymer, said surge suppressor including a reverse screw flight on said shaft and located downstream of said discharge port for urging said polymer upstream toward said discharge port while permitting a portion of said polymer to flow in a downstream direction into said surge suppressor, said surge suppressor being capable of generating a pressure less than or substantially equal to a maximum pressure generated in said metering screw flight; and

sealing means located downstream of said surge suppressor.

14. A method for extruding a polymer using an extruder having a barrel with a discharge, a hopper communicating with an upstream portion of said barrel for delivering said polymer, a shaft rotationally mounted within said barrel and a drive means for rotating said shaft, said method comprising the steps of:

supplying polymer pellets through said hopper and into said barrel;

melting said polymer pellets to produce melted polymer;

conveying said melted polymer through said barrel with a conveying screw flight;

metering said melted polymer in said barrel with a metering screw flight, thereby generating a metering pressure and a metering flow rate;

suppressing surges in said metering pressure or said metering flow rate by generating a suppressing pressure less than or equal to a maximum metering pressure with a reverse screw flight positioned downstream of said discharge;

sealing against flow of said melted polymer downstream from said reverse screw flight; and

directing said melted polymer from said barrel between said metering screw flight and said reverse screw flight to said discharge.

5,486,329

AUTOMOTIVE DOOR TRIM AND METHOD FOR FABRICATING THE SAME

Katsuji Ueki, and Toyokazu Endo, both of Kanagawa, Japan, assignors to Kasai Kogyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 206,284, Mar. 7, 1994, abandoned, which is a continuation of Ser. No. 968,411, Dec. 7, 1992, abandoned, which is a division of Ser. No. 796,668, Nov. 25, 1991, abandoned. This application Mar. 14, 1995, Ser. No. 403,562

Int. Cl.[6] B29C *43/00*

U.S. Cl. 264—273 **4 Claims**

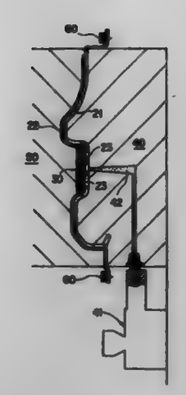
1. A method for fabricating an automotive interior component comprising a resin core member, a surface skin member integrally covering said resin core member, and an attachment member attached to a surface of the surface skin member, comprising the steps of:

providing a plurality of suitably located openings in the surface skin member within the periphery thereof;

retaining said surface skin member between upper and lower dies;

securing the attachment member on a die surface of said upper die;

supplying substantially molten resin material from a gate provided in the lower die;



mold press forming the automotive trim component into a curved contoured shape by engaging the upper and lower dies;

pushing the molten resin through the plurality of openings so that the molten resin material comes into contact with the attachment member, wherein the attachment member has a smaller surface area than the surface skin member; and

allowing the molten resin material to solidify into a resin core member such that the resin core member is securely attached to the attachment member.

5,486,330

PROCESS FOR PRODUCING PLASTIC TUBING OF A SELECTED LENGTH, WALL THICKNESS AND INNER DIAMETER

Theodore N. Westlake, III, and Duane K. Wolcott, both of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 3, 1994, Ser. No. 176,596

Int. Cl.[6] B29C *55/22*

U.S. Cl. 264—291 **1 Claim**

1. A process for producing plastic permeation or diffusion membrane tubing of a selected length, wall thickness and inner diameter, comprising the steps of:

selecting a commercially-available tubing which when stretched to such a selected length will provide tubing of the selected wall thickness and inner diameter;

inserting a length of a membrane support tubing into the lumens of the selected commercially-available plastic tubing at each of the commercially-available plastic tubing's ends, so that overlying, supported end portions of the commercially-available plastic tubing are preserved in an original wall thickness and inner diameter as the tubing is stretched;

heating the plastic tubing above its glass transition temperature over substantially all of the commercially-available plastic tubing's length; and

rapidly stretching the heated tubing by fixing one end of the tubing and applying a constant tensile force to a second end of the tubing until the tubing is of the selected length.

5,486,331
PROCESS FOR DEGREASING CERAMIC MOLDED BODIES

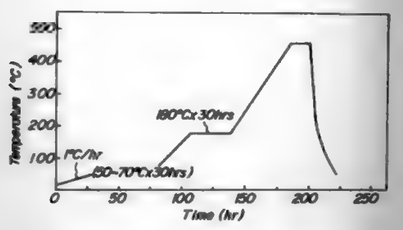
Masakazu Adachi, Nagoya, and Koulchi Imao, Kagamihara, both of, Japan, assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 944,028, Sep. 11, 1992, abandoned, which is a continuation of Ser. No. 726,733, Jul. 2, 1991, abandoned, which is a continuation of Ser. No. 436,641, Nov. 15, 1989, abandoned. This application Apr. 8, 1994, Ser. No. 225,073

Claims priority, application Japan, Nov. 15, 1988, 63-286886

Int. Cl.[6] C04B *33/32*

U.S. Cl. 264—344 **10 Claims**



1. A method of degreasing ceramic molded bodies, comprising the steps of:

forming a mixture into a plurality of ceramic molded bodies, said mixture comprising a ceramic material and an organic binder comprised of paraffin wax, and having a C/B ratio of 45:55 to 55:45, said C/B ratio being a volume ratio of said ceramic material to said organic binder;

determining a first contraction temperature of the ceramic molded bodies wherein the ceramic molded bodies undergo a first contraction while being heated;

embedding the ceramic molded bodies in alumina powder; and

heating the ceramic molded bodies in an oxidizing atmosphere for a predetermined period of time at a first constant temperature to remove said organic binder, said first constant temperature being immediately below said first contraction temperature, whereby a crack formation ratio of the ceramic molded bodies is less than 60% after degreasing.

5,486,332
METHOD FOR EVERTING A TUBULAR LINER BAG

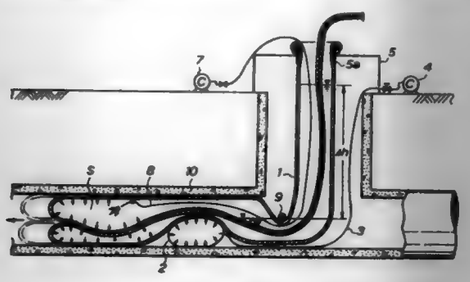
Takao Kamiyama, Hiratsuka, and Yasuhiro Yokoshima, Ibaraki, both of, Japan, assignors to Shonan Gosei-jushi Seisakusyo K.K., Kanagawa, and Yokoshima & Company, Ibaraki, both of, Japan

Filed Mar. 11, 1994, Ser. No. 209,139

Claims priority, application Japan, Mar. 12, 1993, 5-052356

Int. Cl.[6] B29C *63/36;* **B29L** *23/22*

U.S. Cl. 264—516 **2 Claims**



1. A method of providing a lining inside a pipe by everting a tubular liner bag inside a length of the inner wall of the pipe, comprising the steps of:

(a) preparing the tubular liner bag such that one end of an air hose connected to an air compressor is attached to a suitable position at an outer surface of the liner bag in an uneverted state thereof;

(b) everting the tubular liner bag by supplying water under pressure into a vertical entrance to the pipe;

(c) turning a head of the tubular liner bag toward a side of the pipe which is to be lined, when the head of the tubular liner bag hits upon the inner wall of the pipe;

(d) everting the tubular liner bag substantially deep into the pipe;

(e) stopping eversion of the tubular liner bag;

(f) deforming the everted tubular liner bag to a substantially J-shape with the head portion of the tubular liner bag corresponding to a toe portion of the J-shape so that when compressed air at a pressure not substantially higher than a pressure required to force the tubular liner bag to evert exists in the toe portion of the J-shaped tubular liner bag the air does not reach a long-leg section of the J-shaped tubular liner bag from said toe section; and

(g) operating said air compressor to supply compressed air into the head portion of the tubular liner bag via said air hose, to thereby increase an internal pressure in the head portion of the tubular liner to a value substantially higher than a value required to force the tubular liner bag to evert,

wherein said pipe has an inner diameter in the range of 200 to 350 mm, and has a slope of 20° or greater,

said step (c) comprises the step of turning the head of the tubular liner bag toward an upstream side of the pipe, and

said step (f) consists of lowering a press means into said vertical entrance to depress the everted tubular liner bag at a selected location.

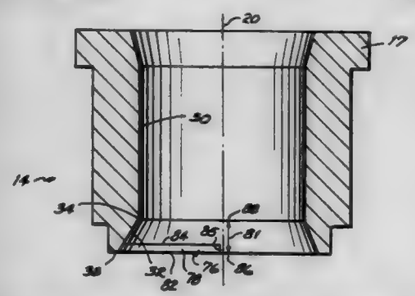
5,486,333
BLOW MOLDING EXTRUSION DIE WITH RECTANGULAR SLOTS

Harilos Mavridis, Blue Ash, and Ramesh N. Shroff, Cincinnati, both of Ohio, assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Filed Sep. 16, 1993, Ser. No. 122,248

Int. Cl.[6] B29C *47/30;49/04*

U.S. Cl. 264—541 **9 Claims**



9. A method of extruding a material through a die into a tubular parison having a varying wall thickness around a perimeter of an annular cross-section of the parison, the method comprising the steps of:

feeding the material through a generally circular circumferential section of an annular material flow path having a flow channel depth formed between an internal surface of a die ring and an external surface of a mandrel located within said die ring; and

feeding the material through a circumferential fixed quadrilateral cutout section of the annular material flow path formed in one of the internal surface and the external surface of the die ring and mandrel, respectively, and having

an arcuate lower edge contiguous with a die exit and having a midpoint providing a maximum flow channel depth, said lower edge extending symmetrically in opposite directions from the midpoint along a curved path terminating at two ends on said one of said internal and external surfaces,

an arcuate upper edge located on said one of said internal and external surfaces upstream from the die exit, said upper edge being generally parallel to said lower edge and defining an intersection of said fixed cutout section with said one of said internal and external surfaces, and

two side edges located on said one of said internal and external surfaces, said side edges extending between ends of said upper and lower edges in directions substantially perpendicular to both of said upper and lower edges,

whereby material feeding through the circumferential fixed quadrilateral cutout section has a greater mass flow than material feeding through the generally circular circumferential section, and the material feeding through the circumferential fixed quadrilateral cutout section has a linear velocity approximately equal to a linear velocity of the material feeding through the generally circular circumferential section.

5,486,334
METHODS FOR INHIBITING METAL CORROSION IN AQUEOUS MEDIUMS

Orin Hollander, Warwick, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Feb. 17, 1994, Ser. No. 198,174

The portion of the term of this patent subsequent to Jan. 3, 2012, has been disclaimed.

Int. Cl.[6] C23F *11/14;11/16*

U.S. Cl. 422—16 **11 Claims**

1. A method for inhibiting the corrosion of ferrous metal surfaces in an aqueous system containing aggressive ions selected from the group consisting of cooper (I) and cooper (II) ions comprising adding to an aqueous system an effective corrosion inhibiting amount of a sulfono benzotriazole compound or salt thereof.

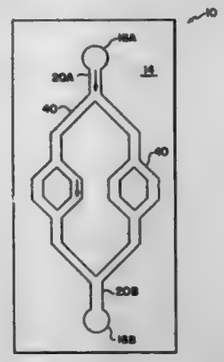
5,486,335
ANALYSIS BASED ON FLOW RESTRICTION

Peter Wilding, Paoli, and Larry J. Kricka, Berwyn, both of Pa., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 250,100, May 26, 1994, abandoned, which is a continuation of Ser. No. 877,701, May 1, 1992, abandoned. This application Apr. 24, 1995, Ser. No. 427,493

Int. Cl.[6] G01N *21/00*

U.S. Cl. 422—55 **47 Claims**



1. A device for detecting the presence of an analyte in a fluid sample, the device comprising:

a solid substrate microfabricated to define:

a sample inlet port; and

a mesoscale flow system comprising:

a primary sample flow channel extending from said inlet port; and

a fractal region, in fluid communication with said primary flow channel, comprising bifurcations leading to plural secondary flow channels; and

means for detecting a flow property of a fluid sample in said flow system as an indication of the presence of an analyte in the fluid sample.

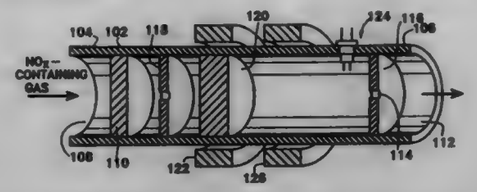
5,486,336
NOX SENSOR ASSEMBLY

Ralph A. Dalla Betta, Mountain View, Calif.; Daniel L. Reed, Boulder, Colo., and Priscilla Schubert, Pacifica, Calif., assignors to Catalytica, Inc., Mountain View, Calif.

Continuation of Ser. No. 536,888, Jun. 12, 1990, abandoned. This application Jun. 22, 1993, Ser. No. 80,679

Int. Cl.[6] G01N *25/20*

U.S. Cl. 422—90 **18 Claims**



1. A self-contained device for measuring NO_x concentration in a flowing gas stream comprising:

a. a container adapted to receive a flowing gas stream containing NO_x;

b. a NO_x reductant source situated within the container and adapted to introduce a NO_x reductant into the flowing gas stream containing NO_x;

c. a heater capable of heating the NO_x reductant source to a temperature above 260° C. thereby releasing NO_x reductant into the flowing gas stream containing NO_x; and

d. a heat flux sensor assembly situated within the container wherein the heat flux sensor assembly comprises a catalytic sensor element and a reference element, said catalytic sensor element comprising a catalyst coated on the periphery of a temperature sensing device whereby the catalytic sensor element catalytically reduces the NO_x with the NO_x reductant and measures the temperature rise from the reduction.

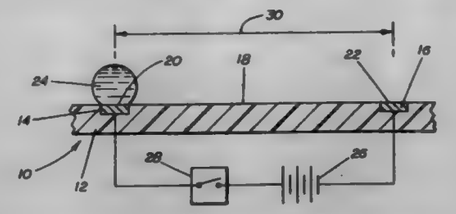
5,486,337
DEVICE FOR ELECTROSTATIC MANIPULATION OF DROPLETS

Tihiro Ohkawa, La Jolla, Calif., assignor to General Atomics, San Diego, Calif.

Filed Feb. 18, 1994, Ser. No. 198,947

Int. Cl.[6] G01N *1/28;1/38*

U.S. Cl. 422—100 **7 Claims**



1. A device for manipulation of liquid droplets,comprising:

a positioning means for establishing an initial position of an individual liquid droplet, said positioning means being electrically conductive;

an attraction means adjacent to said positioning means for electrostatically attracting a droplet from said positioning means; and

a voltage application means for applying a first voltage to said positioning means, thereby electrostatically charging the droplet, then raising said first voltage to a higher magnitude and applying a second voltage of opposite polarity to said attraction means to generate a force urging the droplet from said positioning means toward said attraction means;

wherein:

said positioning means and said attraction means comprise first and second electrodes, respectively;

said first and second electrodes comprise wettable surfaces exposed to the droplet; and

said first and second electrodes are surrounded by a non-wettable surface.

5,486,338

METAL CATALYST CARRIER FOR EXHAUST GAS PURIFICATION

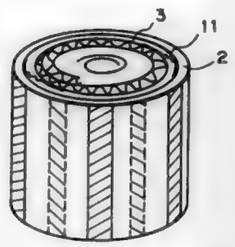
Hitoshi Ota; Masao Yashiro, both of Tokai; Koki Yotsuya, Kimitsu; Takuzo Kako, Kimitsu, and Yuzi Nakashima, Kimitsu, all of, Japan, assignors to Nippon Steel Corporation, Tokyo, and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Sep. 27, 1993, Ser. No. 126,943

Claims priority, application Japan, Sep. 29, 1992, 4-260389

Int. Cl.[6] F01N *3/10*; B01D *53/34*

U.S. Cl. 422—179 **11 Claims**



1. A metal catalyst carrier for exhaust gas purification, comprising:

a columnar metal honeycomb having an inlet end and an outlet end and having a circumferential direction, said honeycomb fabricated by spirally winding a laminate of a flat metal foil and a corrugated metal foil, said columnar metal honeycomb having an axial length of 20 mm or less and having an outer circumferential surface;

a columnar metal case having an inner circumferential surface, and enclosing said columnar metal honeycomb, said inner circumferential surface of said columnar metal case being spaced from said outer circumferential surface of said columnar metal honeycomb thereby forming a circumferential space therebetween;

a cushion member disposed in said circumferential space, said cushion member having alternate joints to said inner circumferential surface of said columnar metal case and said outer circumferential surface of said columnar metal honeycomb at spaced intervals only in the circumferential direction wherein the alternate joints to at least one of said inner circumferential surface of said columnar metal case and said outer circumferential surface of said columnar metal honeycomb axially extend from said inlet end to said outlet end of said honeycomb.

5,486,339

HIGH-PRESSURE MELAMINE REACTOR

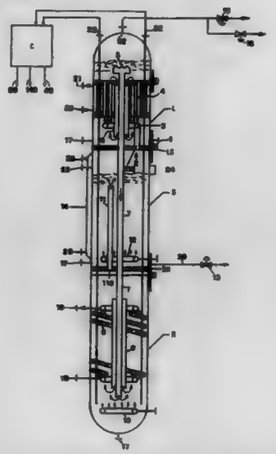
Wladimiro Bizzotto, Via Fontanelle 87/A, 36061 Bassano Del Grappa (VI), Italy

Filed Feb. 16, 1994, Ser. No. 197,175

Claims priority, application Italy, Feb. 22, 1993, VI93A0025

Int. Cl.[6] B01J *10/00*

U.S. Cl. 422—193 **9 Claims**



1. A reactor for the production of melamine comprising:

a single vessel having an outer wall and being divided in a vertically stacked interconnected arrangement of a top sector, a central sector, and a bottom sector;

a pair of upper and lower spaced apart horizontal diaphragms located within the vessel, the upper diaphragm defining a boundary between the top sector and the central sector and the lower diaphragm defining a boundary between the central sector and the bottom sector, said top, bottom and central sectors respectively facilitating washing from raw off-gas produced by the reaction the melamine ammonia and reactants; reacting urea, ammonia and reactants; and separating melamine from ammonia and reactants;

an inlet in the top sector for introducing molten urea therein;

a pressure regulating and extraction tube in the top sector for extracting ammonia and reactants therefrom and adjusting operating pressure of the vessel;

a top heat exchange means located within the top sector, an inlet and an outlet projecting through the outer wall of the vessel in the top sector in communication with the top heat exchange means for circulating a working fluid therethrough to cool raw off-gas which by direct contact heats the molten urea;

bottom heat exchange means located within the bottom sector;

an inlet and an outlet projecting through the outer wall of the vessel in communication with the bottom heat exchange means for circulating a heated working fluid therethrough for heating the molten urea;

a central heat exchange means located in heat exchange relation with the central sector and including an inlet and an outlet for communicating a working fluid therethrough for maintaining the central sector at a selected temperature;

a first tube running through aligned holes in each of the upper and lower diaphragms for feeding molten urea from the top sector to the bottom sector;

a second tube connected at one end through a hole in the lower diaphragm and projecting upwards from the lower diaphragm for feeding reactants from the bottom sector into the central sector;

a third tube connected at one end through a hole in the upper diaphragm and projecting upwards from the upper diaphragm for distributing reactants from the central sector into the top sector;

a first reactant inlet projecting through the outer wall of the vessel in the lower portion of the bottom sector for introducing ammonia;

a second reactant inlet projecting through the outer wall of the vessel in the lower portion of the central sector for introducing ammonia therein;

an outlet tube projecting through the outer wall of the vessel and a lower portion of the central sector for removing melamine therefrom;

a reactant recovery outlet tube projecting through the outer wall of the vessel in the lower portion of each sector for recovering reactants therefrom;

temperature sensing means for sensing the temperature in each of the respective top, central and bottoms sectors; and

means responsive to the temperature sensing means and coupled to the top, central and bottom heat exchange means for regulating the temperature of each sector.

5,486,340

EXHAUST GAS CONDITIONING

James R. Smith, and Peter L. Timms, both of Bristol, United Kingdom, assignors to The BOC Group plc, Windlesham, England

Continuation of Ser. No. 118,324, Sep. 9, 1993, abandoned, which is a continuation of Ser. No. 859,380, May 27, 1992, abandoned. This application Jun. 24, 1994, Ser. No. 267,095

Claims priority, application United Kingdom, Dec. 2, 1989, 8927314

Int. Cl.[6] A62D *3/00*; B01D *53/34*; C01B *21/083*

U.S. Cl. 423—240 S **10 Claims**

1. A method treating gases including exposing the gases in sequential order to: a first reaction stage comprising a magnesium or calcium material, wherein said magnesium or calcium material is calcium oxide, calcium carbonate, calcium hydroxide, magnesium oxide, magnesium carbonate, magnesium hydroxide or mixtures thereof; and a second reaction stage comprising a silicon material, wherein said silicon material is silicon or silicon alloys.

5,486,341

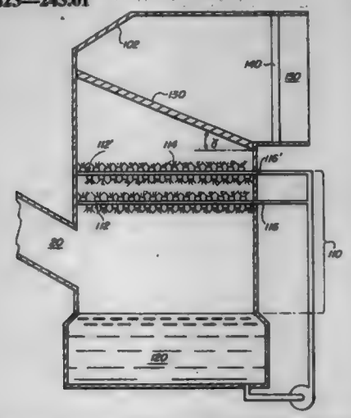
ENTRAINMENT SEPARATOR FOR HIGH VELOCITY GASES

Gerald E. Bresowar, Homewood, Ala., assignor to ABB Environmental Systems, Div. of ABB Flakt, Inc., Birmingham, Ala.

Filed Jun. 9, 1994, Ser. No. 257,085

Int. Cl.[6] B01D *53/50*; *53/78*

U.S. Cl. 423—243.01 **9 Claims**



1. An improved wet scrubbing process for reducing the concentration of SO_2 in flue gases, comprising:

(a) directing a flow of flue gas upwardly through a scrubbing tower;

(b) introducing a spray of droplets of an aqueous slurry of finely-divided calcium carbonate, calcium sulfate, calcium sulfite, and other non-reactive inerts to contact the flue gas in a vertical scrubbing section, the slurry descending through the tower countercurrently to the flow of flue gas and being collected as a liquid after contact; and

(c) passing the flue gas through a single pass entrainment separator positioned above and across the vertical scrubbing section at an angle within the range of about 10° to about 45 degrees relative to the horizontal effective to reduce or consolidate a substantial quantity of droplets entrained in the gas and to also turn the direction of flow of the flue gas from the vertical said entrainment separator includes individual single-pass separator blades, said individual blades are oriented at an angle within the range of about 35° to about 55 degrees from the vertical.

5,486,342

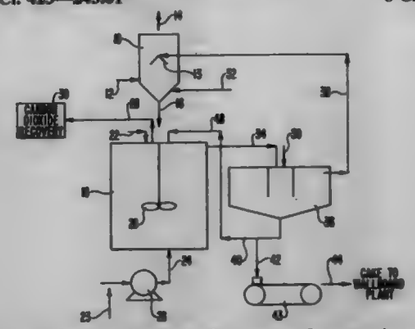
CLEAR LIQUOR SCRUBBING OF SULFUR DIOXIDE WITH FORCED OXIDATION IN FLUE GAS DESULFURIZATION SYSTEM

Robert E. Moser, Palo Alto; David R. Owens, Mountain View, both of Calif.; James H. Wilhelm, Sandy, Utah; Miriam Stohs, Austin, Tex.; James D. Colley, Anchorage, Ky., and Oliver W. Hargrove, Jr., Austin, Tex., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Jun. 13, 1994, Ser. No. 258,921

Int. Cl.[6] B01D *53/50*

U.S. Cl. 423—243.01 **6 Claims**



1. A wet flue gas desulfurization process for removing sulfur oxides from flue gas to produce a usable gypsum by-product without producing scale in the process equipment, including the steps of:

(a) injecting an alkali into the flue gas upstream of the particulate removal device and the scrubber in an amount sufficient to absorb chloride from the flue gas;

(b) directing sulfur oxides-containing flue gas through a particulate removal device to remove ash and alkali chlorides and then to a scrubber;

(c) scrubbing the sulfur oxides from the flue gas with a clear scrubbing liquid that is substantially solids free and contains an organic acid buffer system capable of controlling and maintaining the pH of said process at a pH in the range of 4.5 to 6.0 to produce a sulfur-oxides free gas and a sulfur oxides-containing effluent;

(d) discharging the sulfur oxides-free gas from the process;

(e) directing the sulfur oxides-containing scrubber effluent from the scrubber to a reactor system containing lime or limestone, wherein a sufficient supply of oxidation air is constantly supplied to the reactor system to favor the production of calcium sulfate;

(f) reacting the sulfur oxides-containing scrubber effluent with the lime or limestone in the presence of oxidation air in the reaction system to form a gypsum slurry having a gypsum concentration of 10 to 20 wt. %;

(g) directing the gypsum slurry to a clarifier and clarifying a first portion of the gypsum slurry to produce a clear liquor fraction with a gypsum relative saturation of less than 1.2 and gypsum solids;

(h) dewatering the gypsum solids;
(i) thickening a second portion of the gypsum slurry from the clarifier and recirculating the thickened gypsum slurry to the reactor system;
(j) maintaining the gypsum relative saturation at less than 1.2; and
(k) adding an organic acid buffer system to the clear liquor fraction to control and maintain a process pH of 4.5 to 6 and circulating the clear liquor fraction to the scrubber for use in scrubbing sulfur oxides from the flue gas.

5,486,343

LITHIUM AMIDE PROCESS

James A. Schwindeman, Charlotte, and Robert C. Morrison, Gastonia, both of N.C., assignors to FMC Corporation, Philadelphia, Pa.

Filed Apr. 25, 1994, Ser. No. 232,891
Int. Cl.[6] C01B *21/00*
U.S. Cl. 423—413 **7 Claims**

1. A process for the preparation of lithium amide consisting essentially of forming lithium bronze by introducing at least one equivalent of anhydrous ammonia over a 1 to 5 hour period into a reaction mixture containing one equivalent of lithium in a liquid hydrocarbon solvent selected from the group consisting of olefins containing 2 to 16 carbon atoms at a temperature of up to 40° C., thenafter the lithium bronze is formed, heating the reaction mixture to 50° to 80° C. for two to four hours to decompose the lithium bronze and form a suspension of lithium amide in the solvent from which suspension the lithium amide is recovered.

5,486,344

METHOD OF PRODUCING CHLORINE DIOXIDE

John R. Winters, Marietta; John M. Gray, Roswell, and Joel D. Tenney, Atlanta, all of Ga., assignors to Eka Nobel Inc., Marietta, Ga.

Filed Jun. 9, 1992, Ser. No. 895,634
Int. Cl.[6] C01B *11/02*
U.S. Cl. 423—477 **8 Claims**

1. A method for producing chlorine dioxide, comprising the steps of:
(a) feeding chloric acid and hydrogen peroxide as a reducing agent to a reaction medium in the substantial absence of mineral acids other than chloric acid and in the substantial absence of alkali metal ions, and
(b) reducing the chloric acid to chlorine dioxide.

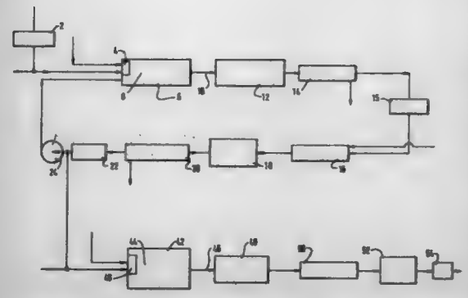
5,486,345

TREATMENT OF GASES

Richard W. Watson, Ilkley, United Kingdom, assignor to The BOC Group plc, Windlesham Surrey, England

Continuation of Ser. No. 834,927, Feb. 12, 1992, abandoned.
This application Aug. 19, 1994, Ser. No. 293,410
Claims priority, application United Kingdom, Feb. 19, 1991, 9103382
Int. Cl.[6] B01D *53/50;53/52*
U.S. Cl. 423—573.1 **12 Claims**

1. A method of recovering sulphur from a feed gas comprising hydrogen sulphide, comprising the steps of:
a) carrying out combustion of a part of the hydrogen sulphide content of a feed gas stream in a furnace to form sulphur dioxide and water vapour;
b) supplying oxygen-rich gas to support the combustion of said part of the hydrogen sulphide at a rate such that the volumetric flow rate of oxygen into the furnace is less than half the volumetric flow rate of hydrogen sulphide into the furnace, the oxygen-rich gas supporting combustion of said part of the hydrogen sulphide;



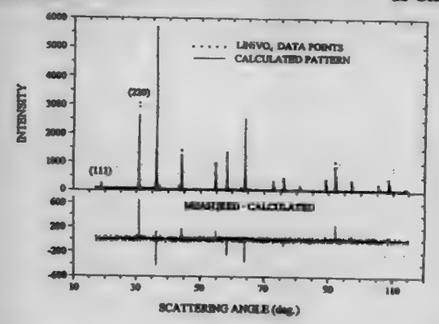
c) allowing remaining hydrogen sulphide in the feed gas stream to react in the furnace with said sulphur dioxide thereby producing sulphur vapour and water vapour;
d) withdrawing a stream of gas -mixture comprising hydrogen sulphide, sulphur dioxide, sulphur vapour and water vapour from the furnace and separating sulphur vapour therefrom to form a partially converted gas stream;
e) dividing the partially converted gas stream into first and second subsidiary partially converted gas streams;
reacting with oxygen-rich gas at least part of the first subsidiary partially converted gas stream so that all of said hydrogen sulfide of said at least part of the first subsidiary partially converted gas stream is fully oxidized to sulphur dioxide and water vapour and thereby forms a hydrogen sulphide-free gas stream;
g) separating water vapour from the hydrogen sulphide-free gas stream to form a recycle gas stream;
h) returning to the furnace at least part of the recycle gas stream and reacting in the furnace sulphur dioxide in the said part of the recycle stream with hydrogen sulphide in the feed gas so as to enhance the sulphur formation in the furnace;
i) subjecting the second subsidiary partially converted gas stream to at least one further stage of reaction between its hydrogen sulphide content so as to form further sulphur vapour;
j) extracting said further sulphur vapour from the second subsidiary partially converted gas stream; and
k) discharging the second subsidiary partially converted gas downstream of the said at least one further stage of reaction.

5,486,346

SYNTHESIS OF CATHODE MATERIAL SUCH AS $LiNiVO_4$ AND $LiCoVO_4$ FOR LITHIUM SECONDARY BATTERIES

George T. Fey, Chung Li City, Taiwan, Prov. of China, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed May 13, 1994, Ser. No. 243,393
Int. Cl.[6] C01G *51/00;53/00;* H01M *4/58;4/52*
U.S. Cl. 423—594 **11 Claims**



1. A method for preparing cathode material for use in lithium secondary batteries comprising the steps of:

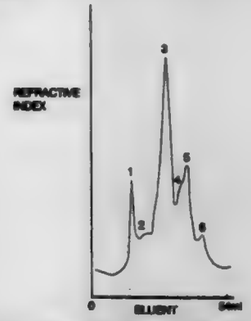
(a) mixing first and second reactants, in a molar ratio of about 2 to 1, to form a reaction mixture, said first reactant being represented by Li_xMO_2, wherein M is either Ni or Co, and x is a variable form 0.25 to 1.1, and said second reactant being selected from the group consisting of V_2O_3, V_2O_5, and NH_4VO_3; and
(b) sintering said reaction mixture in air at temperatures between 650° C. and 700° C. for 1 to 2 hours to obtain an inverse spinel $LiMVO_4$ for use as a cathode material.

5,486,347

ANTIPERSPIRANT COMPOSITION

David T. Callaghan, Quincy; Alan M. Phipps, Framingham, both of Mass., and Stephen J. Provancal, Addison, Ill., assignors to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 252,376, Jun. 1, 1994, which is a continuation of Ser. No. 846,016, Mar. 4, 1992, abandoned, which is a division of Ser. No. 287,096, Dec. 20, 1988, Pat. No. 5,114,705, which is a continuation of Ser. No. 713,470, Mar. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 523,785, Aug. 16, 1983, abandoned. This application May 25, 1995, Ser. No. 452,554
Int. Cl.[6] A61K *7/34;7/38;* C07F *9/00;* C01G *9/02*
U.S. Cl. 423—623 **16 Claims**



1. A method of making a high efficacy antiperspirant salt which comprises providing an aqueous solution of enhanced efficacy aluminum chlorhydroxide, adding zirconyl hydroxy chloride to said solution to provide a mixed solution, said zirconyl hydroxy chloride being added in an amount to provide an atomic ratio of Al:Zr of about 1:1 to 6:1, and rapidly drying said mixed solution to solid form.

5,486,348

ZEOLITE L PREPARATION

Johannes P. Verduijn, Spijkenisse, and Pieter E. Gellings, Oostvoorne, both of, Netherlands, assignors to Exxon Research & Engineering (ER&E), Linden, N.J.

Continuation of Ser. No. 121,972, Sep. 15, 1993, abandoned, which is a continuation of Ser. No. 492,249, Mar. 9, 1990, abandoned, which is a continuation of Ser. No. 160,366, Feb. 25, 1988, abandoned. This application Oct. 12, 1994, Ser. No. 320,972
Claims priority, application United Kingdom, Feb. 25, 1987, 87-04365
Int. Cl.[6] C01B *39/32*
U.S. Cl. 423—700 **11 Claims**

1. A method of preparing binderless zeolite L particles, in which particles are first formed from a mixture of silica and from 10 to 95% preformed zeolite L crystallites, and said particles are thereafter reacted with an aqueous alkaline solution containing a source of alumina sufficient to convert the silica binder to zeolite L, in which the combined composition of the alkaline solution and the silica in the initial particles is such that the molar ratio of SiO_2 to Al_2O_3 is in the range of 4–15.

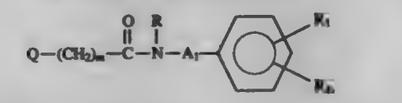
5,486,349

AROMATIC AMIDE POLYAZA MACROCYCLIC COMPOUNDS AND METAL CHELATES THEREOF

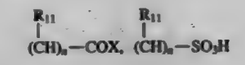
Ramachandran S. Ranganathan, Princeton; Edmund R. Marinelli, Lawrenceville; Radhakrishna Pillai, Kendall Park, and Michael F. Tweedle, Princeton, all of N.J., assignors to Bracco International B.V., Amsterdam, Netherlands

Filed Apr. 8, 1994, Ser. No. 225,210
Int. Cl.[5] A61B *5/055*
U.S. Cl. 424—9.363 **16 Claims**

1. A compound of the following formula I:



wherein
Q is a polyaza macrocyclic group containing at least one aminocarboxylate, aminophosphonate and/or aminohydroxamate chelating group;
A_1 is $(CH_2)_{m'}$, $(CH_2)_n—O—(CH_2)_{n'}$ or a single bond;
$(CH_2)_m$ and $(CH_2)_{m'}$ may be independently substituted with alkyl or hydroxyalkyl;
R is



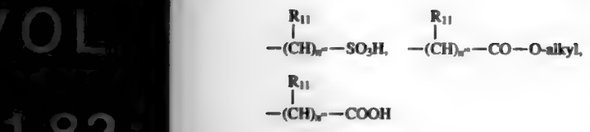
or $—[(CH_2)_2—Y]—R_{13}$;
X is —OH, —O—alkyl or $—NHR_{12}$;
Y is —O— or —NH—;
R_1 and R_2 are each independently hydrogen, alkyl, cycloalkyl, aryl, arylalkyl, $—NO_2$, $—NH_2$,



—NCS,



—COOH, —N—N^+≡N^-, $—NR_3COR_9$, haloalkyl, C_{1-8} alkoxy, aryloxy, cycloalkyloxy, or a functional group capable of forming a conjugate with a biomolecule or of forming a multimer of said compound of the formula I, or R_1 and R_2 together with the phenyl ring to which they are bonded form a naphthyl group, with the proviso that at least one of R_1 or R_2 must be other than hydrogen;
R_3 and R_4 are independently hydrogen, alkyl, arylalkyl, aryl, alkoxy or hydroxyalkyl, or R_3 and R_4, together with the nitrogen atom to which they are bonded, form a maleimide group;
R_9 is alkyl or hydroxyalkyl;
each R_{11} is independently hydrogen or alkyl;
R_{13} is $—CH_2COOH$ or $—CH_2CONHR_{12}$;
R_{12} is hydrogen, alkyl, $—NH_2$.



or hydroxyalkyl;
m, m', n, n' and n'' are independently 1 to 5;
or a salt and/or a multimeric form thereof.

5,486,350

DESENSITIZING ANTI-TARTAR DENTIFRICE

James Norfleet, Plainfield; Willie J. Carter, Belle Mead; Matthew J. Frankel, Franklin Park, and Abdul Gaffar, Princeton, all of N.J., assignors to Colgate Palmolive Company, Piscataway, N.J.

Division of Ser. No. 71,384, Jun. 4, 1993, Pat. No. 5,352,439, which is a continuation of Ser. No. 778,532, Oct. 17, 1991, Pat. No. 5,240,697. This application Jun. 6, 1994, Ser. No. 254,718

Int. Cl.[6] A61K *7/16;7/18*

U.S. Cl. 424—49 **7 Claims**

1. A desensitizing anti-tartar oral composition which consists essentially of an orally acceptable vehicle or base for such composition, an effective anti-tartar proportion of anti-tartar or anti-calculus phosphono compound or a mixture thereof;

a desensitizing proportion of a tooth pain inhibiting potassium salt which passes through exposed dentin tubules to tooth nerves or neurons, which tooth pain inhibiting potassium salt is potassium nitrate, potassium citrate, potassium oxalate or a mixture of two or more thereof; and

wherein there is present in said toothpaste, from said ant-tartar agent or from an additional material, a source of potassium ions in addition to the tooth pain inhibiting potassium salt, the oral composition having a potassium content, in addition to the potassium pain inhibitor, in the range of 0.2 to 5% by weight, such potassium being in ionizable form.

5,486,351

METHOD FOR MAKING STABLE, EXTRACELLULAR TYROSINASE AND SYNTHESIS OF POLYPHENOLIC POLYMERS THEREFROM

Guy R. della-Cloppa; Stephen J. Garger, Jr.; Richard B. Holtz; Michael J. McCulloch, and Genadie G. Sverlow, all of Vacaville, Calif., assignors to Biosource Technologies, Inc., Vacaville, Calif.

Division of Ser. No. 982,095, Nov. 25, 1992, Pat. No. 5,340,734. This application Dec. 14, 1993, Ser. No. 166,465

Int. Cl.[6] A61K *7/42;* **C12P** *21/06;* **C12N** *1/20;15/00*

U.S. Cl. 424—59 **5 Claims**

1. A PPP produced by an in vitro method of producing polyphenolic polymers ("PPP") comprising the steps of taking extracellular tyrosinase, produced by a microorganism selected from the group consisting of Streptomyces, Escherichia, Bacillus, Streptococcus, Salmonella, Staphylococcus, and Vibrio, wherein said microorganism contains an expression vector with polynucleotides encoding tyrosinase, and contacting said tyrosinase with tyrosinase substrates wherein at least one tyrosinase substrate is selected from the group consisting of X/L-tyrosine, L-tyrosine/X, and X/L-tyrosine/X, where X is selected from the group consisting of a single amino acid, a dipeptide, and an oligopeptide bound to L-tyrosine, under suitable reaction conditions, to form PPP and recovering the PPP so produced.

5,486,352

SUNSCREEN COMPOSITIONS

Angel A. Guerrero, Huntington, Conn., assignor to Elizabeth Arden Company, New York, N.Y.

Filed Jan. 3, 1995, Ser. No. 367,650

Int. Cl.[6] A61K *7/42*

U.S. Cl. 424—59 **6 Claims**

1. A sunscreen composition comprising:

(i) from about 1 to about 90% by weight of water;

(ii) from about 1 to about 90% by weight of an emollient oil;

(iii) from about 0.1 to about 30% by weight of an organic sunscreen agent with a chromophoric group active within the ultraviolet radiation range from 290 to 400 nm; and

(iv) from about 0.1 to about 50% by weight of a microfluidized medium comprising:

from about 1 to about 80% by weight of water;

from about 0.001 to about 5% by weight of a phospholipid;

from about 1 to about 50% by weight of an organic sunscreen agent identical to that of component (iii), and the medium being formulated and microfluidized prior to blending with components (i) to (iii).

5,486,353

ANTISUN PRODUCT

Mario Billia, Münchwilen, and Sigrun Siladji, Ettenhausen, both of, Switzerland, assignors to Solco Basel AG, Basel, and Greiter AG, Altstätten, both of, Switzerland

Filed Sep. 27, 1994, Ser. No. 313,001

Claims priority, application Switzerland, Sep. 29, 1993, 2929/93

Int. Cl.[6] A61K *7/42*

U.S. Cl. 424—59 **9 Claims**

1. An antisun product consisting essentially of an effective amount of a deproteinated haemodialysate of mammalian blood or an active fraction thereof, one or more substances which act as sunscreen agents and/or sun blocks in an amount effective to achieve a sun protection factor of 2 to 25, and cosmetic auxiliaries conventionally added to antisun products.

5,486,354

COSMETIC MAKE-UP COMPOSITION CONTAINING A TRANSPARENT TITANIUM OXIDE AND SILICON OXIDE PIGMENT

Béatrice Defossez, and Sylvie Roosignol, both of Paris, France, assignors to L'Oreal, Paris, France

PCT No. PCT/FR93/00099, § 371 Date Sep. 29, 1993, § 102(e) Date Sep. 29, 1993, PCT Pub. No. WO93/14739, PCT Pub. Date Apr. 5, 1993

PCT Filed Jan. 29, 1993, Ser. No. 122,469

Claims priority, application France, Jan. 31, 1992, 92 01086

Int. Cl.[6] A61K *7/021;7/00*

U.S. Cl. 424—63 **11 Claims**

1. A cosmetic make-up composition comprising, in a cosmetic carrier, 0.5 to 30 percent by weight, relative to the total weight of said composition, of a transparent pigment comprising at least 60 percent by weight of titanium oxide in lamellar form and at most 10 percent by weight of silicon oxide, said transparent pigment having a mean size ranging from 1 to 300 μm and a thickness ranging from 0.001 to 0.3 μm.

5,486,355

HOMOGENEOUS COSMETIC STICK PRODUCTS

John R. Berschied, Jr., Lawrenceville, N.J., assignor to Church & Dwight Co., Inc., Princeton, N.J.

Filed Dec. 8, 1992, Ser. No. 986,810

The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.

Int. Cl.[6] A61K *7/32*

U.S. Cl. 424—65 **26 Claims**

1. An antiperspirant-deodorant cosmetic stick product consisting of a solid organic matrix comprising the following parts by weight of ingredients:

volatile silicone oil	10–50
liquid emollient	1–30
low melting point wax	12–24

and the solid organic matrix has homogeneously dispersed therein between about 18–35 parts by weight of particulate antiperspirant and between about 0.05–30 parts by weight water-soluble inorganic salt deodorant ingredients; wherein the dispersed particles have a density which is less than about one gram per cubic centimeter higher than the density of the solid organic matrix.

5,486,356

DEODORANT COMPOSITION COMBINING TRANSITION METAL OXIDE OR ALLOY WITH CATALYTIC METAL ON CARRIER

Seung-jae Yim, Seoul, Rep. of Korea, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 889,139, May 27, 1992, abandoned. This application Jul. 21, 1993, Ser. No. 94,383

Claims priority, application Rep. of Korea, May 30, 1991, 91-8881

Int. Cl.[6] A01N *25/12*

U.S. Cl. 424—76.1 **4 Claims**

1. A deodorant consisting essentially of:

(1) a carrier formed of (a) 70–94 percent by weight of silica gel, MgO, and talc; and (b) 6–30 percent by weight of transition metal oxide or alloy; and

(2) a catalytic metal adsorbed on said carrier in an amount of 0.2–1 percent by weight based on weight of said carrier,

wherein said carrier comprises a porous carrier containing 20–50 percent by weight of silica gel, 20–40 percent by weight of MgO, 20–40 percent by weight of talc, and 6–30 percent by weight of transition metal oxide or alloy, and

wherein said catalytic metal has a covalent bond strength with oxygen which is weaker than its covalent bond strength with sulfur.

5,486,357

RADIOFREQUENCY PLASMA BIOCOMPATIBILITY TREATMENT OF INSIDE SURFACES

Pallassana V. Narayanan, Davie, Fla., assignor to Cordis Corporation, Fla.

Continuation of Ser. No. 4,998, Jan. 15, 1993, abandoned, which is a continuation of Ser. No. 720,410, Jun. 25, 1991, Pat. No. 5,244,654, which is a continuation-in-part of Ser. No. 610,548, Nov. 8, 1990, Pat. No. 5,132,108. This application Oct. 27, 1993, Ser. No. 143,994

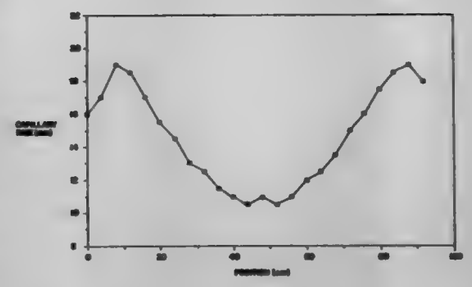
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.

Int. Cl.[6] A61L *33/00;29/00;* **A61K** *31/725;35/62;* **B05D** *3/06*

U.S. Cl. 424—78.17 **15 Claims**

1. A method for enhancing the biocompatibility of interior polymeric surfaces of medical device components, comprising the steps of:

positioning a medical device component within a radiofrequency plasma discharge apparatus, the medical device component being catheter tubing with a polymeric surface interior lumen having a diameter of less than about 0.1 inch, said catheter tubing having a length suitable for use as a catheter in humans;



providing a reduced pressure environment within the radiofrequency plasma discharge apparatus, said reduced pressure environment being about 0.25 Torr or less;

inserting into said reduced pressure environment a plasma medium selected from the group consisting of water vapor, oxygen gas, and mixtures thereof, said plasma medium having a pressure of less than about 0.2 Torr;

subjecting said plasma medium to a radiofrequency electric field to induce a gas discharge in order to form reactive species from said plasma medium within the plasma discharge apparatus and within the lumen to form a modified interior polymeric lumen surface comprising reactive sites which had been modified by the subjecting step, said subjecting step being carried out for at least about 10 minutes and while said plasma medium has a pressure of less than about 0.2 Torr;

treating said modified interior polymeric lumen surface with a spacer component having amine groups whereby covalent linkages are formed between the spacer component amine groups and the reactive sites of the modified interior polymeric lumen surface to form a spacer component-treated modified polymeric lumen surface; and

covalently bonding an anti-thrombogenic, fibrinolytic or thrombolytic agent having acid functionality and biologically active properties to said spacer component-treated modified polymeric lumen surface, whereby said modified polymeric lumen surface is rendered into a biocompatible surface, and the anti-thrombogenic, fibrinolytic or thrombolytic agent of the biocompatible surface is resistant to extraction under in vivo conditions while retaining its biologically active properties.

5,486,358

AZLACTONE-FUNCTIONAL POLYMER BLENDS, ARTICLES PRODUCED THEREFROM AND METHODS FOR PREPARING BOTH

Patrick L. Coleman, Minneapolis; Steven M. Heilmann, Afton; Steven L. Kangas, Woodbury; Jerald K. Rasmussen, May Township, Washington County; Richard J. Rolando, Oakdale, and Julie B. Stahl, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 119,836, Sep. 9, 1993, Pat. No. 5,408,002. This application Apr. 3, 1995, Ser. No. 415,730

Int. Cl.[6] C08L *39/04;* **A61K** *47/32;* **B32B** *27/30*

U.S. Cl. 424—78.23 **5 Claims**

1. A molded article, comprising:

a thermoplastic composition molded into the article by a molding technique wherein the thermoplastic composition comprises a blend of an azlactone-functional homopolymer and a thermoplastic polymer, wherein azlactone-functional surfaces of the molded article have azlactone-reactive ligands coupled thereto.

5,486,359

HUMAN MESENCHYMAL STEM CELLS

Arnold I. Caplan, and Stephen E. Haynesworth, both of Cleveland Heights, Ohio, assignors to Osiris Therapeutics, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 615,430, Nov. 16, 1990, abandoned, and a continuation-in-part of Ser. No. 716,917, Jun. 18, 1991, abandoned, and a continuation-in-part of Ser. No. 34,272, Mar. 22, 1993, abandoned. This application Feb. 8, 1994, Ser. No. 193,262

Int. Cl.[6] A61K *35/12;* **C12N** *5/00;5/08*

U.S. Cl. 424—93.7 **38 Claims**

1. An isolated, homogeneous population of human mesenchymal stem cells which can differentiate into cells of more than one connective tissue type.

5,486,360

METHOD OF TREATING TUMOUR CELLS USING CATALASE

Robert H. Ballagh, 125 Bell Farm Rd. Suite 203, Barrie, Ontario, Canada, and Jeff B. Jones, 217 Pembroke Street East, Pembroke, Ontario, Canada, assignors to St. Joseph Health Centre; The Lawson Research Institute, both of London; Robert H. Ballagh, Barrie, and Jeff B. Jones, Pembroke, all of, Canada

Filed Apr. 22, 1993, Ser. No. 50,776

Int. Cl.[6] A61K *38/44*

U.S. Cl. 424—94.4 **7 Claims**

1. A method of selectively radiosensitizing fibrosarcoma cells during radiotherapy in a mammal which comprises administering to a mammal having a radiation sensitive fibrosarcoma an antioxidant in an amount effective for selectively sensitizing the fibrosarcoma cells to radiation injury, wherein the antioxidant is catalase.

5,486,361

HYBRIDOMAS AND MONOCLONAL ANTIBODIES THAT SPEIFICALLY BIND TO GPIB ON PLATELETS AND INHIBIT THE BINDING OF THROMBIN TO PLATELETS

Harvey R. Grainick, Kensington, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Oct. 25, 1993, Ser. No. 140,412

Int. Cl.[6] A61K *39/395;* **C07K** *16/28;* **C12N** *5/20*

U.S. Cl. 424—144.1 **9 Claims**

1. A monoclonal antibody having the characteristics of:

i) binds to glycoprotein Ibα

ii) inhibits thrombin binding to platelets at nanomolar concentrations of thrombin;

iii) completely inhibits thrombin-induced platelet aggregation;

iv) completely inhibits the high affinity binding of thrombin to GPIb; and

v) inhibits 50–70% of the moderate affinity thrombin binding sites on platelets.

5,486,362

CONTROLLED, SUSTAINED RELEASE DELIVERY SYSTEM FOR TREATING DRUG DEPENDENCY

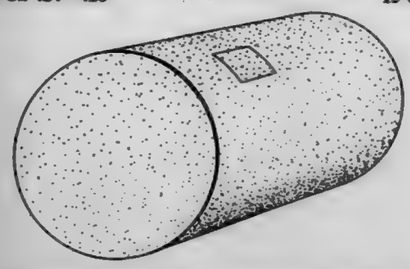
Judith P. Kitchell, Newton; Indu A. Muni, N. Reading, and Yvonne N. Boyer, Salem, all of Mass., assignors to DynaGen, Inc., Cambridge, Mass.

Continuation of Ser. No. 880,959, May 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 696,637, May 7, 1991, abandoned. This application Oct. 21, 1993, Ser. No. 140,280

The portion of the term of this patent subsequent to Apr. 4, 2012, has been disclaimed.

Int. Cl.[6] A61F *2/02;* **A61K** *9/70;9/48;9/50*

U.S. Cl. 424—426 **15 Claims**



1. A method of treating an individual for a drug dependence comprising, administering at least one physical constraint modulation system to said individual, said physical constraint modulation system releasing an amount of a drug substitute effective to diminish the individual's desire for a drug of abuse for a period of time having a duration of at least one day.

5,486,363

PREPARATION OF CHOLINE CHLORIDE-CONTAINING POWDERS, THESE POWDERS, AND THEIR USE

Hans Kiefer, Neustadt; Roland Betz, Niederkirchen, and Wolfgang Bewert, Frankenthal, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 67,810, May 27, 1993, abandoned. This application Nov. 16, 1994, Ser. No. 342,026

Claims priority, application Germany, Jun. 6, 1992, 42 18 768.0

Int. Cl.[6] A23K *1/165*

U.S. Cl. 424—442 **5 Claims**

1. A process for preparing dry, free-flowing, choline chloride-containing powders which comprises: atomizing a colloid-free aqueous choline chloride solution in a countercurrent-flowing air stream that contains a hydrophobic spraying auxiliary powder finely dispersed in the air stream in an amount such that the sprayed choline chloride droplets are coated with 2 to 25% by weight of spraying auxiliary powder, based on choline chloride calculated as 100%, said hydrophobic spraying auxiliary being a silanized silicic acid or a salt of a medium to relatively long chain fatty acid, and thereafter drying the coated droplets to form a free-flowing choline chloride-containing powder.

5,486,364

READILY AVAILABLE KONJAC GLUCOMANNAN AS A SUSTAINED RELEASE EXCIPIENT

Victor L. King, Ewing, N.J.; Thomas A. Wheatley, Richboro, Pa., and David F. Erkoboni, Lawrenceville, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Continuation of Ser. No. 998,335, Dec. 30, 1992, abandoned. This application Aug. 15, 1994, Ser. No. 290,457

Int. Cl.[6] A61K *9/22;9/10;47/36*

U.S. Cl. 424—488 **24 Claims**

1. A solid dosage form, comprising an active ingredient and a sustained release excipient which excipient is at least 7 weight percent of a readily available konjac glucomannan based on the weight of the solid dosage form, wherein the dosage form contains no gas producing disintegrant.

5,486,365

CALCIUM HYDROGEN PHOSPHATE, A METHOD FOR PREPARING IT, AND AN EXCIPIENT UTILIZING IT

Kanemasa Takado, Takaoka, and Tatsuo Murakami, Kamiichi, both of, Japan, assignors to Fuji Chemical Industry Co., Ltd., Japan

Filed Jul. 8, 1994, Ser. No. 272,043

Claims priority, application Japan, Sep. 17, 1993, 5-254741

Int. Cl.[6] A61K *33/42;* **C01B** *25/32*

U.S. Cl. 424—602 **8 Claims**



1. A scale-like calcium hydrogen phosphate with a specific surface area of 20 m^2/g to 60 m^2/g, an apparent specific volume of 5 ml/g or more, an oil absorption rate of 1.5 ml/g or more, a primary particle size of 0.1μ to 5μ, and an average particle size of 2μ to 10μ among secondary particles that are aggregates of the primary particles, the scale-like calcium hydrogen phosphate being represented by the following general formula:

$$CaHPO_4 \cdot mH_2O$$

wherein m satisfies the relationship $0 \leqq m \leqq 0.5$.

6. A method for preparing a scale-like calcium hydrogen phosphate having a calcium to phosphate ratio of exactly 1.0 by reacting either phosphoric acid with an alkaline calcium compound or an alkali metal phosphate with a calcium compound in an aqueous medium in the presence of a multivalent organic acid selected from the group consisting of citric acid, tartaric acid, ethylenediaminetetraacetic acid (EDTA), malic acid and succinic acid with the coordinating ability in order to obtain a columnar calcium hydrogen phosphate, and then subjecting the obtained columnar calcium hydrogen phosphate to hydrothermal treatment at a temperature of 60° C. or higher to obtain said scale-like calcium hydrogen phosphate.

5,486,366

CONTINUOUS CHEWING GUM BASE MANUFACTURING PROCESS USING A MIXING-RESTRICTION ELEMENT

Joo H. Song, Northbrook, and Donald J. Townsend, Chicago, both of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Continuation-in-part of Ser. No. 126,319, Sep. 24, 1993. This application Oct. 14, 1993, Ser. No. 136,589

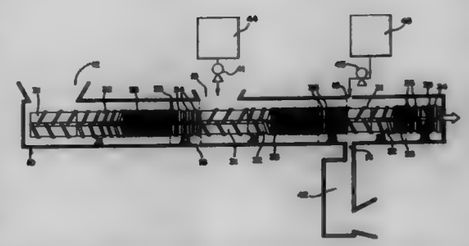
Int. Cl.[6] A23G *3/30*

U.S. Cl. 426—5 **23 Claims**

1. A process for continuously producing a chewing gum base comprising the steps of:

a) continuously adding chewing gum base ingredients, including an elastomer, a filler and a plasticizer, into a continuous mixer;

b) subjecting the elastomer, the filler and the plasticizer to a highly distributive mixing operation within said mixer,



c) passing the highly distributively mixed elastomer, filler and plasticizer through a mixing-restriction element within said mixer, thereby producing a chewing gum base; and

d) continuously discharging the chewing gum base from the mixer while chewing gum base ingredients continue to be introduced and mixed within the mixer.

5,486,367

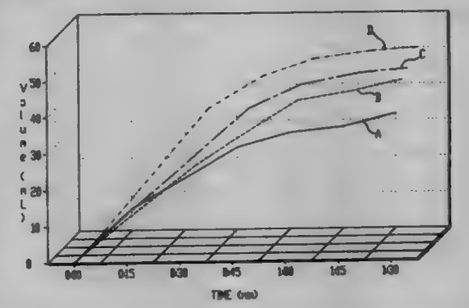
ENZYMATIC METHOD FOR ACCELERATING FERMENTATION OF COMESTIBLE PRODUCTS

Daniel Y. C. Fung, Manhattan, Kans., assignor to Kansas State University Research Foundation, Manhattan, Kans.

Continuation of Ser. No. 959,744, Oct. 13, 1992, abandoned. This application Apr. 19, 1994, Ser. No. 230,430

Int. Cl.[6] A23B *4/20;* **A23L** *1/105;* **A21D** *2/00*

U.S. Cl. 426—7 **10 Claims**



1. In a process for the fermentation of a food ingredient substrate to produce a comestible product, including the steps of inoculating said food ingredient substrate with a fermentative microorganism, and incubating the inoculated food ingredient substrate to cause said microorganism to undergo fermentative activity in the presence of the food ingredient substrate to yield said product, the improvement which comprises the step of contacting said food ingredient substrate with an oxygen-reactive enzyme which is not naturally generated by virtue of said fermentation process, for significantly increasing the fermentative activity of said microorganism, as compared with an otherwise identical process free of said added enzyme.

5,486,368

PRODUCTION OF A CULTURED YEAST PRODUCT FROM WHEY PERMEATE, YEAST CREAM AND YEAST CENTRATE

Rudolf de Boer, Wageningen, Netherlands; Roland K. Kramer, Onalaska, and Ronald W. McKernan, Whitehall, both of Wis., assignors to DMV USA, Inc., La Crosse, Wis.

Filed May 28, 1992, Ser. No. 890,513

Int. Cl.[6] A23C *21/00;* **A23L** *1/28;* **C12N** *1/16;* **A23J** *1/18*

U.S. Cl. 426—41 **5 Claims**

1. A process for producing a modified cultured yeast product from a whey permeate comprising:

a. heat treating a whey permeate at a temperature between about 162° F. (72° C.) and 185° F. (85° C.) for a time sufficient to inactivate undesirable microorganisms in the permeate;
b. inoculating the heat-treated whey permeate with a yeast culture in a bioreactor and maintaining the inoculated whey permeate in the bioreactor under yeast growth conditions until a yeast product is produced in the whey permeate, wherein the yeast culture is selected from the group consisting of *Kluveromyces marxianus* and *Candida intermedia;*
c. separating the yeast product into a yeast cream and a yeast centrate;
d. combining the yeast cream and the yeast centrate in quantities such that the ratio of total solids of the yeast cream to the total solids of the yeast centrate is between approximately 0.3 and 1.6;
e. autolyzing the combination of step d. under sufficient conditions to produce an edible modified yeast product; and
f. heating the yeast product under sufficient conditions to inactivate undesirable microorganisms to produce the modified cultured yeast product.

5,486,369

PROCESS FOR PREPARING SHELF-STABLE, INTERMEDIATE-MOISTURE POTATOES

Charles R. Mason, Yonkers; Dalip K. Nayyar, Washingtonville, both of N.Y., and Edward C. Coleman, New Fairfield, Conn., assignors to Kraft Foods, Inc., Northfield, Ill.

Filed Jan. 20, 1995, Ser. No. 376,311
Int. Cl.[6] A23L *1/217*
U.S. Cl. 426—321 **4 Claims**

1. A method for producing shelf-stable, intermediate-moisture, fried potatoes suitable for microwave reconstitution comprising the steps of:
(a) preparing strips of raw potatoes;
(b) blanching the raw potato strips in an infusion solution for at least 1 minute at a temperature of at least 200° F., the infusion solution containing at least 5% by weight sodium chloride and at least 12% by weight sugar and a weight ratio of sugar to sodium chloride of from 1:1 to 5:1, the blanching time being effective to infuse sodium chloride and sugar into said potato strips;
(c) draining and cooking the infused potato strips;
(d) drying the infused potato strips; thereafter,
(e) frying the strips for a time and at a temperature sufficient to produce shelf stable, intermediate-moisture potato strips which have a water activity below 0.85 and a moisture content between 10 to 40% by weight and which are to be reconstituted by heating in a microwave oven;
(f) packaging the fried strips in moisture-impermeable packaging material; and
(g) storing the packaged, intermediate-moisture potato strips without refrigeration or sterilization.

5,486,370

METHOD OF CONTINUOUSLY FILTERING COOKING OIL

Thomas H. Bivens, P.O. Box 1250, Magnolia, Tex. 77355

Division of Ser. No. 187,115, Jan. 26, 1994, Pat. No. 5,404,799, which is a continuation of Ser. No. 947,479, Sep. 21, 1992, abandoned. This application Dec. 15, 1994, Ser. No. 356,146
Int. Cl.[6] C11B *5/00*
U.S. Cl. 426—417 **5 Claims**

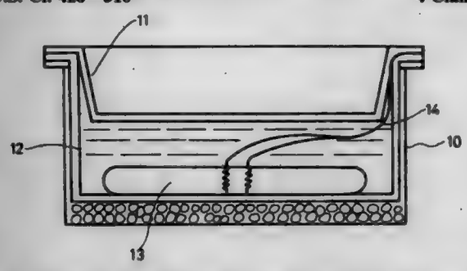
1. A method of continuously filtering cooking oil while frying a food wherein the cooking oil is contained within a tank comprising the steps of:
positioning a filter plate within said tank in a region below a heating source, said filter plate comprising at least one mesh screen operatively connected to piping means, supported on an upper position of said piping means extending through a bottom of said tank;
filtering said cooking oil through said filter plate;
heating said cooking oil to a desired temperature using said heating source;
pumping said cooking oil through said at least one mesh screen, through piping operatively connected to said piping means located exterior of said tank, and returning said cooking oil into said tank at a level below the surface of said cooking oil and above said heating source;
directing a flow of said returning cooking oil downward toward said bottom of said tank;
said pumping step continually performed during a first period to circulate said cooking oil until an aggregation of particulate matter accumulates on an outer surface of said at least one mesh screen, and continually pumping said cooking oil thereafter during a second period while frying the food product.

5,486,371

METHOD FOR COOKING FOOD WITH HEAT ENERGY GENERATED FROM NATURAL STONE MATERIALS

Chung-Te Chen, 5F, Ma Yuan West St., Taichung, Taiwan, Prov. of China

Filed Sep. 26, 1994, Ser. No. 311,949
Int. Cl.[6] A23L *1/00*; F24J *1/00*
U.S. Cl. 426—510 **4 Claims**



1. A method for utilizing heat energy generated from natural materials for cooking food, said method comprising:
preparing a first stone material including at least 55.5% of calcium oxide;
mixing said first stone material with sodium chloride and calcium chloride to form a first mixture, heating said first mixture from about 20° C. to about 1100° C. to form a slow heating material;
preparing a second stone material including at least 55.5% of calcium oxide;
mixing said second stone material with sodium chloride and calcium chloride to form a second mixture, heating said second mixture from about 200° C. to about 1300° C. to form a fast heating material;
mixing about 80% of said slow heating material and about 20% of said fast heating material to form a final heating material;
placing said final heating material in a first container;
mixing said final heating material with a predetermined amount of water sufficient to generate steam in said first container; and
placing food in a second container in or on said first container and cooking said food with the steam.

5,486,372

FROZEN DAIRY PRODUCT CONTAINING POLYOL POLYESTERS

Robert W. Martin, New Town Square, Pa.; Mark S. Miller, Arlington Heights, and Kevin J. Surber, Lombard, both of Ill., assignors to Kraft Foods, Inc., Northfield, Ill.

Filed Mar. 8, 1994, Ser. No. 207,395
Int. Cl.[6] A23G *9/04*
U.S. Cl. 426—565 **20 Claims**

1. A process for preparing a frozen dessert product comprising:
(a) forming a mixture of from about 3% to about 20% polyol fatty acid polyesters having at least 4 fatty acid ester groups, from 0 to about 10% of triglyceride fat, from about 10% to about 19% of non-fat milk solids, from 0 to about 15% of corn syrup solids, from about 6% to about 15% of a carbohydrate sweetener, from 0 to about 0.7% of a stabilizer, from about 0.003% to about 0.007% of an emulsifier and from about 50% to about 75% water;
(b) subjecting said mixture to homogenization at a pressure of at least about 5,000 psig; and
(c) freezing said homogenized mixture with aeration to provide a frozen dessert product.

5,486,373

FROZEN CONFECTION

Christopher B. Holt, Bedford, and Julia H. Telford, Thrapston, both of, United Kingdom, assignors to Good Humor Corporation, Green Bay, Wis.

Continuation of Ser. No. 282,102, Jul. 28, 1994, abandoned, which is a continuation of Ser. No. 51,493, Apr. 22, 1993, abandoned. This application Apr. 19, 1995, Ser. No. 424,766
Claims priority, application European Pat. Off., Apr. 24, 1992, 92303684.2
Int. Cl.[6] A23G *9/00*
U.S. Cl. 426—565 **4 Claims**

1. Frozen gas-containing dessert or confection product comprising a thermal transition temperature in excess of −18° C. and particularly in excess of −13° C., and a bulk density below 0.45 g/ml down to 0.09 g/ml.

5,486,374

MEAT EMULSON PRODUCT

Craig D. Fischer, deceased, late of Manalapan; Dennis J. Breitbart, Kendall Park; Arnold I. Epstein, Cliffside Park, and Dale D. Zabel, Basking Ridge, all of N.J., assignors to Thomas J. Lipton Co., Division of Conopco, Inc., Englewood Cliffs, N.J.

Division of Ser. No. 159,989, Nov. 30, 1993, Pat. No. 5,409,730. This application Oct. 25, 1994, Ser. No. 329,551
Int. Cl.[6] A23L *1/317*
U.S. Cl. 426—574 **16 Claims**

1. A ground or chopped meat product comprising:
(i) a continuous phase of heat settable meat protein;
(ii) a discontinuous phase dispersed in said continuous phase, said discontinuous phase having been dispersed in said continuous phase at a temperature of 10° F. to 30° F., comprising particles of a hardened water-in-oil emulsion having:
(a) a continuous phase of edible fat; and
(b) a discontinuous phase of an aqueous gelled solution, said solution having dissolved or dispersed therein a flavoring agent, whereby said flavoring agent is delivered directly to the taste receptors on the tongue during mastication to enhance the flavor perception of said agent.

5,486,375

CASEINATE REPLACEMENT COMPOSITION FOR IMITATION CHEESE AND PROCESS FOR MAKING IMITATION CHEESE

David Yoder, Crown Point, Ind.; Shau-Gan Chang, Chicago, Ill.; Ansui Xu, Griffith, Ind., and Thomas Domoras, Commerce, Ga., assignors to American Maize Technology, Inc., Dimmitt, Tex.

Continuation-in-part of Ser. No. 69,140, May 28, 1993, abandoned. This application Jun. 29, 1994, Ser. No. 268,804
Int. Cl.[6] A23C *20/00*
U.S. Cl. 426—582 **20 Claims**

1. An imitation cheese product containing caseinate, wherein the improvement comprises replacing at least a portion of said caseinate with a caseinate replacement composition comprising a hydroxypropylated, high amylose granular starch having a degree of substitution greater than 0.04 and a gel component.

5,486,376

HEAT-RESISTANT CHOCOLATE COMPOSITION AND PROCESS FOR THE PREPARATION THEREOF

Jari Alander, Karlshamn; Torbjörn Wärnheim, Bromma, and Erwin Lähti, Karlshamn, all of, Sweden, assignors to Karlshamns Oils & Fats AB, Karlshamn, Sweden

PCT No. PCT/SE92/00876, § 371 Date Aug. 2, 1994, § 102(e) Date Jun. 17, 1994, PCT Pub. No. WO93/12664, PCT Pub. Date Jul. 8, 1993
PCT Filed Dec. 18, 1992, Ser. No. 244,980
Claims priority, application Sweden, Dec. 20, 1991, 9103783
Int. Cl.[6] A23G *1/00*
U.S. Cl. 426—660 **20 Claims**

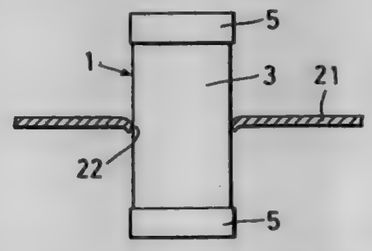
1. A heat-resistant composition prepared by mixing a chocolate mass with a solution consisting essentially of a water-in-oil microemulsion comprising water, fat and an emulsifier wherein the water of the microemulsion is present in the form of droplets having a size of 10–1,000 Å.

5,486,377

METHOD FOR MANUFACTURING CHIP-LIKE ELECTRONIC PARTS

Mitsuro Hamuro; Shigeyoshi Matsuda, and Shoichi Kawabata, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Mar. 7, 1994, Ser. No. 206,159
Claims priority, application Japan, Mar. 5, 1993, 5-071153
Int. Cl.[6] C23C *18/31*; H01G *13/00*
U.S. Cl. 427—79 **6 Claims**



1. A method for manufacturing an electronic part having a ceramic central body and two external electrodes formed on opposite ends of the central body, each external electrode being comprised of an inside electrode and a plated layer, said method comprising the steps of:
providing an electronic part having a ceramic central body and two inside electrodes formed on opposite ends of the central body,
providing a retainer sheet having opposite sides and having a plurality of spaced openings therethrough for receiving and holding the central body of the electronic part,
inserting one of the ends of the electronic part into one of the plurality of spaced openings of the retainer sheet so that the central body of the electronic part is held by the retainer sheet and so that the two inside electrodes formed on opposite ends of the central body are disposed on opposite sides of the retainer sheet,
moving the retainer sheet holding the electronic part to a plating station for passing the electronic part with the two inside electrodes through a plating liquid, thereby plating the two inside electrodes of the electronic part to form external electrodes thereon, and

moving the retainer sheet holding the plated electronic part to a cleaning and drying station for cleaning and drying the plated electronic part of excess plating liquid to obtain the electronic part having a ceramic central body and two external electrodes formed at opposite ends thereof.

5,486,378

METHOD AND APPARATUS FOR MANUFACTURING AN OPTICAL RIBBON CONDUCTOR

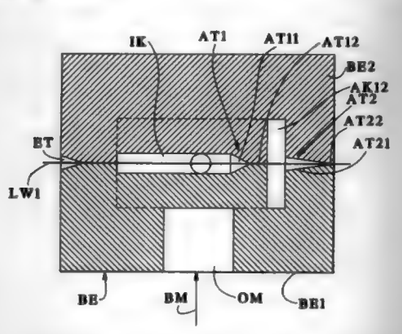
Ulrich Oestreich, Munich; Peter Dotzer, Berg/Bachhausen, and Siegfried Unterberger, Coburg, all of, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 11, 1993, Ser. No. 105,401

Claims priority, application Germany, Aug. 11, 1992, 42 26 600.9; Jun. 4, 1993, 43 18 664.5; Jun. 8, 1993, 43 19 087.1

Int. Cl.[6] B05D *5/66*

U.S. Cl. 427—163.2 **39 Claims**



1. In a method for manufacturing an optical ribbon conductor having a plurality of aligned light waveguides surrounded by an external coating, which includes providing coating means for applying a curable coating material on waveguides, means for supplying the curable coating material to the coating means, conducting a plurality of pre-coated light waveguides through the coating means to enclose the light waveguides in the coating material, the improvements comprising guiding the light waveguides to freely run both proceeding as well as in the coating means to essentially come in contact only with the supply of liquid coating material in the coating means, creating a drag flow of the liquid coating material by the longitudinal movement of the light waveguide through the coating material in a tapering discharge channel having a rectangular cross section, utilizing the drag flow to create a self-alignment of the light waveguides within the coating material and the coating means, said self-alignment providing a uniform and symmetrical distribution of the light waveguide within the contour of the ribbon conductor with the axes of the light waveguides being arranged practically in one plane and the coating material being applied on the light waveguides with approximately the same thickness, and then completing the forming of the ribbon conductor by curing said liquid coating material after leaving the coating means to form the external coating for holding the plurality of aligned light waveguides together.

13. An apparatus for manufacturing an optical ribbon conductor having a plurality of light waveguides extending side-by-side and coated with a coating material, said apparatus including coating means applying a coating on waveguides and means for positioning a plurality of waveguides side-by-side with their axes being arranged practically in one plane and with the coating material being applied on the light waveguides with approximately the same thickness, and guiding the waveguides into an entrance of the coating means, the improvements comprising the entrance and exit of the coating means being dimensioned so that the light waveguides are guided freely in the coating means to come into contact only with the coating material, said coating means including at least one discharge channel having a rectangular cross section and tapering in a throughput direction with the taper creating a drag flow of the coating material to occur due to the longitudinal motion of the waveguides through said discharge opening.

5,486,379

METHOD OF MANUFACTURING A PART MADE OF COMPOSITE MATERIAL COMPRISING FIBER REINFORCEMENT CONSOLIDATED BY A LIQUID PROCESS

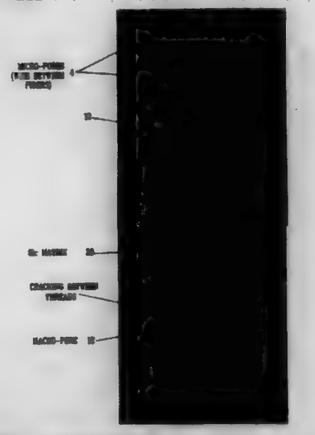
Eric Bouillon, Talence; Jean-Luc Leluan, Bordeaux, and Eric Lavasserie, Begles, all of, France, assignors to Societe Europeenne de Propulsion, Suresnes, France

Filed Jul. 1, 1994, Ser. No. 269,551

Claims priority, application France, Jul. 5, 1993, 93 08177

Int. Cl.[6] B05D *7/00*

U.S. Cl. 427—212 **7 Claims**



1. A method of manufacturing a part made of a composite material, the method comprising the steps of:

making a consolidated fiber preform by a liquid process which includes impregnating a fiber fabric with a liquid precursor of a consolidating material, shaping the impregnated fiber fabric to a form substantially similar to that of the part to be manufactured, and transforming the precursor into said consolidating material to obtain a self-supporting fiber preform,

depositing an interphase layer within said consolidated fiber preform, and

densifying the consolidated fiber preform provided with said interphase layer by a matrix,

whereby said deposition layer and densification step do not require the use of supporting tooling for the preform.

5,486,380

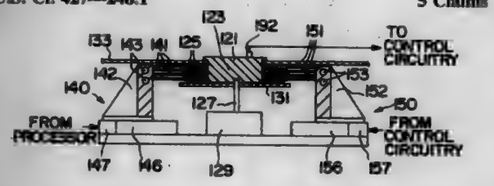
APPARATUS AND METHOD FOR DEPOSITING A SUBSTANCE ON A ROTATING SURFACE

Dan O. Enniss, Sandy, Utah, and Matthew Simpson, Sudbury, Mass., assignors to Saint-Gobain/Norton Industrial Ceramics Corporation, Worcester, Mass.

Filed Dec. 30, 1993, Ser. No. 175,586

Int. Cl.[6] C23C *14/22*

U.S. Cl. 427—248.1 **5 Claims**



1. A method for depositing a substance, comprising the steps of:

producing a vapor containing constituents of said substance;

providing a rotating mandrel assembly that includes a mandrel, having a deposition surface exposed to said vapor so that said substance is deposited on said deposition surface, and a base having a plurality of radiator fins extending therefrom;

interleaving a plurality of receptor fins with said radiator fins; and

providing heat exchange to said receptor fins to cool said mandrel during deposition of said substance on the deposition surface of said mandrel.

5,486,381

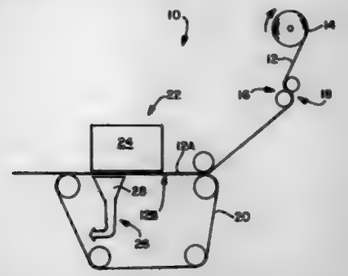
LIQUID SATURATION PROCESS

Terry R. Cleveland, Woodstock; Cherie H. Everhart, Alpharetta; Fred R. Radwanski, and Henry Skoog, both of Roswell, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 22, 1994, Ser. No. 231,608

Int. Cl.[6] B05D *1/30*

U.S. Cl. 427—294 **4 Claims**



1. A continuous, short dwell time process of non-compressively and uniformly applying a liquid saturant throughout a permeable sheet, the process comprising:

providing a continuously advancing permeable sheet having a first surface and a second surface;

depositing a substantially laminar flowing curtain of liquid saturant generally across and onto the first surface of the continuously advancing permeable sheet; and

applying a vacuum to the second surface of the continuously advancing permeable sheet substantially simultaneous with the deposition of the liquid saturant; and

drawing a substantial portion of the liquid saturant through the permeable sheet in less than about 1 second to generate a substantially uniform distribution of liquid saturant throughout the permeable sheet.

5,486,382

METHOD FOR PREPARING A CERMET-COATED ARTICLE

Joseph A. Ference, San Diego; Ronald E. Bullock, Cardiff; Donald A. Uhlir, San Diego; Michael L. Duhl, San Diego, and Sam A. Ropelato, San Diego, all of Calif., assignors to Hughes Missile Systems Company, Los Angeles, Calif.

Filed May 6, 1993, Ser. No. 57,392

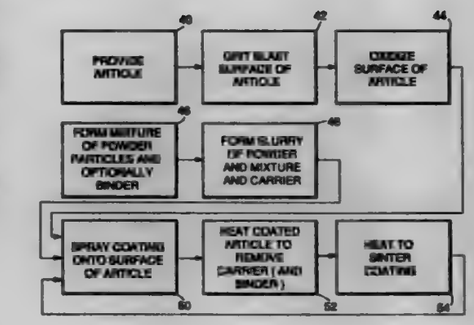
Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—376.3 **16 Claims**

1. A method for preparing a cermet-coated article, comprising the steps of:

providing an oxidized surface on an article to be coated, including the step of providing an article made of a material selected from the group consisting of a nickel-base alloy, a cobalt-base alloy, an iron-base alloy, and a titanium-base alloy;

preparing a mixture of



a metallic powder having a mean particle size of less than about 5 micrometers, and

a ceramic powder having at least some of the particles of a size less than that of the mean particle size of the metallic powder,

forming a slurry of the mixture of the metallic powder and the ceramic powder with a liquid carrier;

applying a coating of the slurry onto the oxidized surface of the article; and

thermally processing the coated article, the step of thermally processing the coated article, the step of thermally processing including the steps of

heating the coated article to a temperature sufficient to vaporize and remove the liquid carrier, and thereafter

heating the coated article to a temperature sufficient to sinter the cermet coating.

5,486,383

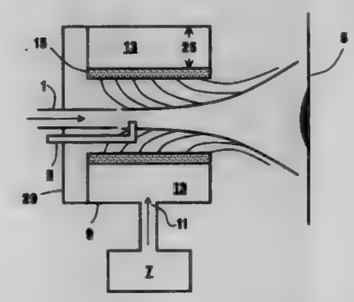
LAMINAR FLOW SHIELDING OF FLUID JET

Mark S. Nowotarski, Stamford, Conn.; Don J. Lemcoe, Indianapolis, Ind.; William J. Snyder, Ossining, N.Y., and David B. Leturno, Hoover, Ala., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Aug. 8, 1994, Ser. No. 286,200

Int. Cl.[6] B05D *3/06*

U.S. Cl. 427—446 **19 Claims**



1. A process for shielding a fluid containing stream from its surrounding environment, said process comprising:

(a) ejecting a turbulent flow of said fluid containing stream from at least one opening;

(b) emitting a laminar flow of a substantially inert shielding fluid transversely to the flowing direction of said turbulent flow of said fluid containing stream; and

(c) entraining said transversely flowing shielding fluid in said turbulent flow of said fluid containing stream to prevent infiltration of gas and/or vapor from said fluid containing stream's surrounding environment.

5,486,384

PROCESS FOR PRODUCING MULTI-LAYER COATINGS BY THE USE OF CLEAR LACQUERS WHICH ARE CAPABLE OF POLYMERIZATION IN RADICALIC AND/OR CATIONIC MANNER

Udo Bastian, Ratingen, and Manfred Stein, Hürth, both of, Germany, assignors to Herberts GmbH, Wuppertal, Germany

Continuation of Ser. No. 953,412, Sep. 29, 1992, abandoned. This application Nov. 5, 1993, Ser. No. 148,025

Claims priority, application Germany, Jan. 8, 1991, 41 33 290.3

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—493 14 Claims

1. Process for producing a multi-layer lacquer coating on a surface provided with a dry basecoat, the process comprising the steps of:

eliminating substantially all light around the surface having a wavelength below 550 nm;

selecting a polyermizing coating agent from a group consisting of radicalic-curable lacquer and cationic-curable lacquer;

applying a layer of the coating agent on the basecoat, the coating agent layer being applied on the basecoat after substantially all light around the surface having a wavelength below 550 nm has been eliminated; and

exposing the coating agent layer to high-energy radiation to polymerize the coating agent and cure the coating agent layer on the basecoat.

5,486,385

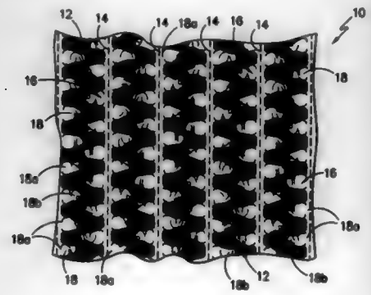
MELTED AND DELUSTERED CAMOUFLAGED FABRIC

Don M. Bylund; Howard C. Willauer, Jr., and James R. Reynolds, all of Spartanburg, S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 123,456, Sep. 17, 1993. This application May 25, 1995, Ser. No. 449,873

Int. Cl.[6] A01N *3/00*

U.S. Cl. 428—17 7 Claims



1. A lightweight composite camouflage construction comprising an open mesh net substrate and a continuous sheet overlying the substrate and bonded to the substrate along at least three spaced lines of attachment, said sheet being cut on opposite sides of said lines of attachment to form a plurality of lobes, each lobe having a base portion attached to the substrate by one of said lines of attachment and an outer end portion free from the substrate to simulate the appearance of natural objects of a terrain, said sheet being color patterned in desired coloration to conform to the terrain in which the camouflage structure is utilized, said plurality of lobes being wrinkled and delustered by an application of heat that is over 400 degrees Fahrenheit.

5,486,386

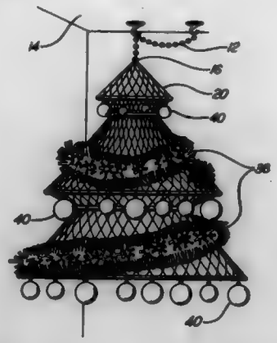
COLLAPSIBLE ARTIFICIAL CHRISTMAS TREE WITH OPEN MESH

Edward J. Rovsek, 2476 Brooklyn Rd., Jackson, Mich. 49203

Filed May 24, 1994, Ser. No. 248,119

Int. Cl.[6] A47G *33/06*

U.S. Cl. 428—18 14 Claims



1. An artificial coniferous tree adapted for suspension from a supporting structure, comprising:

an engagement means selectively enraged with the supporting structure for suspending the tree in a display position;

compliant open mesh material approximately forming a conical shape and having a top portion extending from the engagement means;

a plurality of outer hoops fixed to the mesh thereby at least partially defining an outer radial periphery of the mesh, the hoops being disposed approximately concentrically along a substantially vertical axis of the tree in the display position and being graduated from a small diameter hoop located proximate to the engagement means to a large diameter hoop located distal to the engagement means wherein in the display position the weight of the suspended outer hoops tensions the mesh to define the conical shape; and

at least one inner hoop axially located between two diametrically larger axially adjacent outer hoops and fixed to the mesh thereat, wherein when the tree is in the display position the mesh is tensioned by the weight of the rings thereby providing a sawtooth profile representative of a coniferous tree, and further wherein when the engagement means is released from the supporting structure and lowered to a flat surface the tree rings and the mesh collapse into a substantially flat storage position.

5,486,387

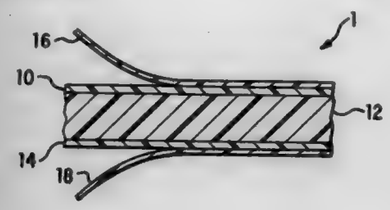
IMPACT MODIFIED MEDICAL FILM

Walter B. Mueller, Inman, S.C., assignor to W. R. Grace & Co.-Conn., Duncan, S.C.

Division of Ser. No. 323,477, Mar. 14, 1989, abandoned. This application Aug. 27, 1993, Ser. No. 113,499

Int. Cl.[6] B32B *27/30;* B29C *47/06;* B65D *65/02*

U.S. Cl. 428—34.7 26 Claims



1. An impact resistant film comprising:

a) two outer layers of a blend of ethylene propylene copolymer containing less than 6% ethylene by weight and a polystyrene/ethylene butylene copolymer/polystyrene block copolymer;

b) a central layer comprising ethylene vinyl acetate copolymer having a melt index less than 1.0; and

c) an intermediate layer disposed between each of the two outer layers and the central layer respectively and comprising ethylene vinyl acetate copolymer having a melt index greater than about 1.0.

5,486,388

ENCLOSURE ASSEMBLY FOR ELONGATE CYLINDRICAL OBJECTS SUCH AS ELECTRIC CABLE SPLICES

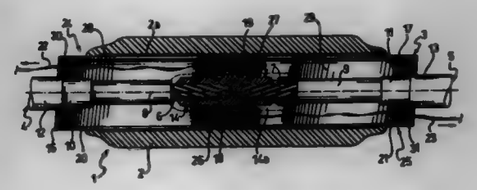
Francesco Portas, Quattordio, and Ubaldo Valsuri, Monza, both of, Italy, assignors to Pirelli Cavi S.p.A., Milan, Italy

Continuation of Ser. No. 985,183, Dec. 2, 1992, abandoned. This application Jan. 9, 1995, Ser. No. 370,558

Claims priority, application Italy, Dec. 16, 1991, MI91A3360

Int. Cl.[6] F16L *11/00*

U.S. Cl. 428—34.9 21 Claims



1. An assembly of an elastic sleeve with a tubular supporting body in the bore of said sleeve for the application of said sleeve to a cylindrical body, said assembly comprising:

a radially stretched sleeve of elastic material, the bore of said sleeve having a predetermined radius in its unstretched state;

a tubular supporting body disposed with the bore of said sleeve and having a longitudinal axis, said body having an external surface around said axis of a radius greater than said predetermined radius to cause radial stretching of said sleeve and having an internal surface around said axis of a radius smaller than the radius of said external surface, said body being formed by a plurality of helically wound, contiguous turns of a strip, severable means securing each turn to an adjacent turn and said turns of said body being made of a material of dimensions which provides a radial resistance to the pressure applied thereto by the stretched sleeve sufficient to maintain said sleeve in its stretched state; and

a pull strip extending from a turn at one end of said body within said internal surface for pulling said turns apart;

the improvement wherein said tubular body having a first plurality of said turns within a first selected region and a second plurality of said turns within a second selected region, said first and said second plurality of said turns having a helical pitch and axial thickness, said helical pitch and said axial thickness of said first plurality of said turns being less than said helical pitch and said axial thickness of said second plurality of said turns; said second plurality of said turns being located adjacent to said first plurality of said turns.

5,486,389

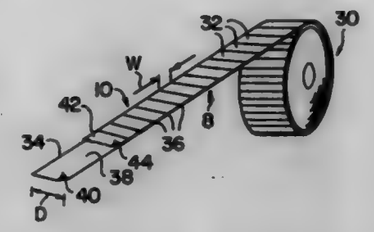
ROLL OF TAPE WITH DOUBLY ADHESIVELY FACED PADS

Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., Tolland, Conn.

Continuation of Ser. No. 109,147, Aug. 19, 1993, abandoned, which is a continuation of Ser. No. 681,861, Apr. 5, 1991, abandoned. This application Oct. 18, 1994, Ser. No. 325,544

Int. Cl.[6] B65D *65/28;* G09F *3/00*

U.S. Cl. 428—40 8 Claims



1. A roll of tape providing a supply of doubly adhesively faced pads for individual application to a receiving surface, said roll of tape comprising:

a generally elongate flexible base layer of material wound into a roll and having one side with a first release surface;

at least one layer of adhesive releasably bonded to said first release surface of said base layer, said at least one layer of adhesive having a multiplicity of separation lines extending transversely of the length of said base layer and spaced from one another along the length of said base layer to define a plurality of pads of material carried on said first release surface with each pad having two side edges extending generally parallel to each other and arranged in abutting relationship to the adjacent side edges of its two neighboring pads such that said plurality of pads are arranged in succession along the length of said base layer, each of said pads being readily separable from an adjacent one of said pads along the intervening one of said separation lines;

each of said pads having first and second tacky faces facing in opposite directions and having said first of its tacky faces releasably adhered to said first release surface of said base layer; and

barrier means associated with each side edge of each of said plurality of pads for keeping abutting ones of said side edges from adhering to one another, said barrier means being a layer of liquid lubricant material on each side edge of each of said plurality of pads which lubricant material penetrates and weakens said at least one layer of adhesive along said separation lines;

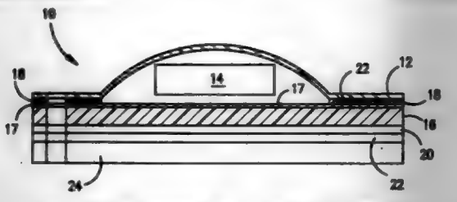
said base layer of material having a second side facing oppositely to said first side, said second side having a second release surface engaging said second tacky faces of said pads,the adherence between said second release surface and said second faces of said pads being less than the adherence between said first release surface and said first faces of said pads so that as said base layer is unrolled from said roll said pads release from said second release surface and remain adhered to said first release surface to expose said second tacky faces of the released pads for application onto a receiving surface such that the pads applied to the receiving surface are thereafter releasable from said first release surface and are cleanly separable along one of said separation lines from the pads not applied to the receiving surface.

5,486,390

RECYCLABLE BLISTER PACKAGE

Donald J. Burns, Lake Zurich, Ill., and A. Michael Nahmias, Victor, N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Apr. 25, 1994, Ser. No. 233,095
Int. Cl.[6] B32B 3/16; B65D 75/60
U.S. Cl. 428—40 16 Claims



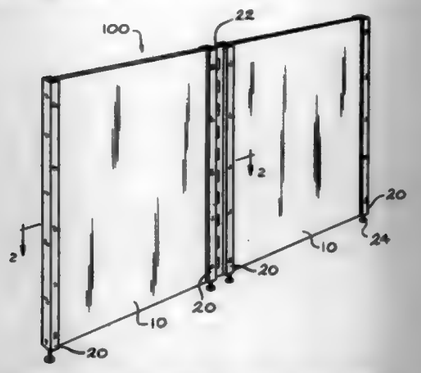
1. A reusable or recyclable blister package comprising:
A) a first sheet selected from the group consisting of polyethylene terephthalate (PET), polyvinyl chloride (PVC), and polyvinyl chloride (PVC) coated with polyvinylidene chloride (PVDC) having a blister which forms a compartment;
B) a second sheet releasably adhered to said first sheet, said second sheet comprising an oriented polypropylene (OPP) peel seal film having its side proximal to said first sheet coated with a first adhesive having controlled adhesion of 300–1200 grams per inch; and
C) a third sheet of card or paper stock which is adhered to said second sheet at at least fiber tear adhesion levels with a second adhesive.

5,486,391

PORTABLE FABRIC COVERED DIVIDER PANELS

Jeffrey D. Tyner, 2879 Canyonside Ct. NE., Grand Rapids, Mich. 49505

Filed Jul. 5, 1994, Ser. No. 270,730
Int. Cl.[6] B32B 3/06;27/10;27/32;27/40
U.S. Cl. 428—44 41 Claims



1. A panel for use as a space divider, which comprises:
(a) a polystyrene bead board core configured in a shape defining the panel of the space divider;
(b) a flexible plastic film layer adhered by an adhesive to the core to provide an outside surface of the panel and covering the core to thereby provide structural strength for the core, wherein the panel is able to withstand repeated punctures in a single hole by a fastening means without compromising the strength and integrity of the panel adjacent the hole and such that the plastic film layer retains the fastening means in the hole after each puncture;
(c) holding means mounted adjacent the core for holding the panel in an upright position such that the panel provides a divider for a space; and
(d) a decorative outer layer covering at least a first portion of the core and the plastic film layer.

5,486,392

ROLL-UP FLOOR MAT

Edward J. Green, Eagan, Minn., assignor to Reese Enterprises, Inc., Rosemount, Minn.

Filed Jul. 5, 1994, Ser. No. 270,480
Int. Cl.[6] B32B 3/10
U.S. Cl. 428—54 14 Claims



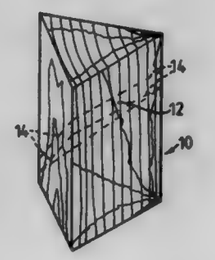
1. A floor mat adapted to be rolled up, comprising:
a plurality of rigid, elongated rails disposed generally parallel to each other in spaced relationship, each of the rails including a base portion supporting a tread surface and a pair of parallel side members connected to the lateral sides of the base portion, each of the side members defining a passageway for receiving an arrangement of a coupling member;
a plurality of flexible, resilient, elongated coupling members each interconnecting a pair of rails in parallel, spaced relationship, each of the coupling members including a web with longitudinal side margins, an arrangement connected to each of the side margins and being received by said passageway to engage the corresponding side member of the rail, the web being at the bottommost position in the floor mat, wherein the cross section of each of the webs has a thicker dimension proximate to the side margins than distal to the side margins.

5,486,393

METHOD OF MANUFACTURING SHEET ELEMENTS OF END-WOOD TYPE AND ELEMENT MANUFACTURED THEREBY

Martin Wiklund, Mosstorpsvägen 40, S-183 30 Täby, Sweden

PCT No. PCT/SE93/00902, § 371 Date May 16, 1994, § 102(e) Date May 16, 1994, PCT Pub. No. WO94/09955, PCT Pub. Date May 11, 1994
PCT Filed Oct. 29, 1993, Ser. No. 244,029
Claims priority, application Sweden, Nov. 4, 1992, 9203292
Int. Cl.[6] B32B 3/14; B27D 1/00
U.S. Cl. 428—58 13 Claims



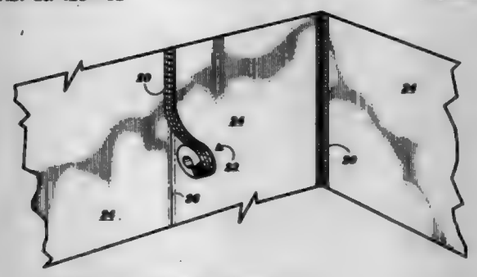
1. Method of manufacturing a sheet element of end-wood type for use as a wear surface for a floor, table or the like, comprising the steps of:
sawing a longitudinally sawn piece of wood with parallel cuts oblique to a longitudinal direction of said sawn piece of wood, into plates, a cut area of which is greater than a cross-sectional area of the piece of wood,
whereafter laying the plates next to each other, and
joining them together with complementarily shaped edge surfaces to form a sheet end-wood element.

5,486,394

SELF-RELEASE SELF-ADHESIVE DRYWALL TAPE

Ronald A. Stough, Hinsdale, Mont., assignor to E-Z Taping System, Inc., Green Bay, Wis.

Filed Aug. 26, 1994, Ser. No. 297,320
Int. Cl.[6] B32B 3/10
U.S. Cl. 428—61 7 Claims



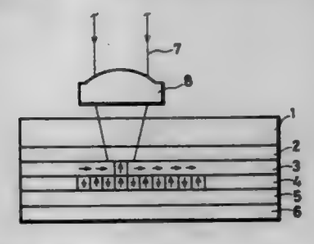
1. A wallboard assembly comprising:
a) a first sheet of drywall;
b) a second sheet of drywall positioned adjacent to the first sheet to define a seam therebetween; and
c) a strip of drywall tape affixed to the first sheet and the second sheet to bridge the seam, wherein the drywall tape has a first layer of flexible paper material, having an inwardly facing pressure-sensitive adhesive coating thereon, the adhesive serving to attach the tape to overlie the seam between said sheets of drywall; a second layer of reinforcing fiber strands, wherein the second layer overlies the first layer; and a third layer of flexible material which overlies the fiber strands to encapsulate the fiber strands between the first layer and the third layer, wherein the third layer has an outwardly facing release coating such that the first layer adhesive will releasably engage the third layer for manual separation of the tape when rolled upon itself.

5,486,395

MAGNETO-OPTICAL DISK

Yoshiteru Murakami, Nishinomiya; Naoyasu Iketani, Tenri; Akira Takahashi, Nara, and Kenji Ohta, Kitakatsuragi, all of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 2, 1992, Ser. No. 984,350
Claims priority, application Japan, Dec. 5, 1991, 3-321932
Int. Cl.[6] B32B 3/02; G11B 5/66
U.S. Cl. 428—64.3 11 Claims



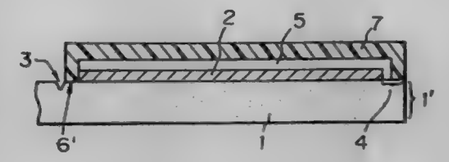
1. A magneto optical disk comprising:
a circular substrate;
a recording layer, formed on said substrate, for a recording of information;
a readout layer, formed between said substrate and said recording layer, for a reproduction of information recorded on said recording layer,
wherein said readout layer has a Curie temperature which is higher than a Curie temperature of said recording layer, exhibits its in-plane magnetization at room temperature and a change from in-plane magnetization to perpendicular magnetization when its temperature rises as a result of an application of a light beam, and wherein a first temperature at which a change occurs from in-plane magnetization to perpendicular magnetization is set such that it increases from a peripheral edge of said magneto-optical disk toward a center thereof.

5,486,396

OPTICAL RECORDING MEDIUM AND PRODUCTION THEREOF

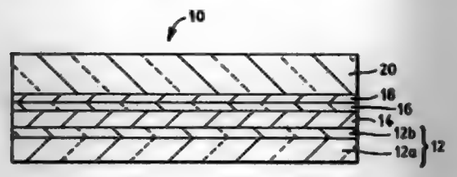
Tadahiko Mizukuki, Tokyo; Kouichi Yabuuchi, Yamanashi; Shinichi Murakami, Kamakura; Tomoyoshi Sasakawa, Chiba; Kouhei Shizuka, Yokohama; Nobuhisa Kitagawa, Yokohama, and Sumio Hirose, Yokohama, all of, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Division of Ser. No. 176,929, Jan. 3, 1994, Pat. No. 5,424,102, which is a division of Ser. No. 885,784, May 20, 1992, abandoned. This application Apr. 5, 1995, Ser. No. 417,257
Claims priority, application Japan, May 21, 1991, 3-116024; Nov. 1, 1991, 3-287663
Int. Cl.[6] B32B 3/00
U.S. Cl. 428—64.2 8 Claims



1. An optical recording medium comprising:
a transparent resin substrate having an inner peripheral portion and an outer substrate periphery;
a dye-containing recording layer spin-coated onto and overlying the substrate and having an inner recording periphery and an outer recording periphery, the inner recording periphery being displaced outwardly from the inner peripheral portion of the substrate and the outer recording periphery being displaced inwardly from the outer substrate periphery;
a metal reflective layer overlying the recording layer, the metal reflective layer having an inner reflective periphery, which is coterminous with the inner periphery of the recording layer, and an outer reflective periphery which extends beyond the outer recording periphery and onto but not coterminous with the outer peripheral edge of the substrate; and
a protective layer overlying the metal reflective layer and having an inner peripheral protective portion and an outer peripheral protective portion, the inner peripheral protective portion overlying the inner peripheral portion of both the recording layer and the metal reflective layer and contacting the inner peripheral portion of the substrate and containing dissolved therein a portion of the recording layer, the outer peripheral protective portion overlying the outer peripheral reflective portion and contacting the substrate proximate the outer substrate periphery, and the protective layer being produced from a liquid resin capable of dissolving the recording layer upon contact therewith and the recording layer being produced by being spin coated onto the substrate of the inner periphery of the reflective layer thereafter applied over the recording layer and the inner peripheral portion of the recording layer which extends inwardly from and lacks a coating of the metal reflecting layer thereon thereafter being selectively removed by being dissolved in the liquid resin used to form the protective layer by contact therewith.

5,486,397
PROTECTED REFLECTION IMAGE
James N. Gordon, Newton, and Ganghui Teng, Bedford, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Apr. 29, 1994, Ser. No. 236,491
Int. Cl.[6] B32B 1/04
U.S. Cl. 428—76 9 Claims



1. A protectively reflected binary image comprising
a thermally imaged transparency and a reflective protective overcoat;
the image transparency comprising a transparent supporting substrate and a binary image supported on the substrate, the binary image being a plurality of first areas at which a porous or particulate image-forming substance is adhered to the substrate and a plurality of second areas at which the substrate is free from the image-forming substance;
the reflective protective overcoat having a uniform opaque area corresponding with the extents of the binary image and comprising at least a durable layer, the opaque area incorporating therein a substantially uniform distribution of reflective pigments, the reflective protective overcoat further comprising a reflective layer configured as said opaque area interposed between the durable layer and the thermally imaged medium.
the reflective protective overcoat being interfacially bonded to the thermally imaged transparency such that the binary image is interposed between the transparent supporting substrate and the reflective protective overcoat and whereby the protected binary image may be viewed through the transparent supporting substrate as reflected against the opaque area.

5,486,398
LOW FLAMMABILITY CARPET FLOOR COVERING
Manfred Weber, Glashütten, and Gerhard Schwarz, Hanau, both of, Germany, assignors to Hoechst Aktiengesellschaft
Filed Sep. 28, 1993, Ser. No. 127,644
Claims priority, application Germany, Sep. 30, 1992, 9212981 U; Jun. 18, 1993, 9309105 U
Int. Cl.[6] B32B 33/00; D03D 27/00
U.S. Cl. 428—95 10 Claims

1. A low flammability carpet floor covering comprising a backing material, a tied-in pile yarn, and a back finish, wherein the pile yarn comprises low flammability synthetic fibers, the backing material comprises normal or low flammability synthetic fibers, and the back finish comprises a polyurethane composed of the radicals of the formulae I to VII:

—CO—A1—CO— (I)

—CO—A2—CO— (II)

$(—O—)_n—A3—(COOH)_m$ (III)

—O—B1—O— (IV)

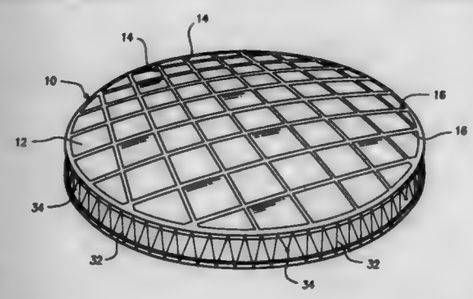
$—O—B_2—(O—)_p$ (V)

—NH—C1—NH— (VI)

—CO—NH—D1—NH—CO— (VII)

where
A1 is an aliphatic radical having from 2 to 12 carbon atoms,
A2 is a phenyl radical
A3 is an aliphatic radical having 2–10 carbon atoms, with n and m each being 1 or 2 and n+m being 3 or 4, and each of the n oxygen atoms being attached to A3,
B1 is an aliphatic or cycloaliphatic radical having 2–10 carbon atoms,
B2 is an aliphatic or cycloaliphatic radical having 3–6 carbon atoms with p being 1 or 2 and each of the p oxygen atoms being attached to B2,
C1 is an aliphatic or mono- or bicyclic cycloaliphatic radical having from 2 to 12 carbon atoms, and
D1 is an aliphatic or mono- or bicyclic cycloaliphatic radical having from 5 to 36 carbon atoms carbon atoms,
the proportions of the radicals I to III, based on their total amount, are within the following limits:
I : 40 to 80 mol %,
II : 10 to 40 mol %,
III : 0 to 25 mol %,
the proportions of the radicals IV, V and VI, based on their total amount, are within the following limits:
IV : 65 to 95 mol %,
V : 0 to 19 mol %,
VI : 3 to 16 mol %,
the radicals of the formulae I, II and IV are polyester blocks having an average molecular weight ($\overline{M}_n$) of from 400 to 6000 and the proportions of the radicals of the formula VII, based on the total amount of all the components of the polyurethane resin, are from 5 to 35 mol %, and the weight proportions of polyurethane finish in the low flammability carpet floor covering is 150 to 500 g/m^2.

5,486,399
SELF-SUPPORTING CONVEX COVER FOR SPACECRAFT
Louis B. Brydon, San Carlos; Samuel R. Moore, and Peter W. Lord, both of Palo Alto, all of Calif., assignors to Space Systems/Loral, Inc., Palo Alto, Calif.
Continuation of Ser. No. 819,285, Jan. 13, 1992, abandoned.
This application Sep. 30, 1993, Ser. No. 130,158
Int. Cl.[6] B32B 3/06;3/12;3/28; H01Q 15/02
U.S. Cl. 428—99 13 Claims



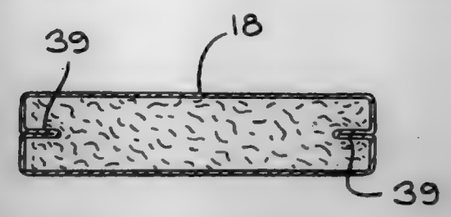
5. A self-supporting convex cover for spacecraft hardware, comprising:
a sheet of laminated material comprising a conductive layer and a thermal control layer, said thermal control layer comprising a film layer, a mesh layer, and a thermally reflective coating;
a first plurality of stiffener elements attached to the material for holding the material in a convex shape; and
a connector for attaching the material to the spacecraft hardware;
wherein the stiffener elements further comprise strips of a material having a channel shape placed between the conductive layer and the thermal control layer and attached to the thermal control layer to form box beam structures in the laminated material;
wherein the stiffener elements further comprise foam ribs inserted between the channel shaped strips and the thermal control layer to which the channel shaped strips are attached to define the box beam shape of the stiffeners.

5,486,400
CHRISTMAS TREE ORNAMENT PROTECTOR
James D. Fishel, 8313 Crown Court Rd., Alexandria, Va. 22308
Filed Nov. 28, 1994, Ser. No. 348,206
Int. Cl.[6] B32B 3/12
U.S. Cl. 428—116 9 Claims



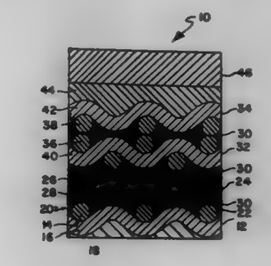
1. A Christmas tree ornament protector comprising:
a top layer having an opening for receiving a trunk of a Christmas tree;
a bottom layer adjacent to said top layer, said bottom layer made of a shock absorbent material and also having an opening for receiving said trunk; and
a plurality of fasteners for attaching said top and bottom layers.

5,486,401
INSULATION ASSEMBLY AND METHOD OF MAKING
Larry J. Grant, Westerville; Raymond V. Monnin, Perrysburg, and James W. Scott, Newark, all of Ohio, assignors to Owens-Corning Fiberglas Technology, Inc., Summit, Ill.
Filed May 9, 1994, Ser. No. 239,820
Int. Cl.[6] B32B 3/04
U.S. Cl. 428—125 10 Claims



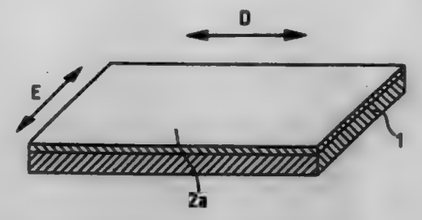
1. A non-rigid mineral fiber insulation assembly comprising, a fibrous body having opposed top and bottom surfaces, opposed side edges and opposed ends, each of said side edges including a longitudinally extending tuck, and each of said opposed ends being free of a transversely extending tuck.

5,486,402
PRINTING BLANKET HAVING PRINTING FACE SURFACE PROFILE WITHIN SPECIFIED ROUGHNESS RANGE
W. Toriran Flint, Spartanburg, and Joseph L. Byers, Inman, both of S.C., assignors to Reeves Brothers, Inc., Spartanburg, S.C.
Division of Ser. No. 835,795, Feb. 14, 1992, Pat. No. 5,364,683. This application Oct. 12, 1994, Ser. No. 322,041
Int. Cl.[6] B32B 3/00; D06N 7/04
U.S. Cl. 428—141 23 Claims



1. A printing blanket comprising:
at least one fabric ply; and
an elastomeric printing face having a surface profile with a roughness average of between about 0.6 microns and about 0.95 microns to enhance releasability while reducing dot gain during printing operations.

5,486,403
ALIGNMENT LAYER FOR LIQUID CRYSTAL ELEMENT AND METHOD OF PRODUCING SAME
Yoshihiko Ishitaka; Yumiko Sato; Munemitsu Abe, all of Sendai; Yorihiko Sasaki, Miyagi; Mitsuru Kano, Furukawa; Arao Sato, Sendai, and Kiyomi Sugawara, Iwaki, all of, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed Mar. 28, 1994, Ser. No. 218,476
Claims priority, application Japan, Apr. 2, 1993, 5-100500; Jan. 12, 1993, 5-341435
Int. Cl.[6] B32B 9/00
U.S. Cl. 428—167 2 Claims



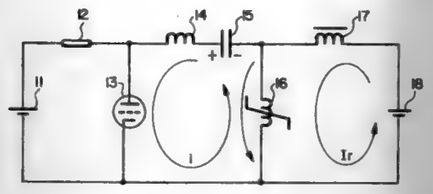
1. An orientation layer for liquid crystal element, the orientation layer comprising:
a macromolecular material deposited on a substrate, the macromolecular material composed of main molecular chains on the average being aligned in a specified direction,
a plurality of parallel microgrooves repeatedly formed on a surface of said macromolecular material, the microgrooves being aligned in a second direction, the second direction being perpendicular to said specified direction, each pair of adjacent microgrooves being separated by first and second sides forming a triangular ridge, the first and second sides being different in length from each other.

5,486,404

NANO-CRYSTALLINE SOFT MAGNETIC ALLOY RIBBON WITH INSULATION COATING AND MAGNETIC CORE MADE THEREFROM AND PULSE GENERATOR, LASER UNIT AND ACCELERATOR THEREWITH

Shin Nakajima, Kumagaya; Michiyuki Fukushima, and Noriyoshi Hirao, both of Saitama, all of, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed May 20, 1994, Ser. No. 246,429
Claims priority, application Japan, May 21, 1993, 5-119548
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—172 13 Claims



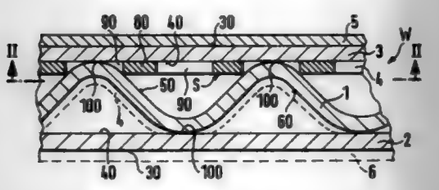
1. A nano-crystalline soft magnetic alloy ribbon having nano-crystalline particles of an average particle size of 50 nm or less occupying at least 50% of the alloy structure, the surface of the ribbon having a ceramic insulation coating which is thicker at each end than the center, in the transverse direction of the ribbon, wherein the thickness (dx) of the insulation coating at the ends of the ribbon and the average thickness (da) of the insulation coating determined by a mass measurement method have relations of 1.2 (da)≦(dx)≦5 (da) and (dx)≦10 μm.

5,486,405

METHOD OF PRODUCING A CORRUGATED BOARD AS WELL AS A CORRUGATED BOARD

Wolf-Henning Laves, Groenenbach, Germany, assignor to Hans Kolb Wellpappe GmbH & Co., Germany

Filed Oct. 4, 1993, Ser. No. 131,145
Claims priority, application Germany, Jan. 14, 1992, 42 34 689.4; European Pat. Off., Feb. 3, 1993, 93101662
Int. Cl.[6] B32B *3/28;31/00*
U.S. Cl. 428—182 31 Claims



1. A corrugated board used for folding cases or for sheet materials for protecting electrostatically endangered articles against electrostatic discharges and electric fields, comprising

a corrugated layer,

a flat layer on one side of said corrugated core layer,

a shielding layer (4) positioned between said corrugated core layer and said flat layer, said shielding layer having shielding material is selected from the group consisting of carbon, graphite and mixtures thereof, said shielding layer having a plurality of interspaces (90), and

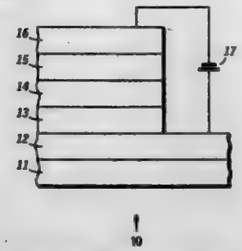
said corrugated layer is bonded or glued to said flat layer at at least some of said interspaces.

5,486,406

GREEN-EMITTING ORGANOMETALLIC COMPLEXES FOR USE IN LIGHT EMITTING DEVICES

Song Q. Shi, Phoenix, Ariz., assignor to Motorola, Schaumburg, Ill.

Filed Nov. 7, 1994, Ser. No. 334,999
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—209 5 Claims

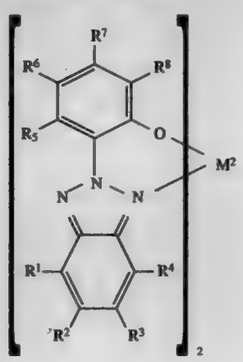


1. An organic light emitting device comprising:

a first conductive layer;

a layer of first carrier transporting and second carrier blocking material positioned on the first conductive layer;

a layer of organometallic material positioned on the layer of first carrier transporting and second carrier blocking material and having the following general formula:



where:

M^2 is a divalent metal ion, and

R^1 to R^8 represent substitution possibilities at each position and each represent hydrogen or hydrocarbon groups or functional groups;

a layer of second carrier transporting and first carrier blocking material positioned on the layer of organometallic material; and

a second conductive layer positioned on the layer of second carrier transporting and first carrier blocking materials.

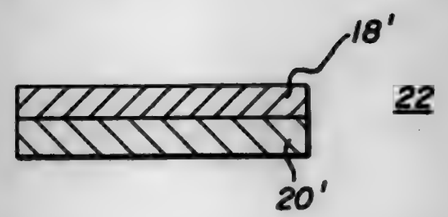
5,486,407

HIGH RUBBER BACKING MULTI-LAYER ABS SYSTEM WHICH EXHIBITS IMPROVED CHEMICAL RESISTANCE TO HCFC BLOWING AGENTS

John L. W. Noell; Satish Gaggar, both of Parkersburg; George P. McCarty, and Kenneth Miller, both of Vienna, all of W. Va., assignors to General Electric Co., Pittsfield, Mass.

Filed Jun. 8, 1993, Ser. No. 73,869
Int. Cl.[6] B32B *7/02*
U.S. Cl. 428—215 11 Claims

1. A thermoformable, coextruded, multilayer sheet comprising a first chemically resistant ABS resin layer of a first ABS resin comprising a rubbery polymer substrate having grafted thereon a vinyl aromatic-unsaturated nitrile grafting copolymer, said vinyl aromatic-unsaturated nitrile grafting copolymer being present in said first layer in an amount from 75 to 90 weight percent based on the total weight of the first ABS resin, said first ABS resin having a diene rubber content of from 10 to 25 percent by weight based on the total weight of the first ABS resin, a second ductile ABS resin layer of a second ABS resin comprising a polymeric diene rubber substrate and having grafted thereon a vinyl aromatic-unsaturated nitrile grafting copolymer, said vinyl aromatic-unsaturated nitrile grafting copolymer being present in said second layer in an amount from 50 to 65 weight percent based on the total weight of the second ABS resin, said polymeric diene rubber substrate being present at a level of from 35 to 70 percent by weight based on the total weight of the second ABS resin said vinyl aromatic-unsaturated nitrile grafting copolymer being present in said first and said second layer comprises from 25 to 40 weight percent of one unsaturated nitrile monomer and from 60 to 75 weight percent of at least one vinyl aromatic monomer selected from the group consisting of styrene, α-methylstyrene, and halogen-substituted styrene.



5,486,408

LAMINATED FIRE RESISTANT SHEET MATERIAL

Joseph S. Sentendrey, Parma, Ohio, assignor to Rexam Industries Corp., Matthews, N.C.

Division of Ser. No. 45,033, Apr. 7, 1993. This application Sep. 22, 1994, Ser. No. 310,571
Int. Cl.[6] B32B *7/00*
U.S. Cl. 428—220 10 Claims



1. A fire retardant laminate structure that is particularly suitable as moisture barrier thermal insulation in buildings, said laminate structure comprising:

a first web of a flexible moisture barrier material;

a second web of flexible material overlying said first web; and

an admixture of an uncured substantially solvent-free adhesive and a fire retardant composition between said first and second webs for adhesively joining said webs when the adhesive in said adhesive admixture is cured and set;

said admixture having a viscosity of between about 20,000 and 30,000 centipoise per second and being present in an amount of between about 5 and 15 pounds per ream; and

said fire retardant composition being present in said admixture in a ratio by weight of between about 0.5:1 and 4:1, retardant:adhesive.

5,486,409

NONWOVEN FABRICS FROM HIGH NITRILE COPOLYMERS

Benedict S. Curatolo, Valley View; George S. Li, Solon, and Brandford E. Giddings, Shaker Heights, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 79,183, Jun. 17, 1993, abandoned. This application Oct. 17, 1994, Ser. No. 324,290
Int. Cl.[6] D04H *3/00*
U.S. Cl. 428—221 21 Claims

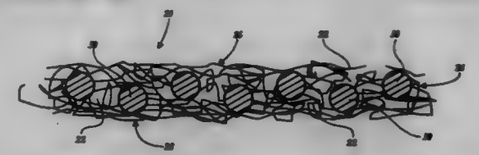
1. A non-woven fabric produced from fibers formed in the absence of a solvent or a plasticizing agent from melt processable and stable copolymers containing 30 to 90 weight percent acrylonitrile moiety and up to 70 weight percent methacrylonitrile moiety and optionally less than 20 weight percent moieties of other comonomers wherein said copolymers are produced by an aqueous emulsion polymerization.

5,486,410

FIBROUS STRUCTURES CONTAINING IMMOBILIZED PARTICULATE MATTER

H. Gunter Groeger; George A. Serad, and Clinton D. Felton, all of Charlotte, N.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation of Ser. No. 977,995, Nov. 18, 1992, abandoned. This application May 17, 1994, Ser. No. 245,103
Int. Cl.[6] B32B *5/16*
U.S. Cl. 428—283 12 Claims



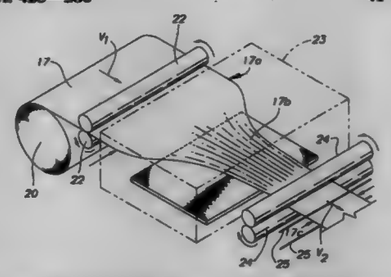
1. A fibrous structure comprising a macrofiber matrix formed from composite fiber comprising a structural component, and a lower melting polyamide that melts at a temperature of less than 220° C., and comprising immobilized functional particulate thermally bonded to said macrofiber matrix by said polyamide.

5,486,411

ELECTRICALLY CHARGED, CONSOLIDATED NON-WOVEN WEBS

Charles B. Hassenboehler, Jr., and Larry B. Wadsworth, both of Knoxville, Tenn., assignors to The University of Tennessee Research Corporation, Knoxville, Tenn.

Continuation-in-part of Ser. No. 858,182, Mar. 26, 1992, Pat. No. 5,244,482. This application Sep. 28, 1992, Ser. No. 952,355
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[6] B32B *27/00*
U.S. Cl. 428—286 41 Claims



1. A post-electrostatically charged, consolidated nonwoven web of improved filtration performance which is consolidated and elastic in the cross-direction, which consolidated web is made by

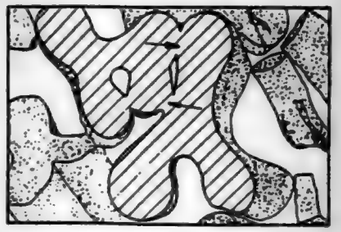
drawing and heat setting a precursor nonwoven web of nonelastomeric, thermoplastic fibers, wherein the consolidated web has a reduced average pore size and reduced pore size distribution with respect to the precursor web, the web comprising a planar layer of randomly organized, nonelastomeric thermoplastic fibers bonded to each other, a majority of fibers being aligned generally in the direction of draw and a minority of fibers disposed in a cross-direction transverse to the direction of the draw, the consolidated web having a maximum pore size of less than 80% of that of the precursor web, wherein the average pore size reduction which results from lateral contraction of the web during drawing is not accompanied by a significant average fiber diameter reduction of the fibers which are aligned in the direction.

5,486,412

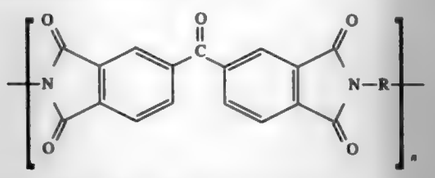
FLAME RETARDANT HIGH-TEMPERATURE-RESISTANT POLYIMIDE FIBERS AND MOLDED ARTICLES MANUFACTURED THEREFROM

Klaus Weinrotter, and Robert Vodiunig, both of Vocklabruck, Austria, assignors to Lenzing Aktiengesellschaft, Lenzing, Austria

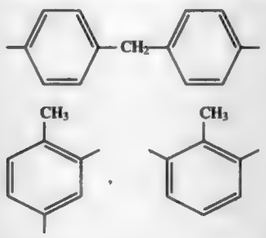
Continuation of Ser. No. 442,351, Oct. 20, 1989, Pat. No. 5,271,889. This application Dec. 16, 1993, Ser. No. 168,558
Claims priority, application Austria, Feb. 26, 1988, A 495/88
Int. Cl.[6] B29D *28/00*; D04H *1/04*; C08G *8/02;14/00*
U.S. Cl. 428—288 **4 Claims**



1. A rigidified machineable, molded article comprising a quantity of heat-shrunk polyimide fibers fused by cohesive bonds corresponding to the general formula:



wherein R is selected from the group consisting of



and combinations thereof, said quantity of polyimide fibers being sufficient to impart flame retardant and high-temperature stability properties to said molded article and said molded article having a tensile strength of 5–50 N/mm^2, a breaking elongation of 5 %–80%, an E-moduli of 100–500N/mm^2 and a density of 1.20 g/cm^3 or less.

5,486,413

CERAMIC ADHESIVE HAVING A SEALED POROSITY

Kurtis C. Kelley, Washington, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Jul. 29, 1994, Ser. No. 282,687
Int. Cl.[6] B32B *27/38*
U.S. Cl. 428—323 **20 Claims**

1. A ceramic adhesive, comprising:

a ceramic matrix, said ceramic matrix being formed from a mixture of a metallic oxide and an alkali silicate in water; and said ceramic matrix further having a sealed porosity;

wherein said porosity of said ceramic matrix is sealed by an organic epoxy resin; and

silicon carbide whiskers dispersed within said ceramic matrix;

wherein said ceramic matrix is formed from a mixture, comprising, in the range of about 50% to about 80% by weight metallic oxide and in the range of about 50% to about 20% by weight alkali silicate in water, and said silicon carbide whiskers being present in the range of about 3% to about 25% by weight of said ceramic matrix; and

wherein said metallic oxide is selected from a group consisting of magnesium oxide, aluminum oxide, zirconium oxide, silicon dioxide and mixtures thereof.

5,486,414

DUAL COATED METAL SUBSTRATES AND METHOD OF MAKING

Oscar E. Roberto, Farmington Hills, and Marc A. Maxim, Sterling Heights, Mich., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed Jul. 18, 1994, Ser. No. 276,284
Int. Cl.[6] B32B *15/04;15/08*; B05D *3/04*; C23F *7/26*
U.S. Cl. 428—334 **26 Claims**

1. A method for coating a metal substrate, said method comprising steps of:

a) applying onto the metal substrate as a first coating an adherent, water insoluble coating comprising (1) a transition metal compound and (2) at least one pulverulent metal in an organic compound matrix;

b) applying onto the surface of the first coating an acidic aqueous composition comprising dispersed resin solids and an activator which converts the water/resin composition into one which will form on a metallic surface a resinous coating that increases in thickness the longer the surface is contacted with the composition, to form a second uncured autodeposited coating over said first coating; and

c) curing the uncured autodeposited coating formed in step b).

5,486,415

POLYPROPYLENE LAMINATE FILM

Junichi Kimura, Osaka; Kazuki Wakamatsu, Chiba; Masahito Usui, Chiba, and Makoto Satoh, Chiba, all of, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Jul. 8, 1994, Ser. No. 271,981
Claims priority, application Japan, Jul. 8, 1993, 5-168986
Int. Cl.[6] B32B *7/12*
U.S. Cl. 428—349 **11 Claims**

1. A polypropylene laminate film comprising a crystalline polypropylene layer having laminated on at least one surface thereof a copolymer which is a random copolymer of propylene, ethylene, and an α-olefin having at least 4 carbon atoms, the copolymer being obtained by a vapor-phase polymerization using a catalyst system comprising a solid catalyst component containing magnesium, titanium, and a halogen, an organoaluminum compound, and an electron donative compound in substantially the absence of a liquid medium, and satisfying the following requirements (1) to (7):

(1) the ethylene content of the copolymer is from 3.0 to 7.0% by weight,

(2) the content of the α-olefin having at least 4 carbon atoms of the copolymer is from 2.0 to 6.0% by weight,

(3) the ratio of the ethylene content to the content of the α-olefin having at least 4 carbon atoms in the copolymer is at least 1.0,

(4) the melt flow rate of the copolymer is 10 g/10 minutes or less,

(5) the ratio of the weight average molecular weight to the number average molecular weight of the copolymer is 4.5 or less,

(6) the melting point of the copolymer is 135° C. or less, and

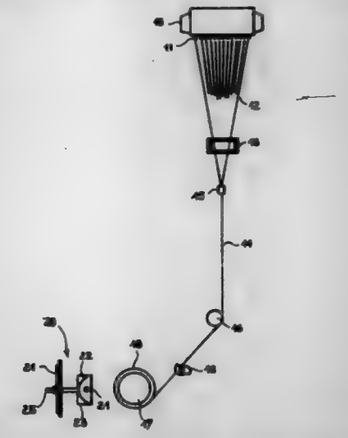
(7) the amount of the n-hexane-soluble components in the copolymer is less than 5.5% by weight.

5,486,416

CONTINUOUS THREAD MANUFACTURED BY MECHANICAL DRAWING

Timothy Johnson, Vimines, and Patrick Moireau, Curienne, both of, France, assignors to Vetrotex France, Chambery, France

Division of Ser. No. 61,223, May 17, 1993, Pat. No. 5,352,392. This application May 24, 1994, Ser. No. 248,147
Claims priority, application France, May 15, 1992, 92 05958
Int. Cl.[6] D02G *3/00*
U.S. Cl. 428—357 **4 Claims**



1. Thread made by a process of forming a plurality of continuous filaments by mechanically drawing a plurality of molten thermoplastic material streams from openings in at least one heated die plate, depositing on the surface of at least one of the filaments a mixture in a liquid state which reacts under the effect of ultraviolet radiation, subsequently combining the filaments to form a thread, winding the thread on a rotating support, and exposing the wound thread to ultraviolet radiation during the winding step, wherein the wound thread consists of filaments coated with a mixture having a polymerization reaction rate which is greater than 60%.

5,486,417

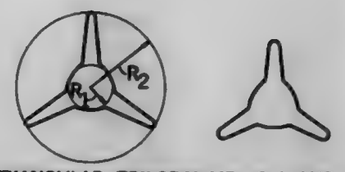
MIXED CROSS-SECTION CARPET YARN

Gerry A. Hagen, Anderson, and Wei Li, Salem, both of S.C., assignors to BASF Corporation, Parsippany, N.J.

Continuation of Ser. No. 128,454, Sep. 28, 1993, Pat. No. 5,413,857. This application Jan. 17, 1995, Ser. No. 373,813
Int. Cl.[6] D02G *3/00*
U.S. Cl. 428—357 **9 Claims**

1. A blend of fibers comprising:

about 51 to 90% by weight of base fibers (a) selected from the group consisting of triangular trilobal fibers having a modification ratio ranging from 2.4 to 3.4; hollow pentagonal fibers; standard trilobal fibers having a modification ratio of at least 2.6; pointed lobe trilobal fibers having a modification ratio of at least 2.6; and mixtures thereof; and



TRIANGULAR TRILOBAL, MR=2.4 AND 3.4

about 10 to 49% by weight of accent fibers (b) selected from the group consisting of standard trilobal fibers having a modification ratio ranging from 1.7 to 2.4; pointed lobe trilobal fibers having a modification ratio ranging from 2.0 to 2.9; and mixtures thereof;

said fibers (a) and (b) having a denier per filament within the range represented by the area enclosed by sides A, B, C, D and E of FIG. 1 and when said fibers (a) and (b) are both pointed lobe trilobal fibers with the same modification ratio and denier per filament, said fibers (a) are delustered and said fibers (b) are not delustered.

5,486,418

WATER-SOLUBLE HEAT-PRESS-BONDING POLYVINYL ALCOHOL BINDER FIBER OF A SEA-ISLANDS STRUCTURE

Akio Ohmory; Tomoyuki Sano; Masahiro Satoh, all of Kurashiki; Syunpei Naramura, Kiyone; Satoru Kobayashi, Kurashiki, and Yosuke Sekiya, Hayashima, all of, Japan, assignors to Kuraray Co., Ltd., Okayama, Japan

Filed Oct. 13, 1994, Ser. No. 322,424
Claims priority, application Japan, Jan. 15, 1993, 5-258117
Int. Cl.[6] D02G *3/04*
U.S. Cl. 428—397 **8 Claims**



1. A water-soluble heat-press-bonding polyvinyl alcohol-containing binder fiber of a sea-islands structure, having a complete-water-dissolution temperature of 100° C. or less such that said fiber completely dissolves in water at said temperature and a tensile strength of 3 g/d or more, in which structure, the sea component is a water-soluble polyvinyl alcohol polymer (A) and the islands component is a water-soluble polymer (B) having a melting point or a fusion-bonding temperature each at least 20° C. lower than the melting point of the polymer (A), and wherein at least part of the islands component in said fiber is present in a fiber zone from 0.01 to 2 μm inside from the fiber surface, said water-soluble polyvinyl alcohol (A) having a saponification degree of 90.0–99 mol % and being comprised of vinyl alcohol units which may be modified with 0.1–3 mol % of a comonomer modifying unit.

5,486,419

RESILIENT, HIGH STRINKAGE PROPYLENE POLYMER YARN AND ARTICLES MADE THEREFROM

Luciano Clementini, Terni, Italy; Adam F. Galambos, New Castle County, Del.; Giuseppe Lesca, Milan; Leonardo Spagnoli, Terni, both of, Italy; Michael E. Starsinic, Cecil County, Md., and Kumar Ogale, New Castle County, Del., assignors to Montell North America Inc., Wilmington, Del.

Continuation of Ser. No. 993,951, Jan. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 824,661, Jan. 23, 1992, abandoned. This application Jan. 10, 1995, Ser. No. 371,056

Claims priority, application Italy, May 29, 1992, MI92A1336

Int. Cl.[6] D02G *3/00;* C08L *23/00;* C08F *10/04*

U.S. Cl. 428—397 10 Claims

1. Propylene polymer yarn of increased resiliency and shrinkage, compared to crystalline polypropylene homopolymer yarn, comprising a continuous strand of multiple monofilamcnt fibers, the composition of matter of said fibers consisting essentially of a member of the group consisting of, amounts being expressed as weight %:

I. a blend of crystalline polypropylene homopolymer at a concentration of about 10– 70% of the blend, and (a) a random crystalline terpolymer consisting essentially of about 96.0–85.0% of propylene, about 1.5–15.0% of ethylene, and about 2.5–10% of a C_4–C_8 alpha-olefin or (b) a random, crystalline, propylene polymer consisting essentially of propylene and about 1.5–20.0% of an olefin selected from the group consisting of ethylene and C_4–C_8 alpha-olefins; and

II. propylene polymer material optionally in a blend with crystalline, polypropylene homopolymer, said homopolymer being at a concentration up to about 70% of the blend, said propylene polymer material being selected from the group consisting of:

(a) a composition of random, crystalline, propylene polymers consisting essentially of:

(1) about 30–65% of a copolymer of about 80–98% propylene, and a C_4–C_8 alpha-olefin, and

(2) about 35–70% of a copolymer of propylene and ethylene and optionally about 2–10% of a C_4–C_8 alpha-olefin, said copolymer containing about 2–10% ethylene when said C_4–C_8 alpha-olefin is not present, and about 0.5–5% ethylene when said C_4–C_8 alpha-olefin is present;

(b) a composition of random, crystalline, propylene polymers and a predominantly ethylene copolymer, which composition consists essentially of:

(1) about 15–35% of a terpolymer of about 90–93% propylene, about 2–3.5% ethylene, and about 5–6% C_4–C_8 alpha-olefin,

(2) about 30–75% of a copolymer of about 80–90% propylene, and a C_4–C_8 alpha-olefin, and

(3) about 20–60% of a copolymer of about 91–95% ethylene, and a C_4–C_8 alpha-olefin;

(c) a heterophasic, polyolefin composition consisting essentially of:

(1) 90–55% of polymeric material selected from the group consisting of a polypropylene homopolymer having an isotactic index greater than 90, and a crystalline copolymer of propylene and an alpha-olefin of the formula CH_2=CHR, where R is H or C_2–C_6 alkyl, said olefinic material being less than 10% of the copolymer, and

(2) 10–45% of an elastomeric polymer of propylene and olefinic material selected from the group consisting of alpha-olefins of the formula CH_2=CHR, where R is H or C_2–C_6 alkyl, said olefinic material being 50–70% of said elastomeric copolymer, and 10–40% of said elastomeric copolymer being insoluble in xylene at ambient temperature.

5,486,420

HYDROPHOBIC SILICA POWDER, MANUFACTURING METHOD THEREOF AND DEVELOPER FOR ELECTROPHOTOGRAPHY

Akira Nishihara; Akihiro Nakamura, and Shigehiro Arakawa, all of Omiya, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Feb. 3, 1994, Ser. No. 191,435

Claims priority, application Japan, Feb. 3, 1993, 5-016454

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—405 4 Claims

1. A hydrophobic silica powder comprising a silica powder treated with an amino-substituted silane selected from the group consisting of

$H_2N(CH_2)_3Si(OEt)_3$

$H_2N(CH_2)_2NH(CH_2)_3Si(OMe)_3$

$H_2N(CH_2)_2NH(CH_2)_3SiMe(OMe)_2$

$C_6H_5NH(CH_2)_3Si(OMe)_3$ and

$H_2N(CH_2)_2NH(CH_2)_3SiCl_3$

and an organopolysiloxane selected from the group consisting of dimethylpolysiloxane, diphenylpolysiloxane, and methylhydropolysiloxane and having an amount of triboelectrification relative to iron of from +467 μC/g to up to +700 μC/g and a hydrophobing ratio of at least 60%, said hydrophobing ratio being the ratio of transmittance of a 550 nm beam through a suspension of 1.0 g of said silica powder in 100 ml of water to the transmittance of a 550 nm beam through pure water.

5,486,421

CURABLE POLYMER RELEASE COATING COMPOSITION

Hideki Kobayashi, Ichihara, Japan, assignor to Dow Corning Toray Silicone Company, Ltd., Tokyo, Japan

Filed Nov. 14, 1994, Ser. No. 338,914

Claims priority, application Japan, Nov. 25, 1993, 5-321025

Int. Cl.[6] B32B *27/00*

U.S. Cl. 428—421 20 Claims

1. A curable polymer composition comprising:

(A) a fluorine-containing polymer that contains at least 2 alkenyl groups in each molecule, said polymer being obtained by the copolymerization of

(a) an acrylic monomer having the general formula

$$CH_2{=}CX{-}COOR'$$

wherein X is selected from the group consisting of hydrogen and a methyl radical and R' denotes a monovalent hydrocarbon group having 4 to 15 carbon atoms which contain at least one —CF_2— group, and

(b) a silicone macromonomer with the general formula

$$CH_2{=}CX{-}COO{-}Q{-}(RMeSiO)_n{-}Me_2SiR''$$

wherein X has its previously defined meaning, Q denotes a divalent hydrocarbon group having 1 to 8 carbon atoms, R is selected from the group consisting of methyl radical and fluorine-containing monovalent hydrocarbon group having 3 to 8 carbon atoms, Me represents a methyl radical, R" denotes an alkenyl group having 2 to 6 carbon atoms and n is an integer having a value of at least 1;

(B) an organohydrogenpolysiloxane that contains at least 3 silicon-bonded hydrogen atoms in each molecule, the amounts of (A) and (B) being selected so as to provide a molar ratio of alkenyl groups in component (A) to silicon-bonded hydrogen in component (B) of 0.2/1 to 5/1;

(C) a hydrosilylation catalyst; and

(D) a hydrosilylation catalyst inhibitor.

5,486,422

PHOTO-CROSSLINKABLE SILICONES AND THEIR USE

Bernard J. L. Boutevin; Latifa Abdellah, both of Montpellier, France, and Gerardo Caporiccio, Milan, Italy, assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 229,247, Apr. 19, 1994, Pat. No. 5,436,309. This application Apr. 17, 1995, Ser. No. 422,919

Int. Cl.[6] C08L *83/04;83/07;* C08F *2/50;2/48*

U.S. Cl. 428—447 14 Claims

1. A composition comprising a silicone copolymer according to the formula $(I)R_b(R_a)_2SiO(V)_v{-}(W)_w{-}(Y)_y{-}(Z)_z{-}Si(R_a)_2R_b$ wherein V is a diorganosiloxy unit having monovalent hydrocarbon substituents having 1 to 8 carbon atoms, R_a is selected from the group consisting of methyl, ethyl, n-propyl, n-butyl, pentyl, hexyl, octyl and phenyl provided no more than one phenyl radical is bonded to any silicon atom, R_b is selected from the group consisting of R_a and an oxyalkylene styrene group connected to the silicon atom of a siloxane unit through a group selected from an alkylene unit, an alkylene unit having at least one oxygen atom in the chain and an alkylene unit having at least one sulphur atom in the chain, W is a siloxane unit having an oxyalkylene styrene group connected to the silicon atom of the siloxane unit through a group selected from an alkylene unit, an alkylene unit having at least one oxygen atom in the chain and an alkylene unit having at least one sulphur atom in the chain, Y is a diorganosiloxy unit wherein the organo radicals are selected from the group consisting of hydrocarbon having 1 to 12 carbon atoms and fluorinated hydrocarbon group having 1 to 12 carbon atoms, Z represents a silfluoroalkylene-siloxy unit; v, y and z have identical or different values but they are not simultaneously zero, w is always non-zero and v+y+z/w is from 1 to 100 and a photoinitiator.

5,486,423

SiO_2 ELECTRETS AND PROCESS OF MAKING IT

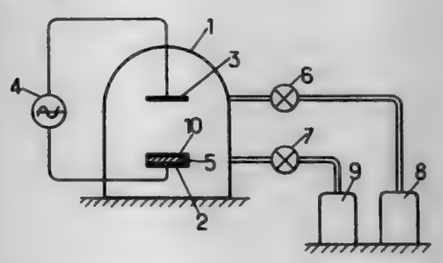
Jacques Lewiner, 7 avenue de Suresnes, 92210 Saint-Cloud, and Didier Perino, 84 rue Voltaire, 92500 Rueil-Malmaison, both of, France

Filed Jan. 13, 1994, Ser. No. 182,707

Claims priority, application France, Jan. 14, 1993, 93 00297

Int. Cl.[6] B32B *15/04;* H05H *1/24*

U.S. Cl. 428—450 8 Claims



1. Process for making an electret which comprises the steps of forming a layer of SiO_2 on a solid substrate, by chemical vapor deposition in a vapor phase starting from a plasma containing silicon and oxygen, subjecting the layer so formed to a thermal treatment by raising its temperature to above 100° C. for a time period longer than 1 hour and then electrically charging said thermally treated layer.

5,486,424

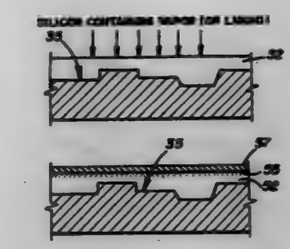
SILYLATED PHOTORESIST LAYER AND PLANARIZING METHOD

Tatsuo Nakato, Vancouver, and David A. Vidusek, Camas, both of Wash., assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 893,702, Jun. 5, 1992, abandoned. This application Feb. 4, 1994, Ser. No. 191,701

Int. Cl.[6] B32B *13/12*

U.S. Cl. 428—451 11 Claims



1. A silylated planarizing resist, the resist having a surface, comprising:

(a) an organic polymer capable of use in lithographic processes; and

b) an acid in a solution with the polymer, the solution forming a silicon-enriched portion adjacent to the surface of the resist,

wherein the silicon-enriched portion is formed by reaction of an organosilane with the acid and wherein the resist is not photosensitive.

5,486,425

SHOOTING RANGE TARGET

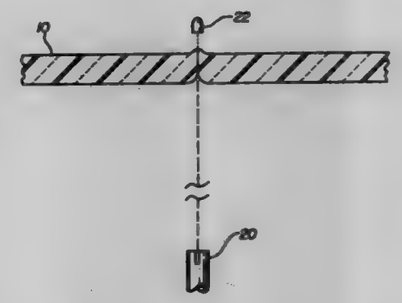
George M. Seibert, 36591 Haverhill St., Sterling Heights, Mich. 48312

Continuation-in-part of Ser. No. 40,140, Mar. 30, 1993, Pat. No. 5,405,673. This application Oct. 22, 1993, Ser. No. 139,845

The portion of the term of this patent subsequent to Apr. 11, 2012, has been disclaimed.

Int. Cl.[6] B32B *3/10;* A63B *67/00;* F41H *5/02*

U.S. Cl. 428—500 10 Claims



1. A target for firearm projectiles including a body of an ionomeric material comprising a metallic salt of a copolymer of ethylene and a vinyl monomer having an acidic group, said body being operable, when penetrated by a bullet to first stretch and deform and then to form an opening therethrough which reseals after the bullet has passed and including a target support structure for retaining said body of ionomeric material.

5,486,426

COLD SEALABLE COHESIVE POLYMER COATED POLYOLEFIN SUBSTRATE

Dennis E. McGee, Penfield, and Robert E. Touhsaent, Fairport, both of N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 131,500, Oct. 4, 1993. This application Nov. 28, 1994, Ser. No. 345,085
Int. Cl.[6] B32B *27/08;7/10*
U.S. Cl. 428—516 13 Claims

1. A coated polyolefin substrate which comprises a polyolefin film having a first side and a second side and a cold sealable, emulsion polymerized pressure sealable cohesive polymer composition for coating the first side of the substrate and an acrylic-based composition for coating the second side of the substrate, the polymer for coating the first side of the substrate comprising an acrylonitrile monomer and at least one of:

(a) a soft monomer selected from the group consisting of methyl acrylate, ethyl acrylate, hexyl acrylate, iso-octyl acrylate, butyl acrylate, isobutyl acrylate, isopropyl acrylate and vinyl acetate; and

(b) a monomer selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, crotonic acid, sulfoethyl methacrylate and maleic acid;

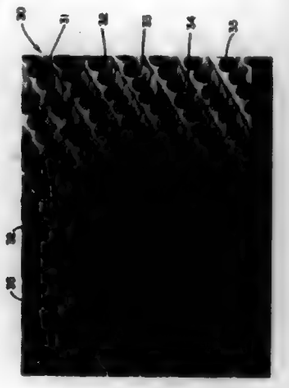
the monomers being combined in weight percent amounts based on the total weight of the polymer sufficient to achieve a glass transition temperature of at least about −35° C., the weight percent amounts of the acrylonitrile monomer ranges from about 10 wt. % to about 65 wt. %, the weight percent amount of the (a) monomer ranges from about 30 wt. % to about 85 wt. % and the weight percent amount of the (b) monomer ranges from about 1 wt. % to about 3 wt. %, based on the total weight of the polymer, the polmer having low blocking tendencies to the acrylic-based formulation of the second side of the substrate.

5,486,427

PATTERNED ARRAY OF UNIFORM METAL MICROBEADS

David C. Koskenmaki, St. Paul, and Clyde D. Calhoun, Grant Township, Washington County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 129,668, Sep. 30, 1993, Pat. No. 5,366,140. This application Aug. 19, 1994, Ser. No. 292,890
Int. Cl.[6] B22F *1/00;9/00*
U.S. Cl. 428—546 13 Claims



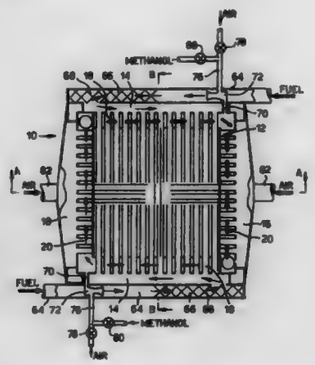
1. A regular array of discrete, uniform metal microspheres on a substrate, wherein said metal microspheres have a spherical portion, and a flat portion in contact with said substrate, and an average density on said substrate of about 600–6,000,000 beads/cm^2.

5,486,428

SOLID OXIDE FUEL CELL STACK

Frederick J. Gardner; Michael J. Day, both of Derby; Nigel P. Brandon, Leicestershire, and John B. Brownell, Derbyshire, all of, England, assignors to Rolls-Royce plc, London, United Kingdom

Filed Feb. 16, 1995, Ser. No. 392,544
Claims priority, application United Kingdom, Feb. 19, 1994, 9403198
Int. Cl.[6] H01M *8/10*
U.S. Cl. 429—19 22 Claims



1. A solid oxide fuel cell stack comprising

a plurality of solid oxide electrolyte members, each solid oxide electrolyte member having a first surface and a second oppositely facing surface, an anode electrode on the first surface of each solid oxide electrolyte member and a cathode electrode on the second opposite surface of each solid oxide electrolyte member to form a fuel cell, each anode electrode partially defining an anode chamber, each cathode electrode partially defining a cathode chamber,

means to define passages internally of the solid oxide fuel cell stack, the passages supplying hydrogen to the anode chambers, the passages containing a catalyst suitable for steam reforming hydrocarbon fuel to hydrogen and other product gases, the means to define the passages being in intimate thermal contact with the solid oxide fuel cells such that waste heat from the oxide fuel cells provides the endothermic heat requirements for the steam reforming reaction,

an adiabatic prereformer to convert heavier hydrocarbon fuels to methane, hydrogen and oxides of carbon and supplies the methane, hydrogen and oxides of carbon to the passages,

means to supply oxidant to the cathode chambers,

means to supply hydrocarbon fuel to the prereformer,

each first module comprising a first distribution member defining a plurality of first passages for the supply of a first reactant longitudinally relative to the first distribution member,

a plurality of electrolyte/electrode assemblies arranged to be carried on one side of the first distribution member, the electrolyte/electrode assemblies and the first distribution member, the electrolyte/electrode assemblies and the first distribution member defining a plurality of second passages therebetween, the second passages extending longitudinally relative to the first distribution member for the distribution of first reactant and the removal of spent first reactant,

each electrolyte/electrode assembly comprising a plurality of first electrodes, a plurality of solid oxide electrolyte members and a plurality of second electrodes,

each solid oxide electolyte member being positioned between and contacting a respective one of the first electrodes and a respective one of the second electrodes to form a fuel cell,

at least one interconnector to connect the first electrode of one fuel cell with the second electrode of an adjacent fuel cell.

the first electrodes on the electrolyte/electrode assembly facing the first distribution member,

each second module comprising a second distribution member defining a plurality of third passages for the supply of a second reactant longitudinally relative to the second distribution member,

the at least one first module being arranged in proximity to the at least one second module such that the electrolyte/electrode assemblies and the second distribution member define a plurality of fourth passage therebetween, the fourth passages extending longitudinally relative to the second distribution member for the distribution of second reactant and the removal of spent second reactant,

the second electrodes on the electrolyte/electrode assemblies facing the second distribution member,

one of the first and the third passages supplying hydrogen to one of the first and second electrodes respectively, one of the first and third passages respectively containing a catalyst suitable for steam reforming hydrocarbon fuel to hydrogen and other product gases, the first or second distribution members being in intimate thermal contact with the solid oxide fuel cells such that waste heat from the solid oxide fuel cells provides the endothermic heat requirements for the steam reforming reaction,

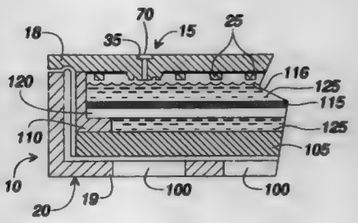
the prereformer supplying methane, hydrogen and oxides of carbon to one of the first and third passages.

5,486,429

DIFFUSION VENT FOR A RECHARGEABLE METAL-AIR CELL

William C. Thibault, Powder Springs, Ga., assignor to AER Energy Resources, Inc., Smyrna, Ga.

Filed Apr. 24, 1995, Ser. No. 428,005
Int. Cl.[6] H01M *2/12;12/06*
U.S. Cl. 429—27 65 Claims



1. A system for venting gas from within a case housing a metal-air cell having a cathode and an anode with a separator position therebetween, said case having an interior surface and an exterior surface, comprising:

at least one gas vent in said case on the anode side of said separator;

said gas vent extending from said interior surface of said case to said exterior surface of said case;

a gas vent cap covering each one of the said gas vents on said interior surface of said case; and

a gas permeable, hydrophobic membrane positioned between each pair of said gas vents and said gas vent caps;

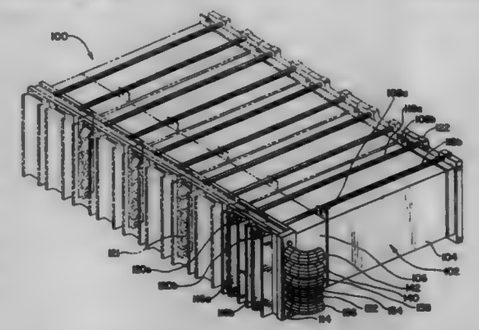
said gas vent cap being configured to prevent said anode from blocking the venting of gas through said membrane.

5,486,430

INTERNAL FLUID MANIFOLD ASSEMBLY FOR AN ELECTROCHEMICAL FUEL CELL STACK ARRAY

Brian N. Gorbell, North Vancouver; Bogusiav M. Wozniczka, Coquitlam, and Clarence Y. Chow, Vancouver, all of, Canada, assignors to Ballard Power Systems Inc., North Vancouver, Canada

Filed Sep. 1, 1994, Ser. No. 299,536
Int. Cl.[6] H01M *8/04*
U.S. Cl. 429—35 10 Claims



1. A fluid manifold assembly for an array comprising a plurality of electrochemical fuel cell stacks, said fluid manifold assembly comprising:

(a) a substantially fluid impermeable housing;

(b) means within said housing for introducing at least one inlet fluid stream to each of said fuel cell stacks;

(c) means within said housing for exhausting at least one outlet fluid stream from each of said fuel cell stacks.

5,486,431

METHOD OF PRODUCING BUTTON-TYPE BATTERIES AND SPRING-BIASED CONCAVE BUTTON-TYPE BATTERY

John R. Tuttle, and Mark E. Tuttle, both of Boise, Id., assignors to Micron Communications, Inc., Boise, Id.

Filed Mar. 2, 1994, Ser. No. 206,051
Int. Cl.[6] H01M *2/04*
U.S. Cl. 429—66 32 Claims



1. A button-type battery comprising:

an anode;

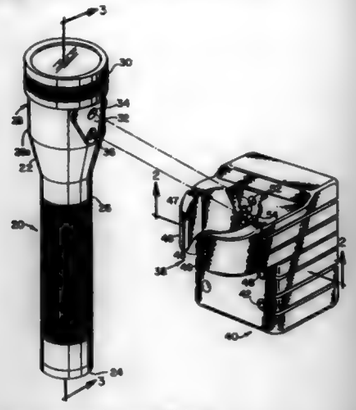
a cathode positioned adjacent to the anode;

a separator and electrolyte between the anode and the cathode; a conductive first terminal housing member in electrical contact with one of the anode or the cathode, the first terminal housing member having a surrounding periphery and a concave central portion intermediate of its surrounding periphery;

a conductive second terminal housing member in electrical contact with the other of the anode or the cathode, the second terminal housing member having a surrounding periphery and a concave central portion intermediate of its surrounding periphery which is opposingly concave to the concave central portion of the first terminal housing member; and

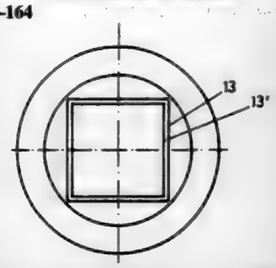
the first and second terminal housing members being insulatingly joined and sealed at their respective peripheries to form an enclosed housing which retains and protects; the anode, cathode, separator and electrolyte, with the concave central portions of the first and second terminal housing members projecting inwardly toward one another forming opposing inwardly sprung conductive terminals compressively forcing the anode, separator and cathode together.

5,486,432
BATTERY ASSEMBLY
Raymond L. Sharrah, Collegeville, and Charles W. Craft, Lansdale, both of Pa., assignors to Streamlight, Inc., Norristown, Pa.
Continuation of Ser. No. 150,362, Nov. 9, 1993, abandoned, which is a division of Ser. No. 3,704, Jan. 13, 1993, Pat. No. 5,432,689. This application Jan. 11, 1995, Ser. No. 371,482
Int. Cl.[6] H01H *2/02*
U.S. Cl. 429—99 **30 Claims**



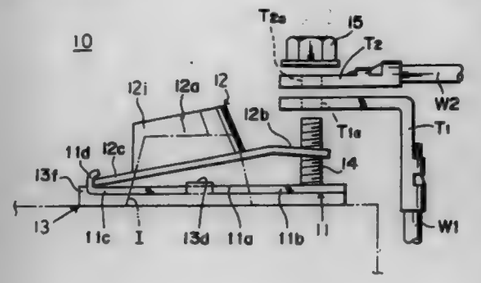
1. A battery assembly, comprising:
an elongated stack of cells, said stack having a first cell contact at one end and a second cell contact at the other end;
a holder sheath for holding said stack of cells together and exposing said first and second contacts;
a first central terminal connected to the first cell contact at said one end and centrally disposed at said one end;
a first conductive member in contact with said second cell contact;
a second terminal spaced from said first central terminal at said one end and insulated from said first terminal, said second terminal having an annular collar about the periphery of said one end of the stack; and
an elongated conductive member connecting said first conductive member with said second terminal, whereby positive and negative connection to said battery assembly is provided through said first and second terminals at said one end of said battery assembly.

5,486,433
BUTTON CELL
Helmut F. Glaser, Singapore, Singapore, assignor to Varta Batterie Aktiengesellschaft, Hanover, Germany
Filed Feb. 4, 1994, Ser. No. 191,955
Claims priority, application Germany, Feb. 24, 1993, 43 05 561.3
Int. Cl.[6] H01M *2/02;6/08*
U.S. Cl. 429—164 **19 Claims**



1. A button cell comprising at least one positive electrode, at least one negative electrode and an interposed separator arranged one on top of another in a flat gas-tight housing, a carrier strip associated with the positive electrode and the negative electrode, and an electrolyte, wherein the electrodes have a polygonal shape.

5,486,434
BATTERY TERMINAL
Masahiko Aoyama, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Filed May 9, 1994, Ser. No. 239,875
Claims priority, application Japan, May 25, 1993, 5-122923
Int. Cl.[6] H01M *2/30*
U.S. Cl. 429—178 **9 Claims**

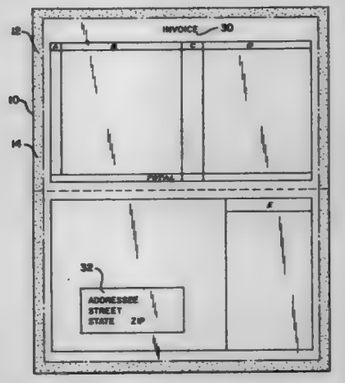


1. A battery terminal for connecting a battery post to a cable, comprising:
(A) a substantially flat main member comprising:
a first post fitting portion having a first battery post fitting hole for receiving the battery post therein;
a ring support provided at a first side of the first post fitting portion;
a cable connector portion provided at a second side of the first post fitting portion; and
a stud bolt projecting vertically upward from said cable connector portion;
(B) a ring member placed over said main member, comprising:
a second post fitting portion having a second battery post fitting hole for receiving the battery post and a cone-shaped clamping piece projecting upward around an inside edge of the second battery post fitting hole;
a clamping member on one side of the second post fitting portion; and;
a cable connector portion with a bolt hole on an other side of the second post fitting portion through which said stud bolt is inserted, said cable connector portion being bent at a predetermined angle with respect to said second post fitting portion; and
(C) a nut mounted onto said stud bolt, whereby the battery terminal is assembled such that the end of the clamping member of the ring member is supported by the ring support of the main member, and the second post fitting portion and the cable connector portion of the ring member are inclined to the main member, and wherein tightening of the nut onto the stud bolt clamps the cable terminal to the ring member and simultaneously pushes the clamping piece of the ring member at an angle over the battery post and down against the battery post;
said main member and said ring member being constructed and arranged such that said first battery post fitting hole is separately formed in and defined by said main member and said second battery post fitting hole is separately formed in and defined by said ring member.

5,486,435
ADDITIVES FOR EXTRUDING POLYMER ELECTROLYTES
Fernand Brochu, Longueuil, and Michel Duval, Montreal, both of, Canada, assignors to Hydro-Quebec, Montreal, Canada
Filed Jan. 25, 1994, Ser. No. 186,103
Int. Cl.[6] H01M *6/18*
U.S. Cl. 429—192 **8 Claims**

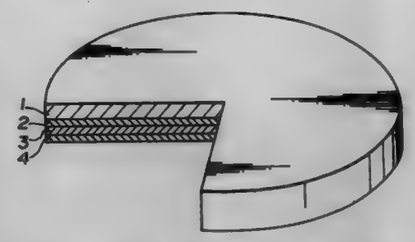
1. In a process for preparing an electrolyte film for lithium polymer electrolyte batteries, by extruding a powder mixture comprising an amorphous polymer and a lithium salt, the improvement comprising said powder mixture containing ultra-fine powder of a metal oxide with particle sizes between about 7 and 40 nm, which mixture is effective in preventing formation of adhesive solid blocks in the powder mixture and which allows said mixture to be introduced easily in an extruder.

5,486,436
SEALABLE WEB OR SHEET PRODUCT
A. Dale Lakes, Dayton, Ohio, assignor to The Standard Register Company, Dayton, Ohio
Filed Oct. 15, 1993, Ser. No. 137,597
Int. Cl.[6] G03G *7/00;* B32B *3/00;7/06;7/14*
U.S. Cl. 430—11 **21 Claims**

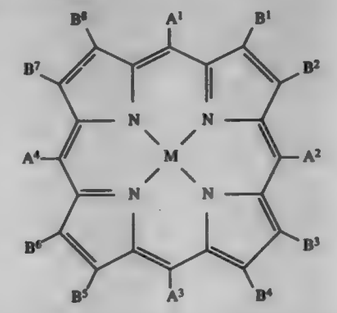


1. A web or sheet product comprising a substrate having two major surfaces, at least a portion of one or more peripheral edges of one major surface thereof coated with a bond-enabling material for adhering toner particles printed on said one or more peripheral edges on the surface of said sheet, said bond enabling material being resistant to melting or degrading when exposed to temperatures from about 250° F. to above 300° F. used for fusing toner images, and wherein said sheet is folded and sealed along at least one peripheral edge thereof which has been coated with said bond-enabling material and printed with said toner particles.

5,486,437
OPTICAL RECORDING METHOD
Takashi Iwamura; Yoko Matsuzawa, and Shin-Ichiro Tamura, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 226,046, Apr. 11, 1994, abandoned. This application Jul. 24, 1995, Ser. No. 506,456
Claims priority, application Japan, Apr. 8, 1993, 5-082109
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—288 **4 Claims**



1. A method for high speed/high density recording of information on an optical recording medium and for high reliability, nondestructive playback of the recorded information therefrom, comprising the steps of:
providing an optical recording medium including a substrate having an optical recording layer thereon, the optical recording layer comprising an organic porphyrin dye having the formula:



where A^1 to A^4 and B^1 to B^8 indicate hydrogen, phenyl group, alkyl group or hydrocarbon compounds containing cyclo rings, or alternatively, B^n to B^{n+1} may be linked with C_6H_4 in a ring form, n being 1, 3, 5 or 7, and M denotes two to four protons or a metal atom,
and having a thickness dimension d, and having a complex index of refraction including a real part and an imaginary part and a reflective layer on said optical recording layer;
recording information on said optical recording medium by contacting the optical recording medium with blue-hued laser light having a first recording wavelength, λ_1, to provide an information carrying optical recording medium, which when reproduced on a compact disc reproducing apparatus has a modulation factor of 0.6 or higher; and
thereafter playing back information stored on the information carrying optical recording medium by contacting the information carrying optical recording medium with laser light having a second, higher, replay wavelength, λ_2, the optical recording layer being formed on the substrate so that the real part of the complex index of refraction in the replay light wavelength, λ_2, is 2.55 or higher and the absolute value of the imaginary part of the complex index of refraction at λ_2 is 0.1 or lower; and such that the absolute value of the imaginary part of the complex index of refraction at λ_1 is 1.0 or higher; and wherein the dimension d is less than or equal to 1.75 λ_2/n, wherein n is the real part of the complex index of refraction of the recording layer at λ_2.

5,486,438

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR

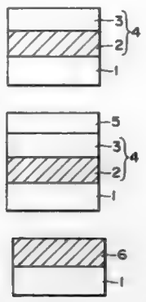
Masayuki Shoshi, Yokohama; Masakatsu Shimoda, Higashikurume; Akiko Konishi, Tokyo; Megumi Kawahara, Yokohama; Akio Kojima, Mitaka; Tetsuro Suzuki, and Masao Yoshikawa, both of Yokohama, all of, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 18,445, Feb. 16, 1993, Pat. No. 5,350,653. This application Jun. 20, 1994, Ser. No. 262,271

Claims priority, application Japan, Mar. 2, 1992, 4-080487; May 20, 1992, 4-154548

Int. Cl.[6] G03G *5/09;5/047*

U.S. Cl. 430—58 **22 Claims**



1. An electrophotographic photoconductor, comprising:

a) an electroconductive substrate;

b) a photoconductive layer formed thereon, comprising a charge generating material, and a vinylidene compound serving as a charge transporting material, which is selected from the group consisting of a vinylidene compound of the formula (I):



wherein Ar represents an aromatic group selected from the group consisting of pyrenyl, phenanthrenyl and anthracenyl, and said group substituted by amino, cyano, nitro, alkyl of 1 to 8 carbon atoms, halogen and alkoxycarbonyl of the formula:



wherein n is an integer of 1 to 8; and a vinylidene compound of the formula (II):



wherein Ar represents an aromatic group selected from the group consisting of pyrenyl, phenanthrenyl and anthracenyl, and said groups substituted by amino, cyano, nitro, alkyl of 1 to 8 carbon atoms, halogen and alkoxycarbonyl of the formula:



wherein n is an integer of 1 to 8, and R is an alkyl group having 1 to 8 carbon atoms, which are unattached or which form a ring in combination together.

12. The electrophotographic photoconductor as claimed in claim **1**, wherein said photoconductive layer comprises a charge generation layer comprising said charge generating material and a charge transport layer comprising said vinylidene compound serving as a charge transporting material, with one of said two layers being overlayed on the other.

5,486,439

ELECTROPHOTOGRAPHIC WITH POLYCARBONATE HAVING CHARGE TRANSPORTING GROUP

Teigo Sakakibara, Yokohama; Kiyoshi Sakai, Hachiohji; Toshihiro Kikuchi, Yokohama, and Akihiro Senoo, Tokyo, all of, Japan, assignors to Canon Kabushiki Knisha, Tokyo, Japan

Filed Feb. 8, 1994, Ser. No. 193,470

Claims priority, application Japan, Feb. 9, 1993, 5-021192; Feb. 9, 1993, 5-021193; Feb. 9, 1993, 5-021194

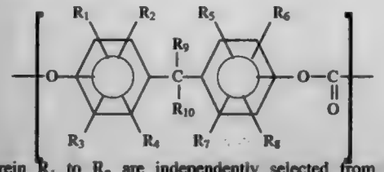
Int. Cl.[6] G03G *5/047;5/09*

U.S. Cl. 430—59 **9 Claims**

1. An electrophotographic photosensitive member, comprising:

a support and a photosensitive layer comprising a charge generation layer and a charge transport layer disposed on the support, said charge transport layer comprising a polycarbonate which has a charge-transporting group having a triphenylamine structure, a hydrazone structure or a biphenylamine structure at least in a side chain, wherein

said polycarbonate has a recurring unit represented by the following formula (A):



wherein R_1 to R_8 are independently selected from the group consisting of hydrogen, halogen, alkyl group capable of having a substituent, alkenyl group capable of having a substituent, alkoxy group capable of having a substituent and aryl group capable of having a substituent; and

one of R_9 and R_{10} is a group containing said charge transporting group and the other group R_9 or R_{10} is hydrogen, alkyl group capable of having a substituent, alkenyl group capable of having a substituent or aryl group capable of having a substituent; and both of R_9 and R_{10} can be a group containing said charge transporting group.

5,486,440

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER, AND PROCESS CARTRIDGE AND ELECTROPHOTOGRAPHIC APPARATUS EMPLOYING THE SAME

Yoshio Kashizaki; Hajime Miyazaki; Koichi Suzuki; Shintetsu Go, and Kazuma Sato, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

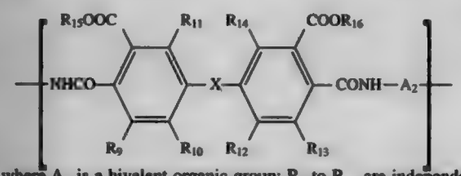
Filed Jun. 28, 1994, Ser. No. 266,687

Claims priority, application Japan, Jun. 30, 1993, 5-160882

Int. Cl.[6] G06G *5/14;15/08;15/00*

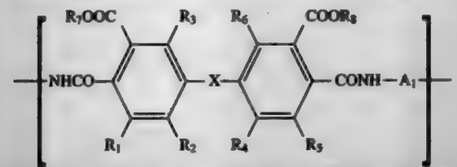
U.S. Cl. 430—62 **20 Claims**

1. An electrophotographic photosensitive member, comprising an electroconductive support, an interlayer formed on the electroconductive support, and a photosensitive layer formed on the interlayer, the interlayer containing a resin having a polyamic acid structure or a polyamic acid ester structure, wherein the resin has an amic acid structure or an amic acid ester structure of Formula (2):



where A_2 is a bivalent organic group; R_9 to R_{14} are independently a hydrogen atom, a halogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkoxy group, or a cyano group; R_{15} and R_{16} are independently a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkoxyalkyl group, or a substituted or unsubstituted aralkyl group; and X is an oxygen atom, a substituted or unsubstituted alkylene group, a carbonyl group, or a sulfonyl group.

12. An electrophotographic photosensitive member, comprising an electroconductive support, an interlayer formed on the electroconductive support, and a photosensitive layer formed on the interlayer, the interlayer containing a resin having a polyamic acid structure or a polyamic acid ester structure of Formula (1)



where A_1 is a bivalent organic group; R_1 to R_6 are independently a hydrogen atom, a halogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkoxy group, or a cyano group; and R_7 and R_8 are independently a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkoxyalkyl group, or a substituted or unsubstituted aralkyl group;

wherein the interlayer is free of a conductive substance.

5,486,441

ELECTROPHOTOGRAPHIC PHOTORECEPTOR CONTAINING 1,4-BIS(4,4-DIPHENYL-1,3-BUTADIENYL)BENZENE DERIVATIVE

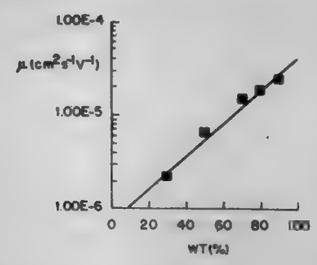
Yoshimasa Matsushima, and Toshimitsu Hagiwara, both of Kanagawa, Japan, assignors to Takasago International Corporation, Tokyo, Japan

Division of Ser. No. 233,434, Apr. 28, 1994. This application Apr. 27, 1995, Ser. No. 429,610

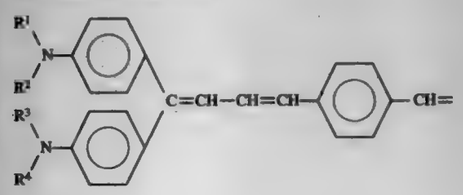
Claims priority, application Japan, Apr. 28, 1993, 5-123105

Int. Cl.[6] G03G *5/06;5/09*

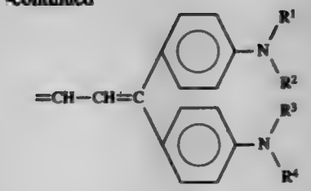
U.S. Cl. 430—74 **1 Claim**



1. An electrophotographic photoreceptor comprising a charge transporting layer containing a charge transporting material comprising a 1,4-bis(4,4-diphenyl-1,3-butadienyl)benzene derivative represented by formula (I):



-continued



wherein R^1, R^2, R^3, and R^4, each independently represents a lower alkyl group which may be substituted, an aralkyl group which may be substituted, or an aryl group which may be substituted.

5,486,442

ORGANIC POLYMER AND PREPARATION AND USE IN CRYSTAL SPATIAL LIGHT MODULATOR

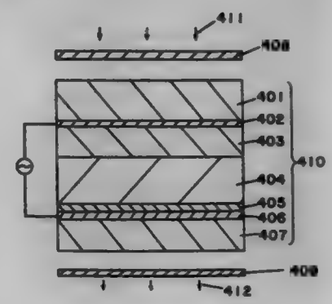
Akio Takimoto; Hirofumi Wakemoto, both of Neyagawa; Eiichiro Tanaka, Kishiwada; Masanori Watanabe, Katano; Junko Asayama, Suita; Hisshito Ogawa, Ikoma; Shigehiro Seto, Osaka, and Fumiko Yokotani, Suita, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 673,759, Mar. 25, 1991, abandoned. This application Jul. 13, 1993, Ser. No. 90,638

Claims priority, application Japan, Mar. 23, 1990, 2-73777; Mar. 23, 1990, 2-73778; Mar. 23, 1990, 2-73779; Mar. 25, 1990, 2-74971; Nov. 29, 1990, 2-335910

Int. Cl.[6] G03G *5/00*

U.S. Cl. 430—78 **5 Claims**



1. A liquid crystal spatial light modulator comprising a liquid crystal layer, a pair of photoconductive layers which sandwich said liquid crystal layer and a pair of conductive electrodes which sandwich said photoconductive layers, wherein said photoconductive layers are made of a polymer comprising repeating units of the formula:

$$-(X_i-Y_i)_n-$$

wherein n is a number of at least 1 (one), i is a positive integer not larger than n, X_i is an aromatic or substituted aromatic group, and Y_i is O, S, Se, Te or a divalent group: —CH=CH—.

5,486,443

MAGNETIC TONER COMPOSITIONS WITH SILICA, STRONTIUM TITANATE AND POLYVINYLIDENE FLUORIDE

Michael L. Grande, Palmyra; Bernard Grushkin, Pittsford; Eugene F. Young, Rochester; Douglas A. Lundy, and Joseph R. E. Matalevich, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 31, 1994, Ser. No. 331,444

Int. Cl.[6] G03G *9/09;9/083;9/097*

U.S. Cl. 430—106 53 Claims

1. A toner consisting essentially of resin particles, magnetite pigment, carbon black pigment, rhodamine charge additive, wax, and a surface mixture of silica, strontium titanate and polyvinylidene fluoride; and wherein said resin particles are present in an amount of from about 50 to about 90 weight percent, said magnetite is present in an amount of from about 25 to about 40 percent, said carbon black is present in an amount of from about 1 to about 5 weight percent, said wax is present in an amount of from about 3 to about 15 weight percent, and said silica, strontium titanate and polyvinylidene fluoride are each present in an amount of from about 0.5 to about 2 weight percent.

5,486,444

POLYESTER PROCESSES FOR THE PREPARATION OF TONER

Robert D. Bayley, Fairport; Carol A. Fox, Farmington; Thomas R. Hoffend, Webster; James R. Paxson, Walworth, and Bernard Grushkin, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 29, 1994, Ser. No. 297,353

Int. Cl.[6] G03G *9/087*

U.S. Cl. 430—109 32 Claims

1. A process for the preparation of toner which comprises mixing colorant and a crosslinked polyester obtained by the reaction of a diol or a mixture of diols and a diacid, a mixture of diacids or their diesters and a polyhydric alcohol monomer to provide a polyhydroxy functional polyester resin precursor, and subsequently reacting said polyhydroxy functional polyester precursor resin with a dianhydride or diepoxy functional crosslinking component.

5,486,445

TONER AND DEVELOPER COMPOSITIONS WITH DIBLOCK COMPATIBILIZERS

John G. Van Dusen, Walworth; Timothy J. Fuller, Pittsford, and Deborah M. Hudson, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 1, 1994, Ser. No. 283,427

Int. Cl.[6] G03G *9/097*

U.S. Cl. 430—110 35 Claims

1. A toner composition consisting essentially of first resin particles, optional second crosslinked resin particles, pigment, wax component particles, and a compatibilizer comprised of a diblock polymer of partially hydrogenated polystyrene/polyisoprene or a partially hydrogenated polystyrene/polybutadiene.

5,486,446

MULTI-COLOR HEAT-SENSITIVE RECORDING MATERIAL UTILIZING MULTIPLE DIAZONIUM SALT LAYERS

Tetunori Matushita; Hiroshi Kamikawa; Hiroshi Satoh; Kimiatsu Nomura, and Mitsuyuki Tsurumi, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 8, 1994, Ser. No. 257,055

Claims priority, application Japan, Jun. 10, 1993, 5-138599; Nov. 26, 1993, 5-297024

Int. Cl.[6] G03F *7/095*

U.S. Cl. 430—156 4 Claims

1. A multi-color heat-sensitive recording material comprising a support having laminated thereon in the following order a first heat-sensitive color forming layer comprising mainly an electron donating dye precursor and an electron accepting compound, a second heat-sensitive color forming layer containing a first diazonium salt compound having a maximum absorption wavelength of 360±20 nm and a first coupler capable of reacting with the first diazonium salt compound by heating to form color and a third heat-sensitive color forming layer containing a second diazonium salt compound in an amount from 0.02 to 3 g/m^2 of the recording material represented by the following general formula (I) having a maximum absorption wavelength of 400±20 nm and a second coupler in an amount from 0.05 to 5 g/m^2 of the recording material represented by the following general formula (II) capable of reacting with the second diazonium salt compound by heating to form a color:



(I)

wherein R_1 and R_2, which may be the same or different, each represents an alkyl group, an aralkyl group or an aryl group, wherein R_1 and R_2 by be substituted with an alkyl group, an aryl group, a hydroxy group, an alkoxy group, an aryloxy group, an alkylthio group, an arylthio group, an acyl group, an alkoxycarbonyl group, an acyloxy group, a carbamoyl group, an acylamino group, a cyano group or a halogen atom; Y represents a halogen atom, an acyl group, an alkoxycarbonyl group or a sulfamoyl group; and X_1^- represents a counter anion;



(II)

wherein R_3 represents an alkyl group or an aryl group; R_4

wherein R_3 represents an alkyl group or an aryl group; R_4 represents an alkyl group, an aryl group or an aralkyl group; R_5 represents an alkyl group, an alkoxy group, an aryloxy group, an aralkyloxy group, an alkylthio group, an arylthio group, an aralkylthio group or a halogen atom; wherein R_3, R_4 and R_5 may be substituted with an alkyl group, an aryl group, an alkoxy group, a cyano group, an ester group, an amide group, or a halogen atom; n represents 0 or an integer of 1 to 4, and when n is 2 or greater, the two or more R_5 groups may be the same or different; and the sum total of carbon atoms in R_4 and $(R_5)_n$ is at least 5.

5,486,447

NEGATIVE RESISTS WITH HIGH THERMAL STABILITY COMPRISING END CAPPED POLYBENZOXAZOLE AND BISAZIDE

Albert Hammerschmidt, Erlangen; Eberhard Kühn, Hemhofen, and Erwin Schmidt, Erlangen, all of, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 672,940, Mar. 21, 1991, abandoned. This application Oct. 27, 1994, Ser. No. 330,227

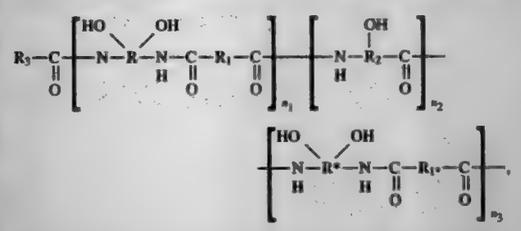
Claims priority, application Germany, Mar. 29, 1990, 40 10 125.8

The portion of the term of this patent subsequent to Dec. 27, 2011, has been disclaimed.

Int. Cl.[6] G03F *7/012;7/40*

U.S. Cl. 430—197 6 Claims

1. A negative resist comprising an admixture of a bisazide photoactive component and a polybenzoxazole precursor, wherein said polybenzoxazole precursor is a hydroxypolyamide having two terminal amino groups, each terminal amino group being end capped, the hydroxypolyamide also having the following structure:



where R, R*, R_1, R_1.* and R_2 are aromatic groups and R_3 is an aromatic group or a norbornene residue, where R≠R* if R_1=R_1.* and if n_1>0 and n_3>0, where R_1≠R_1.* if R=R* and if n_1>0 and n_3>0, where n_1+n_2+n_3≧3, where n_1, n_2 and n_3 are selected from the group consisting of:

n_1=1 to 100, n_2 and n_3=0;

n_1 and n_2=1 to 100, n_3=0;

n_2=1 to 100, n_1 and n_3=0;

n_1, n_2 and n_3=1 to 100; and

n_1 and n_3=1 to 100, n_2=0, and wherein the mass ratio of hydroxypolyamide to bisazide is between about 1:20 and 20:1.

5,486,448

Patent Not Issued For This Number

5,486,449

PHOTOMASK, PHOTORESIST AND PHOTOLITHOGRAPHY FOR A MONOLITHIC IC

Hitoshi Hosono, and Satoru Takasugi, both of Kyoto, Japan, assignors to ROHM Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 476,534, Feb. 7, 1990, abandoned. This application Aug. 28, 1992, Ser. No. 935,345

Claims priority, application Japan, Feb. 7, 1989, 1-28496; Feb. 7, 1989, 1-28497; Feb. 14, 1989, 1-34338; Feb. 14, 1989, 1-34339; Feb. 20, 1989, 1-41069; Feb. 20, 1989, 1-41070; Feb. 23, 1989, 1-44713; Feb. 23, 1989, 1-44714; Feb. 23, 1989, 1-44715; Mar. 3, 1989, 1-52482

Int. Cl.[6] G03F *5/24*

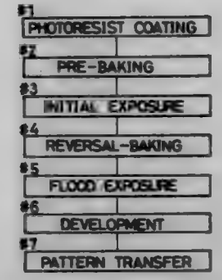
U.S. Cl. 430—328 5 Claims

1. A photolithographic method for manufacturing a semiconductor device comprising:

a step of applying photoresist onto a semiconductor substrate;

a step of pre-baking said photoresist;

a step of initially exposing said photoresist to light through a photomask, said photomask comprises a first part, a second part and a third part, each having different transparencies for exposing said photoresist, said first part being relatively opaque to said light, said second part being more transparent to said light than said first part, and said third part being more transparent to said light than said second part;



a step of reversal-baking said photoresist;

a step of flood-exposing said photoresist to light through another photomask positioned over an initially non-exposed region of the photoresist, said another photomask comprises a first part, a second part and a third part, each having different transparencies for exposing said photoresist, said first part being relatively opaque to said light, said second part being more transparent to said light than said first part, and said third part being more transparent to said light than said second part; and

a step of developing said photoresist to form an aperture therein, said aperture having a platform and an overhang formed in a wall of said aperture.

5,486,450

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT SENSITIVE MATERIAL AND THE IMAGE-FORMING PROCESS THEREOF

Yasuo Tosaka, and Masayuki Sasagawa, both of Odawara, Japan, assignors to Konica Corporation, Tokyo, Japan

Division of Ser. No. 110,083, Aug. 20, 1993, Pat. No. 5,382,506. This application Oct. 11, 1994, Ser. No. 320,860

Claims priority, application Japan, Aug. 25, 1992, 4-226014

Int. Cl.[6] G03C *1/775*

U.S. Cl. 430—538 12 Claims

1. A silver halide color photographic light sensitive material comprising: a reflective support which is coated on both sides with a polyolefin resin, and provided on one side of the reflective support, a hydrophilic colloidal layer containing a white pigment and silver halide emulsion layers comprising a yellow image formable silver halide emulsion layer, a magenta image formable silver halide emulsion layer, a cyan image formable silver halide emulsion layer and a black image formable silver halide emulsion layer, said hydrophilic colloidal layer containing a white pigment being interposed between the support and all silver halide emulsion layers.

5,486,451

METHOD OF PREPARING SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Alberto Vacca, Carcare, and Paolo Barletta, Merana, both of, Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 4, 1994, Ser. No. 285,938

Claims priority, application European Pat. Off., Sep. 23, 1993, 93115320

Int. Cl.[6] G03C *1/047;11/06*

U.S. Cl. 430—569 14 Claims

1. A method of preparing a washed silver halide photographic emulsion comprising the steps of forming a dispersion of silver halide grains in the presence of a hydrophilic colloid and removing

undesirable by-products of silver halide grain-formation by lowering the pH to bring about coagulation and by washing coagulum formed in dispersing silver halide grains, the method being characterized by the fact that said hydrophilic colloid comprises an acid-coagulable gelatin derivative and said coagulation is effected in the presence of an ionic copolymer comprising monomer units of:

(a) a water-soluble salt of a styrene sulfonic acid, and

(b) maleic acid, the molar ratio of (a) to (b) being at least 1:1 up to 9:1.

5,486,452

DEVICES AND KITS FOR IMMUNOLOGICAL ANALYSIS

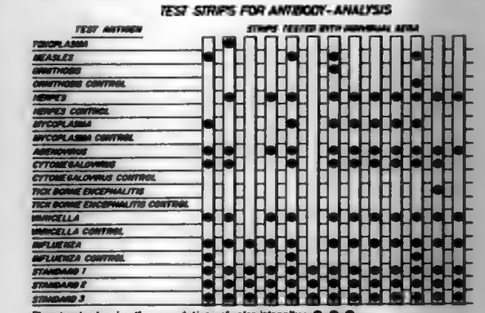
Julian Gordon, Ariesheim; Richard Hawkes, Allschwil, both of, Switzerland; Evelyn Niday, Arlington Heights, Ill., and Harry Towbin, Allschwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 912,144, Sep. 24, 1986, abandoned, which is a continuation of Ser. No. 673,211, Nov. 19, 1984, abandoned, which is a continuation of Ser. No. 345,440, Feb. 3, 1982, abandoned. This application Apr. 10, 1987, Ser. No. 38,470

Claims priority, application United Kingdom, Apr. 29, 1981, 8113167; Nov. 13, 1981, 8134353; Jan. 18, 1982, 8201289

Int. Cl.[6] G01N *33/548;33/564;33/569*

U.S. Cl. 435—5 **47 Claims**



The standards give three gradations of color intensity : ●, ●, ●.
Antigen spots are matched with the corresponding standard intensity.

1. An immunological analysis device consisting of a porous sheet of nitrocellulose containing an array of preselected geometry of delimited absorption areas of at least one compound capable of specifically binding an antigen (antigen-reactive compound) which adheres tightly and does not spread out on the surface of said porous sheet, said array of preselected geometry being obtained in said porous sheet by applying liquid aliquots of said antigen-reactive compound to said porous sheet mechanically via direct contact, wherein residual absorption sited in said porous sheet are unsaturated or saturated by non-specific protein.

5,486,453

ANTIBODIES TO HUMAN PAPILLOMAVIRUS LATENT PROTEINS, DIAGNOSTIC SYSTEMS AND METHODS

Joakim Dillner, Stockholm, Sweden; Richard A. Lerner, La Jolla, Calif.; Richard Smith, and D. Elliot Parks, Del Mar, both of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Division of Ser. No. 996,027, Dec. 23, 1992, Pat. No. 5,401,627, which is a division of Ser. No. 323,614, Mar. 13, 1989, Pat. No. 5,180,806, which is a continuation-in-part of Ser. No. 194,407, May 16, 1988, abandoned. This application Sep. 17, 1993, Ser. No. 123,465

Int. Cl.[6] C12Q *1/70*

U.S. Cl. 435—5 **52 Claims**

1. A method of assaying for the presence of a latent papillomavirus infection in a human subject, comprising the steps of:

a) obtaining a biological sample from said subject;

b) forming an immunoreaction admixture by admixing said sample with an agent that specifically binds one or more anti-papillomavirus latent protein antibodies present in said sample, said agent comprising one or more HPV type 6-related polypeptides of fewer than 35 amino acid residues in length, said one or more HPV type 6-related polypeptides including a sequence selected from the group consisting of

HAIVTVTYDSE, and

HKHAIVTVTYDSEEQRQQC;

c) maintaining said immunoreaction admixture under biological assay conditions for a time period sufficient for anti-papillomavirus latent protein antibodies present in said sample to specifically bind said agent to form an immunoreaction product; and

d) determining the presence of any immunoreaction product that formed, whereby the presence of immunoreaction product indicates the presence of a latent papillomavirus infection in said subject.

5,486,454

NUCLEIC ACID PROBE FOR THE DETECTION OF SALMONELLA HUMAN PATHOGENS

M. Jane Madonna, Middlesex, and Derek Woods, Flemington, both of N.J., assignors to Ortho Diagnostic Systems, Inc., New Brunswick, N.J.

Continuation of Ser. No. 26,256, Mar. 4, 1993, abandoned, which is a continuation of Ser. No. 672,743, Mar. 21, 1991, abandoned, which is a continuation of Ser. No. 309,441, Feb. 13, 1989, abandoned. This application May 17, 1994, Ser. No. 243,749

Int. Cl.[6] C12Q *1/68;* **C07H** *21/04*

U.S. Cl. 435—6 **22 Claims**

1. A synthetic nucleic acid probe for use in detecting nucleic acid from human pathogenic microorganisms from the genus Salmonella consisting of a nucleotide sequence selected from the group consisting of:

5' GCG TGC GGT AAA ACG CAG CGT ATT GGT GCC TTC AAC-3',

5' TAG TGC TAT TGT CCG CAG AGG AGA CAG CCA-3',

5' GCC GGT TGC GGT AGT GCT ATT GTC CGC AGA-3',

5' ACC CAG CGT CAC CGT TTG ATC GGC GGA TTT-3',

5' GTA TTG GTG CCT TCA ACC AGC GAC TGC TTC-3',

5'-ATT GCG AGT CTG ATG TTT G-3',

5'-TGC AGC CTG TGC CGT CAG C-3',

5'-TCT GCG GAC AAT AGC ACT A-3',

5'-GTT GAA GGC ACC AAT AC-3',

5'-TGC CGT TCC CTG ACG GGA-3',

5'-GCG TGC GGT AAA ACG CAG-3',

5'-CCC GAC GCC GGT TGC GG-3',

5'-GGC CGC CAC TTT CGG AT-3',

5'-GTT TGA TCG GCG GAT TT-3', and

5'-GCT CAC CGG ACT AGG ATC-3';

or a nucleotide sequence fully complementary thereto.

5,486,455

PHOTOPROTEIN CONJUGATES AND METHODS OF USE THEREOF

Nancy L. Stults, Duluth, Ga., assignor to SeaLite Sciences, Inc., Bogart, Ga.

Continuation of Ser. No. 17,116, Feb. 12, 1993, abandoned. This application Aug. 22, 1994, Ser. No. 293,648

Int. Cl.[6] C12Q *1/70;1/68;* **G01N** *33/53;* **C07H** *19/04*

U.S. Cl. 435—6 **1 Claim**

1. A photoprotein-binding reagent conjugate composition comprising,

a sulfhydryl-activated aequorin coupled to a sulfhydryl-reactive binding reagent capable of binding specifically to an analyte, to form a conjugate capable of producing light in a luminescent reaction, wherein said aequorin is sulfhydryl-activated by 2-imithiolane (Traut's reagent), and said binding reagent is made sulfhydryl-reactive by succinimidyl 4-(N-maleimidomethyl)cyclohexane, (SMCC).

5,486,456

METHOD OF DIAGNOSING OVARIAN, ENDOMETRIAL, AND COLON CANCERS WITH MONOCLONAL ANTIBODIES OXA AND OXB

Feng J. Xu; Yin H. Yu, both of Durham, and Robert C. Bast, Jr., Chapel Hill, all of N.C., assignors to Duke University, Durham, N.C.

Continuation-in-part of Ser. No. 879,860, May 6, 1992, Pat. No. 5,366,866, which is a continuation-in-part of Ser. No. 735,513, Jul. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 735,601, Jul. 25, 1991, abandoned. This application Mar. 23, 1994, Ser. No. 216,616

Int. Cl.[6] G01N *33/574;33/53;* **C07K** *16/30*

U.S. Cl. 435—7.23 **19 Claims**

1. A method of screening for the presence of cancer in a human subject, the cancer selected from the group consisting of ovarian, breast, endometrial and colon Cancer, comprising:

contacting a sample comprising a biological fluid taken from said subject with an antibody selected from the group consisting of monoclonal antibody OXA, monoclonal antibody OXB, antibodies which specifically bind the epitope bound by monoclonal antibody OXA or OXB, and fragments thereof which specifically bind the epitope bound by monoclonal antibody OXA or OXB, under conditions permitting said antibody to specifically bind an antigen in the sample to form an antibody-antigen complex; and then

determining the amount of antibody-antigen complex in the sample as a measure of the amount of antigen in the sample, wherein an elevated level of the antigen in the sample is associated with the presence of ovarian, breast, endometrial or colon cancer.

5,486,457

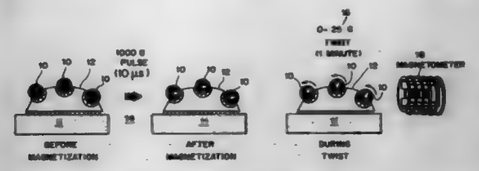
METHOD AND SYSTEM FOR MEASUREMENT OF MECHANICAL PROPERTIES OF MOLECULES AND CELLS

James P. Butler, Brookline; Jeffrey J. Fredberg, Sharon; Donald E. Ingber, Boston, and Ning Wang, Brookline, all of Mass., assignors to Children's Medical Center Corporation, Boston, and President and Fellows of Harvard College, Cambridge, both of Mass.

Filed Aug. 25, 1993, Ser. No. 112,757

Int. Cl.[6] G01N *33/53*

U.S. Cl. 435—7.2 **21 Claims**



8. An in vitro method for detecting the effect of mechanical stimulation of molecules immobilized on a surface comprising:

mixing ferromagnetic microbeads having coated thereon attachment molecules which bind to the molecules immobilized on a surface, wherein the attachment molecules are selected from the group consisting of matrix molecules that bind to integrins and molecules that bind to other receptors that span the cell surface and physically interconnect with distinct cytoskeletal proteins, the microbeads having a diameter between 0.03 and 500 microns, with the molecules immobilized on a substrate;

treating the mixture of the microbeads and the immobilized molecules with a compound which is to be tested for an effect on the interaction of the attachment molecules on the microbeads with the immobilized molecules;

imposing on the microbeads a strong external magnetic field resulting in magnetization and alignment of the magnetic moments of the microbeads;

imposing on the microbeads defined mechanical stresses between zero and 300 dyne/cm^2 using a weaker "twisting" magnetic field applied perpendicular to the original field;

measuring the component of the remanent magnetic field vector in the direction of the original magnetization as a function of time;

comparing the effect of the compound to be tested on the interaction of the immobilized molecules with the attachment molecules on the microbeads with the effect of a compound having a predetermined effect on the interaction of the immobilized molecules with the attachment molecules on the microbeads.

5,486,458

METHOD OF QUANTITATIVE ASSAY FOR 1,5-ANHYDROGLUCITOL

Ryo Kojima; Yoshiro Sato, both of Koriyama, and Takeshi Nagasawa, Urawa, all of, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed Jun. 30, 1993, Ser. No. 85,317

Claims priority, application Japan, Jun. 30, 1992, 4-172955

Int. Cl.[6] C12Q *1/54;* **C12N** *1/00*

U.S. Cl. 435—14 **7 Claims**

1. In a method for the quantitative assay of 1,5-anhydroglucitol in a specimen derived from human blood, blood serum or blood plasma, wherein maltose in the specimen is converted into glucose by the action of α-glucosidase derived from a microorganism belonging to the genus Bacillus in a first step; said glucose is phosphorylated with a phosphorylating enzyme to selectively remove the glucose and sugars other than 1,5-anhydroglucitol present in the specimen in a second step; and 1,5-anhydroglucitol in the specimen is reacted with a pyranose oxidase in a third step; the improvement of:

performing the three steps in a single reaction zone, at a pH range of from 7.2 to 8.5, at a temperature of from about 5° to 40° C. over a period of from about 2 to 30 minutes, said second step taking place in the presence of an excess amount of adenosine-5'-triphosphate.

5,486,459

BIOLOGICALLY RELEVANT METHODS FOR THE RAPID DETERMINATION OF STERILITY

Jeffrey C. Burnham; George J. Hageage; Douglas Jambard-Sweet, all of Maumee, and Judy Hendricks, Findlay, all of Ohio, assignors to Medical College of Ohio, Toledo, Ohio

Continuation of Ser. No. 126,197, Sep. 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 970,307, Nov. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 859,066, Mar. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 450,394, Dec. 14, 1989, abandoned. This application Jan. 30, 1995, Ser. No. 380,195

Int. Cl.[6] C12Q *1/22;* **G01N** *21/00*

U.S. Cl. 435—31 **29 Claims**

1. A biological process for determining the effectiveness of a sterilization procedure comprising the steps of:

a) placing a test indicator containing one or more components, but not all of the components of a plurality of interactive enzyme systems into a sterilization chamber;

b) performing the sterilization procedure within the chamber;

c) adding the remaining components of the plurality of interactive enzyme systems to the one or more components in the test indicator to form a mixture;

d) incubating the mixture for a period of time; and

e) detecting presence or absence of a detectable product to determine the effectiveness of the sterilization procedure.

5,486,460

METHOD AND TEST KITS FOR IDENTIFYING ALZHEIMER'S DISEASE BY TESTING CEREBROSPINAL FLUID

Laurace E. Townsend, Grosse Pointe Pk., Mich., assignor to Wayne State University, Detroit, Mich.

Continuation of Ser. No. 918,943, Jul. 22, 1992, abandoned, which is a continuation of Ser. No. 32,319, Mar. 30, 1987, abandoned. This application May 20, 1993, Ser. No. 64,346

Int. Cl.[6] G01N *1/30;33/48*

U.S. Cl. 435—40.51 **15 Claims**

1. A method for aiding in the diagnosis of Alzheimer's disease after a clinical diagnosis of Alzheimer's type dementia in a living or decreased human the steps which comprise:

(a) providing a sample of cerebrospinal fluid (CSF) suspected of containing amyloid particles from the living or decreased human;

(b) concentrating the CSF sample, to produce a concentrate of said particles;

(c) applying a unit of the liquid concentrate with said particles a on a surface;

(d) drying the concentrate and applying an adhesive so as to bind said particles to the surface;

(e) staining said particles in the dried concentrate on the surface with a stain which is visible with light from and external light source, where the stain is a thiazine stain which stains said particles; and

(f) rinsing excess, non-adherent stain with a solvent which dissolves the excess stain;

(g) counting said particles on the surface by means of said stain, wherein the human with the clinical diagnosis of the Alzheimer's Disease exhibits a higher number of the particles per unit volume of CSF than humans without Alzheimer's Disease and above about 20 particles per 80 microliters of CSF as shown in FIG. 1 with the thioflavin stain.

5,486,461

CASEIN HYDROLYZATE AND METHOD FOR PRODUCTION OF SUCH CASEIN HYDROLYZATE

Per M. Nielsen, Hillerod, Denmark, assignor to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK92/00326, § 371 Date Apr. 13, 1994, § 102(e) Date Apr. 13, 1994, PCT Pub. No. WO93/08702, PCT Pub. Date May 13, 1993

PCT Filed Sep. 9, 1992, Ser. No. 211,689

Claims priority, application European Pat. Off., Nov. 8, 1991, 91610088; Nov. 27, 1991, 91610091; Denmark, May 27, 1992, 711/92

Int. Cl.[6] A23J *3/34;3/10;1/20*

U.S. Cl. 435—68.1 **13 Claims**

1. A method for production of a casein hydrolyzate, comprising

a. suspending or dissolving a rennet precipitated or acid precipitated casein or caseinate with at least 85% of protein calculated as dry matter in an aqueous medium to a solution with a protein content up to about 20%,

b. hydrolyzing the suspension/solution in a one step reaction to a degree of hydrolysis of 15–35% by means of three groups of proteases which are

i. one or more neutral endoproteases from a Bacillus in a concentration of at least 0.005 Anson units/100 g of protein,

ii. one or more alkaline endoproteases from a Bacillus in a concentration of at least 0.005 Anson units/100 g of protein, and

iii. one or more exoproteases from an Aspergillus in a concentration corresponding to at least 1000 peptidase units/100 g of protein, at a temperature between 45° C. and 60° C. without any p.H. adjustment;

c. terminating the hydrolysis by inactivation of the enzymes to form an effluent; and

d. converting the effluent to a dry state;

wherein the casein hydrolyzate is completely soluble or at least 99% soluble in an aqueous medium with a pH value in the pH range of 3.5–7.0, is of good organoleptic quality, and contains peptides in relative amounts corresponding to the following MW distribution:

weight-%	
MW > 5000	0–1
5000 > MW > 1500	15–35
1500 > MW > 500	40–60
500 > MW	15–35

wherein the casein hydrolyzate does not contain any unhydrolyzed casein and contains free amino acids in an amount less than 10% and that the number average molecular weight (Mn) is 400–650.

5,486,462

DIFFERENTIATIVE EXPRESSION MODULES

William J. Rutter; Michael D. Wiaker, both of San Francisco, Calif.; Thomas Edlund, Umeå , Sweden, and Anne M. Boulet, San Francisco, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 768,345, Sep. 30, 1991, abandoned, which is a continuation of Ser. No. 327,366, Mar. 22, 1989, abandoned, which is a continuation of Ser. No. 196,781, May 18, 1988, abandoned, which is a continuation of Ser. No. 674,225, Nov. 23, 1984, abandoned. This application Jun. 17, 1992, Ser. No. 900,512

Int. Cl.[6] C12N *5/06;15/11;15/17;15/67*

U.S. Cl. 435—69.1 **12 Claims**

1. A mammalian tissue-specific DNA fragment comprising a heterologous DNA molecule encoding a gene of interest; and

a tissue-specific transcription-enhancing DNA segment isolated from an insulin gene, wherein said segment is contained within a 5' flanking region located −1 to about −300 bases upstream of the transcription initiation site of the insulin gene, said transcription-enhancing DNA segment being positioned within about 2 kb of the heterologous DNA molecule and operatively linked upstream to a DNA promoter segment, said promoter segment being positioned upstream of and operatively linked to the heterologous DNA molecule,

whereby when the tissue-specific DNA fragment is placed in an insulin-producing cell, expression of the heterologous protein is enhanced relative to the level of expression in a differentiated cell of a different tissue type.

5,486,463

TNF-MUTEINS

Werner Lesslauer, Riehen; Hansruedi Lötscher, Mölin, both of, Switzerland, and Dietrich Stüber, Grenzach-Wyhlen, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 1, 1993, Ser. No. 41,648

Claims priority, application European Pat. Off., Apr. 2, 1992, 92810249

Int. Cl.[6] C12P *21/06;* **C07H** *17/00;* **C07K** *14/00;* **C12N** *1/20*

U.S. Cl. 435—69.5 **27 Claims**

1. A human Tumor Necrosis Factor a mutein having selective binding affinity for the p55 subunit of human Tumor Necrosis Factor Receptor, said mutein comprising the sequence of human Tumor Necrosis Factor wherein at least one amino acid in said sequence is substituted, one of said substitutions being at position 86, wherein Thr is substituted for Ser, and said mutein having selective binding affinity for said p55 subunit of said human Tumor Necrosis Factor receptor, or a pharmaceutically acceptable salt thereof.

5,486,464

Patent Not Issued For This Number

5,486,465

TEICOPLANIN RECOVERY PROCESS

Anacleto Giantonio, Milan, and Gianbattista Panzone, Cornaredo, both of, Italy, assignors to Gruppo Lepetit S.p.A., Gerenzano, Italy

Continuation of Ser. No. 317,422, Oct. 4, 1994, abandoned, which is a continuation of Ser. No. 196,889, Feb. 15, 1994, abandoned, which is a continuation of Ser. No. 34,007, Mar. 19, 1993, abandoned, which is a continuation of Ser. No. 764,658, Sep. 24, 1991, abandoned. This application Mar. 29, 1995, Ser. No. 413,971

Claims priority, application European Pat. Off., Jan. 1, 1990, 90118778

Int. Cl.[6] C07K *14/365*

U.S. Cl. 435—70.1 **5 Claims**

1. A process for recovering teicoplanin A_2 from a whole culture fermentation broth, containing a mycelial mass produced by the fermentation of *Actinoplanes teichomyceticus* ATCC 31121, which comprises:

a) separating the fermentation broth from the mycelial mass by filtration;

b) raising the pH of the whole culture fermentation broth to a level greater than 10, but less than 12, prior to initiating said filtration and maintaining this pH range while said filtration is carried out;

c) maintaining the temperature of the whole culture fermentation broth at a temperature no greater than room temperature while said filtration is carried out and;

d) recovering said teicoplanin A_2 from the filtered fermentation broth.

5,486,466

PROCESS FOR THE PREPARATION OF DNA GYRASE INHIBITORS

Mikio Arisawa, Kamakura, Japan; Erwin Götschi; Paul Hebeisen, both of Reinach, Switzerland; Tsutomu Kamiyama, Yokohama, Japan; Helmut Link; Raffaello Masciadri, both of Basel, Switzerland; Hisao Shimada, Fujisawa, and Junko Watanabe, Yokohama, both of, Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 177,483, Jan. 6, 1994, Pat. No. 5,399,741, which is a division of Ser. No. 952,537, Dec. 9, 1992, Pat. No. 5,294,609. This application Nov. 14, 1994, Ser. No. 339,442

Claims priority, application European Pat. Off., Apr. 17, 1991, 91106105

Int. Cl.[6] C12P *13/04;* **C12N** *1/20*

U.S. Cl. 435—106 **2 Claims**

1. Process for the manufacture of N-[[(4R,7S)-1,3,4,5,6,7,8,10-octahydro-12,14-dihydroxy-7-[[(3R)-3-hydroxy- 1-L-seryl-L-prolyl]amino]-11-methyl-6,10-dioxo- 9,2,5-benzoxathiaazacyclododecin-4-yl]carbonyl]-L-alanine and of pharmaceutically acceptable salts thereof, which comprises cultivating a subculture of the microorganism Streptomyces sp. NR0484 FERM-BP-1982 under submerged, aerobic conditions in an aqueous carbohydrate solution containing nitrogenous nutrients and sodium choride, thereafter isolating the desired compound from the fermentation broth and, if desired. converting the product obtained into a pharmaceutically acceptable salt thereof.

5,486,467

CATALASE FROM *BACILLUS SUBTILIS* IAM 1026 (FERM BP-4844)

Yuichi Fusho, Kanagawa, and Yoshihiro Yajima, Chiba, both of, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1994, Ser. No. 354,721

Claims priority, application Japan, Jan. 18, 1994, 6-003690; Apr. 25, 1994, 6-086745

Int. Cl.[6] C12N *9/08;1/20;1/00*

U.S. Cl. 435—192 **2 Claims**

1. An isolated catalase obtainable from *Bacillus subtilis* IAM 1026 (FERM BP 4844) or a mutant strain thereof having a catalase activity at 0° C. of 95% or more of its catalase activity at 30° C., when measured at pH 7 and wherein said catalase has:

(1) an operative temperature of 0° to 60° C. and an optimum temperature of 0° to 30° C.,

(2) an optimum pH of 7 to 10,

(3) a resistance to 10 mM potassium fluoride,

(4) a molecular weight of 65,000±3,000, when measured by SDS polyacrylamide gel electrophoresis, and

(5) an isoelectric point of about 4.8, when measured by isoelectric focusing.

5,486,468

THERMOSTABLE ENDOXYLANASES

Jutta Casimir-Schenkel, Zurich; Armin Fiechter, Rudolfstetten, both of, Switzerland; Beat Gysin, Harrogate, Great Britain, and Wolfgang Zimmermann, Watt, Switzerland, assignors to Clariant Finance (BVI) Limited, Virgin Islands (Br.)

Division of Ser. No. 747,768, Aug. 20, 1991, Pat. No. 5,407,827. This application Aug. 17, 1994, Ser. No. 292,147

Claims priority, application United Kingdom, Aug. 22, 1990, 9018426

Int. Cl.[6] C12N *9/24;9/42*

U.S. Cl. 435—200 **4 Claims**

1. A biologically pure culture of a strain of *Thermomonospora fusca* possessing all the identifying characteristics of the strain with the designation KW3 and deposition number DSM 6013.

5,486,469

THERMOSTABLE FERVIDOBACTERIUM PULLULANASES

Garabed Antranikian, Seevetal, Germany, and Per L. Jörgensen, Copenhagen, Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK92/00079, § 371 Date Aug. 3, 1993, § 102(e) Date Aug. 3, 1993, PCT Pub. No. WO92/16617, PCT Pub. Date Oct. 1, 1992

PCT Filed Mar. 13, 1992, Ser. No. 94,204

Claims priority, application Denmark, Mar. 15, 1991, 472/91

Int. Cl.[6] C12N *9/44;15/56;15/70;15/74*

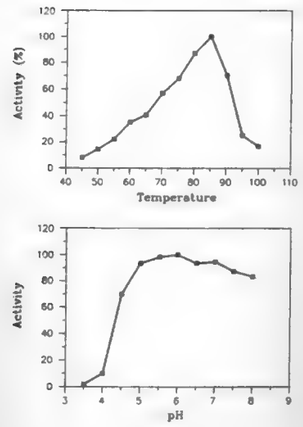
U.S. Cl. 435—210 **8 Claims**

1. An isolated pullulanase endogenous to the strain *Fervidobacterium sp.* Ven 5, DSM 6204, or a mutant thereof which is capable of producing the pullulanase having:

(a) a temperature optimum in the range 80°–90° C.;

(b) a pH optimum in the range of 5–7; and

(c) at least 60% residual activity after 24 hours of incubation at pH 6.0.



5,486,470

PURIFIED HERPES SIMPLEX VIRUS PROTEASE AND METHODS OF PURIFICATION

Paul L. Darke, Blue Bell; Dawn L. Hall, Spring City, and Lawrence C. Kuo, Solebury, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 21, 1994, Ser. No. 279,754
Int. Cl.[6] C12N *9/50*
U.S. Cl. 435—219 17 Claims

1. A method for producing Herpes Simplex Virus 1 or 2 protease comprising the steps of:

a) separating precursor viral protease from non-protease constituents of a host cell using cation exchange chromatography; and

b) subjecting the separated precursor protease to autoprocessing conditions to obtain mature protease.

5,486,471

TISSUE PLASMINOGEN ACTIVATOR ANALOGS HAVING MODIFIED GROWTH FACTOR DOMAINS

Eileen R. Mulvihill, Seattle, Wash.; Shinji Yoshitake, Ibaraki, Japan; Yasunori Ikeda, Ibaraki, Japan; Suguru Suzuki, Ibaraki, Japan; Akira Hashimoto, Ibaraki, Japan; Teruaki Yuzuriha, Ibaraki, Japan, and Bjorn A. Nexo, Søborg, Denmark, assignors to ZymoGenetics, Inc., Seattle, Wash.

Continuation of Ser. No. 171,761, Dec. 22, 1993, abandoned, which is a continuation of Ser. No. 845,736, Mar. 2, 1992, abandoned, which is a continuation of Ser. No. 58,061, Jun. 4, 1987, abandoned. This application Mar. 6, 1995, Ser. No. 400,136
Int. Cl.[6] C12N *9/64;1/21;5/10;* A61K *38/49*
U.S. Cl. 435—226 12 Claims

1. A human t-PA having a cysteine residue within the growth factor domain at position No. 84 of native t-PA replaced with either serine or alanine.

5,486,472

MONOCLONAL ANTIBODIES TO PACAP

Nobuhiro Suzuki, Ibaraki; Chieko Kitada, Osaka, and Masao Tsuda, Ibaraki, all of, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP91/00354, § 371 Date Sep. 3, 1992, § 102(e) Date Sep. 3, 1992, PCT Pub. No. WO91/14786, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 15, 1991, Ser. No. 924,054
Claims priority, application Japan, Mar. 17, 1990, 2-5565; Jan. 26, 1990, 2-287115
Int. Cl.[6] C12N *5/12;* C07K *16/18;* G01N *33/53*
U.S. Cl. 435—240.27 11 Claims

11. A polyclonal antibody which specifically binds to a C-terminal peptide of PACAP27 represented by SEQ ID NO:7.

5,486,473

A DNA CODING FOR A FLAVIVIRUS ANTIGEN

Hiroyuki Fujita, Mitoyo; Iwao Yoshida, Kanonzi; Mitsuo Takagi; Sadao Manabe, both of Mitoyo, and Konosuke Fukai, Toyonaka, all of, Japan, assignors to The Research Foundation for Microbial Diseases of Osaka University, Osaka, Japan

Continuation of Ser. No. 809,255, Dec. 18, 1991, abandoned, which is a continuation of Ser. No. 279,685, Dec. 5, 1988, abandoned, which is a continuation-in-part of Ser. No. 932,419, Nov. 19, 1986, Pat. No. 4,810,492. This application Feb. 9, 1994, Ser. No. 194,049
Claims priority, application Japan, May 6, 1986, 61-131208
Int. Cl.[6] C12N *5/10;1/21;15/40;15/70*
U.S. Cl. 435—240.2 5 Claims

1. An isolated deoxyribonucleic acid which comprises a nucleotide sequence selected from the group consisting of a nucleotide sequence represented by the following formula (II) and the complementary nucleotide sequence to said nucleotide sequence of the formula (II):

TTT AAT TGT CTG GGA ATG GGC AAT CGT GAC
TTC ATA GAA GGA GCC AGT GGA GCC ACT TGG
GTG GAC TTG GTG CTA GAA GGA GAT AGC TGC
TTG ACA ATC ATG GCA AAC GAC AAA CCA ACA
TTG GAC GTC CGC ATG ATT AAC ATC GAA GCT
AGC CAA CTT GCT GAG GTC AGA AGT TAC TGC
TAT CAT GCT TCA GTC ACT GAC ATC TCG ACG
GTG GCT CGG TGC CCC ACG ACT GGA GAA GCT
CAC AAC GAG AAG CGA GCT GAT AGT AGC TAT
GTG TGC AAA CAA GGC TTC ACT GAT CGT GGG
TGG GGC AAC GGA TGT GGA CTT TTC GGG AAG
GGA AGC ATT GAC ACA TGT GCA AAA TTC TCC
TGC ACC AGC AAA GCG ATT GGA AGA ACA ATC
CAG CCA GAA AAC ATC AAA TAC GAA GTT GCC
ATT TTT GTG CAT GGA ACC ACC ACT TCG GAA
AAC CAT GGG AAT TAT TCA GCG CAA GTT GGG
GCG TCC CAG GCG GCA AAG TTT ACA ATA ACA
CCC AAT CGT CCT TCG ATA ACC CTC GGG CTT
GGT GAC TAC GGA GAA GTC ACG CTG GAC TGT
GAG CCA AGG AGT GGA CTG AAC ACT GAA GCG
TTT TAC GTC ATG ACC GTG GGG TCA AAG TCA
TTT CTG GTC CAT AGG GAA TGG TTT CAT GAC
CTC GCT CTC CCC TGG ACG TCC CCT TCG AGC
ACA GCG TGC AGA AAC AGA GAA CTC CTC ATG
GAA TTT GAA GAG GCG CAC GCC ACA AAA CAG
TCC GTT GTT GCT CTT GGG TCA CAG GAA GGA
GGC CTC CAT CAG GCG TTG GCA GGA GCC ATC
GTG GTG GAG TAC TCA AGC TCA GTG AAG TTA
ACA TCA GGC CAC CTG AAA TGT AGG ATG AAA
ATG GAC AAA CTG GCT CTG AAA GGC ACA ACC
TAT GGC ATG TGT ACA GAA AAA TTC TCG TTC
GCG AAA AAT CCG GCG GAC ACT GGC CAC GGA
ACA GTT GTC ATT GAA CTA TCC TAC TCT GGG
AGT GAT GGC CCC TGC AAA ATT CCG ATT GTC
TCC GTT GCG AGC CTC AAT GAC ATG ACC CCC
GTT GGG CGG CTG GTG ACA GTG AAC CCT TTC
GTC GCG ACT TCC AGT GCC AAC TCA AAG CTG

-continued

CTG GTC GAG ATG GAA CCC CCC TTC GGA GAC
TCC TAC ATC GTG GTT GGG AGG GGA GAC AAG
CAG ATC AAC CAC CAT TGG CAC AAA GCT GGA
AGC ACG CTA GGC AAG GCC TTT TCA ACA ACT
TTG AAG GGA GCT CAA AGA CTG GCA GCG TTG
GGC GAC ACA GCC TGG GAC TTT GGC TCC ATT
GGA GGG GTC TTC AAC TCC ATA GGA AAA GCC
GTT CAC CAA GTG TTT GGT GGT GCC TTC AGA
ACA CTC TTT GGG GGA ATG TCT TGG ATC ACA
CAA GGG CTA ATG GGT GCC CTA CTA CTC TGG
ATG GGC GTC AAC GCA CGA GAC CGA TCA ATT
GCT TTG GCC TTC TTA GCC ACA GGA GGT GTG
CTC GTG TTC TTA GCG ACC AAT GTG CAT GCT
..... (II)

wherein A represents a deoxyadenylic acid residue, G a deoxyguanylic acid residue, C a deoxycytidylic acid residue and T a deoxythymidylic acid residue, and the left and right ends of formula (II) represent the 5'-terminus and 3'-terminus, respectively, or a variant of said deoxyribonucleic acid which is obtained by modifying said nucleotide sequences of the formula (II) in accordance with the degeneracy of the Genetic Code.

5,486,474

BIOREMEDIATION METHOD USING A HIGH NITROGEN-CONTAINING CULTURE OF WHITE ROT FUNGI ON SUGAR BEET PULP

Clifford A. Bradley; Robert D. Kearns; Pauline P. Wood, and William E. Black, all of Butte, Mont., assignors to Mycotech Corporation, Butte, Mont.

Continuation of Ser. No. 649,438, Feb. 1, 1991, abandoned. This application Jan. 11, 1993, Ser. No. 3,836
Int. Cl.[6] C02F *1/00;3/00;* C12N *1/22;* C07C *7/00*
U.S. Cl. 435—262 14 Claims

1. A bioremediation method for degrading at least one aromatic compound in soil or water, comprising:

a. combining a white-rot fungus and a sugar beet pulp substrate in a high nitrogen fungal culture such that ligninases are produced during primary metabolism romping a ligninase-producing white-rot fungal culture; and

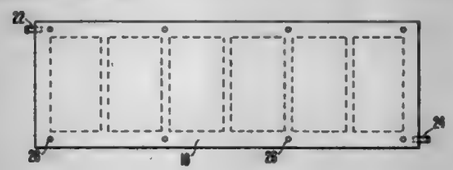
b. mixing the ligninase-producing white-rot fungal culture with the soil or water containing said at least one aromatic compound at a concentration and temperature sufficient to degrade enzymatically at least a portion of the aromatic compound in the soil or water.

5,486,475

MEMBRANE MODULE TO REMOVE GASEOUS SUBSTANCES FROM A GAS STREAM

Valentin Kramer, Flurstrasse 3, 83620, Feldkirchen-Westerham, and Gerd Ziegler, Johann-Sebastian-Bach Str. Strasse 2 85591, Vaterstetten, both of, Germany

Filed Feb. 9, 1994, Ser. No. 195,884
Claims priority, application Germany, Feb. 10, 1993, 43 03 936.7
Int. Cl.[6] C12M *1/00;* C12S *5/00;* B01D *63/08*
U.S. Cl. 435—266 16 Claims



1. A membrane module for removal of undesirable gaseous substances from a gas stream comprising:

(a) a plurality of membrane pocket assemblies, having planar surfaces, that are stacked on top of one another so as to be parallel to the direction of flow of the gas stream, wherein each assembly further comprises:

(i) a flat circumferential frame having a top surface and a parallel bottom surface and an interior space, wherein the frame determines the outer contours of the assembly, said frame including a supply bore and a drainage bore, both bores connected to the interior space of the frame;

(ii) a gas permeable liquidproof membrane that covers both the top and bottom surfaces of the frame and forms a pocket around the interior space of the frame; and

(iii) a mixture, suitable for reaction with said undesirable gaseous substances, selected from the group consisting of a reaction liquid and a suspension of micro-organisms is located within the pocket, wherein the mixture enters the pocket through the supply bore of the frame and exits through the drainage bore of the frame;

(b) a plurality of spacers wherein a spacer is located at opposite sides of the module and between the adjacent pocket assemblies to form an area between the adjacent assemblies through which the gas stream flows, and further wherein the spacers along one side have supply channel holes for location of a supply channel and the spacers along the other side have drainage channel holes for location of a drainage channel;

(c) said supply channel extends to all of the membrane pocket assemblies and connects with the supply bores in the frames, and further extends through said spacers via the supply channel holes, said supply channel providing the mixture only to the pockets via the supply bores within said frames;

(d) said drainage channel extends to all of the membrane pocket assemblies and connects with the drainage bores in the frames and extends through said spacers via the drainage channel holes, said drainage channel providing an egress for the mixture contained within the membrane pockets;

(e) a top plate that covers the plurality of assemblies, said top plate further including the supply channel that extends to the pocket assemblies and through the spacers; and

(f) a floor plate that goes underneath the plurality of assemblies, said floor plate further including the drainage channel that extends from the pocket assemblies and through the spacers.

5,486,476

LIPOPROTEIN (A) PEPTIDES AND THEIR USE

Geoffrey Burns, Munich; Wolf-Dieter Engel, Feldafing, and Christoph Seidel, Weilheim, all of, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Feb. 9, 1994, Ser. No. 196,940
Claims priority, application Germany, Feb. 9, 1993, 43 04 638.4
Int. Cl.[6] G01N *31/00;* A61K *38/04;* C07K *7/00*
U.S. Cl. 436—15 9 Claims

1. A lipoprotein (a) peptide comprising a sequence selected from the group consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7 and SEQ ID NO: 8, wherein said peptide has a random coil structure which produces a negative band between 190 and 200 nm when examined using CD spectroscopy, and wherein said peptide has the same specificity or antigenicity as a peptide selected from the group consisting of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7 AND SEQ ID NO: 8.

5,486,477

REAGENT SYSTEM FOR IMPROVED MULTIPLE SPECIES BLOOD ANALYSIS

Edward L. Carver, Jr., 18 Lisa Dr., Oxford, Conn. 06483

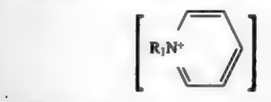
Division of Ser. No. 57,212, May 3, 1993, Pat. No. 5,262,329, which is a continuation of Ser. No. 714,671, Jun. 13, 1991, abandoned. This application Aug. 11, 1993, Ser. No. 105,027

Int. Cl.[6] G01N *1/28*

U.S. Cl. 436—17 **12 Claims**

1. A blood analysis reagent system for the automated or semi-automated differential analysis of white blood cells, comprising:

(1) an aqueous solution of an active lytic reagent consisting essentially of at least one heterocyclic quaternary ammonium compound represented by the formula:



wherein R_1 is a long chain alkyl radical containing from 8 to 20 carbon atoms and X is a halide;

wherein said heterocyclic quaternary ammonium compound(s) of said lytic reagent are present in a quantity sufficient to effect at least a three component differential separation of white blood cells; in combination with

(2) an isotonic blood diluent comprising at least one organic buffer and a cell membrane stabilizing and antimicrobial agent, wherein said cell membrane stabilizing and antimicrobial agent comprises a monoaldehyde, said monoaldehyde being present in the range of 0.01% to 0.15% by volume of said diluent.

5,486,478

METHOD OF MEASURING INGREDIENTS IN LIQUID

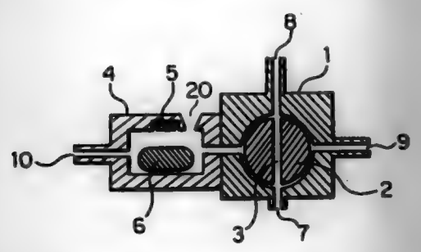
Toshihide Kuriyama, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 73,650, Jun. 7, 1993, abandoned, which is a continuation of Ser. No. 672,389, Mar. 20, 1991, abandoned. This application Dec. 14, 1994, Ser. No. 355,816

Claims priority, application Japan, Mar. 23, 1990, 2-72209

Int. Cl.[6] G01N *35/10*

U.S. Cl. 436—52 **6 Claims**



1. A method of measuring ingredients in a body fluid, said method comprising the steps of:

rotating a valve having a bore therein which forms a reservoir with a fixed volume for receiving a prescribed amount of said body fluid;

placing said bore in communication with an intake port and a suction port of a housing for taking said prescribed amount of said body fluid from said intake port and into the bore in said valve;

rotating said valve a second time to place said bore in communication with an introduction port for introducing a diluent into said bore and into a cell having a stirrer and a sensor therein, said cell having a discharge port, said second rotation of said valve occurring when said bore is filled with said prescribed amount of said body fluid;

transferring a sample of said prescribed amount of said body fluid from said bore and into said cell by a pressing force occurring with the introduction of said diluent into said bore;

diluting said prescribed amount of said body fluid with said diluent along with a stirring by said stirrer;

measuring a concentration of ingredients in said diluted body fluid by said sensor for detecting the ingredients, while said diluted body fluid is being stirred in said cell;

pouring a diluent into said cell through a port thereof and discharging said measured and diluted body fluid out of said cell; and

repeating the above steps in the named order.

5,486,479

BUFFER FOR IMMUNOASSAY, KIT INCLUDING SAME AND IMMUNOASSAY METHOD USING SAID BUFFER

Michio Ito; Satoshi Sugawa, both of Tokyo, Japan, and Atsushi Yanagida, Carmel, Ind., assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

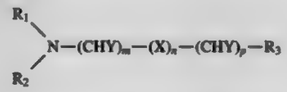
Filed May 2, 1994, Ser. No. 235,876

The portion of the term of this patent subsequent to May 2, 2014, has been disclaimed.

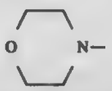
Int. Cl.[6] G01N *33/546*

U.S. Cl. 436—533 **19 Claims**

1. A kit comprising two components A and B, component A comprising an immunoreactant immobilized on a solid support, component B comprising a buffer composition comprising a buffering agent, sodium chloride, choline chloride, a polysaccharide, fatty-acid-free serum albumin and a non-specific reaction suppressor of the formula:



wherein X is —NH—(CO)—NH—, —NH—(CS)—NH—, or —N=C=N—, R_1 and R_2, which may be the same or different, are C_1–C_5 linear or branched alkyl groups, or R_1 and R^2, together with nitrogen, is



or the metho-p-toluenesulfonate salt thereof,

Y, which may be the same or different, is any of H, OH and halogen,

R_3 is —NR_1R_2, —NH_2, —CHY, cyclohexyl, or H,

m is an integer of from 2 to 5,

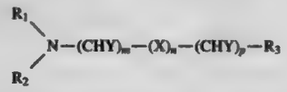
p is an integer of from 0 to 5, and

n is 0 or 1,

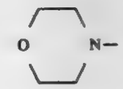
and the acid addition salts thereof.

13. An immunoassay method comprising the steps of:

mixing a sample comprising an analyte to be detected with a buffer composition comprising water, a buffering agent, sodium chloride, choline chloride, a polysaccharide, fatty-acid-free serum albumin, and a non-specific reaction suppressor of the formula



wherein X is —NH—(CO)—NH—, —NH—(CS)—NH—, or —N=C=N—, R_1 and R_2, which may be the same or different, are C_1–C_5 linear or branched alkyl groups, or R_1 and R_2, together with nitrogen, is



or the metho-p-toluenesulfonate salt thereof,

Y, which may be the same or different, is any of H, OH and halogen,

R_3 is —NR_1R_2, —NH_2, —CHY, cyclohexyl, or H,

m is an integer of from 2 to 5,

p is an integer of from 0 to 5, and

n is 0 or 1,

and the acid addition salts thereof, to produce a buffer-sample mixture,

contacting said buffer sample mixture with a solid support having immobilized thereon an immunoreactant which specifically reacts with said analyte to be detected so as to form a specific binding complex, and determining formation of said specific binding complex to detect said analyte.

5,486,480

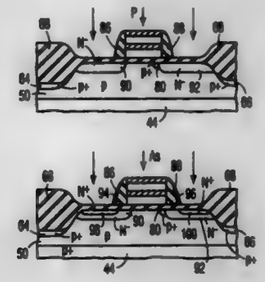
METHOD OF FABRICATION OF PROTECTED PROGRAMMABLE TRANSISTOR WITH REDUCED PARASITIC CAPACITANCES

Teh-Yi J. Chen, Cupertino, Calif., assignor to North American Philips Corporation, New York, N.Y.

Division of Ser. No. 700,663, May 15, 1991, Pat. No. 5,424,467. This application Oct. 28, 1994, Ser. No. 330,645

Int. Cl.[6] H01L *21/8247*

U.S. Cl. 437—29 **3 Claims**



1. A method of fabricating a programmable transistor from a monocrystalline semiconductor body that comprises a surface-adjoining main zone of a first conductivity type, the method comprising the steps of:

creating a charge storage region over a channel region in the main zone;

introducing into the main zone a first dopant of the first conductivity type for providing a first impurity zone of the first conductivity type that extends into the channel region and is more heavily doped than the main zone;

introducing into the main zone a second dopant of a second conductivity type opposite to the first for furnishing a lightly doped second impurity region laterally contiguous with the first impurity zone;

introducing into the second region a third dopant of the second conductivity type for creating a surface-adjoining third impurity region that is embedded in and more heavily doped than the second impurity region, wherein a spacer is formed over the first region and alongside the charge storage region prior to introducing the second dopant.

5,486,481

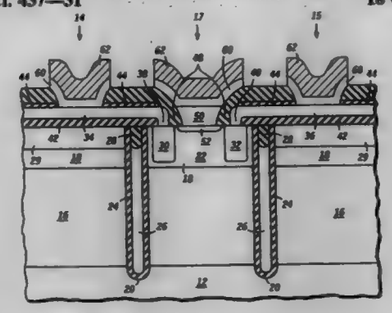
METHOD FOR FORMING A LATERAL BIPOLAR TRANSISTOR

Lalgudi M. G. Sundaram, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 801,282, Dec. 2, 1991, Pat. No. 5,397,912. This application Nov. 21, 1994, Ser. No. 342,476

Int. Cl.[6] H01L *21/8222*

U.S. Cl. 437—31 **18 Claims**



1. A method for making a lateral bipolar transistor comprising the steps of:

forming an isolated semiconductor tub of a first conductivity type;

etching a first trench and a second trench in the isolated semiconductor tub;

filling the first and second trenches with doped polycrystalline semiconductor material of a second conductivity type to form a first and a second filled trench, wherein the first filled trench forms an emitter region and the second filled trench forms a collector region, and wherein that portion of the semiconductor tub between emitter region and the collector region forms a base region;

forming a doped polycrystalline semiconductor layer of the first conductivity type on the isolated semiconductor tub between the emitter and collector regions;

forming a first spacer on the emitter region:

forming a second spacer on the collector region;

forming a first extension doped in the second conductivity type such that the first extension is coupled to the first spacer, wherein the first extension extends laterally beyond the isolated semiconductor tub;

forming a second extension doped in the second conductivity type such that the second extension is coupled to the second spacer, wherein the second extension extends laterally beyond the isolated semiconductor tub:

forming a base electrode on the doped polycrystalline semiconductor layer:

forming an emitter electrode on the first extension: and

forming a collector electrode on the second extension.

5,486,482

PROCESS FOR FABRICATING METAL-GATE CMOS TRANSISTOR

Sheng-Hsing Yang, Hsinchu, Taiwan, Prov. of China, assignor to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

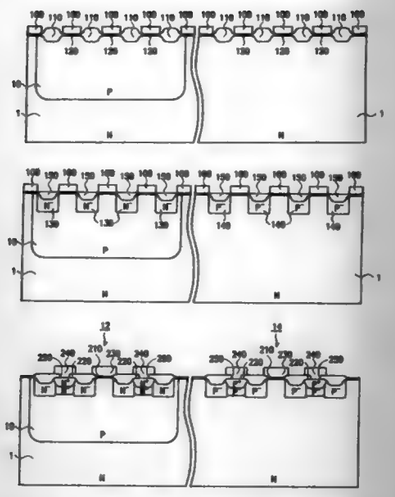
Filed May 9, 1995, Ser. No. 437,724

Int. Cl.[6] H01L *21/8238;21/8234*

U.S. Cl. 437—34 **10 Claims**

1. A process for fabricating a metal-gate MOS transistor for use in CMOS integrated circuits formed on a semiconducting substrate of a first conductivity type having a well region of a second conductivity type therein, comprising:

(a) forming a shielding layer with designated patterns on said well region;



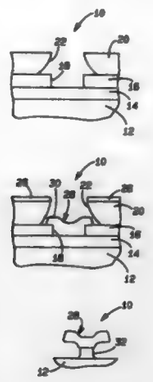
(b) forming first field oxides on said well region between said designated patterns through a thermal oxidation procedure;
(c) removing said first field oxides exposing recesses;
(d) forming drift regions of said first conductivity type in said well region beneath said recesses;
(e) forming second field oxides above said drift regions;
(f) removing said shielding layer;
(g) forming heavily-doped regions of said first conductivity type in said well region between each pair of said drift regions and lightly-doped regions of said first conductivity type beneath said heavily-doped region as source/drain regions;
(h) forming a gate oxide layer on said well region between said source/drain regions and an isolation oxide layer on said heavily-doped regions; and
(i) forming a metal gate on said gate oxide layer.

5,486,483

METHOD OF FORMING CLOSELY SPACED METAL ELECTRODES IN A SEMICONDUCTOR DEVICE

Michael D. Lammert, Manhattan Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Sep. 27, 1994, Ser. No. 312,845
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—39 **20 Claims**



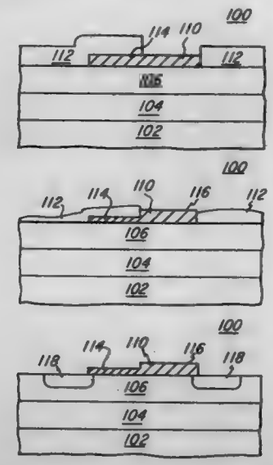
1. A method of forming electrodes associated with different regions of a semiconductor device, said method comprising the steps of:
providing a first semiconductor layer and a second semiconductor layer, said first semiconductor layer being on top of said second semiconductor layer;
providing a first sacrificial layer in contact with the first semiconductor layer and opposite to the second semiconductor layer;
providing a first photoresist layer over the first sacrificial layer opposite to the first semiconductor layer;
forming a first re-entrant profile opening in the first photoresist layer;
forming an opening in the first sacrificial layer through the first re-entrant profile opening of the first photoresist layer to expose the first semiconductor layer;
enlarging the first re-entrant profile opening in the first photoresist layer;
providing a first electrode in contact with the first semiconductor layer; and
etching the first sacrificial layer and the first semiconductor layer so as to remove the first sacrificial layer and a portion of the first semiconductor layer so as to form a first semiconductor region beneath and in contact with the first electrode, wherein the step of enlarging the first re-entrant profile opening selectively controls the lateral spacing between the first semiconductor region and a second electrode contacting the second semiconductor layer.

5,486,484

LATERAL POWER MOSFET STRUCTURE USING SILICON CARBIDE

Satwinder Malhi, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 20,475, Feb. 22, 1993. This application Jul. 25, 1994, Ser. No. 255,023
Int. Cl.[6] H01L *21/443*
U.S. Cl. 437—41 **4 Claims**



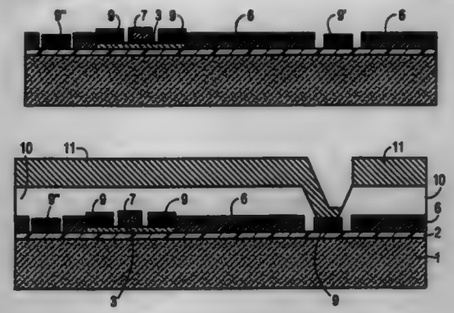
1. A method of forming a MOSFET having a silicon carbide substrate of a first conductivity type, comprising the steps of:
epitaxially growing a layer of second conductivity type material on said silicon carbide substrate;
epitaxially growing a channel region of said first conductivity type above said layer of second conductivity type material;
thermally growing a first insulator layer over a portion of said channel region;
thermally growing a second insulator layer over a portion of said first insulator layer; implanting first and second source/drain regions with a dopant of said first conductivity type directly in said channel region; and
forming a conductive layer over said first and second insulator layers.

5,486,485

METHOD OF MANUFACTURING A REFLECTIVE DISPLAY

Manjin J. Kim, Ossining, and Satyendranath Mukherjee, Yorktown Heights, both of N.Y., assignors to Philip Electronics North America Corporation, New York, N.Y.

Filed Feb. 18, 1994, Ser. No. 198,243
Int. Cl.[6] H01L *21/84*
U.S. Cl. 437—41 **7 Claims**



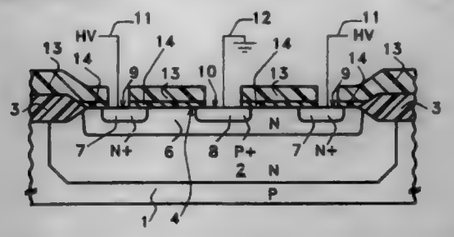
1. A method of making a plurality of information pixels for a reflective display comprising the steps of:
(a) forming a layer of SiO2 on a silicon substrate,
(b) forming a plurality of SOI thin film transistors on said layer of SiO2,
(c) forming a storage capacitor adjacent to each of said plurality of SOI thin film transistors,
(d) forming a plurality of metal lines in contact with each of said SOI thin film transistors and each of said storage capacitors,
(e) covering each of said SOI thin film transistors and each of said storage capacitors with a thickness of a planarized layer of polyimide,
(f) separating said planarized layer of polyimide covering each SOI thin film transistor and each storage capacitor into individual areas having a covering of said polyimide layer, and
(g) covering each individual planarized layer of polyimide with a thickness of a reflective metal electrode to form a plurality of individual pixels.

5,486,486

PROCESS FOR THE MANUFACTURE OF AN INTEGRATED VOLTAGE LIMITER AND STABILIZER IN FLASH EEPROM MEMORY DEVICES

Paolo Ghezzi, Rivolta D'Adda, and Alfonso Maurelli, Sulbiate, both of, Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Milan, Italy

Filed Sep. 7, 1994, Ser. No. 301,792
Claims priority, application European Pat. Off., Sep. 10, 1993, 93830365
Int. Cl.[6] H01L *21/8247*
U.S. Cl. 437—43 **8 Claims**



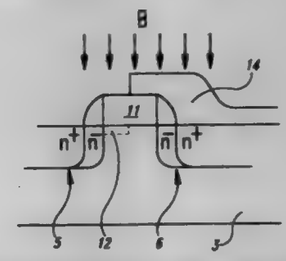
1. A process for the manufacture of an integrated voltage limiter and stabilizer component in a flash EEPROM memory device including flash EEPROM memory cells and N channel and P channel MOS transistors, the process comprising the following steps:
(a) forming N type lightly doped wells for the voltage limiter and stabilizer and for the P channel MOS transistors on a single crystal silicon substrate;
(b) forming active areas on the surface of said N type wells for the voltage limiter and stabilizer and for the. P channel MOS transistors, and on the surface of the silicon substrate for the N channel MOS transistors and for the flash EEPROM memory cells;
(c) growing a gate oxide layer over said active areas;
(d) implanting a first dose of N type dopant into said N type well for the voltage limiter and stabilizer to obtain an N type region, and into the silicon substrate to form source regions for the flash EEPROM memory cells;
(e) implanting a second dose, higher than said first dose, of N type dopant into said N type region to obtain an N+ contact region to both the N type well for the voltage limiter and stabilizer and said N type region, and into said silicon substrate to form source and drain regions of the N channel MOS transistors;
(f) implanting a third dose, higher than said first dose, of P type dopant into said N type region to form a P+ region, and into the N type wells for the P channel MOS transistors to form source and drain regions for the P channel MOS transistors.

5,486,487

METHOD FOR ADJUSTING THE THRESHOLD OF A READ-ONLY MEMORY TO ACHIEVE LOW CAPACITANCE AND HIGH BREAKDOWN VOLTAGE

Giancarlo Ginami, Bergamo; Enrico Laurin, Monza; Silvia Lucherini, Milan, and Bruno Vajana, Bergamo, all of, Italy, assignors to SGS-Thomson Microelectronics S.r.l., Milan, Italy

Continuation-in-part of Ser. No. 678,557, Mar. 29, 1991, abandoned. This application Oct. 19, 1993, Ser. No. 139,800
Claims priority, application Italy, Mar. 30, 1990, 19903/90
Int. Cl.[6] H01L *21/266*
U.S. Cl. 437—45 **10 Claims**



1. A method of manufacturing a programmed memory cell of a read-only memory array comprising the steps of:
defining an active area for a field effect memory element on a semiconductor substrate having a first conductivity type, the active area having a channel region, and a source region and a drain region on opposite sides of the channel region;
forming a gate insulating layer overlying at least a portion of the active area;
forming a gate electrode of uniform thickness overlying the gate insulating layer and positioned over the channel region;
forming a programming mask having a programming mask aperture positioned over at least a portion of the source region;
implanting a doping impurity of the first conductivity type into the semiconductor substrate through the programming mask aperture to program the memory cell;
implanting a doping impurity of a second conductivity type into the gate electrode and into the source and drain regions, causing the gate electrode and the source and drain regions to be doped with the second conductivity type impurity; and
heating the semiconductor substrate to diffuse the doping impurity of the first conductivity type into the channel region and

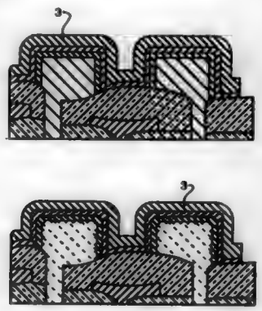
of the second conductivity type into the gate electrode of the source region and the drain regions.

5,486,488

PROCESS FOR MANUFACTURING SEMICONDUCTOR DEVICE

Satoshi Kamiyama, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 1, 1994, Ser. No. 347,712
Claims priority, application Japan, Dec. 2, 1993, 5-302473
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 437—60 **7 Claims**



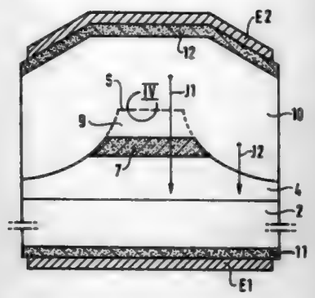
1. A process for manufacturing a capacity element on a semiconductor device comprises:
- a step of forming a capacity lower electrode having, on a surface of the semiconductor device, a first conductive film,
- a step of forming a capacity insulating film comprising a tantalum oxide film,
- a step of subjecting the tantalum oxide film to a densification treatment at a temperature in a range of from room temperature to 300° C., and
- a step of forming a capacity upper electrode comprising a second conductive film.

5,486,489

METHOD OF MANUFACTURING A SEMICONDUCTOR COMPONENT, IN PARTICULAR A BURIED RIDGE LASER

Léon Goldstein, Chaville, and Dominique Bonnevie, Leuville sur Orge, both of, France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Feb. 3, 1994, Ser. No. 191,165
Claims priority, application France, Feb. 4, 1993, 93 01212
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—129 **7 Claims**



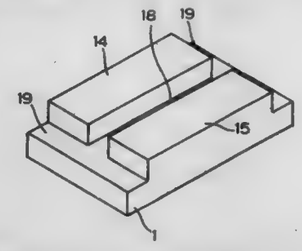
1. A method of manufacturing a semiconductor component, the method involving:
forming a semiconductor base (9) which has a cleansed surface (S) and which is doped with a dopant having a conductivity type; and
depositing a doped semiconductor coating (10) on said cleansed surface (S), which doped semiconductor coating is doped with a dopant having the same conductivity type as the dopant of the base;
said method being characterized by the fact that depositing said coating (10) involves depositing a superdoped layer (24) atop said cleansed surface (S), which superdoped layer is deposited with a dopant having said same conductivity type and having a concentration that is greater than twice a mean dopant concentration of the coating (10).

5,486,490

METHOD OF MAKING SEMICONDUCTOR LASER

Syoichi Kakimoto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 160,748, Dec. 3, 1993, abandoned. This application Sep. 2, 1994, Ser. No. 298,968
Claims priority, application Japan, Dec. 15, 1992, 4-354578
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—129 **6 Claims**



1. A method of making a semiconductor laser comprising:
forming a semiconductor substrate of a first conductivity type to include two opposed mesas separated by a central groove and adjacent two regions transverse to, contiguous to, and continuous with the central groove;
successively, epitaxially growing a first cladding layer of a first conductivity type, an active layer comprising a multiple quantum well structure including alternating well and barrier layers, a second cladding layer of a second conductivity type, opposite the first conductivity type, and a contact layer of the second conductivity type on the semiconductor substrate using a process producing thicker well layers in the groove than in the two regions; and
forming first and second electrodes on the substrate and the contact layer, respectively.

5,486,491

CERAMIC FERROELECTRIC COMPOSITE MATERIAL - BSTO-ZRO_2

Louise Sengupta, Woburn; Eric Ngo, Brighton; Steven Stowell, Jamaica Plain; Michelina O'Day, Andover, and Robert Lancto, Wakefield, all of Mass., assignors to The United States of America as represented by The Secretary of the Army, Washington, D.C.

which is a continuation-in-part of Ser. No. 76,291, Jun. 9, 1993, abandoned. This application Mar. 7, 1994, Ser. No. 207,447
Int. Cl.[6] C04B *35/49*
U.S. Cl. 501—137 **4 Claims**

1. A sintered ceramic ferrolectric composite material for use in array antennas and the like, consisting essentially of:
Barium Strontium Titanate, said Barium Strontium Titanate represented as $BA_{1-x}Sr_xTiO_3$, wherein X is greater than 0.0, but less than or equal to 0.70, and

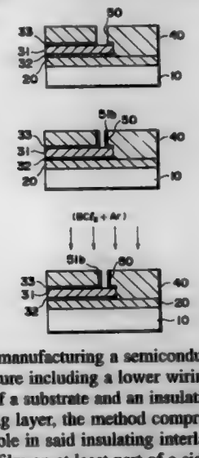
Zirconia;
wherein said Barium Strontium Titanate and Zirconia are present in an amount sufficient to provide a composite having a dielectric constant of about 60 to 3800, low loss tangent of the range of 0.03 or less, and a high tunability. of about 1.67 to 46%.

5,486,492

METHOD OF FORMING MULTILAYERED WIRING STRUCTURE IN SEMICONDUCTOR DEVICE

Hiroshi Yamamoto; Nobuyuki Takeyasu, both of Chiba, and Tomohiro Ohta, Urayasu, all of, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Oct. 29, 1993, Ser. No. 142,971
Claims priority, application Japan, Jan. 30, 1992, 4-293124
Int. Cl.[6] H01L *21/285;21/3065*
U.S. Cl. 437—192 **40 Claims**



1. A method of manufacturing a semiconductor device having a multilayered structure including a lower wiring layer that contacts an upper surface of a substrate and an insulating interlayer formed on the lower wiring layer, the method comprising:
forming a via hole in said insulating interlayer;
applying a thin film on at least part of a sidewall of the via hole formed in the insulating interlayer and on an entire upper surface of the insulating interlayer in which the via hole is formed, the thin film including a high melting point metal or a high melting point metal compound selected from the group consisting of a nitride, an oxynitride, a boride, and a boronitride;
entirely removing the thin film from the upper surface of the insulating interlayer; and
performing selective chemical vapor deposition to fill the remaining portion of the via hole with a conductive material including one of Al and an Al alloy, thereby forming a via plug.

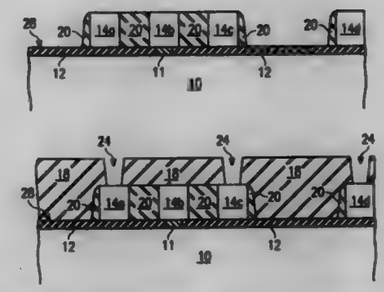
5,486,493

PLANARIZED MULTI-LEVEL INTERCONNECT SCHEME WITH EMBEDDED LOW-DIELECTRIC CONSTANT INSULATORS

Shin-Puu Jeng, 2508 Evergreen Dr., Plano, Tex. 75075

Continuation of Ser. No. 202,057, Feb. 25, 1994, abandoned. This application Apr. 26, 1995, Ser. No. 430,095
Int. Cl.[6] H01L *21/44;21/48*
U.S. Cl. 437—195 **12 Claims**

1. A method for forming an interconnect structure on a semiconductor body, comprising the steps of:
a. forming a plurality of spaced interconnect lines on said semiconductor body;
b. filling the space between all adjacent interconnect lines having a distance therebetween no greater than a given distance with an insulating material having a dielectric constant lower than the dielectric constant of silicon dioxide and greater than or equal to one, and leaving an unfilled open field area between adjacent interconnect lines having a distance therebetween greater than said given distance;
c. depositing a first layer of silicon dioxide over said interconnect lines, said open field area and said insulating material.

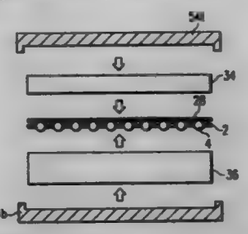


5,486,494

METHOD AND APPARATUS FOR AFFIXING SPHERES TO A CONDUCTIVE SHEET

Gregory Hotchkiss, Richardson, and Jules D. Levine, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 22, 1994, Ser. No. 279,572
Int. Cl.[6] H01L *21/60*
U.S. Cl. 437—209 **29 Claims**



1. A method of affixing a conductive foil sheet to each of a plurality of semiconductor members mounted in a conductive foil matrix, said method comprising the steps of:
providing a cell matrix including said conductive foil matrix with said members mounted therein and an insulating layer disposed on each of said members;
removing a portion of said insulating layer from each of said members to expose a portion of said members;
forming a cell sandwich between an upper pressure pad and a lower pressure pad, said cell sandwich including said cell matrix and said conductive foil sheet;
disposing said cell sandwich within a clamshell;
heating said cell sandwich; and
affixing said members to said conductive foil sheet by directing said cell sandwich within said clamshell through a roll press thereby compressing said cell sandwich.

5,486,495

GERMANATE GLASS CERAMIC

John M. Jewell, Taunton, Mass.; Barry B. Harbison, Dunkirk, Md.; Ishwar D. Aggarwal, Springfield, and Shyam S. Bayya, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 23, 1994, Ser. No. 363,074
Int. Cl.[6] C03C *10/02;3/253*
U.S. Cl. 501—10 **13 Claims**

1. A glass ceramic article comprising 25–80 mol percent germanium oxide, 10–60 mol percent barium oxide and 5–30 mol per-

cent gallium oxide, based on the total mols of germanium oxide, barium oxide and gallium oxide, wherein the total of the germanium oxide and barium oxide is more than 50 mol percent, which article is over 98% by volume crystalline.

5,486,496

GRAPHITE-LOADED SILICON CARBIDE

Lloyd G. Talbert, Alexander, and Stephen M. Brazil, Benton, both of Ark., assignors to Alumina Ceramics Co. (ACI), Benton, Ark.

Filed Jun. 10, 1994, Ser. No. 259,916

Int. Cl.[6] C04B *35/577*

U.S. Cl. 501—90 **13 Claims**

12. A sintered ceramic body, comprising:

(a) at least about 85 weight percent silicon carbide;

(b) at least about 5 weight percent graphite inclusions having an average size of at least about 100 micrometers; and

(c) less than about 0.5 weight percent unreacted silicon metal;

wherein said sintered ceramic body has a density of at least about 2.8 g/cc and a tensile strength of at least about 100 MPa.

5,486,497

CERAMIC FIBER YARN, AND A METHOD OF AND A SPINNING MACHINE FOR MAKING THE SAME

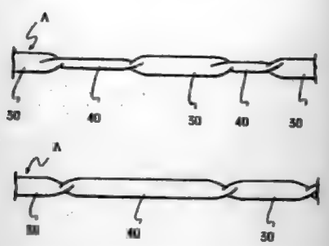
Kyuji Katsuoka; Noriho Harumiya; Tadahiro Hashizume, and Tadashi Kitahara, all of Nagano, Japan, assignors to Taimei Kagaku Kogyo Kabushiki Kaisha, Nagano, Japan

Filed Feb. 4, 1994, Ser. No. 191,933

Claims priority, application Japan, Feb. 8, 1993, 5-019958

Int. Cl.[6] D02G *3/06;* **C04B** *35/10*

U.S. Cl. 501—95 **5 Claims**



1. A ceramic fiber yarn comprising a group of filaments, said filaments being made by the steps of spinning a mother liquid, which comprises colloidal silica and basic aluminum chloride, and firing, said filaments comprising 67–75 wt % of alumina and 25–33 wt % of silica and mainly having polycrystalline transition alumina,

wherein the loop strength of each said filament, which is measured by a wire having diameter of 0.5 mm, is at least 2.5×10^{-2} N;

the crystal structure of said filament substantially changes to polycrystalline mullite after heating for 30 minutes at a temperature of 1,400° C.; and

wherein a part of said filaments of said group have flat shapes in the transverse sections and twisted sections, which are serially formed, with separations, in the axial direction of said filaments.

5,486,498

ZEOLITE L

Johannes P. Verduijn, Spijkenisse, Netherlands, assignor to Exxon Research & Engineering Company, Florham Park, N.J.

Division of Ser. No. 87,225, Jul. 2, 1993, Pat. No. 5,396,009, which is a division of Ser. No. 825,408, Jan. 24, 1992, Pat. No. 5,242,675, which is a continuation of Ser. No. 715,011, Jun. 13, 1991, abandoned, which is a continuation of Ser. No. 501,406, Mar. 29, 1990, abandoned, which is a continuation of Ser. No. 481,484, Feb. 16, 1990, abandoned, which is a continuation of Ser. No. 298,336, Jan. 17, 1989, abandoned, which is a continuation of Ser. No. 918,457, Oct. 14, 1986, abandoned. This application Mar. 3, 1995, Ser. No. 398,250

Int. Cl.[6] B01J *29/06*

U.S. Cl. 502—66 **8 Claims**

1. A catalyst containing a catalytically active metal and zeolite L comprising cylindrical crystallites having basal planes shaped such that the ratio of axial length of curved cylindrical surface (m) to the overall axial length of the crystallite (h) is greater than 0.9; wherein said zeolite is crystallized from a synthesis mixture containing a source of alkali metal selected from the group consisting of potassium and a mixture of potassium and sodium and further comprising a source of additional metal selected from the group consisting of magnesium, calcium, barium, manganese, chromium, cobalt, nickel and zinc cations, said additional metal being present in an amount in the range of from about 0.1 ppm to about 0.1 wt % based on said synthesis mixture.

5,486,499

PILLARED CLAYS

Mary E. Davies; Mavis E. Whittle, both of Cheshire; William Jones, and Robert Mokaya, both of Cambridge, all of, England, assignors to Laporte Industries Limited, England

PCT No. PCT/GB92/00674, § 371 Date Feb. 3, 1993, § 102(e) Date Feb. 3, 1993, PCT Pub. No. WO92/19533, PCT Pub. Date Nov. 12, 1992

PCT Filed Apr. 13, 1992, Ser. No. 140,007

Claims priority, application United Kingdom, Apr. 24, 1991, 9108771

Int. Cl.[6] B01J *21/16*

U.S. Cl. 502—81 **22 Claims**

1. A process for the production of a material suitable for use in the purification of edible oils or as a catalyst support the process comprising treating a layered clay mineral comprising structural aluminum and silicon with a solution of a pillaring material so as to cause adsorption of at least some of the pillaring material into the clay mineral and removing solvent to deposit pillaring material within the clay mineral the process being characterized by acid treating the clay mineral, prior to contact with the pillaring material, at a temperature of at least 70° C. with acid at a concentration of at least 10% by weight so as to increase the silica to alumina ratio in the clay mineral by at least 10% by the removal of structural aluminum.

5,486,500

PRINTED TOWEL AND PROCESS

Mark S. Kaufman, 200 Ingleside Dr., Stamford, Conn. 06903

Continuation-in-part of Ser. No. 845,717, Mar. 4, 1992, abandoned. This application Oct. 20, 1993, Ser. No. 94,603

Int. Cl.[6] B41M *5/035;5/38;* **D06P** *3/54*

U.S. Cl. 503—227 **19 Claims**

1. A printed towel having two faces, a first face comprising a print receiving face which comprises at least about 65% of a relatively non-absorbent material able to receive printing by sublimation printing techniques, wherein said relatively non-absorbent material comprises a material selected from the group consisting of polyester, nylon, acrylic or combinations thereof, said print receiving face having four color process printing applied thereon by



sublimation of sublimation inks; and a second face comprising an absorbent material having a net moisture regain of at least about 3.5%.

5,486,501

NONEQUILIBRIUM PRECURSORS FOR SUPERCONDUCTOR MATERIALS AND PROCESS FOR MAKING SHAPED SUPERCONDUCTOR ARTICLES THEREFROM

Shome N. Sinha, 220 N. Lombard Ave., Oak Park, Ill. 60302

Division of Ser. No. 821,692, Jan. 16, 1992, Pat. No. 5,300,483. This application Feb. 9, 1994, Ser. No. 194,044

Int. Cl.[6] C01F *11/02;17/00;* **C01G** *3/02;* **H01L** *39/24*

U.S. Cl. 505—510 **13 Claims**

1. A superconductor precursor comprising a blend of $BaCuO_{2.5}$, and an oxide of copper and an oxide of at least one other metal, said precursor being in the form of particles having a maximum particle size of about 5 microns for at least 99 weight percent of said blend, the oxides being in a proportion sufficient to provide a total level of oxygen above that which, after fusion of said blend, produces a superconductor of a formula having more than one atom of trivalent copper.

5,486,502

2-METHOXY-4-FORMYL PHENYL ESTER OF PROPIONIC ACID AND USE IN AUGMENTING OR ENHANCING THE AROMA OF PERFUME COMPOSITIONS, COLOGNES AND PERFUMED ARTICLES

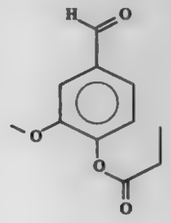
Mark A. Sprecker, Sea Bright; Richard A. Weiss, Pine Brook, and Marie R. Hanna, Keyport, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Dec. 15, 1994, Ser. No. 356,523

Int. Cl.[6] A61K *7/46*

U.S. Cl. 512—21 **12 Claims**

1. 2-Methoxy-4-formyl phenyl ester propionic acid having the structure:



5,486,503

ANTI-FUNGAL HISTATIN-BASED PEPTIDES

Frank G. Oppenheim, Chestnut Hill, and Tao Xu, Somerville, both of Mass., assignors to The Trustees of Boston University, Boston, Mass.

Continuation of Ser. No. 145,830, Oct. 28, 1993, abandoned, which is a continuation of Ser. No. 786,571, Nov. 1, 1991, abandoned. This application Aug. 9, 1994, Ser. No. 287,717

Int. Cl.[6] A61K *38/10;38/16;* **C07K** *7/04;14/00*

U.S. Cl. 514—2 **4 Claims**



1. A composition for treating fungal infection comprising a substantially pure peptide having an amino acid sequence selected from the group consisting of:

a) the amino acid sequence of SPM-H3 as set for in SEQ ID NO: 2;

b) the amino acid sequence of 3P1 as set forth in SEQ ID NO: 3;

c) the amino acid sequence of 3P2 as set forth in SEQ ID NO: 4;

d) the amino acid sequence of 3P3 as set forth in SEQ ID NO: 5;

e) the amino acid sequence of 3P4 as set forth in SEQ ID NO: 6;

f) the amino acid sequence of 3P5 as set forth in SEQ ID NO: 7;

g) the amino acid sequence of M-histatin 1 as set forth in SEQ ID NO: 8;

h) the amino acid sequence of SPM-MHa as set forth in SEQ ID NO: 10;

i) the amino acid sequence of SPM-MHb as set forth in SEQ ID NO: 11;

j) the amino acid sequence of SPM-MHc as set forth in SEQ ID NO: 12; and

k) combinations of two or more of the above.

5,486,504

Patent Not Issued For This Number

5,486,505

POLYPEPTIDE COMPOUNDS HAVING GROWTH HORMONE RELEASING ACTIVITY

Cyril Y. Bowers, New Orleans, La.; Wayne L. Cody, Saline, Mich.; John C. Hubbs; Charles H. Foster, both of Kingsport, Tenn., and Frank A. Momany, Wellesley, Mass., assignors to Polygen Holding Corporation, Wilmington, Del.

Continuation of Ser. No. 557,226, Jul. 24, 1990, abandoned. This application Oct. 16, 1992, Ser. No. 962,069

Int. Cl.[6] A61K *38/00;* **C07K** *7/06*

U.S. Cl. 514—16 **24 Claims**

1. A peptide having the formula

$$A_1\text{—}D^{\beta}Nal\text{—}A_3\text{—}Trp\text{—}A_5\text{—}A_6\text{—}Z,$$

wherein A_1 is His, 3(NMe)His, His—Ala, Ala, Tyr, A_0—His or A_0—3(NMe)His, where A_0 is Ala, Lys, or Glu Met(O), DOPA, Abu or peptides of the formula L—A_0, wherein L is H, DOPA, Lys, Phe, Tyr, Cys, Tyr—DAla—Phe—Gly, Tyr—DAla—Gly—Phe, Tyr—Ala—Gly—Thr or Tyr—DAla—Phe—Sar;

A_3 is Ala, Gly or Ser;

A_5 is DPhe, D/L$^{\beta}$(Me)Phe or (NMe)DPhe;

A_6 is Arg, iLys, Lys or Orn;

Z is NH_2;
and organic or inorganic pharmaceutically acceptable salts thereof.

5,486,506
METHOD FOR TREATING CARDIAC INOTROPIC IRREGULARITIES
Michael Dunn, New Rochelle, N.Y., assignor to Meditech, Ltd., Chappaqua, N.Y.
Continuation of Ser. No. 934,178, Aug. 21, 1992, abandoned. This application Jul. 28, 1994, Ser. No. 281,767
Int. Cl.[6] A61K *31/19;31/705;* **A01N** *37/00*
U.S. Cl. 514—26 **12 Claims**

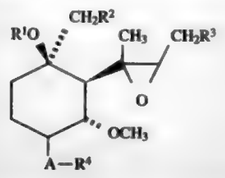
1. A method for treating a subject with a cardiac disorder associated with an inotropic irregularity, wherein said inotropic irregularity is selected from the group consisting of atrial fibrillation, heart flutter and supraventricular tachycardia comprising administering to said subject an amount of 12(R) hydroxyeicosatetraenoic acid (12(R)HETE)sufficient to regulate said inotropic irregularity without inducing arrythmia in said subject.

5,486,507
POROUS PARTICLE AGGREGATE AND METHOD THEREFOR
Roy L. Whistler, West Lafayette, Ind., assignor to Fuisz Technologies Ltd., Chantilly, Va.
Filed Jan. 14, 1994, Ser. No. 182,442
Int. Cl.[6] A61K *31/715;* **C07H** *1/00;* **C08B** *30/00;31/00*
U.S. Cl. 514—54 **13 Claims**

1. A composition comprising substantially spherical porous aggregates of starch granules bound together with a binder at least at their points of contact in said aggregates, the surfaces of the aggregated starch granules cooperating to define an intraaggregate reticulate volume for releasable containment of a functional substance, said aggregates having an average diameter of about 5 to about 250 microns.

5,486,508
CYCLODEXTRIN COMPOSITION
Yoshiaki Uda, Takarazuka; Yoko Nishida, Ibaraki, and Yasuaki Ogawa, Ohyamazaki, all of, Japan, assignors to TAKEDA Chemical Industries Ltd., Osaka, Japan
Continuation of Ser. No. 901,501, Jun. 19, 1992, abandoned. This application Apr. 28, 1994, Ser. No. 236,699
Claims priority, application Japan, Jun. 21, 1991, 3-150507; Sep. 10, 1991, 3-230489
Int. Cl.[6] A61K *31/715;31/335;47/00*
U.S. Cl. 514—58 **11 Claims**

1. A powder composition which comprises a complex of a fumigillol derivative and a cyclodextrin prepared by: preparing a drug solution by dissolving in a water soluble organic solvent a slightly water soluble drug which is a fumagillol derivative represented by the formula:



(I)

wherein R^1 is hydrogen; R^2 is halogen, $N(O)mR^5R^6$, $N^+R^5R^6R^7 \cdot X^-$, $S(O)nR^5$ or $S^+R^5R^6 \cdot X^-$, wherein R^5, R^6 and R^7 are independently an optionally substituted hydrocarbon or heterocyclic group; X^- is a counter anion; m is 0 or 1; n is an integer of 0 to 2; or R^5 and R^6 together with the adjacent nitrogen or sulfur atom may form an optionally substituted nitrogen- or sulfur-containing heterocyclic group which may form a condensed ring; or R^1 and R^2 together represent a bond; R^3 is 2-methyl-1-propenyl group or isobutyl group; A is O or NR^8, wherein R^8 is hydrogen or an optionally substituted lower alkyl or aryl group; and R^4 is hydrogen, an optionally substituted hydrocarbon group or an optionally substituted acyl group; or a physiologically acceptable salt thereof,

preparing a cyclodextrin solution by dissolving a cyclodextrin in water or an aqueous buffer;

mixing the cyclodextrin solution into the drug solution so that the resulting solution contains a molar ratio of the cyclodextrin to the drug of about 1.2:1 to 3:1 and the water soluble organic solventis present in an amount from about 0.1 to 10% by weight based on the total solids; and

lyophilizing or drying under reduced pressure the resulting mixed solution to form a powder;

wherein the powder has substantially increased solubility in aqueous solution compared to the drug.

5,486,509
METHOD OF PREVENTING AND TREATING CHEMOTHERAPY-INDUCED ALOPECIA
Joaquin J. Jimenez, and Adel A. Yunis, both of Miami, Fla., assignors to University of Miami, Miami, Fla.
Continuation of Ser. No. 903,829, Jun. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 810,412, Dec. 20, 1991, abandoned, which is a continuation-in-part of Ser. No. 786,788, Nov. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 722,500, Jun. 28, 1991, abandoned. This application May 27, 1994, Ser. No. 250,646
Int. Cl.[6] A61K *31/59;* **C07C** *401/00*
U.S. Cl. 514—167 **37 Claims**

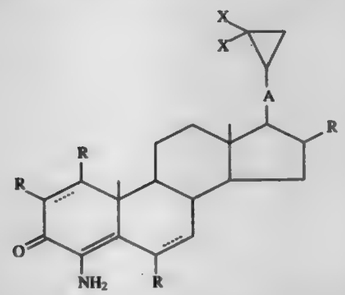
1. A method of reducing chemotherapy-induced alopecia comprising administering to a host treated with at least one chemotherapeutic agent which induces such alopecia an effective amount of vitamin D_3 or derivative or analog or active metabolite thereof.

5,486,510
METHOD AND COMPOSITIONS FOR MODULATING OR CONTROL OF IMMUNE RESPONSES IN HUMANS
Patrick J. D. Bouic, Ronderbosch East, and Carl F. De Vosa Albrecht, Durbanville, both of, South Africa, assignors to Rooperol (NA) NV, Amsterdam, Netherlands
Division of Ser. No. 857,394, Mar. 25, 1992, abandoned. This application Nov. 8, 1993, Ser. No. 148,504
Claims priority, application South Africa, Mar. 28, 1991, 91/2349
Int. Cl.[6] A61K *31/56*
U.S. Cl. 514—170 **12 Claims**

1. A method for the treatment of diseases caused by perturbations of normal lymphocyte homeostasis, comprising administering to a human suffering from a said disease an effective amount of a mixture of β-sitosterol (BBS) and β-sitosterol glucoside (BSSG) in a ratio of from 1:1 to 200:1.

5,486,511
4-AMINO-17β-(CYCLOPROPYLOXY)ANDROST-4-EN-3-ONE, 4-AMINO-17β-(CYCLOPROPYLAMINO)ANDROST-4-EN-3-ONE AND RELATED COMPOUNDS AS C_{17-20} LYASE AND 5α-REDUCTASE
Philip M. Weintraub, Cincinnati; Cynthia A. Gates, Fairfield; Michael R. Angelastro; Timothy T. Curran, both of Cincinnati, and J. O'Neal Johnston, Milford, all of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio
Continuation-in-part of Ser. No. 209,501, Mar. 16, 1994, abandoned, which is a continuation-in-part of Ser. No. 66,744, May 25, 1993, abandoned. This application May 2, 1994, Ser. No. 231,434
Int. Cl.[6] A61K *31/565;* **C07J** *1/00*
U.S. Cl. 514—178 **38 Claims**

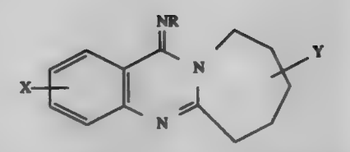
1. A compound and the pharmaceutically acceptable salts of the formula:



wherein A is O or NH and each R is independently selected from the group consisting of hydrogen and C_1-C_4 lower alkyl; each X is independently selected from the group consisting of hydrogen, halogen, and methyl; and the dotted lines indicate the optional presence of a double bond.

5,486,512
QUINAZOLINE DERIVATIVES AS ACETYLCHOLINESTERASE INHIBITORS
Vlad E. Gregor, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.
Continuation of Ser. No. 911,662, Jul. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 736,888, Jul. 29, 1991, abandoned, Continuation of Ser. No. 911,662, Jul. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 736,888, Jul. 29, 1991, abandoned. This application Mar. 17, 1994, Ser. No. 214,911
Int. Cl.[6] C07D *487/04;* **A61K** *31/55*
U.S. Cl. 514—214 **11 Claims**

1. A compound of formula



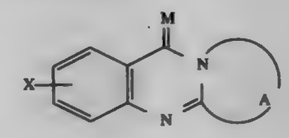
or a pharmaceutically acceptable salt thereof wherein

Y is hydrogen, hydroxy, carboxy, lower alkoxy, lower alkyl, keto, lower alkoxy carbonyl, or lower alkanoyl;

R is hydrogen, lower alkyl, lower alkenyl or lower alkynyl; and

X is absent or one to four substituents selected from halogen, lower alkyl, perfluorinated lower alkyl, hydroxy, carboxy, lower alkoxy, perfluorinated lower alkoxy, nitro, amino, lower alkanoyl amino and lower alkylcarbamoyloxy with the proviso that when Y is hydrogen and R is hydrogen, X is not absent.

8. A method of treating cognitive deficiencies through the inhibition of cholinesterase comprising administering to a mammal in need thereof a therapeutically effective amount in unit dosage form of a compound of the formula



wherein A is

in which Y is hydrogen, hydroxy, carboxy, lower alkoxy, lower alkyl, aryl, heteroaryl, keto, lower alkoxycarbonyl, or lower alkanoyl, or its corresponding oxime;

M is =S, =NR, or

in which R and R' are each independently hydrogen, hydroxy, lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, aryl, aryloxy, aryllower alkyl, heteroaryl, or heteroaryllower alkyl and, when taken together, may form a three- to six-membered ring optionally containing one to three heteroatoms selected from nitrogen, oxygen, and sulfur; and

X is absent or one to four substituents selected form halogen, lower alkyl, lower alkenyl or lower alkynyl, amino, lower alkylamino or di-lower alkylamino, nitro, lower alkylthio, aryl-, or heteroarylthio, mercapto, hydroxy, carboxy, lower alkoxy, aryl- or heteroaryloxy, lower alkyl-, aryl- or heteroarylsulfinyl, lower alkyl-, aryl- or heteroarylsulfonyl, perfluoro-lower-alkyl, perfluoro-lower-alkoxy, perfluoro-lower-alkylthio, perfluoro-lower-alkylsulfinyl, perfluoro-lower-alkylsulfonyl, lower alkyl-, aryl- or heteroarylcarbamoyl, di-lower-alkanoylamino, lower alkyl- aryl- or heteroarylsulfinyl-amido, lower alkyl-, aryl- or heteroarylsulfonylamido, perfluoro-lower-alkylsulfinylamido, perfluoro-lower-alkyl-sulfonylamido, trialkylsilyl, lower alkanoyl, perfluoro-lower-alkanoyl-, loweralkanoyl-lower alkyl, perfluoro-lower-alkanoyl-lower alkyl, lower alkyl-, aryl- or heteroarylcarbamoyloxy, di-lower-alkyl-, diaryl- or diheteroarylcarbamoyloxy, lower alkyl-,aryl- or heteroarylcarbamoylthio, lower alkyl-, aryl or hetero-arylcarbamoyl-lower-

alkyl, imido-lower-alkyl, aryl, aryllower-alkyl, heteroaryl and heteroaryllower-alkyl; or a pharmaceutically acceptable acid addition salt thereof.

5,486,513

2-SUBSTITUTED INDANE-2-MERCAPTOACETYLAMIDE DERIVATIVES USEFUL AS INHIBITORS OR ENKEPHALINASE AND ACE

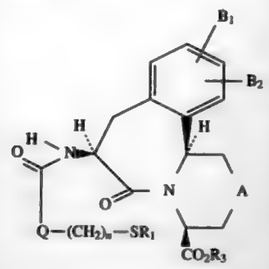
Alan M. Warshawsky, and Gary A. Flynn, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 146,646, Nov. 1, 1993, Pat. No. 5,428,158, which is a continuation-in-part of Ser. No. 929,481, Aug. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 767,286, Sep. 27, 1991, abandoned. This application Mar. 1, 1995, Ser. No. 396,947

Int. Cl.[6] A61K *31/55;* **C07D** *471/04*

U.S. Cl. 514—214 **1 Claim**

1. A composition comprising an assayable amount of a compound of the formula



wherein

B_1 and B_2 are each independently hydrogen; hydroxy; —OR_2 wherein R_2 is a C_1–C_4 alkyl or an Ar—Y group wherein Ar is a phenyl or naphthyl group unsubstituted or substituted with from one to three substituents selected from the group consisting of methylene dioxy, hydroxy, C_1–C_4 alkoxy, fluoro and chloro and Y is a hydrogen or C_1–C_4 alkyl; or, where B_1 and B_2 are attached to adjacent carbon atoms, B_1 and B_2 can be taken together with said adjacent carbons to form a benzene ring or methylenedioxy;

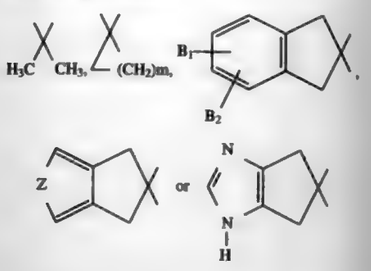
A is a bond, methylene, oxygen, sulfur, NR_4 or $NCOR_5$ wherein R_4 is hydrogen, a C_1–C_4 alkyl or an Ar—Y— group and R_5 is —CF_3, a C_1–C_{10} alkyl or an Ar—Y— group;

R_1 is hydrogen, acetyl, —$CH_2OC(O)C(CH_3)_3$ or benzoyl;

R_3 is hydrogen or —$CH_2OC(O)C(CH_3)_3$;

n is an integer 0 to 3; and

Q is a group of the formula



wherein Z is O, NH or S; and m is an integer 1 to 5 in admixture or otherwise in association with an inert carrier.

5,486,514

CARBAMATE DERIVATIVES

David Trist; Giorgio Pentassuglia; Maria E. Tranquillini, and Antonella Ursini, all of Verona, Italy, assignors to Glaxo SpA, Verona, Italy

PCT No. PCT/EP93/00099, § 371 Date Jul. 20, 1994, § 102(e) Date Jul. 20, 1994, PCT Pub. No. WO93/14075, PCT Pub. Date Jul. 22, 1993

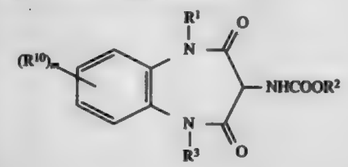
PCT Filed Jan. 15, 1993, Ser. No. 256,358

Claims priority, application United Kingdom, Jan. 21, 1992, 9201181

Int. Cl.[6] C07D *243/12;* **A61K** *31/55*

U.S. Cl. 514—221 **14 Claims**

1. A compound of general formula (I)



(I)

wherein

R^1 represents a phenyl, C_{3-7}cycloalkyl, bridged C_{7-11}cycloalkyl or C_{1-6}alkyl group which alkyl group may be substituted by a hydroxy, phenyl, C_{1-6}alkoxycarbonyl, C_{3-7}cycloalkyl or bridged C_{7-11}cycloalkyl group or R^1 represents the group XYR^4 wherein X is a C_{1-3} straight or branched alklene chain, Y is C=O, $C(OR^5)_2$ or $C(SR^5)$ and is a R^4 is a C_{1-6}alkyl, optionally substituted phenyl, C_{3-7}cycloalkyl or bridged C_{7-11}-cycloalkyl.

R^2 represents a substituted or unsubstituted phenyl (wherein the substitutents may be 1 or 2 of halo, C_{1-6}alkyl, nitro, cyano, trifluoromethyl, trifluoromethoxy C_{1-4}alkylthio or $(CH_2)_n$ R^6 wherein R^6 is hydroxy, C_{1-4}alkoxy, CO_2R^7 or NR^8R^9.

R^3 represents phenyl optionally substituted by one or two halogen atoms;

R^7 represents hydrogen or a C_{1-1}alkyl group;

R^8 and R^9 independently represent hydrogen or a C_{1-4}alkyl group.

R^{10} represents hydrogen or a halogen atom; m is zero, 1 or 2; n is zero or 1; pharmaceutically acceptable salts and solvates thereof.

5,486,515

2-FLUOROALKYL-1,4-BENZOXAXINES AS POTASSIUM CHANNEL MEDIATORS

Frederick J. Brown; Keith Russell, both of Newark, and Paul J. Warwick, Jr., Wilmington, all of Del., assignors to Zeneca Limited, London, England

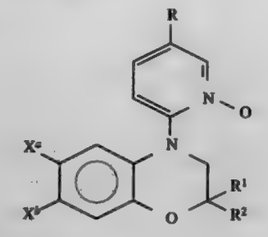
Filed May 9, 1994, Ser. No. 239,637

Claims priority, application United Kingdom, May 12, 1993, 9309716

Int. Cl.[6] A61K *31/535;* **C07D** *265/36;265/38*

U.S. Cl. 514—229.8 **11 Claims**

1. A compound of formula I:



(I)

wherein,

R is hydrogen or trifluoromethyl

R^1 and R^2 are independently selected from (1–3C)alkyl which may be substituted by one or more fluoro groups, provided that at least one of R^1 and R^2 is substituted by at least one fluoro group;

X^a is selected from

(A) cyano, nitro, trifluoromethyl, pentafluoroethyl, trifluoromethoxy, trifluoromethylsulfonyl, methylsulfonyl, halo trifluoromethylthio, and

(B) a group Y-Z connected to the benz ring through Z, wherein

Y is a 6-membered aromatic ring or heteroaromatic ring containing 1–2 nitrogens as the heteroatoms and is connected to Z through carbon, and

Z is selected from sulfonyl and carbonyl; and

X^b is selected from hydrogen, halogen, trifluoromethyl, trifluoromethylacetamido and (1–4C)alkoxy; or

X^a and X^b, together with the carbon atoms to which they are attached, form an 1-oxa-2,5-diazole, a 1-thia-2,5-diazole or a 1,2,5-triazole ring;

or a pharmaceutically acceptable salt of said compound.

5,486,516

FUROPYRIMIDINE DERIVATIVES

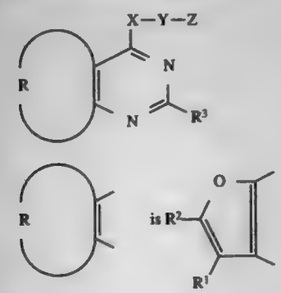
Ronnie G. Edie, Greenfield; Ronald E. Hackler, and Eriks V. Krumkalns, both of Indianapolis, all of Ind., assignors to DowElanco, Indianapolis, Ind.

Continuation of Ser. No. 927,759, Aug. 10, 1992, abandoned, which is a division of Ser. No. 502,364, Mar. 30, 1990, Pat. No. 5,137,879. This application Dec. 10, 1993, Ser. No. 166,263

Int. Cl.[6] C07D *49/048;* **A61K** *31/505;31/535*

U.S. Cl. 514—232.8 **6 Claims**

1. A compound of the formula (1)



(1)

R^1 is H, C_1–C_4 alkyl, or phenyl optionally substituted with halo, (C_1–C_4) alkyl, (C_1–C_4) alkoxy, halo (C_1–C_4) alkyl, or halo (C_1–C_4) alkoxy;

R^2 is H, (C_1–C_4) alkyl, nitro, halo; or

R^1 and R^2 combine to form —$(CH_2)_4$—;

R^3 is H, (C_1–C_4) alkyl, halo (C_1–C_4) alkyl, phenyl, or substituted phenyl;

X is O, or NR^4, where R^4 is H, (C_1–C_4) alkyl, or (C_1–C_4) alkanoyl,

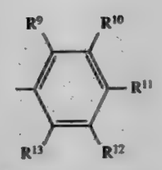
R^7 and R^8 are independently (C_1–C_4) alkyl, (C_3–C_4) branched alkyl, phenyl, or substituted phenyl, and said hydrocarbon chain being optionally substituted with halo, hydroxy, or (C_1–C_4) alkanoyl; or

Y is —$(CH_2)_2$—; and

Z is

(a) (C_3–C_8) cycloalkyl or cycloalkenyl, optionally substituted with (C_1–C_4) alkyl, (C_1–C_4) alkoxy, halo (C_1–C_4) alkyl, halo (C_1–C_4) alkoxy, halo, hydroxy or (C_1–C_4) alkanoyl;

(b) a phenyl group of the formula (2)



(2)

where

R^9 to R^{13} are independently

H,

halo

I,

(C_3–C_8) cycloalkyl or -cycloalkenyl,

phenoxy, or

substituted phenoxy,

phenylthio, or substituted phenylthio,

phenyl, or substituted phenyl,

NO_2,

acetoxy,

OH,

CN,

$SiR^7R^8R^{14}$ or $OSiR^7R^8R^{14}$, where R^7, and R^8 are as defined above and R^{14} is (C_1–C_4) alkyl, (C_3–C_4) branched alkyl, phenyl, or substituted phenyl,

$NR^{15}R^{16}$, where R^{15} and R^{16} are independently H, (C_1–C_4) alkyl, or (C_1–C_4) alkanoyl,

$S(O)R^{17}$, or SO_2R^{17}, where R^{17} is (C_1–C_{10}) alkyl, phenyl, or substituted phenyl

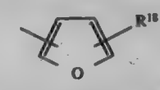
a C_1–C_{12} saturated or unsaturated hydrocarbon chain, straight chain or branched optionally including a hetero atom selected from O, S, SO, SO_2, NR^4, or SiR^7R^8 in place of one of the carbon atoms, where R^4, R^7 and R^8 are as defined above, and optionally substituted with halo, halo (C_1–C_4) alkoxy, hydroxy, (C_3–C_8) cycloalkyl or cycloalkenyl, (C_1–C_4) alkanoyl, phenoxy, substituted phenoxy, phenyl, substituted phenyl, phenylthio, or substituted phenylthio;

(C_1–C_7) alkoxy optionally substituted with halo, phenyl, substituted phenyl, (C_3–C_8) cycloalkyl or cycloalkenyl, phenoxy, or substituted phenoxy,

(C_1–C_7) alkylthio optionally substituted with halo, pheanyl, substituted phenyl, (C_3–C_8) cycloalkyl or cycloalkenyl, phenoxy, or substituted phenoxy; or

R^{10} and R^{11} combine to form —O—CF_2—O— or —O—(CH_2)—O—;

(c) a furyl group of formula (3)



(3)

where R^{18} is H, halo, halomethyl, CN, NO_2, (C_1–C_4) alkyl, (C_3–C_4) branched alkyl, pheanyl, (C_1–C_4) alkoxy;

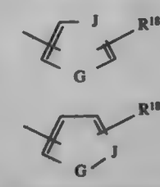
(d) a thienyl group of the formula (4)



(4)

where R^{19} is R^{18} as defined in paragraph (c) or thienyl;

(e) a group of formula (5) or (6)



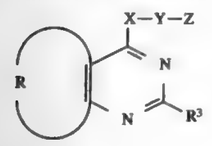
(5)

(6)

where R^{18} is as defined in paragraph (c), J is N or CH, and G is O, NR^{20}, or S, provided that if J is not N then G is NR^{20}, where R^{20} is H, (C_1–C_4) alkyl, (C_1–C_4) alkanoyl, phenylsulfonyl, or substituted phenylsulfonyl;

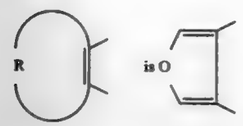
(f) a group selected from
naphthyl, dihydronaphthyl, tetrahydronaphthyl, and decahydronaphthyl;
pyridyl;
indolyl;
1,3-benzodioxolyl;
2,6-dimethyl-4-morpholinyl; and
1-adamantyl;
or an acid addition salt of a compound of formula (1);
where, in the foregoing definitions, the terms substituted phenyl, substituted phenoxy, substituted phenylthio and substituted phenylsulfonyl, refer to such groups wherein the phenyl ring is substituted with up to three groups selected from halo, I, $(C_1–C_{10})$ alkyl, branched $(C_3–C_6)$ alkyl, halo $(C_1–C_7)$ alkyl, hydroxy $(C_1–C_7)$ alkyl, $(C_1–C_7)$ alkoxy, halo $(C_1–C_7)$ alkoxy, phenoxy, substituted phenoxy, phenyl, substituted phenyl, NO_2, OH, CN, $(C_1–C_4)$ alkanoyloxy, or benzyloxy, provided that no substituted phenyl, phenoxy, phenylthio, or phenyl sulfonyl group includes more than three phenyl rings.

2. A compound of the formula (1)

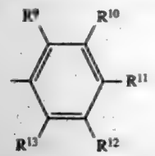


(1)

where



R^1 is H, $C_1–C_4$ alkyl, or phenyl optionally substituted with halo, $(C_1–C_4)$ alkyl, $(C_1–C_4)$ alkoxy, halo $(C_1–C_4)$ alkyl, or halo $(C_1–C_4)$ alkoxy;
R^2 is H, $(C_1–C_4)$ alkyl, nitro, halo; or
R^1 R^2 combine to form $—(CH_2)_4—$;
R^3 is H, $(C_1–C_4)$ alkyl, halo $(C_1–C_4)$ alkyl, phenyl, or substituted phenyl;
X is O, or NR^4, where R^4 is H, $(C_1–C_4)$ alkyl, or $(C_1–C_4)$ alkanoyl,
R^7 and R^8 are independently $(C_1–C_4)$ alkyl, $(C_3–C_4)$ branched alkyl, phenyl, or substituted phenyl, and said hydrocarbon chain being optionally substituted with halo, hydroxy, or $(C_1–C_4)$ alkanoyl; or
Y is $—(CH_2)_2—$; and
Z is
(a) $(C_3–C_8)$ cycloalkyl or cycloalkenyl, optionally substituted with $(C_1–C_4)$ alkyl, $(C_1–C_4)$ alkoxy, halo $(C_1–C_4)$ alkyl, halo $(C_1–C_4)$ alkoxy, halo, hydroxy or $(C_1–C_4)$ alkanoyl;
(b) a phenyl group of the formula (2)



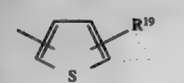
(2)

where
R^9 to R^{13} are independently
H,
halo
I,
$(C_3–C_8)$ cycloalkyl or -cycloalkenyl,
phenoxy, or
substituted phenoxy,
phenylthio, or substituted phenylthio,
phenyl, or substituted phenyl,
NO_2,
acetoxy,
OH,
CN,
$SiR^7R^8R^{14}$ or $OSiR^7R^8R^{14}$, where R^7, and R^8 are as defined above and R^{14} is $(C_1–C_4)$ alkyl, $(C_3–C_4)$ branched alkyl, phenyl, or substituted phenyl,
$NR^{15}R^{16}$, where R^{15} and R^{16} are independently H, $(C_1–C_4)$ alkyl, or $(C_1–C_4)$ alkanoyl,
$S(O)R^{17}$, or SO_2R^{17}, where R^{17} is $(C_1–C_{10})$ alkyl, phenyl, or substituted phenyl
a $C_1–C_{12}$ saturated or unsaturated hydrocarbon chain, straight chain or branched optionally including a hetero atom selected from O, S, SO, SO_2, NR^4, or SiR^7R^8 in place of one of the carbon atoms, where R^4, R^7 and R^8 are as defined above, and optionally substituted with halo, halo $(C_1–C_4)$ alkoxy, hydroxy, $(C_3–C_8)$ cycloalkyl or cycloalkenyl, $(C_1–C_4)$ alkanoyl, phenoxy, substituted phenoxy, phenyl, substituted phenyl, phenylthio, or substituted phenylthio;
$(C_1–C_7)$ alkoxy optionally substituted with halo, phenyl, substituted phenyl, $(C_3–C_8)$ cycloalkyl or cycloalkenyl, phenoxy, or substituted phenoxy,
$(C_1–C_7)$ alkylthio optionally substituted with halo, phenyl, substituted phenyl, $(C_3–C_8)$ cycloalkyl or cycloalkenyl, phenoxy, or substituted phenoxy; or
R^{10} and R^{11} combine to form $—O—CF_2—O—$ or $—O—(CH_2)—O—$;
(c) a furyl group o f formula (3)



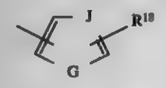
(3)

where R^{18} is H, halo, halomethyl, CN, NO_2, $(C_1–C_4)$ alkyl, $(C_3–C_4)$ branched alkyl, phenyl, $(C_1–C_4)$ alkoxy;
(d) a thienyl group of the formula (4)

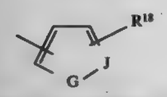


(4)

where R^{19} is R^{18} as defined in paragraph (c) or thienyl;
(e) a group of formula (5) or (6)



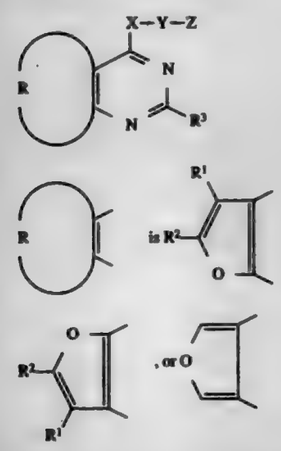
(5)



(6)

where R^{18} is as defined in paragraph (c), J is N or CH, and G is O, NR^{20}, or S, provided that if J is not N then G is NR^{20}, where R^{20} is H, $(C_1–C_4)$ alkyl, $(C_1–C_4)$ alkanoyl, phenylsulfonyl, or substituted phenylsulfonyl;
(f) a group selected from
naphthyl, dihydronaphthyl, tetrahydronaphthyl, and decahydronaphthyl;
pyridyl;
indolyl;
1,3-benzodioxolyl;
2,6-dimethyl-4-morpholinyl; and
1-adamantyl;
or an acid addition salt of a compound of formula (1);
where, in the foregoing definitions, the terms substituted phenyl, substituted phenol, substituted phenylthio and substituted phenylsulfonyl, refer to such groups wherein the phenyl ring is substituted with up to three groups selected from halo, I, $(C_1–C_{10})$ alkyl, branched $(C_3–C_6)$ alkyl, halo $(C_1–C_7)$ alkyl, hydroxy $(C_1–C_7)$ alkyl, $(C_1–C_7)$ alkoxy, halo $(C_1–C_7)$ alkoxy, phenol, substituted phenoxy, phenyl, substituted phenyl, NO_2, OH, CN, $(C_1–C_4)$ alkanoyloxy, or benzyloxy, provided that no substituted phenyl, phenoxy, phenylthio, or phenyl sulfonyl group includes more than three phenyl rings.

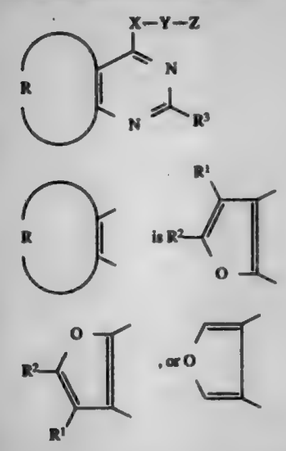
3. A compound of the formula (1)



(1)

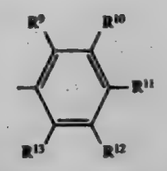
R^1 is H, $C_1–C_4$ alkyl, or phenyl optionally subatituted with halo, $(C_1–C_4)$ alkyl, $(C_1–C_4)$ alkoxy, halo $(C_1–C_4)$ alkyl, or halo $(C_1–C_4)$ alkoxy;
R^2 is H, $(C_1–C_4)$ alkyl, nitro, halo; or
R^1 and R^2 combine to form $—(CH_2)_4—$;
R^3 is H, $(C_1–C_4)$ alkyl, halo $(C_1–C_4)$ alkyl, phenyl, or subatituted phenyl;
X is O, or NR^4, where R^4 is H, $(C_1–C_4)$ alkyl, or $(C_1–C_4)$ alkanoyl,
Y is $—(CH_2)_2—$; and
Z is 2-naphthalene;
or an acid addition salt of a compound of formula (1).

4. A compound of the formula (1)



(1)

R^1 is H, $C_1–C_4$ alkyl, or phenyl optionally substituted with halo, $(C_1–C_4)$ alkyl, $(C_1–C_4)$ alkoxy, halo $(C_1–C_4)$ alkyl, or halo $(C_1–C_4)$ alkoxy;
R^2 is H, $(C_1–C_4)$ alkyl, nitro, halo; or
R^1 and R^2 combine to form $—(CH_2)_4—$;
R^3 is H, $(C_1–C_4)$ alkyl, halo $(C_1–C_4)$ alkyl, phenyl, or substituted phenyl;
X is O;
R^7 and R^8 are indepeadently $(C_1–C_4)$ alkyl, $(C_3–C_4)$ branched alkyl, phenyl, or substituted phenyl, and said hydrocarbon chain being optionally substituted with halo, hydroxy, or $(C_1–C_4)$ alkanoyl; or
Y is $—(CH_2)_2—$; and
Z is a phenyl group of the formula (2)



(2)

where
R^9 to R^{13} are independently
H,
halo
I,
$(C_3–C_8)$ cycloalkyl or -cycloalkenyl,
phenoxy, or
substituted phenoxy,
phenylthio, or substituted phenylthio,
phenyl, or substituted phenyl,
NO_2,
acetoxy,
OH,
CN,
$SiR^7R^8R^{14}$ or $OSiR^7R^8R^{14}$, where R^7, and R^8 are as defined above and R^{14} is $(C_1–C_4)$ alkyl, $(C_3–C_4)$ branched alkyl, phenyl, or substituted phenyl,
$NR^{15}R^{16}$, where R^{15} and R^{16} are independently H, $(C_1–C_4)$ alkyl, or $(C_1–C_4)$ alkanoyl,
$S(O)R^{17}$, or SO_2R^{17}, where R^{17} is $(C_1–C_{10})$ alkyl, phenyl, or substituted phenyl
a $C_1–C_{12}$ saturated or unsaturated hydrocarbon chain, straight chain or branched optionally including a hetero atom selected from O, S, SO, SO_2, NR^4, or SiR^7R^8 in place of one of the carbon atoms, where R^4, R^7 and R^8 are as defined above, and optionally substituted with halo, halo $(C_1–C_4)$ alkoxy, hydroxy, $(C_3–C_8)$ cycloalkyl or cycloalkenyl, $(C_1–C_4)$ alkanoyl, phenoxy, substituted phenoxy, phenyl, substituted phenyl, phenylthio, or substituted phenylthio;
$(C_1–C_7)$ alkoxy optionally substituted with halo, phenyl, substituted phenyl, $(C_3–C_8)$ cycloalkyl or cycloalkenyl, phenoxy, or substituted phenoxy,
$(C_1–C_7)$ alkylthio optionally substituted with halo, phenyl, substituted phenyl, $(C_3–C_8)$ cycloalkyl or cycloalkenyl, phenoxy, or substituted phenoxy; or
R^{10} and R^{11} combine to form $—O—CF_2—O—$ or $—O—(CH_2)—O—$;
or an acid addition salt of a compound of formula (1).
where, in the foregoing definitions, the terms substituted phenyl, substituted phenoxy, substituted phenylthio and substituted phenylsulfonyl, refer to such groups wherein the phenyl ring is substituted with up to three groups selected from halo, I, $(C_1–C_{10})$ alkyl, branched $(C_3–C_6)$ alkyl, halo $(C_1–C_7)$ alkyl, hydroxy $(C_1–C_7)$ alkyl, $(C_1–C_7)$ alkoxy, halo $(C_1–C_7)$ alkoxy, phenoxy, substituted phenoxy, phenyl, substituted phenyl, NO_2, OH, CN, $(C_1–C_4)$ alkanoyloxy, or benzyloxy, provided that no substituted phenyl, phenoxy, phenylthio, or phenyl sulfonyl group includes more than three phenyl rings.

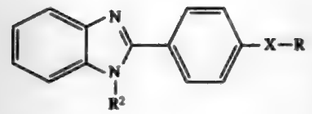
5,486,517

BENZIMIDAZOLES AND IMIDAZOPYRIDINES AS CENTRAL NERVOUS SYSTEM AGENTS

Dennis M. Downing; Shelly A. Glase; Stephen J. Johnson; Lawrence D. Wise, and Jonathan L. Wright, all of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 10, 1994, Ser. No. 240,355
Int. Cl.[6] A61K *31/495;31/505;* C07D *403/10;403/12*
U.S. Cl. 514—253 5 Claims

1. A compound of Formula I



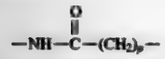
wherein R is



wherein R^1 is aryl, or heteroaryl;
R^2 is hydrogen, or alkyl of from 1 to 6 carbon atoms;
X is -Y- $(CH_2)_n$-
wherein Y is O, S or NH, and n is an integer from 2 to5,

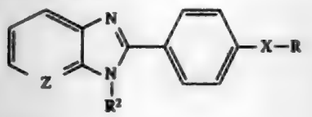


wherein p is an integer from 1 to 4,

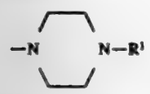


wherein p is as defined above,
alkyl of from 3 to 6 carbon atoms,
alkenyl of from 3 to 6 carbon atoms,
alkynyl of from 3 to 6 carbon atoms;
and corresponding cis or trans isomers or mixtures of cis and trans isomers thereof; or a pharmaceutically acceptable acrid addition salt thereof.

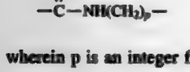
5. A method of treating schizophrenia comprising administering to a host suffering therefrom a therapeutic effective amount of a compound of Formula I



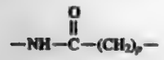
wherein R is



wherein R^1 is aryl, or heteroaryl;
R^2 is hydrogen, or alkyl of from 1 to 6 carbon atoms;
X is -Y- $(CH_2)_n$-
wherein Y is O, S or NH, and n is an integer from 2 to 5,



wherein p is an integer from 1 to 4,



wherein p is as defined above,
alkyl of from 3 to 6 carbon atoms,
alkenyl of from 3 to 6 carbon atoms,
alkynyl of from 3 to 6 carbon atoms;
Z is N or CH;
and corresponding cis or trans isomers or mixtures of cis and trans isomers thereof; or a pharmaceutically acceptable acid addition salt thereof in unit dosage form.

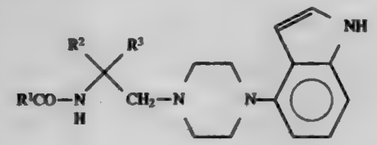
5,486,518

4-INDOLYLPIPERAZINYL DERIVATIVES

John P. Yardley, King of Prussia; Horace Fletcher, III, Pottstown, both of Pa.; Michael G. Kelly, Maidenhead, and Alan C. White, Surrey, both of, England, assignors to American Home Products Corporation, Madison, N.J.

Filed Apr. 10, 1995, Ser. No. 419,342
Int. Cl.[6] A61K *31/495*; C07D *403/00*
U.S. Cl. 514—254 10 Claims

1. A compound of the formula:



in which
R^1 is alkyl of 1 to 6 carbon atoms, cycloalkyl of 5 to 7 carbon atoms, aryl of 6 to 10 carbon atoms or arylalkyl of 7 to 12 carbon atoms;
R^2 is hydrogen or alkyl of 1 to 6 carbon atoms;
R^3 is phenyl, benzyl, substituted phenyl, or substituted benzyl in which the substituents are hydroxy, halo, alkoxy of 1 to 6 carbon atoms, trifluoromethyl, nitro, cyano, alkoxycarbonyl of 2 to 7 carbon atoms, amino or dialkylamino, each alkyl group having 1 to 6 carbon atoms;
or a pharmaceutically acceptable salt thereof.

5,486,519

METHOD FOR TREATMENT OF ACUTE RENAL FAILURE

James E. Greenwald, 100 N. Euclid Ave., Ste. 902, St. Louis, Mo. 63108

Filed Aug. 22, 1994, Ser. No. 293,989
Int. Cl.[6] A61K *31/505*
U.S. Cl. 514—258 4 Claims

1. A method for the treatment of acute renal failure comprising administering to a warm-blooded mammal manifesting acute renal failure a small but effective amount of zaprinast sufficient to effect acceleration of the recovery from said acute renal failure.

5,486,520

1,3-OXATHIOLANES USEFUL IN THE TREATMENT OF HEPATITIS

Bernard Belleau, deceased, late of Quebec, and Nghe Nguyen-Ba, Quebec, both of, Canada, assignors to BioChemPharma, Inc., Laval, Canada

Continuation of Ser. No. 884,729, May 15, 1992, abandoned. This application Dec. 10, 1993, Ser. No. 166,320
Claims priority, application United Kingdom, May 20, 1991, 9110874
Int. Cl.[6] A01N *43/54*; A61K *31/505*
U.S. Cl. 514—274 10 Claims

1. A method for the treatment of hepatitis B infections in animals, including humans, comprising the step of administering, in an amount effective to inhibit viral replication, a compound selected from the group consisting of
cis-2-hydroxymethyl-5-(5'-fluorocytosin-1'-yl)-1,3-oxathiolane;
trans-2-hydroxymethyl-5-(5'-fluorocytosin-1'-yl)-1,3-oxathiolane; and mixtures thereof;
or pharmaceutically acceptable derivatives thereof.

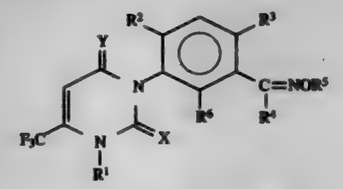
5,486,521

PYRIMIDINYL ARYL KETONE OXIMES

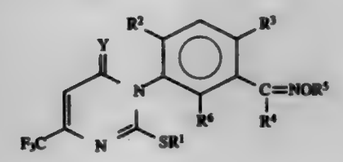
Walter G. Brouwer, Guelph, Canada; Alan W. Dalrymple, Lindale, Tex.; Ethel E. Fritzner, Paddock, Canada, and Paul T. McDonald, Middlebury, Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.; Uniroyal Chemical Ltd., Elmira, Canada, and Linc, New Jersey, Canada

Filed Mar. 21, 1994, Ser. No. 216,207
Int. Cl.[6] C07D *239/54*;*239/56*; A61K *31/505*
U.S. Cl. 514—274 9 Claims

1. An insecticidally-active compound of structural formula I, Ia or Ib shown below wherein:

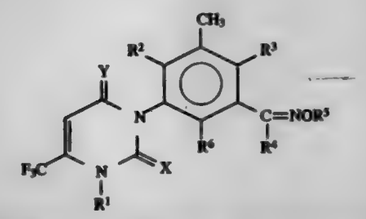


(I)



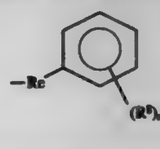
(Ia)

AND

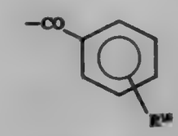


(Ib)

R^1 is hydrogen; C_1–C_6 hydrocarbyl; hydroxymethyl; alkaline earth metal; or organic base salt;
R^2 and R^6 are independently either hydrogen; halogen; or C_1–C_4 hydrocarbyl;
R^3 is either hydrogen; C_1–C_6 straight chain alkoxy, branched chain alkoxy or cyclic alkoxy; C_3–C_6 straight chain alkenyloxy, branched chain alkenyloxy or cyclic alkenyloxy; C_1–C_6 straight chain alkylthio or branched chain alkylthio; or C_1–C_6 hydrocarbyl; and provided that R^3 is not trifluoro methyl;
R^4 is either hydrogen or C_1–C_4 hydrocarbyl;
R^5 is either 2-tetrahydrofuranylmethyl or C_1–C_6 hydrocarbyl; and wherein R^5 may be substituted either with C_1–C_4 linear alkoxy or branched alkoxy, or with trimethylsilyl, or with C_1–C_6 hydrocarbyl substituted with up to eleven (11) halogen atoms; or wherein R^5 may be the group $Re—CO_2—R^7$ wherein Re can be a C_1–C_3 alkylidene moiety and either may be substituted with C_1–C_6 linear alkyl groups or branched alkyl groups, or with from one (1) to six (6) halogen atoms; and wherein R^7 either is C_1–C_6 hydrocarbyl, or is the aromatic structural group shown immediately below



wherein Re is as defined above; and wherein $(R^8)_m$ is defined as follows
m is an integer between 0 and 5 and R^8 may be independently selected from halogen; nitro; cyano; carboxy; C_1–C_6 alkoxy; C_1–C_5 alkoxycarbonyl; or C_1–C_6 hydrocarbyl; or the group $ReCOR^9$ wherein Re is as defined above; and wherein R^9 is C_1–C_6 hydrocarbyl; phenyl substituted with C_1–C_6 hydrocarbyl; phenyl substituted with C_1–C_6 linear alkoxy or branched alkoxy; phenyl substituted with C_1–C_6 alkyl; phenyl substituted with halogen; or is the aromatic structural group shown immediately below



wherein R^{10} is C_1–C_4 linear alkoxy or branched alkoxy; C_1–C_4 hydrocarbyl; or halogen; and wherein X and Y are independently sulfur or oxygen.

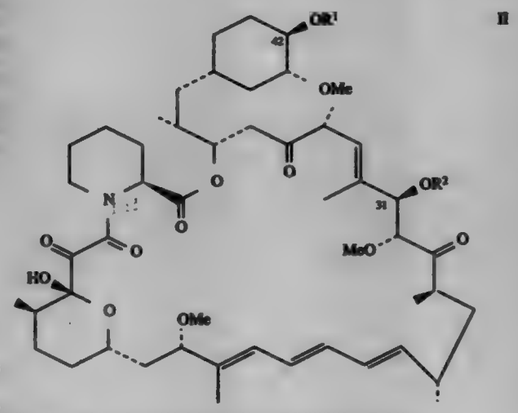
5,486,522

CARBAMATES OF RAPAMYCIN

Amedeo A. Failli, Princeton Junction, N.J.; Oleg I. Steynman, Holland, Pa.; Wenling Kao, Paoli, Pa., and Magid A. Abou-Gharbia, Glen Mills, Pa., assignors to American Home Products Corporation, Madison, N.J.

Division of Ser. No. 284,764, Aug. 2, 1994, which is a continuation-in-part of Ser. No. 160,984, Dec. 1, 1993, abandoned, which is a division of Ser. No. 54,655, Apr. 23, 1993, Pat. No. 5,302,584, which is a continuation-in-part of Ser. No. 960,597, Oct. 13, 1992, abandoned. This application May 24, 1995, Ser. No. 448,789
Int. Cl.[6] A61K *31/395*; C07D *498/16*
U.S. Cl. 514—291 1 Claim

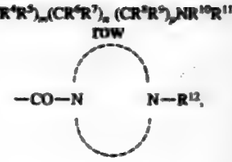
1. A method of treating transplantation rejection or graft vs. host disease in a mammal in need thereof, which comprises administering to said mammal an antirejection effective amount of a compound of the structure



II

wherein R^1 and R^2 are each, independently, hydrogen,

row row



or —$CONR^3R^{13}$;

R^3 is hydrogen, alkyl of 1–6 carbon atoms, or arylalkyl of 4–10 carbon atoms;

R^4, R^5, R^8, and R^9 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, —OH, $—CF_3$, or —F;

R^6 is hydrogen or $—OR^{14}$;

R^7 is hydrogen or alkyl of 1–6 carbon atoms;

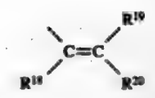
R^{10} is hydrogen, alkyl of 1–6 carbon atoms, or arylalkyl of 4–10 carbon atoms;

R^{11}, R^{12}, and R^{13} are each, independently, $—(CR^{15}R^{16})_rR^{17}$;

R^{14} is hydrogen, alkyl of 1–6 carbon atoms, tri-(alkyl of 1–6 carbon atoms)silyl, tri-(alkyl of 1–6 carbon atoms)silylethyl, triphenylmethyl, benzyl, alkoxymethyl of 2–7 carbon atoms, tri-(alkyl of 1–6 carbon atoms)silylethoxymethyl, or tetrahydropyranyl;

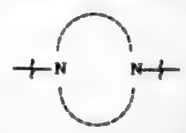
R^{15} and R^{16} are each, independently, hydrogen or alkyl of 1–6 carbon atoms;

R^{17} is



or —C≡C—R^{21};

R^{18}, R^{19}, R^{20}, and R^{21} are each, independently, hydrogen, alkyl of 1–6 carbon atoms, halogen, or phenyl, wherein the phenyl group may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1–6 carbon atoms, arylalkyl of 7–10 carbon atoms, alkoxy of 1–6 carbon atoms, trifluoroalkoxy of 1–6 carbon atoms, cyano, halo, hydroxy, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, amino, dialkylamino of 1–6 carbon atoms per alkyl group, dialkylaminoalkyl of 3–12 carbon atoms, hydroxyalkyl of 1–6 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthio of 1–6 carbon atoms, $—SO_3H$, $—PO_3H$, and $—CO_2H$;



is a 5–7 membered saturated or partially unsaturated heterocyclic radical containing at least 2 ring nitrogens, wherein the heterocyclic ring may optionally contain NR^{22} in the heterocyclic ring, and the ring carbons may optionally be substituted by alkyl of 1–6 carbon atoms, arylalkyl of 4–10 carbon atoms, halogen, $—CF_3$, $—OR^{14}$, or $—CO_2R^{10}$;

R^{22} is hydrogen, alkyl of 1–6 carbon atoms, or arylalkyl of 4–10 carbon atoms;

m=0–6;

n=1–6;

p=0–6; and

r=1–6

with the proviso that R^1 and R^2 are both not hydrogen, or a pharmaceutically acceptable salt thereof.

5,486,523

CARBAMATES OF RAPAMYCIN

Amedeo A. Failli, Princeton Junction, N.J.; Oleg I. Bleyman, Holland, Pa.; Wenling Kao, Paoli, and Magid A. Abou-Gharbia, Glen Mills, Pa., assignors to American Home Products Corporation, Madison, N.J.

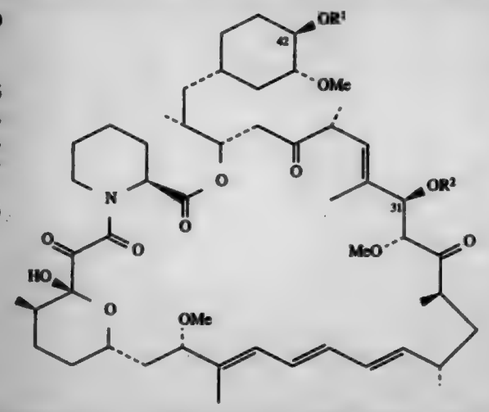
Division of Ser. No. 284,764, Aug. 2, 1994, which is a continuation-in-part of Ser. No. 160,984, Dec. 1, 1993, abandoned, which is a division of Ser. No. 54,655, Apr. 23, 1993, Pat. No. 5,302,584, which is a continuation-in-part of Ser. No. 960,597, Oct. 13, 1992, abandoned. This application May 24, 1995, Ser. No. 449,444

Int. Cl.[6] A61K *31/395*; C07D *498/16*

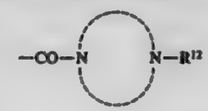
U.S. Cl. 514—291 1 Claim

1. A method of treating pulmonary inflammation in a mammal in need thereof, which comprises administering to said mammal an antiinflammatory effective amount of a compound of the structure

II



wherein R^1 and R^2 are each, independently, hydrogen, $—CONR^3(CR^4R^5)_m(CR^6R^7)_n(CR^8R^9)_pNR^{10}R^{11}$,



or $CONR^3R^{13}$;

R^3 is hydrogen, alkyl of 1–6 carbon atoms, or arylalkyl of 4–10 carbon atoms;

R^4, R^5, R^8, and R^9 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, —OH, $—CF_3$, or —F;

R^6 is hydrogen or $—OR^{14}$;

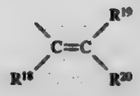
R^7 is hydrogen or alkyl of 1–6 carbon atoms;

R^{10} is hydrogen, alkyl of 1–6 carbon atoms, or arylalkyl of 4–10 carbon atoms;

R^{11}, R^{12}, and R^{13} are each, independently, $—(CR^{15}R^{16})_rR^{17}$;

R^{14} is hydrogen, alkyl of 1–6 carbon atoms, tri-(alkyl of 1–6 carbon atoms)ailyl, tri-(alkyl of 1–6 carbon atoms)ailylethyl, triphenylmethyl, benzyl, alkoxymethyl of 2–7 carbon atoms, tri-(alkyl of 1–6 carbon atoms)ailylethoxymethyl, or tetrahydropyranyl;

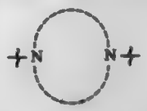
R^{15} and R^{16} are each, independently, hydrogen or alkyl of 1–6 carbon atoms;



or —C≡C—R^{21};

R^{18}, R^{19}, R^{20}, and R^{21} are each, independently, hydrogen, alkyl of 1–6 carbon atoms, halogen, or phenyl, wherein the phenyl group may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1–6 carbon atoms, arylalkyl of

7–10 carbon atoms, alkoxy of 1–6 carbon atoms, trifluoroalkoxy of 1–6 carbon atoms, cyano, halo, hydroxy, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, amino, dialkylamino of 1–6 carbon atoms per alkyl group, dialkylaminoalkyl of 3–12 carbon atoms, hydroxyalkyl of 1–6 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthio of 1–6 carbon atoms, $—SO_3H$, $—PO_3H$, and $—CO_2H$;



is a 5–7 membered saturated or partially unsaturated heterocyclic radical containing at least 2 ring nitrogens, wherein the heterocyclic ring may optionally contain NR^{22} in the heterocyclic ring, and the ring carbons may optionally be substituted by alkyl of 1–6 carbon atoms, arylalkyl of 4–10 carbon atoms, halogen, $—CF_3$, $—OR^{14}$, or $—CO_2R^{10}$;

R^{22} is hydrogen, alkyl of 1–6 carbon atoms, or arylalkyl of 4–10 carbon atoms;

m=0–6;

n=1–6;

p=0–6; and

r=1–6

with the proviso that R^1 and R^2 are both not hydrogen, or a pharmaceutically acceptable salt thereof.

5,486,524

CARBAMATES OF RAPAMYCIN

Amedeo A. Failli, Princeton Junction, N.J.; Oleg I. Bleyman, Holland, Pa.; Wenling Kao, Paoli, Pa., and Magid A. Abou-Gharbia, Glen Mills, Pa., assignors to American Home Products Corporation, Madison, N.J.

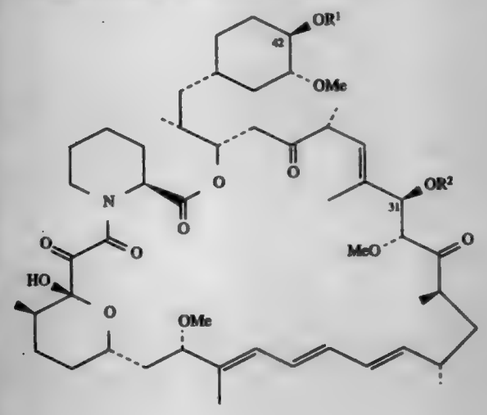
Division of Ser. No. 284,764, Aug. 2, 1994, which is a continuation-in-part of Ser. No. 160,984, Dec. 1, 1993, abandoned, which is a division of Ser. No. 54,655, Apr. 23, 1993, Pat. No. 5,302,584, which is a continuation-in-part of Ser. No. 960,597, Oct. 13, 1992, abandoned. This application May 24, 1995, Ser. No. 449,166

Int. Cl.[6] A61K *31/395*; C07D *498/16*

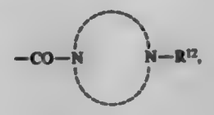
U.S. Cl. 514—291 1 Claim

1. A method of treating restenosis in a mammal in need thereof, which comprises administering to said mammal an antiproliferative effective amount of a compound of the structure

II



wherein R^1 and R^2 are each, independently, hydrogen, $—CONR^3(CR^4R^5)_m(CR^6R^7)_n(CR^8R^9)_pNR^{10}R^{11}$,



or $CONR^3R^{13}$;

R^3 is hydrogen, alkyl of 1–6 carbon atoms, or arylalkyl of 4–10 carbon atoms;

R^4, R^5, R^8, and R^9 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, —OH, $—CF_3$, or —F;

R^6 is hydrogen or $—OR^{14}$;

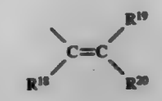
R^7 is hydrogen or alkyl of 1–6 carbon atoms;

R^{10} is hydrogen, alkyl of 1–6 carbon atoms, or arylalkyl of 4–10 carbon atoms;

R^{11}, R^{12}, and R^{13} are each, independently, $—(CR^{15}R^{16})_rR^{17}$;

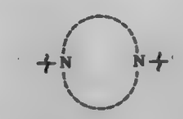
R^{14} is hydrogen, alkyl of 1–6 carbon atoms, tri-(alkyl of 1–6 carbon atoms)silyl, tri-(alkyl of 1–6 carbon atoms)silylethyl, triphenylmethyl, benzyl, alkoxymethyl of 2–7 carbon atoms, tri-(alkyl of 1–6 carbon atoms)silylethoxymethyl, or tetrahydropyranyl;

R^{15} and R^{16} are each, independently, hydrogen or alkyl of 1–6 carbon atoms;



or —C≡C—R^{21};

R^{18}, R^{19}, R^{20}, and R^{21} are each, independently, hydrogen, alkyl of 1–6 carbon atoms, halogen, or phenyl, wherein the phenyl group may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1–6 carbon atoms, arylalkyl of 7–10 carbon atoms, alkoxy of 1–6 carbon atoms, trifluoroalkoxy of 1–6 carbon atoms, cyano, halo, hydroxy, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, amino, dialkylamino of 1–6 carbon atoms per alkyl group, dialkylaminoalkyl of 3–12 carbon atoms, hydroxyalkyl of 1–6 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthio of 1–6 carbon atoms, $—SO_3H$, $—PO_3H$, and $—CO_2H$;



is a 5–7 membered saturated or partially unsaturated heterocyclic radical containing at least 2 ring nitrogens, wherein the heterocyclic ring may optionally contain NR^{22} in the heterocyclic ring, and the ring carbons may optionally be substituted by alkyl of 1–6 carbon atoms, arylalkyl of 4–10 carbon atoms, halogen, $—CF_3$, $—OR^{14}$, or $—CO_2R^{10}$;

R^{22} is hydrogen, alkyl of 1–6 carbon atoms, or arylalkyl of 4–10 carbon atoms;

m=0–6;

n=1–6;

p=0–6; and

r=1–6

with the proviso that R^1 and R^2 are both not hydrogen, or a pharmaceutically acceptable salt thereof.

5,486,525

PLATELET ACTIVATING FACTOR ANTAGONISTS: IMIDAZOPYRIDINE INDOLES

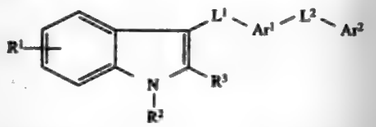
James B. Summers, Jr.; Steven K. Davidsen, both of Libertyville; Michael L. Curtin, Lindenhurst; H. Robin Heyman, Chicago; George S. Sheppard, Wilmette; Lianhong Xu, Libertyville; George M. Carrera, Jr., Des Plaines, and Robert B. Garland, Northbrook, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 324,631, Oct. 18, 1994, which is a continuation-in-part of Ser. No. 168,564, Dec. 16, 1993, abandoned. This application Dec. 5, 1994, Ser. No. 347,528

Int. Cl.[6] A61K *31/435*; C07D *471/04*

U.S. Cl. 514—303 10 Claims

1. A compound of formula



or a pharmaceutically acceptable salt thereof wherein

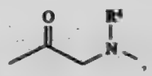
R^1 is one or more groups independently selected from the group consisting of
hydrogen,
halogen,
hydroxy,
cyano,
alkyl of one to six carbon atoms,
alkynyl of two to four carbon atoms,
alkoxy of one to six carbon atoms,
alkanoyl of one to seven carbon atoms,
—$COOR^6$, wherein R^6 is hydrogen, alkyl of one to ten carbon atoms, or phenylalkyl wherein the alkyl portion is of one to four carbon atoms,
unsubstituted phenyl,
phenyl, substituted with
alkyl of one to six carbon atoms,
alkoxy of one to six carbon atoms,
halogen,
—NR^4R^5, where R^4 and R^5 are independently selected from hydrogen and alkyl of one to six carbon atoms, or R^4 and R^5 together with the nitrogen atom to which they are attached form a pyrrolidinyl, piperidinyl, piperazinyl, or morpholinyl ring,
—$COOR^6$,
—$C(O)NR^4R^5$, or
—$SO_2NR^4R^5$,
—$C(O)NR^4R^5$,
—$OC(O)NR^4R^5$,
—$NHC(O)NR^4R^5$,
2- or 3-furyl,
2- or 3-thienyl,
2-, 4-, or 5-thiazolyl
2-, 3-, or 4-pyridyl,
2-, or 4-pyrimidyl,
phenylalkyl in which the alkyl portion is of one to six carbon atoms,
phenylalkyl, in which the alkyl portion is of one to six carbon atoms and the phenyl moiety is substituted with
halogen,
alkyl of from one to six carbon atoms, or
alkoxy of from one to six carbon atoms,
unsubstituted benzoyl,
benzoyl substituted with
halogen,
alkyl of from one to six carbon atoms, or
alkoxy of from one to six carbon atoms,
unsubstituted phenoxy,
phenoxy substituted with
halogen,
alkyl of from one to six carbon atoms, or
alkoxy of from one to six carbon atoms,
unsubstituted phenylalkyloxy, in which the alkyl portion is of one to six carbon atoms,
phenylalkyloxy in which the alkyl portion is of one to six carbon atoms and the phenyl moiety is substituted with
halogen,
alkyl of from one to six carbon atoms, or
alkoxy of from one to six carbon atoms, and
unsubstituted phenylalkanoyl, in which the alkanoyl portion is of one to seven carbon atoms,
phenylalkanoyl, in which the alkanoyl portion is of one to seven carbon atoms and the phenyl moiety is substituted with;
halogen,
alkyl of from one to six carbon atoms, or
alkoxy of from one to six carbon atoms;

R^2 is selected from the group consisting of
hydrogen,
alkyl of one to six carbon atoms;
—$(CH_2)_pCOOR^6$, where p 0, 1, 2, 3, or 4,
—$(CH_2)_qNR^4R^5$, where q 2, 3, or 4,
—$(CH_2)_pCOR^6$
—$(CH_2)_qOR^6$,
—$(CH_2)_pSO_2R^6$,
—$(CH_2)_pSO_2NR^4R^5$,
—$(CH_2)_pCONR^7R^8$, where R^7 and R^8 are independently selected from the group consisting of
hydrogen,
alkyl of one to six carbon atoms,
—$(CH_2)_rCOOR^6$, where r is 1, 2, 3, or 4,
—$(CH_2)_rNR^4R^5$,
—$(CH_2)_rOH$,
—$(CH_2)_rSO_2R^6$, and
—$(CH_2)_rSO_2NR^4R^5$,
—$(CH_2)_pCN$
—$(CH_2)_p$-1H-tetrazol-5-yl
—$CONHNH_2$, and;
unsubstituted phenylalkyl wherein the alkyl portion is of one to four carbon atoms, and
phenylalkyl wherein the alkyl portion is of one to four carbon atoms and the phenyl moiety is substituted with
halogen,
alkyl of from one to six carbon atoms, or
alkoxy of from one to six carbon atoms; or

R^7 and R, taken together with the nitrogen atom to which they are attached, for a pyrrolidinyl or morpholinyl ring;

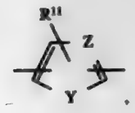
R^3 is selected from the group consisting of hydrogen and alkyl of one to six carbon atoms;

L^1 is selected from the group consisting of
>C=O,



>C=NNR^9R^{10}, where R^9 and R^{10} are independently selected from
hydrogen,
alkyl of one to six carbon atoms,
alkoxycarbonyl of from one to six carbon atoms,
aminocarbonyl,
alkylaminocarbonyl of one to six carbon atoms,
dialkylaminocarbonyl in which the alkyl groups are independently of one to six carbon atoms,
alkanoyl of one to six carbon atoms,
unsubstituted phenyl, and
phenyl substituted with
halogen,
alkyl of from one to six carbon atoms, or
alkoxy of from one to six carbon atoms; and
>C=NOR^9,
>$S(O)_n$, wherein n is 1 or 2, and
—$NHSO_2$—;

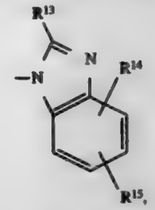
Ar^1 is a radical of formula

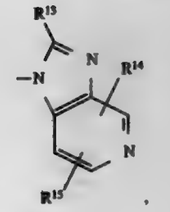


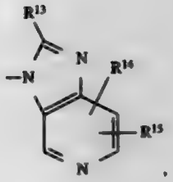
where Y is O, S, or —CH=CH—, Z is N or CH, and R^{11} is selected from the group consisting of
hydrogen,
alkyl of one to six carbon atoms,
alkenyl of two to six carbon atoms,
alkoxy of one to six carbon atoms, and
halogen;

L^2 is selected from the group consisting of
a valence bond,
unsubstituted straight-chain alkylene of one to six carbon atoms,
straight-chain alkylene of one to six carbon atoms substituted with one or more groups selected from
alkyl of one to six carbon atoms,
alkenyl of two to six carbon atoms,
alkoxycarbonyl of one to six carbon atoms,
alkoxy of one to six carbon atoms,
alkylthio of one to six carbon atoms,
alkoxyalkyl in which the two alkyl portions each are of one to six carbon atoms,
alkylthioalkyl in which the alkoxy and alkyl portions are independently of one to six carbon atoms,
unsubstituted phenylalkyl wherein the alkyl portion is of one to six carbon atoms,
phenylalkyl wherein the alkyl portion is of one to six carbon atoms, and the phenyl ring is substituted with alkyl of one to six carbon atoms, haloalkyl of one to six carbon atoms, alkoxy of one to six carbon atoms, hydroxy, or halogea,
unsubstituted thiophenyl, and
thiophenyl substituted with alkyl of one to six carbon atoms, haloalkyl of one to six carbon atoms, alkoxy of one to six carbon atoms, hydroxy, or halogen,
with the proviso that L^2 is unsubstituted alkylene or alkylene substituted alkyl when Ar^1 is a valence bond;

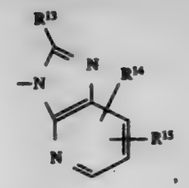
Ar^2 is selected from the group consisting of

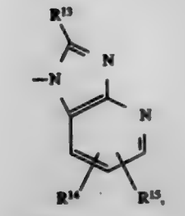


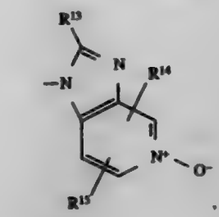


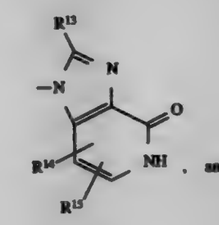


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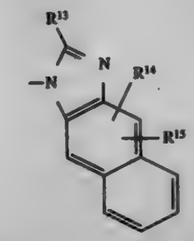








and



where R^{13} is selected from the group consisting of
alkyl of one to six carbon atoms,
alkenyl of two to six carbon atoms,
alkoxy of one to six carbon atoms,
alkylthio of one to six carbon atoms,
alkoxyalkyl in which the alkoxy and alkyl portions are independently of one to six carbon atoms,
alkylthioalkyl in which the alkyl portions each independently of one to six carbon atoms,
haloalkyl of one to six carbon atoms, unsubstituted phenylalkyl wherein the alkyl portion is of one to six carbon atoms,
phenylalkyl wherein the alkyl portion io of one to six carbon atoms and the phenyl is substituted with
alkyl of one to six carbon atoms,
haloalkyl of one to six carbon atoms,
alkoxy of one to six carbon atoms,
hydroxy, or
halogen,
cycloalkyl of three to eight carbon atoms,

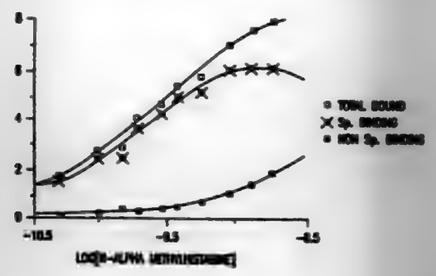
unsubstituted thiophenyl, and
thiophenyl substituted with
alkyl of one to six carbon atoms,
haloalkyl of one to six carbon atoms,
alkoxy of one to six carbon atoms,
hydroxy, or
halogen, and
R^{14} and R^{15} are independently selected from the group consisting of
hydrogen,
alkyl of one to six carbon atoms,
alkenyl of two to six carbon atoms,
halogen,
cyano,
carboxyl,
alkoxycarbonyl of two to six carbon atoms,
aminocarbonyl,
alkylaminocarbonyl of two to six carbon atoms,
dialkylaminocarbonyl in which the alkyl groups are independently of one to six carbon atoms,
alkanoyl,
hydroxyalk,
haloalkyl,
alkoxy of one to six carbon atoms,
alkylthio of one to six carbon atoms,
alkylsulfinyl of one to six carbon atoms,
alkylsulfonyl of one to six carbon atoms,
amino,
alkonylamino, of one to six carbon atoms, and
nitro, or
R^{14} and R^{15}, together with the carbon atoms to which they are attached define a phenyl ring or 5- to 7-membered cycloalkylene ring.

5,486,526

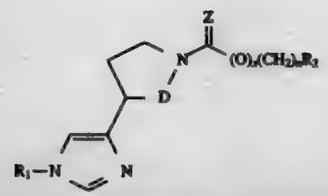
HISTAMINE H_3-RECEPTOR ANTAGONISTS AND THERAPEUTIC USES THEREOF

Graham J. Durant, Marshfield, Mass.; Amin M. Khan, Toledo, and Clark E. Tedford, S. Russell, both of Ohio, assignors to The University of Toledo, Toledo, and Gliatech, Inc., Beachwood, both of Ohio

Continuation-in-part of Ser. No. 862,657, Apr. 1, 1992, abandoned. This application Oct. 29, 1993, Ser. No. 145,983
Int. Cl.[6] C07D *411/00;211/06;233/00;* A01N *43/40*
U.S. Cl. 514—319 **9 Claims**



1. A method of suppressing appetite in a subject comprising administering to an animal, in whom appetite suppression is desired, an effective amount of a compound of the formula:



I

wherein R_1 represents hydrogen, an in vivo hydrolyzable group, an alkyl group., a cyclic alkyl group, or an aryl group; D is CH_2 or C_2CH_2; Z is S or O; x is 0 or 1; n is an integer from 0 to 6; and R_2 represents a substituted or unsubstituted linear chain or branched chain alkyl group of up to about 20 carbon atoms, a substituted or unsubstituted carbocyclic group of up to about 20 atoms, or a substituted or unsubstituted aryl group of up to about 20 carbon atoms, and salts thereof, with the provisos that if R_2 is tert-butyl, cyclohexyl, or dicyclohexylmethyl, x or n must not be 0; and if R_2 is adamantane, the sum of x and n must be greater than 1;. or a pharmaceutically acceptable salt thereof.

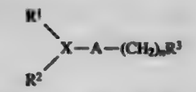
5,486,527

ANTICHOLINERGIC AGENTS

David Alker, Birchington, and Peter E. Cross, Canterbury, both of, England, assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 877,170, Jun. 29, 1992, abandoned. This application Jul. 28, 1994, Ser. No. 282,191
Claims priority, application United Kingdom, Jan. 6, 1990, 9000305
Int. Cl.[6] A61K *31/445;* C07D *405/06;405/12*
U.S. Cl. 514—321 **7 Claims**

1. A compound of the formula (I):

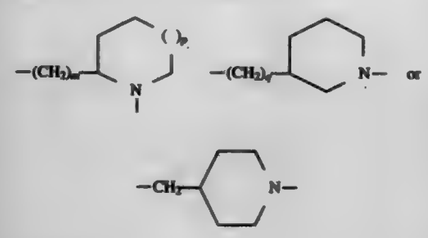


(I)

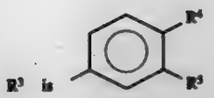
or a pharmaceutically acceptable salt thereof, wherein R^1 and R^2 are the same or different and each is phenyl which is unsubstituted or substituted by at least one group selected from C_1–C_4 alkyl and halo, X is



X being attached to a carbon atom of A, A is



n is from 1 to 3,
m is 1 or 2,
p is 1,
q is 1



wherein R^4 and R^5 are taken together to form a —Y—$(CH_2)_s$—Z— group wherein Y and Z are independently —O— or —CH_2— and s is 1, 2 or 3.

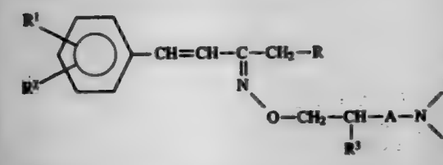
5,486,528

BASIC ETHERS AND PROCESS FOR THE PREPARATION THEREOF

Judit Bajnágel; Gábor Blaskó; Zoltán Budai; Éva Schmidt; András Egyed; Márton Fekete; István Gacsályi; István Gyertyán; Tibor Mezei; Kalóra Reiter née Esses; Gyula Simig; Katalin Szemerédi, and Endre Szirt née Kiszely, all of Budapest, Hungary, assignors to Egis Gyogyszergyar Rt., Budapest, Hungary

Filed Apr. 11, 1994, Ser. No. 226,089
Claims priority, application Hungary, Apr. 9, 1993, 93 01040
Int. Cl.[6] A61K *31/15;* C07C *251/48*
U.S. Cl. 514—331 **8 Claims**

1. A basic ether of the formula (I),



(I)

wherein
R^1 and R^2 are independently hydrogen, halogen or C_{1-4} alkoxy, or together they represent a 3,4-methylenedioxy group,
R stands for C_{1-5} alkyl,
R^3 represents hydrogen, C_{1-4} alkyl or hydroxy,
A is a valency bond or methylene group,
R^4 and R^5 are independently hydrogen, C_{1-12} alkyl or C_{1-12} alkenyl, or
R4 and R^5 form together with the adjacent nitrogen atom 1-pyrrolidinyl, 1-piperidinyl, morpholino or 1-piperazinyl groups, its stereo and optically active isomer or racemic mixture, acid-addition or quaternary ammonium salt thereof.

R is hydrogen; or
R is an acyl group of formula A.X.CO— or A.X.CJ— in which A.X—, taken together is trifluoromethyl;
J is oxygen;
X is a direct bond or oxy; and
A is selected from (1–6C)alkyl, aryl or aryl(1–3C)alkyl or pyridyl or pyridyl(1–3C)alkyl wherein an aryl or pyridyl moiety is optionally substituted with a member selected from the group consisting of one halogeno, nitro, methyl or trifluoromethyl group and further wherein the group A is optionally substituted with one substituent selected from a group consisting of hydroxy, lower alkoxy or lower acyloxy; and each of R^5 and R^6 is independently hydrogen or lower alkyl; or one of R^5 and R^6 is hydrogen or methyl and the other of R^5 and R^6 is a radical of formula B.Y— in which B is aryl which aryl independently may bear one substituent defined for A;
Y is a direct bond, methylene, ethylene or trans-vinylene;
R^4 is hydrogen, aryl(1–3C)alkyl, or pyridyl(1–3C)alkyl, wherein an aryl or pyridyl moiety may bear one, halogeno, methyl or trifluoromethyl group and further wherein the group R^4 may bear one substituent selected from a group consisting of hydroxy, lower alkoxy, COORs, CONRtRu, and NRtRu, in which Rs–Ru are independently selected from hydrogen, benzyl or lower(1–6C)alkyl; or for a compound of formula I which is acidic or basic, a pharmaceutically acceptable salt thereof.

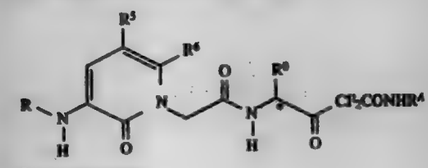
5,486,529

CERTAIN PYRIDYL KETONES FOR TREATING DISEASES INVOLVING LEUKOCYTE ELASTASE

Peter R. Bernstein, Wallingford; Andrew Shaw, Kennett Square, both of Pa.; Royston M. Thomas, Macclesfield, England; Chris A. Veale, Newark, Del.; Peter Warner, Macclesfield, England, and Donald J. Wolanin, Orange, Conn., assignors to Zeneca Limited, London, England

Filed Apr. 8, 1993, Ser. No. 45,496
Claims priority, application United Kingdom, Apr. 16, 1992, 9208385; Aug. 14, 1992, 9217365
Int. Cl.[6] A61K *31/44;* C07D *401/12;211/84;213/81*
U.S. Cl. 514—335 **15 Claims**

1. A compound of formula I wherein:



(I)

R^0 is (1–5C)alkyl;

5,486,530

USE OF TORASEMIDE FOR THE TREATMENT OF BRAIN OEDEMAS

Tim Boelke; Lothar Kling, both of Mannheim, and Reinhard Koenig, Grunstadt, all of, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Continuation of Ser. No. 133,160, Oct. 21, 1993, abandoned. This application Jan. 30, 1995, Ser. No. 380,323
Claims priority, application Germany, Apr. 27, 1991, 41 13 820.1
Int. Cl.[6] A61K *31/44*
U.S. Cl. 514—347 **8 Claims**

1. A method of treating a brain edema in a patient in need of such treatment, said method comprising administering to said patient an effective amount of 4-3'-methylphenylaminopyridine-3-sulphonamide or a pharmacologically acceptable salt thereof.

5,486,531

HYDROXYMETHYLFURAZANCARBOXYLIC ACID DERIVATIVES

Karl Schlossinger, Altenau, and Helmut Bohn, Schlueck, both of, Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 7, 1994, Ser. No. 207,200
Claims priority, application Germany, Mar. 6, 1993, 43 07 105.8
Int. Cl.[6] C07D *271/08;* A61K *31/41*
U.S. Cl. 514—364 **10 Claims**

1. Hydroxymethylfurazancarboxylic acid derivatives of the formula I



(I)

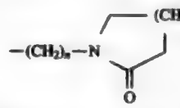
in which one of the radicals R^1 and R^2 represents hydroxymethyl and the other represents



where

X represents NR^3R^4 or OH or OR^7;

R^3 and R^4, independently of each other, denote hydrogen, (C_1-C_{20})-alkyl, 1-phenyl-(C_2-C_4)-alkyl, 2-phenyl-(C_3-C_4)-alkyl, (C_3-C_6)-alkenyl, (C_3-C_7)-cycloalkyl, $-(CH_2)_n-NR^5R^6$, $-(CH_2)_n-OR^5$, $-(CH_2)_m-COOR^5$, $-CH(Alk)-COOR^5$, $-(CH_2)_m-CONR^5R^6$, $-CH(Alk)-CONR^5R^6$,



$-(CH_2)_n-NR^5(COAlk)$, $-(CH_2)_n-Ar$ or $-(CH_2)_n-Het$, or R^3 and R^4, together with the nitrogen atom linking them, form a heterocycle, which can also be substituted once or more than once by (C_1-C_6)-alkyl, (C_3-C_7)-cycloalkyl, (C_1-C_4)-alkoxy, amino, (C_1-C_4)-alkylamino, di((C_1-C_4)-alkyl)amino, hydroxyl, acetoxy, benzyl, phenethyl or Ar;

R^5 and R^6, independently of each other, denote hydrogen, (C_1-C_6)-alkyl, (C_3-C_6)-alkenyl, (C_3-C_7)-cycloalkyl, benzyl, phenethyl or Ar;

R^7 denotes (C_1-C_6)-alkyl, (C_3-C_7)-cycloalkyl, benzyl or phenyl, or phenyl which is substituted once or more than once by (C_1-C_4)-alkyl, fluorine, chlorine or nitro;

Alk denotes (C_1-C_6)-alkyl;

Ar denotes an aryl radical having 6 to 12 C atoms which can also be substituted once or more than once by (C_1-C_4)-alkyl, (C_1-C_4)-alkoxy, amino, (C_1-C_4)-alkylamino, di((C_1-C_4)-alkyl)amino, (C_1-C_6)-alkanoylamino, sulphamoyl, fluorine, chlorine, bromine, hydroxyl, acetoxy, nitro, trifluoromethyl or cyano;

Het denotes a heterocyclic radical having 1 to 3 heteroatoms, which can also be substituted once or more than once by (C_1-C_4)-alkyl, (C_1-C_4)-alkoxy, amino, (C_1-C_4)-alkylamino, di((C_1-C_4)-alkyl)amino, (C_1-C_6)-alkanoylamino, fluorine, chlorine, bromine, hydroxyl, acetoxy, nitro, cyano or Ar;

n represents 0, 1, 2, 3 or 4,

m represents 1, 2, 3 or 4,

p represents 1, 2 or 3; and pharmacologically acceptable salts thereof.

5,486,532

BENZOSPIROALKENES

Alex Cordi, Suresnes; Jean-Michel Lacoste, Sevres; Michel Laubie, Vaucresson; Tony Verbeuren, Versailles; Jean-Jacques Descombes, Neuilly-Plaisance, and Mark Millan, Paris, all of, France, assignors to Adir et Compagnie, Courbevoie, France

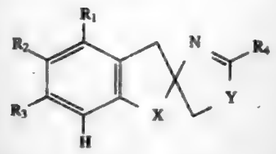
Filed Jul. 19, 1994, Ser. No. 276,910

Claims priority, application France, Jul. 20, 1993, 93 08859

Int. Cl.[6] C07D *263/28*

U.S. Cl. 514—374 **9 Claims**

1. A compound of formula (I):



(I)

in which:

X represents $-CH_2-$, $-(CH_2)_2-$, $-CH=CH-$, $-O-CH_2-$, $-S-CH_2-$, $-SO-CH_2-$, or $-SO_2-CH_2-$,

Y represents oxygen,

R_1 represents halogen, linear or branched (C_1–C_6) alkyl which is unsubstituted or substituted with one or more halogen; hydroxyl, or linear or branched (C_1–C_6) alkoxy,

R_2 represents hydrogen or halogen, linear or branched (C_1–C_6) alkyl which is unsubstituted or substituted with one or more halogen; hydroxyl, linear or branched (C_1–C_6) alkoxy, or linear or branched (C_1–C_6) alkylthio,

R_3 represents hydrogen or halogen, linear or branched (C_1–C_6) alkyl which is unsubstituted or substituted with one or more halogen; hydroxyl, linear or branched (C_1–C_6) alkoxy, or linear or branched (C_1–C_6) alkylthio,

R_4 represents hydrogen or amino which is unsubstituted or substituted with one or two linear or branched (C_1–C_6) alkyl;

R_1 and R_2 form, together with the carbon atoms which bear them, a benzenic ring, on condition that, in this case, X represents $-CH_2-$ or $-(CH_2)_2-$,

an optical isomer thereof or an addition salt thereof with a pharmaceutically-acceptable acid, it being understood that by "halogen" is intended fluorine, chlorine, or bromine, and that substituents R_1, R_2, and R_3 cannot include two tertiary butyl substituents on adjacent carbon atoms of the benzene ring.

5,486,533

FUNGICIDAL SUBSTITUTED AZOLE DERIVATIVES

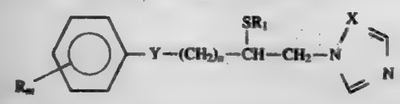
Anupama Mishra, Guelph, Canada, and Robert A. Davis, Cheshire, Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn., and Uniroyal Chemical Ltd./Ltee, Elmira, Canada

Division of Ser. No. 263,896, Jun. 21, 1994, which is a continuation of Ser. No. 959,238, Oct. 9, 1992, abandoned. This application May 18, 1995, Ser. No. 443,632

Int. Cl.[6] A01N *43/653*; C07D *249/08*

U.S. Cl. 514—383 **7 Claims**

1. A compound having the structural formula



I

wherein:

R can be the same or different and is halogen, hydrogen, C_1–C_8 alkyl, C_1–C_8 haloalkyl, C_3–C_6 cycloalkyl, C_7–C_9 aralkyl, phenyl, nitro, C_1–C_6 alkoxy, C_1–C_6 alkylthio, C_1–C_6 alkylsulfinyl, C_1–C_6 alkylsulfonyl, C_7–C_9 aralkoxy, phenoxy, phenylthio, phenylsulfinyl, or phenylsulfonyl;

m is an integer from 0 to 5;

Y is CH_2

n is an integer from 1 to 5;

R_1 is C_{1-C5} alkyl;

X is N; or physiologically acceptable salts thereof.

5,486,534

3,4-SUBSTITUTED PYRAZOLES FOR THE TREATMENT OF INFLAMMATION

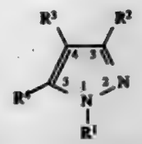
Len F. Lee, St. Charles, Mo.; Thomas D. Penning, Elmhurst, and Steven W. Kramer, Des Plaines, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Jul. 21, 1994, Ser. No. 278,297

Int. Cl.[6] A61K *31/415*; C07D *231/12*

U.S. Cl. 514—406 **48 Claims**

1. A compound of Formula I



(I)

wherein R^1 is a radical selected from hydrido, alkyl, alkenyl, alkynyl, haloalkyl, aralkyl, hydroxyalkyl, alkoxyalkyl, cyanoalkyl, aminoalkyl, alklaminoalkyl, carboxyalkyl, alkoxycarbonylalkyl, alkylaminocarbonylalkyl, N-hydroxyaminocarbonylalkyl, N-hydroxy-N-alkyl-aminocarbonylalkyl, arylaminocarbonylalkyl and aminocarbonylalkyl;

wherein R^2 is aryl substituted at a substitutable position with a radical selected from alkylsulfonyl and sulfamyl;

wherein R^3 is selected from aryl, cycloalkyl, and cycloalkenyl; wherein R^3 is optionally substituted at a substitutable position with one or more radicals selected from halo, alkylthio, alkylsulfinyl, alkyl, cyano, carboxyl, alkoxycarbonyl, aminocarbonyl, alkylaminocarbonyl, arylaminocarbonyl, N-alkyl-N-arylaminocarbonyl, haloalkyl, hydroxyl, alkoxy, hydroxyalkyl, haloalkoxy, amino, alkylamino, arylamino, heterocyclo and nitro; and

wherein R^4 is selected from hydrido, alkyl, haloalkyl, carboxyalkyl, alkoxycarbonylalkyl, aralkoxycarbonylalkyl, aminocarbonylalkyl, hydroxyalkyl and aralkoxyalkyl;

or a pharmaceutically-acceptable salt thereof.

5,486,535

METHOD FOR TREATING TOXOPLASMOSIS

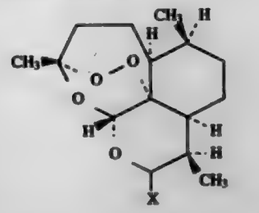
J. Joseph Marr, Lake Forest, Ill.; Edward C. Krug, Aurora; Randolph L. Berens, Littleton, both of Colo., and Ou-Yang Ke, Hunan, China, assignors to Regents of the University of Colorado, Boulder, Colo.

Continuation-in-part of Ser. No. 858,226, Mar. 26, 1992, abandoned, which is a continuation of Ser. No. 543,978, Jun. 26, 1990, abandoned. This application Sep. 7, 1993, Ser. No. 117,414

Int. Cl.[6] A61K *31/335*

U.S. Cl. 514—450 **12 Claims**

1. A method for treating toxoplasmosis in a mammal comprising the step of administering to said mammal a therapeutically effective amount of the compound



where X is OR, where R is a straight chain or branched alkyl having 1–6 carbons, whereby the growth of the organism causing toxoplasmosis is inhibited.

5,486,536

SULFATIDES AS ANTI-INFLAMMATORY COMPOUNDS

Peter A. Ward, Ann Arbor, Mich.; Masayuke Miyasaka, Suita, and Yasuo Suzuki, Shizuoka, both of, Japan, assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed Aug. 15, 1994, Ser. No. 289,985

Int. Cl.[6] A61K *31/35*

U.S. Cl. 514—460 **12 Claims**

1. A method of treating selectin-dependent lung inflammation in a patient in need thereof comprising,

administrating an effective amount of a sulfatide.

5,486,537

TOPICAL ANTI-FUNGAL COMPOSITION FOR SKIN AND KERATINOUS TISSUE

Reynaldo G. Farinas, Miami, Fla., assignor to Dayton Laboratories, Inc., Miami, Fla.

Filed Jan. 20, 1995, Ser. No. 375,705

Int. Cl.[6] A61K *31/335;31/34;31/11;31/045*

U.S. Cl. 514—462 **29 Claims**

1. In combination, an anti-fungal composition effective against *Trichophyton mentagrophytes* and *Candida albicans*, and a closed container, wherein said composition is disposed within said closed container, said composition comprising a solution of cinnamic aldehyde, up to about 20% by weight griseofulvin, and at least 5% by volume an alcohol selected from the group consisting of isopropanol and ethanol.

5,486,538

PRECIOUS METAL HUMATES AND THEIR PREPARATIONS

Bernhard Seubert, Ellingen-Neckarhausen, and Anton F. Haase, Mulhlal, both of, Germany, assignors to Rutgerswerke Aktiengesellschaft, Germany

Filed Aug. 29, 1994, Ser. No. 298,419

Claims priority, application Germany, Jan. 16, 1993, 43 35 370.3

Int. Cl.[6] A61K *31/28*; C07F *1/12;15/00*

U.S. Cl. 514—492 **5 Claims**

1. A process for the preparation of a stable precious metal humate comprising electrochemically oxidizing an aqueous alkaline solution of a polyvalent phenolic compound in an anode chamber, adding to the said solution after the start of the oxidation reaction an aqueous solution or hydrosol of the precious metal salt, completing the electrochemical oxidation and adjusting the pH to 4 to 6 to obtain the precious metal humate.

2. A process for the preparation of a stable precious metal humate comprising plasmochemically oxidizing an aqueous alkaline solution of a polyvalent phenolic compound in the reaction tube, adding to the solution after the start of the oxidation reaction an aqueous solution or hydrosol of the precious metal salt, completing the oxidation reaction and adjusting the pH to 4 to 6 to obtain the precious metal humate.

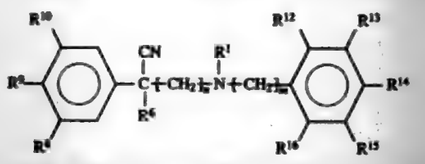
3. A precious metal salt of a humic acid with a mean molecular weight of 900 to 30,000 Daltons containing 1 to 5% by weight of the precious metal.

5,486,539
METHOD OF USING PHENYLACETONITRILEALKYLAMINOALKYL-ORTHO-SUBSTITUTED ARYL COMPOUNDS AS IMMUNOSUPPRESSIVES

Chi-Deau Liang, Glenview, Ill.; John P. McKearn, Pacific; John M. Farah, Jr., St. Louis, both of Mo., and Richard A. Mueller, Glencoe, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation of Ser. No. 926,732, Aug. 6, 1992, abandoned, which is a continuation of Ser. No. 623,596, Dec. 12, 1990, Pat. No. 5,162,569, which is a continuation-in-part of Ser. No. 609,145, Nov. 6, 1990, abandoned, which is a continuation of Ser. No. 456,004, Dec. 21, 1989, abandoned. This application Mar. 1, 1994, Ser. No. 204,121
Int. Cl.[6] A61K 31/275
U.S. Cl. 514—521 3 Claims

1. A method to suppress immune response in a subject, said method comprising administering to said subject a therapeutically-effective amount of an immunosuppressive compound of Formula I:



(II)

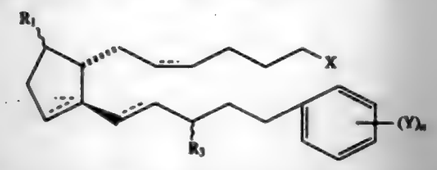
wherein m is one or two; wherein n is a number selected from one to five, inclusive; wherein R^1 is selected from hydrido, alkyl, hydroxyalkyl, cycloalkyl, cycloalkylalkyl, alkoxyalkyl, alkenyl and alkynyl; wherein R^6 is selected from loweralkyl; wherein each of R^8, R^9, R^{10} and R^{12} through R^{16} is independently selected from hydrido, hydroxy, alkoxy, alkenyl, alkynyl, alkylcarbonyl, alkoxycarbonyl and alkoxyalkyl; with the proviso that at least one of R^{12} and R^{16} must be selected from alkoxycarbonyl; or a tautomer thereof or a pharmaceutically-acceptable salt thereof.

5,486,540
CYCLOPENTANE HEPTANOIC OR HEPTENOIC ACID, 2-ARYLALKYL OR ARYLALKENYL AND DERIVATIVES AS THERAPEUTIC AGENTS

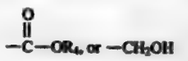
Steven W. Andrews, Irvine, Calif., assignor to Allergan, Inc., Irvine, Calif.

Filed Oct. 28, 1993, Ser. No. 144,968
Int. Cl.[6] A61K 31/215;31/19;31/045
U.S. Cl. 514—530 10 Claims

1. A method of treating ocular hypertension which comprises applying to the eye an amount sufficient to treat ocular hypertension of a compound of formula (I)



wherein the solid triangle indicates (β) configuration; the hatched line indicates α configuration; the wavy line indicates either an α or β configuration; the dashed bonds represent a single bond or a double bond which can be in the cis or trans configuration; X is a radical selected from the group consisting of



wherein R_4 is hydrogen or is a lower alkyl radical having up to 6 carbon atoms; Y is a radical selected from the group consisting of halo, nitro, amino, thiol, hydroxy, alkyloxy and alkyicarboxy; R_1 is —OH, or a —O(CO)R_6 group and R_2 is —OH or an —O(CO)R_6 group, wherein R_6 is a saturated or unsaturated acyclic hydrocarbon group having from 1 to about 20 carbon atoms, or —$(CH_2)_m$—R_7, wherein m is 0–10, and R_7 is an aliphatic ring having from about 3 to about 7 carbon atoms, or an aromatic ring; or a pharmaceutically acceptable salt thereof.

5,486,541
MONOFLUORINATED DERIVATIVES OF N-PROPARGYL-1-AMINOINDAN AND THEIR USE AS INHIBITORS OF MONOAMINE OXIDASE

Jeff Sterling, Jerusalem; Ruth Levy, Tel-Aviv; Alex Volsberg, Rehovot; Willy Goldenberg, Jerusalem; John Finberg, Tivon; Moses Youdim, and Arieh Gutman, both of Haifa, all of, Israel, assignors to Teva Pharmaceutical Industries, Ltd., Jerusalem, Israel

Continuation of Ser. No. 961,132, Oct. 14, 1992, abandoned. This application Sep. 22, 1994, Ser. No. 310,480
Claims priority, application Israel, Jan. 16, 1991, 99759
Int. Cl.[6] A61K 31/135; C07C 211/42
U.S. Cl. 514—657 18 Claims

1. A compound selected from the group consisting of 4-fluoro-N-propargyl- 1-aminoindan, 5-fluoro-N-propargyl-1-aminoindan, 6-fluoro-N-propargyl-1-aminoindan and pharmaceutically acceptable addition salts thereof.

5,486,542
PROCESS FOR THE DISTILLATION OF FISHER-TROPSCH PRODUCTS

Sytze A. Postburna; Hermanus M. H. Wechem, and Hendrikus Heetveld, all of The Hague, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 188,495, Jan. 28, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 486,157
Int. Cl.[6] C07C 27/00
U.S. Cl. 518—700 9 Claims

1. A process for the distillation of a hydrocarbon mixture, which mixture has been prepared by a Fischer-Tropsch synthesis, which process comprises supplying the hydrocarbon mixture to a wiped film evaporator and recovering a first fraction having a low boiling point range and a narrow melting point range as the light product from the evaporator and recovering a second fraction having a high boiling point range and a wider melting point range as the heavy product of the evaporator.

5,486,543
FORMED THERMOPLASTIC RESIN ARTICLE AND PRODUCTION PROCESS THEREOF

Tsunetoshi Shimada; Katsuo Wada, both of Yokohama; Haruo Inoue, Zushi; Masaki Mizumi, Chigasaki, and Akira Saito, Yokohama, all of, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Dec. 22, 1993, Ser. No. 171,443
Claims priority, application Japan, Dec. 28, 1992, 4-348205
Int. Cl.[6] C08F 2/50;16/00
U.S. Cl. 521—149 9 Claims

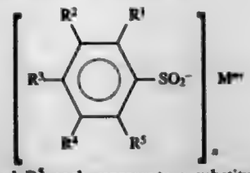
1. A formed thermoplastic resin article comprising thermoplastic resin and foamed elastic polymer finely dispersed therein, wherein said formed thermoplastic resin article is obtained by blending an elastic polymer containing an endothermic foaming agent decomposable at a temperature of at least 160° C., said endothermic foaming agent being mixed with the elastic polymer at a temperature lower than the decomposition temperature of the endothermic foaming agent, in a thermoplastic resin and then plasticizing and forming the resultant resin blend at a temperature at least equal to the decomposition temperature of the endothermic foaming agent.

5,486,544
POLYMERIZABLE COMPOSITION

Mitsunobu Kawashima, and Ikuo Omura, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Continuation of Ser. No. 895,170, Jun. 8, 1992, abandoned, which is a continuation of Ser. No. 550,508, Jul. 10, 1990, abandoned. This application Sep. 12, 1994, Ser. No. 304,434
Claims priority, application Japan, Jul. 12, 1989, 1-181382
Int. Cl.[6] C08F 2/46
U.S. Cl. 523—17 20 Claims

1. A polymerizable composition, comprising:
(a) a monomer;
(b) a sulfinate having the formula (I):



(I)

wherein R^1 and R^5 each represents a substituent having 2 to 6 carbon atoms, R^2, R^3 and R^4 each represents an atom or substituent inert to said monomer (a), M^{n+} represents an n-valent cation, and n represents an integer of 1 to 2, and wherein said mooomer has a carbon-carbon double bond directly linked to an electron attracting group.

5,486,545
PROCESS FOR MAKING PROPENYL ETHERS AND PHOTOPOLYMERIZABLE COMPOSITIONS CONTAINING THEM

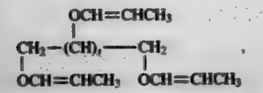
James V. Crivello, Clifton Park, N.Y., assignor to Rensselaer Polytechnic Institute, Troy, N.Y.

Division of Ser. No. 988,214, Dec. 9, 1992, abandoned. This application Apr. 25, 1994, Ser. No. 232,507
Int. Cl.[6] C08F 2/46
U.S. Cl. 522—31 4 Claims

1. A product of the process comprising
(a) preparing a mixture of at least one monomer selected from the group consisting of
(i) neopentylglycol dipropenyl ether;
(ii) compounds of the formula

$$CH_3CH{=}CHO{-}(CH_2)_p{-}OCH{=}CHCH_3 \quad \text{(I); and}$$

(iii) compounds of the formula



(II)

wherein p is an integer from 2 to 20; and s is 0 or an integer from 1 to 4; and from 0.01 to 20% by weight of a cationic photoinitiator chosen from the group consisting of diaryliodonium, triarylsulfonium, diaryliodosonium, triarylsulfoxonium, dialkylphenacyl sulfonium, and dialkylhydroxyphenyl sulfonium salts; and
(b) exposing said mixture to ultraviolet light for a period of time sufficient to produce a solid polymer which is infusible and insoluble in common solvents.

5,486,546
METHOD OF PRODUCING A MICROSTRUCTURE IN A BIORESORBABLE ELEMENT

Torbjorn Mathiesen, Bandhagsplan 9, S-13224 Bandhagen; Gunnar Bernhard, Mastvagen 12, 181 43 Lidingo, both of, Sweden, and Phil Rumsby, Loughsmborough, England

PCT No. PCT/SE92/00404, § 371 Date Feb. 7, 1994, § 102(e) Date Feb. 7, 1994, PCT Pub. No. WO92/22336, PCT Pub. Date Dec. 23, 1992
PCT Filed Jun. 10, 1992, Ser. No. 162,853
Claims priority, application Sweden, Jun. 10, 1991, 9101752
Int. Cl.[6] C08G 63/02
U.S. Cl. 522—165 7 Claims

1. A method of producing a microstructure in at least a portion of a bioresorbable aliphatic polymer material adapted to be employed in a living body, which process comprises exposing said material to energy from an excimer laser operated at a maximum wave length of 248 mm, wherein a major portion of said material comprises at least one aliphatic polyester or aliphatic polycarbonate polymer, or blends thereof, made from one or more monomers selected from the class consisting essentially of glycolic acid, glycolide, lactic acid, lactide, ε-caprolactone, trimethylene carbonate, paradioxanone, 1,5-dioxepan-2-one, valerolactone and β-bpyrolactone, and mixtures thereof.

5,486,547
SURGICAL ADHESIVE SHEET, SURGICAL INSTRUMENTS AND METHODS OF USING THE SAME

Takehisa Matsuda, Misao; Tetsuo Itoh, Shiga, and Tohru Tani, Kusatsu, all of, Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Division of Ser. No. 127,477, Sep. 28, 1993, which is a continuation of Ser. No. 497,985, Mar. 23, 1990, abandoned. This application Nov. 3, 1994, Ser. No. 335,341
Claims priority, application Japan, Mar. 23, 1989, 1-71407; Mar. 23, 1989, 1-71408; Mar. 23, 1989, 1-71409
Int. Cl.[6] A61L 15/26; C08L 75/04;75/08
U.S. Cl. 523—111 13 Claims

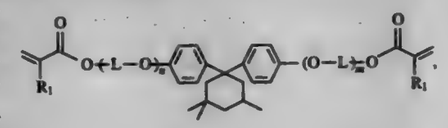
1. A surgical adhesive sheet, comprising
a sheet material comprising at least one polymer selected from the group consisting of polyurethane resins, silicone resins and fluorine-containing resins, coated with
a surgical adhesive comprising an NCO-terminated urethane prepolymer having a free isocyanate group content of 2–10% by weight, wherein said sheet is anhydrous or contains water in an amount insufficient to crosslink the prepolymer.

5,486,548
ACRYLATES AND METHACRYLATES BASED ON CYCLOHEXYLDIPHENOLS

Wolfgang Podszun, Köln, Germany, and Michael Müller, Mortsel, Belgium, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jul. 14, 1994, Ser. No. 275,211
Claims priority, application Germany, Jul. 21, 1993, 43 24 431.9
Int. Cl.[6] C08F 20/30;20/20; A61C 13/087; A61K 6/083
U.S. Cl. 523—115 4 Claims

1. Dental articles comprising polymers obtained from monomers of the formula (IIIb)



(IIIb)

in which
R_1 represents hydrogen or methyl,

L represents a C_2- to C_6-alkylene radical which can be substituted by alkyl, hydroxyl or halogen, and

n and m independently of one another denote an integer from 1 to 4.

5,486,549

LOW-FOAMING WATER-BASED PRINTING INK COMPOSITION

Akinari Itagaki; Syuuichi Arechi; Satoshi Kuwata, all of Gunma; Yousuke Tsutsumi, and Masanori Kodaira, both of Osaka, all of, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, and Sakata Inx Corp., Osaka, both of, Japan

Filed Oct. 25, 1994, Ser. No. 328,648

Claims priority, application Japan, Jan. 26, 1993, 5-267282

Int. Cl.[6] C09D 5/00; C08K 3/36

U.S. Cl. 523—161 **10 Claims**

1. A low-foaming water-based printing ink composition which comprises, as a uniform blend:

(A) an organic polymer in the form of an aqueous solution or in the form of an aqueous emulsion;

(B) a coloring agent; and

(C) a silicone-based defoaming composition, in an amount in the range from 0.01 to 10% by weight, comprising:

(a) 100 parts by weight of a polyoxyalkylene group-containing organopolysiloxane represented by the average unit formula

$$G_aR^1_bSiO_{(4-a-b)/2},$$

in which R^1 is a monovalent hydrocarbon group having 1 to 18 carbon atoms, G is a polyoxyalkylene group represented by the general formula

$$—R^2—O—(—R^3—O—)_p—Q,$$

R^2 being a divalent hydrocarbon group having 1 to 10 carbon atoms, R^3 being an ethylene group $—C_2H_4—$ or a propylene group $—C_3H_6—$, Q being an atom or group selected from the class consisting of a hydrogen atom, alkyl groups having 1 to 8 carbon atoms, acetyl group and isocyanato group —NCO and the subscript p being a positive integer not exceeding 200, the subscript a is a positive number in the range from 0.005 to 0.5 and the subscript b is a positive number in the range from 1.4 to 2.195 with the proviso that a +b is in the range from 1.9 to 2.2;

(b) from 2 to 200 parts by weight of a polydimethylsiloxane having a viscosity in the range from 100 to 1,000,000 centistokes at 25° C.;

(c) from 0.1 to 40 parts by weight of a finely divided silica powder having a specific surface area of at least 50 m^2/g; and

(d) from 0.05 to 60 parts by weight of an organopolysiloxane resin soluble in an organic solvent which consists of the siloxane units of the unit formula $R^4_3SiO_{0.5}$, siloxane units of the unit formula SiO_2, siloxane units of the unit formula R^4_2SiO and siloxane units of the unit formula $R^4SiO_{1.5}$, R^4 in the unit formulas being a monovalent hydrocarbon group having 1 to 6 carbon atoms, of which the combined molar fraction of the siloxane units of the formula $R^4_3SiO_{0.5}$ and the siloxane units of the formula SiO_2 is at least 80% and the molar ratio of the siloxane units of the formula $R^4_3SiO_{0.5}$ to the siloxane units of the formula SiO_2 is in the range from 0.5 to 1.5.

5,486,550

WATER BASED PIGMENTED INK

Manfred Lubas, Nürnberg, Germany, assignor to J.S. Staedtler GmbH & Co., Nurnberg, Germany

Filed Jun. 17, 1994, Ser. No. 261,638

Claims priority, application Germany, Jun. 24, 1993, 43 20 959.9

Int. Cl.[6] C09D 11/10

U.S. Cl. 523—161 **15 Claims**

1. An ink for writing, drawing, painting, printing or marking, the ink comprising a mixture of coloring matter comprising color pigments formed of at least one dye and at least one solid polymer dispersion component, wherein the at least one dye is selected from the group consisting of Basic Yellow 40, Solvent Yellow 43, Basic Red 1, Basic Red 1:1, Basic Violet 10, Basic Blue 3, Reactive Blue 41, Solvent Yellow 160/1, Basic Violet 11:1, Basic Violet 35, or from a mixture thereof, and wherein the at least one solid polymer dispersion component comprises 60–65% acrylonitrile and 35–40% by weight of butyl acrylate, further comprising a stabilizing acid group-free polyhydroxy compound selected from the group consisting of a sugar, a sugar alcohol, a polyglycerin or a mixture thereof, at least one of a surfactant and an emulsifier, at least one preservative, and water as solvent, wherein the color pigments are reaction products formed within the ink mixture through a reaction between functional groups of the at least one alkaline dye and the at least one solid polymer dispersion component.

5,486,551

METHOD FOR PREPARING A FINELY DIVIDED, FREE FLOWING ORGANOSILOXANE ELASTOMER BASE EXHIBITING REDUCED COMPRESSION SET FOLLOWING CURING

Keith E. Polmanteer, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jan. 3, 1995, Ser. No. 368,065

Int. Cl.[6] C08K 9/06

U.S. Cl. 523—212 **4 Claims**

1. A method for reducing the compression set of a cured elastomer prepared from a curable organosiloxane elastomer base in the form of a free flowing powder said method comprising the following sequential steps:

1) maintaining in the fluidized state a finely divided form of a previously prepared non-creping organosiloxane elastomer base comprising a curable polyorganosiloxane gum and reinforcing silica filler having silanol groups on the surface thereof, wherein a portion of said silanol groups sufficient to reduce creping have been converted to organosiloxy groups;

2) blending said base with an organosilicon compound of the general formula R^1_3SiX or $(R^1_3Si)_2NR^2$ under conditions sufficient to react said compound with at least a portion of the residual silanol groups in said base, wherein the molar ratio of said organosilicon compound to the combined concentration of silanol and silicon-bonded hydrolyzable groups present in said base is at least 0.5:1, and

3) isolating the resultant organosiloxane composition as a free flowing powder;

wherein each R^1 is individually selected from monovalent hydrocarbon radicals free of ethylenic unsaturation, X represents a hydrolyzable group, R^2 is selected from the group consisting of hydrogen and R^1.

5,486,552

Patent Not Issued For This Number

5,486,553

ADVANCED POLYMER/WOOD COMPOSITE STRUCTURAL MEMBER

Michael J. Deaner, Osceola, Wis.; Giuseppe Puppin, Bayport, and Kurt E. Heikkila, Circle Pines, both of Minn., assignors to Andersen Corporation, Bayport, Minn.

Continuation of Ser. No. 938,365, Aug. 31, 1992, abandoned. This application Apr. 7, 1994, Ser. No. 224,399

Int. Cl.[6] C08L 97/00; C08K 11/00; B29C 1/00; B32B 21/00

U.S. Cl. 524—13 **22 Claims**

1. A polymer wood thermoplastic composite structural member, suitable for use as a replacement for a wood structural member, which thermoplastic composite structural member comprises a composite member with a Youngs modulus of greater than 500,000, and a coefficient of thermal expansion less than 3×10^{-5} in/in-°F. and which composite member comprises a continuous organic phase comprising about 35 to 65 wt-% of a polymer comprising vinyl chloride and, dispersed in the continuous phase, about 35 to 55 wt-% of wood fiber having an aspect ratio of at least about 2.

5,486,554

METHOD AND APPARATUS FOR TREATMENT OF ASPHALT AND SYNTHETIC RESINS

Daniel A. Truax, Kansas City, Mo., assignor to Ultra-Technologies, Inc., Kansas City, Mo.

Continuation of Ser. No. 41,289, Mar. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 891,408, May 29, 1992, abandoned. This application May 17, 1994, Ser. No. 245,866

Int. Cl.[6] C08L 95/00; C08F 6/00

U.S. Cl. 524—71 **20 Claims**

1. A method of preparing an asphalt and/or synthetic resin composition comprising the steps of:

forming a mixture including at least one of: (1) asphalt and reclaimed rubber particles; (2) asphalt and synthetic resin having a melting point of about 700° F. or less; and (3) synthetic resin having a melting point of 700° F. or less;

directing said mixture into a confined reaction zone simultaneously with a quantity of a stream of water and/or steam, and subjecting the mixture in said confined reaction zone to conditions of elevated temperature and shear, and to a pressure of from about 100–800 psi, to agitate and foam the mixture and render it flowable;

passing said agitated mixture from said confined reaction zone into a reaction vessel under pressure conditions above atmospheric but below the pressure of said confined reaction zone, and retaining the agitated mixture within said reaction vessel for a time sufficient to assure substantial homogeneity of the mixture; and

recovering said homogeneous mixture,

said rubber particles having a maximum average size which will pass through an 8-mesh screen.

5,486,555

PROCESS FOR PRODUCTION OF STABILIZED POLYCARBONATE

Masumi Hirata; Wataru Funakoshi, and Katsushi Sasaki, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Division of Ser. No. 294,995, Aug. 24, 1994. This application May 10, 1995, Ser. No. 437,980

Claims priority, application Japan, Aug. 26, 1993, 5-211367; Jan. 29, 1993, 5-272263; Dec. 16, 1993, 5-316646

Int. Cl.[6] C08K 5/46; 5/42

U.S. Cl. 524—83 **10 Claims**

1. A process for the production of a stabilized polycarbonate which comprises melt-polycondensing an aromatic dihydroxy compound and a carbonic acid diester in the presence of a polycondensation catalyst and then, after the reaction mixture shows an intrinsic viscosity of at least 0.1, adding at least one stabilizer selected from the group consisting of a compound of the formula (IV)

$$A^5\text{-}Ad^1\text{-}A^4\text{-}(Ad^2\text{-}A^5)_l \quad (IV)$$

wherein A^5 is a monovalent or divalent hydrocarbon group,

A^4 is a divalent hydrocarbon group,

each of Ad^1 and Ad^2 is independently an acid anhydride group selected from the group consisting of $-SO_2\text{-}O\text{-}SO_2-$, $-SO_2\text{-}O\text{-}CO-$ and $-CO\text{-}O\text{-}SO_2-$, and l is 0 or 1,

provided that when l is 0, $-(Ad^2\text{-}A^5)_l$ is a hydrogen atom or a bond between A^4 and A^5, in which A^5 is a divalent hydrocarbon group or a single bond,

in an amount of 0.01 to 500 ppm of a polycarbonate to be formed, to form a polycarbonate having a desired intrinsic viscosity.

5,486,556

POLYMER COMPOSITION CONTAINING A PIPERIDYL-TRIAZINE COMPOUND

Toshimasa Toda; Satoru Naito; Hiroyu Osawa, and Takaaki Yamazaki, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

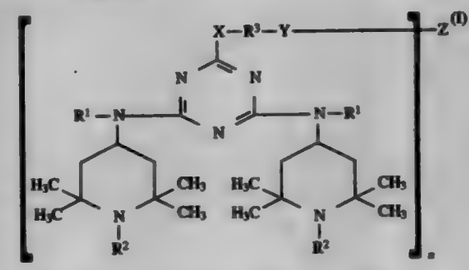
Division of Ser. No. 474,292, Feb. 2, 1990, Pat. No. 5,446,144, which is a continuation of Ser. No. 257,753, Oct. 14, 1988, abandoned. This application May 2, 1995, Ser. No. 432,665

Claims priority, application Japan, Jan. 30, 1987, 62-273138

Int. Cl.[6] C08K 5/3492

U.S. Cl. 524—100 **10 Claims**

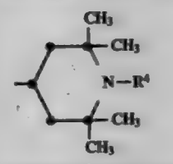
1. A polymer composition comprising a polymer stabilized against the effects of light and heat by the incorporation of a polymer stabilizer, wherein the polymer stabilizer comprises at least one compound selected from the group consisting of compounds of formula (I):



(I)

wherein:

R represents a hydrogen atom, an alkyl group having from 1 to 18 carbon atoms, an alkoxyalkyl group having from 3 to 22 carbon atoms, a carboxylic acyl group having from 2 to 18 carbon atoms, a phenylalkyl group in which the alkyl part has from 1 to 4 carbon atoms and in which the phenyl part is unsubstituted or has at least one substituent selected from the group consisting of C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups and halogen atoms, or a group of formula (II):



(II)

wherein R^4 has the same meaning as defined below for ^{2};

R^2 represents a hydrogen atom, an alkyl group having from 1 to 18 carbon atoms, a carboxylic acyl group having from 2 to 18 carbon atoms or a phenylalkyl group in which the alkyl part has from 1 to 4 carbon atoms and in which the phenyl part is unsubstituted or has at least one substituent selected from the group consisting of C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups and halogen atoms;

R^3 represents an alkylene group having from 1 to 6 carbon atoms or an alkylene group having from 1 to 6 carbon atoms which is interrupted by at least one oxygen atom;

X represents an oxygen atom or a group of formula —NR^5—, wherein R^5 represents a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms;

Y represents a group of formula —OCO—, a group of formula —COO—, a group of formula —CONH— or a group of formula —OCONH—;

is an integer from 2 to 4; and

when n is 2:

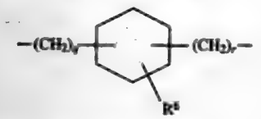
Z represents:

(i) an alkylene group having from 1 to 18 carbon atoms or an alkylene group having from 1 to 18 carbon atoms which is interrupted by at least one member selected from the group consisting of oxygen atoms, sulfur atoms and groups of formula (II'):



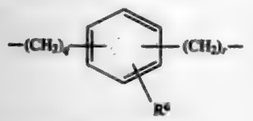
(II')

or (ii) a group of formula (III):



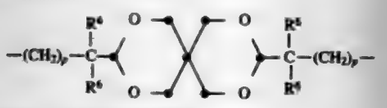
(III)

or (iii) a group of formula (IV):



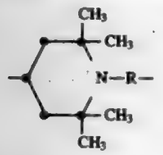
(IV)

or (iv) a group of formula (V):



(V)

or (v) a group of formula (VI):



(VI)

wherein:

R^6 represents a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms;

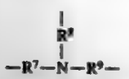
R represents an alkylene group having from 2 to 4 carbon atoms;

p is an integer from 1 to 4; and

q and r are independently selected from the group consisting of the cipher 0 and the integers from 1 to 3;

when n is 3:

Z represents an alkanetriyl group having from 3 to 8 carbon atoms or a group of formula (VII):



(VII)

wherein R^7, R^8 and R^9 are independently selected from the group consisting of alkylene groups having from 1 to 5 carbon atoms, provided that the total number of carbon atoms in $R^7+R^8+R^9$ is from 3 to 8;

or when n is 4:

Z represents an alkanetetrayl group having from 4 to 8 carbon atoms or an alkanetetrayl group having from 4 to carbon atoms which is interrupted by at least one oxygen atom;

and acid addition salts thereof.

5,486,557

FURFURYL ALCOHOL-FORMALDEHYDE RESINS

Denis W. Akerberg, Lafayette, Ind., assignor to QO Chemicals, Inc., West Lafayette, Ind.

Filed Aug. 16, 1994, Ser. No. 291,170

Int. Cl.[6] C08K *5/15;5/353;5/54*

U.S. Cl. 524—111 **6 Claims**

1. A composition for use as a binder for composite materials comprising:

a water-compatible furfuryl alcohol-formaldehyde resins said resin comprising the reaction product of furfuryl alcohol with formaldehyde in a molar ratio of at least 1:2, said resin containing not more than 10% by weight of water insoluble material; and

from about 0.15 to 0.30% by weight of gamma-aminopropyltrimethoxysilane based on the weight of the resin.

5,486,558

PLASTIC CLOSURES AND CLOSURE LINERS

Robert W. Lee, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 80,338, Jun. 21, 1993, abandoned. This application Oct. 24, 1994, Ser. No. 328,334

Int. Cl.[6] C08L *33/00*

U.S. Cl. 524—241 **5 Claims**

1. A closure liner comprising a blend consisting essentially of poly (1-butene), random polypropylene copolymer, ethylene methyl acrylate and an effective amount of lubricating agent;

wherein said poly (1-butene) is present in an amount of about 20–85% wt, said ethylene methyl acrylate is present in an amount of about 20–80% wt, said polypropylene is present in an amount of about 20–80% wt, and said lubricating agent is present in an amount of about 0.5–5% wt;

wherein said poly (1-butene) is semicrystalline having from about 35% to about 60% crystallinity, and wherein the crystallization temperature of said poly (1-butene) is from about 30° C. to about 90° C. as measured by a differential scanning calorimeter.

5,486,559

OPTICALLY NON-LINEAR ACTIVE WAVEGUIDING MATERIAL COMPRISING DONOR AND ACCEPTOR GROUPS-CONTAINING TRIPHENYLCARBINOLS

Johannes F. J. Engbersen, Ede; Erik Kelderman, Enschede; David N. Reinhoudt, Hengelo, and Willem Verboom, Vriezenveen, all of, Netherlands, assignors to Akzo Nobel NV, Arnhem, Netherlands

Filed Aug. 11, 1994, Ser. No. 289,044

Claims priority, application European Pat. Off., Aug. 19, 1993, 93202453

Int. Cl.[6] C08K *5/13;5/05;* **G02B** *6/00*

U.S. Cl. 524—299 **5 Claims**

1. An optically non-linear active waveguiding material comprising an optically transparent polymer and an optically non-linear active dopant comprising a donor-π-acceptor unit, characterised in that the optically non-linear active dopant is a donor and acceptor groups-containing triphenylcarbinol.

5,486,560

VARIABLE-MODULUS MATERIAL

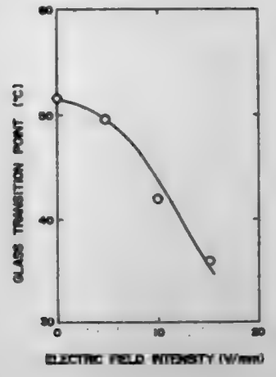
Tohru Shiga; Yoshiharu Hirose; Akane Okada, and Toshio Kurauchi, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Division of Ser. No. 170,858, Dec. 21, 1993, abandoned. This application Oct. 11, 1994, Ser. No. 320,524

Claims priority, application Japan, Dec. 25, 1992, 4-345875

Int. Cl.[6] C08K *3/00;3/10;* **H01B** *1/00*

U.S. Cl. 524—401 **14 Claims**



1. A method for dampening vibrations, comprising the step of applying an electric field in a manner responsive to vibrations to a variable-modulus polymer material, wherein said electric field has a strength of 5 to 150 V/mm,

wherein said variable-modulus polymer material decreases in modulus upon application of an electric field.

5,486,561

POLYPROPYLENE RESIN COMPOSITION

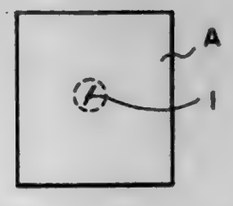
Koki Hirano; Ryuichi Ohki, and Yutaka Kobayashi, all of Ichihara, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1993, Ser. No. 49,302

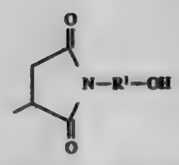
Claims priority, application Japan, Apr. 21, 1992, 4-100773

Int. Cl.[6] C08J *3/00;* **C08K** *5/09;* **C08L** *37/00;* **C08F** *8/00*

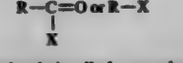
U.S. Cl. 524—451 **6 Claims**



1. A polypropylene resin composition consisting essentially of 50 to 90% by weight of (a) polypropylene; 50 to 10% by weight of (b) an ethylene/αolefin copolymer elastomer having a Mooney viscosity of 10 to 100 (ML 1+4 (100° C.)); 0.1 to 15 parts by weight based on 100 parts by weight of the components (a) and (b) in total of (c) a modified polyolefin formed by introducing a functional group in either or both end of a straight-chain polyolefin having a number-average molecular weight of 1,000 to 10,000, wherein the group is one selected from a hydroxyl group, a maleic anhydride group, an unsaturated carboxylic group and a polar group represented by the general formula

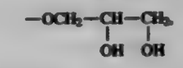


wherein R^1 is an alkylene group having 1 to 4 carbon atoms; and 0.1 to 1.0 part by weight based on 100 parts by weight of the components (a) and (b) in total of (d) a compound represented by the general formula (I)



(I)

wherein R is a straight chain alkyl group having 10 to 22 carbon atoms and X denotes —$N(CH_2CH_2OH)_2$ or



wherein the straight-chain polyolefin has a number average molecular weight of 2,000 to 6,000; and wherein component (d) is selected from the group consisting of stearic acid monoglyceride, stearyl diethanolamine, N-diethanol stearylamide and N-diethanol dodecanamide.

5,486,562

MODIFICATIONS OF POLY(ALKYLENE CYCLOHEXANEDICARBOXYLATE) BLENDS

Willem F. H. Borman, Evansville, and Nan-I Liu, Mt. Vernon, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 957,459, Oct. 6, 1992, abandoned, which is a continuation of Ser. No. 551,397, Jul. 12, 1990, abandoned. This application Aug. 2, 1994, Ser. No. 284,725

Int. Cl.[6] C08L *69/02*

U.S. Cl. 524—451 **20 Claims**

1. A composition comprising:

(A) from 75 to 95 parts by weight of a polyester resin comprising the reaction product

(a) at least one straight chain, branched, or cycloaliphatic C_2–C_{10} alkane diol or chemical equivalent thereof; and

(b) at least one cycloaliphatic diacid or chemical equivalent thereof; and

(B) from 5 to about 25 parts by weight of a substantially amorphous resin comprising a terpolymer of acrylonitrile, at least 62 percent by weight butadiene, and styrene, wherein the styrene to acrylonitrile ratio is from about 3.5:1 to about 2.5:1 and the butadiene to styrene/acrylonitrile ratio is 7:3, the sum of (A) and (B) being 100 parts by weight.

5,486,563

PROCESS FOR MAKING DISPERSANT VISCOSITY INDEX IMPROVERS

Robert J. Sutherland, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 20, 1994, Ser. No. 359,806

Int. Cl.[6] C08L *51/00*

U.S. Cl. 524—534 **11 Claims**

1. A process for making a dispersant viscosity index improver, comprising the sequential steps of:

dissolving a star polymer in a lubricating oil at a polymer concentration of from 3% to 30% by weight, the star polymer comprising:

at least 3 first arms comprising a preponderance of a hydrogenated, polymerized conjugated alkadiene, the first arms having a peak molecular weight from 10,000 to 200,000;

at least 3 second arms comprising a preponderance of a polymerized methacrylate, the second arms having a peak molecular weight from 500 to 10,000; and

a central core comprising a polymerized bisunsaturated monomer, wherein the central core connects the first and second arms in a star configuration;

reacting the dissolved star polymer with an acid catalyst; and

reacting the dissolved star polymer with an amine.

5,486,564

HIGH PURITY POLYHYDROGEN SILSESQUIOXANE RESIN FOR ELECTRONIC COATINGS

Katsutoshi Mine; Takashi Nakamura, and Motoshi Sasaki, all of Chiba, Japan, assignors to Dow Corning Toray Silicone Company, Ltd., Tokyo, Japan

Division of Ser. No. 145,923, Oct. 29, 1993, Pat. No. 5,416,190. This application Feb. 13, 1995, Ser. No. 387,697

Claims priority, application Japan, Nov. 24, 1992, 4-338103

Int. Cl.[6] C08L *83/00*

U.S. Cl. 524—588 **8 Claims**

1. A high purity electronic coating composition comprising polyhydrogen silsesquioxane resin having a sodium content of 9 ppb or less, a sulfur content of 14 ppm or less and a chlorine content less than 1 ppm.

5,486,565

ORGANOSILICON COMPOUNDS AND LOW TEMPERATURE CURING ORGANOSILOXANE COMPOSITIONS CONTAINING SAME

Theresa E. Gentle, and Michael A. Lutz, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 2, 1994, Ser. No. 348,425

Int. Cl.[6] C08K *5/54*

U.S. Cl. 524—730 **11 Claims**

1. An organosilicon composition comprising at least one compound formed by the interchange reaction between 1) a polyhydric alcohol of the general formula $R^1(OH)_m$, 2) an alcohol of the general formula $R^2(OH)_n$ and 3) a silane of the formula $R^3_pSiX_{4-p}$, wherein R^1 is a hydrocarbon radical having a valence of m and no ethylenic unsaturation, R^2 is an organic radical having a valence of n and comprising carbon, hydrogen, and at least one organofunctional substituent selected from the group consisting of CH_2=CH–, acryloxy, methacryloxy, epoxy, carboxy, amino, amido, acrylamido, methacrylamido, and mercapto, R^3 is an unsubstituted or substituted monovalent hydrocarbon radical, X represents a hydrolyzable group, m is at least 2, n is at least 1, p is 0 or 1 and wherein each molecule of said compound contains at least two silicon atoms.

5,486,566

SILOXANE GELS

Dimitris E. Katsoulis, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

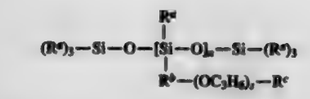
Filed Sep. 23, 1994, Ser. No. 311,246

Int. Cl.[6] A61K *7/32*; C08K *5/09*; *5/098*

U.S. Cl. 524—773 **1 Claim**

1. A gel consisting essentially of

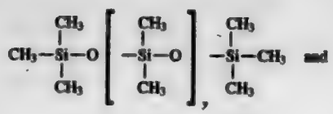
(A) 1–98.9% by weight of the gel of a siloxane polyether with the formula



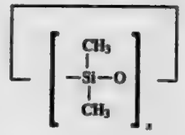
where R^a is an alkyl group of 1–6 carbon atoms; R^b is linking group $-C_nH_{2n}-$; R^c is hydroxyl or alkoxy; m is 2–8;s is 1-30;and n is 1–40;

(B) 0.1–20% by weight of the gel of an amide-free gelator selected from the group consisting of 12-hydroxystearic acid and its metal salts; and

(C) 1–98.9% by weight of the gel of a volatile methyl siloxane with a boiling point less than 250° C., a viscosity of 0.65–5 centistokes, and a formula selected from the group consisting of



and



where x is 3–6 and y is 0–5.

5,486,567

PRIMER COMPOSITIONS

Masatoshi Arai; Yoshifumi Inoue, and Toshiyuki Ozai, all of Matsuida, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1995, Ser. No. 389,196

Claims priority, application Japan, Feb. 15, 1994, 6-040471

Int. Cl.[6] C08L *83/06*

U.S. Cl. 524—863 **6 Claims**

1. A primer composition comprising the following components:

(A) a polyorganosiloxane resin containing at least 0.01 mole of hydroxyl groups per 100 g of the resin represented by the following average composition formula (I):



(I)

wherein R^1, which may be the same or different, represent a substituted or unsubstituted monovalent hydrocarbon group, and a is a value of from 0.4 to 1.8;

(B) at least one compound selected from the group consisting of an alkoxytitanium and a partially hydrolyzed product thereof;

(C) an acid; and

(D) a solvent.

5,486,568

PROTECTED FUNCTIONAL INITIATED POLYMERS CAPPED WITH LOW SURFACE ENERGY FLUOROCARBONS

Robert C. Bening, Katy, and David J. St. Clair, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 20, 1994, Ser. No. 359,805

Int. Cl.[6] C08F *8/18*

U.S. Cl. 525—102 **6 Claims**

1. A process for making heterotelechelic polymers, comprising the steps of:

anionically polymerizing a polymer comprising a conjugated diene with a protected functional initiator; and

capping the polymer with a low surface energy fluorocarbon compound selected from a group consisting of perfluoroaldehydes, perfluoroketones, and perfluoroalkylsilanes.

5,486,569

METHOD OF INCREASING THE SIZE AND/OR ABSORPTION UNDER LOAD OF SUPERABSORBENT POLYMERS BY SURFACE CROSS-LINKING AND SUBSEQUENT AGGLOMERATION OF UNDERSIZED PARTICCLES

John A. Henderson, Birkenhead, United Kingdom; Anthony S. Tomlin, Island Lake, Ill., and David M. Lucas, West Kirby, United Kingdom, assignors to American Colloid Company, Arlington Heights, Ill.

Filed Sep. 28, 1994, Ser. No. 314,363

Int. Cl.[6] C08F *8/32*

U.S. Cl. 525—116 **27 Claims**

1. A method of enhancing the water or aqueous medium absorbance and particle size of water-absorbent, cross-linked polyacrylic polymer particles selected from the group consisting of polyacrylic acid; partially neutralized polyacrylic acid; fully neutralized polyacrylic acid; and mixtures thereof comprising:

contacting the surface of the polyacrylic polymer particles with a solution containing a polyfunctional cross-linking agent capable of cross-linking said polyacrylic polymer;

wherein the solution is surface coated onto the cross-linked polyacrylic polymer particles in a weight ratio of polyacrylic polymer, dry basis, to coating solution in the range of about 1:0.01 to about 1:0.5;

subjecting the coated polyacrylic polymer particles to conditions sufficient to react the cross-linking agent with the surface of the polyacrylic polymer particles to form a polyacrylic polymer having enhanced water absorbance; and

mixing the polyacrylic polymer particles with water, after reaction of the surface of the polyacrylic polymer particles with the cross-linking agent, in a weight ratio of polymer particles, dry basis, to water in the range of about 1:1 to about 1:10 to form a paste; drying the paste to a moisture content less than about 15% by weight; and pulverizing the dried paste to form polyacrylic polymer particles having a size greater than the size of the particles prior to the surface cross-linking reaction.

5,486,570

POLYURETHANE SEALANTS AND ADHESIVES CONTAINING SATURATED HYDROCARBON POLYOLS

David J. St. Clair, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 29, 1994, Ser. No. 315,166

Int. Cl.[6] C08L *75/00*; C08F *8/30*

U.S. Cl. 525—123 **20 Claims**

1. A polyurethane composition comprising a polyisocyanate having a functionality of from 2.2 to 10 and a saturated, polyhydroxylated polydiene polymer having a hydroxyl equivalent weight of from 500 to 20,000 wherein the NCO:OH ratio is between 0.3:1 and 0.7:1.

5,486,571

HEAT-SEALABLE AND PEELABLE FILM FOR POLYSTYRENE CONTAINERS AND PROCESS FOR SEALING BY MEANS OF SAID FILM

Jean-Francois Arnac, Pau; Catherine Bembai, Billere, and Betty Laurent, Bernay, all of, France, assignors to Elf Atochem S.A., Puteaux, France

Division of Ser. No. 286,983, Aug. 8, 1994, Pat. No. 5,432,235, which is a continuation of Ser. No. 960,765, Oct. 14, 1992, abandoned. This application Apr. 12, 1995, Ser. No. 420,809

Claims priority, application France, Jan. 18, 1991, 91 12899

Int. Cl.[6] C08L *33/08*; *23/08*

U.S. Cl. 525—227 **8 Claims**

1. A heat-sealable and peelable film for polystyrene containers comprising at least one thin film (i) of a mixture which includes, by weight relative to the total mixture, (a) 40 to 70% polystyrene, (b) 30 to 60% of at least one copolymer of ethylene and acrylic ester and (c) zero percent styrene/butadiene/styrene block copolymer.

5,486,572

PROCESS FOR PREPARING PROPYLENE BLOCK COPOLYMERS

Takashi Fujita, and Toshihiko Sugano, both of Yokkaichi, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Continuation of Ser. No. 185,233, Jan. 24, 1994, abandoned, which is a continuation of Ser. No. 12,984, Feb. 3, 1993, abandoned, which is a continuation of Ser. No. 727,124, Jul. 9, 1991, abandoned. This application Dec. 1, 1994, Ser. No. 352,199

Claims priority, application Japan, Sep. 27, 1990, 2-258381

Int. Cl.[6] C08F *297/08*

U.S. Cl. 525—247 **27 Claims**

1. A process for preparing propylene block copolymers consisting essentially of:

a preceding polymerization step in which a crystalline homopolymer of propylene, or a propylene-ethylene copolymer containing 7 wt. % or less of ethylene copolymerized is produced in the presence of a catalyst consisting of the following components (A) and (B), and

a succeeding polymerization step in which the polymerization is continued in the presence of at least a part of the product obtained from the preceding polymerization step, and in the presence of the following component (C) which is added after the completion of the preceding polymerization step to give the propylene block copolymer with a polymerization ratio in a weight ratio of propylene to ethylene of from 0/100 to 90/10;

the polymerization amount at the preceding polymerization step being from 30 to 95 wt. % of the total polymerization amount at said preceding and succeeding polymerization steps;

component (A): essentially a solid catalyst component of Ziegler catalysts consisting essentially of titanium, magnesium, a halogen and an electron donor selected from the group consisting of esters of an organic acid, acid halides, organoalkoxysilicons and esters of an inorganic acid:

component (B): an organoaluminum compound;

component (C): a compound selected from the group consisting of a cyclic olefin having 5 to 12 carbon atoms, vinyl tri-lower alkyl silane, a vinyl lower alkyl ether and methyl methacrylate,

the weight ratio of the component (B) to the component (A) being from 1 to 100 and the molar ratio of the component (C) to the titanium contained in the component (A) being from 0.2 to 100.

5,486,573

POLYMER POWDER CROSS-LINKED BY METALLIC IONS AND CONTAINING REINFORCING MATERIAL, PROCESS FOR PRODUCING THE POLYMER POWDER, COMPOSITE MATERIAL BASED ON POLYMER CROSS-LINKED BY METALLIC IONS, AND PROCESS FOR PRODUCING THE COMPOSITE MATERIAL

Kaneo Hamajima, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jun. 29, 1993, Ser. No. 82,968

Claims priority, application Japan, Jun. 30, 1992, 4-172474; Aug. 6, 1992, 4-210527; Jan. 18, 1993, 5-005687

Int. Cl.[6] C08F 275/00

U.S. Cl. 525—274 5 Claims

1. A process for producing a polymer powder cross-linked by metallic ions and containing reinforcing material, comprising the steps of:

a reinforcing material dispersion step comprising preparing a solution including a polymer raw material cross-linkable by reacting with metallic ions and another solution including the metallic ions, and dispersing a fibrous reinforcing material or a particulate reinforcing material in at least one of the solutions;

a reaction step comprising (i) mixing and reacting said solutions to form a polymer which is cross-linked with said metallic ions and captures said reinforcing material and (ii) precipitating the resulting polymer and captured reinforcing material; and

a separation and desiccation step comprising separating the resulting precipitated polymer and captured reinforcing material from liquid and drying them.

5,486,574

DISSIMILAR ARM ASYMMETRIC RADICAL OR STAR BLOCK COPOLYMERS FOR ADHESIVES AND SEALANTS

Glenn R. Himes; Bridget A. Spence; Ronald J. Hoxmeier, and Steven S. Chin, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 149,595, Nov. 9, 1993, Pat. No. 5,393,841. This application Nov. 9, 1994, Ser. No. 336,632

Int. Cl.[6] C08F 297/04

U.S. Cl. 525—314 21 Claims

1. Radial or star asymmetric block copolymers of the formulae (I) (A—HD)$_x$—Y—(UD)$_z$ [or (II) (UD—A—HD)$_x$—Y or (III) ((UD)$_y$—A—HD)$_x$—Y—(UD)$_z$] wherein A is a vinyl aromatic hydrocarbon block having a peak molecular weight as determined by gel permeation chromatography of from 4000 to 20,000, HD is a hydrogenated conjugated diene block having a peak molecular weight as determined by gel permeation chromatography of from 10,000 to 100,000, Y is a multifunctional coupling agent, UD is a partially hydrogenated conjugated diene block having a peak molecular weight as determined by gel permeation chromatography of from 1000 to 80,000, x is an integer from 2 to 20, [y is 0 or 1,] z is an integer from 1 to 20, and x+z ranges from 3 to 30, and the vinyl aromatic hydrocarbon content ranges from 4 to 35 percent by weight.

5,486,575

HIGH PERFORMANCE BLOW MOLDING RESINS AND PROCESS FOR THEIR PREPARATION

Ramesh N. Shroff, Cincinnati, Ohio, assignor to Quantum Chemical Corporation, Cincinnati, Ohio

Filed Mar. 8, 1994, Ser. No. 208,155

Int. Cl.[6] C08F 110/02;210/02

U.S. Cl. 525—333.8 14 Claims

1. In a high shear blow molding process for producing bottles from high density ethylene polymers obtained by the particle form homopolymerization of ethylene or copolymerization of ethylene with a C_{3-8} alpha-olefin using a chromium catalyst and having a density from 0.949 to 0.960, melt index from 0.1 to 1.0, long chain branching index less than 1.9, unsaturation content greater than 0.9 vinyl units per 1000 carbon atoms, and M_w/M_n greater than 10, to increase the top load stress crack resistance and swell characteristics of bottles produced therefrom, the improvement comprising contacting the resin prior to blow molding with 25 to 300 ppm organic peroxide while maintaining the resin in a molten state at a temperature above the decomposition temperature of the organic peroxide.

5,486,576

METHOD FOR REDUCING MICROFOAM IN A SPRAY-APPLIED WATERBORNE THERMOSET COMPOSITION

Gary R. Larson, Hatfield; Carea A. Paschak, Norristown, and Kurt A. Wood, Abington, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jul. 1, 1994, Ser. No. 269,707

The portion of the term of this patent subsequent to Aug. 2, 2011, has been disclaimed.

Int. Cl.[6] C08F 8/30

U.S. Cl. 525—375 8 Claims

1. A method for reducing the amount of microfoam in a spray-applied clear waterborne thermoset composition comprising:

forming said clear waterborne thermoset composition comprising an emulsion-polymerized addition polymer with an average particle diameter of greater than about 120 nanometers, said polymer bearing at least two first reactive groups; and a reactive modifier bearing at least two second reactive groups, said second reactive groups being reactive with said first reactive groups to form a covalent bond;

applying said thermoset composition to a substrate using a spray method, whereby a clear coating is formed; and

curing said thermoset composition.

5,486,577

BLENDS OF DIARYL FLUORENE CARBONATE POLYMERS WITH BISPHENOL A CARBONATE POLYMERS

Hani Farah, Sugarland, Tex., and Stephen E. Bales, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 21, 1995, Ser. No. 407,930

Int. Cl.[6] C08L 69/00

U.S. Cl. 525—469 17 Claims

1. A carbonate polymer composition comprising a first diaryl fluorene carbonate polymer component and a second bisphenol A carbonate polymer component, different from the diaryl fluorene carbonate polymer component.

5,486,578

CURABLE SILICONE COATINGS CONTAINING SILICONE RESINS

Leslie E. Carpenter, II, Kanagawa, Japan, and Robert A. Ekeland, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 175,830, Dec. 30, 1993, Pat. No. 5,391,673. This application Dec. 20, 1994, Ser. No. 359,311

Int. Cl.[6] C08F 283/00

U.S. Cl. 525—478 35 Claims

1. A curable silicone coating composition comprising:

(A) an organosilicon compound having at least two olefinic hydrocarbon radicals per compound;

(B) at least one organohydrogensilicon compound;

(C) a platinum group metal-containing catalyst; and

(D) a silicone resin prepared by the process of:

(I) mixing in a continuous manner a silane selected from the group consisting of:

(a) a silane having the formula SiX_4 wherein X is a halogen atom or a group having the formula OR wherein R is a group selected from the group consisting of alkyl groups having from 1 to 6 carbon atoms, aryl groups, and arylalkyl groups;

(b) alcohol treated halogenated silanes; and

(c) alkyl silicates having units of the formula

$$\frac{SiO_{\frac{4-d}{2}}}{}(OR^1)_d$$

or a partial hydrolysis condensate thereof, wherein R^1 is a group selected from the group consisting of alkyl groups having from 1 to 6 carbon atoms, aryl groups, and arylalkyl groups, and d has a value of from 1 to 3, with a condensation catalyst;

(II) adding a quenching agent to the reaction mixture of (I), whereby an aqueous layer or condensation catalyst layer and an organic-silicone resin containing layer are formed;

(III) separating the aqueous layer or condensation catalyst layer from the organic-silicone resin containing layer; and

(IV) stripping the organic-silicone resin containing layer, wherein the weight ratio of said silane to said condensation catalyst is constant throughout said process.

5,486,579

WETTABLE SILICONE HYDROGEL COMPOSITIONS AND METHODS FOR THEIR MANUFACTURE

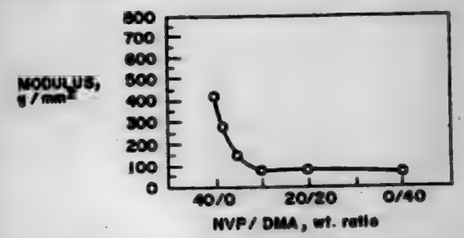
Yu-Chin Lai, and Paul L. Valint, Jr., both of Pittsford, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation of Ser. No. 922,292, Jul. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 788,013, Nov. 5, 1991, abandoned. This application Apr. 11, 1994, Ser. No. 226,596

The portion of the term of this patent subsequent to May 10, 2011, has been disclaimed.

Int. Cl.[6] C08F 283/12

U.S. Cl. 525—479 16 Claims



1. In a silicone-containing hydrogel composition formed by curing a monomer mixture comprising at least one silicone-containing monomer and a hydrophilic monomer, the improvement of which comprises combining the silicone-containing monomer with N-vinylpyrrolidone and N,N-dimethylacrylamide in the monomer mixture.

5,486,580

MESOGENIC NOVOLACS AND RESINS

Mark D. Newsham, Midland, Mich.; Jimmy D. Earls, and Robert E. Hefner, Jr., both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 2, 1994, Ser. No. 333,897

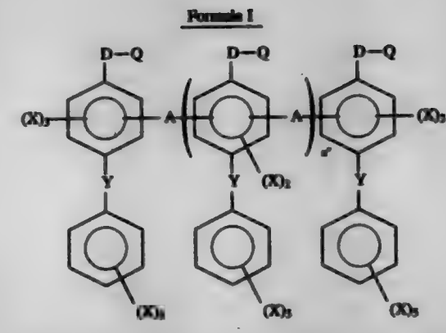
Int. Cl.[6] C08L 61/06

U.S. Cl. 525—504 13 Claims

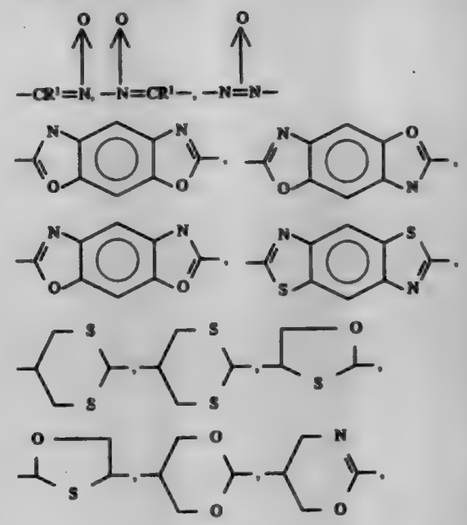
1. A composition comprising

(A) a compound represented by the following Formula I:

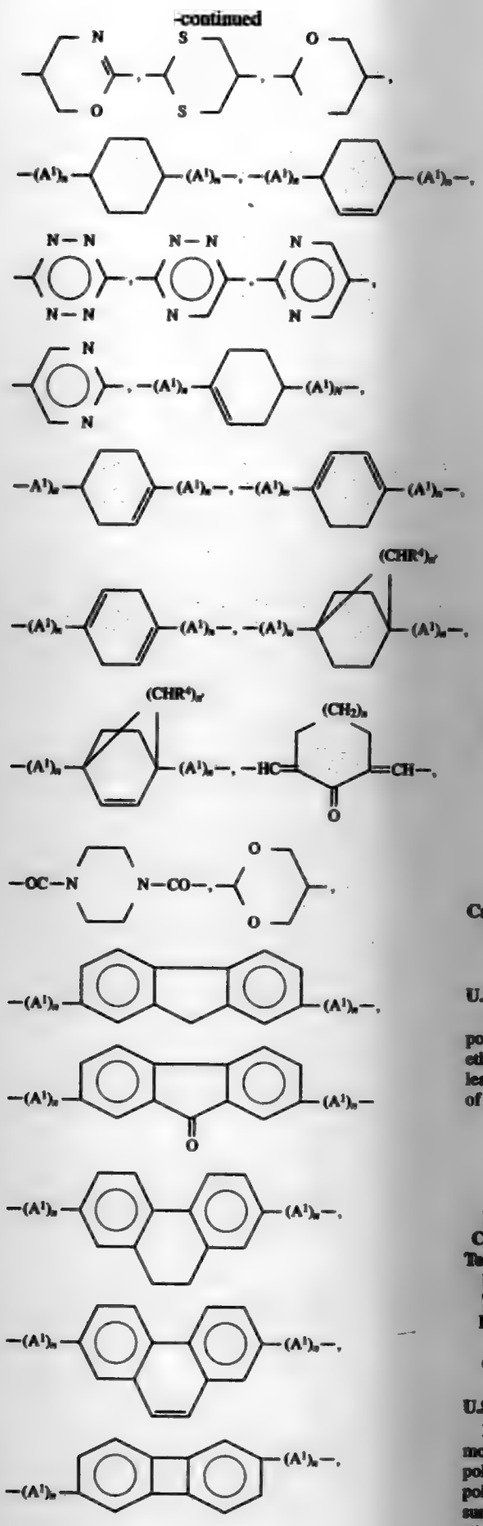
Formula I



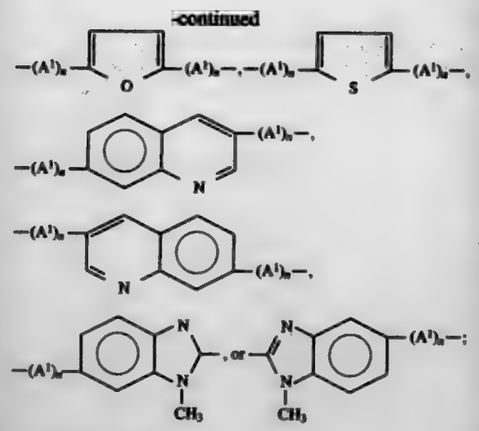
wherein A is a divalent C_1-C_{12} aliphatic or cycloaliphatic hydrocarbyl group, D is O or NR with the proviso that when R is NR is hydrogen then Q is hydrogen or cyanamide; Q is hydrogen, epoxy, thiirane, vinylester, cyanamide, or cyanate; a' has a value from 1.01 to about 10; X is hydrogen, a hydrocarbyl or hydrocarbyloxy group having from one to about 10 carbon atoms, a halogen atom, a nitro group, a phenyl group, a ketone group, an ester group, a carboxyl acid group with the proviso that when X is a carboxyl group Q is hydrogen, —SO_2R, —SO_2CH_2F, —SO_2CHF_2, —SO_2CF_3, —$S(NSO_2CF_3)CF_3$, —CF_3, —$COCF_3$, cyano, cyanovinyl, dicyanovinyl, tricyanovinyl; with the proviso that only one X can be a group other than hydrogen; R is hydrogen or a C_1 to C_{20} hydrocarbyl group; and Y is a rigid central linkage group selected from the group consisting of —CR^1=CR^1—, —C≡C—, —N=N—, —CR^1=N—, —N=CR^1—, —O—CO—, —CO—O—, —NR^1—CO—, —CO—NR^1—, —CR^1=N—N=CR^1—, —CO—O—N=CR^1, —CR^1=N—O—CO—, —CO—NR^1—NR^1—OC—, —CR^1=CR^1—O—OC—, —CO—O—CR^1=CR^1—, —O—OC—CR^1=CR^1—, —CR^1=CR^1—CO—O—, —$(CHR^1)_w$—O—CO—CR^1=CR^1—, —CR^1=CR^1—CO—O—CR^1=CR^1—, —$(CHR^1)_w$—CO—O—CR^1=CR^1—, —CR^1=CR^1—O—CO—$(CHR^1)_w$—, —S—CO—, —CO—S—, —CH_2—CH_2—CO—O—, —O—OC—CH_2—CH_2—, —C≡C—C≡C—, —CR^1=CR^1—CR^1=CR^1—, —CR^1=C(—Cl)—, —C(—Cl)=CR^1—, CR^1=C(—C≡N)—, —C(—C≡N)=CR^1—, —C(—C≡N)=N—, —N=C(—C≡N)—, —C≡C—CO—O—, —O—CO—C≡C—



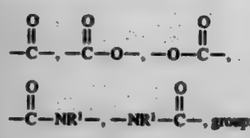
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each A^1 is independently a



each R^1 is independently hydrogen or a hydrocarbyl group having from one to about 3 carbon atoms; R^4 is hydrogen or a methyl group; n has a value of zero or one; and n' has a value of 1 or 2; and

(B) optionally, a curing amount of a curing agent or a catalytic amount of a polymerization catalyst and/or a cure accelerating amount of an accelerating agent.

5,486,581

CROSSLINKED POLYKETONE POLYMER

Carlton E. Ash, Sugar Land, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 19, 1993, Ser. No. 155,396
Int. Cl.[6] C08G 63/00
U.S. Cl. 525—539 7 Claims

1. A crosslinked composition comprising a linear alternating polyketone polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon, and a minor amount of at least one iodide salt, wherein crosslinking is induced by the action of a sufficient amount of heat and oxygen.

5,486,582

POLYMER SCALE PREVENTIVE PROCESS USING A COATING OF CHITOSAN SALT AND PHENOTHIAZINE

Toshihide Shimizu, Urayasu, and Minoru Shigemitsu, Kasukabe, both of, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

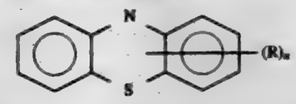
Division of Ser. No. 909,220, Jul. 6, 1992, abandoned. This application Dec. 15, 1994, Ser. No. 357,145
Claims priority, application Japan, Jul. 3, 1991, 3-189158
Int. Cl.[6] C08F 2/00
U.S. Cl. 526—62 6 Claims

1. A process of producing a polymer by polymerization of a monomer having an ethylenically unsaturated double bond in a polymerization vessel, comprising the step of carrying out said polymerization in a polymerization vessel having on its inner wall surfaces a coating for preventing polymer scale deposition, wherein the coating comprises:

(A) a water-soluble basic polysaccharide

(B) selected from the group consisting of the inorganic acid salts and organic acid salts of chitosans, and

(B) a phenothiazine, wherein the phenothiazine (B) is represented by the general formula:



wherein R may be the same or different where there exist two or more R's and each represent a hydrogen atom, —OH, —Cl, $—CH_3$, $—C_2H_5$, $—COCH_3$, $—COC_2H_3$, $—SO_2CH_3$, $—SO_2C_2H_5$, or $—NO_2$, and n is an integer of 1 to 4.

5,486,583

DEFOAMING COMPOSITIONS FOR ABS LATICES

Herbert Eichenauer, Dormagen; Karl-Erwin Piejko, Bergisch Gladbach; Hans-Jürgen Bunte, Krefeld, and Hans-Jürgen Thiem, Dormagen, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 7, 1994, Ser. No. 350,695
Claims priority, application Germany, Dec. 17, 1993, 43 43 207.7
Int. Cl.[6] C08K 5/36; B01D 19/04
U.S. Cl. 526—68 5 Claims

1. A mixture suitable for use as a defoamer comprising:

A) 30 to 85 parts by weight of a C_{10}–C_{20} alcohol;

B) 5 to 30 parts by weight of a mineral oil;

C) 5 to 40 party by weight of an ester from a thiodicarboxylic acid with 4 to 8 carbon atoms and an alcohol with 10 to 20 carbon atoms; and

D) 2 to 15 parts of a non-ionic emulsifier.

3. A process for removing residual monomers from acrylonitrile-butadiene-styrene polymer latices, comprising adding to an acrylonitrile-butadiene-styrene polymer latex a defoaming mixture as claimed in claim 1 and then degassing the latex.

5,486,584

CHROMIUM CATALYST COMPOSITIONS

Rickey D. Badley, Dewey; Elizabeth A. Benham, and Max P. McDaniel, both of Bartlesville, all of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 8, 1992, Ser. No. 958,668
Int. Cl.[6] C08F 4/22;4/24
U.S. Cl. 526—95 12 Claims

1. A process comprising

producing a copolymer by copolymerizing ethylene and at least one non-ethylene comonomer, wherein said copolymer has a high molecular weight portion that has a molecular weight greater than the weight average molecular weight of said copolymer

with a chromium catalyst composition that comprises at least two chromium catalyst systems, wherein each said chromium catalyst system comprises chromium and a support, and wherein each support comprises silica, and wherein at least two of said chromium catalyst systems have supports that have an average pore radius difference sufficient to preferentially introduce said non-ethylene comonomer into said high molecular weight portion.

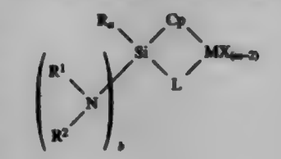
5,486,585

AMIDOSILYLDIYL BRIDGED CATALYSTS AND METHOD OF POLYMERIZATION USING SAID CATALYSTS.

Masahide Murata, Obi, Japan, and Terry J. Burkhardt, Kingwood, Tex., assignors to Exxon Chemical Patents Inc., Wilmington, Del.

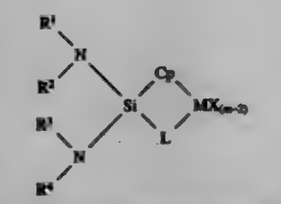
Filed Aug. 26, 1993, Ser. No. 112,491
Int. Cl.[6] C08F 4/656
U.S. Cl. 526—130 19 Claims

1. A polymerization catalyst system comprising a transition metal catalyst component represented by the formulae:



(1)

or



(2)

wherein L is an anionic ligand and can be

(i) Cp;

(ii) O; or

(iii) NR^3;

wherein:

M is a group 3–6 transition metal;

X is the same or different hydrogen, halogen, hydrocarbyl, substituted hydrocarbyl, halocarbyl, substituted halocarbyl, C_{1-20} alkyl, C_{2-20} alkenyl, C_{6-20} aryl, C_{7-40} alkyaryl, C_{7-40} arylalkyl, C_{8-40} arylalkenyl, alkoxy, aryloxy, siloxy, or amide radicals or combinations thereof;

Cp is the same or different cyclopentadienyl ring substituted with from zero to four substituent groups, each group being, independently, the same or different hydrocarbyl, substituted hydrocarbyl, hydrocarbyl substituted silyl group, halocarbyl, substituted halocarbyl, or taken together, two or more adjacent substituents form part of a ring structure having between 2 and 10 carbons;

m is equal to or greater than 2 and is equal to the oxidation state of the transition metal;

R, R^1, R^2, R^3, R^4 are the same or different hydrogen, halogen, C_{1-20} alkyl, C_{2-20} alkenyl, C_{6-20} aryl, C_{7-40} alkylaryl, C_{7-40} arylalkyl, C_{8-40} arylalkenyl, or taken together, two or more adjacent substituents form part of a ring structure having between 2 and 10 carbons;

Si is silicon;

N is nitrogen;

a=b=1, or a=0 when b=2;

and a catalyst activating compound.

5,486,586

ADHESIVES BASED ON POLYVINYL ETHER COPOLYMERS

Hubertus Kroener, Ludwigshafen; Eberhard Schupp, Grunstadt; Eckehardt Wistuba, Bad Duerkheim; Oral Aydin, Mannheim; Elmar Schwarzenbach, Roemerberg, and Klaus Schnell, Ludwigshafen, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 202,180, Feb. 25, 1994, abandoned. This application May 12, 1995, Ser. No. 440,119

Claims priority, application Germany, Mar. 20, 1993, 43 09 081.8

Int. Cl.[6] C08F *16/12*

U.S. Cl. 526—332 **7 Claims**

1. An adhesive containing 5 to 90% by weight of a polyvinyl ether copolymer having a weight average molecular weight of > 10,000, comprising

a) from 0 to 95% by weight of vinyl ethers of the formula I

$$H_2C{=}CH{-}O{-}R \qquad I$$

b) from 5 to 100% by weight of hydrophilic vinyl ethers of the formula II

$$H_2C{=}CH{-}O{-}R^1 \qquad II$$

and

c) from 0 to 30% by weight of further monomers,

where R is C_1–C_{20}-alkyl and R^1 is an aliphatic or cyclo-aliphatic radical which is substituted by hydroxyl groups or interrupted by nonadjacent groups —Y—, Y is oxygen, sulfur or a group NR^2 or $N^+R^2R^3X^-$, R^2 and R^3 independently of one another are each hydrogen or C_1–C_4-alkyl and X^- is a counter-anion, and the molar ratio of carbon atoms to the sum of groups Y and hydroxyl groups in the aliphatic or cycloaliphatic radical R^1 is from 1.01 : 1 to 6.5 : 1

optionally in combination with at least one adhesive additive selected from the group consisting of a thickener, a leveling agent, an antifoam agent, a plasticizer and a tackifier.

5,486,587

AQUEOUS LATEXES CONTAINING MACROMONOMERS

Gregory D. Shay, Cary, N.C.; Richard D. Jenkins, Hurricane, and David R. Bassett, Charleston, both of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation of Ser. No. 887,671, May 29, 1992, abandoned. This application Aug. 16, 1993, Ser. No. 107,330

Int. Cl.[6] C08F *16/12*

U.S. Cl. 526—333 **22 Claims**

1. A latex composition comprising an aqueous emulsion copolymer of monoethylenically unsaturated monomers which includes from about 0.1 weight % to about 10 weight % of one or more monoethylenically unsaturated macromonomers represented by the formula:

$$R^1{-}(OR^2)_z{-}R^3{-}C(R^4){=}CR^5R^6$$

wherein:

R^1 is a monovalent residue of a substituted or unsubstituted complex hydrophobe compound;

each R^2 is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue;

R^3 is a substituted or unsubstituted divalent hydrocarbon residue;

R^4, R^5 and R^6 are the same or different and are hydrogen or a substituted or unsubstituted monovalent hydrocarbon residue; and

z is a value of 0 or greater;

wherein the substituted or unsubstituted complex hydrophobe compound is represented by the formula selected from:

$$R_1{-}(O{-}CH_2)_a$$
$$\qquad\qquad\diagdown$$
$$\qquad\qquad R_3{-}(OR_4)_x{-}(OR_5)_y{-}OR_6$$
$$\qquad\qquad\diagup$$
$$R_2{-}(O{-}CH_2)_b$$

wherein R_1 and R_2 are the same or different and are hydrogen or a substituted or unsubstituted monovalent hydrocarbon residue, R_3 is a substituted or unsubstituted divalent or trivalent hydrocarbon residue, each R_4 is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, each R_5 is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, R_6 is hydrogen, a substituted or unsubstituted monovalent hydrocarbon residue or an ionic substituent, a and b are the same or different and are a value of 0 or 1, and x and y are the same or different and are a value of 0 or greater; provided at least two of R_1, R_2, R_3, R_4, R_5 and R_6 are a hydrocarbon residue having greater than 2 carbon atoms in the case of R_1, R_2 and R_6 or having greater than 2 pendant carbon atoms in the case of R_3, R_4 and R_5; and

$$R_7{-}(OCH_2)_d{-}R_9{-}(OR_{10})_f{-}OR_{11}$$
$$\qquad\qquad\qquad\quad|$$
$$\qquad\qquad\qquad R_{15}$$
$$\qquad\qquad\qquad\quad|$$
$$R_8{-}(OCH_2)_e{-}R_{12}{-}(OR_{13})_g{-}OR_{14}$$

wherein R_7 and R_8 are the same or different and are hydrogen or a substituted or unsubstituted monovalent hydrocarbon residue, R_9 and R_{12} are the same or different and are a substituted or unsubstituted divalent or trivalent hydrocarbon residue, each R_{10} is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, each R_{13} is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, R_{11} and R_{14} are the same or different and are hydrogen, a substituted or unsubstituted monovalent hydrocarbon residue or an ionic substituent, R_{15} is a substituted or unsubstituted divalent hydrocarbon residue, d and e are the same or different and are a value of 0 or 1, and f and g are the same or different and are a value of 0 or greater; provided at least two of R_7, R_8, R_9, R_{10}, R_{11}, R_{12}, R_{13}, R_{14} and R_{15} are a hydrocarbon residue having greater than 2 carbon atoms in the case of R_7, R_8, R_{11} an R_{14} or having greater than 2 pendant carbon atoms in the case of R_9, R_{10}, R_{12}, R_{13} and R_{15}.

5,486,588

EPOXY-FUNCTIONAL ORGANOPOLYSILOXANE FROM SIH POLYSILOXANE, UNSATURATED EPOXY COMPOUND AND ALKENE

Yoshitsugu Morita, Chiba, Japan, assignor to Dow Corning Toray Silicone Company, Ltd., Tokyo, Japan

Division of Ser. No. 259,817, Jun. 15, 1994. This application Jun. 5, 1995, Ser. No. 463,578

Claims priority, application Japan, Jun. 29, 1993, 5-185627

Int. Cl.[6] C08G *77/06;77/08*

U.S. Cl. 528—15 **6 Claims**

1. A method for the preparation of an organopolysiloxane having the general formula

$$(R^2{-}SiO_{1/2})_a(R^3{-}SiO_{1/2})_b(SiO_{4/2})_c$$

wherein R^1 is defined hereinabove; R^2 is selected from the group consisting of hydrogen, monovalent hydrocarbon groups and a halogenated hydrocarbon groups; R^3 is selected from the group consisting of epoxy-functional organic groups, alkoxysilylalkyl groups and alkyl groups having at least 6 carbon atoms; a is zero or a positive number; b is a positive number; c is a positive number; a/c has a value of >4; b/c has a value of 0.05 to 4; and (a+b)/c has a value of zero to 4; with the proviso that neither R^1 nor R^2 is an alkenyl group and that said organopolysiloxane has in its molecule at least one said epoxy-functional organic group and at least one

said alkyl group having at least 6 carbon atoms comprising reacting in the presence of

(A) a hydrosilylation-reaction catalyst;

(B) an SiH-containing organopolysiloxane having the general formula

$$(R^1{-}SiO_{1/2})_d(H{-}SiO_{1/2})_e(SiO_{4/2})_f$$

wherein R^1 is a monovalent group selected from the group consisting of hydrocarbon groups and halogenated hydrocarbon groups, excluding alkenyl groups; d is zero or a positive number; e is a positive number; f is a positive number; d/f has a value of zero to <4; e/f has a value of 0.05 to 4; and (d+e)/f has a value of 0.2 to 4,

(C) an aliphatically unsaturated epoxy-functional organic compound,

(D) an alkene that contains at least 6 carbons, and, optionally,

(E) an alkoxysilylalkene.

5,486,589

ROOM TEMPERATURE VULCANIZABLE ORGANOPOLYSILOXANE COMPOSITION

Yoshio Inoue, Annaka, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1994, Ser. No. 355,771

Claims priority, application Japan, Dec. 14, 1993, 5-342451

Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—17 **5 Claims**

1. A room temperature vulcanizable composition which comprises:

(A) 100 parts by weight of a diorganopolysiloxane blocked with a silanol group at both ends of the molecular chain, said diorganopolysiloxane being of the following formula

$$HO[(R^1)(R^2)SiO]_nH$$

wherein each of R^1 and R^2 independently represents an unsubstituted or substituted monovalent hydrocarbon group selected from a C_{1-8} alkyl group, a C_{2-3} alkenyl group, a C_{6-8} aryl group, a C_{5-7} cycloalkyl group or those groups defined above substituted with a halogen atom or cyano group for one to all of the hydrogen atoms bonded to the carbon atoms thereof, and n is an integer of 5 or more;

(B) from 0.01 to 10 parts by weight of an organopolysiloxane having at least three silanol groups in the molecule, and is of the following formula

$$R^3O[(R)_2SiO]_m[(R/(OH)SiO]_k[(R)_2SiO]R^3$$

wherein each R independently represents an unsubstituted or substituted monovalent hydrocarbon group selected from a C_{1-8} alkyl group, a C_{2-3} alkenyl group, a C_{6-8} aryl group or those groups defined above substituted with a halogen or cyano group for one to all of the hydrogen atoms bonded to the carbon atoms thereof, both R^3 are hydrogen atoms or the group $(R)_3Si$, k is an integer of 3 or over, and m is an integer of 1 or over; and

(C) from 0.5 to 30 parts by weight of at least one member selected from the group consisting of organosilanes and organopolysiloxanes each having two hydrolyzable groups in one molecule, the at least one member serving to crosslink said diorganopolysiloxane and said organopolysiloxane therethrough.

5,486,590

SULFONATED POLYETHYLENE REARRANGEMENT OF POLYORGANOSILOXANES

Israel Cabasso, Syracuse, N.Y., and Daniel Graiver, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Feb. 9, 1995, Ser. No. 386,040

Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—23 **12 Claims**

1. A process for siloxane bond rearrangement of polyorganosiloxanes, the process comprising:

contacting a polyorganosiloxane at a temperature within a range of about 20° C. to 110° C. with a rearrangement catalyst consisting essentially of solid sulfonated polyethylene.

5,486,591

BIOPOLYMERS DERIVED FROM HYDROLYZABLE DIACID FATS

Abraham J. Domb, Gush Etzion, and Raphael Nudelman, Rehovot, both of, Israel, assignors to Yissum Research Development Co. of the Hebrew University of Jerusalem, Jerusalem, Israel

Division of Ser. No. 168,457, Dec. 16, 1993. This application Mar. 21, 1995, Ser. No. 407,183

Int. Cl.[6] C08G *63/02;63/44;69/00*

U.S. Cl. 528—272 **6 Claims**

1. A polymer essentially consisting of repeating units of a monomeric diacid derivative comprising at least two fatty acids coupled by a hydrolytically or enzymatically degradable bond whereby said degradable bond in a biological environment degrades forming naturally occurring fatty acid products.

5,486,592

COPOLYOXADIAZOLES OF BLOCK TYPE AND PROCESS FOR THEIR SYNTHESIS

Thierry Brifaud, Aincourt, and Jean-Marc Sage, Oullins, both of, France, assignors to Elf Atochem S.A., France

PCT No. PCT/FR94/00037, § 371 Date Oct. 6, 1994, § 102(e) Date Oct. 6, 1994, PCT Pub. No. WO94/15994, PCT Pub. Date Jul. 21, 1994

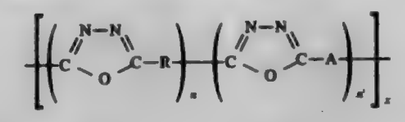
PCT Filed Jan. 12, 1994, Ser. No. 256,899

Claims priority, application France, Jan. 13, 1993, 93 00257

Int. Cl.[6] C08G *73/08*

U.S. Cl. 528—363 **11 Claims**

1. Block copolymers of the formula:



in which

R represents an aliphatic residue, A an aromatic residue

x is such that the inherent viscosity (measured in methanesulphonic acid at a concentration of 0.2 g per deciliter at 30° C.) in deciliters per gram is greater than 0.6

n and n' are greater than or equal to 2 and having two glass transition temperatures, with one glass transition temperature being between −50° and +50° C. and the other glass transition temperature being between 180° and 300° C.

5,486,593

MEDICAL DEVICES FABRICATED FROM COPOLYMERS HAVING RECURRING CARBONATE UNITS

Reginald T. Tang, Warren; Frank Mares, Whippany; William J. Boyle, Jr., Parsippany; Tin-Ho Chiu, Millburn, and Kundanbhai M. Patel, Landing, all of N.J., assignors to United States Surgical Corporation, Norwalk, Conn.

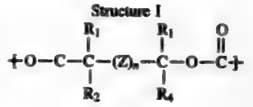
Continuation of Ser. No. 301,149, Sep. 6, 1994, Pat. No. 5,412,068, which is a continuation of Ser. No. 146,548, Nov. 1, 1993, abandoned, which is a continuation of Ser. No. 917,242, Jul. 22, 1992, Pat. No. 5,274,074, which is a division of Ser. No. 833,206, Feb. 10, 1992, Pat. No. 5,152,781, which is a division of Ser. No. 466,109, Jan. 16, 1990, Pat. No. 5,145,945, which is a division of Ser. No. 227,386, Aug. 2, 1988, Pat. No. 4,920,203, which is a continuation-in-part of Ser. No. 134,290, Dec. 17, 1987, abandoned, and a continuation-in-part of Ser. No. 134,321, Dec. 17, 1987, Pat. No. 4,891,263, and a continuation-in-part of Ser. No. 134,339, Dec. 17, 1987, Pat. No. 5,120,802. This application Sep. 23, 1994, Ser. No. 311,301

Int. Cl.[6] C08G *63/91;64/00;63/08*

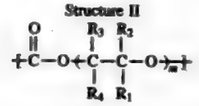
U.S. Cl. 528—370 **21 Claims**

1. A medical device formed totally or in part of one or more biopolymers selected from the group consisting of copolymers containing repeating units derived from a dioxanone and at least one recurring monomeric unit of the following General Structures I and II:

Structure I



Structure II



wherein:

Z is $-[C(R_3R_4)]_r-$, $-[NR_5]_r-$, —O— or a combination thereof, where Z is selected such that there are no adjacent heteroatoms;

n is from 1 to about 8;

m is from 1 to about 8;

R_1, R_2, R_3, and R_4 are the same or different at each occurrence and are hydrogen, aryloxyalkyl, alkoxyaryl, aryloxyaryl, arylalkyl, alkylarylalkyl, arylalkylaryl, alkylaryl, arylcarbonylalkyl, alkyl, aryl, alkylcarbonylalkyl, cycloalkyl, arylcarbonylaryl, alkylcarbonylaryl, alkoxyalkyl, or aryl or alkyl substituted with one or more biologically compatible substituents; and

R_5 and R_6 are the same or different and are R_1, R_2, R_3, R_4, dialkylamino, diarylamino, alkylarylamino, alkoxy, aryloxy, alkanoyl, or arylcarbonyl, or any two of R_1 to R_6 together may form an alkylene chain completing a 3, 4, 5, 6, 7, 8 or 9 membered alicyclic fused, spiro, bicyclic and/or tricyclic ring system, which system may optionally include one or more non-adjacent carbonyl, oxa, alkylaza or acylaza groups.

5,486,594

POLYKETONE POLYMERS AS NYLON TOUGHNERS

Randall P. Gingrich, Houston; Michelle Louda, Sugar Land, and John E. Flood, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 11, 1994, Ser. No. 273,552

Int. Cl.[6] C08G *79/02*

U.S. Cl. 528—392 **3 Claims**

1. A toughened polyamide composition comprising polyamide selected from the group consisting of Nylon 6, Nylon 11, and Nylon 12 and a toughener comprising of between about 15 and 20% wt of an alternating polymer of a carbon monoxide and at least one or more ethylenically unsaturated hydrocarbons (based on total weight of said composition).

5,486,595

TUMOR NECROSIS FACTOR INHIBITORS

George A. Heavner, Malvern, Pa., assignor to Centecor, Inc., Malvern, Pa.

Filed Apr. 1, 1994, Ser. No. 221,583

Int. Cl.[6] C07K *5/00;7/00;17/00*

U.S. Cl. 530—324 **5 Claims**

1. A peptide which consists of SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:44, SEQ ID NO:45, SEQ ID NO:46, SEQ ID NO:47, SEQ ID NO:48, SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID NO:53, SEQ ID NO:54, SEQ ID NO:55, SEQ ID NO:56, SEQ ID NO:57, SEQ ID NO:58, SEQ ID NO:59, SEQ ID NO:60, SEQ ID NO:61 or SEQ ID NO:62.

5,486,596

ANALOGUES OF 8-D-HOMOARGININE VASOPRESSIN

Zdenko Procházka; Ivo Bláha; Miroslava Žertová; Jiřina Staninová; Jiří, cu 1 Velek; Jana Škopková; Michal Leibl, all of Prague; Tomislav Barth, Roztoky u Praky; Lenka Maletínská, Prague, all of, Czechoslovakia, and Hans Vilhardt, Espergærde, Denmark, assignors to Ceskoslovenska akademie ved, Czechoslovakia

Continuation of Ser. No. 873,967, Apr. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 564,538, Aug. 7, 1990, abandoned. This application Aug. 25, 1993, Ser. No. 111,815

Claims priority, application Czechoslovakia, Aug. 7, 1989, 4705-89; Aug. 18, 1989, 4860-89

Int. Cl.[6] A61K *38/00;* **C07K** *7/06;7/00*

U.S. Cl. 530—329 **3 Claims**

1. Analogues of 8-D-homoarginine vasopressin of the general formula



where X is

L-O-methyltyrosine

L-p-ethylphenylalanine

D-p-ethylphenylalanine

L-p-methylphenylalanine

D-p-methylphenylalanine

and R is cysteine or β-mercaptopropionic acid.

5,486,597

TETRAPEPTIDE DERIVATIVES AND ANALOGUES

Sarkis B. Kalindjian, Banstead; Howard B. Broughton, Essex; Caroline M. R. Low, Croydon; Iain M. McDonald, Paddock Wood; Robert A. D. Hull, Tonbridge; Nigel P. Shankley, Nr. Edenbridge; Ildiko M. Buck, London; Katherine I. M. Steel, Harlow, and Jonathan M. R. Davies, Fort Talbot, all of, United Kingdom, assignors to James Black Foundation Limited, Dulwich, United Kingdom

PCT No. PCT/GB91/02249, § 371 Date Jun. 17, 1993, § 102(e) Date Jun. 17, 1993, PCT Pub. No. WO92/11284, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 17, 1991, Ser. No. 75,528

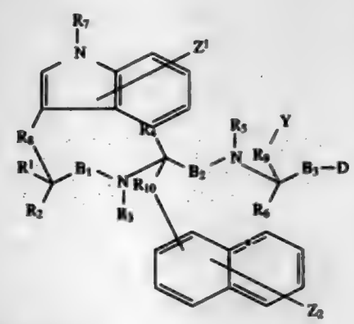
Claims priority, application United Kingdom, Dec. 17, 1990, 9027286; Nov. 1, 1991, 9123231

Int. Cl.[6] A61K *38/00;* **C07K** *5/00;7/00;17/00*

U.S. Cl. 530—331 **24 Claims**

1. A compound of the formula:

(I)



wherein R_1 is H or



R_2, R_3, R_4, R_5, and R_6 are independently H or methyl,

R_7 is H, methyl, ethyl, benzyl or formyl,

R_8 and R_{10} are independently C_1 to C_3 alkylene or are absent,

R_9 is C_1 to C_3 alkylene or is linked to R_6 to form a 3- to 6-membered cycloalkyl group or is absent

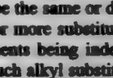
R_{11} is an N-blocking group and R_{12} is H or methyl, or R_{11} and R_{12} are linked to form an N-blocking group

B_1, B_2 and B_3 are independently $-CH_2-$ or a carbonyl group,

Y is $-CO_2H$, tetrazole or $CONR_{13}R_{14}$ (wherein R_{13} and R_{14} are independently H or C_1 to C_5 hydrocarbyl)

Z_1 and Z_2 (which may be the same or different) are optional and each represents one or more substituents in the aromatic ring system, such substituents being independently selected from C_1 to C_6 alkyl (two such alkyl substituents optionally forming a ring fused to one or both of the aromatic rings), C_1 to C_6 alkoxy, C_1 to C_6 thioalkoxy, carboxy, C_1 to C_6 carboalkoxy, nitro, trihalomethyl, hydroxy, $-NR_{15}R_{16}$ (wherein R_{15} and R_{16} are independently H or C_1 to C_6 alkyl), C_1 to C_6 alkylaryl, C_1 to C_6 alkyl (substituted aryl), halo, sulphonamide and cyano

and D is —O—R_{17}—Q or



(wherein Q is H or a carbocyclic or heterocyclic group which may optionally be substituted; R_{17} is absent or is C_1 to C_{10} hydrocarbylene, optionally substituted by —OH, —SH, halogen, $-CO_2R_{19}$ or $-CONR_{19}R_{20}$ (wherein R_{19} and R_{20} are independently H or C_1 to C_5 hydrocarbyl), and optionally having up to three carbon atoms replaced by —O—, —S— or $-NR_{21}-$ (wherein R_{21} is H or an N-blocking group), provided that R_{17} contains at least one carbon atom if Q is H and that R_{17} does not contain —O—O—; and R_{18} is H or C_1 to C_5 alkyl or forms an alkylene (e.g. C_1 to C_4 alkylene) link to Q)

or a pharmaceutically acceptable salt thereof.

5,486,598

SILICA MEDIATED SYNTHESIS OF PEPTIDES

Jon K. West, and Larry L. Hench, both of Gainesville, Fla., assignors to University of Florida, Gainsville, Fla.

Filed May 20, 1994, Ser. No. 246,827

Int. Cl.[6] B01J *21/06;* **C07K** *1/02;1/10*

U.S. Cl. 530—338 **18 Claims**

1. A method of synthesizing a polypeptide comprising forming an aqueous reaction medium containing a first amino acid or peptide, a second amino acid or peptide and a hydrated silica entity containing silanol groups (HSE) in amounts and under conditions such that (1) at least one silanol group of said HSE undergoes a condensation reaction with a —COOH or —NH_2 group of one of said first amino acid or peptide to form a Si—O—CO— or Si—N—C— linkage, respectively, therewith and (2) thereafter, said second amino acid or peptide undergoes a condensation reaction with said HSE at said Si—O—CO— or Si—N—C— linkage via a —NH_2 or —COOH group, respectively, to form a peptide linkage, —OC—N—C—, in said polypeptide.

5,486,599

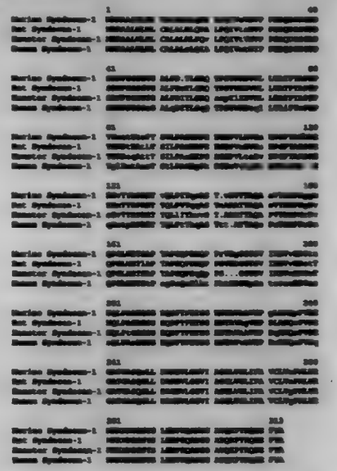
CONSTRUCTION AND USE OF SYNTHETIC CONSTRUCTS ENCODING SYNDECAN

Scott Saunders; Merton Bernfield, and Masato Kato, all of Boston, Mass., assignors to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif., and Children's Medical Center Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 757,654, Sep. 6, 1991, abandoned, and a continuation-in-part of Ser. No. 856,849, Mar. 24, 1992, abandoned, which is a continuation-in-part of Ser. No. 746,797, Aug. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 331,585, Mar. 29, 1989, abandoned. This application Jun. 17, 1993, Ser. No. 78,683

Int. Cl.[6] C07K *14/435;19/00;* **C12N** *15/12;15/62*

U.S. Cl. 530—395 **21 Claims**



1. A proteoglycan recombinantly-produced by a transformed eukaryotic host cell capable of producing heparan sulfate glycosaminoglyycans, which proteoglycan has a heparan sulfate glycosaminoglyycan chain attached thereto, wherein the proteoglycan is selected from

(1) compounds of

(a) a first formula represented by residues of 23-311 of SEQ ID NO: 2,

(b) a second formula in which one to five amino acids residues in said first formula are replaced by different amino acids, wherein said replacement amino acids do not substantially alter attachment of a syndecan hoporan sulfate glycosaminoglycan chain to the proteoglycan,

(c) a third formula in which from 1 to 10 amino acids are absent from either the amine terminal, the carboxy terminal, or both terminals of said first formula or said second formula or said third formula, or

(d) a fourth formula in which from 1 to 10 addition amine acids are attached sequentially to the amine terminal, carboxy terminal, or both terminals of said first formula, said second formula, or said third formula; and

(2) salts of compounds having said formulas.

5,486,600

FIBER-REACTIVE HALOTRIAZINYL OR HALOPYRIMIDINYL DISAZO DYES

Rolf Deitz, Basel, and Athanassios Tzikas, Pratteln, both of, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

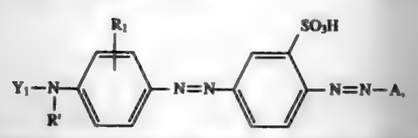
Filed Jul. 19, 1993, Ser. No. 94,646

Claims priority, application Switzerland, Jul. 23, 1992, 2318/92

Int. Cl.[6] C09B *62/513;62/09;* **D06P** *1/38*

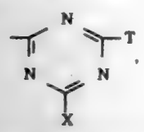
U.S. Cl. 534—634 **17 Claims**

1. A reactive dye of the formula



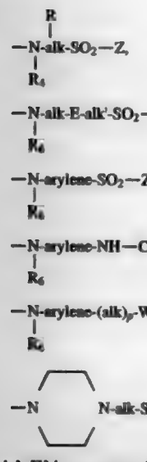
(1)

in which R' and R_1 are each hydrogen, Y_1 is a halotriazine reactive radical of the formula



(2)

in which X is chlorine or fluorine and T is a fibre-reactive radical of the formula



(4a)

(4b)

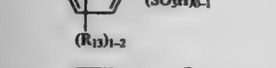
(4c)

(4d)

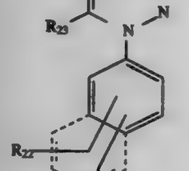
(4e)

(4f)

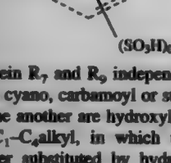
in which W is a group of the formula —CONH—, R is hydrogen, R_4 is hydrogen or C_1–C_4alkyl, R_5 is hydrogen, methyl or ethyl, Z is a group of the formula —CH=CH_2 or —CH_2—CH_2—U_1, U_1 is a group of the formula —Cl or —OSO_3H, Z_1 is a group of the formula



Hal is bromine, E is the radical —O— or —NH—, alk and alk' independently of one another are C_1–C_4alkylene, arylene is a 1,3- or 1,4-phenylene radical which is unsubstituted or substituted by sulfo, carboxyl, methyl or methoxy or is naphthylene and p is 0, and A is a radical of the formula



(5)



(6)

(7)

(8)

(9)

(11)

wherein R_7 and R_9 independently of one another are C_1–C_4alkyl, R_8 is cyano, carbamoyl or sulfomethyl, R_{10} and R_{11} independently of one another are hydroxyl, amino or amino which is substituted by C_1–C_4alkyl, in which the alkyl radical is unsubstituted or further substituted by hydroxyl, sulfo or sulfato and, with the exception of methyl, can be interrupted by oxygen, R_{12} is hydroxyl, phenyl or amino which is unsubstituted or substituted by cyano, R_{13} is hydrogen, amino or N—C_1–C_4alkylamino, R_{14} is hydrogen, C_2–C_5alkanoylamino or ureido, R_5 and R_{16} independently of one another are hydrogen, a halotriazine reactive radical of the formula (2) or C_1–C_5alkyl which is unsubstituted or substituted by hydroxyl, sulfo, sulfato or phenyl, in which the phenyl radical is unsubstituted or substituted by sulfo, R_{17} is hydrogen, R_{18} is C_2–C_5alkanoyl, benzoyl which is unsubstituted or substituted by C_1–C_4alkyl, C_1–C_4alkoxy, C_2–C_4alkanoylamino, halogen or sulfo or is a halotriazine reactive radical of the formula (2), R_{21} is C_1–C_4alkyl, R_{22} hydrogen and R_{23} is amino.

5,486,681

TRISAZO DYE, AND AQUEOUS INK COMPOSITION CONTAINING THE SAME

Tatsuya Yagyu, Neyagawa, and Takashi Ono, Takatsuki, both of, Japan, assignors to Orient Chemical Industries, Ltd., Osaka, Japan

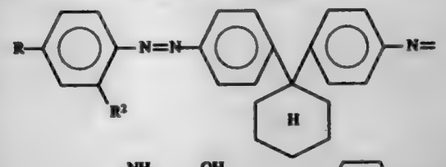
Filed Sep. 28, 1994, Ser. No. 314,801

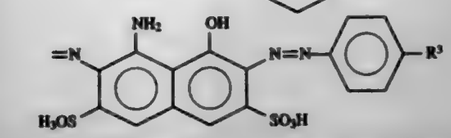
Claims priority, application Japan, Sep. 29, 1993, 5-242597

Int. Cl.[6] C09B *35/46;* **C09D** *11/00*

U.S. Cl. 534—666 **11 Claims**

1. A trisazo dye represented by the formula:





(I)

wherein R^1 and R^2 independently represent a hydrogen atom, a hydroxyl group, a carboxyl group, an amino group, an alkyl group having 1 to 4 carbon atoms, a substituted amino group which is substituted with a hydroxyalkyl group or an acyl group, or an alkoxy group having 1 to 4 carbon atoms; and R^3 represents a hydrogen atom, an alkyl or alkoxy group having 1 to 6 carbon atoms; provided that both R^1 and R^2 are not amino groups nor substituted amino groups.

5,486,682

GENES ENCODING SERINE PROTEASE MUTANTS OF THE CHYMOTRYPSIN SUPERFAMILY RESISTANT TO INHIBITION BY THEIR COGNATE INHIBITORS

Joseph F. Sambrook; Edwin L. Madison; Elizabeth J. Goldsmith, and Maryjane H. Gething, all of Dallas, Tex., assignors to The Board of Regents of the University of Texas System, Austin, Tex.

Division of Ser. No. 589,554, Sep. 28, 1990, Pat. No. 5,304,482, which is a continuation-in-part of Ser. No. 434,748, Nov. 13, 1989, which is a continuation-in-part of Ser. No. 319,212, Mar. 6, 1989, abandoned. This application Dec. 17, 1993, Ser. No. 168,366

Int. Cl.[6] C12N *15/58;9/64*

U.S. Cl. 536—23.2 **5 Claims**

1. A gene encoding a mutant of t-PA, wherein in said mutant, the phenylalanine in t-PA which corresponds to histidine at position 40 of trypsin has been replaced by a basic amino acid, and the alaline in t-PA which corresponds to serine at position 32 of trypsin has been replaced by serine.

5,486,683

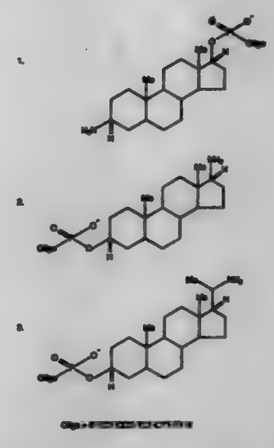
OLIGONUCLEOTIDE HAVING ENHANCED BINDING AFFINITY

Chris A. Buhr, Daly City, Calif., assignor to Gilead Sciences, Inc., Foster City, Calif.

Continuation of Ser. No. 461,884, Jan. 8, 1990, abandoned. This application Jun. 22, 1992, Ser. No. 902,538

Int. Cl.[6] C07H *15/12;17/00;* **C07J** *41/00;31/00*

U.S. Cl. 536—24.3 **32 Claims**



1. An oligonucleotide conjugate comprising an oligonucleotide containing from about 2 to about 30 nucleotides or analog thereof conjugated to a molecule at a terminal 2', 3' or 5' position of the oligonucleotide, which molecule comprises a rigid structure consisting of:

(a) a cyclic ring portion containing from about 2 to about 6 n-membered rings where n=4–8;

(b) a first terminal amine wherein said amine is directly attached to, or is attached to a carbon atom that is directly attached to said cyclic ring portion; and

(c) a second terminal group consisting of a phosphate, a second amine or a cationic sulphur wherein said second terminal group is contained within, is directly attached to, or is attached to an atom that is directly attached to said cyclic ring portion or the first terminal amine;

wherein said cyclic ring portion may be a substituted derivative thereof having methyl or lower alkyl groups at any position other than those positions attaching said first terminal amine and containing or attaching said second terminal group.

5,486,684

CYCLIC ADP RIBOSE ANTAGONISTS

Timothy F. Walseth, Roseville; Hon-Cheung Lee, Woodbury, and Robert A. Aarhus, Brooklyn Park, all of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Nov. 1, 1993, Ser. No. 148,646

Int. Cl.[6] C07H *19/23;* **A61K** *51/00*

U.S. Cl. 536—26.13 **4 Claims**

1. A compound of the formula:



8-X-cADPR

wherein

X is selected from the group consisting of amino, azido, Br or a pharmaceutically acceptable acid addition salt thereof.

5,486,605

HYDROGEN SULFIDE CONVERTER

Larry W. Gatlin, Rte. 2, Box 181A, Hwy. 1301, Floresville, Tex. 78114

Continuation-in-part of Ser. No. 51,185, Apr. 22, 1993, abandoned, which is a continuation of Ser. No. 728,522, Jul. 11, 1991, abandoned. This application May 20, 1994, Ser. No. 247,149

Int. Cl.[6] C07H *5/04;5/06;1/00*

U.S. Cl. 536—55.2 13 Claims

1. The reaction product of:

a. amine heads, with

b. a second component comprising an aldose selected from the group consisting of D-aldoses having from 3 to 6 carbon atoms.

5,486,606

CELLULOSIC POLYMER, BLOOD-TREATING DEVICE, AND PROCESS FOR PRODUCING THE SAME

Shingo Emi, Osaka; Kyoji Suzuki, Shizuoka, and Yoshito Ikada, Uji, all of, Japan, assignors to Teijin Limited, Osaka, Japan

Filed May 4, 1993, Ser. No. 57,094

Claims priority, application Japan, May 8, 1992, 4-115089

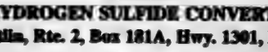
Int. Cl.[6] B01D *61/24;61/28*

U.S. Cl. 536—84 4 Claims

1. A blood treating device comprising a cellulosic polymer which contacts blood wherein a DA (phosphorous) improving number of hydroxyl groups on at least one portion of the cellulosic polymer which contacts the blood are modified as represented by the formula:



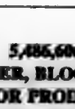
wherein R^1 and R^2 may be the same or different and each represents a hydrogen atom or a C_1 to C_5 alkyl group, X is a member selected from the groups consisting of



R_0 is a member selected from the group consisting of a hydrogen atom, a C_1 and C_3 group, a C_3 to C_6 cycloalkyl group, and a C_6 to C_{10} alkyl group,



wherein R^3 and R^4 may be the same or different and each represents a member selected from the group consisting of a hydrogen atom, a C_1 and C_3 alkyl group and a C_3 to C_6 cycloalkyl group, or Y is



wherein R^5, R^6 and R^7 may be the same or different and each represents a member selected from the group consisting of a hydrogen atom, a C_1 to C_5 alkyl group, a C_3 to C_6 cycloalkyl group and a C_6 to C_{10} aryl group, and n is integer of 2 to 10.

5,486,607

DIOXAZINE BLUE DYE COMPOUND HAVING VINYLSULFONE TYPE FIBER REACTIVE GROUPS

Tetsuya Miyamoto, Takatsuki; Miyao Takahashi, Minoo; Takahiko Fujisaki, Takarazuka; Naoki Harada, Suita; Yutaka Kayane, Ibaraki, and Takashi Omura, Kobe, all of, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

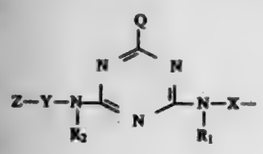
Continuation of Ser. No. 40,587, Mar. 31, 1993, abandoned, which is a continuation of Ser. No. 860,193, Mar. 26, 1992, abandoned, which is a continuation of Ser. No. 489,863, Mar. 5, 1990, abandoned, which is a continuation of Ser. No. 292,256, Dec. 30, 1988, abandoned. This application Jan. 27, 1995, Ser. No. 379,828

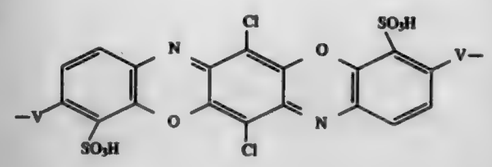
Claims priority, application Japan, Jan. 20, 1988, 63-11689

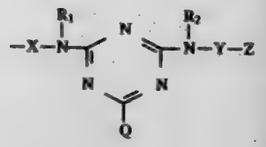
Int. Cl.[6] C07D *498/04*

U.S. Cl. 544—76 11 Claims

1. A dioxazine compound represented by the following formula in the free acid form,







wherein

V—X is a direct linkage, —NHC_2H_4—, —NHC_3H_6— or —NH-phenylene unsubstituted or substituted once or twice by sulfo,

Y is phenylene unsubstituted or substituted once or twice by methyl, ethyl, methoxy, ethoxy, chloro, bromo, sulfo or carboxy, or naphthylene unsubstituted or substituted once by sulfo, Z is —SO_2CH=CH_2 or —$SO_2CH_2CH_2Z_1$ in which Z_1 is a group capable of being split by the action of an alkali, Q is amino, carboxymethylamino, N,N-dihydroxymethylamino, ethylamino, β-carboxyethylamino, β-hydroxyethylamino, β-methoxyethylamino, β-sulfoethylamino, N-(β-sulfoethyl)-N-methylamino, N,N-diethylamino, N,N-di-β-hydroxyethylamino, phenylamino, N-ethyl-N-phenylamino, toluidino, anisidino, 2-, 3- or 4-sulfoanilino, 2,4- or 2,5-disulfoanilino, 2-carboxy-5 -sulfophenylamino, 3,6-disulfonaphthyl-(1)-amino, 3,6,8-trisulfonaphthyl-(1)-amino, 4,8 -disulfonaphthyl-(2)-amino, 3,6,8-trisulfonaphthyl-(2)-amino or morpholino, and R_1 and R_2 independently of one another are each hydrogen or alkyl of 1 to 4 carbon atoms.

5,486,608

CATIONIC COMPOUNDS, THEIR PREPARATION AND THE USE THEREOF FOR THE PHOTOCHEMICAL STABILISATION OF BASIC DYEABLE POLYAMIDE FIBRE MATERIALS

Jean-Marie Adam, Rosenau, France, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

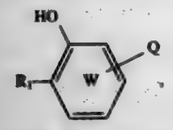
Filed Dec. 15, 1993, Ser. No. 168,012

Claims priority, application Switzerland, Dec. 17, 1992, 3850/92

Int. Cl.[6] C07D *295/037*

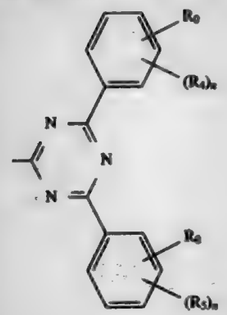
U.S. Cl. 544—108 6 Claims

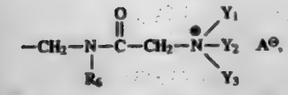
1. A cationic compound of the formula



(1)

wherein R_1 is the radical of the formula





(3)

and the benzene ring W, in addition to being substituted by R_1, —OH and Q, is unsubstituted or is substituted by C_1–C_6alkyl or C_1–C_4alkoxy, and wherein

R_0 is hydrogen or hydroxy,

R_2 is hydrogen, halogen,

R_4 and R_5 are each independently of the other hydrogen, C_1–C_6alkyl, C_1–C_4alkoxy or halogen, or, when R_0 is hydroxy and n is 1, are also the group of formula Q,

R_6 is hydrogen or C_1–C_6alkyl, and

n is 1 or 2; or,

when R_1 is a radical of the formula (2),

Y_1 is unsubstituted C_1–C_6alkyl or C_1–C_6alkyl which is substituted by halogen, cyano, hydroxy or C_1–C_4alkoxy,

Y_2 is unsubstituted C_1–C_6alkyl or C_1–C_6alkyl which is substituted by halogen, cyano, hydroxy or C_1–C_4alkoxy,

Y_3 is hydrogen, unsubstituted C_1–C_6alkyl or C_1–C_6alkyl which is substituted by cyano, hydroxy, C_1–C_6alkoxy, phenyl or C_1–C_4alkoxycarbonyl, or is C_3–C_6alkenyl,

or Y_1 together with Y_2 and the linking N-atom, form a morpholino ring, and Y_3 is hydrogen, unsubstituted C_1–C_6alkyl or C_1–C_6alkyl which is substituted by cyano, hydroxy, C_1–$_6$alkoxy, phenyl or C_1–C_4alkoxycarbonyl, is C_3–C_6alkenyl,

or Y_1, Y_2 and Y_3, together with the linking N-atom, form an unsubstituted or a C_1–C_6alkyl-substituted pyridinyl or quinolinyl radical; or

$A^{\ominus}$ is a colourless anion.

5,486,609

PREPARATION OF CARBOCYLIC M-AMINOHYDROXYAROMATICS

Robert Reinhardt, Mackenheim; Helmut Reichelt, Neustadt, and Roland Merget, Bad Schönborn, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Mar. 24, 1995, Ser. No. 409,713

Claims priority, application Japan, Mar. 26, 1994, 44 10 660.2

Int. Cl.[6] C07D *265/30*

U.S. Cl. 544—173 6 Claims

1. A process for preparing carbocyclic m-aminohydroxyaromatics, which comprises reacting carbocyclic o— or m-halohydroxyaromatics or metal salts thereof with primary or secondary amines in the presence of a base and in the presence or absence of a diluent.

5,486,618

PYRIMIDYLBENSULFONYL CHLORIDE COMPOUNDS

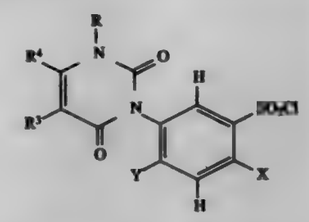
Richard J. Struzk, and Allyn R. Bell, both of Cheshire, Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Division of Ser. No. 987,511, Dec. 7, 1992, Pat. No. 5,324,854, which is a division of Ser. No. 742,957, Aug. 9, 1991, Pat. No. 5,169,438. This application Mar. 17, 1994, Ser. No. 214,932

Int. Cl.[6] C07D *239/54;* A01N *43/54*

U.S. Cl. 544—311 1 Claim

1. A pyrimidinylbenzenesulfonyl chloride compound of the structural formula



wherein R is hydrogen, C_1–C_6 alkyl, or C_1–C_4 haloalkyl;

X is C_1–$_4$ alkyl, C_1–C_6 alkoxy, or halogen;

Y is hydrogen or halogen;

R^3 is hydrogen, halogen or C_1–C_4 alkyl; and

R^4 is C_1–$_4$ alkyl or C_1–C_4 haloalkyl.

5,486,611

CARBOXAMIDO-(1,2N)-CARBOCYCLIC-2-AMINOTETRALIN DERIVATIVES

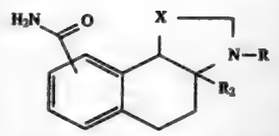
Chiu-Hong Lin, Portage, Mich.; Susanne R. Haadsma-Svensson, Gothenburg, Sweden; Robert B. McCall, Kalamazoo, Mich.; Arthur G. Romero, Kalamazoo, Mich.; William H. Darlington, Kalamazoo, Mich., and Michael D. Ennis, Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 702,814, May 20, 1991, abandoned, and a continuation-in-part of Ser. No. 803,287, Dec. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 379,526, Jul. 13, 1989, abandoned. This application Oct. 28, 1993, Ser. No. 144,851

Int. Cl.[6] C07D *209/60;* A61K *31/40*

U.S. Cl. 546—62 18 Claims

1. A compound having the Formula



I

wherein X is —$(CH_2)_n$— or —$C(R_1)(H)$—; R is C_1–C_8 alkyl; R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen, C_1–C_8 alkyl, C_2–C_8 alkenyl, C_2–C_8 alkynyl, aryl and benzyl; and n is 1 or 2; and pharmaceutically acid addition salts thereof.

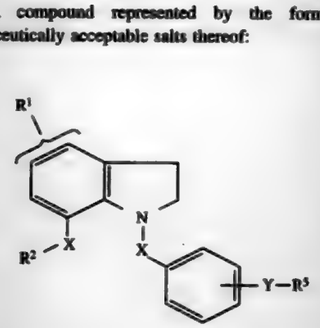
5,486,612

N-BENZYL DIHYDROINDOLE LTD_4 ANTAGONISTS

J. Scott Sawyer, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 14, 1993, Ser. No. 166,489
Int. Cl.[6] C07D *401/14;* A61K *31/475*
U.S. Cl. 546—176 6 Claims

1. A compound represented by the formula (II) and pharmaceutically acceptable salts thereof:



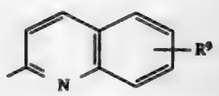
(II)

wherein;

R^1 is selected from the group consisting of hydrogen, halo, C_{1-4} alkyl, C_{1-4} alkoxy, nitrile, optionally protected carboxy, C_{1-4} alkoxy-carbonyl and trihalomethyl;

R^2 is tetrazolyl, nitrile, carboxy, C_{1-4} alkoxycarbonyl or —$CONR^7R^8$ where R^7 and R^8 are each hydrogen or C_{1-4} alkyl;

R^5 is



where R^9 is hydrogen, halo, C_{1-4} alkyl, C_{1-4} alkoxy or trihalomethyl;

each X is independently selected from a bond, —$(CH_2)_n$— where n is from 1 to 5, —O—$CR^{11}R^{12}$—, —$CR^{11}R^{12}$—$CR^{13}R^{14}$— or —CR^{11}=CR^{12}— where R^{11},R^{12}, R^{13} and R^{14} are each hydrogen or C_{1-4} alkyl; and

Y is —O—$CR^{15}R^{16}$— or —CR^{15}=CR^{16}— where R^{15} and R^{16} are each hydrogen or C_{1-4} alkyl.

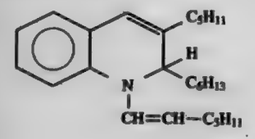
5,486,613

VULCANIZATION ACCELERATORS

Fabio Broussard, Brusaporto; Mauro Adovasio, Bergamo; Corrado Callierotti, Seriate; Giambattista Tarsni, Mozzo, and José Roncalli, Bergamo, all of, Italy, assignors to Great Lakes Chemical Italia S.r.l., Milan, Italy

Filed Jul. 11, 1994, Ser. No. 272,826
Claims priority, application Italy, Jul. 15, 1993, MI93A1566; Apr. 7, 1994, MI94A0650
Int. Cl.[6] C07D *215/06*
U.S. Cl. 546—181 1 Claim

1. A novel vulcanization accelerator compound, the compound having the formula (III):



(III)

5,486,614

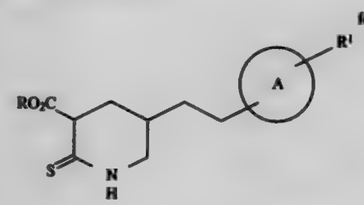
INTERMEDIATES FOR PEPARING ANTIFOLATE COMPOUNDS

Charles J. Barnett, Indianapolis, and Thomas M. Wilson, Speedway, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 96,899, Jul. 23, 1993, which is a continuation-in-part of Ser. No. 961,572, Oct. 15, 1992, abandoned. This application May 30, 1995, Ser. No. 453,529
Int. Cl.[5] C07D *211/78;405/06;409/06*
U.S. Cl. 546—207 10 Claims

1. A compound of formula II

formula II



wherein

R is C_1–C_4 alkyl or phenyl which may be substituted;

R^1 is bromo, iodo or $COOR^2$;

R^2 is H, C_1–C_4 alkyl, phenyl which may be substituted or benzyl; and

Ⓐ is an aryl group which may be substituted; or a salt thereof.

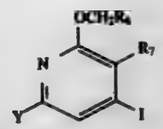
5,486,615

METHOD OF MAKING ASYMMETRIC DE RING INTERMEDIATES FOR THE SYNTHESIS OF CAMPTOTHECIN ANALOGS

Daniel L. Comins, Cary, N.C., assignor to North Carolina State University, Raleigh, N.C.

Division of Ser. No. 159,117, Nov. 30, 1993, Pat. No. 5,395,939. This application Aug. 10, 1994, Ser. No. 288,591
Int. Cl.[6] C07D *213/61;213/64*
U.S. Cl. 546—301 7 Claims

1. A compound of Formula VII:



VII

wherein Y is H or halogen, R_6 is lower alkoxy, and R_7 is lower hydroxy-alkyl.

5,486,616

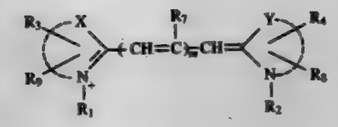
METHOD FOR LABELING AND DETECTING MATERIALS EMPLOYING ARYLSULFONATE CYANINE DYES

Alan S. Waggoner; Lauren A. Ernst, both of Pittsburgh, and Ratnakar B. Majumdar, Glenshaw, all of Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.

Division of Ser. No. 884,636, May 15, 1992, Pat. No. 5,268,486, which is a continuation of Ser. No. 240,756, Sep. 2, 1988, abandoned, which is a continuation-in-part of Ser. No. 854,347, Apr. 18, 1986, abandoned. This application Nov. 29, 1993, Ser. No. 158,952
Int. Cl.[6] C07D *413/06*
U.S. Cl. 548—217 9 Claims

1. A water soluble luminescent dye consisting of:

a cyanine having the structure



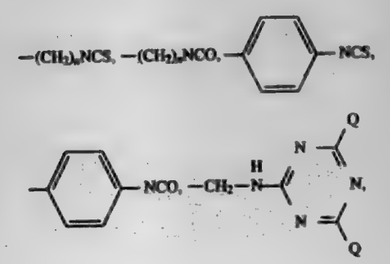
wherein:

the dotted lines each represent carbon atoms necessary for the formation of one ring to three fused rings having 5 to 6 atoms in each ring and said R_3, R_4, R_8 and R_9 groups are attached to said rings;

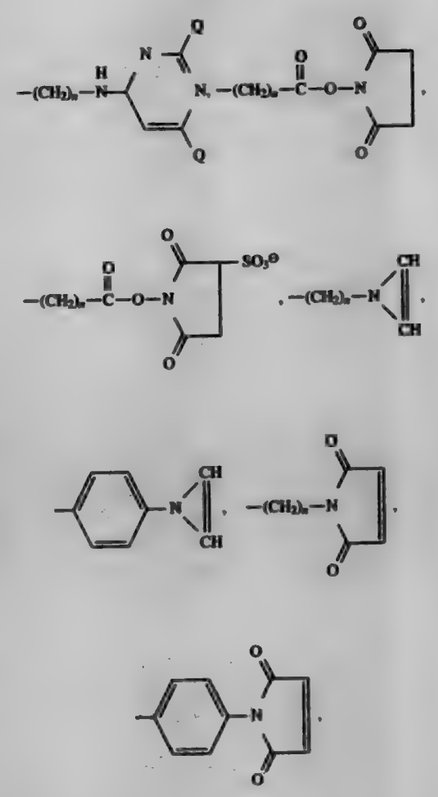
at least one of X and Y is oxygen and the other is selected from the group consisting of O, S and CH_3—C—CH_3;

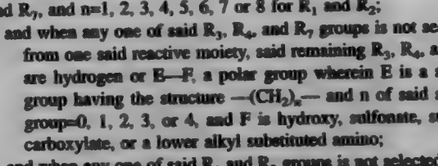
m is an integer selected from the grouping consisting of 1, 2 and 3;

at least one of said R_1, R_2, R_3, R_4 and R_7 groups reacts with amino, hydroxy or sulfhydryl nucleophiles and is a reactive moiety selected from the group consisting of



-continued





wherein Q is Br or Cl, and n=0, 1, 2, 3, 4, 5, 6, 7 or 8 for R_3, R_4 and R_7, and n=1, 2, 3, 4, 5, 6, 7 or 8 for R_1 and R_2;

and when any one of said R_3, R_4, and R_7 groups is not selected from one said reactive moiety, said remaining R_3, R_4, and R_7 are hydrogen or E—F, a polar group wherein E is a spacer group having the structure —$(CH_2)_n$— and n of said spacer group=0, 1, 2, 3, or 4, and F is hydroxy, sulfonate, sulfate, carboxylate, or a lower alkyl substituted amino;

and when any one of said R_1 and R_2 groups is not selected from one said reactive moiety, said remaining R_1 or R_2 are a lower alkyl or said E—F and n of said spacer group=1, 2, 3, or 4;

at least one said R_8 and R_9 groups is selected from the group consisting of a sulfonic acid and sulfonate moiety attached directly to one of said one ring to three fused rings for conferring luminescence to said dye, wherein said ring or rings to which said sulfonic acid or sulfonate moiety is attached is an aryl ring;

and when one of said R_8 or R_9 group is not a sulfonic acid or sulfonate, said remaining R_8 or R_9 group is a hydrogen.

5,486,617

PROCESS FOR THE PREPARATION OF 2-SUBSTITUTED 5-CHLOROIMIDAZOLE-4-CARBALDEHYDES

Gareth Griffiths, Visp; René Imwinkelried, Brig-Glis, and Jacques Gosteli, Basel, all of, Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

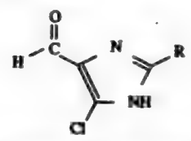
Filed Nov. 14, 1994, Ser. No. 340,377

Claims priority, application Switzerland, Nov. 15, 1993, 3410/93

Int. Cl.[6] C07D 233/68

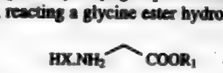
U.S. Cl. 548—333.5 12 Claims

1. A process for preparing a 2-substituted 5-chloroimidazole-4-carbaldehyde of the formula:



I

wherein R is hydrogen, an alkyl group, an alkenyl group, a cycloalkyl group, an arylalkyl group or an aryl group, comprising: in a first stage, reacting a glycine ester hydrohalide of the formula:



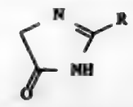
II

wherein R_1 is an alkyl group and X is a halogen atom, with an imidate ester of the formula:



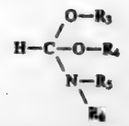
III

wherein R has the above-mentioned meaning, and R_2 is an alkyl group, in the presence of a base to obtain a 2-substituted 3,5-dihydroimidazole-4-one of the formula:



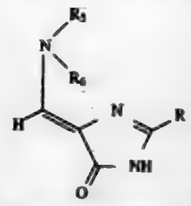
IV

wherein R has the above-mentioned meaning, in a second stage, converting said 2-substituted 3,5-dihydroimidazol-4-one of the formula IV with an N,N-substituted formamide acetal of the formula:



V

wherein R_3 and R_4 are identical or different and each is an alkyl group or an arylalkyl group, and R_5 and R_6 are identical or different and each is an alkyl group or an aryl group, to give an N,N-substituted aminomethyleneimidazolinone of the formula:



VI

wherein R, R_5 and R_6 have the above-mentioned meanings, and, finally in the third stage, the N,N-substituted aminomethyleneimidazolinone of the formula VI is chlorinated with phosphorus oxychloride or phosgene to give the final product, namely, the 2-substituted 5-chloroimidazole-4-carbaldehyde of the formula I.

5,486,618

SUBSTITUTED 5-AMINOPYRAZOLES

Helmut Hagen, Frankenthal; Gerhard Nilz, Darmstadt-Schnaerlheim; Helmut Walter, Obrigheim, and Andreas Landes, Limburgerhof, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshaven, Germany

PCT No. PCT/EP91/02286, § 371 Date Jun. 7, 1993, § 102(e) Date Jun. 7, 1993, PCT Pub. No. WO92/10480, PCT Pub. Date Jun. 25, 1992

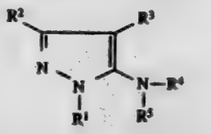
PCT Filed Dec. 3, 1991, Ser. No. 70,386

Claims priority, application Germany, Dec. 13, 1990, 40 39 733.5

Int. Cl.[6] C07D 231/00

U.S. Cl. 548—362.1 10 Claims

1. A substituted 5-aminopyrazole of the formula I



I

where

R^1 is C_1–C_8-alkyl, C_1–C_8-hydroxyalkyl or a phenyl group which may carry from one to three of the following radicals: halogen, nitro, C_1–C_6-alkyl, partially or completely halogenated C_1–C_6-alkyl, C_1–C_6-alkoxy, partially or completely halogenated C_1–C_6-alkoxy, C_1–C_6-alkylthio or —NR^6R^7, where R^6 and R^7 are each hydrogen or C_1–C_4-alkyl, and the phenyl group may additionally carry a number of halogen atoms so that the total number of radicals is 4 or 5;

R^2 is hydrogen or C_1–C_6-alkyl which may be unsubstituted or partially or completely halogenated;

R^3 is cyano or CO—R^8 or CS—R^8, where R^8 is hydroxyl, C_1–C_6-alkoxy, amino, C_1–C_6-alkylamino or di-C_1–C_4-alkylamino;

R^4 and R^5 are each hydrogen, C_1–C_6-alkyl, $PX(OR^9)_2$, SO_2—R^9, CX—R^{10}, CX—NH—CY—R^9 or CX—NH—SO_2—R^{11}, where X and Y are each oxygen or sulfur;

R^9 is one of the substituents R^1;

R^{10} is C_1–C_{20}-alkyl, C_1–C_4-alkoxy or a phenyl group which may carry from one to three of the following radicals: halogen, nitro, C_1–C_4-alkyl, partially or completely halogenated C_1–C_4-alkyl, C_1–C_4-alkoxy, partially or completely halogenated C_1–C_4-alkoxy, C_1–C_4-alkylthio or —NR^6R^7, and which may additionally carry a further number of halogen atoms so that the total number of radicals is 5; amino which may be unsubstituted or may carry a C_1–C_6-alkyl, cycloalkyl or phenyl radical, where the phenyl radical may additionally carry from one to three of the following radicals: halogen, C_1–C_4-alkyl, partially or completely halogenated C_1–C_4-alkyl, C_1–C_4-alkoxy, partially or completely halogenated C_1–C_4-alkoxy or C_1–C_4-alkylthio, and the phenyl group may additionally contain a further number of halogen atoms so that the total number of radicals is 4 or 5;

R^{11} is amino, C_1–C_4-alkylamino, di-C_1–C_4-alkylamino, pyrrolidinyl, piperidinyl or morpholinyl;

or

R^4 and R^5 together form a group =$CR^{12}R^{13}$ or —CO—W—CO—, where R^{12} is hydrogen, amino, C_1–C_4-alkylamino or C_3—C_6-cycloalkylamino;

R^{13} is amino, C_1–C_4-alkylamino, di-C_1–C_4-alkylamino, C_3–C_6-cycloalkylamino, pyrrolidin-1-yl, piperidin-1-yl, morpholin-4-yl, phenyl or pyridyl, where the two last-mentioned substituents may furthermore carry from one to three of the following radicals: halogen, nitro, C_1–C_4-alkyl, partially or completely halogenated C_1–C_6-alkyl, C_1–C_6-alkoxy, partially or completely halogenated C_1–C_6-alkoxy or C_1–C_6-alkylthio;

W is an ethylene or ethenylene bridge, a 5-membered or 6-membered 1,2-C-bonded aromatic or heteroaromatic bridge having a nitrogen, oxygen or sulfur atom as the hetero atom, where these bridge members may furthermore carry, on each substitutable carbon atom, a radical selected from up to 2 of the following: halogen, C_1–C_4-alkyl, partially or completely halogenated C_1–C_4-alkyl, C_1–C_6-alkoxy, partially or completely halogenated C_1–C_4-alkoxy, C_1–C_6-alkylthio and partially or completely halogenated C_1–C_4-alkylthio, and where the bridge members may additionally carry a number of halogen atoms equivalent to the number of further substitutable carbon atoms, or

a 5-membered or 6-membered 1,2-C-bonded cycloalkylene or cycloalkenylene bridge, where these substituents may furthermore carry from one to four of the following radicals: halogen or C_1–C_4-alkyl;

and the basic salts of the compounds I in which R^3 is hydroxycarbonyl or hydroxythiocarbonyl, and the acidic salts of the compounds I which contain a basic nitrogen atom,

with the exception of 1-phenyl- and 1-methyl-4-cyano-5-acylaminopyrazole, 1-methyl-4-cyano-5-(chloromethylcarbonylamino)-pyrazole, 1-methyl-4-cyano-5-(phenylcarbonylamino)-pyrazole, 1-methyl-4-cyano-5-(p-chlorophenylcarbonylamino)-pyrazole, 5-amino-4-cyano-1-methylpyrazole, 5-amino-4-cyano-1,3-dimethylpyrazole, 5-amino- 4-cyano-1-methyl-3-trifluoromethylpyrazole, 5-amino-1,3 -dimethylpyrazole-4-carboxamide, 5-amino-1-methylpyrazole- 4-carboxamide, 5-amino-1-(2-hydroxyethyl)-pyrazole-4-carboxamide, 5-amino-4-cyano-1-(2-hydroxyethyl)-pyrazole and those compounds I in which either

R^1 is unsubstituted or substituted phenyl and R^4 and R^5 are simultaneously hydrogen or

R^1 is unsubstituted or substituted phenyl, R^2 and R^5 are each hydrogen, R^3 is cyano and R^4 is hydrogen or C_1–C_4-alkylamino or

R^1 is substituted phenyl, R^2 and R^5 are each hydrogen,

R^3 is cyano, C_1–C_4-alkoxycarbonyl, aminocarbonyl or C_1–C_4-alkylaminocarbonyl and R^4 is CX—(C_1–C_4-alkoxy), or substituted or unsubstituted CX—NH_2, and

with the exception of those compounds I in which one of the radicals R^4 or R^5 is C_1–C_5-alkyl and the other is methoxycarbonyl or ethoxycarbonyl when R^2 is hydrogen, R^3 is cyano and R^1 is substituted phenyl.

5,486,619

METHOD OF PRODUCING DAI FROM DOPA, USING ONE REACTION VESSEL

Gottfried Wenke, Woodbridge; Yuh-Geo Pan, Stamford; Mu-Ill Lim, Trumbull, and Liane Stanaitis, Fairfield, all of Conn., assignors to Clairol, Inc., New York, N.Y.

Filed Apr. 29, 1994, Ser. No. 235,763

Int. Cl.[6] C07D 209/08

U.S. Cl. 548—508 20 Claims

1. A method of producing and isolating 5,6-diacetoxyindole in a single reaction vessel comprising the following steps:

(a) preparing a first solution comprising dopa, water and a solubilizing agent selected from the group consisting of an acid having a pk_a value equal to or less than 4 and a first base having a pk_b value equal to or greater than 10;

(b) preparing a second solution comprising an oxidant, a buffer and water;

(c) mixing the first and second solutions to form a combined solution which is rendered oxygen-free and has a pH of from about 6 to about 9;

(d) stirring said combined solution in an inert atmosphere until 5,6-dihydroxyindole is substantially completely formed;

(e) adding a derivatizing agent and a second base to said combined solution to form a final solution, wherein said derivatizing agent is present in an amount to derivatize substantially all of said 5,6-dihydroxyindole;

(f) stirring said final solution until said 5,6-dihydroxyindole is substantially fully consumed;

(g) cooling said final solution to precipitate 5,6-diacetoxyindole;

(h) isolating the precipitated 5,6-diacetoxyindole.

5,486,620

INTERMEDIATES FOR THE SYNTHESIS OF KAINIC ACID

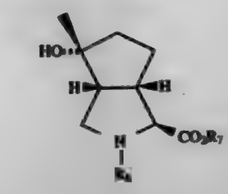
James A. Monn, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 56,687, Apr. 30, 1993, Pat. No. 5,352,799, which is a continuation-in-part of Ser. No. 985,986, Dec. 4, 1992, Pat. No. 5,319,095. This application Apr. 22, 1994, Ser. No. 231,543

Int. Cl.[4] C07D 513/16

U.S. Cl. 548—515 10 Claims

1. A compound off the formula



III

wherein

R_6 is hydrogen, acyl, alkoxycarbonyl, or arylalkoxycarbonyl; and

R_7, is hydrogen, C_1–C_6 alkyl, aryl, or arylalkyl.

5,486,621

FUNGICIDES FOR THE CONTROL OF TAKE-ALL DISEASE OF PLANTS

Dennis Phillion, St. Charles; Sui C. Weng, Chesterfield, and Barry Shortt, New Melle, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 15, 1994, Ser. No. 356,770

Int. Cl.[6] C07D 333/72; A01N 43/10

U.S. Cl. 549—4 7 Claims

1. A compound which is 4,5-dimethyl-N-2-propenyl-2-trimethylsilyl)-3-thiophenecarboxamide.

5,486,622

PROCESS AND INTERMEDIATE PRODUCTS FOR THE PRODUCTION OF 5-OXASPIRO [2.4] HEPTAN-6-ONE

Paul Hanselmann, Visp, Switzerland, assignor to Lonza Ltd., Gampel/Valais, Switzerland

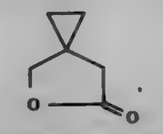
Filed Apr. 5, 1995, Ser. No. 417,250

Claims priority, application Switzerland, Apr. 21, 1994, 1230/94

Int. Cl.[6] C07D 307/94; 307/26; C07C 255/00

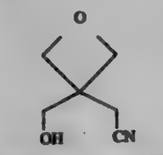
U.S. Cl. 549—265 8 Claims

1. A process for the production of 5-oxaspiro[2.4]heptan-6-one of formula:



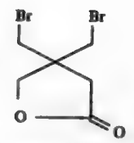
I

comprising converting [3-(hydroxymethyl)oxetan-3-yl]acetonitrile of formula:



II

with hydrogen bromide to 4,4-bis(bromomethyl)dihydro-2-furanone of formula:



III

and cyclizing the 4,4-bis(bromoethyl)dihydro-2-furanone of formula III with zinc to the 5-oxaspiro[2.4]heptan-6-one of formula I.

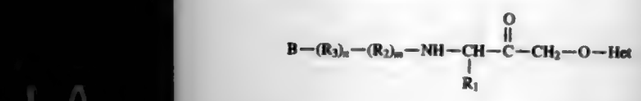
5,486,623

CYSTEINE PROTEASE INHIBITORS CONTAINING HETEROCYCLIC LEAVING GROUPS

Mary P. Zimmerman, Pleasonton, and Robert E. Smith, Livermore, both of Calif., assignors to Prototek, Inc., Dublin, Calif.

Filed Dec. 8, 1993, Ser. No. 164,031
Int. Cl.[6] C07D *315/00;307/02;207/00;* **A61K** *31/35*
U.S. Cl. 549—417 **11 Claims**

1. Cathepsin inhibitors of the formula:



wherein

B is H or an amino acid blocking group for an N-terminal amino acid nitrogen;

R_1 is the amino acid side chain of the P_1 amino acid residue;

R_2 is the amino acid residue of the P_2 amino acid;

R_3 is the amino acid residue of the P_3 amino acid;

n is 0 or 1;

m is 0 or 1; and

Het is a pyrone.

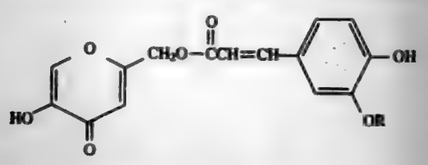
5,486,624

KOJIC ACID DERIVATIVE

Chang M. Yang, Seongnam; Jong Y. Hong; Ki W. Lee, both of Seoul; Byeong G. Lee, Suwon, and Dong I. Chang, Anyang, all of, Rep. of Korea, assignors to Pacific Corporation, Seoul, Rep. of Korea

Filed Jan. 19, 1995, Ser. No. 374,914
Claims priority, application Rep. of Korea, Feb. 1, 1994, 1994-1795
Int. Cl.[6] C07D *309/40*
U.S. Cl. 549—418 **1 Claim**

1. A kojic acid derivative represented by the formula (I):



(I)

wherein, R is a hydrogen atom or methyl group.

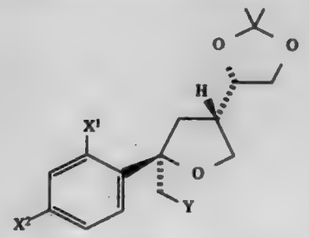
5,486,625

PROCESS FOR THE PREPARATION OF CHIRAL INTERMEDIATES USEFUL FOR THE SYNTHESIS OF ANTIFUNGAL AGENTS

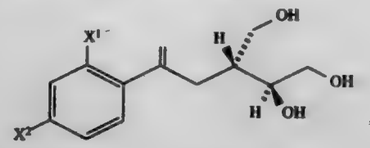
William Leong, Westfield, and Lyman H. Smith, Piscataway, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Jul. 8, 1994, Ser. No. 272,411
Int. Cl.[6] C07D *317/00;249/08;233/04*
U.S. Cl. 549—448 **17 Claims**

1. A process for preparing chiral compounds of the formula

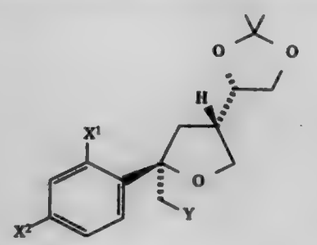


wherein X^1 and X^2 are independently F or Cl, and Y is Cl, Br or I, comprising reacting a triol of the formula



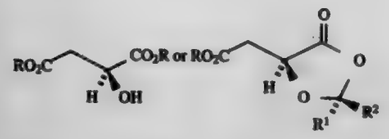
wherein X^1 and X^2 are as defined above, with acetone in the presence of a catalyst, then with a halogen selected from Cl_2, Br_2 or I_2, or N-bromosuccinimide or N-iodosuccinimide.

6. A process for preparing chiral compounds of the formula



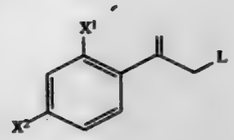
wherein X^1 and X^2 are independently F or Cl, and Y is Cl, Br or I, comprising the steps:

(a) using a nonaqueous base to deprotonate a chiral compound of the formula

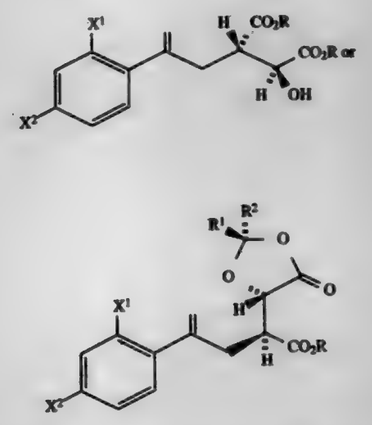


wherein: R is C_1-C_6 alkyl;

one of R^1 or R^2 is H and the other is —$C(CH_3)_3$ or —CCl_3, or R^1 and R^2 are both C_1-C_6 alkyl, or R^1 and R^2 together with the carbon to which they are attached comprise a 6-membered carbocyclic ring, then treating with a compound of the formula

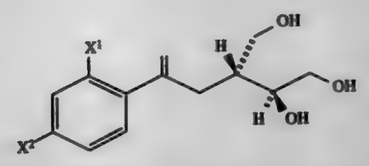


wherein X^1 and X^2 are as defined above and L is a leaving group, to form a chiral compound of the formula



respectively, wherein X^1, X^2, R, R^1 and R^2 are as defined above;

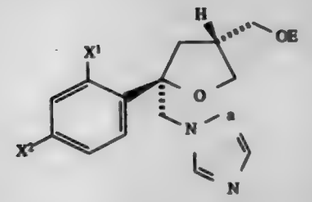
(b) reducing the product of step (a) with a hydride reducing agent to form a chiral triol of the formula



wherein X^1 and X^2 are as defined above; and

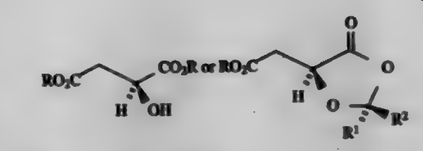
(c) reacting the triol of step (b) with acetone in the presence of a catalyst, then with a halogen selected from Cl_2, Br_2 or I_2, or N-bromosuccinimide or N-iodosuccinimide.

8. A process for preparing a compound of the formula



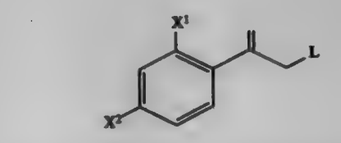
wherein: a is CH or N; X^1 and X^2 are independently F or Cl; and E is —SO_2R^6, wherein R^6 is C_1-C_6 alkyl, CF_3, aryl, or substituted aryl, wherein said substituted aryl is an aryl group having 1 to 3 substituents selected from halogeno, C_1-C_6 alkyl, NO_2 and CF_3, comprising the steps:

(a) using a nonaqueous base to deprotonate a chiral compound of the formula

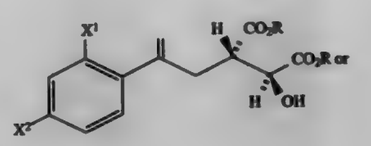


wherein: R is C_1-C_6 alkyl;

one of R^1 or R^2 is H and the other is —$C(CH_3)_3$ or —CCl_3, or R^1 and R^2 are both C_1-C_6 alkyl, or R^1 and R^2 together with the carbon to which they are attached comprise a 6-membered carbocyclic ring, then treating with a compound of the formula

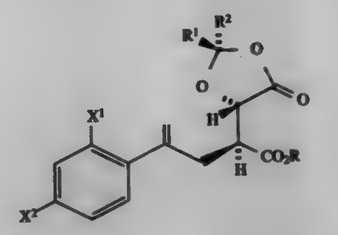


wherein X^1 and X^2 are as defined above and L is a leaving group, to form a chiral compound of the formula



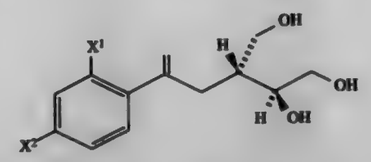
respectively, wherein X^1, X^2, R, R^1 and R^2 are as defined above;

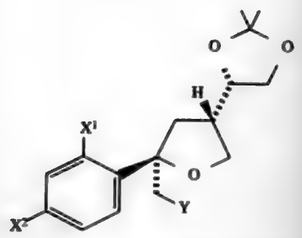
(b) reducing the product of step (a) with a hydride reducing agent to form a chiral triol of the formula



wherein X^1 and X^2 are as defined above;

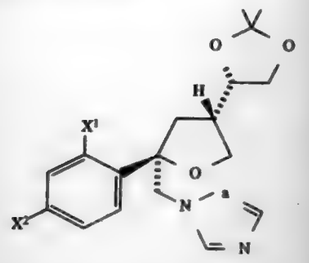
(c) reacting the triol of step (b) with acetone in the presence of a catalyst, then with a halogen selected from Cl_2, Br_2 or I_2, or N-bromosuccinimide or N-iodosuccinimide, to form a chiral tetrahydrofuran of formula





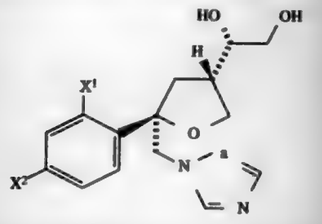
wherein X^1 and X^2 are as defined above and Y is Cl, Br or I;

(d) treating the tetrahydrofuran of step (c) with an alkali metal triazole or imidazole to form a chiral triazole or imidazole compound of the formula

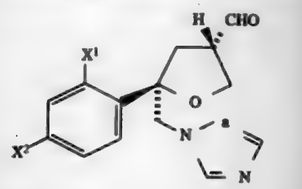


wherein a, X^1 and X^2 are as defined above;

(e) hydrolyzing the triazole or imidazole product of step(d) with an aqueous acid to form a diol intermediate of the formula

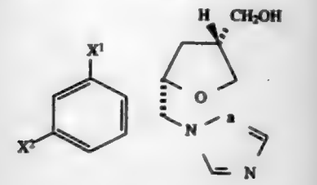


followed by oxidatively cleaving the diol using H_5IO_6, $NaIO_4$ or $Pb(OAc)_4$ to form an aldehyde of the formula



wherein a, X^1 and X^2 are as defined above;

(f) reducing the aldehyde of step (e) with a hydride reducing agent to form an alcohol of the formula



wherein a, X^1 and X^2 are as defined above; and

(g) treating the alcohol of step (f) with a compound of the formula E-X, wherein X is Cl or Br, and E is as defined above.

5,486,626

PROCESS FOR THE PREPARATION OF 3β-AMINOCHOLANIC ACID DERIVATIVES

Alfons Eahsen, Büttelborn; Heiner Glombik, Hofheim/Ts.; Werner Kramer, Mainz, and Günther Wess, Erlensee, all of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

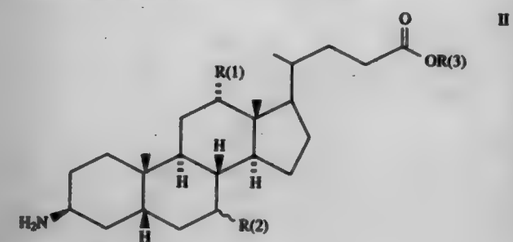
Filed Mar. 7, 1994, Ser. No. 206,321

Claims priority, application Germany, Mar. 9, 1993, 43 07 305.0

Int. Cl.[6] C07J *41/00*

U.S. Cl. 552—521 **4 Claims**

1. A process for the preparation of a 3β-aminocholanic acid derivative of the formula II



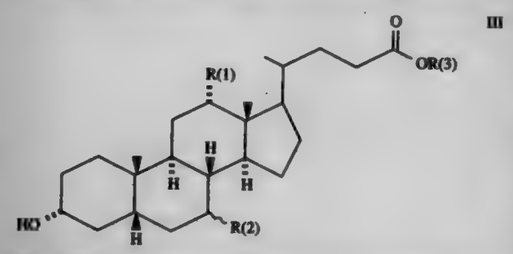
in which R(1) is H or OH,

R(2) is H, α-OH or β-OH

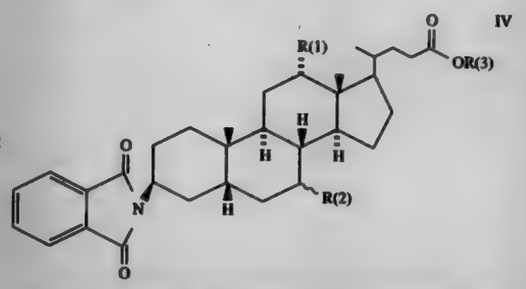
and R(3) is an unbranched C_1–C_4-alkyl radical or a branched C_3–C_4-alkyl or a benzyl radical,

and of a salt thereof with a mineral acid, which comprises

a) reacting a 3α-hydroxycholanic acid ester of the formula III



with phthalimide to give the 3β-phthalimido derivative of the formula IV



b) reacting a resulting 3β-phthalimidocholanic acid ester of the formula IV with hydrazine hydrate or phenylhydrazine and

c) splitting the phthalimide group by treating the reaction product with an aqueous solution of a mineral acid, an acid addition salt of the compound II with the mineral acid being formed.

5,486,627

METHOD FOR PRODUCING EPOXIDES

George J. Quarderer, Jr., Midland, Mich.; Curtis N. Swisher, and David L. Trent, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 2, 1994, Ser. No. 348,639

Int. Cl.[6] C07D *301/26;303/04;303/08;303/14*

U.S. Cl. 549—521 **32 Claims**

1. A method for producing epoxides comprising the steps:

(a) forming a low chlorides aqueous hypochlorous acid solution;

(b) contacting the low chlorides aqueous hypochlorous acid solution with at least one unsaturated organic compound to form an aqueous organic product comprising at least olefin chlorohydrin, wherein the unsaturated organic compound contains from 2 to about 10 carbon atoms and is selected from the group consisting of substituted and unsubstituted olefins and cyclic olefins, the substituted olefins having substituents selected from the group consisting of an alkyl radical, a phenyl radical, and an alkylphenyl radical, each radical being independently either unsubstituted or substituted;

(c) contacting at least the olefin chlorohydrin with an aqueous alkali metal hydroxide to form an aqueous salt solution product containing at least epoxide; and

(d) isolating the epoxide from the aqueous salt solution;

wherein water is recovered from the product of at least Step (b) and recycled into Step (a) for use in forming the low chlorides aqueous hypochlorous acid solution.

5,486,628

ETHYLENE OXIDE CATALYST AND PROCESS

Richard A. Kemp, 11510 Chariot, Stafford, Tex. *77477*

Division of Ser. No. 64,287, May 17, 1993, Pat. No. 5,447,897. This application May 23, 1995, Ser. No. 448,149

Int. Cl.[6] C07D *301/10;303/04*

U.S. Cl. 549—536 **6 Claims**

1. In a process for the production of ethylene oxide wherein ethylene is contacted in the vapor phase with an oxygen-containing gas at ethylene oxide forming conditions at a temperature in the range of from about 180° C. to about 330° C. in the presence of a silver metal-containing catalyst, the improvement which comprises using a catalyst comprising a catalytically effective amount of silver, a promoting amount of alkali metal, a promoting amount of a rare earth metal compound and a promoting amount of rhenium supported on a suitable support having a surface area in the range of from about 0.05 m^2/g to about 10 m^2/g.

5,486,629

DIRECT DYES HAVING A QUATERNARY CENTER WITH A LONG ALIPHATIC CHAIN

Alexander Chan, Mineola, N.Y., and Yuh-Gao Pan, Stamford, Conn., assignors to Clairol, Inc., New York, N.Y.

Division of Ser. No. 179,289, Jan. 10, 1994, Pat. No. 5,360,930, which is a division of Ser. No. 939,282, Sep. 1, 1992, Pat. No. 5,314,505. This application Jul. 28, 1994, Ser. No. 281,818

Int. Cl.[6] C09B *1/16*

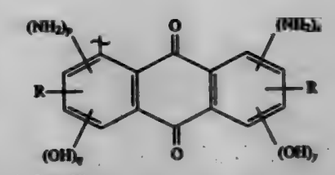
U.S. Cl. 552—236 **1 Claim**

1. An aminoanthraquinone dye compound of the formula (I):

$$Q\text{-}NR_a(CH_2)_n\text{-}N^+R_1R_2R_3\ X^-$$

or a cosmetically acceptable salt thereof, wherein

Q is an anthraquinone of the formula (V):



(V)

a is 2 to 12;

p, q, x, and y are, independent of each other, 0, 1, or 2;

R is hydrogen, C_{1-6} alkyl, C_{1-6} hydroxyalkyl, C_{1-6} polyhydroxyalkyl, halogen, C_{1-6} alkoxy, halogenated C_{1-3} alkyl, polyhalogenated C_{1-3} alkyl, CN, amide, or COOH;

R_1 is C_{1-6} alkyl, C_{1-6} hydroxyalkyl, or C_{1-6} polyhydroxyalkyl;

R_2 is C_{1-6} alkyl, C_{1-6} hydroxyalkyl, or C_{1-6} polyhydroxyalkyl;

R_3 is a C_{8-22} aliphatic chain;

R_a is hydrogen, C_{1-6} alkyl, C_{1-6} hydroxyalkyl, or C_{1-6} polyhydroxyalkyl; and

X^- is a monovalent or divalent anion.

5,486,630

LEGIONELLA SPECIFIC ANTIBIOTIC

Yong W. Lee, Seoul; Young S. Lee, Goyang; Chang S. Yoo, Seoul; Jung W. Suh, Incheon; Chul H. Lee, Seoul; Young H. Lim, Anyang, and Ick D. Yoo, Daejeon, all of, Rep. of Korea, assignors to Cheil Foods & Chemicals Inc., Seoul, and Korea Institute of Science and Technology, Seongbuk-ku, both of, Rep. of Korea

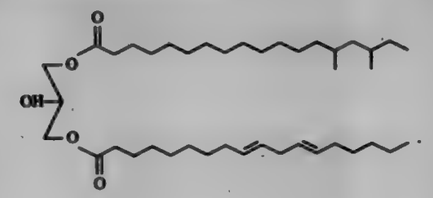
Filed Nov. 14, 1994, Ser. No. 340,358

Claims priority, application Rep. of Korea, Sep. 14, 1994, 94-23582; Sep. 14, 1994, 94-23583; Sep. 14, 1994, 94-23584

Int. Cl.[6] C07C *59/00*; A61N *37/06*; C12P *7/02*; A61K *39/02*

U.S. Cl. 554—1 **1 Claim**

1. A compound of the formula:



5,486,631

SILICONE POLYMERS FOR THE MODIFICATION OF ZINC OXIDE

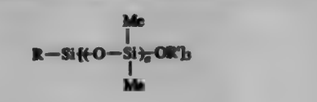
Mark Mitchnick, Hampton, N.Y., and Anthony J. O'Lenick, Jr., Lilburn, Ga., assignors to Siltech Inc., Norcross, Ga., and Sunsmart Inc., Wainscott, N.Y.

Filed Jun. 14, 1995, Ser. No. 490,494

Int. Cl.[6] C07F *3/06*

U.S. Cl. 556—10 **18 Claims**

1. A hydrophobic zinc oxide which is prepared by the reaction of a silicone compound conforming to the following structure:



Me is methyl;

R is alkyl having one to ten carbon atoms;

R' is methyl or ethyl;

a is an integer ranging from 4 to 12;

with zinc oxide.

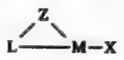
5,486,632

GROUP 4 METAL DIENE COMPLEXES AND ADDITION POLYMERIZATION CATALYSTS THEREFROM

David D. Devore; Francis J. Timmers, both of Midland, Mich.; James C. Stevens, Richmond, and Robert K. Rosen, Sugar Land, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 28, 1994, Ser. No. 267,993
Int. Cl.[6] C08F 4/643;4/642
U.S. Cl. 556—11 10 Claims

1. A metal complex containing one and only one cyclic, delocalized, anionic, π-bonded group, said complexes corresponding to the formula:



wherein:

M is a Group 4 metal in the +4 formal oxidation state;

L is a group containing a cyclic, delocalized, anionic, π-system through which the group is bound to M, and which group is also bound to Z;

Z is a moiety bound to M via a σ-bond, comprising an element selected from the group consisting of boron, and the members of Group 14 of the Periodic Table of the Elements, and also comprising an element selected from the group consisting of nitrogen, phosphorus, sulfur and oxygen, said moiety having up to 60 non-hydrogen atoms; and

X is a conjugated diene or a hydrocarbyl-, halocarbyl-, or silyl-substituted derivative thereof, said X having from 4 to 40 non-hydrogen atoms, and being coordinated to M so as to form a metallocyclopentene therewith.

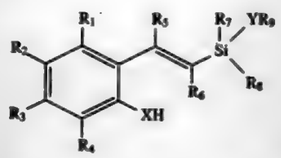
5,486,633

PHOTOCHEMICALLY-REMOVABLE SILYL PROTECTING GROUPS

Michael C. Pirrung, Houston, Tex., and Yong Rok Lee, Durham, N.C., assignors to Duke University, Durham, N.C.

Filed Nov. 10, 1994, Ser. No. 339,216
Int. Cl.[6] C07F 7/08;7/10
U.S. Cl. 556—410 10 Claims

1. A photochemically-removable silyl protecting agent of the Formula (I):



(I)

wherein:

R_1–R_6 are, independently, hydrogen, alkyl, O-alkyl, N-alkyl, S-alkyl, aryl, heteroaryl or halogen;

R_7–R_8 are alkyl;

YR_9 is a leaving group; and

X is S, O or NH;

or salt thereof.

5,486,634

METHOD FOR THE PREPARATION OF ORGANOPOLYSILOXANES WITH SECONDARY AMINOALKYL GROUPS LINKED THROUGH A CARBON ATOM TO A SILICON ATOM

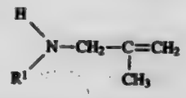
Günter Hahn; Klaus-Dieter Klein, both of Mülheim, and Dietmar Schäfer, Hattingen, all of, Germany, assignors to Th. Goldschmidt AG, Essen, Germany

Filed Dec. 22, 1994, Ser. No. 362,098
Claims priority, application Germany, Dec. 23, 1993, 43 44 082.7
Int. Cl.[6] C07F 7/10
U.S. Cl. 556—425 3 Claims

1. A method for the synthesis of organopolysiloxanes having secondary aminoalkyl groups linked over carbon atoms to silicon atoms comprising the steps of

hydrosilylating secondary aminoalkenes with hydrogen siloxanes in presence of platinum catalysts and, optionally, by subsequently equilibrating under basic conditions thus obtained organo-modified organopolysiloxanes with cyclic siloxanes,

further comprising that the secondary aminoalkene has a general formula



wherein R^1 is an alkyl group having 1 to 4 carbon atoms, with the proviso that the secondary aminoalkene is linked to the silicon atoms exclusively through a γ-addition.

5,486,635

METHOD FOR PREPARING DIORGANOPOLYSILOXANE HAVING A FUNCTIONAL GROUP AT ONLY ONE END OF THE MOLECULAR CHAIN

Tadashi Okawa, Chiba, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1995, Ser. No. 428,938
Claims priority, application Japan, Apr. 28, 1994, 6-113951
Int. Cl.[6] C07F 7/08
U.S. Cl. 556—437 12 Claims

1. A method for preparing a diorganopolysiloxane of the formula

$$R((R_2SiO)_nB$$

wherein R is an independently selected monovalent hydrocarbon group, B is selected from the group consisting of a hydrogen atom and an organosilyl group having the formula

$$—SiR_2R'$$

in which R is as defined above, R' is selected from the group consisting of a hydrogen atom and an organo functional group and p is an integer having a value of at least 1, said method comprising:

(1) polymerizing, in a nonequilibrium polymerization reaction,

(A) a cyclic trisiloxane having the formula

$$(SiR_2O)_3$$

in which R is as defined above, optionally in the presence of

(B) a compound having its formula

$$R(R_2SiO)_nH$$

in which R is as defined above and m is an integer having a value of at least 1, using

(C) a lithium compound catalyst of the general formula

$$R(R_2SiO)_nLi$$

in which R is as defined above and n is an integer having a value of at least 0, said nonequilibrium polymerization reaction taking place in the presence of

(D) a compound selected from the group consisting of a nitrile compound and an ester compound and

(E) a polar solvent which does not contain activated hydrogen; and

(II) terminating the nonequilibrium polymerization reaction product obtained from step (I) using

(F) a compound selected from the group consisting of an acid and an organohalogenosilane of the formula

$$R'R_2SiX$$

in which R and R' are as defined above and X is a halogen atom.

5,486,636

SYNTHESIS OF 19-NOR VITAMIN D COMPOUNDS

Hector F. DeLuca, Deerfield; Heinrich K. Schnoes; Kato L. Perlman, both of Madison, all of Wis., and Rolf E. Swenson, Lake Bluff, Ill., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 180,702, Jan. 13, 1994, Pat. No. 5,391,755, which is a division of Ser. No. 979,482, Nov. 20, 1992, Pat. No. 5,281,731, which is a continuation of Ser. No. 705,917, May 28, 1991, abandoned. This application Oct. 26, 1994, Ser. No. 329,334
Int. Cl.[6] C07C 35/17;35/14;43/184; C07F 7/02
U.S. Cl. 556—443 1 Claim

1. A compound of the structure:

where X^1 and X^2, which may be the same or different, represent hydrogen or a hydroxy-protecting group and where Y^1 represents hydroxy, protected-hydroxy, O-tosyl, O-mesyl, bromine, chlorine or iodine.

5,486,637

UNSATURATED ALCOHOLS AS ACCELERATORS FOR HYDROSILATION

Howard M. Bank, Freeland, and Gary T. Decker, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Apr. 17, 1995, Ser. No. 425,007
Int. Cl.[6] C07F 7/08;7/18
U.S. Cl. 556—479 22 Claims

1. A hydrosilation process comprising: contacting

(A) a silicon hydride described by formula

$$R^1_aH_bSiX_{4-a-b}$$ (I),

where each R^1 is independently selected from a group consisting of alkyls comprising one to 20 carbon atoms, cycloalkyls comprising four to 12 carbon atoms, and aryls; each X is independently selected from a group consisting of halogen and organooxy radicals described by formula —OR^1, where R^1 is as previously described, a=0 to 3, b=1 to 3, and a+b=1 to 4; and

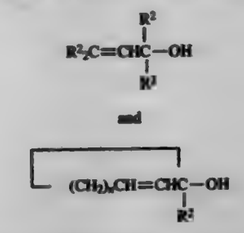
(B) an unsaturated reactant selected from a group consisting of

(i) substituted and unsubstituted unsaturated organic compounds,

(ii) silicon compounds comprising substituted or unsubstituted unsaturated organic substituents, and

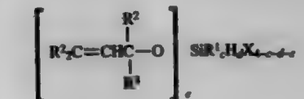
(iii) mixtures of (i) and (ii);

in the presence of a platinum catalyst selected from a group consisting of platinum compounds and platinum complexes, and an accelerator selected from a group consisting of unsaturated secondard and tertiary alcohols described by formulas

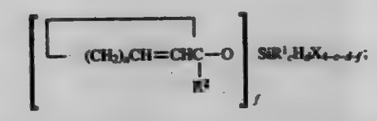


and

and silated unsaturated secondary and tertiary alcohols described by formulas



and



where each R^2 is independently selected from a group consisting of hydrogen and alkyls comprising one to six carbon atoms, each R^3 is an independently selected alkyl comprising one to six carbon atoms, c=0 to 3, d=0 to 3, c+d=0 to 3, e=1 to 4, f=1 to 4, and n=0 to 10.

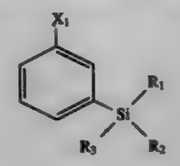
5,486,638

PROCESS FOR THE PREPARATION OF 1-HALO-3-TRIALKYSILANYL-BENZENE DERIVATIVES

Dennis K. Klipa, and Robert T. Keaten, both of Midland, Mich., assignors to Marion Merrell Dow Inc., Cincinnati, Ohio

Filed Nov. 8, 1994, Ser. No. 336,142
Int. Cl.[6] C07F 7/08
U.S. Cl. 556—480 15 Claims

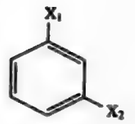
1. A process for the preparation of a compound of the formula:



wherein

X_1 is Cl Br or I; and

R_1, R_2 and R_3 are each independently C_1–C_4 alkyl, comprising adding a suitable ether to a mixture of $ClSiR_1R_2R_3$, magnesium, a suitable aromatic solvent and a compound of the formula:



wherein

X_1 and X_2 are each independently Cl Br or I and R_1, R_2 and R_3 are defined as above; provided X_2 is other than Br or Cl when X_1 is I; and further provided X_2 is other than Cl when X_1 is Br.

5,486,639

PROCESS FOR PREPARING BIS(PENTAERYTHRITOL PHOSPHATE ALCOHOL) ALKYLPHOSPHONATE

Jeffrey E. Teschow, Tarrytown, N.Y., assignor to Akzo Nobel NV, Arnhem, Netherlands

Division of Ser. No. 155,666, Nov. 22, 1993, Pat. No. 5,362,898. This application Aug. 30, 1994, Ser. No. 298,250

Int. Cl.[6] C07F 9/02

U.S. Cl. 558—74 **3 Claims**

1. A process for preparing a bis(pentaerythritol phosphate alcohol) alkylphosphonate compound which comprises the transesterification of a diphenyl alkyl phosphonate carrying the desired alkyl group with pentaerythritol phosphate alcohol.

5,486,640

PROCESS FOR PREPARING BIS(PENTAERYTHRITOL PHOSPHATE ALCOHOL) ALKYLPHOSPHONATE

Jeffrey E. Teschow, Tarrytown, N.Y., assignor to Akzo Nobel NV, Arnhem, Netherlands

Division of Ser. No. 155,666, Nov. 22, 1993, Pat. No. 5,362,898. This application Aug. 30, 1994, Ser. No. 298,249

Int. Cl.[6] C07F 9/02

U.S. Cl. 558—74 **3 Claims**

1. A process for preparing a bis(pentaerythritol phosphate alcohol) alkylphosphonate compound which comprises the reaction of pentaerythritol phosphate alcohol, a trialkylamine, and an alkylphosphonic dihalide.

5,486,641

SOLVENT-FREE PROCESS FOR THE PREPARATION OF THE BETA CRYSTALLINE MODIFICATION OF 2,2',2''-NITRILO[TRIETHYL-TRIS-(3,3',5,5',-TETRA-TERT-BUTYL-1,1'-BIPHENYL-2,2'-DIYL) PHOSPHITE]

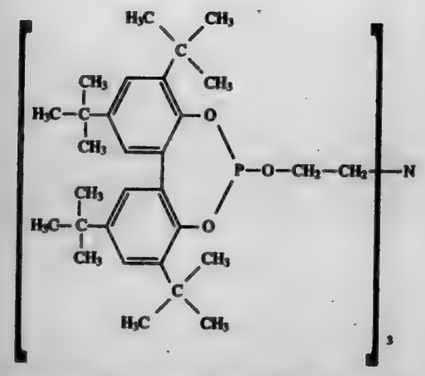
Sai P. Shum, Pleasantville, N.Y., and Stephen D. Pastor, Danbury, Conn., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Feb. 28, 1995, Ser. No. 396,315

Int. Cl.[6] C07F 9/6574

U.S. Cl. 558—78 **4 Claims**

1. A process for the preparation of the beta, triclinic form of the compound of formula I



(I)

characterized by melting in the range of 200°–207° C. and by an X-ray diffraction pattern exhibiting lines of very high intensity at 8.4 and 17; lines of high intensity at 9.9, 10.6, 11.4, 17.5, 19.1, 20.2; lines of medium intensity at 4.6, 4.9, 7.1, 12.7, 13.2, 13.6, 15.3, 15.8, 16.4, 16.7, 18.4, 19.7, 21.7, 23.4; and lines of weak intensity at 7.8, 8.8, 9.4, 12, 14.1, 14.6, 21, 22.3, 22.8, 23.9, 24.7, 25.3, 25.5, 26.4, 27.27.7, 28.4 and a relative absolute configuration of the three stereo axes of the dibenzo[d,f][1,3,2]dioxaphosphepin rings of R*,R*,S*, which comprises

placing the compound of formula I in a closed vessel and heating the vessel at atmospheric pressure to 90°–160° C. for 10–20 minutes to convert the starting compound into a crystalline mass which is the beta, triclinic crystalline form of the compound of formula I.

5,486,642

PROCESS FOR THE PRODUCTION OF CARBONIC ACID ESTERS

Frank-Gerald Kleiner, and Robert Becker, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 24, 1995, Ser. No. 410,504

Claims priority, application Germany, Apr. 5, 1994, 44 11 668.3

Int. Cl.[6] C07C 68/00

U.S. Cl. 558—270 **3 Claims**

1. Process for the production of carbonic acid esters (carbonates) by the reaction of carbonyl compounds of the formula (I)



in which

R denotes H, O—H, O—C_1–C_{10} alkyl or O—C_{6-C10} aryl or O-bisphenol and

X denotes H, C_1–C_{10} alkyl, C_6–C_{10} aryl, with metal ions (having a positive oxidation number) which cleave the C-X bond by oxidation and organic hydroxo compounds of the formula



(II),

in which

R denotes C_1–C_{10} alkyl and C_6–C_{30} aryl, optionally under a CO (carbon monoxide) atmosphere.

5,486,643

ISOMERIZATION OF 2-METHYL-3-BUTENENITRILE

Marc Huser, Villeurbanne, and Robert Perron, Charly, both of, France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Filed Oct. 11, 1994, Ser. No. 321,111

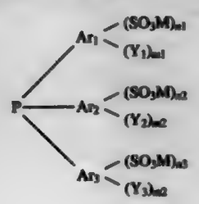
Claims priority, application France, Jan. 8, 1993, 93 12320

Int. Cl.[6] C07C 253/30

U.S. Cl. 558—355 **18 Claims**

1. A process for the conversion of 2-methyl-3-butenenitrile into a linear pentenenitrile, comprising isomerizing said 2-methyl-3-butenenitrile in the presence of a catalytically effective amount of an aqueous solution which comprises:

(a) at least one sulfonated phosphine of the general formula (I):



(I)

in which Ar_1, Ar_2 and Ar_3, which may be identical or different, are each an aryl radical; Y_1, Y_2 and Y_3, which may be identical or different, are each an alkyl radical having from 1 to 4 carbon atoms, an alkoxy radical having from 1 to 4 carbon atoms, a halogen atom, a CN radical, an NO_2 radical, an OH radical, or a radical NR_1R_2, in which R_1 and R_2, which may be identical or different, are each an alkyl radical having from 1 to 4 carbon atoms; M is an inorganic or organic cation selected such that the compound of formula (I) is water-soluble, from among H^+, cations derived from alkali metals or alkaline earth metals, $N(R_3R_4R_5R_6)$, in which R_3, R_4, R_5 and R_6, which may be identical or different are each an alkyl radical having from 1 to 4 carbon atoms, or a hydrogen atom, or other cations derived from metals, the benzenesulfonic acid salts thereof being water-soluble; m_1, m_2 and m_3 are integers, which may be identical or different, ranging from 0 to 5; and n_1, n_2 and n_3 are integers, which may be identical or different, ranging from 0 to 3, at least one of which being equal to or greater than 1; and

(b) at least one transition metal compound; to yield a product containing at least 66% by weight of a linear pentenenitrile.

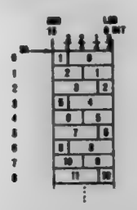
VOL 1182 ISS 4 JA 23 1996 UMI

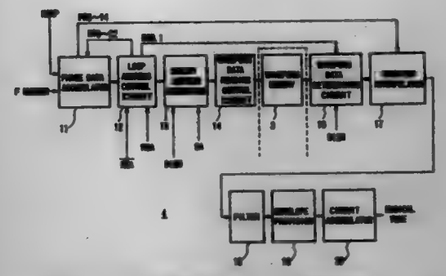
5,486,644

ELECTRONIC MUSICAL INSTRUMENT HAVING A WAVEFORM MEMORY FOR STORING VARIABLE LENGTH WAVEFORM DATA

Masaki Kudo, and Kyoko Ohno, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Sep. 15, 1992, Ser. No. 945,825
Claims priority, application Japan, Sep. 17, 1991, 3-236542
Int. Cl.[5] G10H 7/00
U.S. Cl. 811—604 7 Claims





1. An electronic musical instrument comprising:
a waveform memory for storing waveform data which is obtained by sequentially sampling musical tone waveforms, the waveform memory having a plurality of storage areas each of which is capable of storing a fixed number of bits, wherein if the length of the waveform data corresponding to a musical tone waveform is different from said fixed number of bits, the whole waveform data corresponding to the musical tone waveform is stored in the waveform memory so as not to generate vacant memory areas and the waveform data may be divided if necessary and the parts of the waveform data obtained by the division is stored in a plurality of neighboring storage areas of the waveform memory; and
musical tone generating means for generating a desired musical tone, including reading means for repetitively reading out waveform data corresponding to a portion of a waveform;
determining means for determining the waveform data from the read out data based on the length of the waveform data of the desired musical tone; and
tone generation means for generating the musical tone based on the determined waveform data.

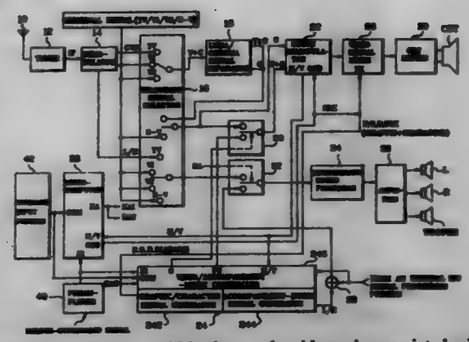
5,486,645

MUSICAL MEDLEY FUNCTION CONTROLLING METHOD IN A TELEVISON WITH A VIDEO/ ACCOMPANIMENT-MUSIC PLAYER

Jung S. Suh, and Sang S. Lee, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Jun. 30, 1994, Ser. No. 268,942
Claims priority, application Rep. of Korea, Jun. 30, 1993, 93-12407
Int. Cl.[5] G09B 15/04; G10H 1/36; H04N 5/76
U.S. Cl. 84—610 2 Claims

1. In a television having a karaoke player incorporated therewith, and being of the type which, upon a selection of a song, provides background video scene related to the selected song, accompaniment music associated with the selected song, and words for display on said background, said words associated with said selected song; a method for providing a musical medley function, comprising:
actuating a medley function key;
detecting the actuation of said medley function key;
displaying on a monitor of said television a list of song themes, in response to detecting the actuation of said medley function key;
actuating a key to select one of said displayed themes;
detecting the actuation of a key corresponding to one of the displayed themes;
displaying a list of song styles associated with the selected theme;
actuating a key to select one of said displayed song styles;
detecting the actuation of a key corresponding to one of the displayed styles;
selecting from a memory of stored songs, those songs having the theme and style selected by the actuation of said keys;
playing said songs seriatim on said karaoke player by providing accompaniment music, words, and background scenes for each said song.

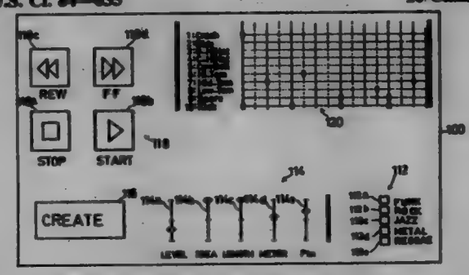


5,486,646

RHYTHM CREATING SYSTEM FOR CREATING A RHYTHM PATTERN FROM SPECIFYING INPUT DATA

Yuji Yamashita, and Katsuhiro Toyota, both of Osaka, Japan, assignors to Roland Corporation, Osaka, Japan

Continuation of Ser. No. 942,612, Sep. 10, 1992, Pat. No. 5,369,217. This application May 26, 1994, Ser. No. 249,743
Claims priority, application Japan, Jan. 16, 1992, 4-005679; Jan. 16, 1992, 4-005680; Jan. 16, 1992, 4-005682
Int. Cl.[6] G10H 1/40;7/00
U.S. Cl. 84—635 10 Claims



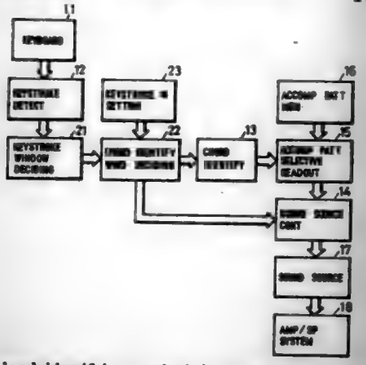
1. A rhythm creating system comprising:
an input means for entering a plurality of parameters specifying the genre and meter of the rhythm to be created;
a memory for storing a rule data base for associating the parameters with rhythm patterns including a LEVEL rule specifying complexity of the desired pattern, and a LENGTH rule specifying a number of bars of a rhythm pattern to be created; and
a rhythm pattern creating means for creating desired rhythm patterns by an inference system with reference to the rule data base on the basis of the plurality of parameters entered by the input means.

5,486,647

CHORD IDENTIFYING METHOD FOR AUTOMATIC ACCOMPANIMENT USING KEYBOARD INSTRUMENT AND AUTOMATIC ACCOMPANIMENT FUNCTION EQUIPPED KEYBOARD INSTRUMENT USING THE SAME

Stephen R. Kay, 140 Madison Ave., Westfield, N.J. 07090; Athan Billias, Mountain View, Calif.; Yoshiyuki Igoshi, Tokyo, and Naoki Hashida, Saitama, both of, Japan, assignors to Stephen R. Kay, Westfield, N.J., and Korg Incorporated, Suginami, Japan

Filed Jun. 24, 1994, Ser. No. 265,837
Claims priority, application Japan, Jun. 25, 1993, 5-155344
Int. Cl.[6] G10H *1/38;1/42*
U.S. Cl. 84—635 14 Claims



1. A chord identifying method for automatic accompaniment wherein a chord is identified on the basis of simultaneously pressed keys of a keyboard instrument and the original chord of an accompaniment pattern read out from an accompaniment pattern memory in the course of playing said keyboard instrument is converted to said identified chord to generate an accompaniment tone signal, said method comprising the steps of:

detecting said simultaneously pressed keys of said keyboard instrument and detecting keys of the lowest and highest notes among said simultaneously pressed keys;

setting a dividing point at a center key between said keys of the lowest and highest notes;

deciding an area from said dividing point to said key of the lowest note to be used as left-hand keystroke window and an area from said dividing point to said key of the highest note as a right-hand keystroke window;

determining whether said keystroke windows are effective in the identification of chords and deciding an effective one of said keystroke windows to be used as a chord identifying window; and

identifying chords on the basis of said pressed keys in said chord identifying window.

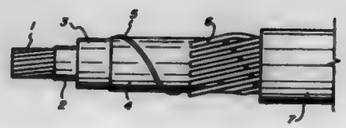
5,486,648

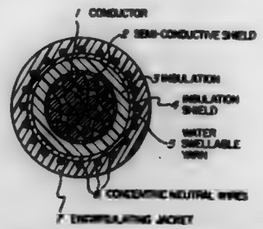
POWER CABLE WITH LONGITUDINAL WATERBLOCK ELEMENTS

John C. Chan, Scarborough, and Hossein Compani, North York, both of, Canada, assignors to Alcatel Canada Wire Inc., Canada

Filed Apr. 6, 1994, Ser. No. 223,639
Claims priority, application Canada, May 12, 1993, 2096066
Int. Cl.[6] H01B *7/28*
U.S. Cl. 174—23 R 29 Claims

1. An electrical power cable having concentric neutral wires applied helically over a cable core construction extending in a longitudinal direction to provide a metallic ground shield, and having a protective polymeric jacket over said concentric neutral wires, characterized in that at least one continuous elongated water swellable element, chosen from a group consisting of yarn, yarn, filament, strand and strip, is provided in contact with the concentric





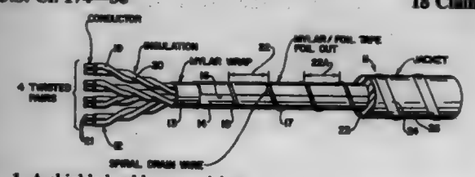
neutral wires and is so disposed in relation to said concentric neutral wires as to block passage of water within the cable in the longitudinal direction.

5,486,649

SHIELDED CABLE

Galen M. Garvis, Richmond, Ind., assignor to Belden Wire & Cable Company, Richmond, Ind.

Filed Mar. 17, 1994, Ser. No. 210,692
Int. Cl.[6] H01B *7/34*
U.S. Cl. 174—36 18 Claims



1. A shielded cable comprising

a group of at least four twisted pair insulated wires;

a lateral shield having overlapping longitudinal ends surrounding said group of at least four twisted-pair insulated wires, said shield having a thickness of about 1 to about 4 mils, said shield having a conductive metal foil on one surface and a non-conductive plastic on an opposite surface;

a drain wire extending the length of said cable and being in contact with said conductive metal face,

a helical groove formed in said shield; and

an insulating jacket surrounding said shield.

5,486,650

PARTITION FOR DIVIDING A DEVICE BOX

Karl Yetter, Gales Ferry, Conn., assignor to Hubbell Incorporated, Orange, Conn.

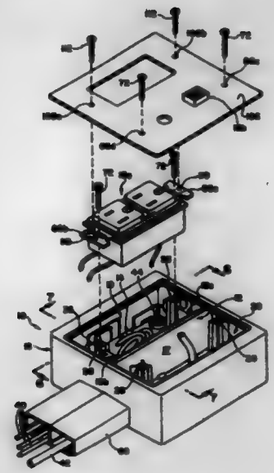
Filed Nov. 15, 1993, Ser. No. 151,916
Int. Cl.[6] H02G *3/08*
U.S. Cl. 174—53 25 Claims

1. A partition dimensioned to be releasably coupled to a pair of mounting posts of a device box for dividing the device box into at least two sections to separate different incoming wiring systems, said partition comprising:

a dividing member having a top edge, a bottom edge and a pair of side edges extending between said top and bottom edges;

a pair of brackets coupled to and extending outwardly from said dividing member; and

a pair of gripping members coupled to said dividing member via said brackets and configured to be releasably coupled to the pair of mounting posts of the device box for supporting said dividing member within the device box to divide the device box into said at least two sections.



5,486,651

MULTI-NEURAL ELECTRICAL BUSWAY

Robert W. Morgan, Spartanburg, S.C., assignor to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Filed Mar. 25, 1993, Ser. No. 37,780
Int. Cl.[6] H02G *5/06*
U.S. Cl. 174—68.2 35 Claims



1. A busway system comprising:

a three-phase electrical power source including an A-phase potential, a B-phase potential, a C-phase potential and a neutral potential;

a first conductive phase busbar having a substantially rectangular cross-section of a predetermined width and a first thickness, the first conductive busbar being coupled to the A-phase of the power source;

a second conductive phase busbar having a substantially rectangular cross-section of the predetermined width and the first thickness, the second conductive busbar being coupled to the B-phase of the power source;

a third conductive phase busbar having a substantially rectangular cross-section of the predetermined width and the first thickness, the third conductive busbar being coupled to the C-phase of the power source;

at least two neutral conductive busbars for each quantity of three phase busbars in the busway system, each having a substantially rectangular cross-section of the predetermined width and second and third thicknesses, respectively, the neutral conductive busbars being coupled to the neutral potential, where the sum of the second and third thicknesses is greater than 1.5 times the first thickness; and

a busway housing having first and second ends, where the first, second and third conductive phase busbars and the at least two neutral conductive busbars are supported within the busway and extend between the first and second ends.

5,486,652

FLEXIBLE JUMPER AND METHOD OF MAKING

James J. Kasper, Sheffield Village, Ohio, assignor to Waterridge-Uniflex Inc., Avon Lake, Ohio

Division of Ser. No. 12,253, Feb. 1, 1993, Pat. No. 5,393,951.
This application Feb. 21, 1995, Ser. No. 391,008
Int. Cl.[6] H02G *15/02*
U.S. Cl. 174—75 R 5 Claims



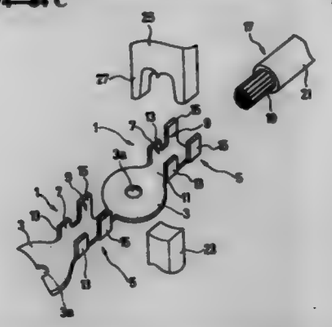
1. A flexible electrical laminated jumper comprising a stack of half hard conductive metal laminations, said stack being press welded at each end of the jumper to form a substantially solid block, said laminations between said ends maintaining their half hard temper, and terminations formed in the substantially solid blocks formed by the press welded ends.

5,486,653

CRIMP-STYLE TERMINAL

Hikoo Dohi, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Apr. 28, 1994, Ser. No. 233,931
Claims priority, application Japan, Apr. 27, 1993, 5-022209 U
Int. Cl.[6] H01K *4/18*
U.S. Cl. 174—84 C 11 Claims



1. A crimp-style terminal for connection with an end of an electric wire having a cross-sectional area, the terminal comprising:

an electric connecting part which is to be electrically connected to another connecting part; and

a crimping part formed integrally with said electric connecting part, said crimping part including a bottom part and a pair of beads each having a distal end protruding from both sides of said bottom part, each of said beads being formed to be thinner than said bottom part;

wherein said pair of bends being deformed in such a manner: that each distal end of said bends is directed to a substantially intermediate position in the width direction of said bottom part of the crimping part, to deform the bends with a crimping width and a crimping height conforming to the cross-sectional area of the wire arranged between said bottom part and said bends, thereby forming an electrical connection between the crimping portion and the electric wire having a substantially repeatable electrical contact resistance therebetween.

7. A method for connecting a crimp-style terminal having a crimping part to an end of an electric wire having a cross-section, comprising the steps of:

providing an electric connecting part which is to be electrically connected to another connecting part, the crimping part including a bottom part and a pair of bends protruding from both sides of said bottom part, each of said bends having a length-wise thickness which is thinner than said bottom part, each of said bends having a distal end;

positioning the electrical wire adjacent to and substantially parallel with a lengthwise extent of the bottom part; and

deforming the bends around the electrical wire and directing the distal ends of the bends to a substantially intermediate position of the electrical wire in the widthwise direction of the bottom part of the crimping part, to crimp the crimping part with a crimping width and a crimping height substantially conforming to the electrical wire cross-section, and provide an electrical connection between the terminal and the electric wire having a substantially repeatable electrical contact resistance therebetween.

5,486,654

EASY-STRIP CABLE

Karl Hanak, Fumay; Daniel Prudhon, Pierrecles; Serge Damlle, Charleville-Mezieres, and Patrick Rofidal, Fumay, all of, France, assignors to Filotex, Dravell, France

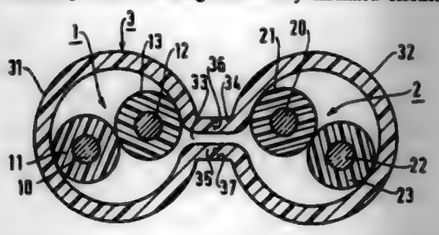
Filed Sep. 2, 1994, Ser. No. 300,206

Claims priority, application France, Sep. 6, 1993, 93 10566; Jul. 22, 1994, 94 09105

Int. Cl.[6] H01B 7/34

U.S. Cl. 174—113 R 9 Claims

1. Easy-strip cable including individually insulated electrical



conductors assembled into separate sets and at least one continuous insulative sheath around said sets and separating said set into two groups, wherein said at least one continuous insulative sheath has two tubular portions, substantially partly open at facing locations along the cable, around said sets and separating the two groups, and two substantially parallel peripheral continuity tongues, joining the two tubular portions, delimiting between said tongues on said continuous insulative sheath a constriction whose width is less than the diameter of the insulated conductors and at least one of said tongues being rupturable for opening said continuous insulative sheath as required.

5,486,655

MULTIPLE WIRE ADHESIVE ON A MULTIPLE WIRE WIRING BOARD

Shigeharu Arike, Tochigi; Yorio Iwasaki, Shimodate; Eiichi Shinada, Shimodate; Toshiro Okamura, Shimodate; Kanji Murakami, Mito, and Yuichi Nakamoto, Ibaraki, all of, Japan, assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan

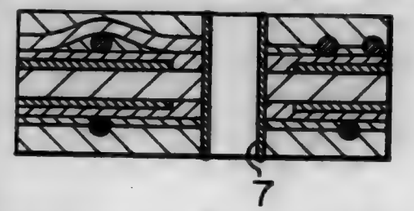
Division of Ser. No. 107,115, Aug. 17, 1993, Pat. No. 5,403,869. This application Nov. 21, 1994, Ser. No. 345,457

Claims priority, application Japan, Aug. 17, 1992, 4-217814; Jul. 2, 1993, 5-164525

Int. Cl.[6] H05K 1/02

U.S. Cl. 174—259 2 Claims

1. A multiple wire wiring board comprising a substrate having a



conductor circuit thereon or insulating substrate, an adhesive layer formed on one or both surfaces of the substrate, said adhesive layer being formed of an adhesive comprising

(a) an epoxy resin having a molecular weight of 5000 or more and being solid at room temperature,

(b) a polyfunctional epoxy resin having at least three epoxy groups,

(c) an intramolecular epoxy modified polybutadiene having at least three epoxy groups,

(d) a cationic photopolymerization initiator, and

(e) a tin compound,

wherein the weight ratio of (a+b+c) to (a) is 100:40 to 100:70, the weight ratio of (a+b+c) to (b) is larger than 100:10, the weight ratio of (a+b+c) to (c) is 100:10 to 100:40 and the weight ratio of (a+b+c) to (d) is 100:0.5 to 100:5 insulated encapsulated wires fixed on the adhesive layer through holes formed in necessary portions of the substrate, and conductor circuits formed on necessary portions of outmost surfaces of the substrate.

5,486,656

PRINTED CIRCUIT BOARD HAVING AN EXTRA PLATE CONNECTED TO A PRODUCT PORTION

Tatsuru Kojima, Tokyo, and Naoyuki Kobyama, Saitama, both of, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 860,320, Mar. 30, 1992, abandoned. This application Dec. 15, 1994, Ser. No. 357,876

Claims priority, application Japan, Mar. 29, 1991, 3-027039 U

Int. Cl.[6] H01R 9/09

U.S. Cl. 174—261 3 Claims

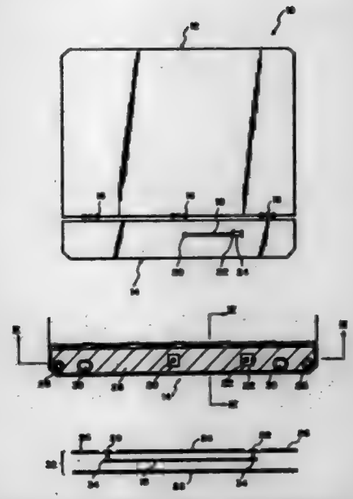
1. A laminated printed circuit board having a product portion, including a first strip conductor having a characteristic impedance and wavelength compaction ratio, and an extra plate portion connected to said product portion, said extra plate portion comprising:

a second strip conductor, provided on one of a surface and an inner layer of said laminated printed circuit board, having a characteristic impedance and wavelength compaction ratio which are substantially equal to said characteristic impedance and said wavelength compaction ratio of said first strip conductor of said product portion;

a ground conductor provided on a surface of said laminated printed circuit board;

a land for measurement formed at one end of said second strip conductor;

chip lands formed at the other end of said second strip conductor and connectable to a chip resistor;



wherein one of said chip lands is connected to said second strip conductor and another chip land is connected to said ground conductor; and

a connecting portion for connecting said extra plate portion to said product portion, wherein changes in said characteristic impedance and said wavelength compaction ratio of said product portion resulting from modifications to said laminated printed circuit board are measured via said second strip conductor without disconnecting said first strip conductor from surrounding circuitry of said product portion.

5,486,657

BEVELED EDGE CIRCUIT BOARD WITH CHANNELED CONNECTOR PADS

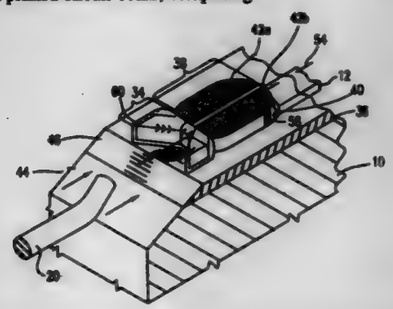
James S. Bell, Cedar Park; Patricia L. Herman, and Richard I. Phillips, both of Austin, all of Tex., assignors to Dell USA, L.P., Austin, Tex.

Filed Jun. 9, 1994, Ser. No. 257,755

Int. Cl.[6] H05K 1/02

U.S. Cl. 174—261 16 Claims

1. A printed circuit board, comprising:



a plurality of bonding pads spaced from each other in a row along one side of a printed circuit board, wherein said row is parallel to one edge of said printed circuit board; and

a layer of solder mask surrounding a rearward portion of said bonding pads and covering the remaining, forward portion of said bonding pads, wherein the layer of solder mask is beveled at the edge of said printed circuit board, and wherein the covered portion of each said bonding pad is arranged adjacent said beveled layer of solder mask.

5,486,658

STYLUS DEVICE FOR USE IN A SCUFFING HEAD ASSEMBLY

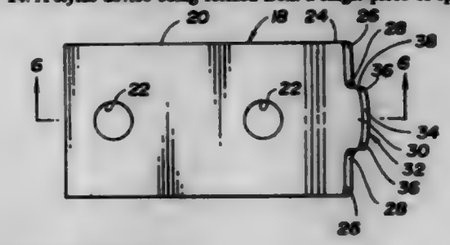
Kenneth E. Hicks, Clinton Township, Mich., assignor to Larry Wingst, Leonard, Mich.

Filed Jun. 6, 1994, Ser. No. 254,192

Int. Cl.[6] G08C 21/00

U.S. Cl. 178—18 15 Claims

14. A stylus device being formed from a single piece of spring



steel and comprising:

a lower body portion;

an upper body portion extending from the lower body portion;

a pair of spaced shoulders formed at a distal end of the upper body portion, each of the spaced shoulders including an inwardly extending side surface defined by a curve having a first radius; and

a head supported on the upper body portion between the spaced shoulders and including an outwardly extending end surface having a central portion defined by a curve having a radius, the central portion of the outwardly extending end surface being rounded for controllably removing a layer of paint from a rotating painted substrate when in scuffing engagement therewith, wherein the outwardly extending end surface also has a pair of spaced end portions, each of the end portions being defined by a curve having a third radius wherein the length of the second radius is in the range of nine to eleven times a length of the third radius and the end portions of the outwardly extending end surface are rounded to prevent the outwardly extending end surface from damaging the rotating painted substrate at the end portions, and wherein the head further includes a pair of spaced parallel side surfaces, each of the spaced parallel side surfaces being formed between and interconnecting one of the inwardly extending side surfaces and one of the rounded end portions of the outwardly extending end surfaces.

5,486,659

STETHOSCOPE PROTECTION DEVICE AND METHOD FOR USING SAME

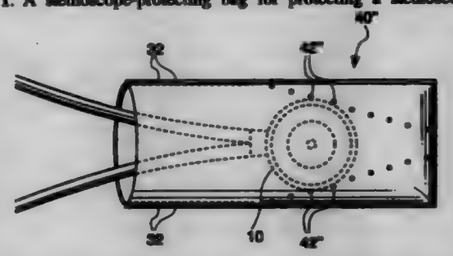
Stuart W. Rosenbush, 6643 N. Le Mai Ave., Lincolnwood, Ill. 60646-3101

Filed Mar. 8, 1994, Ser. No. 207,833

Int. Cl.[6] A61B 7/02

U.S. Cl. 181—131 9 Claims

1. A stethoscope-protecting bag for protecting a stethoscope



from becoming contaminated during a stethoscopic examination of an animal, the stethoscope-protecting bag comprising a length of flexible tubular polymeric material defining a first rectangular

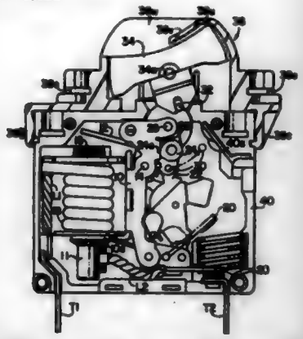
panel and a second rectangular panel which are joined at their lateral edges, the tubing being open at a first end and closed at a second end, the bag further comprising lines of weakness extending from the open end for at least a portion of the length of the bag, the lines of weakness being disposed substantially parallel to and adjacent to the joined lateral edges, whereby the first and second rectangular panel may be separated along the lines of weakness.

5,486,660

RESET ONLY ROCKER GUARD FOR SPLIT CASE CIRCUIT BREAKER

Michael Fasano, Watertown, Conn., assignor to Carlingswitch, Inc., Plainville, Conn.

Filed Jun. 15, 1994, Ser. No. 259,864
Int. Cl.[6] H01H 9/28
U.S. Cl. 200—43.16 **4 Claims**



1. The combination comprising a rocker actuated circuit breaker and rocker bracket assembly therefor, said circuit breaker comprising a housing having opposite end faces and a front face, said front face having a raised boss adapted to fit a small panel opening, said boss defining a slot, said circuit breaker having a mechanism in the housing including a pivoted actuator link, said pivoted actuator link having a free end portion provided in said slot, said link being pivotably mounted in said housing for limited rotation on a fixed axis defined in the housing, and said link having a cross pin movably mounted in said slot for engaging a rocker, said bracket assembly including a U-shaped adapter plate of one piece plastic with resilient integrally formed leg portions at one end and at an opposite end thereof, said one piece plastic adapter plate having a resilient portion so that said leg portions are moveable with respect to one another in order to receive said circuit breaker front face as a result of bending said plate, said plate leg portions defining inturned lips for entry in openings defined in said circuit breaker end faces, said plate defining a generally rectangular raised boss adapted to fit a larger panel opening than that adapted to accommodate said raised boss of said circuit breaker front face, said plate defining a rearwardly open generally rectangular recess for receiving said rocker, said plate having an integrally molded front wall defining a window for exposing a portion of said rocker, said rocker having a portion accessible through said window for moving said rocker into one position, another portion of said rocker being hidden by said front wall thereby inhibiting movement of the rocker into another position.

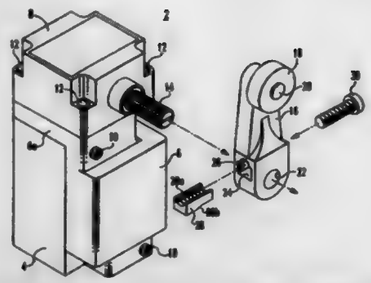
5,486,661

LIMIT SWITCH LEVER

George F. Jambor, New Berlin, Wis., and David W. Place, Hendersonville, N.C., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 12, 1994, Ser. No. 274,086
Int. Cl.[6] H01H 3/16
U.S. Cl. 200—47 **13 Claims**

1. An electrical limit switch having a rotatable shaft and an actuator lever attached to said shaft, said actuator lever comprising:



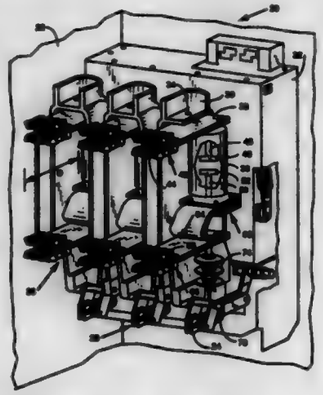
a hole extending through said actuator lever adapted to receive said shaft therein;
a straight-sided cavity extending into said lever from one exterior side surface of said lever, said cavity partially intersecting said hole;
an opening in another exterior side surface of said lever, said opening extending into said cavity;
a screw projecting through said opening having a threaded shank disposed in said cavity;
a key slidably disposed for reciprocal movement in said cavity, said key having a threaded portion engaged with said threaded shank and a straight-sided cross-sectional shape complemental to said straight-sided cavity preventing rotation of said key within said cavity, said key comprising a cam drawn against said shaft by rotation of said screw to clamp said lever to said shaft.

5,486,662

FLEXIBLE CONNECTOR FOR A CIRCUIT INTERRUPTER

Antonio I. Takiishi, Coraopolis, Pa., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 16, 1993, Ser. No. 93,287
Int. Cl.[6] H01H 9/00
U.S. Cl. 200—50 AA **3 Claims**



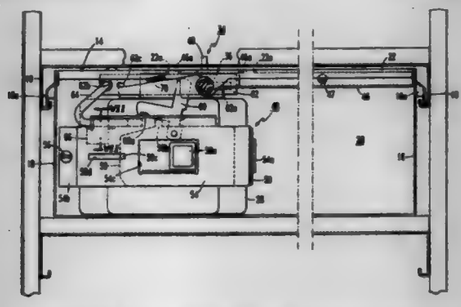
1. A circuit interrupter system, comprising:
circuit interrupter means including a fixed contact and a movable contact;
fixed electrical terminal means; and
flexible connector means for connecting said movable contact with said fixed electrical terminal means, said flexible connector means comprising at least one stack of flexible sheets of a conducting material, each of said flexible sheets in said stack having a pair of opposed major surfaces with at least a portion of a major surface of one of said flexible sheets in said stack being in contact with at least a portion of a major surface of an adjacent one of said flexible sheets in said stack, said flexible sheets being constructed such that said flexible connector means can accommodate the movement of said movable contact, said stack being joined together by means at spaced apart zones near edges of said stack, whereby said flexible sheets stay together while maintaining the flexibility of said stack.

5,486,663

MOTOR CONTROL CENTER REMOVABLE CONTROL UNIT INTERLOCK

Ronald J. Fritsch, Menomonee Falls, and Richard J. Holland, Glendale, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 19, 1994, Ser. No. 325,739
Int. Cl.[6] H01H 9/20
U.S. Cl. 200—50 R **11 Claims**



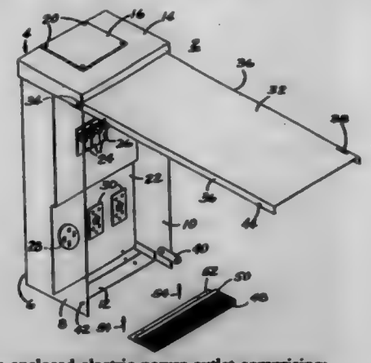
1. An interlock for a removable control unit of a motor control center comprising:
a motor control center cabinet having an opening for receiving a control unit, a structural member adjacent said opening, and electrical bus bars within said cabinet;
a control unit removably inserted into said opening, said control unit comprising:
plug-in terminal means engagable with said bus bars in an inserted position of said control unit;
switch means operable between ON and OFF positions connected to said plug-in terminal means;
operator means for operating said switch means between said ON and OFF positions; and
a latch manually movable between extended and retracted positions thereof, said latch engaging said structural member in said extended position blocking removal of said control unit from said cabinet, said latch also abutting said structural member in said extended position blocking insertion of a removed said control unit into said opening;
wherein said interlock comprises:
a slider slidably mounted on said control unit;
means extending from said slider to a location proximate said operator means in said OFF position of said switch means; and
cooperating means on said slider and said latch for permitting sliding movement of said slider in said extended position of said latch and for blocking sliding movement of said slider in said retracted position of said latch, said means extending from said slider blocking movement of said operator means from said OFF position to said ON position in said retracted position of said latch, thereby preventing insertion of said control unit into said cabinet or removal of said control unit from said cabinet with said switch means in said ON position.

5,486,664

SEAL FOR CORD PASSAGEWAY OF POWER POD

William G. Lamp, Brookfield, and Clarence J. Spitzer, Grafton, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 27, 1994, Ser. No. 266,850
Int. Cl.[6] H01H 9/02
U.S. Cl. 200—297 **17 Claims**



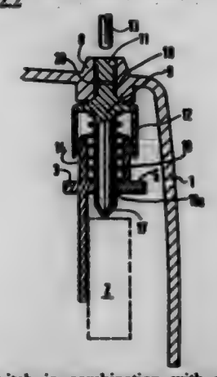
1. An enclosed electric power outlet comprising:
an enclosure case having an open side;
a plug-in electrical receptacle in said case accessible through said open side;
an opening in a wall of said case, said opening communicating with said open side;
an enclosure cover attached to said case closing said open side and cooperating with said opening to complete a closed-perimeter exit passageway for an electrical cord adapted to be plugged into said receptacle; and
a compliant seal attached to said enclosure, said seal filling said passageway in a normal condition of said seal and being locally deflectable by said cord exiting said enclosure through said passageway to closely conform to said cord without distorting portions of said seal remote from said cord.

5,486,665

SAFETY SWITCH FOR A FOOD PROCESSOR

Claude Le Rouzic, Montceau-Les-Mines, France, assignor to Robot-Coupe SNC, France

Filed Apr. 21, 1994, Ser. No. 230,908
Claims priority, application France, Apr. 30, 1993, 93 05134
Int. Cl.[6] H01H 13/06
U.S. Cl. 200—302.2 **3 Claims**



1. A safety switch in combination with a base for a food processor having a base with a surface on which a bowl closed by a lid is removably mounted, a plurality of drive attachments each being couplable inside the bowl via a drive shaft projecting through the bottom of the bowl, means for providing safe operation of a switch contained in the base in the form of a push rod having

upper and lower ends, the lower end of the push-rod coming into contact with the switch when the bowl is properly attached to the base and the lid closing the bowl is in a closed position wherein:

the surface of the base is formed with a tapering projection formed with a bore having a bore axis, the tapering projection protruding from the surface of the base;

the switch has a piston having a piston axis and a contact means having a body and a pusher, the body being mounted adjacent to the bore axis, the piston having an upper and a lower end, the upper end of the piston being slidably engaged in the bore formed in the tapering projection such that the bore axis and piston axis are coaxial, the piston being movable between a depressed and released position such that the upper end of the piston remains completely engaged in the tapering projection when the piston is in the released position, the upper end of the piston being actuated by the lower end of the push rod such that the upper end of the piston recedes into the bore formed in the tapering projection when the piston moves towards the depressed position, the lower end being operable to bear on the pusher when the piston is in the depressed position;

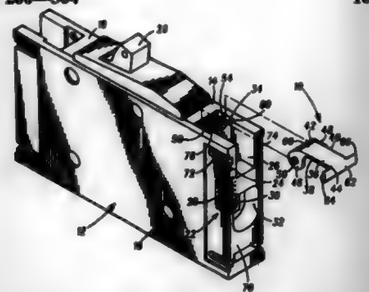
a support fixture which is mounted to the base, the contact means being mounted to the support fixture, the support fixture being formed with a bore having a support fixture bore axis, which is coaxial to the bore axis, and in which the lower end of the piston is slidably engaged, the piston having a protective skirt overlying and surrounding a portion of the support fixture, and wherein the support fixture has a ridge which slidably engages a vertical slot formed in the skirt.

5,486,666

PROTECTIVE COVER FOR ELECTRICAL TERMINALS AND METHOD OF USING SAME

Tak M. Wong, Cedar Rapids; Ronald J. Etsbeidt, Anamosa, and Patrick L. Freilinger, Cedar Rapids, all of Iowa, assignors to Square D Company, Palatine, Ill.

Filed Nov. 24, 1992, Ser. No. 935,756
Int. Cl.[6] H01H 9/02
U.S. Cl. 200—304 **16 Claims**



1. A cover for an exposed electrical terminal mounted on an electrical distribution device, the cover including:

a generally planar body having upper and lower surfaces and of sufficient size to substantially cover the exposed terminal, the body being defined by two side edges and two end edges and including a pair of rounded side flanges disposed at a first end of said body and being integrally formed with and extending perpendicularly downward from the side edges of the body, each side flange extending partially along a length of the side edge, a nib being centrally located on each side flange, each nib extending outwardly from the side flange, each nib being aligned to form a pivotal axis extending perpendicularly through the center of each nib, each nib being adapted to mate with a corresponding dimple located on the device, an end flange being integrally formed with and extending perpendicularly downward from the other end of the body which is opposite the side flanges, the end flange having opposite ends which extend beyond respective side edges of the body to define two distal edges, each distal edge having a tab projecting from the distal edge towards the nibs, each tab being adapted to abut with a corresponding indentation in the device;

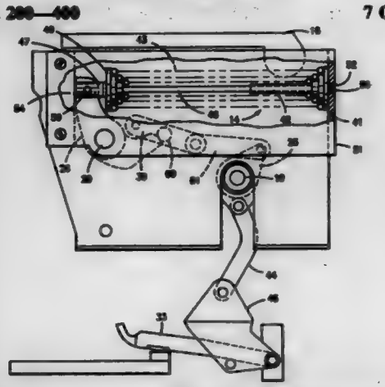
wherein said nibs, when attached to said corresponding dimples, enable the body to be secured to the device so that a person's finger or equipment is prevented from contacting the exposed terminal while access to the remainder of the device is allowed, the nibs allowing the body to be manually attached and detached from the device, and allowing the body to pivot away from the exposed terminal to provide access to the terminal without detaching the entire cover from the device.

5,486,667

RATING MODULE UNIT FOR HIGH AMPERE-RATED CIRCUIT BREAKER

Roger N. Castonguay, Terryville; James L. Rosen, West Hartford, and Mark A. Zaffetti, Windsor Locks, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Feb. 28, 1994, Ser. No. 203,062
Int. Cl.[6] H01H 5/00
U.S. Cl. 200—400 **7 Claims**



1. An industrial-rated circuit breaker for high-level overcurrent protection comprising:

an insulative base;

a pair of separable contacts within said base, one of said contacts being attached to a movable contact arm;

a contact arm carrier connecting with said movable contact arm within said base and with a contact arm drive link extending outside said base;

an insulative cover above said base, said cover enclosing a closing shaft and a drive shaft, said drive shaft connecting with said contact arm drive link for moving said contact arm carrier and said contact arm between open and closed positions;

a closing spring modular unit interacting with said closing shaft for providing closing bias force to said closing shaft;

said modular unit comprises:

a pair of front and rear opposing cylinders, one of said cylinders including a cylindrical extension;

a support rod removably connecting said cylinders, one end of said support rod extends within said cylindrical extension, said one end of said support rod being threaded;

a compression spring arranged on said support rod;

means on one of said cylinders providing connection with a circuit breaker operating mechanism; and

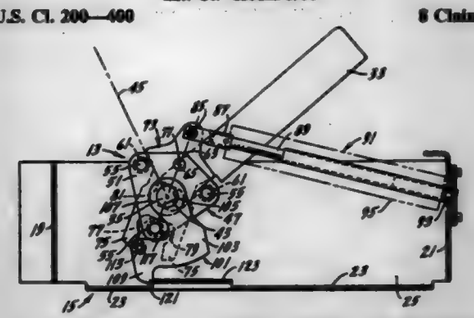
an interface cam interacting with said drive shaft for controlling when said drive link moves said contact arm between said open and closed positions.

5,486,668

OPERATING MECHANISM FOR A MANUALLY OPERATED LOAD BREAK SWITCH

James A. Erickson, Crystal Lake, Ill., assignor to Boltswitch, Inc., Crystal Lake, Ill.

Filed Jun. 6, 1994, Ser. No. 254,375
Int. Cl.[6] H01H 5/10
U.S. Cl. 200—400 **8 Claims**



1. An operating mechanism for a manually operated load break switch having an over center spring drive moved by an operating handle to open and close the switch, said operating mechanism including:

a shaft rotatable by said operating handle,

a follower rotatably mounted on said shaft,

an elongated forked plate pivotally mounted intermediate its length to said follower at a location radially outwardly of said shaft,

an operating lever for said switch pivotally mounted on said shaft and movable by engagement with said follower,

a driver affixed to said shaft for rotation therewith and positioned to engage and rotate said follower and said forked plate,

an over center spring drive pivotally connected to said forked plate at a location radially outwardly of said pivotal mounting of said forked plate to said follower, and

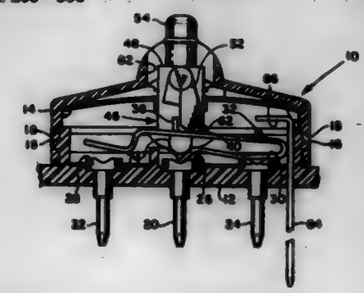
means to move said over center spring drive between fully closed and fully opened conditions of said switch by rotation of said operating handle while preventing alignment of said shaft, said pivotal mounting of the forked plate to said follower and said over center spring drive pivotal mounting to said forked plate when said spring drive is in its fully compressed condition.

5,486,669

DETENTED PADDLE BLADE SWITCH ASSEMBLY

Thomas J. Oshgan, Mt. Prospect, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 106,005, Aug. 13, 1993, abandoned. This application Oct. 21, 1994, Ser. No. 326,886
Int. Cl.[6] H01H 3/20
U.S. Cl. 200—556 **9 Claims**



1. An electric switching assembly comprising:

(a) housing means;

(b) a contact blade member, said blade member comprising a unitary strip of electrically conductive spring material having an end formed in a generally U-shaped configuration, said strip terminating intermediate said U-shape and an opposite end of said strip;

(c) first and second stationary electrical side contacts mounted on said housing means and a common electrical contact spaced intermediate said first and second side contacts with the said U-shaped end of said blade member pivoted on said common terminal;

(d) actuating means pivotally mounted for user movement between a neutral position and a clockwise and anti-clockwise actuated positions on said housing means, said actuating means having portions thereof frictionally contacting said blade member intermediate said U-shape and said opposite end, wherein upon user movement of said actuating means to one of said actuated positions said blade member is resiliently deflected and moved between one of a clockwise and anti-clockwise position having said U-shaped portion contacting one of said first and second contacts with the said end opposite said U-shaped portion contacting the other of said first and second contacts in the other of said clockwise and anti-clockwise positions;

(e) spring means biasing said actuating means to the neutral position;

(f) means moveable on said actuating means including biasing means biasing said means in one direction; and,

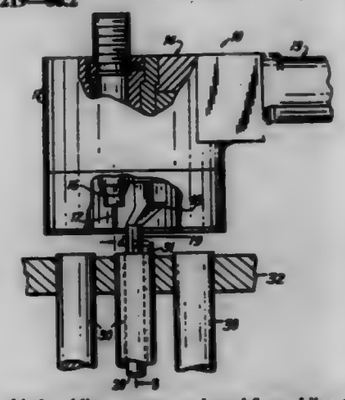
(g) said housing means defining detent surfaces located adjacent said contact blade member, wherein said moveable means is operable to directly contact said detent surfaces, and provide detenting of said actuating means between said clockwise and anti-clockwise positions.

5,486,670

PILOT PROBE FOR ORBITAL WELDING APPARATUS

Lucas H. Van Rhyn, Dunsville, N.Y., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Filed Jun. 24, 1994, Ser. No. 265,485
Int. Cl.[6] B23K 9/028
U.S. Cl. 219—60.2 **7 Claims**



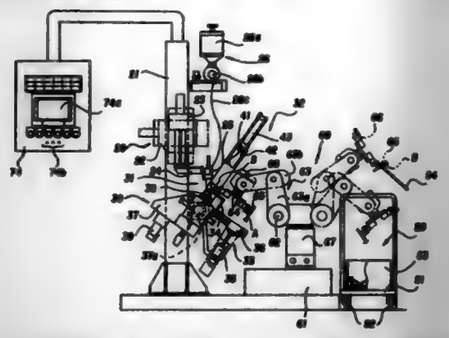
1. An orbital welding apparatus adapted for welding tubes into a tubesheet, said apparatus comprising: a body unit including a handle, a rotor unit rotatably mounted within the body unit and carrying a gas shielded type welding electrode, and a central pilot probe unit extending from said body unit lower side, said pilot probe unit having an elongated cylindrical shape and including a plurality of sets of diametrically-opposed balls longitudinally spaced apart along the pilot probe unit length, each said set including two spring-loaded balls retained in a transverse opening by an annular member having a reduced inner diameter and externally threaded transversely into the pilot probe unit, said balls each extending radially outwardly from the elongated pilot probe unit outer surface.

5,486,671

HARD FACING APPARATUS FOR APPLYING HARD FACING TO VALVES

Hiroshi Miyata; Yoshio Chiba, and Osami Noguchi, all of Okegawa, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Sep. 22, 1994, Ser. No. 310,068
Claims priority, application Japan, Dec. 7, 1993, 5-333731
Int. Cl.[6] B23K 9/04
U.S. Cl. 219—76.14 2 Claims



1. A hard facing apparatus for applying a hard facing material to a valve head of an intake valve or an exhaust valve for use with internal combustion engines, said apparatus comprising:

a welding torch for performing hard facing on a valve head of a valve blank to be hard faced;

valve blank holding means for holding said valve blank in an oblique position such that said valve head of said valve blank faces said welding torch, and for rotating said valve blank about its axis; and

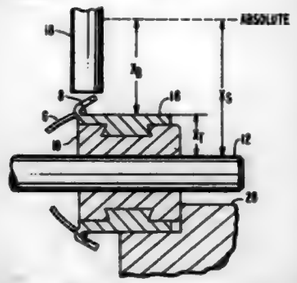
valve transfer means for transferring said valve blank to said valve blank holding means, said valve blank holding means comprising valve attaching/positioning means for attaching said valve blank to said valve blank holding means while positioning a stem of said valve blank so that an axis of said valve blank is substantially aligned with an axis of rotation of said valve blank holding means.

5,486,672

METHODS AND APPARATUS FOR COMMUTATOR FUSING

Federico Sbalchiero, and Alessandro Rossi, both of Florence, Italy, assignors to Axis USA, Inc., Marlborough, Mass.

Filed Dec. 13, 1993, Ser. No. 166,095
Int. Cl.[5] B23K 11/11
U.S. Cl. 219—86.41 31 Claims



1. A machine for fusing electric motor armatures, each armature comprising a shaft and a commutator, the commutators having commutator bars with top surfaces to which coil leads are connected, the fusing machine comprising:

a primary electrode;

displacement sensor means for monitoring the displacement between said primary electrode and said shaft;

control means for controlling the displacement of said primary electrode relative to said shaft; and

means for applying force and heat to portions of the commutator bars with the primary electrode to compress the portions of the commutator bars onto the coil leads to form fused lead connections, wherein said control mean directs said means for applying force and heat to compress diametrically opposed portions of the commutator bars with said primary electrode toward common radial positions with respect to the shaft to balance the commutator.

5,486,673

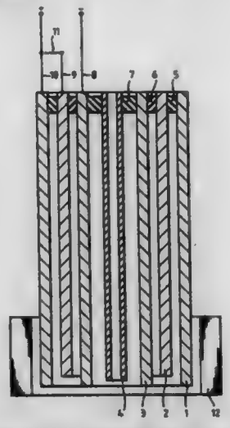
Patent Not Issued For This Number

5,486,674

PLASMA TORCH DEVICE FOR CHEMICAL PROCESSES

Steinar Lynum; Kjell Haugsten, both of Oslo; Ketil Hox, and Jan Hugdahl, both of Trondheim, all of, Norway, assignors to Kvaerner Engineering AS, Lysaker, Norway

PCT No. PCT/NO92/00195, § 371 Date Dec. 29, 1994, § 102(e) Date Dec. 29, 1994, PCT Pub. No. WO93/12633, PCT Pub. Date Jun. 24, 1993
PCT Filed Dec. 11, 1992, Ser. No. 244,295
Claims priority, application Norway, Dec. 12, 1991, 914907
Int. Cl.[5] B23K 10/00
U.S. Cl. 219—121.52 2 Claims



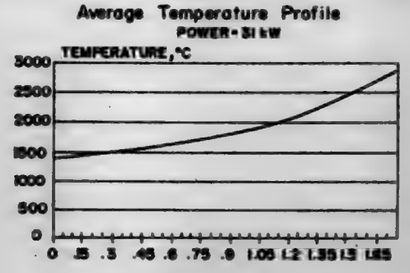
1. A plasma torch for supplying energy, said plasma torch comprising a first, a second and a third tubular electrode with said second and third electrodes being located co-axially inside said first electrode and said third electrode being located inside said second electrode, said electrodes being electrically insulated from one another and having connections for electrical power, said third electrode having a feed-in tube located co-axially therein for supplying a raw material, said electrodes being composed of a non-metallic material with a high melting point and there being provided an annular space between said feed-in tube and said third electrode to provide a path for a plasma-forming gas and a reactant, said electrodes being mounted so as to be moveable relative to one another in an axial direction, said second electrode constituting an ignition electrode and being continuously connected to one of said second and third electrodes having the same polarity and voltage.

5,486,675

PLASMA PRODUCTION OF ULTRA-FINE CERAMIC CARBIDES

Patrick R. Taylor, and Shahid A. Pirzada, both of Moscow, Id., assignors to Idaho Research Foundation, Moscow, Id.

Division of Ser. No. 792,790, Nov. 15, 1991, Pat. No. 5,369,241, which is a continuation-in-part of Ser. No. 658,649, Feb. 22, 1991, abandoned. This application Aug. 18, 1994, Ser. No. 292,361
Int. Cl.[6] B23K 10/00
U.S. Cl. 217—121.59 12 Claims



1. A method of producing ultra-fine ceramic carbides in a reactor using a plasma torch for providing heat to said reactor, said method comprising the steps of:

(a) injecting materials for reaction at points around a periphery of said torch into a first reaction temperature zone with a temperature above 3000° kelvin., said first reaction temperature zone including a first means for controlling temperatures;

(b) passing said reactants from said first zone to a second zone with a temperature between 2000° kelvin and 3000° kelvin, said second zone including a second means for controlling temperatures; and

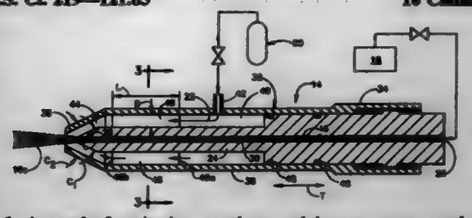
(c) causing said reactants to enter a third zone for rapid quenching, said third zone having a temperature less than 2000° kelvin, said third zone including a third means for controlling temperatures.

5,486,676

COAXIAL SINGLE POINT POWDER FEED NOZZLE

Stephen Aleshin, Cincinnati, Ohio, assignee to General Electric Company, Cincinnati, Ohio

Filed Nov. 14, 1994, Ser. No. 339,388
Int. Cl.[6] B23K 26/14
U.S. Cl. 219—121.63 10 Claims



1. A nozzle for ejecting powder metal in a stream toward a workpiece comprising:

an inner tube having an inlet for receiving said powder metal, an outlet for discharging said powder metal, and a supply channel therebetween;

an outer tube disposed radially outwardly of said inner tube and coaxially therewith, and having a mounting end fixedly joined to said inner tube adjacent to said powder inlet, a nozzle outlet at an opposite distal end thereof, an intermediate portion axially therebetween spaced radially outwardly from said inner tube to define an annular flow manifold radially therebetween, and an inlet disposed in said intermediate portion for channeling a shaping gas into said manifold;

said powder outlet being disposed coaxially with said nozzle outlet and spaced axially aft therein to define therebetween an annular gas outlet for said manifold for channeling said shaping gas around said powder metal discharged from said powder outlet prior to discharge from said nozzle outlet; and

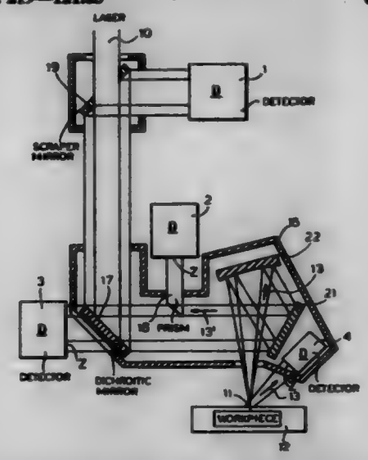
means disposed between said inner and outer tubes for confining said shaping as to confine said powder metal discharged from said powder outlet for reducing divergence of said discharged powder metal.

5,486,677

METHOD OF AND APPARATUS FOR MACHINING WORKPIECES WITH A LASER BEAM

Dora Malechner; Alexander J. Drenker, both of Aachen; Peter Abels, Alsdorf, and Eckhard Beyer, Aachen, all of, Germany, assignors to Fraunhofer-Gesellschaft zur Forderung der Angewandten Forschung E.V., Munich, Germany

PCT No. PCT/DE92/00115, § 371 Date Aug. 19, 1993, § 102(e) Date Aug. 19, 1993, PCT Pub. No. WO92/14578, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 15, 1993, Ser. No. 107,763
Claims priority, application Germany, Feb. 26, 1991, 41 06 007.5
Int. Cl.[6] B23K 26/00
U.S. Cl. 219—121.83 6 Claims



1. A method of monitoring machining of a workpiece which comprises the steps of:

(a) directing a laser beam at said workpiece and melting same to a melting depth in the presence of a laser-induced signal-emitting plasma or vapor at a machining location;

(b) detecting signals emitted by said plasma or vapor at said location;

(c) subjecting the detected signals to frequency analysis and dividing the frequency analyzed signals into two different frequency bands;

(d) averaging amplitudes over said bands to obtain two amplitude values of average amplitudes each derived from one of said bands; and

(e) monitoring said depth by calculating a rating value from said amplitude values by forming a quotient therefrom.

5,486,678

PROCESS OF AND MACHINERY FOR JOINING TWO METAL SHEETS BY WELDING

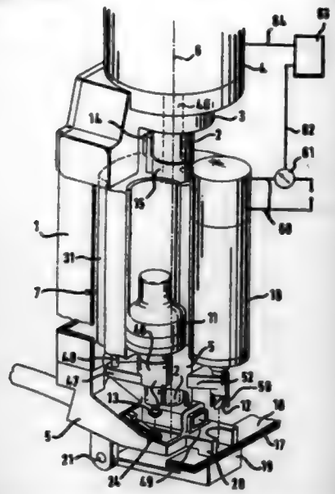
Jürg Hofmann, Giessen; Harald Knetsch, Herborn/Seelbach; Kurt Liebich, Lich; Reinhold Opper, Alten-Buseck; Hans Wiesler, Wettenberg, and Alois Bauer, St. Wolfgang, all of, Germany, assignors to Emhart Inc., Newark, Del.

Filed Mar. 1, 1994, Ser. No. 204,039

Claims priority, application Germany, Mar. 1, 1993, 43 06 282.2

Int. Cl.[6] B23K 9/007

U.S. Cl. 219—127 28 Claims



1. A process for joining a plurality of stacked metal bodies at a plurality of weld points comprising the steps of

providing a welding machine including a drilling tool and a welding head;

sequentially operating said machine through a predetermined time cycle to successively:

drill said stacked bodies at a selected weld point to expose a fresh metal surface on each body;

initiate a welding arc at said selected weld point within a predetermined time after completion of said drilling step to prevent formation of more than a preselected depth of contaminant on said fresh metal surfaces, the operating parameters of said arc being preset to complete a weld joining said bodies even in the presence of said preselected depth of contaminant;

extinguish said arc; and

repeat said drilling, initiating and extinguishing steps at each of said plurality of weld points.

5,486,679

ARC WELDING CONTROL METHOD FOR A WELDING ROBOT

Masayuki Hamura; Mitsuhiro Okuda, and Yuuki Mukibata, all of Oshino, Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP93/01708, § 371 Date Aug. 4, 1994, § 102(e) Date Aug. 4, 1994, PCT Pub. No. WO94/13423, PCT Pub. Date Jun. 23, 1994

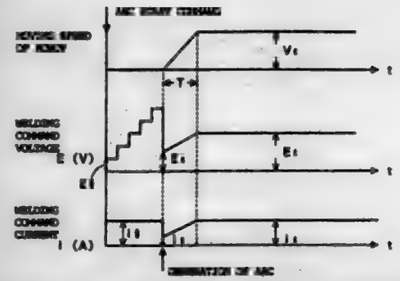
PCT Filed Nov. 22, 1993, Ser. No. 284,474

Claims priority, application Japan, Dec. 11, 1992, 4-352422

Int. Cl.[6] B23K 9/06

U.S. Cl. 219—130.5 5 Claims

1. An arc welding control method for controlling arc welding operation of a welding robot having a machining electrode, comprising the steps of:



(a) setting a welding command voltage to a predetermined first voltage in response to an arc start command, to supply electric power between a workpiece and the electrode;

(b) gradually increasing the welding command voltage from the predetermined first voltage until an arc is generated between the workpiece and the electrode at an arc start voltage; and

(c) decreasing the welding command voltage to a predetermined second voltage lower than the arc start voltage, when the arc generated in step (b) is detected.

5,486,680

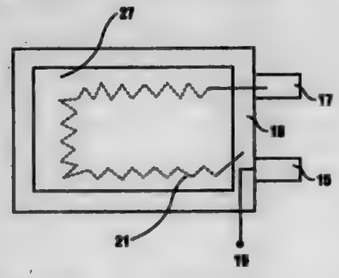
WARMING SYSTEM USING A FLEXIBLE BATTERY

Mitchell J. Lieberman, 24 Ethan Allan Ave., Colchester, Vt. 05446

Filed Jan. 10, 1994, Ser. No. 179,522

Int. Cl.[6] H01M 10/50; H05B 3/34

U.S. Cl. 219—211 7 Claims



1. A body warming apparatus comprising,

a substantially planar flexible battery having first and second battery terminals,

a substantially planar heating element coupled to said first and second battery terminals, said heating element being disposed overlaying and in close proximity with said flexible battery, whereby at least a portion of the heat from said heating element heats said battery.

5,486,681

DEVICE FOR HEATING UP ELECTRONIC BOARDS

Pierre Dagnac, Tournefeuille; Michel Leviandier, St Orens de Gameville, and Jean-Philippe Tigneres, Toulouse, all of, France, assignors to Thomson-CSF, Paris, France

PCT No. PCT/FR93/01075, § 371 Date Jun. 24, 1994, § 102(e) Date Jun. 24, 1994

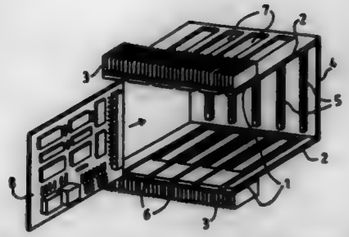
PCT Filed Oct. 29, 1993, Ser. No. 256,166

Claims priority, application France, Jan. 29, 1992, 92 12950

Int. Cl.[6] F27D 7/04

U.S. Cl. 219—400 8 Claims

1. Device for heating up electronic boards comprising opposing board-guide walls with each having parallel guidance grooves for inserting said electronic boards therein, a back for interconnecting said walls,



a heating element arranged on at least one of said board-guide walls on a side of a first board-guide wall opposite to said grooves, convection means associated with said heating element, and vents arranged in each of said board-guide walls with each of said vents located between said grooves so as to allow a circulation of heated air between said electronic boards.

5,486,682

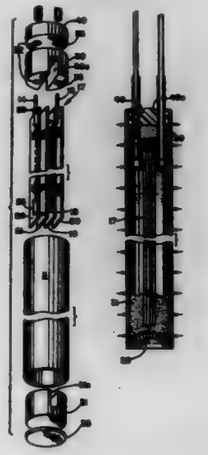
HEATER ASSEMBLY FOR SWAGED CARTRIDGE HEATER AND METHOD OF MANUFACTURE

Robert A. Ryseman, Buffalo Grove, Ill., assignor to Acra Electric Corporation, Schiller Park, Ill.

Filed Oct. 21, 1992, Ser. No. 964,278

Int. Cl.[6] H05B 3/00

U.S. Cl. 219—544 7 Claims



1. A cartridge heater assembly to be swaged, comprising:

a cylindrical sheath having a head end and a slug end;

a resistance heater unit in said sheath having a flat rectangular core of insulating material,

a resistance wire winding on said core with a first end turn at the head of said core and a second end turn at the slug end of said core, and

first and second flat rectangular core covers of insulating material one on each side of said core, in which the resistance wire at said first end turn extends through a hole in the adjacent core cover;

crushable heater unit centralizers at each end of the sheath, holding the resistance heater unit;

a plastic bushing closing the head end of the sheath;

a slug closing the slug end of the sheath; and

leads connected to the resistance wire winding and extending from the sheath, the connection between the resistance wire winding and the leads being enclosed in the crushable centralizer at the head end of the sheath with the resistance wires extending from the end turns and connected with said leads.

5,486,683

METHOD OF COOKING USING AN ELECTROMAGNETIC COOKER COVER PLATE

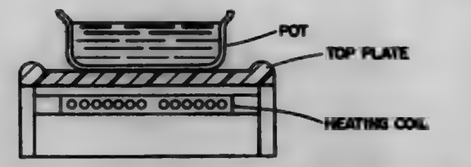
Tetsuo Shindou, Yokosuka, and Naoki Wakita, Yokohama, both of, Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Continuation of Ser. No. 688,897, Apr. 19, 1991, abandoned. This application Oct. 21, 1994, Ser. No. 327,149

Claims priority, application Japan, Apr. 20, 1990, 2-103812

Int. Cl.[6] H05B 6/12

U.S. Cl. 219—622 8 Claims



1. A method of cooking edible liquid and solid foods comprising the steps of:

placing an edible liquid and/or solid food in a cookware article;

induction heating said food in said cookware article on an electromagnetic cooker cover plate, said cover plate formed by injection molding a polymeric composition, said composition comprising a wholly aromatic, liquid crystalline polyester and an inorganic filler, wherein said cover plate has a heat deformation temperature of at least 200° C. under a load of 18.5 kg/cm^2 whereby vibration and other noises generated during said cooking step are diminished.

5,486,684

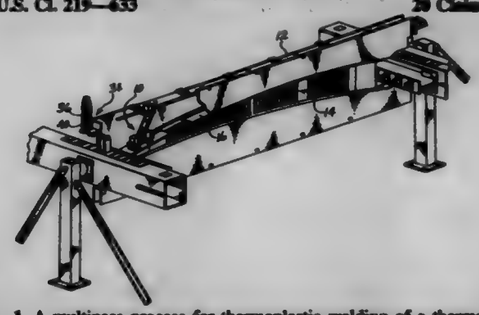
MULTIPASS INDUCTION HEATING FOR THERMOPLASTIC WELDING

Todd R. Peterson, Federal Way, and Michael A. Walker, Sumner, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jan. 3, 1995, Ser. No. 367,546

Int. Cl.[6] H05B 6/10

U.S. Cl. 219—633 20 Claims



1. A multipass process for thermoplastic welding of a thermoplastic resin along a bond line to prepare a high strength fusion bond connecting two aerospace composite structural parts, comprising the steps of:

(a) inserting a susceptor between two faying surfaces of at least two thermoplastic composite parts to be welded together; the susceptor being made from a material susceptible to induction, having a substantially uniform pattern of openings extending through the material so that the susceptor heats substantially uniformly when subjected to the oscillating magnetic field produced with a induction coil, the susceptor defining a bond line where a fusion bond will connect the parts;

(b) positioning said induction coil in close proximity to said faying surfaces and applying electrical power to said coil to heat said susceptor sufficiently to soften the thermoplastic in said faying surfaces and to create a substantially uniform temperature in the softened thermoplastic;

(c) moving said coil in a first pass along said faying surfaces and simultaneously applying pressure to said parts to force said faying surfaces together to reduce irregularities that otherwise interfere with full surface area contact between the faying surfaces along the bond line and to produce intimate contact between the faying surfaces;

(d) solidifying the thermoplastic by stopping the induction which heats the susceptor;

(e) after said first pass, moving said coil while applying electrical power in a second pass along said faying surfaces and simultaneously applying pressure to said parts to soften the thermoplastic again and to further force said faying surfaces together to achieve intimate contact while having the thermoplastic heal to create a strong fusion bond by penetration of polymer chains in the thermoplastic of one faying surface into the molecular matrix of the thermoplastic in the other faying surface; and

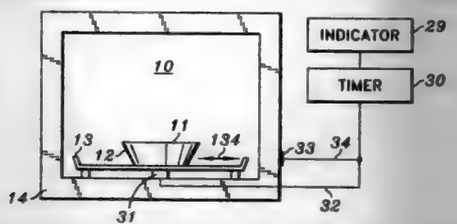
(f) after said second pass, performing additional passes of said coil and simultaneous application of pressure to attain a welded bond line of the desired integrity and completeness.

5,486,685

OVEN WITH FOOD PRESENCE INDICATOR

W. Jean Dodds, 938 Stanford, Santa Monica, Calif. 90403

Filed Nov. 23, 1994, Ser. No. 344,276
Int. Cl.[6] H05B 6/68
U.S. Cl. 219—720 13 Claims



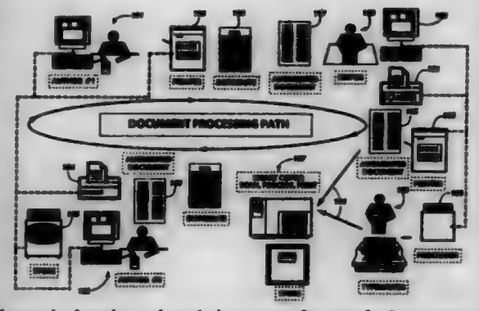
1. Apparatus for preventing the spoilage of food in an oven, in combination with an oven which includes a chamber within which there are means for receiving food for heating, a door to the chamber, the door being normally closed thereby providing for closure of the chamber in which the heating is effected, means for regular operation for generating heat in the chamber or in food in the chamber, a support in the chamber for locating the food in the chamber, and an indicator for signalling the existence of food in the chamber, comprising means for having the indicator be operational after the regular operation of the means for generating heat in the chamber or in the food, and when the heat-generating means is non-operating including a sensor, the sensor being sensitive to weight, and wherein a weight greater than a predetermined amount activates the indicator, the indicator being selectively at least one of light means or audio means.

5,486,686

HARDCOPY LOSSLESS DATA STORAGE AND COMMUNICATIONS FOR ELECTRONIC DOCUMENT PROCESSING SYSTEMS

Frank Zdybel, Jr., Palo Alto; Henry W. Sang, Jr., Cupertino; Jan O. Pederson, Palo Alto; Z. E. Smith, III, Palo Alto; D. A. Henderson, Jr., Palo Alto; David L. Hecht, Palo Alto, and Dan S. Bloomberg, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 530,677, May 30, 1990, abandoned. This application May 18, 1992, Ser. No. 887,563
Int. Cl.[6] G06F 15/20
U.S. Cl. 235—375 19 Claims



14. In an electronic document processing system having scanner means for transforming information from a hardcopy domain to an electronic domain, and rendering means for transferring representations of human readable information from sources in at least one-of said domains to hardcopy documents in said hardcopy domain in accordance with a transform having known attributes, including system attributes which are not explicitly defined by said human readable information; the improvement comprising

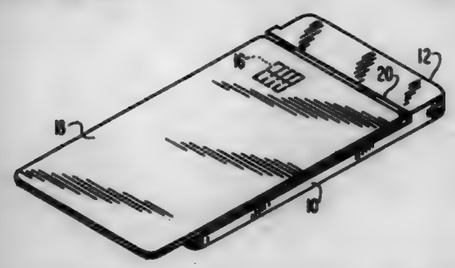
means within said rendering means for printing a machine readable encoded description of at least one of the known system attributes, including system attributes which are not explicitly defined by said human readable information of said transform on said hardcopy documents along with said human readable information, such that at least one of said system attributes of said transform is stored on said hardcopy documents for retrieval when any of said hardcopy documents is transformed from said hardcopy domain to said electronic domain.

5,486,687

MEMORY CARD HAVING A RECESSED PORTION WITH CONTACTS CONNECTED TO AN ACCESS CARD

Jean-Yves Le Roux, Bouc Bel Air, France, assignor to Gemplus Card International, Gemenos, France

Continuation of Ser. No. 997,501, Dec. 28, 1992, Pat. No. 5,375,037. This application Sep. 27, 1994, Ser. No. 312,647
Claims priority, application France, Jan. 14, 1992, 92 00323
Int. Cl.[6] G06K 19/06; 5/00
U.S. Cl. 235—382 7 Claims



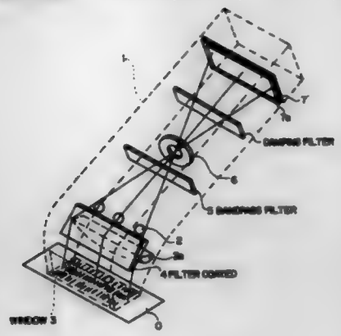
1. A plug-in memory card for a microcomputer, said card having several integrated circuit chips and a connector with several dozen plug-in contacts at an end of the card, said card also comprising a supplementary connector with a plurality of flush contacts on a first surface of the card, said supplementary connector being able to come into contact with a flat chip card, whose access contacts are flush on a face which is facing said first face further comprising card from a computer, into which it is plugged, as a function of the results of the communication.

5,486,688

NON-SCANNING TYPE OPTICAL READING APPARATUS HAVING ILLUMINATING EQUALIZATION FILTER

Mitsunori Iima; Kazuya Hara, and Atsumi Kaneko, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 25, 1992, Ser. No. 904,307
Claims priority, application Japan, Jun. 26, 1991, 3-154942
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—462 9 Claims



1. An optical reading apparatus comprising:

an imaging lens for imaging a two-dimensional pattern as an object to be read and forming a two-dimensional image thereof:

light-receiving means for reading information from the two-dimensional image of the two-dimensional pattern, the two-dimensional image being formed by light travelling from the two-dimensional pattern to the light receiving means; and

damping means for providing attenuation of the light provided to the light-receiving means, the attenuation varying in two dimensions depending on position of the light within the two-dimensional image, wherein said damping means is a bandpass filter for limiting the wavelength of said light reaching said light-receiving means, said bandpass filter being provided between said two-dimensional pattern and said light-receiving means and so set that given the wavelength of said light, a light component incident at an oblique angle to the bandpass filter will have a higher transmittance than a light component incident normal to the bandpass filter.

2. An optical reading apparatus comprising:

an imaging lens for imaging a pattern as an object to be read and forming an image thereof;

light-receiving means for reading information from the image of the pattern, the image being formed by light travelling from the pattern to the light-receiving means; and

damping means providing attenuation of the light, the attenuation varying depending on position of the light within the image,

the damping means comprising at least two light attenuating devices, each of the at least two light attenuating devices being one of a light-attenuating reflecting mirror and a light-attenuating transmission filter,

reflectance of the light-attenuating reflecting mirror varying with position along the surface of the mirror at which the light is reflected, and

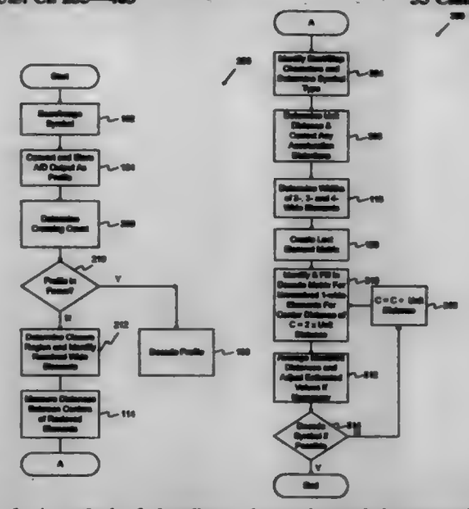
transmittance of the light-attenuating transmission filter varying with position along the surface of the filter through which the light is transmitted.

5,486,689

METHOD AND APPARATUS FOR DECODING UNRESOLVED MULTI-WIDTH BAR CODE SYMBOLOGY PROFILES

H. Sprague Ackley, Seattle, Wash., assignor to Intermec Corporation, Everett, Wash.

Continuation-in-part of Ser. No. 8,769, Jan. 22, 1993, Pat. No. 5,389,770. This application Oct. 24, 1994, Ser. No. 327,972
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—463 53 Claims



1. A method of decoding a bar code symbol representing encoded information, the bar code symbol including a plurality of relatively spaced bars having at least first, second and third widths, and spaces between the bars having at least first, second and third widths, the second and third widths being greater than the first width, the method comprising the steps of:

receiving light reflected from the bar code symbol and producing an output signal therefrom that represents the reflectance of the bars and spaces comprising the bar code symbol;

receiving the output signal and producing a wide feature signal resolving the bars and spaces having the second and third widths, but the wide feature signal failing to resolve at least some of the bars and spaces having the first width;

receiving the wide feature signal and determining which of the bars and spaces are resolved by defining a threshold and identifying a plurality of portions in the wide feature signal that extend beyond the threshold, each of the plurality of portions corresponding to one of the resolved bars and spaces;

measuring distances between the plurality of portions in the wide feature signal;

determining a narrow width of the bars and spaces having the first width based on the distances measured;

determining a number and location of the bars and spaces having the first width based on the determined width and the distances measured; and

determining the information encoded in the bar code symbol based on the determined number and location of bars and spaces having the first width.

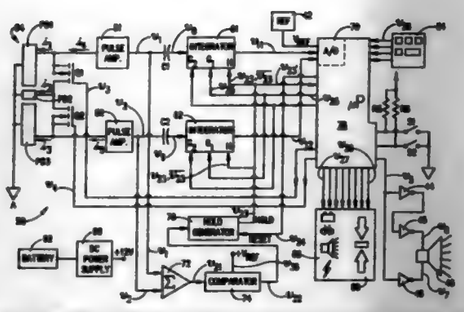
5,486,690

METHOD AND APPARATUS FOR DETECTING LASER LIGHT

DuWain K. Ake, Tipp City, Ohio, assignor to Apache Technologies, Inc., Dayton, Ohio

Filed Aug. 29, 1994, Ser. No. 297,116
Int. Cl.[6] H01J 40/14; G01C 3/08
U.S. Cl. 250—206.1 10 Claims

1. A light detecting circuit, comprising:



(a) a plurality of light-sensitive elements arranged in an array for detecting pulses of light energy striking said light detecting circuit, thereby creating a plurality of first electrical signals, wherein the magnitude of each of said plurality of first electrical signals is proportional to the power of light striking its corresponding light-sensitive element, each of the light-sensitive elements in said array having a known physical location with respect to one another, and each pair of adjacent light-sensitive elements forming an individual gap of known distance between the respective proximal edges of said pair of adjacent light-sensitive elements;

(b) at least one electrical switching device that alternately connects one of said plurality of first electrical signals to at least one of the other of said first electrical signals, thereby creating at least two interface signals;

(c) an amplifying and integrating circuit that amplifies and integrates each of said at least two interface signals, thereby creating a plurality of second electrical signals, wherein the gain of said amplifying and integrating circuit is automatically controlled so as to keep said plurality of second electrical signals within the active dynamic range of said light detecting circuit, and wherein the peak magnitude of each of said plurality of second electrical signals is proportional to the power and to the duration time of light striking its corresponding light-sensitive element;

(d) a comparator device that determines which of said plurality of second electrical signals is greater in magnitude, said greater second electrical signal being indicative of the physical location that substantially the center of said light energy is striking said array of light-sensitive elements; and

(e) a display for indicating said actual physical location, in comparison to the desired physical location, that substantially the center of said light energy is striking said array of light-sensitive elements.

5,486,691

MONITORING APPARATUS IN MACHINES

Gerhard Dieterle, Simonswald, Germany, assignor to Erwin Sick GmbH Optik–Elektronik, Waldkirch, Germany

Filed Oct. 5, 1993, Ser. No. 132,087

Claims priority, application Germany, Jan. 7, 1992, 42 33 810.7

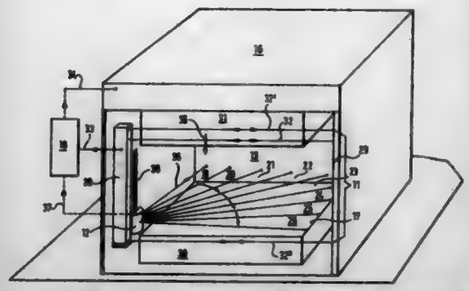
Int. Cl.[6] B62D *1/24*; B60T *7/16*

U.S. Cl. 250—221 **17 Claims**

1. A monitoring apparatus for a machine of the type having a working space in which dangerous working processes occur, the working space having at least one entry side through which an operator can enter or a work tool can be inserted, the apparatus comprising:

at least one protective light curtain arranged on the entry side of the working space and having a transmitter for transmitting light, a reflector for reflecting the light and a receiver for detecting the reflected light;

an evaluation circuit operatively coupled to the receiver and having a switch for terminating the dangerous working processes of the machine when the operator or the work tool passes by the light curtain; and



a rotational light sensor having a transmitter for transmitting light through the working space and a receiver for detecting the transmitted light, the rotational light sensor being rotatably coupled to the working space so that the light is scanned across at least a portion of the working space over a scanning plane having an angle of 0° to 60° with respect to a horizontal plane, the receiver being coupled to the evaluation circuit such that the switch terminates the dangerous working processes when the operator or the work tool are located within the scanning plane.

5,486,692

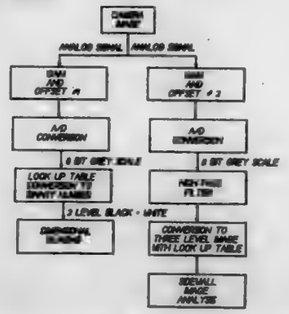
GLASSWARE INSPECTION MACHINE COMPRISING DIFFUSED LIGHT SOURCES AND TWO-DIMENSIONAL CAMERAS

Leo B. Baldwin, Horseheads, N.Y., assignor to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Filed Oct. 19, 1994, Ser. No. 325,770

Int. Cl.[6] G01N *21/90*

U.S. Cl. 250—223 B **8 Claims**



1. An inspection machine for inspecting a vertically standing container comprising

a conveyor for horizontally displacing a vertically standing glass container through spaced first and second inspection locations,

a first pair of diffused light sources located behind said conveyor for forwardly directing 90° angularly related first and second beams of light substantially horizontally at a container located at one of said inspection locations, said first and second beams being sufficiently large so that said light beams will pass around the entire profile of a container located at said first inspection location,

a first two dimensional camera having a first imaging surface on the other side of said conveyor for issuing an analog signal representing the image on said imaging surface, and

first means for redirecting said forwardly directed beams to corresponding halves of said imaging surface,

a second pair of diffused light sources located in front of said conveyor for rearwardly directing 90° angularly related third and fourth beams of light parallel substantially horizontally at a container located at the other one of said inspection locations, said third and fourth beams being parallel to said first and second beams and being sufficiently large so that said light beams will pass around the entire profile of a container located at said second inspection location,

a second two dimensional camera having a second imaging surface on the side of said conveyor opposite to said second pair of diffused light sources for issuing an analog signal representing the image on said second imaging surface,

second means for redirecting said rearwardly directed third and fourth light beams to corresponding halves of the imaging surface of said second two dimensional camera, and

means for analyzing the analog signal from each of said cameras.

5,486,693

DETECTION OF TURBID CONTAMINANTS IN CONTAINERS BY DETECTING SCATTERED RADIANT ENERGY

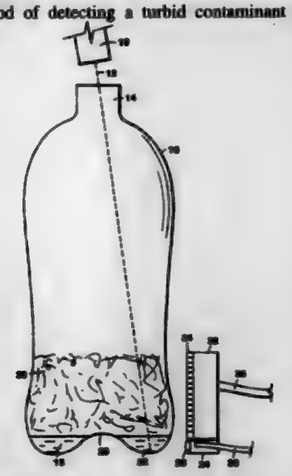
Eugene K. Achter, Lexington; Helmut W. Klotzsch, Groton; Craig D. Thompson, Natick; Fuquan Gao, Cambridge, and Jonathan E. Bosworth, Acton, all of Mass., assignors to Thermedics Detection Inc., Chelmsford, Mass.

Continuation-in-part of Ser. No. 268,198, Jun. 29, 1994, which is a continuation-in-part of Ser. No. 198,217, Feb. 17, 1994. This application Nov. 8, 1994, Ser. No. 337,817

Int. Cl.[6] G01N *21/24*

U.S. Cl. 250—223 B **33 Claims**

1. A method of detecting a turbid contaminant in a moving



container, comprising:

selecting a wavelength for which energy having said wavelength is absorbed by contents of the moving container that include the turbid contaminant at a different level than energy having said wavelength is absorbed by contents of the moving container that include a non-contaminant,

producing radiant energy having said wavelength,

directing the radiant energy into the moving container,

electronically detecting a level of radiant energy scattered by contents of the moving container, and

indicating the presence of a turbid contaminant when the detected level of scattered radiant energy differs from a threshold level.

5,486,694

WOBBLE CORRECTION AND FOCUSING OPTICAL ELEMENT WITH REFRACTIVE TOROIDAL SURFACE AND BINARY DIFFRACTIVE OPTICAL SURFACE

Ellis D. Harris, Claremont, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 2, 1994, Ser. No. 348,415

Int. Cl.[6] H01J *3/14*

U.S. Cl. 250—236 **5 Claims**

1. An optical scanning system for wobble correction and focusing a light beam at a scan line comprising:



a rotating polygon mirror with a plurality of facets,

means for generating a collimated light beam directed onto one of said facets, and

an optical element which focuses said light beam reflected off said one of said facets to a scan line and corrects for wobble of said light beam at said scan line, said optical element comprising a binary diffractive optical surface and a refractive toroidal lens surface.

5,486,695

STANDOFF COMPENSATION FOR NUCLEAR LOGGING WHILE DRILLING SYSTEMS

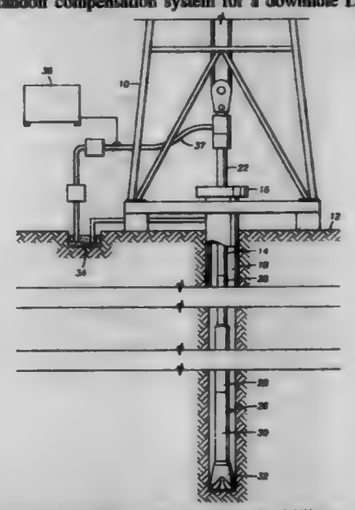
Ward E. Schultz, Fulshear, and Gordon L. Moake, Houston, both of Tex., assignors to Halliburton Company, Dallas, Tex.

Filed Mar. 29, 1994, Ser. No. 219,062

Int. Cl.[6] G01V *5/04*

U.S. Cl. 250—261 **30 Claims**

1. A standoff compensation system for a downhole LWD tool,



said LWD tool forming part of a bottombole drilling assembly to drill a borehole, comprising:

a sensor for measuring formation parameters based on nuclear count data and generating a signal indicative thereof;

a sensor for determining the standoff distance between the borehole wall and the LWD tool and generating a signal indicative thereof;

a downhole processor for receiving the signal indicative of standoff distance and developing a weight factor therefrom, said processor also receiving said signal indicative of the nuclear count data and modifying the nuclear count data based on said weight factor; and

wherein the weight factor is determined based upon a weight function relationship.

5,486,696

PROCEDURE AND APPARATUS FOR THE ANALYSIS OF SURFACE AND/OR DEPTH PROFILES

Karl-Heinz Muller, Werne, and Hans Oechsner, Kaiserslautern, both of, Germany, assignors to SPECS Gesellschaft fur Oberflachenanalytik and Computertechnologie mbH, Germany

PCT No. PCT/EP92/00067, § 371 Date Mar. 9, 1994, § 102(e) Date Mar. 9, 1994, PCT Pub. No. WO92/13268, PCT Pub. Date Aug. 6, 1992

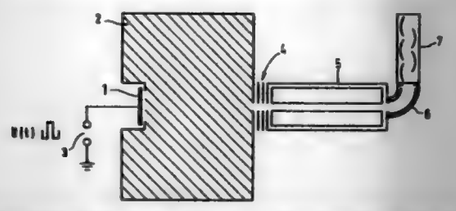
PCT Filed Jan. 14, 1992, Ser. No. 90,109

Claims priority, application Germany, Jan. 15, 1991, 41 00 980.0

Int. Cl.[6] H01J *49/14*

U.S. Cl. 250—288 8 Claims

1. Procedure for analyzing the surface and/or depth profile of



specimens, said specimens being completely or partially electrically non conductive, employing the direct bombardment method of the secondary neutral-particle mass spectrometry SNMS, comprising the steps of:

applying a high-frequency alternating voltage to an underside of a specimen, said specimen having an upperside in direct contact with a low-pressure plasma; wherein said alternating voltage has high frequency periods wherein, during negative voltage phases of said high-frequency periods, said upperside of said specimen is bombarded by positive ions from said plasma with a constant kinetic energy for producing neutral atoms and molecules and, during positive voltage phases of said high-frequency periods, said upperside of said specimen is bombarded by electrons from said plasma for compensating the charge produced on said specimen by said positive ions.

5,486,697

ARRAY OF MICRO-MACHINED MASS ENERGY MICRO-FILTERS FOR CHARGED PARTICLES

Roland E. Stalder, Pasadena; Thomas R. Van Zandt, Redondo Beach; Michael H. Hecht, Los Angeles, and Frank J. Grunthaner, Glendale, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Nov. 14, 1994, Ser. No. 338,400

Int. Cl.[6] H01J *37/12*

U.S. Cl. 250—305 18 Claims

1. An energy filter for charged particles comprising:

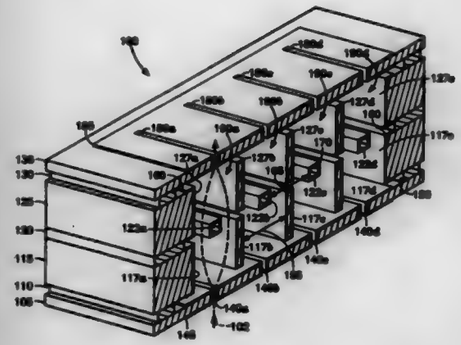
(A) a stack of micro-machined wafers comprising:

(1) plural apertures passing through said stack of wafers,

(2) focusing electrodes bounding charged particle paths through said apertures,

(3) an entrance orifice to each of said plural apertures and an exit orifice from each of said plural apertures; and

(B) means for biasing said focusing electrodes with an electrostatic potential corresponding to an energy pass band of said filter.



5,486,698

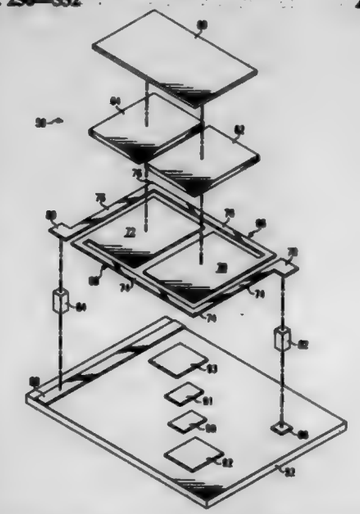
THERMAL IMAGING SYSTEM WITH INTEGRATED THERMAL CHOPPER

Charles M. Hanson, Richardson; Dana Dudley, and James E. Robinson, both of Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 19, 1994, Ser. No. 229,497

Int. Cl.[6] G01J *5/10*

U.S. Cl. 250—332 22 Claims



1. A thermal sensor mounted on a substrate to provide a signal representative of the amount of thermal radiation incident to the thermal sensor, comprising:

thermal sensitive material for generating a biased signal representing total radiance from the scene and for generating a reference signal by shunting the thermal sensitive material with the substrate;

at least one flexible arm for allowing selective deflection of the thermal sensitive material to contact the substrate and form the reference signal; and

a signal flow path from the thermal sensitive material to a respective contact pad disposed on the substrate; and

the signal flow path providing a reference signal representative of the temperature of the substrate when the thermal sensitive material deflects to contact the substrate.

5,486,699

NON-DISPERSIVE INFRARED SPECTROMETER

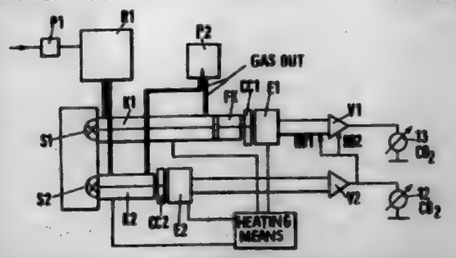
Walter Fabinski, Krefeld; Gerhard Wiegleb, Neu-Anspach; Peter Hering; Werner Fuss, both of Garching, and Michael Haisch, Dusseldorf, all of, Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Continuation of Ser. No. 96,017, Jul. 22, 1993. This application Jan. 13, 1995, Ser. No. 372,868

Claims priority, application Germany, Jul. 22, 1992, 42 24 146.4

Int. Cl.[6] G01N *21/35*

U.S. Cl. 250—345 17 Claims



1. A method of selectively determining an isotope portion of a measuring gas by means of non-dispersive infrared spectroscopy, the method comprising sensitizing the measuring gas in a first ray path to an isotope component $^*A_xB_y$ and sensitizing the measuring gas in a second ray path to the isotope-pure measuring gas A_xB_y, electronically amplifying the measurement results, carrying out an additional optical filtering in the first ray path by a filter essentially filled with isotope-pure measuring gas A_xB_y, and using the electronic measuring value of the second ray path for influencing an amplification factor and an offset in the measurement result of the first ray path.

5,486,700

PROXIMITY CONTROLS FOR GAMMA CAMERA

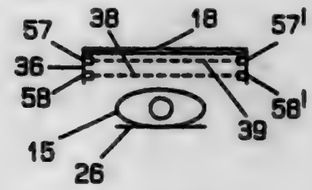
Alex Silberkang, Haifa, and Israel Ohana, Kiryat Tivon, both of, Israel, assignors to Elscint Ltd., Haifa, Israel

Filed Dec. 27, 1993, Ser. No. 172,728

Claims priority, application Israel, Dec. 31, 1992, 104292

Int. Cl.[6] G01T *1/166*

U.S. Cl. 250—363.04 22 Claims



1. A gamma camera system comprising:

a gantry having at least one gamma camera mounted thereon fop use in performing scans of a patient, controls for minimizing the distance between the patient and the gamma camera during said scans, said controls limited to a first proximity control for providing a first energy screen of multiple energy beams at a first distance from the detector of the gamma camera and a second proximity control for providing a second energy screen of multiple energy beams at a second distance from the detector of the gamma camera, said second distance being larger than said first distance,

said controls minimizing the distance between the gamma camera and the patient's body by controlling the movements of the gamma camera to maintain the contour of the patient's body between said first and second energy screens,

said multiple energy beams being comprised of a number of beams sufficiently close to each other so that cross-talk may occur between individual transmitters and receivers that are not oppositely disposed, and

a cross-talk avoidance arrangement for avoiding cross-talk between individual receivers and transmitters that are not oppositely disposed.

5,486,701

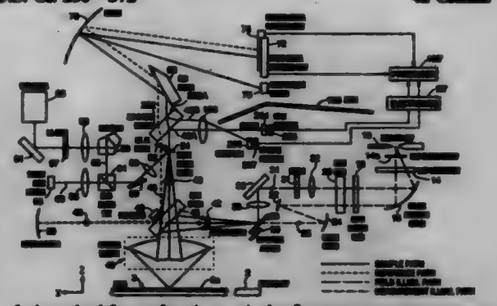
METHOD AND APPARATUS FOR MEASURING REFLECTANCE IN TWO WAVELENGTH BANDS TO ENABLE DETERMINATION OF THIN FILM THICKNESS

Adam E. Norton, Palo Alto, and Hung V. Pham, San Jose, both of Calif., assignors to Prometrix Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 899,665, Jun. 16, 1992, abandoned. This application Mar. 28, 1994, Ser. No. 218,975

Int. Cl.[6] G01N *21/27*

U.S. Cl. 250—372 42 Claims



1. A method for performing optical reflectance measurements on a sample having a very thin film, the method including the steps of:

(a) focusing a first beam of radiation onto a selected area of the sample, said first beam including UV components in a UV frequency band and visible components in a visible frequency band;

(b) receiving a reflected portion of the first beam that has reflected from the selected area, and separating the reflected portion into a second beam including the UV components and a third beam including the visible components;

(c) generating a first signal indicative of intensity of the second beam;

(d) generating a second signal indicative of intensity of the third beam;

(e) processing the first signal and the second signal to generate a reflected ratio signal indicative of relative intensity of the second beam and the third beam; and

(f) processing the reflected ratio signal to generate data indicative of thickness of the very thin film.

5,486,702

SCAN TECHNIQUE TO REDUCE TRANSIENT WAFER TEMPERATURES DURING ION IMPLANTATION

John P. O'Connor, Andover, and John W. Smith, Newburyport, Mass., assignors to Genus, Inc., Sunnyvale, Calif.

Filed Sep. 21, 1993, Ser. No. 125,117

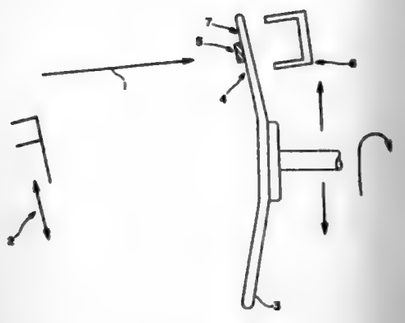
Int. Cl.[6] H01J *37/317*

U.S. Cl. 250—492.21 13 Claims

1. Method of ion implantation comprising

directing an ion beam at a target and mechanically imparting a scanning movement between said beam and said target, wherein

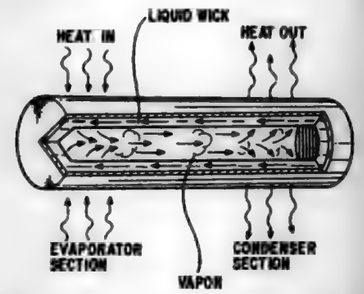
slow active ion-implantation mechanical scans in one direction are alternated with rapid inactive ion-implantation mechanical scans in the reverse direction.



5,486,703
HYDRONIC COOLING OF PARTICLE ACCELERATOR WINDOW

Joseph R. Lovin, Greer, and David S. Shevick, Taylors, both of S.C., assignors to W. R. Grace & Co.-Conn., Duncan, S.C.

Continuation of Ser. No. 955,529, Oct. 1, 1992, abandoned. This application Sep. 2, 1994, Ser. No. 300,689
Int. Cl.[6] H01J 7/18;37/30
U.S. Cl. 250—492.3 12 Claims



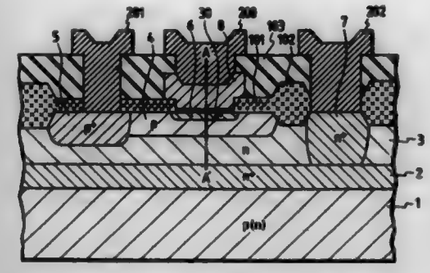
1. A method of irradiating an article, comprising the steps of:
providing an electron beam accelerator, said accelerator comprising a window, a target region, and a heat pipe for cooling the window; wherein said heat pipe comprising a hollow tube having an evaporator section in contact with the window and a condenser section, a volatile liquid in said hollow tube, and a wick;
irradiating an article in the target region;
cooling the window while irradiating the article; and providing an inert gas to the target region during the irradiating to substantially decrease ozone production.

5,486,704
SEMICONDUCTOR DEVICE AND ELECTRONIC DEVICE BY USE OF THE SEMICONDUCTOR

Masakazu Morishita, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 780,397, Oct. 23, 1991, Pat. No. 5,272,357, which is a continuation of Ser. No. 619,527, Nov. 29, 1990, abandoned. This application Sep. 10, 1993, Ser. No. 118,751
Claims priority, application Japan, Nov. 30, 1989, 1-311550; Feb. 28, 1990, 2-48320; Feb. 28, 1990, 2-48321
Int. Cl.[6] H01L 29/72
U.S. Cl. 257—9 10 Claims

1. A semiconductor device comprising:
a collector region of first conductivity type;
a base region of second conductivity type;
an emitter region of the first conductivity type;
a thin film provided on said emitter region in which tunnel current for both electron and hole carriers can flow; and

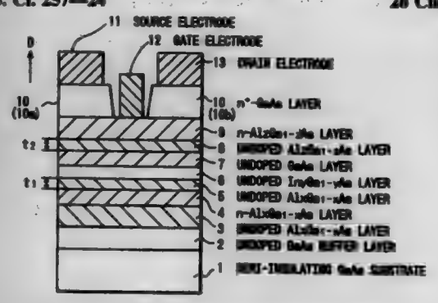


a polycrystalline layer laminated on said thin film;
wherein, between said emitter region and said polycrystalline layer a Fermi level of said polycrystalline layer and a Fermi level of said emitter region are aligned so as to form a potential barrier against a carrier injected from said base region into said emitter region.

5,486,705
HETEROJUNCTION FIELD EFFECT TRANSISTOR

Kaoru Inoue, Kadoma; Toshinobu Matsuno, Katano; Tadayori Nakatuka, Osaka, and Hiroyuki Masato, Kadoma, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jun. 9, 1994, Ser. No. 257,125
Claims priority, application Japan, Jun. 15, 1993, 5-143442
Int. Cl.[6] H01L 29/06
U.S. Cl. 257—24 26 Claims

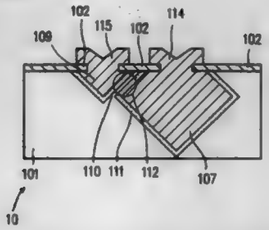


1. A heterojunction field effect transistor comprising:
(a) a semi-insulating GaAs substrate;
(b) a heterojunction structure formed on said semi-insulating GaAs substrate in a predetermined direction, said heterojunction structure comprising:
(i) an active layer comprising a channel layer including an undoped InGas layer, wherein 0.05=y=0.30, and an undoped GaAs layer formed on and in contact with said undoped $In_yGa_{1-y}As$ layer in said predetermined direction; and
(ii) first and second AlGaAs layers doped with first and second dopants, respectively, sandwiching said active layer, said second AlGaAs layer being provided between said active layer and said semi-insulating GaAs substrate;;
(c) a source electrode structure formed on a first area of said
(d) a gate electrode structure formed on a second area of said heterojunction structure and
(e) a drain electrode structure formed on a third area of said heterojunction structure.

5,486,706
QUANTIZATION FUNCTIONAL DEVICE UTILIZING A RESONANCE TUNNELING EFFECT AND METHOD FOR PRODUCING THE SAME

Koichiro Yuki, Neyagawa; Yoshihiko Hirai, Osaka; Kiyoshi Morimoto, Neyagawa; Masaaki Niwa, Hirakata; Juro Yasui, Toyonaka; Kenji Okada, Suita, and Masaharu Udagawa, Tokyo, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 26, 1994, Ser. No. 249,541
Claims priority, application Japan, May 26, 1993, 5-123732; Jan. 7, 1993, 5-251565; Dec. 22, 1993, 5-325076; Mar. 24, 1994, 6-053972
Int. Cl.[6] H01L 29/88;31/036
U.S. Cl. 257—25 11 Claims

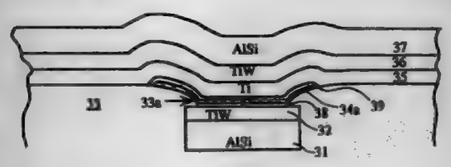


1. A quantization functional device, comprising:
a silicon thin plate having a plurality of side walls each having a surface orientation of (111), a distance between the plurality of side walls being sufficiently thin as to allow the silicon thin plate to act as a quantum well;
a pair of tunneling barriers respectively provided on surfaces of the side walls of the silicon thin plate; and
a first electrode and a second electrode sandwiching the pair of tunneling barriers.

5,486,707
ANTIFUSE STRUCTURE WITH DOUBLE OXIDE LAYERS

Kevin T. Look, Fremont, and Evert A. Wolsheimer, Sunnyvale, both of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Continuation of Ser. No. 933,428, Aug. 21, 1992, abandoned. This application Jan. 10, 1994, Ser. No. 182,519
Int. Cl.[6] H01L 29/04;27/02
U.S. Cl. 257—52 20 Claims

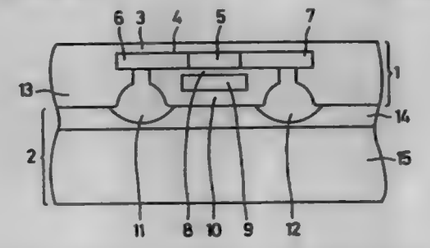


1. An antifuse structure comprising:
a first conductive layer including a refractory metal;
a first oxide layer comprising an oxide of said refractory metal;
an amorphous silicon layer formed on said first oxide layer;
a second oxide layer comprising an oxide of said amorphous silicon layer; and
a second conductive layer formed on said second oxide layer, wherein said antifuse structure provides a programming voltage range of approximately 7.5 volts to approximately 10.0 volts.

5,486,708
LIGHT VALVE DEVICE USING SEMICONDUCTIVE COMPOSITE SUBSTRATE

Kunihiro Takahashi; Yoshikazu Kojima; Hiroaki Takasu; Nobuyoshi Matsuyama; Hitoshi Niwa; Tomoyuki Yoshino, and Tsuneo Yamazaki, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Division of Ser. No. 791,912, Nov. 13, 1991, Pat. No. 5,347,154. This application Jun. 23, 1994, Ser. No. 264,635
Claims priority, application Japan, Nov. 15, 1990, 2-309437; Jan. 23, 1991, 3-6561; Feb. 16, 1991, 3-22420; Apr. 11, 1991, 3-79330; Apr. 11, 1991, 3-79337
Int. Cl.[6] H01L 33/00
U.S. Cl. 257—59 14 Claims

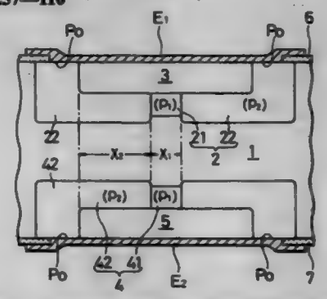


1. A light valve device comprising: a drive substrate having a drive electrode and an electrically connected drive circuit for exciting the drive electrode in response to a predetermined signal; an opposed substrate arranged opposite to the drive substrate; and an electrooptical material layer arranged between the drive substrate and the opposed substrate, wherein the drive substrate includes a transparent insulating thin film layer and a single crystal semiconductor thin film layer formed over the transparent insulating thin film layer, wherein the drive circuit includes a transistor element formed in the single crystal semiconductor thin film layer, and wherein the drive electrode is integrally arranged on one of the single crystal thin film layer and the transparent insulating thin film layer so that the drive electrode is excited by the drive circuit to control the optical transparency of the electrooptical material layer.

5,486,709
SURGE PROTECTION DEVICE

Yutaka Hayashi, Tsukuba; Masaaki Sato, Machida, and Yoshiki Maeyashiki, Chofu, all of, Japan, assignors to Agency of Industrial Science & Technology; Ministry of International Trade & Industry; Sankosha Corporation, all of Tokyo, and Optotechno Co., Ltd., Kanagawa, all of, Japan

Filed Mar. 26, 1993, Ser. No. 38,623
Claims priority, application Japan, Mar. 27, 1992, 4-100233
Int. Cl.[6] H01L 29/74
U.S. Cl. 257—110 18 Claims



1. A surge protection device comprising a first semiconductor region, a second semiconductor region forming a first pn junction with the first semiconductor region, at least one third semiconductor region facing the first semiconductor region across the second semiconductor region and forming a second pn junction with the

second semiconductor region, a fourth semiconductor region forming a third pn junction with the first semiconductor region at a place apart from the second semiconductor region, the second semiconductor region being comprised of a punch-through generation region portion and a punch-through suppression region portion, the punch-through suppression region portion being disposed to cover corners of the at least one third semiconductor region, the punch-through generation region portion being disposed only between flat facing portions of the at least one third semiconductor region and the first semiconductor region, a first ohmic electrode disposed in common ohmic contact with surfaces of the second and at least one third semiconductor regions, and a second ohmic electrode disposed in ohmic contact with the fourth semiconductor region;

wherein application across the first ohmic electrode and the second ohmic electrode of a surge of a polarity causing the first pn junction to be reverse biased causes a depletion layer to grow in the punch-through generation region portion of the second semiconductor region and reach the at least one third semiconductor region to cause punch-through and initiate breakdown operation between the first and at least one third semiconductor regions, whereafter current flowing between the first and second ohmic electrodes increases to produce in the second semiconductor region a voltage drop which turns on the second pn junction and causes the surge protection device to exhibit a breakover characteristic,

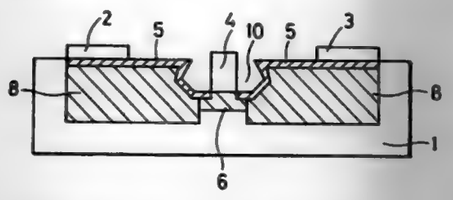
wherein the punch-through generation region portion and the punch-through suppression region portion constituting the second semiconductor region are of the same conductivity type but an impurity concentration of the punch-through generation region portion is lower than that of the punch-through suppression region portion, whereby the punch-through generation region portion permits punch-through to occur between the first and at least one third semiconductor regions and the punch-through suppression region portion suppresses the occurrence of punch-through between the first and at least one third semiconductor regions.

5,486,710

FIELD EFFECT TRANSISTOR

Toshiaki Kitano, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 133,378, Oct. 8, 1993, abandoned.
This application Feb. 7, 1995, Ser. No. 385,089
Claims priority, application Japan, Jan. 9, 1992, 4-298136; Mar. 16, 1993, 5-055252
Int. Cl.[6] H01L *31/0328;29/80;31/112*
U.S. Cl. 257—192 **6 Claims**



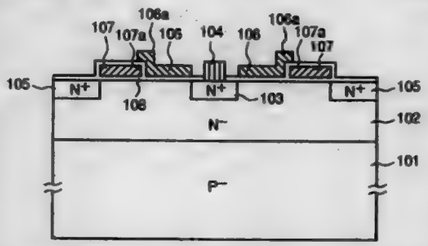
1. A field effect transistor comprising:
a semi-insulating GaAs substrate having a recess;
a gate electrode disposed in the recess;
a low carrier concentration region disposed in said GaAs substrate beneath the gate electrode;
first and second high carrier concentration regions having a higher carrier concentration than the low carrier concentration region disposed in said GaAs substrate at opposite sides of the recess and in contact with the low carrier concentration region;
third and fourth high carrier concentration regions having a higher carrier concentration than the first and second high carrier concentration regions disposed at the surface of the low carrier concentration region in the recess except beneath the gate electrode;
spaced apart source and drain electrodes disposed on the first and second high carrier concentration regions, respectively; and
fifth and sixth regions having a carrier concentration higher than that of the first and second high carrier concentration regions, disposed in the first and second high carrier concentration regions, reaching opposite side surfaces of the recess and portions of the first, second, third, and fourth high carrier concentration regions.

5,486,711

SOLID-STATE IMAGE SENSOR WITH OVERLAPPING SPLIT GATE ELECTRODES

Tomohisa Ishida, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jun. 24, 1994, Ser. No. 265,723
Claims priority, application Japan, Jun. 25, 1993, 5-154716
Int. Cl.[6] H01L *27/14;31/00*
U.S. Cl. 257—258 **4 Claims**



1. A solid-state image sensor comprising a plurality of picture elements, each of said picture elements comprising:
a semiconductor substrate of a first conductivity type;
a semiconductor layer of a second conductivity type formed on said semiconductor substrate;
a source region and a drain region of said second conductivity type, each of which is formed in a surface of said semiconductor layer and having a higher impurity density than that of said semiconductor layer; and
a plurality of split gate electrodes formed on the surface of said semiconductor layer between said source region and said drain region and insulated from said semiconductor layer surface, said split gate electrodes overlapping each other through an insulator layer.

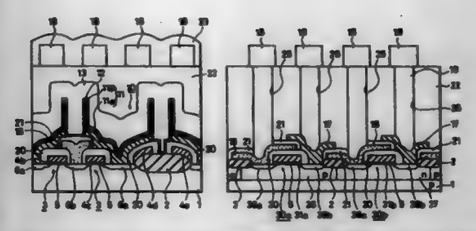
5,486,712

DRAM HAVING PERIPHERAL CIRCUITRY IN WHICH SOURCE-DRAIN INTERCONNECTION CONTACT OF A MOS TRANSISTOR IS MADE SMALL BY UTILIZING A PAD LAYER AND MANUFACTURING METHOD THEREOF

Hideaki Arima, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 690,843, Apr. 24, 1991, abandoned.
This application Apr. 25, 1994, Ser. No. 232,315
Claims priority, application Japan, May 1, 1990, 2-115642
Int. Cl.[6] H01L *27/108;29/772*
U.S. Cl. 257—296 **15 Claims**

1. A DRAM including a memory cell region having a plurality of memory cells each formed of at least one MOS transistor and one capacitor, and a peripheral circuit for writing/reading prescribed memory information to and from the memory cell region, on a main surface of a semiconductor substrate, said DRAM comprising:



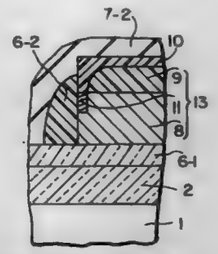
a MOS transistor for each memory cell including a pair of first impurity regions formed in said semiconductor substrate and a first gate electrode formed on the semiconductor substrate between said pair of first impurity regions;
a MOS transistor for the peripheral circuit including a pair of second impurity regions formed in said semiconductor substrate and a second gate electrode formed on said semiconductor substrate between said pair of second impurity regions;
a first conductive layer connected to one of said first impurity regions of said MOS transistor for the memory cell;
a second conductive layer connected to the other one of said first impurity regions of said MOS transistor for the memory cell, to form a lower electrode of said capacitor;
a third conductive layer connected to one of said second impurity regions of said MOS transistor for the peripheral circuit and extending above at least a portion of said second gate electrode of said MOS transistor of the peripheral circuit; and
a fourth conductive layer connected to another one of said second impurity regions of said MOS transistor for the peripheral circuit, and extending above at least a portion of said second gate electrode of said MOS transistor for the peripheral circuit and over at least a portion of said third conductive layer.

5,486,713

SEMICONDUCTOR DEVICE HAVING A CAPACITOR

Kuniaki Koyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 177,865, Jan. 4, 1994, abandoned.
This application May 26, 1995, Ser. No. 450,921
Claims priority, application Japan, Jan. 5, 1993, 5-000158
Int. Cl.[6] H01L *27/08;29/76;29/94;31/119*
U.S. Cl. 257—310 **9 Claims**



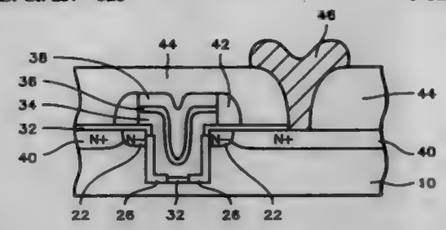
1. A semiconductor device comprising:
a semiconductor substrate;
an insulating film covering said semiconductor substrate;
first and second conductive layers formed on said insulating film apart from each other thereby forming respective sidewalls facing each other, each of said first and second conductive layers including a film made of metal whose oxide has an electrical conductivity;
a first dielectric film formed on said first conductive layer with a substantially same pattern as said first conductive layer;
a second dielectric film formed on said second conductive layer with a substantially same pattern as said second conductive layer, said first and second dielectric films thereby having top surfaces and respective sidewalls, the sidewalls facing each other, and each of said first and second dielectric films having a first dielectric constant;
a third dielectric film having a second dielectric constant that is smaller than said first dielectric constant and filling a space between said first and second conductive layers in contact with the sidewalls of said first and second conductive layers and further with the sidewalls of said first and second dielectric films, wherein said third dielectric film does not cover said top surfaces of said first and second dielectric films; and
a third conductive layer formed continuously to cover said first, second and third dielectric films in contact respectively with said first, second and third dielectric films, wherein said first conductive layer, said first dielectric film and a part of said third conductive layer constitutes a first capacitor, and said second conductive layer, said second dielectric film and another part of said third conductive layer constitutes a second capacitor which has one electrode connected in common to one electrode of said first capacitor through said third conductive layer.

5,486,714

TRENCH EEPROM WITH TUNNEL OXIDE IN TRENCH

Gary Hong, Hsin-chu, Taiwan, Prov. of China, assignor to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Division of Ser. No. 276,605, Jul. 18, 1994, Pat. No. 5,429,970.
This application May 22, 1995, Ser. No. 445,939
Int. Cl.[6] H01L *27/115*
U.S. Cl. 257—321 **8 Claims**



1. The Flash EEPROM memory comprising:
a stacked polysilicon gate structure in a trench within a semiconductor substrate and extending above said semiconductor substrate;
source and drain regions on either side of said stacked polysilicon gate structure at the surface of said substrate;
a thin tunnel oxide layer overlying said source and drain regions, on the sidewalls of the upper portions of said trench contacting said source and drain regions, and at a small center portion of the bottom of said trench;
a thick gate oxide layer on the sidewalls and bottom of said trench not covered by said thin tunnel oxide layer;
a polysilicon floating gate at the base of said stacked polysilicon gate structure;
an interpoly dielectric layer overlying said polysilicon floating gate; and
a polysilicon control gate overlying said interpoly dielectric layer.

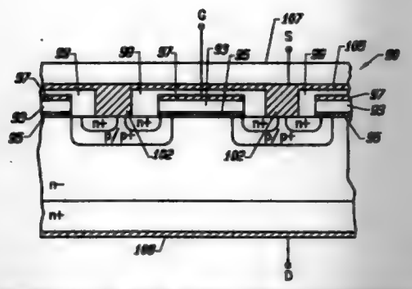
5,486,715

HIGH FREQUENCY MOS DEVICE

Nathan Zommer, Los Altos, Calif., assignor to IXYS Corporation, Santa Clara, Calif.

Continuation of Ser. No. 137,823, Oct. 15, 1993, abandoned.
This application Dec. 1, 1994, Ser. No. 347,787
Int. Cl.[6] H01L *29/78;21/265*
U.S. Cl. 257—341 **30 Claims**

1. A power MOSFET device comprising:



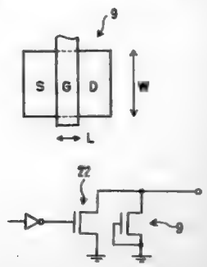
a plurality of active MOS regions within a semiconductor substrate, each of said active MOS regions having a source region, channel region, and drain region;
a polysilicon layer overlying said semiconductor substrate, said polysilicon layer having a portion overlying at least each of said channel regions to form a common gate electrode;
a first metallization layer comprising aluminum having portion overlying said polysilicon layer overlying each of said channel regions;
an insulating layer on and in contact with said first metallization layer; and
a second metallization layer comprising a gate bus and a source bus overlying at least said insulating layer, said second metallization layer further comprising aluminum;
wherein said first metallization layer and said gate bus are common to each other through a gate contact opening in at least said insulating layer.

5,486,716

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE WITH ELECTROSTATIC DAMAGE PROTECTION

Yutaka Saito; Jun Osanai; Yoshikazu Kojima, and Masaaki Kamiya, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed May 8, 1992, Ser. No. 880,720
Claims priority, application Japan, May 14, 1991, 3-109443; Jul. 16, 1991, 3-175628; Jan. 21, 1992, 4-008670
Int. Cl.[6] H01L *23/62*
U.S. Cl. 257—360 **10 Claims**



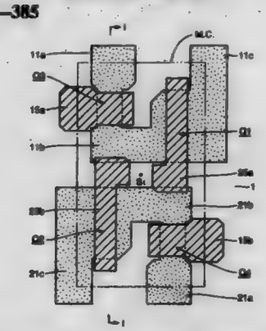
1. A semiconductor integrated circuit device, comprising: an internal circuit area including an internal transistor of an insulating gate field effect type, the internal transistor having a channel portion formed with a length limited by a predetermined minimum length value; and a peripheral connection area including an N channel type peripheral transistor of the insulating gate field effect type for use in an external connection, an open-drain output portion and an open-drain output transistor electrically connected to the open-drain output portion, wherein the peripheral transistor is electrically connected to the open-drain output transistor and has a short channel portion formed with a shorter length than the predetermined minimum length value so that an electrostatic stress current applied to the semiconductor integrated circuit is released more efficiently by the peripheral transistor than by the internal transistor.

5,486,717

SRAM WITH SMALL PLANAR LAYOUT

Nobuyuki Kokubo, and Kazuya Ikeda, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1994, Ser. No. 309,833
Claims priority, application Japan, Jan. 29, 1993, 5-272031
Int. Cl.[6] H01L *27/11*
U.S. Cl. 257—385 **23 Claims**



1. A semiconductor memory device including a static memory cell having an access transistor pair and a driver transistor pair in a memory cell region, comprising:
a semiconductor substrate having a main surface;
a first access transistor having a gate electrode layer formed on the main surface of said semiconductor substrate with a gate insulating film therebetween;
a second access transistor having a gate electrode layer formed on the main surface of said semiconductor substrate with a gate insulating film therebetween, said gate electrode layers of said first and second access transistors being formed from two portions of the same conductive layer, which portions are isolated from each other;
a first driver transistor having a gate electrode layer formed on the main surface of said semiconductor substrate with a gate insulating film therebetween;
a second driver transistor having a gate electrode layer formed on the main surface of said semiconductor substrate with a gate insulating film therebetween;
an insulating layer formed over and around said gate electrode layer of each of said transistors, and having a first contact hole reaching a top surface of said gate electrode layer of said first access transistor and a second contact hole reaching a top surface of said gate electrode layer of said second access transistor; and
a conductive layer formed on said insulating layer and connected to said gate electrode layers of said first and second access transistors via said first and second contact holes.

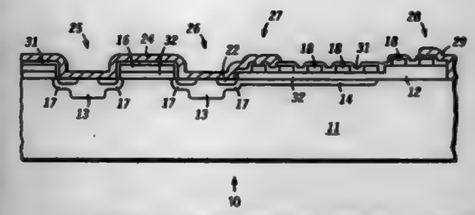
5,486,718

HIGH VOLTAGE PLANAR EDGE TERMINATION STRUCTURE AND METHOD OF MAKING SAME

Stephen Robb, Tempe, and Paul Groenig, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 5, 1994, Ser. No. 270,281
Int. Cl.[6] H01L *23/58*
U.S. Cl. 257—630 **15 Claims**

11. A semiconductor structure having an edge termination feature comprising:
a semiconductor substrate of a first conductivity type;
a first doped region of a second conductivity type selectively formed in said semiconductor substrate to form a pn junction together with said semiconductor substrate, said first doped region having an impurity concentration higher than that of said semiconductor substrate;
a second doped region of the second conductivity type selectively formed in said semiconductor substrate and coupled with said first doped region, said second doped region forming a pn junction together with said semiconductor substrate and having an impurity concentration lower than that of said first doped region;
an electrically insulating layer disposed on said semiconductor substrate so as to extend over said second doped region; and
a polysilicon layer disposed over said electrically insulating layer and over at least a portion of said second doped region, said polysilicon layer having a coil-shaped configuration and being electrically coupled at an inner portion to said first doped region and electrically coupled at an outer portion to said semiconductor substrate, and wherein said polysilicon layer does not make direct contact to said second doped region.



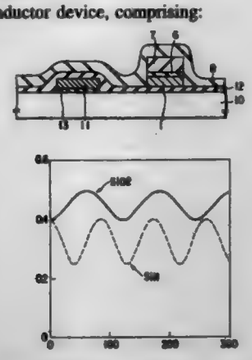
5,486,719

SEMICONDUCTOR DEVICE INCLUDING INSULATING FILM ARRANGEMENT HAVING LOW REFLECTANCE

Souichi Sugiura, Yamato; Hidehiro Watanabe, Tokyo, both of, Japan, and Seiko Yoshida, Fishkill, N.Y., assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 14, 1994, Ser. No. 227,519
Claims priority, application Japan, Apr. 15, 1993, 5-112194
Int. Cl.[6] H01L *23/58*
U.S. Cl. 257—641 **9 Claims**

1. A semiconductor device, comprising:



a semiconductor substrate;
a gate electrode insulatively spaced from said semiconductor substrate;
a wiring layer insulatively spaced from said semiconductor substrate;
a first insulating film formed only on said wiring layer, said first insulating film having a reflectance which is 25% or more;
a second insulating film formed only on said first insulating film, said second insulating film having a reflectance which is 25% or more and said first and second insulating films having a total reflectance of less than 25%; and
a third insulating film covering said gate electrode, said wiring layer, and said first and second insulating films.

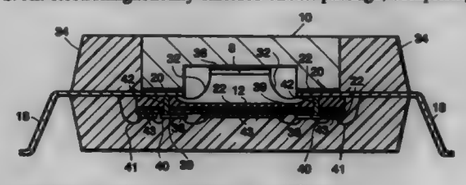
5,486,720

EMF SHIELDING OF AN INTEGRATED CIRCUIT PACKAGE

Oliver J. Kierse, County Clare, Ireland, assignor to Analog Devices, Inc., Norwood, Mass.

Filed May 26, 1994, Ser. No. 250,166
Int. Cl.[6] H01L *23/06;23/36;23/482*
U.S. Cl. 257—659 **25 Claims**

1. An electromagnetically shielded circuit package, comprising:



a leadframe having a plurality of lead fingers,
an electrically conductive heat sink disposed on said leadframe, said heat sink having a recess that faces said leadframe,
a ground connection for said heat sink,
a first electrically insulating layer between said heat sink and said leadframe,
an electrically conductive layer disposed on a side of said leadframe facing away from said heat sink and, together with said heat sink, forming an electromagnetic field shielded enclosure,
a ground connection for said electrically conductive layer,
a second electrically insulating layer between said electrically conductive layer and said leadframe,
a first electrical device disposed within said enclosure in thermal communication with said heat sink and shielded from outside electromagnetic fields by said heat sink and electrically conductive layer,
a third electrically insulating layer on a side of said electrically conductive layer that faces away from said heat sink,
electrically conductive tracks on said third electrically insulating layer, said tracks in electrical communication with said lead fingers,
at least one other electrical device disposed outside of said enclosure and attached to said third electrically insulating layer, said at least one other electrical device having leads in electrical communication with said electrically conductive tracks, and being shielded from electromagnetic energy emitted from said first electrical device within said enclosure, and
an electrically insulating molding material encapsulating said heat sink, leadframe, electrically conductive layer, electrically insulating layers, and all of said electrical devices.

5,486,721

LEAD FRAME FOR INTEGRATED CIRCUITS

Günter Herklotz, Bruchköbel; Heinz Förderer, Grosskrotzenburg, and Thomas Frey, Hanau, all of, Germany, assignors to W.C. Heraeus GmbH, Hanau, Germany

Filed Mar. 31, 1994, Ser. No. 221,175
Claims priority, application Germany, Apr. 10, 1993, 43 11 872.0
Int. Cl.[6] H01L *23/48;23/52;29/40;* **H05K** *5/02*
U.S. Cl. 257—666 **20 Claims**

1. Lead frame for an integrated circuit, said lead frame comprising
a metal base element,
an outer layer of palladium, and
an intermediate layer consisting of a nickel-phosphorus alloy between said base element and said outer layer, said intermediate layer having a phosphorus content of 1–30 wt %.

5,486,722

LEAD FRAME HAVING SMALL PITCH BETWEEN OUTER LEADS

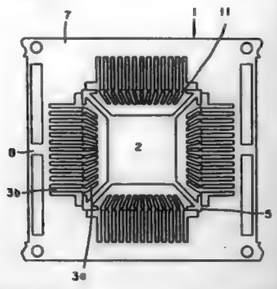
Naohumi Sato, and Yasuhiro Yanagisawa, both of Tokyo, Japan, assignors to Sumitomo Metal Mining Company, Limited, Tokyo, Japan

Filed May 3, 1994, Ser. No. 237,176

Claims priority, application Japan, May 11, 1993, 5-132918; Mar. 23, 1994, 6-076462

Int. Cl.[6] H01L *23/495;23/28*

U.S. Cl. 257—666 3 Claims



1. A lead frame for a semiconductor device, comprising a die pad disposed at a central area of the lead frame for mounting a semiconductor chip, and a plurality of leads surrounding said die pad, each lead being divided into an inner lead portion which is to be encapsulated with a resin material and an outer lead portion, which is not to be encapsulated by said resin, and a mold line defined at the intersection of the inner and outer portions of each lead,

said outer lead portions along each side of said frame being spaced from one another along the respective side of said frame, said inner lead portions being spaced from one between adjacent inner lead portions, each lead having a portion of greatest width adjacent said mold line and including side edge portions which continously taper outwardly away from one another toward said mold line in an area adjacent said mold line so that each of said spaces in an area adjacent said mold line, continuously tapers inwardly to a point adjacent said mold line to form a gap between leads of less than 0.15 mm at said mold line to substantially prevent flowable resin material supplied to said central area from flowing past said mold line.

5,486,723

PACKAGED INTEGRATED CIRCUIT ADD-ON CARD

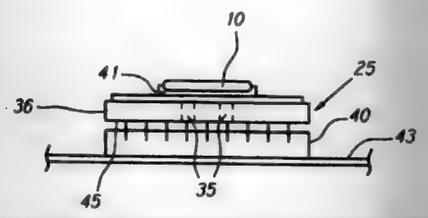
Abraham C. Ma, Milpitas, and Paul Y. J. Hsueh, Concord, both of Calif., assignors to MA Laboratories, Inc., San Jose, Calif.

Continuation of Ser. No. 68,250, May 27, 1993, Pat. No. 5,362,985. This application Nov. 7, 1994, Ser. No. 335,131

The portion of the term of this patent subsequent to Nov. 8, 2011, has been disclaimed.

Int. Cl.[6] H01L *23/02*

U.S. Cl. 257—707 11 Claims



1. An add-on card which may be used to connect a land gate array packaged integrated circuit to an integrated circuit socket comprising:

a board having a bonding surface and a pin surface, said board having a first board layer with containing said bonding surface and a second board layer containing said pin surface;

an array of rows and columns of mounting pads disposed on said bonding surface of said board, said plurality of mounting pads having greater surface area than solder points on the land gate array packaged integrated circuit that will be bonded thereto; and

a plurality of pins fastened to said pin surface of said circuit board, said plurality of pins arranged so that said plurality of pins fit into a pin grid array socket, each of said plurality of pins electrically connected to said one of said mounting pads via circuitries between said first board layer and said second board layer.

5,486,724

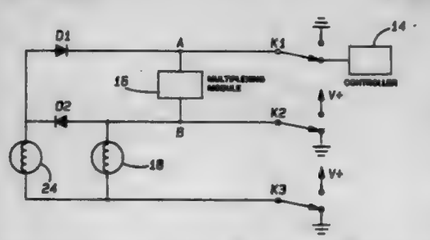
SYSTEM FOR CONTROL OF ACTUATORS AND SWITCHES BY A REMOTELY LOCATED MICROCONTROLLER USING A TWO BUSS SYSTEM

Pierre Periou, Cergy Pontoise; Xavier Bonnefond, Paris, both of, France; Dennis A. Kramer, Troy, and Mark E. Malinowski, Farmington Hills, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jan. 15, 1992, Ser. No. 822,186

Int. Cl.[6] G05D *3/00*

U.S. Cl. 307—10.1 24 Claims



1. A vehicular actuator interface circuit for coupling at least one electromechanical actuator and at least one switching mechanism to a controller of the type which controls application of operating power to the actuator in response to changes in state of said switching mechanism, comprising:

a periodic signal having a cycle including a low and a high condition, said periodic signal generated by said controller and communicated to said switching mechanism by said interface circuit;

said switching mechanism including means for loading said interface circuit in response to changes in state of said switching mechanism; and

said controller including means to detect a coincidence of said high condition of said periodic signal and loading of said interface circuit to thereby determine the state of said switching mechanism and supplying power to said actuator in response to changes in state of said switching mechanism.

5,486,725

SECURITY POWER INTERRUPT

Daniel J. Keizer, 38 First Avenue, Schumacher, Ontario, Canada; Steven A. Lax, 193 Crestwood Road, Toronto, Ontario, Canada, and Robert K. Muylwyk, 54 Amelia Street, Toronto, Ontario, Canada

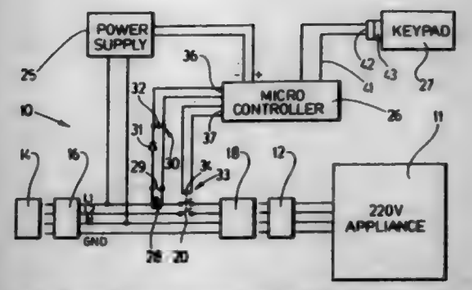
Filed Dec. 27, 1993, Ser. No. 173,046

Int. Cl.[6] H01H *71/24*

U.S. Cl. 307—116 12 Claims

1. For interrupting power to an electrical appliance having a first load which draws a current below a preset current threshold and a second load which draws a current above the preset current threshold, a device comprising

means for connecting the device to an electrical power supply,



means for supplying electrical power to the appliance connected to both the first load and the second load through a single switch,

means for monitoring an electric current drawn by the appliance and comparing the electric current to the preset current threshold,

the switch being controlled by means for selectively interrupting power to the appliance in an interrupt mode in which the device supplies power to the appliance to power the first load and when the second load is activated so that the current drawn by the appliance exceeds the current threshold the means for interrupting power opens the switch to thereby interrupt power to the appliance,

the means for interrupting power to the appliance being responsive to entry of an authorization signal for switching the device from the interrupt mode to an operational mode in which the device supplies power to the appliance regardless of the current drawn by the appliance, and

unlocking means for transmitting the authorization signal to the means for interrupting power to the appliance.

5,486,726

POWER-SUPPLY CONTROL SYSTEM OF PERIPHERAL EQUIPMENT OF COMPUTER

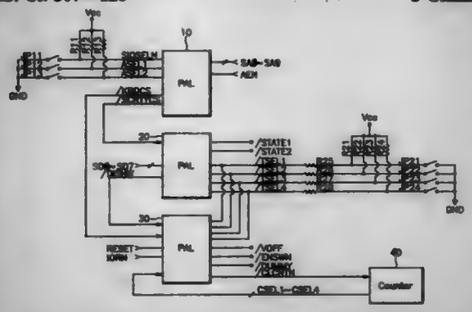
Heejo Kim, Seoul; Jongyong Leem, Kyungki; Bongrak Choi, Seoul; Kyungsang Lee, and Kyungseol Min, both of Kyungki, all of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Aug. 11, 1993, Ser. No. 104,282

Claims priority, application Rep. of Korea, Aug. 13, 1992, 92-14590; Aug. 13, 1992, 92-15238; Mar. 4, 1993, 93-3116

Int. Cl.[6] H01H *35/00*

U.S. Cl. 307—120 5 Claims



1. A power-supply control system for a peripheral equipment of a computer comprising:

first switching means for generating a serial port sensing signal and an address selecting signal which is user adjustable;

input-output sensing means for both determining which input and output means are being used by testing a serial port sensing enable signal, an address selecting signal, an address signal and an address enable signal, and for outputting a signal which senses the use of an input-output means;

internal-operation sensing means for both generating a delay-time signal and a hardware disable signal, and for sensing the internal state and operation of a computer from a chip selecting signal of the input-output sensing means, a data signal, said delay-time signal and a state signal;

second switching means for enabling an adjustment of said delay-time signal by the user;

a counter for outputting a current counting value, for performing a continuous counting operation, and for resetting in response to a counter clear signal; and

controlling means for outputting a power controlling signal to an external input-output means based on the use of the input-output means of said input-output sensing means, the delay-time signal of said internal-operating sensing means, the hardware disable signal, a reset signal of a system bus, a signal for reading the input and output means, and the counting value of said counter.

5,486,727

LINEAR ACCELERATOR

Götz Heidelberg, Starnberg; Peter Ehrhart, München; Gerhard Reiner, Pähl, and Andreas Grilmll, München, all of, Germany, assignors to Magnet-Motor Gesellschaft MbH, Starnberg, Germany

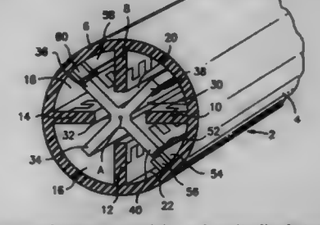
PCT No. PCT/EP92/01530, § 371 Date Jan. 6, 1994, § 102(e) Date Jan. 6, 1994, PCT Pub. No. WO93/01645, PCT Pub. Date Jan. 21, 1993

PCT Filed Jul. 7, 1992, Ser. No. 178,053

Claims priority, application Germany, Jul. 8, 1991, 41 22 601.1

Int. Cl.[6] H02K *41/02;* H01F *7/06*

U.S. Cl. 310—12 18 Claims



1. A linear accelerator comprising a longitudinal stator defining a linear path of movement and having a plurality of stator conductors; a runner accelerable along the path of movement, said runner having an plurality of runner conductors; said stator and runner conductors being disposed symmetrically about a plane perpendicular to the path of movement with respect to an axis parallel to the path of movement; and said stator conductors being formed as stator coils which are aligned so as to create a magnetic field radially surrounding said axis in symmetric fashion; and a plurality of stator components disposed along said path of movement, each of said stator components being provided with a separate power supply.

5,486,728

MICROMOTOR

Hideo Hirama, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

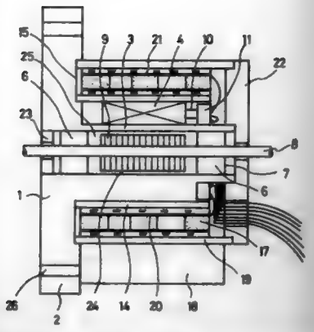
Filed Aug. 13, 1993, Ser. No. 106,419

Claims priority, application Japan, Aug. 25, 1992, 4-226276

Int. Cl.[6] H02K *5/12;9/00;9/197*

U.S. Cl. 310—40 MM 8 Claims

1. A micromotor comprising: a cylindrical rotor casing provided with a central through hole; a rotor comprised of a cylindrical, magnetic rotor block fixed on a rotor shaft and inserted in the central through hole of the rotor casing; first and second bearings supporting the rotor shaft for rotation and being fitted, respectively,



in opposite ends of the central through hole of the rotor casing and defining a sealed rotor chamber therebetween; stator coils attached to the outer circumference of the rotor casing; a stator casing joined to the rotor casing coaxially with the rotor so as to cover the stator coils; a magnetic fluid filled in the sealed rotor chamber between the first and second bearings between which is disposed the magnetic rotor block; heat-dissipating means disposed around the stator coils for dissipating heat generated by the stator coils, magnetic fluid, and first and second bearings during operation of the micromotor, the heat-dissipating means comprising a plurality of Peltier elements disposed circumferentially around the stator coils for absorbing heat by the Peltier effect; and a tubular member encircling the rotor casing at least in the region between the first and second bearings and defining an annular space between the tubular member and rotor casing, the stator coils being disposed interiorly of the tubular member in the annular space and the heat-dissipating means being disposed exteriorly of the tubular member, the Peltier elements being disposed at axially-spaced locations along the tubular member and at circumferentially-spaced locations around the tubular member.

5,486,729

METHOD AND APPARATUS FOR CONTROLLING A MAGNETIC BEARING

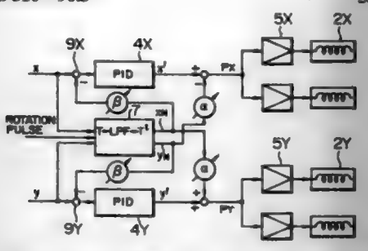
Osami Matsushita; Mitsuho Yoneyama; Naohiko Takahashi, all of Ibaraki; Yasuo Fukushima, Tsuchiura; Minoru Hirochima, Ushiku; Tadashi Kaneki, Tsuchiura; Yoshiaki Abe, and Naofumi Sakanashi, both of Ibaraki, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 5, 1993, Ser. No. 26,760

Claims priority, application Japan, Mar. 9, 1992, 4-086827; Nov. 4, 1992, 4-295258

Int. Cl.[6] H02K *7/09*

U.S. Cl. 310—90.5 **33 Claims**



1. A method of controlling a magnetic bearing, said method comprising:

providing an ABS control and N-cross control in coaction.

5,486,730

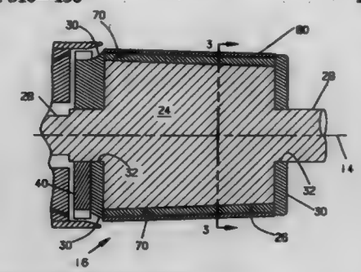
ROTOR ASSEMBLY

George A. Ludwig, and David G. Teraji, both of San Diego, Calif., assignors to Solar Turbines Incorporated, San Diego, Calif.

Filed Mar. 18, 1993, Ser. No. 33,483

Int. Cl.[6] H02K *21/12*

U.S. Cl. 310—156 **12 Claims**



1. A rotor assembly comprising:

a shaft having a first end portion and a second end portion and having a frustoconical surface defined thereon interposed the first and second end portions;

a plurality of magnets being attached to the frustoconical surface forming a generally frustoconical outer configuration wherein said plurality of magnets have a thickness at a larger end being less than a thickness at a smaller end of the frustoconical outer configuration;

a cover having a preestablished inner frustoconical surface being in contact with the magnets; and

a pair of end flanges being attached to the shaft.

5,486,731

SINUSOIDALLY DISTRIBUTED WINDING METHOD SUITABLE FOR A DETECTOR WINDING

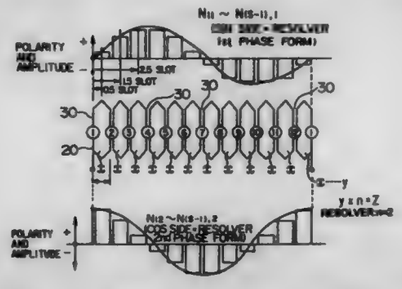
Koichi Masaki; Yoshinao Fukuzawa; Kanji Kitazawa; Takanobu Azuma; Naohiro Naganuma, and Tetsuo Hosoda, all Iida, Japan, assignors to Tamagawa Seiki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,463

Claims priority, application Japan, Jan. 27, 1992, 4-288798

Int. Cl.[6] H02K *3/00*

U.S. Cl. 310—180 **1 Claim**



1. In a sinusoidally distributed winding suitable for a detector winding wherein n-phase winding groups are wound on a ring core having a given number of alternating tooth portions and slots disposed along its inner diameter side so that a plurality of one-phase winding groups produce a 2P polar and sinusoidally distributed magnetic flux distribution of said n-phase winding groups, the improvement comprising a number of serially connected winding groups corresponding to the number of said slots to provide said plurality of one-phase winding groups, said winding groups being wound at one-slot pitch intervals, and a plurality of said one-phase winding groups providing said n-phase winding groups, whereby a 2P polar and n-phase sinusoidally distributed magnetic flux is

provided, a number of winding turns of said one-phase winding groups in each of said slots being determined by the following formula:

$$N_{k1}=\frac{W\sin\left[2\pi P/S\left\{(k-1)+\frac{1}{2}\right\}\right]}{\sum_{i=1}^{S}\sin\left[2\pi P/S\left\{(i-1)+\frac{1}{2}\right\}\right]}$$

$$N_{k2}=\frac{W\sin\left[2\pi P/S\left\{(k-1)+\frac{1}{2}\right\}+\frac{2\pi}{n}\right]}{\sum_{i=1}^{S}\sin\left[2\pi P/S\left\{(i-1)+\frac{1}{2}\right\}+\frac{2\pi}{n}\right]}$$

$$\vdots$$

$$N_{k(n)}=\frac{W\sin\left[2\pi P/S\left\{(k-1)+\frac{1}{2}\right\}+\frac{2\pi(n-1)}{n}\right]}{\sum_{i=1}^{S}\sin\left[2\pi P/S\left\{(i-1)+\frac{1}{2}\right\}+\frac{2\pi(n-1)}{n}\right]}$$

where

S is a variable integer representing said number of slots;

k is a variable integer representing a given slot, k being between one and said number of slots;

n is a variable integer representing a number of phases;

P is a variable integer representing a number of magnetic poles in said detector winding;

W is a variable integer representing a total number of turns (the sum of the windings wound at each slot in one phase when i=1 to S); and

$N_{k\,(n)}$ is a variable integer representing the respective number of turns of the windings at the k-th slot in the n-th winding group of said n-phase winding groups.

5,486,732

SLIP RING UNIT FOR FITTING TO AN ALTERNATOR, ESPECIALLY FOR A MOTOR VEHICLE

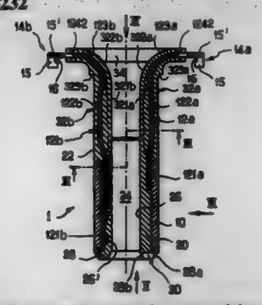
Patrick Rondier, Montmagny, France, assignor to Valeo Equipements Electriques Moteur, Creteil, France

Filed Sep. 21, 1994, Ser. No. 304,361

Claims priority, application France, Sep. 16, 1993, 93 11041

Int. Cl.[6] H02K *13/02*

U.S. Cl. 310—232 **9 Claims**



1. An electrical terminal connection comprising a wire having a wire end and a connecting element secured to the wire end, the connecting element comprising two lugs in facing relationship and defining a channel between them for receiving the wire end, and a connecting portion joining the lugs together and defining a base of the said lugs being arranged to be bent towards each other to grip the wire end between them, wherein at least one lug defines a lateral edge, the lateral edge having a slot formed therein close to the connecting portion, the wire end comprising a first wire portion extending within the channel, a second wire portion extending outside the channel, and a bent wire portion, bent through approximately 180°, joining said first and second wire portions together and received in said slot.

5,486,733

BONDING APPARATUS

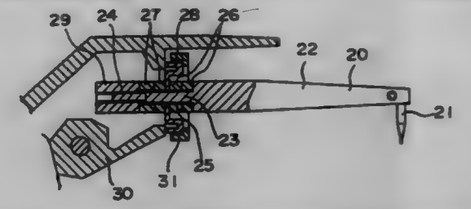
Nobuto Yamazaki, Higashi, and Ryuichi Kyomasu, Kodaira, both of, Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Continuation of Ser. No. 172,828, Dec. 22, 1993, abandoned. This application Dec. 28, 1994, Ser. No. 365,855

Claims priority, application Japan, Dec. 24, 1992, 4-357385

Int. Cl.[6] H03H *9/05*

U.S. Cl. 310—323 **3 Claims**



1. A bonding apparatus for a semiconductor device processing comprising a bonding arm, an ultrasonic horn mounted to said bonding arm, a bonding tool provided at one end of said ultrasonic horn and a vibration-generating source provided at an other end of said ultrasonic horn, and wherein said bonding apparatus further comprises a horn support that is used for mounting said ultrasonic horn to said bonding arm, said horn support comprising vibration-generating source attachment shafts on both sides and threaded portions formed at end portions of said attachment shafts, said vibration-generating sources are provided on said attachment shafts and located on both sides of said horn support, and one of said threaded portions is screw connected to said ultrasonic horn.

5,486,734

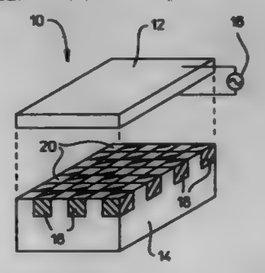
ACOUSTIC TRANSDUCER USING PHASE SHIFT INTERFERENCE

Mir S. Seyed-Bolorforosh, 1704 Oak Creek Dr., Apt. 307, Palo Alto, Calif. 94309

Continuation of Ser. No. 198,727, Feb. 18, 1994, abandoned. This application Feb. 3, 1996, Ser. No. 382,829

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—327 **11 Claims**



1. A transducer device for transmitting acoustic waves in response to an electrical signal comprising:

a piezoelectric element having first and second surfaces and a first acoustic impedance, and further having an operating frequency; and

means having an interface with said first surface for establishing a desired pattern of wave interference for acoustic waves that are originally directed toward said first surface and then redirected toward said second surface;

said means including first and second sections having dissimilar acoustic impedances, said first acoustic impedance being more closely matched to said acoustic impedance of said second sections than to said acoustic impedance of said first sections;

said first and second sections having generally planar proximal sides at said interface with said first surface of said piezoelec-

tric element, said second sections having generally planar distal sides opposite to said proximal sides, each said distal side being parallel to said proximal side and separated therefrom by a distance equal to an integral odd multiple of a one-quarter wavelength of said operating frequency of said piezoelectric element;

whereby said desired pattern of wave interference is formed such that acoustic energy reflected at said proximal sides of said first section is substantially 180° out of phase with respect to acoustic energy reentering said piezoelectric element after being reflected at said distal sides of said second section.

5,486,735

ELECTRON GUN WITH IMPROVED WITHSTAND VOLTAGE FOR COLOR-PICTURE TUBE

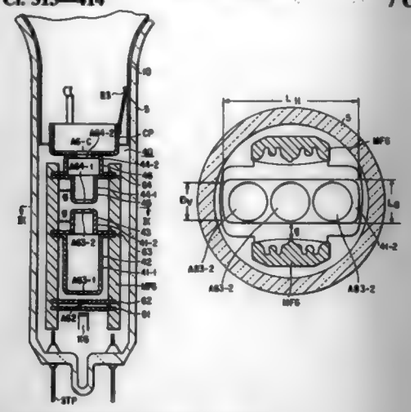
Eiji Kamohara, Fukaya; Shigeru Sugawara, Saitama, and Junichi Kimiya, Fukaya, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 1, 1993, Ser. No. 143,646

Claims priority, application Japan, Nov. 2, 1992, 4-294374

Int. Cl.[6] H01J *29/51*

U.S. Cl. 313—414 **7 Claims**



1. A color cathode ray tube comprising:

an electron gun assembly for generating in-line electron beams;

a phosphor screen for emitting light rays when said electron beams land thereon;

a vacuum envelope having a face where said phosphor screen is formed and which accommodates said electron gun assembly;

deflecting means for deflecting said electron beams in vertical and horizontal directions in said vacuum envelope;

said electron gun assembly having an electron-beam generating section, for generating a plurality of in-line electron beams, and a main electronic lens section for converging said plurality of in-line electron beams, generated by said electron-beam generating section, on said phosphor screen,

said main electronic lens section including a plurality of grids each having electron-beam through holes and securely supported by a plurality of insulating supports, at least one of said grids having a portion with a substantially rectangular cross section for commonly enclosing said plurality of in-line electron beams and a face having electron-beam through holes formed at one or more ends and substantially perpendicular to said portion having a substantially rectangular cross section, said substantially rectangular portion having an outside length L_H in a long-axial direction and an outside length L_S in a short-axial direction such that a ratio of said outside length L_H to said outside length L_S, L_H/L_S, is

$$.5<L_H/L_S<4.4$$

and a ratio of said outside length L_S in said short-axial direction to a length D_V of said electron-beam through holes in the same short-axial direction, L_S/D_V, is

$$.0<L_S/D_V<2.1.$$

5,486,736

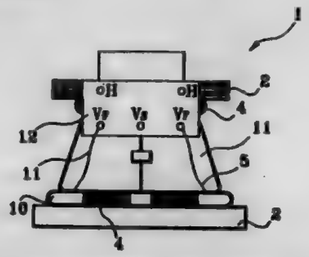
DEFLECTION YOKE

Gi W. Lee, Suwon; Sung Y. Lim, Seoul, and In J. Yoon, Suwon, all of, Rep. of Korea, assignors to Samsung Electro-Mechanics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 22, 1994, Ser. No. 216,131

Int. Cl.[6] H01J *29/70*

U.S. Cl. 313—440 **2 Claims**



1. In a deflection yoke having a coil separator for forming the shape of said deflection yoke, a pair of horizontal deflection coils on the inner side of said coil separator for generation a deflection magnetic field to horizontally deflect electron beams, a pair of vertical deflection coils on the outer side of said coil separator for generation a deflection magnetic field to vertically deflect said electron beams, each of said vertical deflection coils having a screen-bent portion at its front part and a neck bent portion at its rear part, and a pair of ferrite cores of a magnetic material mounted to wrap the outer portion of said vertical deflection coils to increase a deflection force, improvements to said deflection yoke comprising:

non-magnetic conductors respectively attached to said screen-bent portions of said pair of vertical deflection coils for externally wrapping said vertical deflection coils, and allowing stray capacitance generated between said horizontal deflection coils and vertical deflection coils and between said vertical deflection coils and said pair of ferrite cores to be conducted; and

lead lines simultaneously connected to said non-magnetic conductors and terminals at ends of said vertical deflection coils for allowing said stray capacitance conducted by said non-magnetic conductors to be passed to ground.

5,486,737

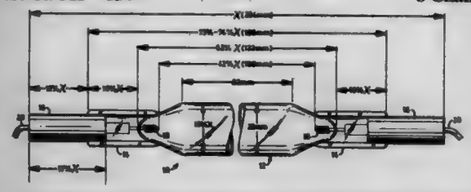
HEAVILY LOADED DOUBLE-ENDED ARC LAMP

David M. Hrubowchak, Litchfield, N.H., and Nanu Brates, Malden, Mass., assignors to Osram Sylvania Inc., Del.

Filed Apr. 12, 1994, Ser. No. 226,807

Int. Cl.[6] H01J *61/30*

U.S. Cl. 313—634 **6 Claims**



1. A double-ended arc lamp having an overall length equal to X; an arc chamber having a volume of about 56 cc and which is cylindrical for a greater part of its length; an arc length equal to about 42%X; an overall arc chamber length of about 50%X; a maximum arc chamber inside diameter of about 10%X; and a pair of press seals each having a length of about between 10%X to 11%X.

5,486,738

ELECTROLUMINESCENT DEVICE

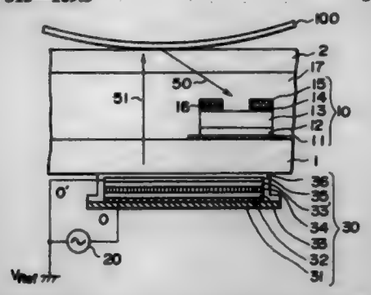
Toshihiro Saika, Zama; Hidemasa Mizutani, Sagamihara; Noriyuki Kaifu, Hachioji, and Toshio Kameshima, Atsugi, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 934,326, Aug. 25, 1992, Pat. No. 5,384,456. This application Aug. 23, 1994, Ser. No. 294,361

Claims priority, application Japan, Aug. 29, 1991, 3-242461; Aug. 30, 1991, 3-244159

Int. Cl.[6] G09G *3/10*

U.S. Cl. 315—169.3 **3 Claims**



1. An electroluminescent device comprising a first electrode, a second electrode and an electroluminescence emission zone, the electroluminescence emission zone being made of a first electroluminescence emission layer, a second electroluminescence emission layer, and a transparent electrode which is interposed between the first electroluminescence emission layer and the second electroluminescence emission layer, at least either the first electrode or the second electrode being a transparent electrode, whereby the first electroluminescence emission layer and the second electroluminescence emission layer emit light by applying a driving voltage to the transparent electrode with both the first electrode and the second electrode connected to a power supply for a reference voltage.

5,486,739

BALLASTING SYSTEM FOR FLUORESCENT LAMPS HAVING IMPROVED ENERGY TRANSFER

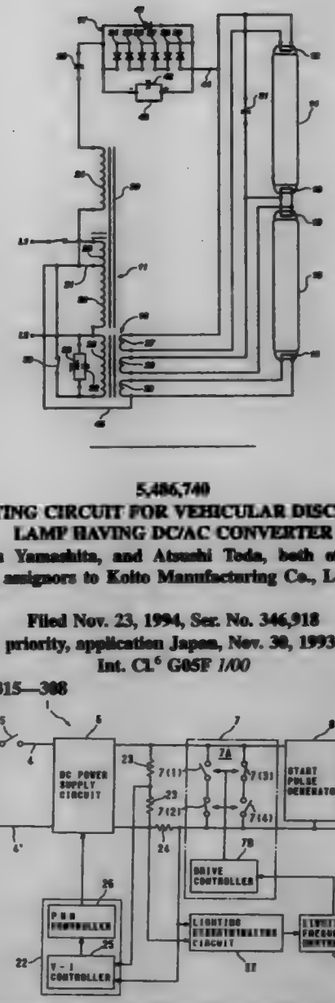
Gary D. Roberts, Riverton, Utah, assignor to Remtech, L.C., Lindon, Utah

Continuation-in-part of Ser. No. 125,815, Sep. 24, 1993, and a continuation-in-part of Ser. No. 215,257, Mar. 21, 1994. This application May 13, 1994, Ser. No. 242,417

Int. Cl.[6] H05B *41/16*

U.S. Cl. 315—277 **12 Claims**

1. A ballasting system for fluorescent lamps which includes an elongated laminated iron core having a magnetic shunt which produces low leakage reactance and a narrow range of harmonics, a cathode heating transformer which includes a first winding and three supplementary windings wound together on said core, a low leakage reactance ballasting transformer which includes a main winding on said core adapted to be connected across an a.c. power line, a tap on said main winding dividing it into a primary winding and a tertiary winding, a secondary winding positioned on said core over the magnetic shunt, and means for tuning the combination of the tertiary winding and the effective magnetic flux under load in said secondary winding to the primary winding at the frequency of the a.c. power line.



5,486,740

LIGHTING CIRCUIT FOR VEHICULAR DISCHARGE LAMP HAVING DC/AC CONVERTER

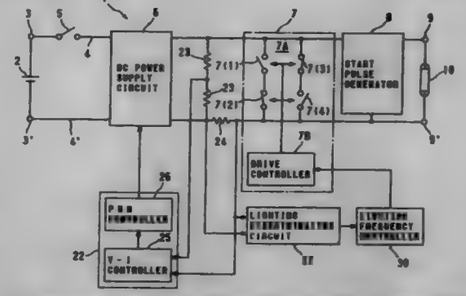
Masayasu Yamashita, and Atsushi Toda, both of Shimizu, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1994, Ser. No. 346,918

Claims priority, application Japan, Nov. 30, 1993, 5-323297

Int. Cl.[6] G05F *1/00*

U.S. Cl. 315—308 **14 Claims**



1. A lighting circuit for a vehicular discharge lamp, comprising:

a DC-AC converter for converting a DC voltage from a DC power supply circuit to an AC voltage with a rectangular waveform and supplying said AC voltage to a discharge lamp;

a start pulse generator for generating a start pulse to said discharge lamp, superimposing said start pulse on an output of said DC-AC converter and supplying a resultant pulse to said discharge lamp, said start pulse generator including a transformer having a secondary winding connected to a power supply line connecting an output terminal of said DC-AC converter to said discharge lamp and a primary winding to which a capacitor and a self-breakdown switch element are connected in series, whereby a timing at which said start pulse is generated by closing of the series circuit of said self-breakdown switch element, said primary winding and said capacitor, caused when said self-breakdown switch element yields, is associated with a specific phase of said rectangular wave from said DC-AC converter;

a lighting discriminating circuit for discriminating an ON status or OFF status of said discharge lamp; and

lighting frequency control means for changing a frequency of said rectangular wave from said DC-AC converter in such a manner that a frequency of said rectangular wave output from said DC-AC converter at a time said OFF status of said discharge lamp is discriminated by said lighting discriminating circuit becomes lower than a frequency of said rectangular

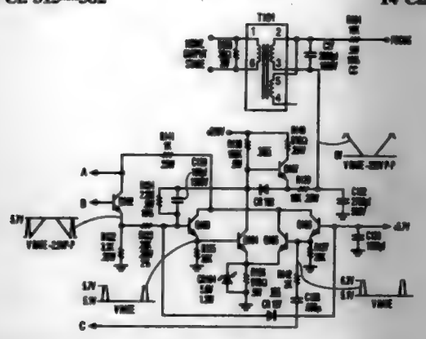
wave at a time said ON status of said discharge lamp is discriminated by said lighting discriminating circuit.

5,486,741

WAVEFORM CORRECTION CIRCUIT FOR DYNAMIC FOCUS AMPLIFIER

John B. George, Carmel, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Aug. 3, 1994, Ser. No. 285,579
Int. Cl.[6] H01J 29/58
U.S. Cl. 315—382 **14 Claims**



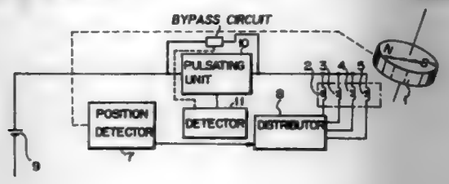
1. A dynamic focus amplifier, comprising:
means for generating a vertical rate sawtooth waveform;
first means responsive to said sawtooth waveform for generating at said vertical rate a modulating waveform having a desired component of a given shape during trace intervals and an undesired time compressed version of said given shape during retrace intervals;
second means responsive to said sawtooth waveform for generating a pulse waveform at said vertical rate, substantially corresponding in width and phase to a vertical retrace blanking waveform; and,
means for combining said modulating waveform and said pulse waveform to remove said undesired time compressed version of said given shape from said modulating waveform.

5,486,742

EASILY STARTED DC MOTOR APPARATUS

Hiroyuki Chino; Toshiya Akasaka, and Minoru Iwata, all of Kanagawa, Japan, assignors to Ebara Corporation, Tokyo, Japan

Continuation of Ser. No. 940,230, Sep. 3, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 183,775
Claims priority, application Japan, Sep. 17, 1991, 3-265250
Int. Cl.[6] H02P 6/02
U.S. Cl. 318—254 **6 Claims**



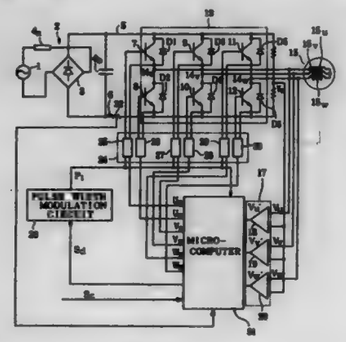
1. A DC motor comprising:
a rotary member for rotating about an axis;
a stationary member having a pluarlity of coils;
a position setecting means for detecting a pluarlity of positions of said rotary member as said rotary member rotates about said axis;
a DC current distributing means responsive to the output of said position detecting means for sequentially swithcing DC current supplied to said plurality of coils;
a pulsating means for pulsating the DC current flowing through at least one of said plurality of coils selected on the basis of a position of said rotary member detected by said position detector during a period that said DC current is being supplied to said at least one coil; and
wherein, during start-up of the motor, the DC current is pulsed in a timed sequence such that a driving force due to the DC current coincides with a back-and-forth swing of the rotary member resulting from the inertial force of the rotary member when the DC current pulses are supplied thereto.

5,486,743

INVERTER AND AIR CONDITIONER CONTROLLED BY THE SAME

Kazunobu Nagai, Aichi, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Nov. 16, 1993, Ser. No. 153,525
Claims priority, application Japan, Nov. 19, 1992, 4-310087; Aug. 24, 1993, 5-209191
Int. Cl.[6] H02P 6/08
U.S. Cl. 318—439 **13 Claims**



1. An inverter comprising:
a switching circuit including a plurality of switching elements sequentially energizing windings of a plurality of phases of an electric motor;
a pulse width modulation circuit for obtaining a pulse width modulated signal;
electrical quantity detecting means for detecting a quantity of electricity supplied to the switching circuit, thereby generating an electrical quantity signal;
position detecting means for detecting a rotational position of a rotor of the motor, thereby providing information about the rotational position of the rotor;
energization signal generating means for generating an energization signal at a time according to a commutation timing necessary for the switching circuit on the basis of the information about the rotational position of the rotor, the energization signal generating means comprising means for obtaining a reference commutation timing from the information about the rotational position of the rotor, electrical quantity comparing means for sequentially sampling the electrical quantity signals generated by the electrical quantity detecting means to thereby obtain a mean electrical quantity value and comparing the mean electrical quantity value with a last mean electrical quantity value, and compensation means for compensating the commutation timing so that the commutation timing corresponds to a point of time preceding the reference commutation timing by a predetermined compensation period of time, the compensation means changing the predetermined compensation time period in accordance with the result of comparison by the electrical quantity comparing means; and

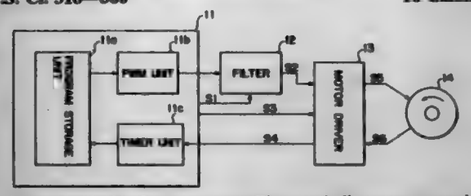
drive means synthesizing the energization signal and the pulse width modulated signal for driving each switching element.

5,486,744

SERVO DEVICE FOR SPINDLE MOTOR

Yusuke Watanabe, Ischara, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 16, 1993, Ser. No. 18,926
Claims priority, application Japan, Feb. 20, 1992, 4-070150
Int. Cl.[6] G11B 19/247
U.S. Cl. 318—560 **16 Claims**



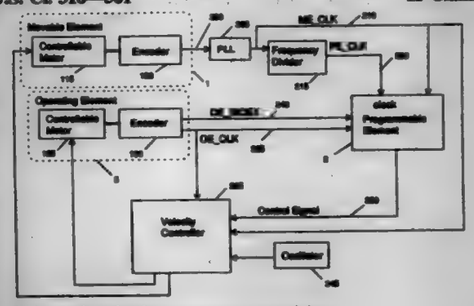
1. A servo device for servo controlling a spindle motor, comprising:
means for generating a signal with at least two cycles during one full rotation of a rotator in said spindle motor in accordance with a rotational movement of said rotator;
means for measuring a period for at least one cycle in one full rotation of said rotator;
means for storing at least one target period corresponding to said measured period for said at least one cycle in one rotation of said rotator;
means for comparing said respective measured period with said corresponding target period stored in said storing means; and
speed controlling-means for controlling a rotational speed of said rotator in response to a result of said comparing means.

5,486,745

METHOD AND APPARATUS FOR SYNCHRONIZING SYSTEM OPERATIONS USING A PROGRAMMABLE ELEMENT

Ralph S. Hanseler, Andover, and Michael D. Healy, Boston, both of Mass., assignors to Miles Inc., Wilmington, Mass.

Filed Oct. 5, 1993, Ser. No. 131,726
Int. Cl.[6] G11B 5/596; G05B 11/18
U.S. Cl. 318—561 **13 Claims**



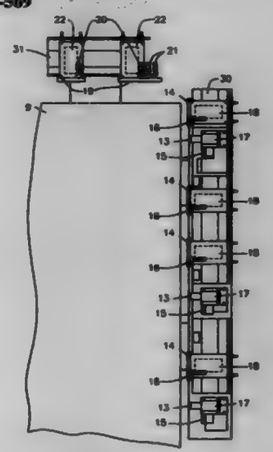
1. A synchronization apparatus comprising;
a movable element;
an operating element;
means for generating a first reference signal corresponding to an operational position of said movable element;
means for generating a second reference signal corresponding to an operational characteristic of said operating element; and
a programmable element, including a clock input for receiving said first reference signal and a data input for receiving said second reference signal, for producing a synchronization control signal in response to said first and second reference signals; and
means, responsive to said synchronization control signal, for synchronizing the operational characteristic of said operating element with the operational position of said first movable element.

5,486,746

POSITIONING RULE STOPPER APPARATUS IN A NUMERICAL CONTROL ROUTER

Nobuyoshi Suzuki, Shizuoka, Japan, assignor to Heian Corporation, Shizuoka, Japan

Filed Oct. 20, 1993, Ser. No. 140,583
Claims priority, application Japan, Jan. 20, 1992, 4-306514
Int. Cl.[6] B23Q 1/18
U.S. Cl. 318—569 **3 Claims**



1. A positioning rule stopper apparatus for use in a numerical control router, comprising:
a supporting bed;
a first rail mounted on the supporting bed;
a second rail mounted on the supporting bed and oriented at a right angle to said first rail;
a head structure provided with a process head having a motor with a rotary shaft on which a tool can be fixed, said head structure being movably mounted on the first rail;
a suction table mounted on the second rail for holding a sacrifice board and a process board on the sacrifice board, said suction table being movable on said second rail at a right angle to movement of the head structure on the first rail, said suction table having at least one short outer side and at least one long outer side;
a first stopper holder fixed to the supporting bed at one short outer side of the suction table;
a plurality of first rule stoppers for the sacrifice board and the process board in common;
first cylinder means mounted on said first stopper holder for moving said rule stoppers to position one side of the sacrifice board and the process board with respect to the suction table;
first confirming contact limit switches mounted on the first rule stoppers for confirming the position of said one side of the sacrifice board and the process board;
a second stopper holder fixed to the supporting bed at one longer outer side of the suction table;
a plurality of second rule stoppers for the sacrifice board;
second cylinder means mounted on said second stopper holder for moving said second rule stoppers to position another side of the sacrifice board with respect to the suction table; and
second confirming contact limit switches engaged with the second rule stoppers for confirming the position of said another side of the sacrifice board;
a plurality of third rule stoppers for the process board;

third cylinder means mounted on said second stopper holder for moving said third rule stoppers to position another side of the process board with respect to the suction table; and

third confirming contact limit switches engaged with the third rule stoppers for confirming the position of said another side of the process board; and

said second cylinder means and said third cylinder means are alternately mounted on the second stopper holder at different heights.

5,486,747

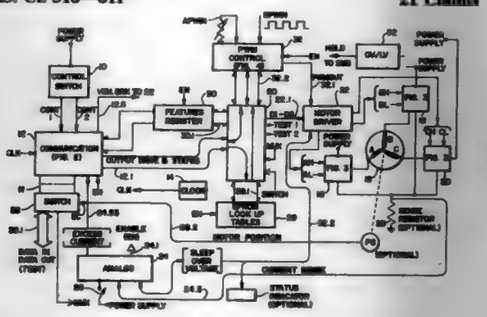
GENERAL PURPOSE MOTOR CONTROLLER

David W. Welch, Columbus, Miss., assignor to United Technologies Motor Systems, Columbus, Miss.

Filed Jul. 29, 1993, Ser. No. 99,669

Int. Cl.[6] H02P *5/28*

U.S. Cl. 318—811 **21 Claims**



1. A motor control for providing signals to a motor drive to vary current in a DC motor, characterized by:

means for providing two binary primary motor control signals to determine motor direction and initiate motor operation;

a programmable memory containing operating characteristics for the motor;

communication means for receiving said two primary motor control signals comprising a first state machine with a plurality of states accessed in response to the binary status of said primary motor control signals relative to each other to operate the motor in different modes associated with said operating characteristics, said communication means comprising means for supplying program data to the programmable memory in response to externally supplied signals containing said program data, the first state machine being inactive when said externally supplied signals are applied;

pulse width modulation means comprising a second state machine responsive to a signal from the communication means to provide a pulse width modulation address signal in the presence of a pulse width modulation signal identifying either digital or analog pulse width modulation;

means for providing said pulse width modulation signal;

lookup table means for providing a secondary motor control signal to control motor speed in response to said pulse width modulation address signal; and

multiplexing means for directing the pulse width modulation address signal from the pulse width modulation means to the lookup table, for receiving the secondary motor control signal from the lookup table and for directing said signal to the pulse width modulator means, said pulse width modulator means providing a variable duty cycle signal in response to said secondary motor control signal to vary current flow in the motor.

5,486,748

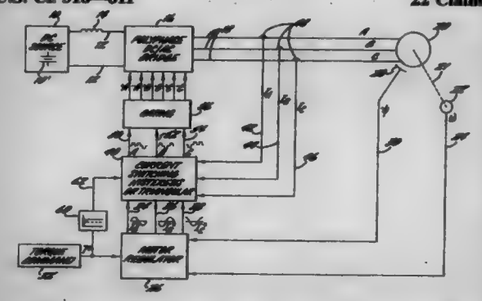
METHOD AND APPARATUS FOR IMPROVED EFFICIENCY IN A PULSE-WIDTH-MODULATED ALTERNATING CURRENT MOTOR DRIVE

Charles E. Konrad, and Richard W. Boothe, both of Roanoke, Va., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 837,467, Feb. 14, 1992, Pat. No. 5,287,051. This application Feb. 14, 1994, Ser. No. 195,636

Int. Cl.[6] H02P *5/28*

U.S. Cl. 318—811 **22 Claims**



16. A polyphase alternating current motor drive of the type in which the motor is provided electrical power from a controllable direct current to alternating current power inverter, said motor drive comprising:

(a) means to provide a torque command signal having a value representing a desired output torque of the motor; and

(b) control means for controlling the power inverter in a pulse-width-modulated mode in response to said torque command signal, said control means comprising frequency modulation control means for effecting relatively higher rates of pulse modulation in response to values of said torque command signal representing low values of motor output torque than to values of said torque command representing high values of motor output torque and to provide a constant number of modulating pulses for values of said torque command signal representing values of desired torque higher than a predetermined value of desired torque;

(c) wherein the higher number of modulating pulses produce a power wave shade more closely approximating a sine wave to thereby lower harmonic heating of the motor when switching currents are low, and the lower number of modulating pulses reduce switching losses of the power inverter when switching currents are high.

5,486,749

MULTIPLE BATTERY CHARGER WITH A POWER SOURCE CONTROL

Gerald L. Brainard, San Jose, Calif., assignor to AST Research, Inc., Irvine, Calif.

Filed Jun. 21, 1993, Ser. No. 80,272

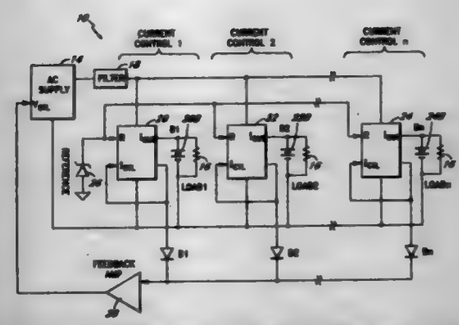
Int. Cl.[6] H02K *7/18*; H02P *3/00*

U.S. Cl. 320—9 **8 Claims**

1. A battery charging apparatus which continuously. charges multiple batteries during a charging cycle, comprising:

a power supply which provides charging current to all batteries simultaneously;

a plurality of linear current limiters coupled to said power supply and each linear current limiter further connected to a respective battery to continuously provide charging current to said respective battery during said charging cycle, wherein each current limiter includes means to control the amount of charging current supplied to said respective battery; and



means, coupled to said power supply and to each battery, and to each of said plurality of linear current limiters, for providing feedback information indicative of a voltage level of said respective battery to each of said plurality of current limiters, wherein each of said plurality of linear current limiters reduces the voltage drop across itself in response to said feedback information to maintain substantially constant current through said respective battery during said charging cycle.

5,486,750

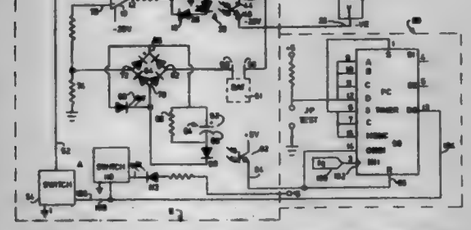
BATTERY CHARGER WITH POLARITY SENSING AND TIMER

Laverne A. Walborn, 142 Willow Avenue, Toronto, Ontario, and Brian W. H. Wong, 31 Benfrisco Crescent, Scarborough, Ontario, both of, Canada

Filed Jan. 4, 1994, Ser. No. 177,166

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—25 **7 Claims**



1. A battery charger comprising a charging circuit to charge a battery and a control circuit to control said charging circuit, said charging circuit having a pair of electrical contacts to be connected to a corresponding pair of terminals of the battery to be charged to transfer charge thereto and a power supply having a pair of sources of opposite polarity and each connected to a respective one of said pair of electrical contacts by a respective one of a pair of current switches, said control circuit including an operational amplifier having an input connected to said charging circuit and an output operable upon said switches and being operable to monitor charging current flowing in said charging circuit and operate one of said current switches to connect to said one of said contacts a source of the same polarity as that of the one of said battery terminal connected thereto, said control circuit maintaining said charging current in said charging circuit at a predetermined level and having a reference input applied to said amplifier, said reference input being connected to said one of said contacts to apply a reference voltage of the same polarity as said one of said sources to said reference input.

5,486,751

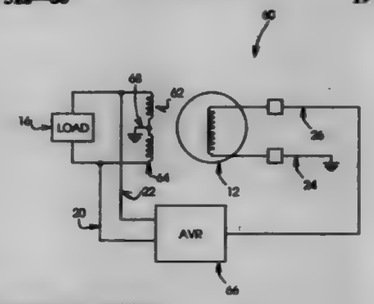
ELECTRONIC TRIMMING VOLTAGE REGULATOR

David J. Koenig, Wyoming, Minn., assignor to Onan Corporation, Minneapolis, Minn.

Continuation of Ser. No. 193,519, Feb. 8, 1994, abandoned, which is a continuation of Ser. No. 843,415, Feb. 27, 1992, abandoned. This application Aug. 22, 1994, Ser. No. 294,201

Int. Cl.[6] H02P *9/00*

U.S. Cl. 322—86 **19 Claims**



3. A generator, comprising:

a rotating field winding having a first and a second end;

flux sensing means, coupled with the rotating field winding, for sensing a magnetic flux generated by said rotating field winding; and

excitation current means, connecting between the flux sensing means and the rotating field winding, for providing, as a function of the magnetic flux generated by said rotating field winding, excitation current to said rotating field winding in order to generate controlled magnetic flux, said excitation current means comprising:

voltage reference means, coupled between a connecting juncture of said flux sensing means and one end of said rotating field winding, for establishing a reference voltage;

first voltage conversion means connected between said flux sensing means and said rotating field winding for converting power from said flux sensing means to provide an uncontrolled level of excitation current sufficient to induce a first level of magnetic flux; and

second voltage conversion means connected between said flux sensing means and said rotating field winding for converting power from said flux sensing means to provide a controllable level of excitation current which, when added to said uncontrolled level of excitation current, acts to induce a second level of magnetic flux.

5,486,752

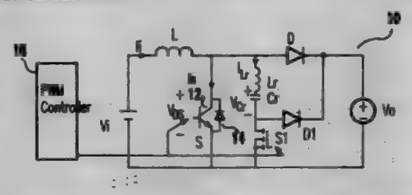
ZERO-CURRENT TRANSITION PWM CONVERTERS

Guichao C. Hua, and Fred C. Lee, both of Blacksburg, Va., assignors to Center for Innovative Technology, Herndon, Va.**

Filed Jun. 17, 1994, Ser. No. 262,049

Int. Cl.[6] H02M *3/335*

U.S. Cl. 323—222 **15 Claims**



1. A pulse-width-modulated d.c to d.c. converter, comprising:

a d.c. voltage input means;

a d.c. voltage output means;

a pulse-width modulating switch electrically connected between said d.c. voltage input means and said d.c. voltage output means;

a resonant branch connected between said d.c. voltage input means and said d.c. voltage output means, said resonant branch comprising a resonant inductor connected directly in series with a resonant capacitor;

an auxiliary switch means for electrically connecting and electrically disconnecting said resonant branch from said d.c. voltage input means and said d.c. voltage output means; and

a diode having .a first connection between said resonant capacitor and said auxiliary switch means, and a second connection connected to said d.c. voltage output means, said auxiliary switch means electrically connecting said resonant branch between said d.c. voltage input means and said d.c. voltage output means during a period when said pulse-width modulating switch is switching from an on-state to an off-state to create a zero-current condition in said pulse-width modulating switch.

5,486,753

SIMULTANEOUS CAPACITIVE OPEN-CIRCUIT TESTING

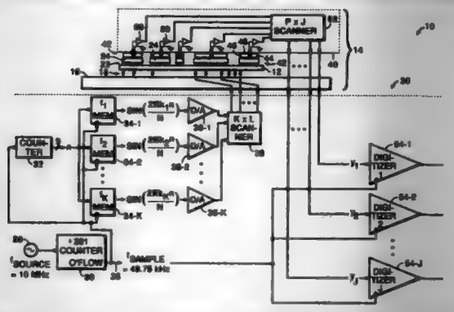
Moses Khazam, Lexington, and Aldo Mastrocola, Everett, both of Mass., assignors to GenRad, Inc., Concord, Mass.

Continuation of Ser. No. 100,000, Jul. 30, 1993, abandoned. This application Sep. 8, 1994, Ser. No. 302,227

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—72.5 **2 Claims**

1. For testing, on a circuit board on which is mounted a circuit



package that houses an integrated circuit and provides IC pins intended to be conductively connected to conductive paths respectively associated therewith on the circuit board, the continuity between a plurality of the IC pins and the conductive board paths respectively associated therewith, a method comprising the steps of:

A) applying an AC signal of a different test frequency respectively associated therewith to each of a plurality of the board paths associated with the IC pins;

B) capacitively sensing the resultant electric-field signal in the vicinity of the circuit package;

C) determining the contribution of each of the test frequencies to the sensed signal; and

D) if the contribution of a given test frequency is less than a predetermined threshold associated therewith, generating an indication of a lack of continuity between the board path associated with the given test frequency and the IC pin associated with that board path.

5,486,754

ELECTRIC CURRENT MEASUREMENT

Andrew J. Cruden, Lennoxtown; James R. McDonald, Newton Mearns; Ivan Andonovic, Bearsden; Kenneth Allan, Erskine, and Raymond A. Porrelli, East Kilbride, all of, Scotland, assignors to Instrument Transformers Limited, Glasgow, Scotland

PCT No. PCT/GB93/00134, § 371 Date Jul. 21, 1994, § 102(e) Date Jul. 21, 1994, PCT Pub. No. WO93/15410, PCT Pub. Date Aug. 5, 1993

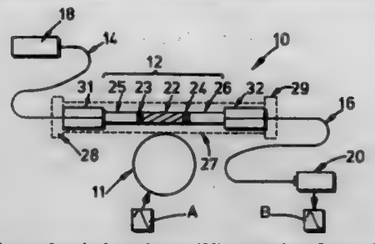
PCT Filed Jan. 22, 1993, Ser. No. 256,713

Claims priority, application United Kingdom, Jan. 29, 1992, 9201896

Int. Cl.[6] G01R *31/00*

U.S. Cl. 324—96 **6 Claims**

1. An electrical current measuring device, for measuring the



current in an electrical conductor (11), comprises first and second measurement channels, each channel comprising

a sensor (12) adapted to be located adjacent the conductor (11) and coupled via optical fibres (14,16) to source circuitry (18) and detector circuitry (20), the sensor (12), incorporating a material (22) which exhibits the Faraday magneto-optic effect and the source circuitry (18) being arranged to deliver an unpolarised light signal which is subsequently polarised by a first polariser (23) to enable a linearly polarised light signal to be incident to the material (22) and the quantum of rotation in the plane of polarisation imposed on the signal emerging from the material (22) being monitored via a second polariser (24) by the detector circuitry (20) as a measure of the electrical current flowing in the conductor (11),

wherein the sensor material (22) of the first channel is different from the sensor material (22) of the second channel, having a Verdet constant which is more temperature sensitive than that of the second channel;

each measurement channel is arranged to maintain a constant light intensity incident on its detector circuitry (20), and

gain-control circuitry (17,19) is provided at the outputs of the two measurement channels to deliver to an output terminal a modified measure of the sensed electrical current which is compensated against temperature variations,

the gain control circuitry (17,19) comprising a gain-controllable amplifier connected to the output of the detector circuitry (20) of the first channel, a divider (17) connected to the outputs of the respective detector circuitry (20) of the first and second channels for computing the ratio of said signals, means for comparing the computed ratio with pre-stored data (FIG. 3) representative of known signal ratios achieved under known constant currents but varying temperatures whereby to evaluate a proportionality measure with respect to temperature,

and means for applying said proportionality measure to gain control the gain-controllable amplifier to provide the modified measure of the sensed electrical current from the detector circuitry (20) of the first channel.

5,486,755

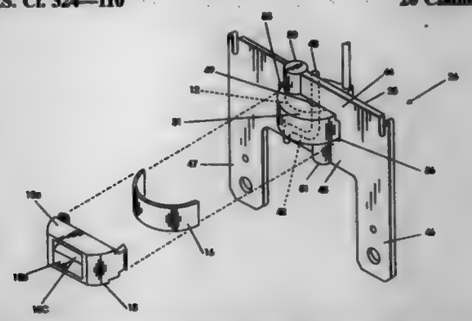
ELECTRONIC METER HAVING ANTI-TAMPERING MAGNETIC SHIELD

Patrick J. Horan, Dover; Richard A. Balch, North Hampton; David D. Elmore, Somersworth, all of N.H., and Joseph R. Legere, Sanford, Me., assignors to General Electric Company, New York, N.Y.

Filed Dec. 27, 1994, Ser. No. 364,109

Int. Cl.[6] G01R *11/48;1/20*

U.S. Cl. 324—110 **20 Claims**



1. An electronic meter for measuring electricity and being resistant to tampering by an externally applied magnetic field, said electronic meter comprising:

a housing comprising a base and a cover connected thereto;

a plurality of electrical current sensors positioned within said housing, each of said electrical current sensors comprising a toroidal coil defining a coil axis aligned transverse to the base, outermost ones of said toroidal coils having respective outermost coil portions positioned in closely spaced relation from an adjacent interior surface of said housing; and

a magnetic shield positioned adjacent each outermost toroidal coil to thereby resist tampering by a magnetic field applied from external to said housing, said magnetic shield having an arcuate cross-sectional shape corresponding to the outermost coil portion and having a predetermined arc length covering only a predetermined portion of the outermost coil portion.

5,486,756

DC CURRENT SENSOR

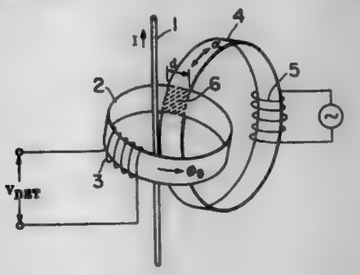
Makoto Kawakami, and Shigeru Yamaguchi, both of Osaka, Japan, assignors to Sumitomo Special Metals Co., Ltd., Tokyo, Japan

Division of Ser. No. 96,159, Jul. 9, 1993, abandoned. This application Mar. 13, 1995, Ser. No. 402,501

Claims priority, application Japan, Jul. 10, 1992, 4-207380; Jul. 10, 1992, 4-207381; Nov. 5, 1992, 4-322363; Jan. 26, 1993, 5-31361

Int. Cl.[6] G01R *1/04;31/00*

U.S. Cl. 324—127 **6 Claims**



1. A DC current sensor, comprising

an exciting core of soft magnetic material and formed with a pair of tubular bodies, each tubular body being positioned in parallel with the other to provide therebetween a space, through which passes a wire conducting a current to be detected;

a detecting core formed with the side faces of a pair of tubular bodies and two plate-like members of soft magnetic material, each of which connecting integrally with each of the inside edges thereof near an opening of said tubular bodies to form a rectangular frame-shaped member as a whole;

exciting coils, each of which magnetically energizing the exciting core in the direction perpendicular to the plane of the detecting core;

detecting coils, each of which being wound around said detecting core; and

means for applying an alternating current to the exciting coils to periodically and magnetically saturate the rectangular-shaped portions of said detecting core and exciting core, said means energizing said exciting coils to modulate a magnetic flux produced in the detecting core corresponding to the DC current flowing through said wire.

5,486,757

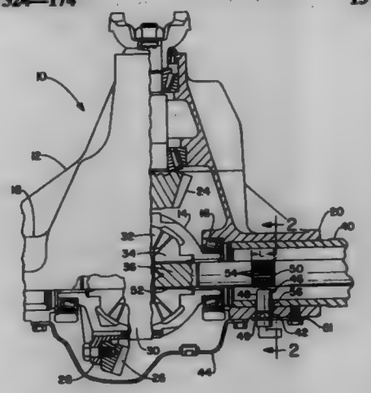
WHEEL-SPEED SENSORS FOR MOTOR VEHICLE MOUNTED IN THE SPREADER HOLES OF A DIFFERENTIAL CARRIER HOUSING

Paul D. Easley, Auburn, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Aug. 24, 1993, Ser. No. 111,125

Int. Cl.[6] G01P *3/48;3/52;* **F16H** *1/38;* **B23P** *11/00*

U.S. Cl. 324—174 **15 Claims**



1. A speed-sensing system to monitor the speed of individual wheels of a vehicle, comprising,

a vehicle drive axle including a differential carrier housing and case assembly rotatably mounted within said carrier housing, said carrier housing having first and second axle tubes coupled to and extending therefrom in which first and second axle shafts for said vehicle are disposed, said carrier housing having spreader holes formed therein at each location where said axle tubes are coupled to said carrier housing, wherein each of said axle shafts are drivingly engaged to said case

assembly and includes signal generating means associated therewith, and a sensing device mounted in said carrier housing at the location of said spreader holes and adjacent to said signal generating means to independently monitor the rotation of each of said axle shafts to generate a signal proportional to the speed of said axle shaft.

5,486,758

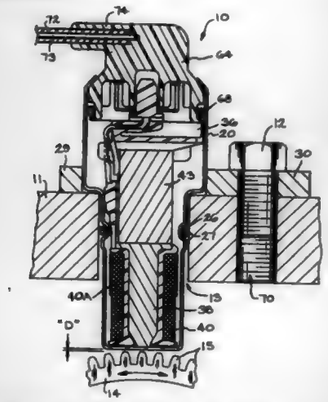
INTEGRAL VARIABLE RELUCTANCE SPEED SENSOR

Mark K. Hammerle, Fenton, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Continuation of Ser. No. 132,737, Oct. 6, 1993, abandoned. This application Jan. 17, 1995, Ser. No. 374,401

Int. Cl.[6] G01P *3/48*

U.S. Cl. 324—174 **33 Claims**



1. A variable reluctance magnetic transducer comprising:

a pole piece having first and second ends;

a core having a first end portion formed about said pole piece, said pole piece extending through said first end portion, said core also having an intermediate portion adjacent to said first end portion, said intermediate portion including a chamber formed therein, said second end of said pole piece forming one end of said chamber, said chamber including an opening formed through the side of said intermediate portion, said opening adapted to receive a magnet, said intermediate portion also including means for retaining a magnet within said chamber, said core further having a second end portion adjacent to said intermediate portion and opposite from said first end portion;

a permanent magnet retained in said chamber, said magnet having an end contacting said second end of said pole piece;

a pair of electrical connectors supported by said second end portion of said core;

a coil wound about said core first end portion;

means for electrically connecting said coil to said electrical connectors;

a tubular housing having a closed first end and an open second end, said closed first end forming an inside surface, said housing receiving said core with said first end of said pole piece contacting said inside surface of said closed end and said second end of said core being contained within said housing; and

a bracket secured to said housing a predetermined distance from said closed end of said housing, said bracket having an aperture formed therethrough, said aperture adapted to receive a fastener.

5,486,759

DEVICE FOR DETECTING THE MOVEMENT OF A MOVABLE COMPONENT AND SIGNALLING THE DETECTED MOVEMENT OVER A SINGLE LINE

Hartmut Seller, Baden-Baden; Guenter Haderer, Buehl; Volker Aab, Sasbach, and Cornelius Peter, Buehl-Neusatz, all of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

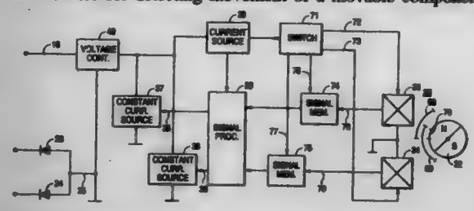
Filed Oct. 20, 1993, Ser. No. 138,288

Claims priority, application Germany, Jan. 21, 1992, 42 35 471.A; Mar. 13, 1993, 43 08 030.8

Int. Cl.[6] G01P *13/04;* **G01B** *7/30;7/02;* **H02P** *7/00*

U.S. Cl. 324—207.2 **14 Claims**

1. A device for detecting movement of a movable component,



said device comprising:

a first position sensor for outputting a first signal corresponding to at least a first position range of the movable component when the first position sensor senses the movable component within the first position range, the first signal having a single first discrete value;

a second position sensor for outputting a second signal corresponding to at least a second position range of the movable component when the second position sensor senses the movable component within the second position range, the second position range having an overlap region with said first position range, said second signal having a single second discrete value which is different from said first discrete value;

means for adding the respective discrete values of said first and second signals to produce a discrete sum signal, and for feeding the discrete sum signal to a single signal line; and

an evaluation arrangement connected to said single signal line for receiving and evaluating the sum signal on said single signal line and determining movement of the movable component based on the sum signal.

5,486,760

APPARATUS FOR CHECKING SURFACE FEATURES OF CONICAL PARTS INCLUDING A PROBE DISPOSED WITHIN A TRANSVERSAL GROOVE OF A ROLLER

Narciso Selleri, Monteveglio, and Giuliano Longhi, Bologna, both of, Italy, assignors to Marposs Societa' Per Azioni, Bentivoglio, Italy

PCT No. PCT/EP92/01484, § 371 Date Dec. 13, 1993, § 102(e) Date Dec. 13, 1993, PCT Pub. No. WO93/01493, PCT Pub. Date Jan. 21, 1993

PCT Filed Jul. 1, 1992, Ser. No. 162,151

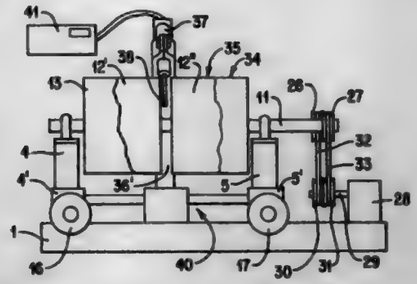
Claims priority, application Italy, Jul. 4, 1991, BO91A0240

Int. Cl.[6] G01R *33/038;* **G01N** *21/01*

U.S. Cl. 324—262 **18 Claims**

1. An apparatus for checking surface features of conical parts (39), comprising:

support means (1–9, 14–25, 40);



driving means, coupled to the support means, for supporting, rotating, and longitudinally advancing, substantially along a feed line, conical parts (39), the driving means including at least two substantially cylindrical rollers (12, 13; 12', 12") coupled to the support means and defining two geometrical axes of rotation lying nonparallel to each other, and motor means (28–33) coupled to said rollers for rotating them; and

checking means (37, 38, 41) including a stationary probe adapted to scan the conical parts during their combined motion including rotation and advance feed; and

wherein said rollers are adapted to support a plurality of conical parts arranged substantially in a row and defining a transversal circular groove (36; 36'), and wherein said probe is disposed within said transversal groove, whereby the parts forming said row are checked while passing in correspondence of said transversal groove.

5,486,761

NUCLEAR MAGNETIC RESONANCE MEASURING APPARATUS

Abdurrahman Sezginer, Brookfield, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

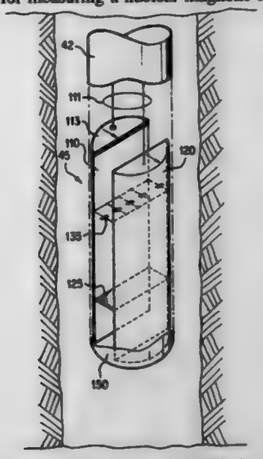
Continuation of Ser. No. 41,643, Apr. 1, 1993, Pat. No. 5,376,884. This application Jun. 15, 1994, Ser. No. 259,999

The portion of the term of this patent subsequent to Dec. 27, 2011, has been disclaimed.

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—303 **18 Claims**

1. Apparatus for measuring a nuclear magnetic resonance property of formations surrounding an earth borehole, comprising:



a logging device moveable through the borehole;

first and second elongated magnets having parallel axes of elongation generally parallel to the axis of the borehole and being disposed in said logging device in side-by-side spaced-apart arrangement;

an RF current loop disposed in the region between said magnets; means for coupling RF energy to said RF current loop; and means for detecting RF signals induced in said RF current loop.

5,486,762

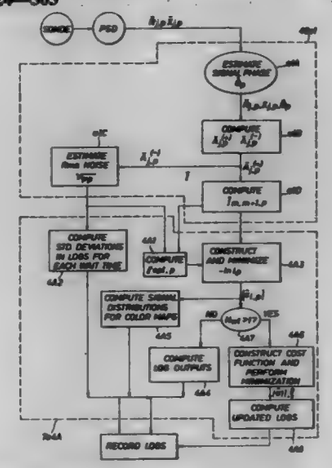
APPARATUS INCLUDING MULTI-WAIT TIME PULSED NMR LOGGING METHOD FOR DETERMINING ACCURATE T_2-DISTRIBUTIONS AND ACCURATE T_1/T_2 RATIOS AND GENERATING A MORE ACCURATE OUTPUT RECORD USING THE UPDATED T_2-DISTRIBUTIONS AND T_1/T

Robert Freedman, Houston, and Christopher E. Morriss, The Woodlands, both of Tex., assignors to Schlumberger Technology Corp., Houston, Tex.

Continuation-in-part of Ser. No. 127,978, Sep. 28, 1993, Pat. No. 5,381,092, which is a continuation of Ser. No. 970,332, Nov. 2, 1992, Pat. No. 5,291,137. This application Aug. 15, 1994, Ser. No. 291,960

Int. Cl.[6] G01R *33/20*

U.S. Cl. 324—303 **30 Claims**



1. A logging system, comprising:

first means adapted to be disposed in a wellbore for receiving a plurality of spin echo pulse sequences from a formation penetrated by said wellbore, generating a plurality of signals in response thereto, and transmitting said plurality of signals uphole when said first means is disposed in said wellbore;

second means adapted to be disposed at a surface of said wellbore for receiving said plurality of signals, said second means including,

spectral amplitude generation means responsive to said plurality of signals for generating a true polarization correction and a set of true spectral amplitudes corresponding to the true polarization correction, and

means responsive to the true polarization correction and said set of true spectral amplitudes corresponding to the true polarization correction for generating an output record medium illustrating a set of characteristics of said formation penetrated by said wellbore.

5,486,763

METHOD TO DISPLAY WITH COMBINED COLOR MULTIPLE QUANTITATIVE IMAGES OF TISSUE PARAMETERS OBTAINED WITH NUCLEAR MAGNETIC RESONANCE

Bruno Alfano, Naples, Italy, assignor to Consiglio Nazionale delle Ricerche, Italy

PCT No. PCT/IT92/00112, § 371 Date Apr. 11, 1994, § 102(e) Date Apr. 11, 1994, PCT Pub. No. WO93/05405, PCT Pub. Date Mar. 18, 1993

PCT Filed Sep. 9, 1992, Ser. No. 204,421

Claims priority, application Italy, Sep. 12, 1991, RM91A0680

Int. Cl.[6] G01R *33/48*

U.S. Cl. 324—309 8 Claims

1. A method of representation of physical tissue parameters in nuclear magnetic resonance (NMR), said method comprising a step of simultaneous representation of said parameters as combined color images, said color images being the result of overlapping of a least two parametric images obtained with chromatic scales different from one another and independent of one another, said physical tissue parameters comprise the longitudinal relaxation constant R1 and the transverse relaxation constant R2, which are defined by the formulas R1=1/T1 and R2=1/T2, wherein T1 and T2 are respectively the longitudinal and the transverse relaxation times that are characteristic of the voxel.

5,486,764

METHOD FOR DETERMINING SUBSURFACE ELECTRICAL RESISTANCE USING ELECTROSEISMIC MEASUREMENTS

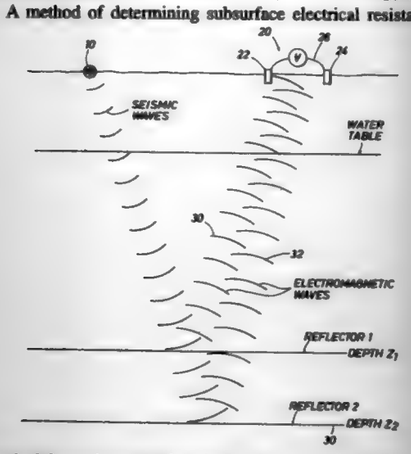
Arthur H. Thompson, and Grant A. Gist, both of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Jan. 15, 1993, Ser. No. 4,959

Int. Cl.[6] G01V *11/00;3/12;3/30;1/00*

U.S. Cl. 324—323 28 Claims

1. A method of determining subsurface electrical resistance in



geological formations as a function of depth, comprising the steps of:

placing an antenna comprising at least two electrodes at a receiving location;

initiating a seismic wave into the earth from a source location such that the seismic wavefront encounters two or more reflectors and is converted to electromagnetic waves at each said reflector;

detecting a first electromagnetic wave from a first reflector;

detecting a second electromagnetic wave from a second reflector, wherein said second reflector is at a distance farther removed from said source location; and

determining the conductivity of the earth between said first and second reflectors and take distance from said source location to each of said first and second reflectors using said detected first and second electromagnetic waves.

5,486,765

INSULATING CONDITION DETECTING APPARATUS FOR A WIRE-CUT ELECTRICAL DISCHARGE MACHINE

Shunzo Izumiya, Fujiyoshida; Akihiro Sakurai, and Akiyoshi Kawahara, both of Minamitsuru, all of, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP93/00692, § 371 Date Feb. 4, 1994, § 102(e) Date Feb. 4, 1994, PCT Pub. No. WO93/24265, PCT Pub. Date Dec. 9, 1993

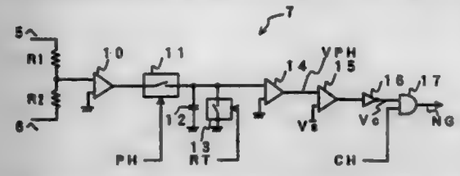
PCT Filed May 25, 1993, Ser. No. 190,158

Claims priority, application Japan, Jun. 4, 1992, 4-170125

Int. Cl.[6] B23H *1/02*

U.S. Cl. 324—537 3 Claims

1. An apparatus for detecting insulation between a wire electrode



and a workpiece of a wire-cut electrical discharge machine, comprising:

a capacitor storing a charged voltage to be applied between the wire electrode and the workpiece;

a charging switching element for charging said capacitor;

a discharging switching element, formed of a semiconductor, for discharging a capacitor and for applying the charged voltage of said capacitor between the wire electrode and the workpiece;

voltage detecting means for detecting a voltage between the wire electrode and the workpiece caused by a leakage current from the semiconductor of said discharging switching element during a period through which said capacitor is being charged when said discharging switching element is turned off and said charging switching element is turned on; and

determining means for comparing the voltage detected by said voltage detecting means and a set reference value, and for determining a dielectric breakdown when the detected voltage is lower than said reference value.

5,486,766

METHOD FOR TESTING SWITCH MATRICES

Gregory B. Hibdon, Folsom, and John M. Ingram, Sacramento, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed May 20, 1994, Ser. No. 246,997

Int. Cl.[6] G01R *31/02*

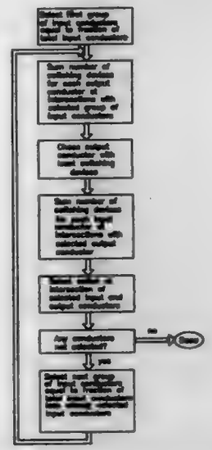
U.S. Cl. 324—537 10 Claims

1. A testing method for determining switching devices to close in a switch matrix having a plurality of input conductors and a plurality of output conductors arranged as logical rows and columns which intersect and having switching devices at a fraction of intersections comprising the steps of:

(step 1) selecting a combination of input conductors to be connected to the output conductors,

(step 2) summing the number of switching devices connected to each output conductor at intersections with the combination of input conductors,

(step 3) selecting an output conductor having a least number of switching devices at intersections with the combination of input conductors,



(step 4) summing the switching devices for each of the combination of input conductors having a switching device at an intersection with the selected output conductor,

(step 5) selecting an input conductor having the least number of switching devices,

(step 6) selecting a next combination of input conductors including all of the input conductors from the first combination except a previously selected input conductor arid all of the output conductors except a previously selected output conductor, and

(step 7) repeating each of the steps 2 through 6 until no conductors remain which have not been selected.

5,486,767

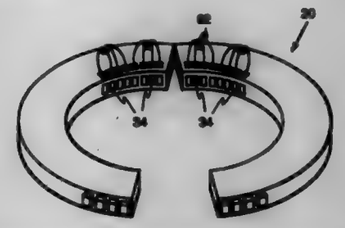
METHOD AND SYSTEM FOR DETECTING DEFECTS IN PIPES OR OTHER STRUCTURES

Robert J. Schwabe, Katonah; Michael R. Eggleston, Scotia, and Louis F. Coffin, Jr., Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 3, 1994, Ser. No. 206,297

Int. Cl.[6] G01R *27/14*

U.S. Cl. 324—715 26 Claims



1. A system for detecting defects in an object having a cylindrical surface, the system comprising:

a plurality of multiple pin electrodes sufficient to cover the circumference of the cylindrical surface, each multiple pin electrode having a single voltage pin and at least three (3) current pins contained therein;

structure for operatively positioning the electrodes relative to the object and in contact with the cylindrical surface; and

tension means, operatively connected to each pin, for urging the pins such that contact with the cylindrical surface is sufficiently equal between pins wherein a mathematical model can be utilized to analyze the object for defects.

5,486,768

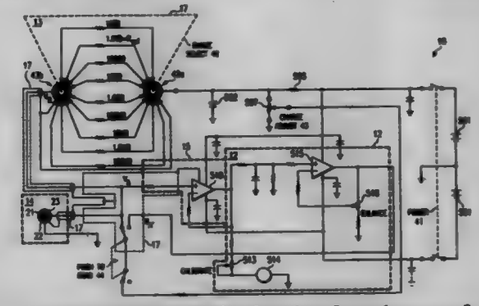
SURFACE RESISTIVITY METER FOR DETERMINING SURFACE DEGRADATION OF HIGH RESISTIVITY MATERIALS

Howard S. Silvus, Jr., San Antonio; William A. Mallow, Helotes; Charles H. Parr, and Jerome J. Dziuk, both of San Antonio, all of Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed May 31, 1994, Ser. No. 251,393

Int. Cl.[6] G01R *27/02*

U.S. Cl. 324—718 12 Claims



1. An ohmmeter for measuring the value of an unknown surface resistance of a sample of material, comprising:

a voltage source circuit for supplying a low reference voltage;

a meter circuit connected across said unknown surface resistance for providing an output signal indicative of said unknown surface resistance;

an input circuit at the input to said meter circuit for providing a high input impedance to said meter circuit at a measurement input node;

a resistance circuit connected between said input node and said voltage source circuit, for receiving said reference voltage and for providing a reference resistance;

a probe circuit connected to said input node, said probe circuit having two electrodes for contacting the surface of said material, one connected to ground, thereby providing said unknown surface resistance, which divides the voltage across said voltage supply circuit to provide a voltage at said input node that is related to said unknown surface resistance;

a guard circuit for shielding connections to said input node, said guard circuit being in electrical communication with the output of said meter circuit;

wherein the combined gain of said input circuit and said meter circuit is adjustable to approximately unity; and

a quick charge circuit having a quick charge switch connected across said resistance circuit for bypassing said resistance circuit during charging of circuit capacitances.

5,486,769

METHOD AND APPARATUS FOR MEASURING QUANTITATIVE VOLTAGE CONTRAST

Wai K. Chim; Jacob C. H. Phang, and Daniel S. H. Chan, all of Singapore, Singapore, assignors to National University of Singapore, Crescent, Singapore

Filed Aug. 15, 1994, Ser. No. 290,527

Int. Cl.[6] G01R *31/00*

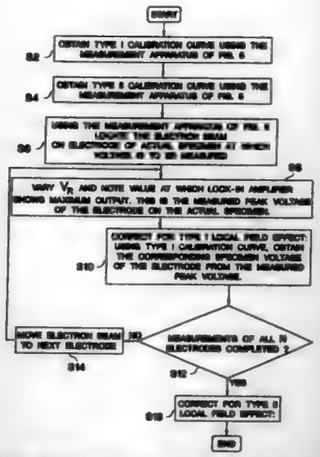
U.S. Cl. 324—751 17 Claims

1. A method of measuring quantitative voltage contrast comprising the steps of:

(a) outputting instructions from a processor to an energy analyzer and scanning electron microscope;

(b) locating an electron beam of said scanning electron microscope on a specimen electrode of a specimen structure based on said instructions;

(c) varying a grid voltage of said energy analyzer in accordance with said instructions;



(d) detecting secondary electron emission from said specimen electrode with a detector of said scanning electron microscope;

(e) determining a measured peak voltage of said specimen electrode based on output from said detector;

(f) obtaining a specimen electrode voltage corrected for type I local field effect error using said measured peak voltage and a type I calibration curve, said type I calibration curve representing peak voltage versus specimen electrode voltage; and

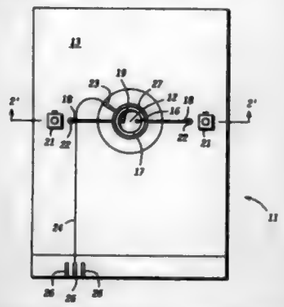
(g) correcting for type II local field effect error in output of said step (f) based on a type II calibration curve, said type II calibration curve representing a shift in specimen electrode peak voltage versus adjacent electrode voltage.

5,486,770

HIGH FREQUENCY WAFER PROBE APPARATUS AND METHOD

Scott V. Johnson, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 27, 1994, Ser. No. 265,876
Int. Cl.[6] G01R *31/00*
U.S. Cl. 324—754 **6 Claims**



1. A high frequency wafer probe apparatus comprising:

a substrate having a top surface, a bottom surface, and an opening extending through the substrate from the top surface to the bottom surface;

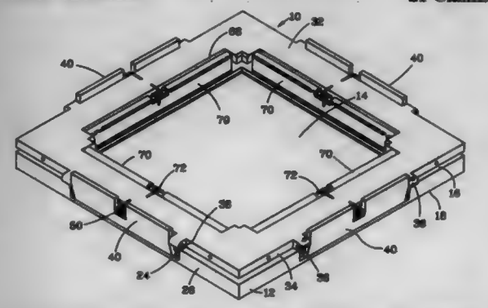
an insulating ring disposed within the opening; and a high frequency coaxial wafer probe having a first end and a second end, a conductor extending from the first end to the second end, a dielectric layer surrounding the conductor, a grounding layer surrounding the dielectric layer, and a pair of ground probe needles coupled to the grounding layer opposite each other, wherein the conductor extends beyond the dielectric layer and the grounding layer at the first end to form a signal probe needle; and wherein the pair of ground probe needles are adjacent the signal probe needle, and wherein the high frequency coaxial wafer probe is embedded in the insulating ring such that the signal probe needle and the pair of ground probe needles extend below the bottom surface of the substrate, and wherein the second end of the high frequency coaxial wafer probe is adapted for coupling to a high frequency tester.

5,486,771

BURN-IN SOCKET TESTING APPARATUS

Keith L. Volz, Jamestown; Robert M. Renn, Pfafftown; Robert D. Iribeck, Greensboro; Frederick R. Denk, Kernersville, and David C. Johnson, Winston-Salem, all of N.C., assignors to Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 81,769, Jun. 23, 1993, abandoned.
This application Dec. 23, 1994, Ser. No. 363,559
Int. Cl.[6] G01R *31/02;* **H05K** *1/02*
U.S. Cl. 324—755 **21 Claims**



1. A burn-in socket testing apparatus for use with an integrated circuit chip, said apparatus includes electrical contact surfaces for electrical engagement with electrical contact surfaces formed on said chip, said apparatus comprising:

a first frame member having a first pusher member and a second pusher member, each said pusher member is pivotally mounted to said first frame member for independent pivotal motion relative to said first frame member;

a second frame member operatively connected to said first frame member for relative movement therebetween, said first and second frame members being adapted to cause pivotal movement in said pusher members during said relative movement, and the second frame member includes at least one camming surface which is adapted to engage one of said pusher members during said relative movement.

5,486,772

RELIABILITY TEST METHOD FOR SEMICONDUCTOR TRENCH DEVICES

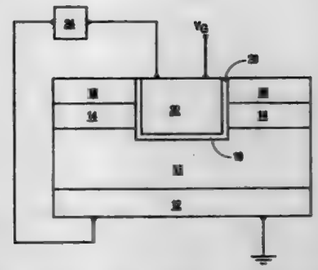
Fwu-Iuan Hshieh, Saratoga; Calvin K. Choi, San Jose; William H. Cook, Fremont; Lih-Ying Ching, and Mike F. Chang, both of Cupertino, all of Calif., assignors to Siliconix incorporation, Santa Clara, Calif.

Filed Jun. 30, 1994, Ser. No. 268,755
Int. Cl.[6] G01R *31/26*
U.S. Cl. 324—769 **10 Claims**

1. A method for testing the reliability of a trench transistor having a source, a gate, and a drain, said method comprising the steps of:

applying a first voltage to said gate;

coupling said drain to a second voltage different from said first voltage;



measuring a leakage current between said gate and said drain;

comparing said leakage current to a threshold current; and

identifying said trench transistor as a defective transistor if said leakage current is greater than said threshold current.

5,486,773

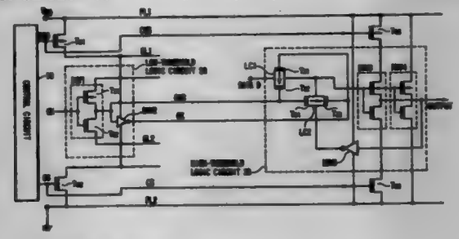
Patent Not Issued For This Number

5,486,774

CMOS LOGIC CIRCUITS HAVING LOW AND HIGH-THRESHOLD VOLTAGE TRANSISTORS

Takakuni Douseki; Junzo Yamada; Yasuyuki Matsuya, and Shinichirou Mutou, all of Kanagawa, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Continuation of Ser. No. 981,183, Nov. 24, 1992, abandoned.
This application Nov. 2, 1994, Ser. No. 333,235
Claims priority, application Japan, Nov. 26, 1991, 3-311007; Dec. 6, 1991, 3-323382; Dec. 9, 1991, 3-324512; Feb. 3, 1992, 4-017537
Int. Cl.[6] H03K *19/0948*
U.S. Cl. 326—33 **11 Claims**



1. A circuit comprising:

a logic circuit having a plurality of logic circuit elements each comprised of a plurality of field effect transistors;

first and second power lines for supplying power to said logic, with said first power line connected to a power source and with said second power line connected to a ground;

a first dummy power line connected to one of a plurality of power source terminals of said logic circuit; and

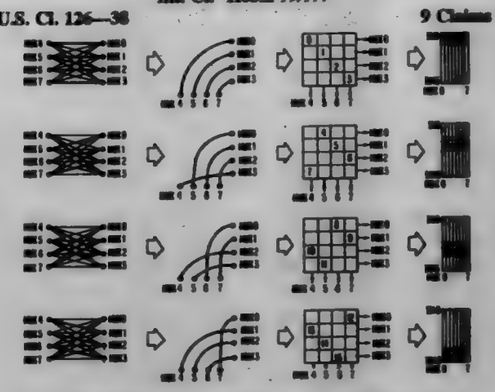
a first control transistor connected between said first dummy power line and said first power line, said first control transistor having a threshold substantially greater than thresholds of said field effect transistors of said logic circuit.

5,486,775

MULTIPLEXER STRUCTURES FOR USE IN MAKING CONTROLLABLE INTERCONNECTIONS IN INTEGRATED CIRCUITS.

Kerry Veenstra, San Jose, Calif., assignor to Altera Corporation, San Jose, Calif.

Filed Nov. 22, 1993, Ser. No. 156,260
Int. Cl.[6] H03K *19/177*
U.S. Cl. 326—38 **9 Claims**



3. An integrated circuit communication network comprising:

a plurality of substantially parallel, side by side, input conductors; and

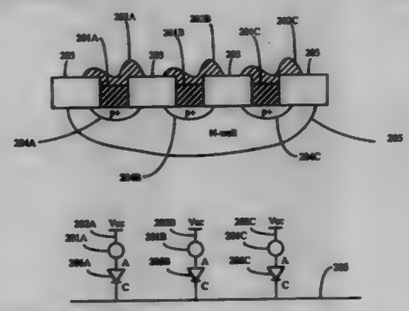
a predetermined plural number of multiplexers, each of said multiplexers having a plurality of inputs, each of said input conductors being connected to an input of two of said multiplexers, wherein said input conductors form a plurality of adjacent, mutually exclusive groups of input conductors, each group having half as many input conductors as there are multiplexers, each multiplexer having inputs that are connected to said input conductors in said groups, such that each multiplexer is connected to one input conductor in each of said groups.

5,486,776

ANTIFUSE-BASED PROGRAMMABLE LOGIC CIRCUIT

David Chiang, Saratoga, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Sep. 29, 1994, Ser. No. 315,809
Int. Cl.[6] H03K *19/177*
U.S. Cl. 326—41 **6 Claims**



1. A programmable logic circuit comprising:

a first plurality of lines;

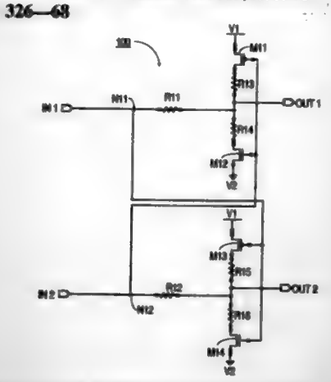
a second plurality of lines;

means for connecting at least one of said first plurality of lines to at least one of said second plurality of lines, wherein said means for connecting includes an antifuse and a diode connected in series, wherein said antifuse is formed over a diffusion area in a well area, and said diode is formed from said diffusion area and said well area.

5,486,777
LOW POWER DIFFERENTIAL RECEIVER INPUT CIRCUIT

Hai T. Nguyen, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 7, 1994, Ser. No. 301,462
Int. Cl.[6] H03K *19/0185;19/0948*
U.S. Cl. 326—68 **12 Claims**



3. A low power differential receiver circuit for respectively converting first and second differential input signals into first and second differential output signals, the receiver circuit comprising:

first and second input terminals for respectively receiving the first and second differential input signals, the first and second input terminals being respectively connected to first and second nodes;

a first output terminal connected to the first node through a first resistor;

a second output terminal connected to the second node through a second resistor;

a first transistor of a first type having a gate connected to the second node, a source connected to a first voltage source and a drain connected to the first output terminal;

a second transistor of a second type having a gate connected to the second node, a drain connected to the first output terminal and a source connected to a second voltage source;

a third transistor of the first type having a gate connected directly to the first node, a source connected to the first voltage source and a drain connected to the second output terminal; and

a fourth transistor of the second type having a gate connected directly to the first node, a drain connected to the second output terminal and a source connected to the second voltage source;

wherein a voltage of the first differential input signal controls the third transistor of the first type and the fourth transistor of the second type, thereby producing the second differential output signal at the second output terminal; and

wherein a voltage of the second differential input signal controls the first transistor of the first type and the second transistor of the second type thereby producing the first differential output signal at the first output terminal.

5,486,778
INPUT BUFFER FOR TRANSLATING TTL LEVELS TO CMOS LEVELS

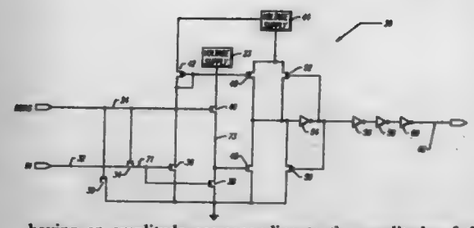
Perry W. Lou, Carlsbad, Calif., assignor to Brooktree Corporation, San Diego, Calif.

Filed Mar. 10, 1993, Ser. No. 28,999
Int. Cl.[6] H03K *19/0185;19/0948*
U.S. Cl. 326—71 **22 Claims**

1. In combination,

first means for providing an input voltage,

second means responsive to the input voltage for providing a first control voltage having a first amplitude for amplitudes of the input voltage greater than a first particular amplitude and



having an amplitude corresponding to the amplitude of the input voltage for amplitudes of the input voltage less than the first particular amplitude,

third means responsive to the first control voltage for providing a second control voltage having a second particular amplitude upon the occurrence of the second particular amplitude in the first control voltage and having an amplitude inverse to the amplitude of the first control voltage for amplitudes of the first control signal different from the second particular amplitude, and

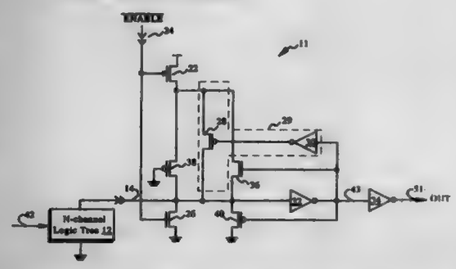
fourth means responsive to the first and second control voltages for providing an output voltage related to the input voltage and having the same delay relative to the input voltage for rising and falling amplitude characteristics and having substantially the same rising and falling characteristics with respect to time.

5,486,779
SENSE AMPLIFIER

John D. Eitrheim, Plano, Tex., assignor to Cyrix Corporation, Richardson, Tex.

Filed Dec. 29, 1994, Ser. No. 367,035
Int. Cl.[6] H03F *3/45*
U.S. Cl. 327—51 **18 Claims**

1. A sense amplifier comprising:



(a) sense means, coupled to receive input signals, for sensing logic levels and providing an output in response thereto;

(b) feedback means, coupled to the output of the sense means, for providing feedback to the sense means;

(c) load means, coupled between a positive voltage rail and the sense means and controlled by the feedback means, for selectively supplying current to the sense means;

(d) bleeder means, coupled in parallel with the load means, for supplying a weak current to the sense means; and,

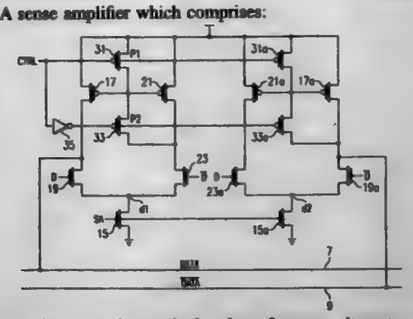
(e) dampening means, coupled between the sense means and a negative voltage rail and controlled by the sense means, for dampening a response of the sense means to the input signals.

5,486,780
TRI-STATEABLE CURRENT MIRROR SENSE AMPLIFIER

Haindao Lu, Richardson, Tex., assignor to Texas Instruments Inc., Dallas, Tex.

Filed Oct. 19, 1994, Ser. No. 325,768
Int. Cl.[6] H03F *3/45;* **G06G** *7/12*
U.S. Cl. 327—53 **16 Claims**

1. A sense amplifier which comprises:



(a) a voltage supply terminal and a reference voltage terminal;

(b) a control transistor coupled to said reference voltage terminal and having a control electrode for receiving a first control signal;

(c) a first series circuit including a first transistor of a first channel type and a second transistor of opposite channel type coupled between said control transistor and said voltage supply terminal, said second transistor generating a first output signal and having a control electrode for receiving a first input signal; and

(d) a second series circuit including a third transistor of said first channel type and a fourth transistor of said opposite channel type coupled between said control transistor and said voltage supply terminal, said fourth transistor having a control electrode for receiving a second input signal;

(e) a fifth transistor of said first channel type coupled between said voltage supply terminal and control electrodes of said first channel type transistors and having a control electrode for receiving a second control signal; and

(f) a sixth transistor of said first channel type coupled between said control electrodes of said first channel type transistors and a junction of said third and fourth transistors and having a control electrode for receiving a third control signal.

5,486,781
BASE CURRENT-CONTROL CIRCUIT OF AN OUTPUT TRANSISTOR

Changsik Im, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 27, 1994, Ser. No. 187,038
Claims priority, application Rep. of Korea, Jan. 27, 1993, 1003/93
Int. Cl.[6] H03K *17/16;17/60*
U.S. Cl. 327—108 **12 Claims**

1. A base current-control circuit of an output transistor comprising:

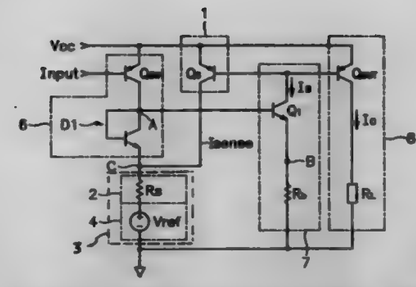
a detector for detecting an output load current of said output transistor and for enabling the circuit to generate a detected current in constant proportion to said output load current;

a base current-control voltage generator for generating a voltage as a function of said detected current in constant proportion to said output load current;

a switch for generating ON/OFF signals;

a reference voltage generator for generating a reference voltage; and

a base current generator for utilizing, said voltage generated by said base current-control voltage generator in constant proportion to said output load current and said reference voltage to



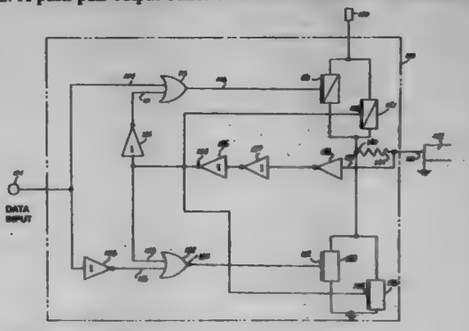
generate a base current for input to said output transistor as a function of the output load current in response to said ON/OFF signals.

5,486,782
TRANSMISSION LINE OUTPUT DRIVER

Francis H. Chan, Williston, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 27, 1994, Ser. No. 312,731
Int. Cl.[6] H03K *3/00*
U.S. Cl. 327—112 **14 Claims**

1. A push-pull output buffer circuit for use with a transmission



line comprising:

an input node and an output node;

first and second power source terminals;

a first primary gate circuit connected between the first power source terminal and the output node;

a second primary gate circuit connected between the output node and the second power source terminal;

a first auxiliary gate circuit connected in parallel with the first primary gate circuit;

a second auxiliary gate circuit connected in parallel with the second primary gate circuit;

control circuitry connected to the input node and responsive to an input signal to selectively turn on the first and second primary gate circuits; and

pulse-generating circuitry having an input connected to the output node and having outputs connected to the first and second primary gate circuits and first and second auxiliary gate circuits, the pulse-generating circuitry responsive to signals on the output node to selectively turn off the first and second primary gate circuits and to selectively turn the first and second auxiliary gate circuits on and off.

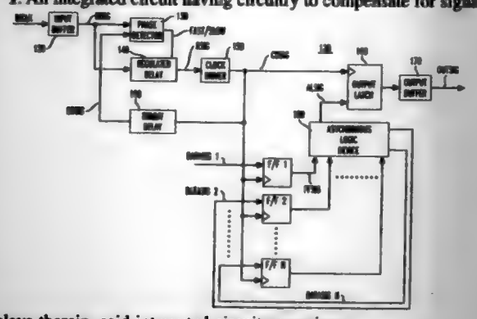
5,486,783

METHOD AND APPARATUS FOR PROVIDING CLOCK DE-SKEWING ON AN INTEGRATED CIRCUIT BOARD

Robert J. Baumert, Allentown, and Robert L. Pritchett, East Allen Township, both of Pa., assignors to AT&T Corp., Murray Hill, N.J.

Filed Oct. 31, 1994, Ser. No. 332,202
Int. Cl.[6] H03L *7/06*
U.S. Cl. 327—147 **13 Claims**

1. An integrated circuit having circuitry to compensate for signal



delays therein, said integrated circuit comprises:

a) a first input buffering means for receiving and buffering a clocked input reference signal, wherein said input buffer means generates a first signal delay upon said input reference signal;

b) signal regulating means coupled to said input buffering means for generating a synchronizing signal delay to said input reference signal for synchronizing an output data signal with said input reference signal, said signal regulating means having an output port and at least one input port and a feedback loop coupling said output port to said at least one input port;

c) a first output latching means coupled to said output port of said signal regulating means at a first input of said output latching means for latching said output data signal, wherein said output latching means generates a second signal delay upon said output data signal;

d) a first output buffering means coupled to said output latching means for buffering said output data signal, wherein said output buffering means generates a third signal delay upon said output data signal; and

simulated signal delay means coupled in said feedback loop for generating a delayed input signal to said signal regulating means, said delayed input signal having a generated simulated signal delay approximately equal to said first signal delay of said input buffering means, said second signal delay of said output latching means and said third signal delay of said output buffering means, wherein said delayed input signal is operative to enable said signal regulating means to provide a signal delay to said input reference signal so as to synchronize said input reference signal with said output data signal.

5,486,784

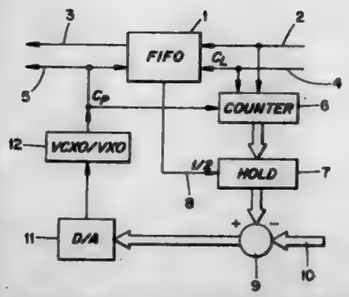
METHOD AND DEVICE FOR GENERATION OF CLOCK SIGNALS

Karl Ö. Eriksson, Askim, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Nov. 23, 1994, Ser. No. 346,915
Claims priority, application Japan, Nov. 26, 1993, 9303922-0
Int. Cl.[6] H03K *5/01*
U.S. Cl. 327—165 **15 Claims**

1. A method for regenerating clock rate information wherein data is intermediately stored in a memory to which the data is read at a first rate and out of which the data is read at a second rate, comprising the steps of:

determining a difference between two levels of an amount of data stored in the memory, wherein one of said two levels is a



level at which the memory provides an indication that the amount of data stored in the memory has reached a certain level;

comparing the difference with a reference value; and changing the second rate based on said comparison so that at subsequent measurements of the difference, the difference between the two levels of data and the reference value shall decrease.

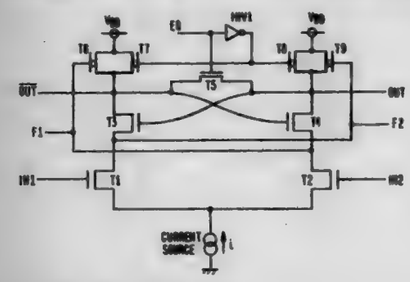
5,486,785

CMOS LEVEL SHIFTER WITH FEEDFORWARD CONTROL TO PREVENT LATCHING IN A WRONG LOGIC STATE

Dennis R. Blankenship, Durham, N.C., assignor to Mitsubishi Semiconductor America, Inc., Durham, N.C.

Filed Sep. 30, 1994, Ser. No. 316,462
Int. Cl.[6] H03L *5/00*
U.S. Cl. 327—306 **13 Claims**

1. Apparatus for level shifting from an input voltage range to an



output voltage range, comprising:

input differential amplifying means including first and second input transistors respectively supplied with first and second input signals having the amplitudes varying over said input voltage range, for forming a differential signal representative of a difference between the amplitudes of said first and second input signals,

output means responsive to said differential signal for latching in a first output logic state when said first input signal is larger than said second input signal, and for latching in a second output logic state when said first input signal is smaller than said second input signal, to form an output signal varying over said output voltage range, and

feedforward control means including first and second feedforward transistors respectively coupled to said second and first input transistors for preventing said output means from latching in said second output logic state when said first input signal is larger that said second input signal, and for preventing said output means from latching in said first output logic state when said first input signal is smaller than said second input signal,

wherein said output means comprises first and second output transistors respectively coupled to first and second output nodes of said output means,

said first and second feedforward transistors are respectively coupled in parallel to said first and second output transistors, and

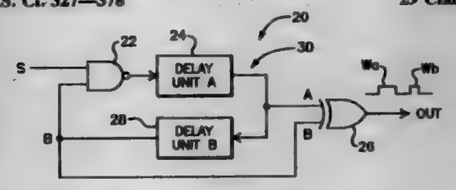
first and second isolation transistors are respectively coupled to said first and second output transistors to prevent a signal formed at said second output node from being supplied to a gate of said first feedforward transistor and to prevent a signal formed at said first output node from being supplied to a gate of said second feedforward transistor.

5,486,786

PROCESS MONITOR FOR CMOS INTEGRATED CIRCUITS

Teh-Kuin Lee, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Aug. 9, 1994, Ser. No. 287,653
Int. Cl.[6] H03K *17/14;9/08*
U.S. Cl. 327—378 **29 Claims**



1. A process monitor for a CMOS integrated circuit, comprising:

a ring oscillator that is fabricated integrally with the integrated circuit and includes PMOS circuit elements and NMOS circuit elements; and

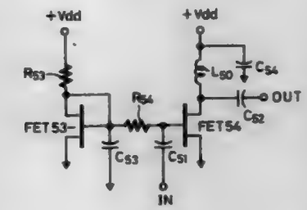
a processor for sensing pulses generated by the ring oscillator and computing a process factor for the integrated circuit as a predetermined function of a parameter of said sensed pulses that varies in accordance with relative electrical characteristics of the PMOS circuit elements and the NMOS circuit elements.

5,486,787

MONOLITHIC MICROWAVE INTEGRATED CIRCUIT APPARATUS

Itaru Mackawa; Takahiro Ohgihara, and Kuninobu Tanaka, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 7, 1994, Ser. No. 179,048
Claims priority, application Japan, Jan. 8, 1993, 5-016795; Mar. 18, 1993, 5-085641; Mar. 29, 1993, 5-069976
Int. Cl.[6] H03F *1/00;* **H02J** *1/00*
U.S. Cl. 327—560 **14 Claims**



1. A monolithic microwave semiconductor integrated circuit (MMIC), comprising:

a biased transistor formed of a compound semiconductor field effect transistor of an enhancement mode having a source directly connected to ground, its drain connected to a power supply potential, and its gate connected to a bias stabilizing circuit of a current mirror type:

said bias stabilizing circuit comprising first and second resistors, a bias control transistor formed of a compound semiconductor field effect transistor of an enhancement mode and having its source directly connected to ground, its gate directly connected to its drain, its drain connecting through said second resistor to a power supply potential, and its gate connecting through said first resistor to the gate of the bias transistor; and

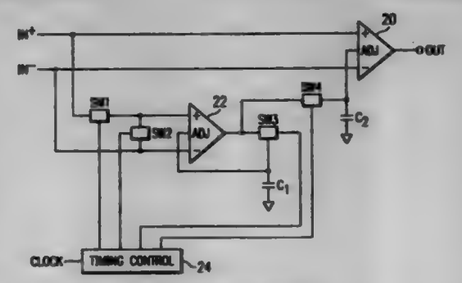
the gate of the bias control transistor being connected to ground through a first capacitor, a signal input being directly connected to the gate of the biased transistor through a second capacitor, an output being connected through a third capacitor to the drain of the biased transistor, and the drain of the biased transistor being directly connected to the power supply potential through an inductance.

5,486,788

CHOPPER STABILIZED OPERATIONAL TRANSCONDUCTANCE AMPLIFIER

Karl M. Schlager, Campbell, Calif., and Solomon K. Ng, Singapore, Singapore, assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Oct. 7, 1994, Ser. No. 320,142
Int. Cl.[6] H03F *1/02;1/14*
U.S. Cl. 330—9 **15 Claims**



1. A current amplifier circuit comprising:

a nulling operational transconductance amplifier having an non-inverting input, having an inverting input, having an offset adjustment input, and having a current output;

a first capacitor having a first plate connected to the offset adjustment input of said nulling operational transconductance amplifier and having a second plate connected to a voltage reference;

a main operational transconductance amplifier having an non-inverting input connected to a first input voltage, having an inverting input connected to a second input voltage, having an offset adjustment input, and having a current output;

a second capacitor having a first plate connected to the offset adjustment input of said main operational transconductance amplifier and having a second plate connected to the voltage reference;

a first switch having a conductive path between the second voltage and the non-inverting input to said nulling operational transconductance amplifier, and having a control element;

a second switch having a conductive path between the non-inverting input of said nulling operational transconductance amplifier and the inverting input of said nulling operational transconductance amplifier and having a control element;

a third switch having a conductive path between the output of said nulling operational transconductance amplifier and the offset adjustment input of said nulling operational transconductance amplifier and having a control element;

a fourth switch having a conductive path between the output of said nulling operational transconductance amplifier and the offset adjustment of said main operational transconductance amplifier and having a control element; and

a timing control circuit having a clock input for receiving a clock signal, having a first output connected to the control element of said first switch, having a second output connected to the control element of said second switch, having a third output connected to the control element of said third switch,

and having a fourth output connected to the control element of said fourth switch, for causing said first, second, third, and fourth switches to conduct current such that the current amplifier circuit is chopper stabilized,

wherein said timing control circuit controls said first, second, third, and fourth switches in four phases in accordance with the following table:

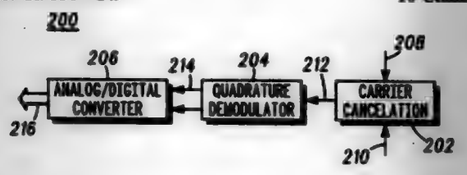
Phase	1st Switch	2nd Switch	3rd Switch	4th Switch
1	off	on	on	off
2	on	on	off	off
3	on	off	off	on
4	on	on	off	off

5,486,789

APPARATUS AND METHOD FOR PROVIDING A BASEBAND DIGITAL ERROR SIGNAL IN AN ADAPTIVE PREDISTORTER

Robert L. Palandech, Bartlett; Wayne H. Bradley, Bloomingdale; George F. Opas, Park Ridge, and James E. Mitzlaff, Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 28, 1995, Ser. No. 395,259
Int. Cl.[6] H03F *1/32*
U.S. Cl. 330—149 **10 Claims**



8. A method for providing a baseband digital error signal for an adaptive predistorter, wherein the adaptive predistorter comprises a first signal based on an amplifier output and a second signal based on a data input, the method comprising:

a) deriving a high frequency analog error signal as a difference between the first signal and the second signal;

b) deriving a baseband analog error signal by demodulating the high frequency analog error signal; and

c) deriving the baseband digital error signal by using an analog to digital conversion.

5,486,790

MULTISTAGE AMPLIFIER WITH HYBRID NESTED MILLER COMPENSATION

Johan H. Huijsing, Schipluiden, and Rudolphe G. H. Eschauzier, Spijenisse, both of, Netherlands, assignors to Philips Electronics North America Corporation, New York, N.Y.

Continuation of Ser. No. 197,539, Feb. 10, 1994, abandoned. This application Dec. 23, 1994, Ser. No. 365,332
Int. Cl.[6] H03F *3/45;1/34*
U.S. Cl. 330—260 **19 Claims**

9. A multistage amplifier circuit with frequency compensation comprising:

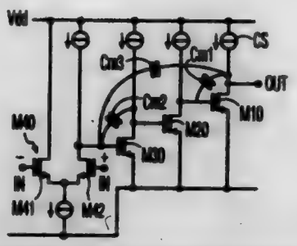
an input terminal and an output terminal;

first, second, third and fourth amplifier stages connected in cascade, each amplifier stage having an input and an output;

a first capacitor coupled between the output and input of the first amplifier stage;

a second capacitor coupled between the output and input of the third amplifier stage;

a third capacitor coupled between the output of the first amplifier stage and the input of the third amplifier stage;



means for coupling said input terminal and said output terminal to the input and the output of the amplifier stages comprising the first and last amplifier stages of the cascade, respectively; and wherein

said first, second and third amplifier stages comprise inverting stages; and

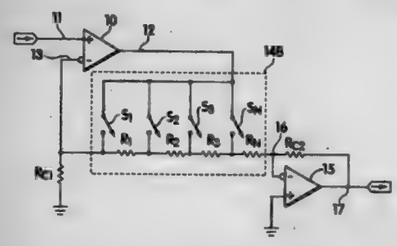
said fourth, third, second and first amplifier stage being connected in cascade in the order named between said input terminal and said output terminal.

5,486,791

PROGRAMMABLE GAIN AMPLIFIER

Paul Spitalny, Allston, and Martin Mallinson, Billerica, both of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 819,376, Jan. 9, 1992, Pat. No. 5,233,309. This application Jan. 29, 1993, Ser. No. 11,106
The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[6] H03G *3/30*
U.S. Cl. 330—282 **17 Claims**



17. A method for using an electrical circuit which includes: a first gain element having means for receiving an input, means for providing an output, and means for receiving a feedback signal; a second gain element having means for receiving an input and means for providing an output; an impedance having a first lead connected to the feedback signal receiving means and a second lead connected to the input receiving means of the second gain element; and a switch having a first state for connecting the output of the first gain element to the first lead of the impedance and having a second state for connecting the output of the first gain element to the second lead of the impedance, as a programmable gain amplifier, the method comprising the steps of:

selecting one of the first and second states for the switch;

setting the switch in the selected state;

applying a continuous AC input signal to the input of the first gain element; and

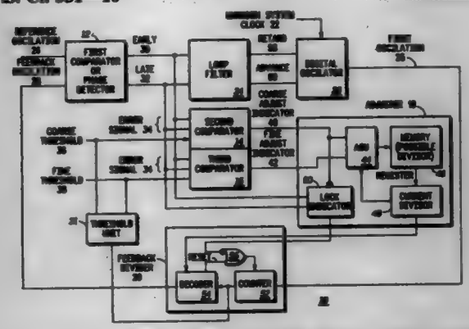
obtaining a continuous AC signal, which is a function of the input signal, from the output of the second gain element.

5,486,792

METHOD AND APPARATUS FOR CALCULATING A DIVIDER IN A DIGITAL PHASE LOCK LOOP

James W. Girardeau, Jr., Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 6, 1995, Ser. No. 399,006
Int. Cl.[6] H03L *7/08;7/18*
U.S. Cl. 331—10 **20 Claims**



1. A method for determining a feedback divider ratio in a phase lock loop from an unknown reference clock, the method comprising the steps of:

(a) upon a triggering event, comparing a reference oscillation with a feedback oscillation to produce an error signal;

(b) comparing the error signal with a coarse threshold; and

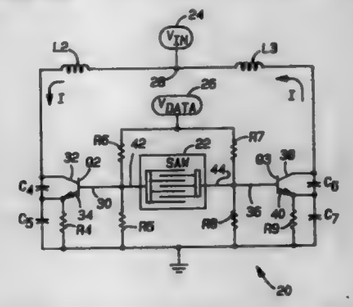
(c) when the error signal compares unfavorably to the coarse threshold, providing a coarse divisor adjustment to a feedback divider.

5,486,793

BALANCED RF OSCILLATOR AND TRANSMITTER

John P. Hill, Westland, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Nov. 21, 1994, Ser. No. 342,721
Int. Cl.[6] H03B *5/36;* **H04L** *27/04*
U.S. Cl. 331—56 **18 Claims**



17. A method of generating and transmitting an oscillating RF signal comprising:

producing a resonance signal in a series tank input circuit;

generating an oscillating current signal in response to the resonance signal being applied to a first amplifier and a second amplifier;

applying the oscillating current signal to a first output tank so as to radiate first energy;

applying the oscillating current signal to a second output tank so as to radiate second energy; and

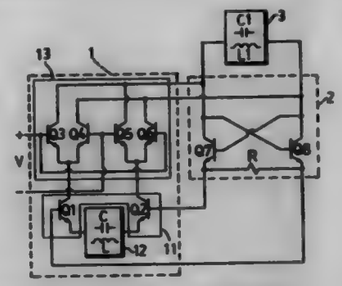
summing the first and second radiating energy from the first and second output tank so as to produce a summed radiating output.

5,486,794

VARIABLE FREQUENCY LC OSCILLATOR USING VARIABLE IMPEDANCE AND NEGATIVE IMPEDANCE CIRCUITS

Jieh-Tsong Wu, Taipei, and Wei-Zen Shen, Tou-Liu, both of, Taiwan, Prov. of China, assignors to National Science Council of R.O.C., Taipei, Taiwan, Prov. of China

Filed Dec. 15, 1994, Ser. No. 356,861
Int. Cl.[6] H03B *5/12;7/06*
U.S. Cl. 331—115 **15 Claims**



1. A variable frequency oscillator, comprising:

a variable impedance circuit having an input terminal pair, an output terminal pair and a control input pair for receiving a control voltage to vary impedance of said variable impedance circuit;

a reactive load connected to said output terminal pair of said variable impedance circuit, said variable impedance circuit being a capacitive impedance when said reactive load is an inductive load and being an inductive impedance when said reactive load is a capacitive load; and

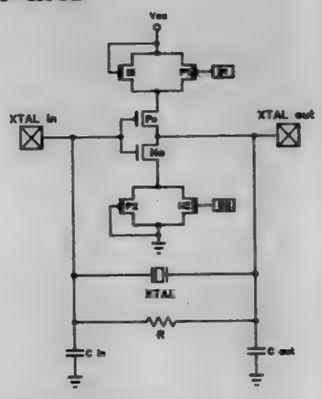
a negative impedance circuit having an output terminal pair connected to said output terminal pair of said variable impedance circuit and an input terminal pair connected to said input terminal pair of said variable impedance circuit, said negative impedance circuit serving as a positive feedback path for said variable impedance circuit.

5,486,795

LOW POWER CRYSTAL OSCILLATOR

John R. Spence, Villa Park; Rajiv Gupta, Brea, and Mingming Zhang, Alhambra, all of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Apr. 22, 1993, Ser. No. 51,134
Int. Cl.[6] H03B *5/06;5/36*
U.S. Cl. 331—116 FE **8 Claims**



1. A Pierce oscillator comprising:

(a) an inverter and a crystal in parallel;

(b) a voltage source;

(c) a load and a first switch in parallel between the voltage source and the inverter, the load comprising an NFET with its gate wired to its source, and the first switch comprising a PFET;

(d) means for enabling the first switch during power-up and for thereafter disabling the first switch.

5,486,796

OSCILLATOR CIRCUIT FOR RECEIVING A WIDE FREQUENCY BAND SIGNAL

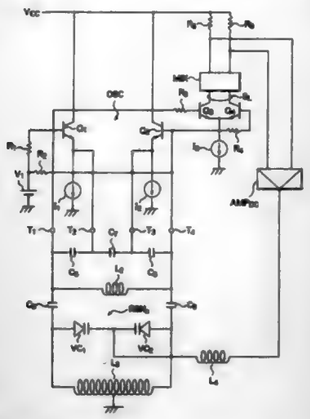
Nobuyuki Ishikawa, Kanagawa, and Tadashi Imai, Saitama, both of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 8, 1994, Ser. No. 354,836

Claims priority, application Japan, Dec. 20, 1993, 5-320252

Int. Cl.[6] H03B *5/12;* **H03D** *3/00;* **H03L** *7/099*

U.S. Cl. 331—117 R **13 Claims**



1. An oscillator comprising:

a differential type amplifier formed by first and second transistors;

a resonance circuit, output terminals thereof being connected to bases of said first and second transistors;

a first inductive element directly connected between said bases of said first and second transistors; and

a second inductive element connected to said resonance circuit in parallel, a point dividing inductance thereof into substantially two equal values being grounded.

5,486,797

INTEGRATED PORT SELECTION CIRCUIT FOR HIGH FREQUENCY SIGNAL

Tomohiro Suzuki, Chiba, Japan, assignor to Uniden Corporation, Chiba, Japan

Filed Nov. 8, 1994, Ser. No. 337,816

Claims priority, application Japan, Aug. 4, 1994, 6-183452

Int. Cl.[6] H01P *1/15*

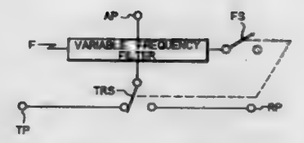
U.S. Cl. 333—104 **8 Claims**

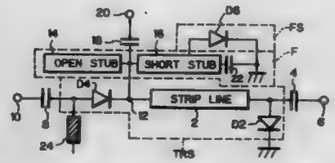
1. A port selection circuit for selectively connecting any one of first to n-th ports to an (n+1)-th port, where n is an integer larger than 1, first to n-th frequencies respectively assigned to said first to n-th ports being different from each other, said circuit comprising:

first to n-th switches each including one end connected to a corresponding one of said first to n-th ports and the other end connected to a common junction point;

a variable frequency filter which is connected between said common junction point and said (n+1)-th port and is settable to a frequency characteristic permitting any one of said first to n-th frequencies to pass; and

means responsive to the operation of any one of said first to n-th switches for causing said variable frequency filter to set to a





frequency characteristic permitting a frequency assigned to the port corresponding to the operated switch to pass.

5,486,798

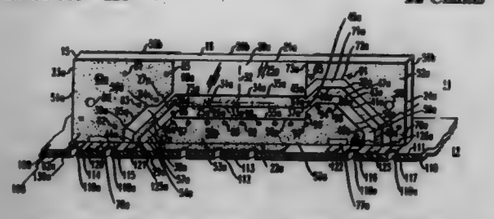
MULTIPLANAR HYBRID COUPLER

William K. Veltschegger, Pickerington, Ohio, assignor to AT&T IPM Corp., Coral Gables, Fla.

Continuation-in-part of Ser. No. 206,996, Mar. 7, 1994, abandoned. This application Dec. 7, 1994, Ser. No. 350,600

Int. Cl.[6] H01P *5/18*

U.S. Cl. 333—116 **22 Claims**



1. A microwave coupler device comprising: a horizontally and vertically extending dielectric coupler board having a longitudinally horizontal bottom margin, thickness in the transversely horizontal dimension, and front and back surfaces separated by said thickness, front and back flat elongated metallic conductors on said front and back surfaces and respectively comprising front and back central strips centrally located on said board and registering with each other through said board to be broadside coupled with each other, said strips each extending longitudinally between opposite ends thereof which are left and right ends in the front-to-back traverse direction, said front and back conductors further comprising: two front leads in said front conductor which are left and right leads having junctions with, respectively, said left and right ends of said front strip, and two back leads in said back conductor which are left and right leads having junctions with, respectively, said left and right ends of said back strip, said two front leads and two back leads having, respectively, two front and two back terminations extending downwardly to lower ends thereof constituting respective ports disposed on said board's front and back surfaces at said bottom margin, the two ports at said margin on each of the front and back surfaces of said board being longitudinally spaced at said bottom margin from all the other of said ports, said front and back conductors having overall lengths extending from one to the other of the two ports constituting respective pairs thereof on, respectively, said front surface and said back surface, and said device further comprising: a plurality of front metallic ground plane regions on said front surface and spaced thereon from, respectively, said front leads and said front strip by front lead-bordering gaps on either side of each of said front leads, and by a front strip-bordering gap below said front strip, and a plurality of back metallic ground plane regions on said back surface and spaced thereon from, respectively, said back leads and said back strip by back lead-bordering gaps on either side of each of said back leads, and by a back strip-bordering gap below said back strip, said front ground plane regions and back ground plane regions having

respective terminations on, respectively, said front surface and back surface which are disposed at said bottom margin to each be longitudinally spaced at said margin from the other and from each of said downwardly extending terminations of the two leads on that surface, said flat conductors and adjacent portions of said ground plane regions providing transmission lines, inclusive of the leads and strip in each such conductor, for conveyance of microwaves between the ports at the opposite ends of such conductors, and said leads and ground plane regions on each of said surfaces being mutually disposed so that all said leads over at least most of their lengths are non-overlapping through said board with any other lead while being overlapping through said board with portions of ground plane regions on the opposite side of said board.

5,486,799

STRIP LINE FILTER AND DUPLEXER FILTER USING THE SAME

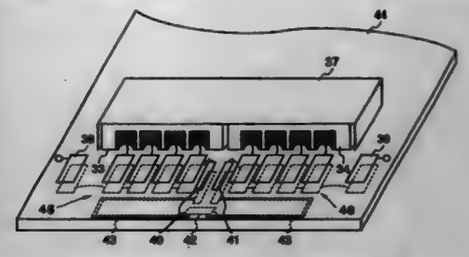
Tomokazu Komazaki; Katsuhiko Gunji; Kazushige Noguchi, and Kunihiro Tanoie, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 56,626, May 4, 1993, abandoned. This application Oct. 20, 1994, Ser. No. 326,368

Claims priority, application Japan, May 8, 1992, 4-116159

Int. Cl.[6] H01P *5/12;1/202;1/203*

U.S. Cl. 333—134 **22 Claims**



15. A duplexer filter, comprising: a transmitting filter and a receiving filter, each comprising a strip line filter, including

a rectangular box-shaped, dielectric block having opposite side faces, opposite front and back faces, and opposite top and bottom faces, said block having a plurality of parallel grooves, formed with a predetermined spacing therebetween and extending from said top face to said bottom face,

an outer conductor formed of a thin film conductive material, covering said side faces, said back face, and said bottom face,

a plurality of resonators, each formed of a thin film of conductive material and covering the respective surfaces of said grooves, each to said resonators being connected to said outer conductor,

a substrate, disposed in parallel to one face of said dielectric block, and

a plurality of capacitors, each having a pair of opposing electrodes formed on said substrate, said capacitors being positioned next to each other and connected to respective ones of said resonators, said plurality of capacitors including a first capacitor having one side connected to a first one of said resonators, a second capacitor having one side connected to a last one of said resonators, and a third capacitor connected between the other side of one of said first and second capacitors and one of the resonators adjacent to the resonator to which the one side of said one of said first and second capacitors is connected; and

a separating circuit connected to said transmitting and receiving filters so as to convey a transmit signal from said transmitting filter to an antenna and to convey a receive signal from the antenna to said receiving filter, said separate circuit including a substrate and circuitry thereon, formed by a strip line; wherein the substrates of said transmitting filter and said receiving filter are disposed adjacent to said substrate of said separating circuit.

5,486,800

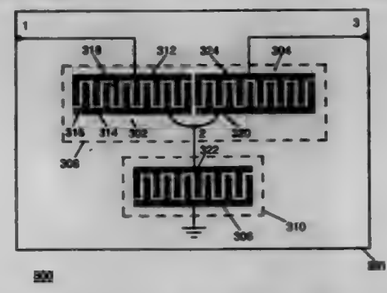
SURFACE ACOUSTIC WAVE DEVICE

Roger A. Davenport, Ft. Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 29, 1994, Ser. No. 314,835

Int. Cl.[6] H03H *9/64*

U.S. Cl. 333—193 **20 Claims**



1. A surface acoustic wave (SAW) device operating over a passband having a center frequeacy, comprising:

a piezoelectric substrate having at least two acoustic tracks;

at least two interdigital transducers located on one acoustic track, operating at resonance at the center frequency;

at least one interdigital transducer located on a second acoustic track, operating at anti resonance at the center frequency;

the at least two interdigital transducers on the one acoustic track are acoustically and electrically coupled and the at least one interdigital transducer on the second acoustic track is electrically coupled to the at least two interdigital transducers on the one acoustic track; and

the at least two interdigital transducers on the one acoustic track are tuned for resonance at the center frequency using independently adjustable electrical and acoustic coupling while the at least one interdigital shunt transducer on the second acoustic track is tuned for anti resonance at the center frequency using independently controlled electrical coupling.

5,486,801

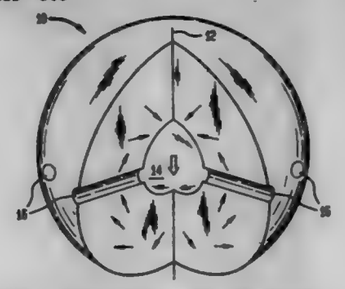
SPHERICAL MAGNET STRUCTURE FOR USE IN SYNCHROTRON RADIATION SOURCE

Herbert A. Leupold, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 5, 1994, Ser. No. 349,221

Int. Cl.[6] H01F *7/02*

U.S. Cl. 335—306 **6 Claims**



1. A source of synchrotron radiation, comprising:

a sphere fabricated of permanently magnetic material with a cavity centrally disposed therein and passage means disposed equatorially thereabout for entering and exiting the cavity, the sphere being magnetized to pass a magnetic field through the cavity in parallel with a magnetic axis which extends between poles thereon; and

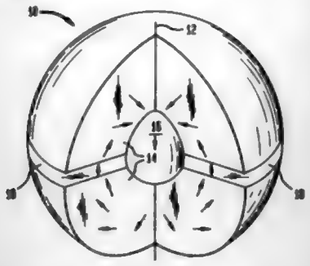
means for introducing charged particles through the passage means to a plane oriented perpendicularly across the magnetic axis within the cavity wherein such particles are influenced by the magnetic field to travel in a circular path around the magnetic axis and thereby generate synchrotron radiation which emits from the cavity through the passage means.

5,486,802

SPHERICAL MAGNET STRUCTURE AND USE THEREOF IN SYNCHROTRON RADIATION SOURCE

Herbert A. Leupold, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 5, 1994, Ser. No. 349,222
Int. Cl.[6] H01F 7/02
U.S. Cl. 335—306 **10 Claims**



1. A magnet structure, comprising:

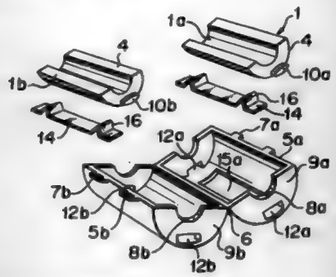
a spherical shell fabricated of active magnetic material with an equatorial gap disposed thereinto about the entire periphery thereof and having a solid core fabricated of a second magnetic material centrally disposed therein, the shell being magnetized to sustain a magnetic field across the gap in a direction parallel with a magnetic axis which extends between poles thereon and through the core.

5,486,803

SIGNAL DISCRIMINATOR

Osamu Igarashi, Yokohama; Akira Naiton, Sagamihara; Hikohiro Tougane, Sagamihara; Hironobu Tsutsumi, Sagamihara, and Toshisa Kudou, Sagamihara, all of, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, and Nikko Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 816,570, Jan. 3, 1992, abandoned.
This application Mar. 7, 1994, Ser. No. 206,278
Claims priority, application Japan, Jan. 24, 1991, 3-006836; Jan. 24, 1991, 3-006837; Jul. 1, 1991, 3-160330
Int. Cl.[6] H01F 17/06;27/02;27/26
U.S. Cl. 336—92 **3 Claims**



1. A signal discriminator comprising:

a plurality of divided magnetic cores, each having an engaging protrusion;

a resin case formed of a plurality of sections, each section having a recess for engagingly accommodating a respective engaging protrusion from a corresponding one of the plurality of divided magnet cores, wherein the engaging protrusions and the recesses are respectively formed at both ends of each of the plurality of divided magnetic cores and at both ends of each of the plurality of sections of the resin case; and

a plurality of press-contacting means formed of a resilient material, wherein a respective one of the plurality of press-contacting means is arranged between each of the plurality of divided magnetic cores and the corresponding one of the plurality of sections of the resin case, and wherein each of the plurality of press-contacting means comprise a unitary resilient member having at least two protrusions;

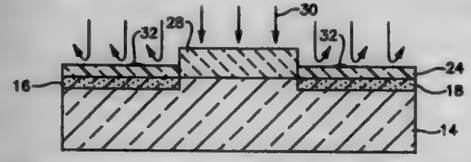
a cut-out portion formed in each section of the resin case at a position where the respective of the plurality of press-contacting means is arranged, a portion of the respective of the plurality of press-contacting means extending beyond the cut out portion such that each end of the plurality of press-contacting means contacts a respective end of the plurality of sections of the resin case.

5,486,884

INTEGRATED MAGNETORESISTIVE SENSOR FABRICATION METHOD AND APPARATUS

Marko Sokolich, Los Angeles; Hiroyuki Yamasaki, Palos Verdes Estates, and Huai-Tung Yang, Torrance, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 3, 1993, Ser. No. 161,021
Int. Cl.[6] H01L 43/00
U.S. Cl. 338—32 R **8 Claims**



1. A method of forming a magnetoresistor, comprising the steps of:

(a) providing a semiconductor substrate;

(b) forming a mask on said substrate, said mask having a window at the desired location of said magnetoresistor;

(c) depositing a layer of a magnetoresistive material on said substrate within said window wherein said magnetoresistive material is substantially non-adherent to said mask and said magnetoresistive material is deposited to a predetermined thickness; and

(d) removing said mask to thereby form said magnetoresistor.

5,486,805

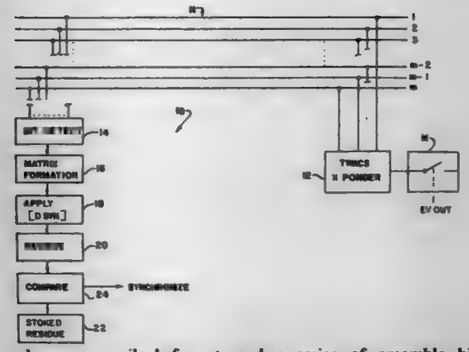
METHOD OF RECEIVING UNSOLICITED MESSAGES ON AN ELECTRICAL DISTRIBUTION NETWORK COMMUNICATIONS SYSTEM

Sloe T. Mak, Chesterfield, Mo., assignor to Distribution Control Systems, Inc., St. Louis, Mo.

Filed Jul. 6, 1993, Ser. No. 86,085
Int. Cl.[6] H04M 11/04; G08B 1/08; H04Q 1/30
U.S. Cl. 340—310.06 **12 Claims**

1. In a two-way communication system used with an electrical power distribution network, the communication system providing both outbound and inbound messages to and from remote network locations, a method of detecting and decoding unsolicited inbound messages from the remote locations comprising:

forming an unsolicited message at a remote location in response to the occurrence of a time independent event at that location, each message including a series of message bits each of which



has a prescribed format, and a series of preamble bits arranged in a predetermined bit pattern at the beginning of the message;

transmitting the unsolicited message over any one of a plurality of selected communication channels normally used for two-way communications, said channels being selected for their relative immunity to noise;

receiving the unsolicited message at a receiving site, receiving the message including a receiver of the system being out of synchronization with the message, receipt of the message including first receiving the bits comprising the preamble, and then the bits comprising the message; and,

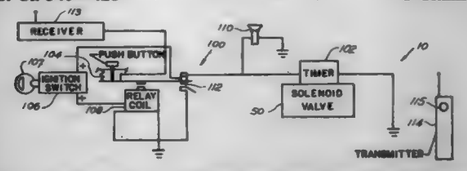
detecting the bits comprising the preamble as an indication an unsolicited message is being received, detecting the bits including forming a matrix comprising a plurality of values derived from the detection of bits comprising the unsolicited message, the bit values within the matrix being arbitrarily set such that bits having a zero value are set at zero, bits having a value between zero and a first predetermined value are set at zero, bits having a value greater than the first predetermined value are set a second predetermined value, and bits having a value less than a fourth predetermined value are set at a fifth predetermined value thereby to compensate for the effects of noise on the power distribution network.

5,486,806

ANTI-HIJACKING AND THEFT PREVENTION DEVICE FOR MOTOR VEHICLES

Harold A. Firari, N6604 Shorewood Hills Rd., Lake Mills, Wis. 53551, and John A. Werner, 11602 Watertown Plank Rd., Wauwatosa, Wis. 53226

Filed Nov. 9, 1994, Ser. No. 336,815
Int. Cl.[6] B60R 25/10
U.S. Cl. 340—426 **8 Claims**



7. An anti-hijacking and theft prevention device for a motor vehicle having a fuel line and ignition switch, the device comprising:

a valve installed on the fuel line, the valve having an orifice formed therethrough;

a solenoid for moving the valve from an open position to a closed position, the solenoid connected to the valve;

a control means for controlling the solenoid connected to the solenoid and to the ignition switch;

the control means including a deactivating switch;

the control means maintaining the valve in the open position for a predetermined period of time after the ignition switch is activated;

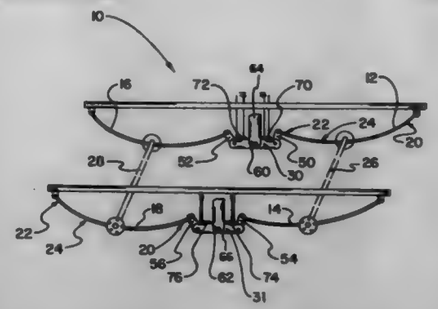
the control means activating the valve into the closed position at the end of the predetermined period of time provided the deactivating switch has not been activated.

5,486,807

LOW OR FLAT TIRE WARNING SYSTEM

Ray M. Price, 7015 N. Greenwich Ave., Portland, Oreg. 97217

Filed Mar. 14, 1994, Ser. No. 212,125
Int. Cl.[6] B60C 23/00
U.S. Cl. 340—443 **1 Claim**



1. A new and improved tire pressure warning system for use under a frame of a tandem axle vehicle comprising:

a left front leaf spring, a right front leaf spring, a left rear leaf spring, and a right rear leaf spring, each leaf spring having a front end, a rear end, and an intermediate portion therebetween, the intermediate portions of the left and right front leaf springs adapted to be aligned with and coupled to a front axle having inflatable tires disposed thereon, the intermediate portions of the left and right rear leaf springs adapted to be aligned with and coupled to a rear axle having inflatable tires disposed thereon, the front ends of the right front and left front leaf springs and the rear ends of the right rear and left rear leaf springs adapted to be offset and coupled to the frame of a tandem axle vehicle;

a left and a right equalizer bar, each equalizer bar having an elongated and generally rectangular shape and an upper surface, a lower surface, a leading edge, a trailing edge, a central axis defined between the leading and trailing edges, and a cross axis defined perpendicular to the central axis, the left equalizer bar disposed between and offset below the rear end of the left front leaf spring and front end of the left rear leaf spring, the right equalizer bar disposed between and offset below the rear end of the right front leaf spring and the front end of the right rear leaf spring, the leading edge of the left and right equalizer bars facing the left front and right front leaf springs, respectively, and the trailing edge of the left and right equalizer bars facing the left rear and right rear leaf springs, respectively;

a left front link, a left rear link, a right front link, and a right rear link, the left front link pivotally coupled between the rear end of left front leaf spring and the left equalizer bar near the leading edge thereof, the left rear link pivotally coupled between the front end of left rear leaf spring and the left equalizer bar near the trailing edge thereof, the right front link pivotally coupled between the rear end of right front leaf spring and the right equalizer bar near the leading edge thereof, the right rear link pivotally coupled between the front end of right rear leaf spring and the right equalizer bar near the trailing edge thereof, the links enabling the equalizer bars to rotate about their central and cross axes when unequal load conditions exist on the leaf springs;

a left and a right support bar, each bar having an upper end and a lower end, the upper end of each bar adapted to be coupled to the frame of a vehicle, the lower end of the left support bar coupled to the left equalizer bar between the left front link and the left rear link, the lower end of the right support bar coupled to the right equalizer bar between the right front link and right rear link;

a left front mercury switch, a left rear mercury switch, a right front mercury switch, and a right rear mercury switch, each mercury switch further comprising an elongated, hollow, and sealed container having a first end and a second end, liquid mercury disposed within the container to flow between the first end and the second end thereof when tilted, and a terminal coupled to the second end to contact the liquid mercury, whereby when the mercury is contained in the first end, the mercury switch is disengaged, and when the mercury is contained in second end, the mercury switch is engaged, the left front mercury switch disposed upon the upper surface of the left equalizer bar with the second end of the switch positioned adjacent to the leading edge, the left rear mercury switch disposed upon the upper surface of the left equalizer bar with the second end of the switch positioned adjacent to the trailing edge, the right front mercury switch disposed upon the upper surface of the right equalizer bar with the second end of the switch positioned adjacent to the leading edge, and the right rear mercury switch disposed upon the upper surface of the right equalizer bar with the second end of the switch positioned adjacent to the trailing edge;

a plurality of wires adapted to carry electrical power from an external power source;

an upstanding planar rectangular indicator panel having an upper left corner, a lower left corner, an upper right corner, and a lower right corner, the indicator panel adapted to be coupled to the dashboard within a driver's compartment of a vehicle, the indicator panel further having an indicator circuit coupled thereto, the indicator circuit adapted to be coupled to an external power source, the indicator circuit further comprising:

a left front light coupled to the upper left corner of the indicator panel, a left rear light coupled to the lower left corner of the indicator panel, a right front light coupled to the upper right corner of the indicator panel, a right rear light coupled to the lower right corner of the indicator panel, and a central light coupled to the center of the indicator panel, the left front light electrically connected in series to the left front mercury switch with a wire, the left rear light electrically connected in series to the left rear mercury switch with a wire, the right front light electrically connected in series to the right front mercury switch with a wire, the right rear light electrically connected in series to the rear mercury switch with a wire, the central light electrically connected in parallel to the left front light with a wire, the left rear light with a wire, the right front light with a wire, and the right rear light with a wire, the left front light, the left rear light, the right front light, and the right rear light adapted to provide an indication of lost pressure in a given tire, the central light adapted to provide a indication of lost pressure in any of the tires, and

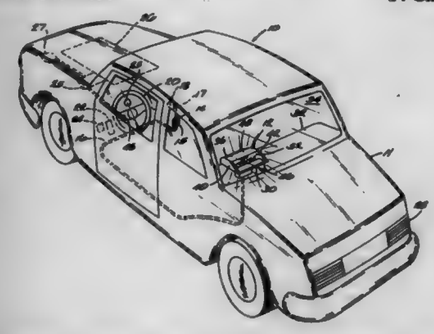
a controller switch operable in one orientation to energize the indicator circuit and in another orientation to de-energize the indicator circuit, whereby when the tire pressure warning system is coupled to a vehicle and energized, and a tire on the vehicle loses pressure, the equalizer bar rotates about its central and cross axes due to the unequal load conditions on the tires, causing the mercury switch located in the direction of equalizer bar rotation to engage and activate the central light and one of the lights positioned in one of the corners on the indicator panel.

5,486,806

EXTERNAL CRUISE CONTROL WARNING LIGHT

Benjamin J. Nejdl, Palatine, Ill., assignor to Safe-Lite, Inc., Palatine, Ill.

Filed Apr. 19, 1993, Ser. No. 49,104
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 340—464 **14 Claims**



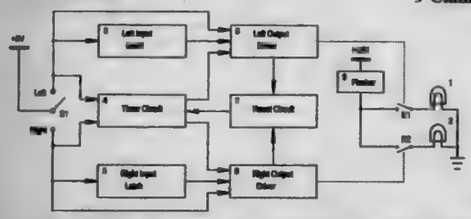
1. A kit for a vehicle having a rear window, an internal combustion engine, an operator, an electrical system and means for the operator to maintain the speed of the vehicle fixed at any operator selectable speed, said kit comprising a light mounted immediately in front of said rear window, said light having lettering indicating said speed maintenance means is operable when said light is activated, an electric cable connected to said light, and operator controllable means for connecting the electric cable to said vehicle electrical system to create an electric circuit to activate said light, said operator controllable means comprising electrical relay means, said electrical relay means comprising means for sensing said speed maintenance means is activated and switch means for connecting said light to said electrical system, whereby when said light is activated by connecting said electric cable to said vehicle electrical system persons outside of the vehicle are advised the speed of the vehicle is being maintained at a fixed rate.

5,486,809

LEVER-TAP-ACTIVATED TIMED TURN SIGNALING

Ben Wadlington, Jr., Rt. 2, Box 913-A, Adkins, Tex. 78101

Filed Jun. 6, 1994, Ser. No. 254,518
Int. Cl.[6] B60Q *1/40*
U.S. Cl. 340—477 **9 Claims**



1. An apparatus for providing momentary-activation-defined durations of motor vehicle turn signaling in a turn signal system having a means for selecting either left or right, and either momentary or latched signal activations, said apparatus comprising:

means for detecting said momentary activations of said selecting means of said turn signal system;

means for counting and maintaining a count total of said momentary activations;

means for timing successive pre-determined lengths of time, said timing means becoming operative when said count total is non-zero, said timing means decrementing said count total upon a passage of each successive pre-determined length of time;

means for detecting a right or left direction of said momentary activations;

a first switching means for conducting pulsed battery current to a right signal lamp, said first switching means conducting said pulsed current when said selecting means of said turn signal system is in a right activation position, said first switching means also conducting said pulsed current when said means for timing successive pre-determined lengths of time is operative and said direction detecting means indicates a right direction for a last momentary activation;

a second switching means for conducting pulsed battery current to a left signal lamp, said second switching means conducting said pulsed current when said selecting means of said turn signal system is in a left activation position, said second switching means also conducting said pulsed current when said means for timing successive pre-determined lengths of time is operative and said direction detecting means indicates a left direction for a last momentary activation;

means for blocking a count of a momentary activation when said timing means is operative and said means for detecting a right or left direction of said activation detects a direction different from a last direction detected;

means for deactivating said means for timing and for resetting said count total to zero when said selecting means of said turn signal system is latched or momentarily activated in a direction different from a last direction detected by said direction detecting means; and

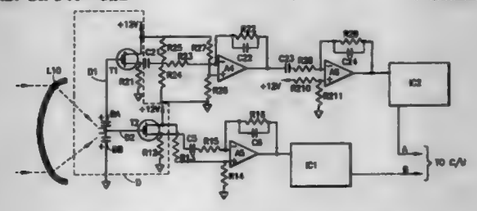
means for generating an audible signal upon each count of a momentary activation.

5,486,810

INFRARED DETECTOR FOR DETECTING MOTION AND FIRE AND AN ALARM SYSTEM INCLUDING THE SAME

Frank Schwarz, 156 Thunderhill Dr., Stamford, Conn. 06902

Division of Ser. No. 12,432, Feb. 2, 1993. This application Dec. 13, 1994, Ser. No. 355,060
Int. Cl.[6] G08B *19/00;13/18;17/12*
U.S. Cl. 340—521 **7 Claims**



1. A detector which detects motion and changes in ambient temperature comprising:

a) a first passive infrared sensor and a second passive sensor, said first and second passive sensors coupled to each other in phase opposition and providing a first output;

b) first circuit means coupled to said first output for providing an intrusion alarm when infrared radiation detected by said first passive infrared detector differs from said second passive infrared detector according to first criteria; and

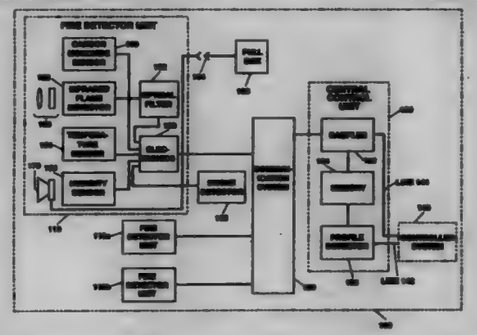
c) second circuit means coupled to said first passive infrared sensor at a common connection between said first and second passive infrared sensors for providing an ambient temperature change alarm when said first passive infrared sensor detects a change in infrared radiation that exceeds a predetermined amount over a predetermined time.

5,486,811

FIRE DETECTION AND EXTINGUISHMENT SYSTEM

John P. Wehrle, Greenbelt, Md.; Ernest A. Dahl, Ventura, Calif., and James R. Lagar, Annapolis, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 9, 1994, Ser. No. 193,984
Int. Cl.[6] G08B *19/00*
U.S. Cl. 340—522 **9 Claims**



1. A fire detection and extinguishment system for detecting and extinguishing early stage fires in a protected space, comprising:

at least one fire detector unit including at least a carbon monoxide sensor and a radiation sensitive flame detector, said at least one fire detector unit associated with a localized portion of a protected space;

a central control unit including at least a sampler for periodically receiving data measured by at least said carbon monoxide sensor and said radiation sensitive flame detector, a memory for storing said received data and a profile detector responsive to said stored data, said memory storing therein said received data in the form of time profiles of variations of said data measured over a period of time by at least said carbon monoxide sensor and said radiation sensitive flame detector, said memory further having stored therein known data indicative of early stages of a fire, said known data corresponding to said data measured by at least said carbon monoxide sensor and said radiation sensitive flame detector, wherein said profile detector compares said measured data with said corresponding known data;

a communication system for communicating between said at least one fire detector unit and said central control unit; and

a controlled fire extinguishment system responsive to said central control unit, wherein said controlled fire extinguishment system includes at least one localized fine water mist supply and distribution system functioning to absorb heat produced by early stage fires, a central water supply for supplying pressurized water, at least one water supply main for transporting said pressurized water from said central water supply to said at least one localized fine water mist supply and distribution system, and at least one valve responsive to said central control unit for activating a flow of said pressurized water to said at least one localized fine water mist supply and distribution system, wherein said flow of preasurized water is supplied at a pressure of approximately 250 psi, said at least one localized fine water mist supply and distribution system responsive to one or more of said at least one fire detector unit and positioned within a localized portion of a protected space associated with said one or more of said at least one fire detector unit, and further said at least one localized fine water mist supply and distribution system including a plurality of distribution branches, a plurality of water mist nozzles mounted on each of said distribution branches, a supply riser and a distribution manifold for providing said pressurized water to said plurality of distribution branches, said nozzles being spaced at approximately 16 inch intervals on said distribution branches, said distribution branches being spaced at approximately four foot intervals along said distribution manifold, wherein said at least one fine water mist supply and

distribution system provides a controlled distribution of fine water mist comprising water particles having diameters of about 100 microns at a water distribution density of about 0.05 gallons per minute for each square foot of protected area within said localized portion of a protected space associated with said at least one fire detector unit,

wherein upon said profile detector detecting a correlation between said measured data and said corresponding known data said central control unit activates said localized fine water mist supply and distribution system for providing said controlled distribution of fine water mist, said controlled distribution of fine water mist providing a large surface area of water particles for transferring heat out of early stage fires such that fire progression is halted.

5,486,812

SECURITY ARRANGEMENT

Robert E. Todd, Blythe, Great Britain, assignor to Cedardell Limited, Hexham, United Kingdom

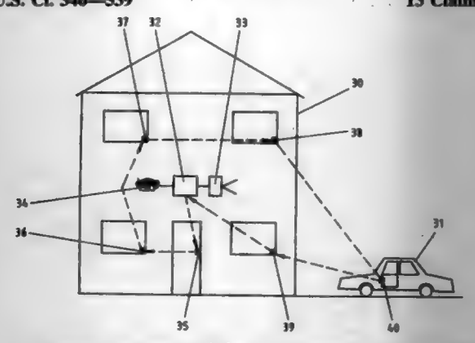
PCT No. PCT/GB91/00160, § 371 Date Oct. 26, 1992, § 102(e) Date Oct. 26, 1992, PCT Pub. No. WO91/14245, PCT Pub. Date Sep. 19, 1991

PCT Filed Feb. 4, 1991, Ser. No. 927,651

Claims priority, application United Kingdom, Mar. 3, 1990, 9004828; Jan. 18, 1990, 9022698

Int. Cl.[6] G08B *1/08*

U.S. Cl. 340—539 **13 Claims**



1. A building security arrangement comprising a control module, an alarm and a multiplicity of stations, at least one station including a lock, wherein each lock is arranged to be actuated upon receipt of a control signal from the control module and wherein said stations include a detector adapted to provide a status signal indicative of a status of the station, a radio frequency transceiver for transmitting and receiving control signals from the control module, and a control signal modifier for modifying the control signal received by the station, the control module being arranged to actuate the alarm upon detection of a predetermined status of a station, whereby the stations are successively interrogated by the control module, and wherein at least one station is arranged to receive a control signal from a first adjacent station, to modify said control signal to indicate the status of the station, and to transmit the control signal to a second adjacent station.

5,486,813

Patent Not Issued For This Number

5,486,814

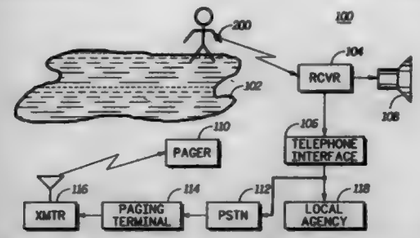
BABY POOL GUARD ALARM

Sandra L. Quinones, 111 Canterbury Dr. W., West Palm Beach, Fla. 33407-1510

Filed Oct. 11, 1994, Ser. No. 321,144

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—573 **5 Claims**



1. A fail safe alarm control device for detecting entry into body of water, including a swimming pool, the alarm control device being powered by a power source and the alarm control device comprising:

a device body;

means for attaching said device body to a portion of a human body;

an underwater sensor disposed in said device body for sensing a water condition when said device body is submerged in water;

a radio transmitter disposed within said device body, said radio transmitter receiving power from the power source to maintain a condition wherein said radio transmitter is normally transmitting a coded signal, unless said radio transmitter is deactivated in response to detection of a water condition by said underwater sensor, or unless said radio transmitter is deactivated in response to failure of the power source;

a receiver for receiving said coded signal from said radio transmitter; and

an alarm means that is activated in response to interruption in reception of said coded transmission from said radio transmitter to said receiver, whereby a failure in reception of said coded transmission is automatically detected.

5,486,815

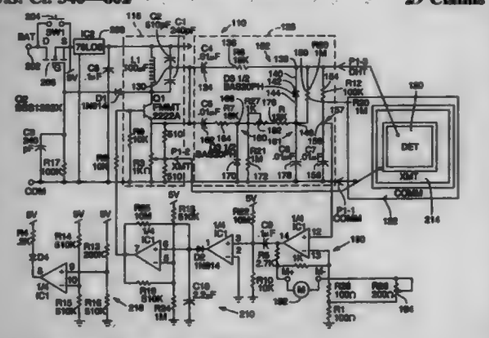
MOISTURE DETECTION CIRCUIT

Edward D. Wagner, Rogue River, Oreg., assignor to Wagner Electronic Products, Inc., Rogue River, Oreg.

Filed Jan. 26, 1993, Ser. No. 9,274

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—602 **29 Claims**



1. A moisture detector comprising:

an oscillator having an AC signal output;

a common electrode;

a detector electrode for placing in proximity to an object such that an impedance between the detector electrode and the common electrode is related to a moisture content of the object;

a first capacitor and a first resistor connected in series between the AC signal output of the oscillator and the detector electrode for driving the detector electrode with an AC signal which is affected by the impedance between the detector electrode and the common electrode such that a voltage level of the AC signal is thereby related to the moisture content of the object; and

a first diode connected between the detector electrode and a reference voltage node, whereby the voltage at the detector electrode is level shifted relative to a reference voltage at the reference voltage node.

5,486,816

FIRE DETECTOR HAVING OPTIC BASE CLAMPING OPTIC ELEMENTS TO A CIRCUIT BOARD

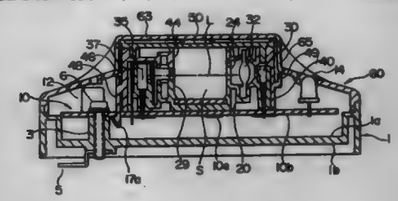
Yasuo Ariga, and Eiji Hirooka, both of Tokyo, Japan, assignors to Nohmi Bosai Ltd., Tokyo, Japan

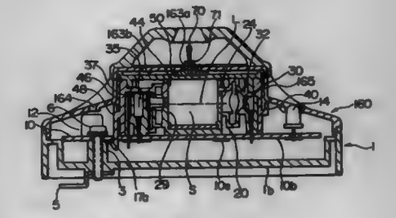
Filed Apr. 23, 1993, Ser. No. 51,689

Claims priority, application Japan, Apr. 25, 1992, 4-131536; Apr. 25, 1992, 4-131537

Int. Cl.[6] G08B *17/10;23/00;17/00;* **G01N** *15/06*

U.S. Cl. 340—630 **23 Claims**





1. A fire detector, comprising:

a detector body;

a printed circuit board fixed to said detector body, said printed circuit board having a plurality of insertion holes;

an optic base having a plurality of hooks at a lower end thereof and an annular labyrinth defined at an upper end thereof, said hooks being received in said insertion holes of said printed circuit board so as to fix said optic base to the upper surface of said printed circuit board;

an optic part holder mounted upon and directly contacting the upper surface of said printed circuit board, said optic base clamping said optic part holder to the upper surface of said printed circuit board to fix the optic part holder relative to said upper surface;

an optic base cover covering an upper end of said labyrinth of said optic base; and

a light-emitting element and a light-receiving element arranged in a pair on said optic part holder.

5,486,817

COMMUNICATION SYSTEM FOR VEHICLE CONTROL SYSTEM HAVING PRESETTABLE INITIAL STATE

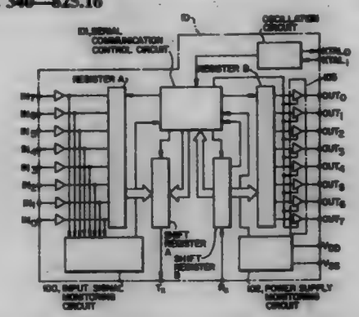
Katsuhiro Ina, Okazaki, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 701,169, May 17, 1991, abandoned. This application Jul. 26, 1993, Ser. No. 96,838

Claims priority, application Japan, May 21, 1990, 2-130526; Apr. 16, 1991, 3-084152

Int. Cl.[6] G05B *23/02*

U.S. Cl. 340—825.16 **8 Claims**



1. A communications system for a vehicle, comprising a sending station and a receiving station which are actuated by receiving an electric power supply from a battery mounted on the vehicle, said sending station and said receiving station being positioned at various places in the vehicle, wherein communication between the sending station and the receiving station is performed via a communication line, said receiving station comprising:

communication means for receiving a communication signal sent from said sending station via said communication line,

outputting means for performing drive control of a plurality of driven means in accordance with said communication signal when the communication signal is received by said communication means, and

continuity control means, provided between said communication means and said outputting means, to electrically connect and disconnect therebetween, for electrically separating said communication means from said outputting means to electrically disconnect therebetween by assuming a high impedance state between a time when supply of electric power supply voltage from said battery to the receiving station is started, until said communication means receives the communication signal from said sending station,

wherein said outputting means performs drive control of said plurality of driven means in a desired initial state independent of said communication signal when connection between said communication means and outputting means is electrically separated by means of said continuity control means.

5,486,818

WIRELESS SWITCH FOR A TELEMETRIC RECEIVER

Erkki Loponen, Mikkola, Finland, assignor to Polar Electro Oy, Kempele, Finland

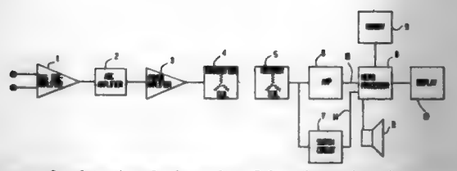
Continuation of Ser. No. 918,052, Jul. 24, 1992, abandoned. This application Nov. 14, 1994, Ser. No. 340,479

Claims priority, application Finland, Jul. 26, 1991, 913599

Int. Cl.[6] G08C *19/06*

U.S. Cl. 340—870.31 **10 Claims**

1. A wireless switch for a telemetric receiver in a pulse meter, wherein the receiver receives a telemetric pulse measuring signal from a transmitter by means of an inductive coupling between the transmitter and the receiver, the wireless switch, comprising:



means for detecting the intensity of the telemetric pulse measuring signal inductively received in the telemetric receiver and for causing a pulse measuring function of the pulse meter to be activated in the receiver at times when the signal intensity exceeds a predetermined threshold value, the activated pulse measuring function being terminated by causing a second telemetric pulse measuring signal having an intensity exceeding said threshold value to occur in the inductance of the receiver at times when the pulse measurement function is active wherein the means for detecting the intensity of the telemetric pulse measuring signal includes the same inductance used by the receiver for the inductive coupling of the transmitter.

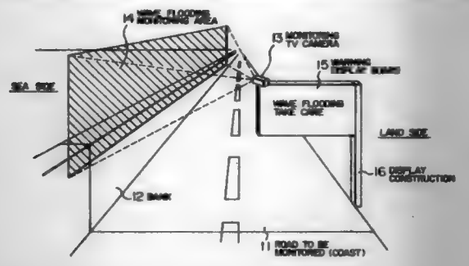
5,486,819

ROAD OBSTACLE MONITORING DEVICE

Ryuji Horie, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 787,952, Nov. 5, 1991, abandoned.
This application May 22, 1995, Ser. No. 447,083
Claims priority, application Japan, Nov. 27, 1990, 2-328665
Int. Cl.[6] G08G *1/09*; H04N *7/18*
U.S. Cl. 340—905 **12 Claims**

1. A system for monitoring selected road sections and for detect-



ing the occurrence of obstacles that occupy said selected road sections, said system comprising:

a road section imaging device for generating image data of a selected road section being monitored, said image data including reference image data of said selected road section having no obstacles and monitored image data of said selected road section when obstacles may be present;

an image processing device communicatively connected to receive said image data from said road section imaging device, said image processing device including means for detecting an obstacle based on detecting a frame difference between said reference image data and monitored image data;

means connected to said image processing device, for measuring physical dimensions of said detected obstacle and for generating an output signal when said physical dimensions of said obstacle exceed predetermined minimum physical dimension data; and

means communicatively connected to receive said output signal from said measuring means, for generating a warning display of said detected obstacle.

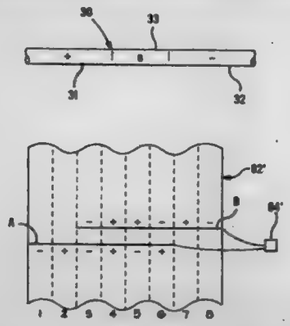
5,486,820

TRAFFIC SENSOR HAVING PIEZOELECTRIC SENSORS WHICH DISTINGUISH LANES

Joseph V. Chatigny, Wayne; Mitchell Thompson, Exton; Peter F. Radice, King of Prussia, and Donald L. Halvorsen, Phoenixville, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Dec. 18, 1992, Ser. No. 992,577
Int. Cl.[6] G08G *1/01*
U.S. Cl. 340—933 **28 Claims**

1. A traffic sensor for sensing the number of vehicles travelling



in each lane of a predetermined portion of a roadway, comprising:

a piezoelectric sensor stretched across a width of said predetermined portion of said roadway, said piezoelectric sensor generating an electrical signal when deflected by a vehicle, generated electrical signal having a first polarity when deflected by a vehicle in a first lane of said roadway and a second polarity when deflected by a vehicle in a second lane of said roadway; and

means for discriminating the polarity of said generated electrical signal and for determining from the respective polarities in which lane of said roadway said piezoelectric sensor has been deflected by one of the vehicles.

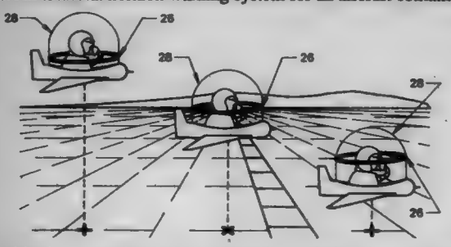
5,486,821

ARTIFICIAL HORIZON ALTITUDE WARNING SYSTEM

David E. Stevens, St. Louis, Mo., and Leonard A. Temme, Pensacola, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 26, 1994, Ser. No. 249,658
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—970 **18 Claims**

1. An artificial horizon warning system for an aircraft containing



an altitude measuring and or ground proximity devices which provides a warning when a controlled flight of the aircraft will result in a collision with the ground, said system comprising:

means for gathering altitude information about said aircraft from said altitude and proximity measuring device and generating an altitude signal;

laser light generating means for producing at least one ray of laser light in a cockpit of said aircraft; and

control means for receiving said altitude signal and for positioning one ray of said light in said cockpit to form an artificial line based on said altitude signal, said artificial line being positioned so as to be disposed along an arcuate length corresponding to the location of an actual horizon as viewed by a pilot of said aircraft wherein said artificial line is disposed at the intersection of said one ray of said light and said cockpit, said one ray of light being defined by a visual horizon, angle, said visual horizon angle being defined by:

$$x = \sin^{-1}\left[\frac{R}{A+R}\right]$$

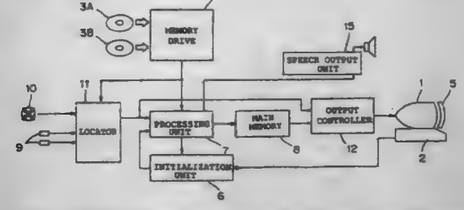
where, x is said visual horizon angle, R is the radius of the earth, and A is the altitude of said aircraft, said visual horizon angle being measured from a line extending from a pilot's eye to the horizon and from said pilot's eye to the center of the earth.

5,486,822

OPTIMUM ROUTE DETERMINATION

Kenji Tenmoku; Takuya Inoue, and Takeo Hashimoto, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 786,843, Nov. 1, 1991, abandoned.
This application May 26, 1994, Ser. No. 250,105
Claims priority, application Japan, Nov. 9, 1990, 2-305017; Nov. 10, 1990, 2-305020
Int. Cl.[6] G08G *1/123*
U.S. Cl. 340—995 **13 Claims**



1. In an optimum route determination apparatus which, according to a destination set by a vehicle operator, reads road map data of an area containing a departure point and that destination out of a road map memory for a road map and which determined an optimum route leading from the departure point to the destination based on the road map data, selection means exterior to said optimum route determination apparatus having previously selected a plurality of specific points, calculation means exterior to said optimum route determination apparatus having previously calculated a plurality of optimum routes which lead from said plurality of specific points to a plurality of destinations, respectively, passing in sequence through specific points and each specific point representing at least one departure point in a respective optimum route, said optimum route determination apparatus comprising:

a route memory having stored therein a route table containing data of said specific points, data of said destinations and data of a plurality of initial routes, one of said initial routes leading from one of said specific points to at least the next specific point in said sequence positioned on one of said optimum routes leading from said one of said specific points to one of said destinations, and not including all specific points comprising the optimum route to a respective destination, wherein said data of said data of said specific points, said data of said destinations and said data of said initial routes are contained in said route table in such a manner that the data of said one of said initial routes is acquired by searching said route table for said one of said specific points and one of said destinations;

initialization means for setting one of said destinations and one of said specific points near to a current location of a vehicle; and

initial route acquisition means for searching said route table for the specific point and the destination set by said initialization means to acquire said data of said initial route,

said initialization means then replacing said one of said specific points with the next specific point, said initial route acquisition means and said initialization means then repeating the searching and replacing operations until one of said optimum routes is constituted by the repeatedly acquired initial route data.

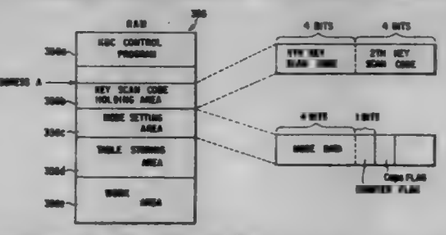
5,486,823

KEYBOARD SYSTEM CAPABLE OF ALLOWING SINGLE-HAND INPUT OPERATION

Wen-Hung Tsai, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 7, 1994, Ser. No. 178,752
Claims priority, application Japan, Jan. 14, 1993, 5-004878
Int. Cl.[6] H03K *17/94*; G06F *3/00*
U.S. Cl. 341—22 **12 Claims**

1. A keyboard system connected to a computer system and



having a plurality of keys, comprising:

generating means for detecting depression of an arbitrary key included in the plurality of keys to generate a key scan code corresponding to the depressed key;

first holding means for holding data having a size twice that of the key scan code generated by said generating means and system scan code supplied to said computer system in correspondence with the key scan code;

second holding means, coupled to said generating means, for holding the key scan code generated by said generating means;

determining means, coupled to said second holding means, for checking whether the key scan code is held in said second holding means;

first control means, coupled to said generating means, for checking in accordance with the key scan code generated by said generating means whether a specific key is depressed and executing a process pre-assigned to the specific key upon determining depression of the specific key; and

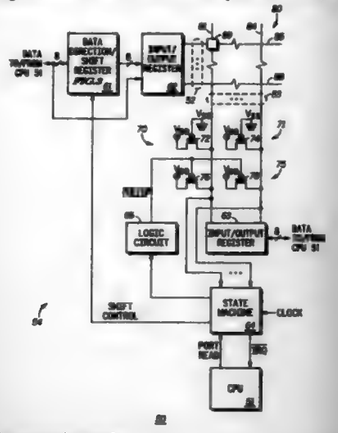
second control means, coupled to said second holding means and said determining means, for, when said determining means determines that the key scan code is already held in said second holding means, and a next key scan code is generated by said generating means, defining, as first data, data having a size twice that of a single key scan code and constituted by the next key scan code generated by said generating means and the key scan code already held in said second holding means, detecting one of the system scan codes, corresponding to the first data stored in said first holding means, and sending the system scan code to said computer system.

5,486,824
DATA PROCESSOR WITH A HARDWARE KEYSCAN CIRCUIT, HARDWARE KEYSCAN CIRCUIT, AND METHOD THEREFOR

Keith E. Kinerk; Hoang K. Quan, and Joseph P. Magliocco, all of Austin, Tex., assignors to Motorola, Inc., Schumburg, Ill.

Filed Oct. 5, 1994, Ser. No. 318,301
Int. Cl.[6] H03K *17/94*
U.S. Cl. 341—26 **20 Claims**

1. A data processor with a hardware keyscan circuit, comprising:



a central processing unit;

a first register coupled to said central processing unit and to a first port for being coupled to a plurality of rows of a keypad matrix;

a second register coupled to said central processing unit and to a second port for being connected to a plurality of columns of said keypad matrix;

a first plurality of pullup elements coupled to corresponding ones of said plurality of columns, said first plurality of pullup elements characterized as being continuously conductive;

a second plurality of pullup elements coupled to corresponding ones of said plurality of columns, said second plurality of pullup elements characterized as being conductive in response to a pullup signal; and

a pullup control circuit having an input coupled to said second register, and an output coupled to said second plurality of pullup elements for activating said pullup signal in response to a change of logic state of at least one of said plurality of columns.

5,486,825
CONVOLUTIONAL ENCODERS FOR MODEMS WHICH IMPLEMENT THE "COLE CODE"

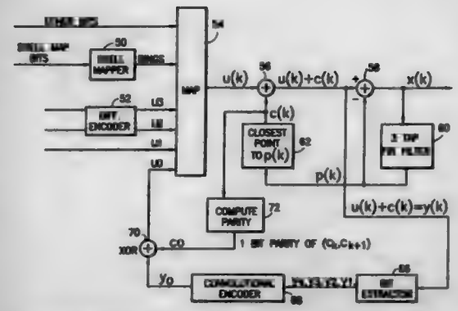
Paul D. Cole, Fairfield, Conn., assignor to General DataComm, Inc., Middlebury, Conn.

Filed Apr. 20, 1994, Ser. No. 230,682
Int. Cl.[6] H03M *7/00*
U.S. Cl. 341—50 **16 Claims**

1. A sixty-four state convolutional encoder for a non-systematic encoder of a modem, said sixty-four state convolutional encoder receiving at least three inputs p(n), r(n) and s(n), and having a current state, comprising:

a) state means for storing the current state of the convolutional encoder, the current state being defined by six state variables, said six state variables being r(n−1), r(n−2), s(n−1), s(n−2), p(n−1), and x(n−1), where x(n−1) is equal to the sum of p(n−2) plus a first variable, where the first variable is zero when said at least three inputs constitutes exactly three inputs;

b) means for updating the current state of the convolutional encoder to a new state by updating said six state variables from old values to new values, where the new value for state variable r(n−1) is the old value of input r(n), the new value for



state variable r(n−2) is the old value of state variable r(n−1), the new value for state variable s(n−1) is the old value of input s(n), the new value for state variable s(n−2) is the old value of state variable s(n−1), the new value for state variable p(n−1) is the old value for input p(n), and the new value for state variable x(n−1) is equal to the sum of the old value for state variable p(n−1) plus a second variable, where the second variable is zero when said at least three inputs constitute exactly three inputs; and

c) means for generating at least four outputs $y_3(n)$, $y_2(n)$, $y_1(n)$, and $y_0(n)$ from said six state variables of said current state and from said at least three inputs according to at least four output equations

$$y_3(n)=p(n)+r(n)r(n-1)+r(n-2)+r(n-1)s(n)+r(n-1)s(n-2)$$

$$y_2(n)=r(n-1)+s(n)+s(n-2)$$

$$y_1(n)=r(n)+r(n-1)r(n-2)+p(n-1)+p\ (n-2)+q(n-1)$$

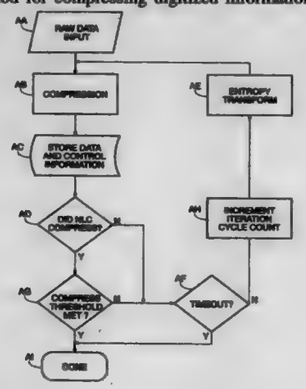
$$y_0(n)=s(n-1).$$

5,486,826
METHOD AND APPARATUS FOR ITERATIVE COMPRESSION OF DIGITAL DATA

John F. Remillard, Boulder, Colo., assignor to PS Venture 1 LLC, Cheyenne, Wyo.

Filed May 19, 1994, Ser. No. 246,014
Int. Cl.[6] H03M *7/30*
U.S. Cl. 341—51 **20 Claims**

1. A method for compressing digitized information comprising



the steps of:

a) storing input digital information in a first storage means;

b) applying a compression process in a compressor means to the stored input digital information to obtain first information bit sets and a first control/data set about the first information bit sets, said first information bit sets intended to be a reduced number of information bit sets compared to said input digital information, and storing said first information bit sets and said first control/data set in a second storage means as first processed data; thereafter

c) testing said first processed data in comparison to said input digital information to determine if total information storage requirements have been reduced; and if so

d) testing said first processed data against a compression threshold; and, if the compression threshold is not met,

e) applying an entropy transformation on said first processed data to obtain transformed data; thereupon

f) storing as output information at least said transformed data in a third storage means as a representation of processed information;

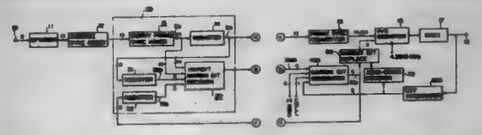
g) repeating step b) with said representation of processed information as said stored input digital information; and

h) repeating steps c) through g) until no further compression is desired.

5,486,827
EFM MODULATOR FOR CONTROLLING DIGITAL SUM VARIATION OF ENCODED DATA

Kazutoshi Shimizume, and Shinobu Nakamura, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 18, 1993, Ser. No. 136,949
Claims priority, application Japan, Jan. 22, 1992, 4-284319
Int. Cl.[6] H03M *5/00*
U.S. Cl. 341—58 **3 Claims**



1. A modulator for converting input m bit code series to n channel bit patterns (where n>m) which are linked to each other with one of a plurality of margin bit patterns to limit maximum and minimum recording wavelengths and suppress a low-frequency component of a recording waveform, comprising:

means for receiving:

an inhibit signal indicating which of said plurality of margin bit patterns are to be inhibited;

a level signal representing a final level of a modulated signal waveform for each of said n channel bit patterns, said n channel bit patterns being positioned before each of said plurality of margin bit patterns;

a polarity signal indicating a polarity of a cumulative digital sum variation;

a control signal indicating a magnitude of an absolute value of said cumulative digital sum variation;

a variation signal indicating said cumulative digital sum variation of each of said n channel bit patterns to be placed after each of said plurality of margin bit patterns; and

margin bit generating means for selecting a margin bit pattern most suitable for controlling said cumulative digital sum variation from among said plurality of margin bit patterns based on said inhibit, level, polarity, control and variation signals.

5,486,828
CODING/DECODING METHOD AND APPARATUS THEREFOR

Fumiyuki Mikami, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 27,581, Mar. 5, 1993, which is a continuation of Ser. No. 504,623, Apr. 4, 1990. This application Dec. 17, 1993, Ser. No. 169,539
Claims priority, application Japan, Apr. 6, 1989, 1-85659; Jul. 18, 1989, 1-183582
Int. Cl.[6] H03M *7/00*
U.S. Cl. 341—59 **9 Claims**

1. A method for outputting optimized digital data in a form



which facilitates at least one of storage of said optimized digital data on a recording medium and transmission of said optimized digital data to a remote location, comprising the steps of:

providing an input means for inputting digital data;

providing a processing means for processing the input digital data input by the input means by encoding binary data into 5-bit code word for every 2-bit binary data (data word), in order to record digital data in a recording medium or transmit digital data; and

providing an output means for outputting data processed by the processing means the encoding step comprising the steps of;

(a) inputting a plurality of data words by said input means,

(b) transferring a series of four data words of 8 bits length of said plurality of data words to said processing means,

(c) discriminating whether or not said series of four data words correspond with a first data array, and if it is discriminated by said processing means that said series of four data words correspond with the first data array, encoding said series of four data words into predetermined four code words of 20 bits length by said processing means and transferring said four code words to said output means,

(d) if it is discriminated by said processing means that the series of four data words do not correspond with the first data array in step (c), discriminating whether or not a series of three data words of 6 bits length correspond with a second data array by said processing means, and if it is discriminated by said processing means that said series of three data words correspond with the second data array, encoding said series of three data words into predetermined three code words of 15 bits length by said processing means and transferring said three code words to said output means,

(e) if it is discriminated by said processing means that said series of three data words do not correspond with the second data array in step (d), discriminating whether or not a series of two data words of 4 bits length correspond with a third data array by said processing means, and if it is discriminated by said processing means that said series of two data words correspond with the third data array, encoding said series of two data words into predetermined two code words of 10 bits length by said processing means and transferring said two code words to said output means, and

(f) if it is discriminated by said processing means that the series of two data words do not correspond with the third data array in step (e), encoding one data word into a predetermined 5-bit code word, in accordance with a type of the 2-bit data word by said processing means and transferring said 5-bit code word to said output means,

wherein a number of bit "0" between bit "1" and bit "1" is from four to nineteen, whereby said 2-bit binary data input by said input means is encoded into 5-bit code word and output.

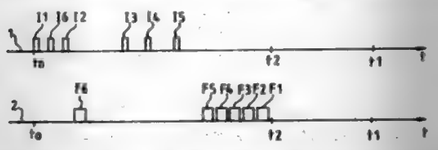
5,486,829

METHOD OF COMMUNICATING INFORMATION BETWEEN AN S-MODE SECONDARY RADAR AND A TARGET

Eric Potier, Velizy, and Michel Wybierala, Versailles, both of, France, assignors to Thomson-CSF, Paris, France

Filed Jul. 8, 1994, Ser. No. 271,991
Claims priority, application France, Jul. 9, 1993, 93 08474
Int. Cl.[6] G01S *13/76*
U.S. Cl. 342—40 **7 Claims**

1. A method of communicating data between a transmission/



reception center and a target, said data including transactions each of which consists of an interrogation pulse transmitted by said transmission/reception center and a reception window transmitted by said transmission/reception center which receives a response transmitted by said target, said method comprising the steps of:

(a) transmitting a plurality of interrogation pulses; and

(b) transmitting a plurality of reception windows such that a reception window corresponding to a latest-transmitted interrogation pulse is transmitted immediately after said latest-transmitted interrogation pulse and the reception windows corresponding to the interrogation pulses transmitted before said latest-transmitted interrogation pulse are then transmitted in a reverse order to an order in which the interrogation pulses to which they correspond were transmitted, unless any of said reception windows overlaps any of said interrogation pulses in which case the reception window which overlaps the interrogation pulse and its corresponding interrogation pulse are transmitted at the earliest time for which no overlap occurs.

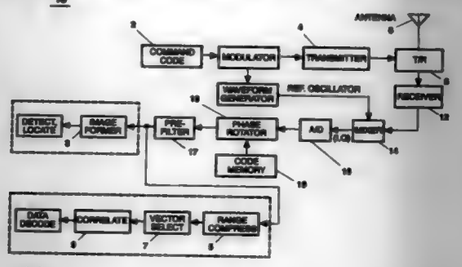
5,486,830

RADAR TRANSPONDER APPARATUS AND SIGNAL PROCESSING TECHNIQUE

Robert M. Axline, Jr.; George R. Sloan, and Richard E. Spalding, all of Albuquerque, N.M., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 6, 1994, Ser. No. 223,799
Int. Cl.[6] G01S *13/74*
U.S. Cl. 342—43 **33 Claims**

14. An rf transponder recognition and identification system



comprising:

a) an rf transponder (tag) for receiving, modulating, and retransmitting rf pulses transmitted to said tag by a synthetic-aperture radar means, wherein said tag means is capable of amplitude-gating and phase-coding its echo with a number of prescribed and/or informational pulse sequences for retransmission to said synthetic-aperture radar means, said tag further comprising;

i) radar signal receiving means for receiving an illuminating signal from said SAR;

ii) frequency conditioning means coupled to said radar signal receiving means for phase-shifting said illuminating signal into a phase-shifted tag signal;

iii) transmitting means for transmitting rf signals to said SAR;

iv) code generator means for generating a prescribed code sequence for transmission to said SAR through said transmitting means;

v) tag status means coupled to said code generator means for providing identifying, environmental and 'status information of said tag to said SAR through said transmitting means; and

vi) mixing means, incorporated as part of said code generator means, for combining said prescribed sequence with said status information to produce a sequence having a combination of prescribed and informational content to be sent by said transmitting means to said airborne SAR; and

b) a synthetic-aperture radar (SAR) located on an airborne platform said SAR comprising:

i) illumination signal means for transmitting illuminating signals toward a ground surface from an airborne platform;

ii) rf receiving means for receiving radio frequency echo signals after said SAR transmits said illuminating signals to said surface;

iii) first signal-processing means coupled to said rf receiving means wherein echo signals are processed and demodulated using prescribed modulation sequences stored in a code-memory means and wherein prescribed modulation sequences, stored in a code memory means, identical to that used by said tag are mixed against echoes received by said rf receiving means providing processing of incoming tag echoes also received by said receiving means with said radio frequency echo signals reflected from said surface; and

iv) code memory means coupled to said first signal processing means for storing said modulation sequences;

wherein the total echo signal returned to said synthetic-aperture radar is processed by said processing in combination with additional standard image-formation processing of the echoes of at least one transponder apparatus, and resulting in the significant suppression of unwanted echoes due to clutter echo from stationary, natural or cultural targets located in proximity to said at least one transponder apparatus.

5,486,831

MULTI-MODE MISSILE SEEKER WITH ADJUNCT SENSOR BLOCKING AN ELECTRONICALLY SCANNED RADIO FREQUENCY APERTURE USING AN OFF-BORESIGHT DIRECTION FINDING PROCESS

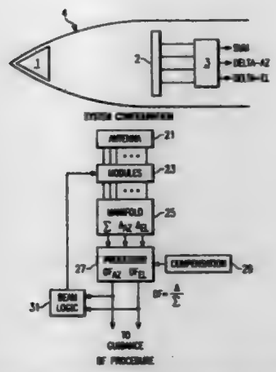
Landon L. Rowland, Rte. 4, Box 75070, McKinney, Tex. 75070; Richard K. Lowder, #8 Creek Ski Lake, Rte. 4, Sherman, Tex. 75429; Lester W. Dyer, 3301 Snidow Ct., Plano, Tex. 75025-5362, and Charles H. Turner, 120 Forest Hollow, Argyle, Tex. 76126

Continuation of Ser. No. 231,008, Apr. 21, 1994, abandoned. This application Apr. 12, 1995, Ser. No. 420,616
Int. Cl.[6] G01S *13/44;13/72*
U.S. Cl. 342—62 **21 Claims**

1. A multi-mode seeker having a boresight which comprises:

(a) a housing having a nose region;

(b) an impediment to transmission of electromagnetic radiations disposed in said nose region along said boresight of said seeker;



(c) a stationary antenna disposed along said boresight and rearward of said impediment to transmission of electromagnetic radiations relative to the direction of radiations to and/or from said antenna, said impediment blocking transmissions along said boresight to and from said antenna, said antenna having a field of regard having an axis disposed along said boresight and capable of scanning each one of plural fields of view within said field of regard; and

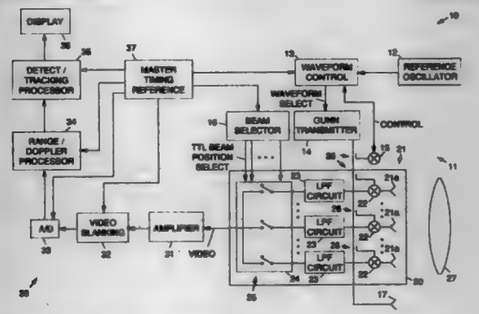
(d) electronic circuitry to cause said antenna to select one of said fields of view to scan responsive to said radiations received by said antenna.

5,486,832

RF SENSOR AND RADAR FOR AUTOMOTIVE SPEED AND COLLISION AVOIDANCE APPLICATIONS

Garry N. Hulderman, Riverside, Calif., assignor to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Jul. 1, 1994, Ser. No. 269,729
Int. Cl.[6] G01S *13/91*
U.S. Cl. 342—70 **16 Claims**



1. Radar apparatus comprising:

a millimeter wave FMCW radar transmitter comprising a single flood beam antenna;

a radar signal processor for processing radar return signals to produce radar output signals; and

an RF sensor comprising a receive antenna that includes:

a plurality of antenna elements;

a plurality of mixers respectively coupled to outputs of the plurality of antenna elements and coupled to the transmitter by means of a coupler;

a plurality of filter circuits respectively coupled to outputs of the plurality of mixers;

a multiplexer coupled to outputs of the plurality of filter circuits that comprises a multiple input, single output switch for sequentially outputting video signals derived from radar signals received by each of the receive antenna elements, and wherein the single output of the multiplexer is coupled to the radar signal processor for providing the radar return signals thereto; and

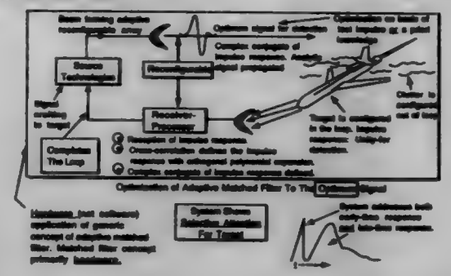
a lens for imaging radar returns onto each of the plurality of antenna elements.

5,486,833

ACTIVE SIGNALLING SYSTEMS

Terence W. Barrett, 1453 Beulah Rd., Vienna, Va. 22182

Filed Apr. 2, 1993, Ser. No. 42,272
Int. Cl.[6] G01S *7/42;7/32*
U.S. Cl. 342—204 **22 Claims**



1. A signalling system for detecting targets in a given medium, comprising:

means for generating and transmitting in said given medium a time-frequency wave packet which is the complex (phase) conjugate of the impulse response of the combined medium and target, and

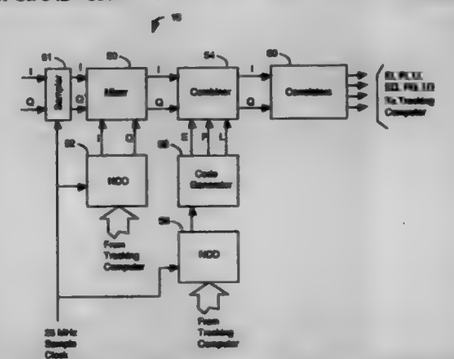
means for solving the wave equation for transmissions through said medium, reflectance from said target and transmission back through said medium.

5,486,834

GLOBAL ORBITING NAVIGATION SATELLITE SYSTEM RECEIVER

Gary R. Lennen, San Jose, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Aug. 8, 1994, Ser. No. 287,187
Int. Cl.[6] G01S *5/02;* H04J *1/02*
U.S. Cl. 342—357 **8 Claims**



1. A global orbiting navigation satellite system (GLONASS) navigation receiver, comprising:

a radio frequency (RF) down-conversion section having a RF input to receive microwave radio transmissions from orbiting GLONASS satellites and a pseudo-baseband output in which a plurality of GLONASS satellite carriers separated in frequency are mixed-down to a near baseband composite signal that exhibits a spectral fold-over;

a Nyquist sampling unit included in a final stage of the RF down-conversion section and operating in the range of twenty

to twenty-five MHz for generating in-phase (I) and quadrature-phase (Q) signals from said composite signal; and

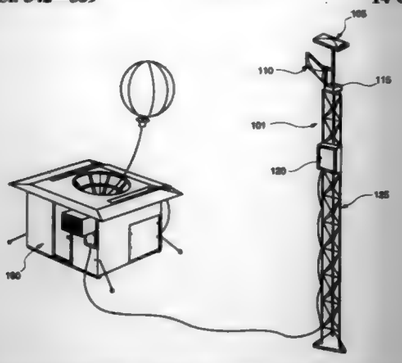
a digital carrier mixer connected to receive said I and Q signals and having a programmable frequency that provides for a digital baseband selection among particular GLONASS satellites.

5,486,835

LOW COST TELEMETRY RECEIVING SYSTEM

Terrence F. Hock, Golden, Colo., assignor to University Corporation For Atmospheric Research, Boulder, Colo.

Filed Oct. 31, 1994, Ser. No. 331,808
Int. Cl.[6] H01Q *3/00*
U.S. Cl. 342—359 **14 Claims**



1. A low cost telemetry receiving system for receiving a telemetry signal of predetermined frequency from a wandering transmitter in airspace local to said telemetry receiving system, said telemetry receiving system comprising:

high gain antenna means having a receiving beam of narrow azimuthal and wide elevational view of space;

means for sensing the strength of said telemetry signal; and

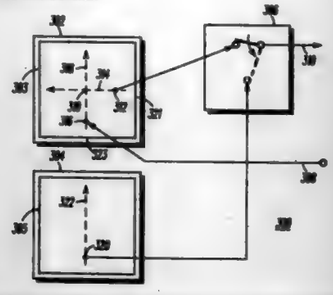
means, responsive to said means for sensing, for positioning said antenna means to continuously receive said telemetry signal as said wandering transmitter traverses said airspace local to said telemetry receiving system.

5,486,836

METHOD, DUAL RECTANGULAR PATCH ANTENNA SYSTEM AND RADIO FOR PROVIDING ISOLATION AND DIVERSITY

Stephen L. Kuffner, Algonquin; Scott N. Carney, Palatine, and Eric L. Krenz, Crystal Lake, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 16, 1995, Ser. No. 389,540
Int. Cl.[6] H01Q *1/38*
U.S. Cl. 343—700 MS **16 Claims**



1. A dual rectangular patch antenna system for providing isolation and diversity comprising:

A) a first rectangular patch antenna having a substantially planar conductive rectangular first patch with four coplanar sides, a first midline orthogonal to a first side, and a second midline parallel to the first side and intersecting the first midline at a center of the first patch, wherein the first patch includes:

Aa1) a first mode feedpoint, located on the first midline between the first side and the center of the first patch, for providing a first mode polarization, wherein the first mode feedpoint is connected to a transmit path; and

A2) a second mode feedpoint, located on the second midline between a second side, adjacent to the first side, and the center of the first patch, for providing a second mode polarization orthogonal to the first mode polarization, wherein the first mode feedpoint and the second mode feedpoint are located such that an isolation is provided by a voltage null of the first mode polarization along the second midline and a voltage null of the second mode polarization along the first midline;

B) a second rectangular patch antenna, spatially separated from the first rectangular patch antenna, having a substantially planar conductive rectangular second patch including a third mode feedpoint for providing a third mode polarization; and

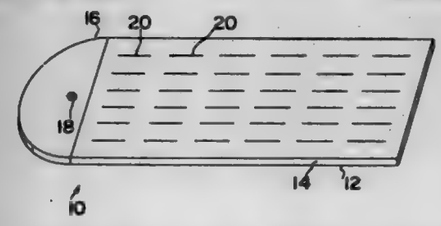
C) a switch, operably coupled to select one of the second mode feedpoint of the first rectangular patch antenna and the third mode feedpoint of the second rectangular patch antenna based on a predetermined signal quality, for providing spatial diversity in a receive path.

5,486,837

COMPACT MICROWAVE ANTENNA SUITABLE FOR PRINTED-CIRCUIT FABRICATION

Lee S. Miller, 105 Windsor Ct., Central, S.C. 29630

Continuation of Ser. No. 16,531, Feb. 11, 1993, abandoned. This application Dec. 21, 1994, Ser. No. 361,849
Int. Cl.[6] H01Q *13/00*
U.S. Cl. 343—780 **22 Claims**



1. A compact microwave antenna suitable for printed-circuit fabrication, comprising:

a guided wave structure supporting the propagation of surface guided waves;

a series of dipoles disposed relative to the surface of said guided wave structure, wherein said dipoles are excited by surface guided waves propagated along said guided wave structure, thereby generating a desired radiation field, and wherein the length and spacing of said dipoles are selected to achieve a desired angle of radiation from the surface of said guided wave structure and a desired radiation frequency; and

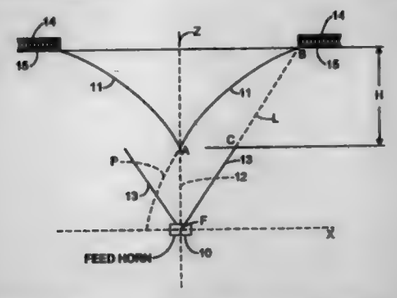
an excitation device disposed adjacent to said guided wave structure for exciting said guided wave structure with electromagnetic waves to generate surface guided waves so excite said series of dipoles.

5,486,838

BROADBAND OMNIDIRECTIONAL MICROWAVE ANTENNA FOR MINIMIZING RADIATION TOWARD THE UPPER HEMISPHERE

Geza Dienes, Claremont, Calif., assignor to Andrew Corporation, Orland Park, Ill.

Continuation-in-part of Ser. No. 110,598, Aug. 23, 1993, abandoned. This application Apr. 19, 1994, Ser. No. 229,553
Int. Cl.[6] H01Q *19/14*
U.S. Cl. 343—781 R **17 Claims**



1. An omnidirectional microwave antenna comprising

a conical reflector having a reflecting surface defined by a cone having an axis and a surface of revolution around said axis, the line of intersection between said surface of revolution and a plane passing through said axis and said surface of revolution being a segment of a parabolic curve, said reflector including a flange extending outward from an outermost circumference of said surface of revolution of said cone, said flange having absorptive material mounted thereto, said flange being generally perpendicular to said axis of said cone, and

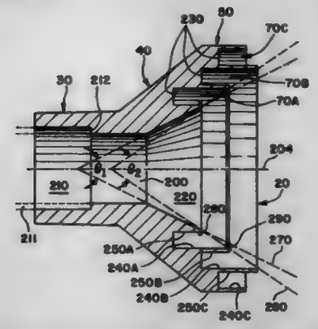
a conical feed horn located along said axis of said cone and having an aperture therein, the center of said aperture of said feed horn being located approximately at the apex of said cone, said absorptive material absorbing radiation emitted from said feed horn and bypassing said reflector.

5,486,839

CONICAL CORRUGATED MICROWAVE FEED HORN

Charles E. Rodeffer, Burlington, Iowa; Edgar J. Denlinger, Princeton Junction, N.J., and Aly E. Fathy, Langhorne, Pa., assignors to Winegard Company, Burlington, Iowa

Filed Jul. 29, 1994, Ser. No. 282,787
Int. Cl.[6] H01Q *13/00*
U.S. Cl. 343—786 **16 Claims**



1. A conical corrugated microwave feed horn comprising in combination:

a conical flare section, said flare section having a smooth conical region and a corrugated conical region, said feed horn having a cylindrical aperture formed on a first open end,

a cylindrical throat formed on a second open end opposing said cylindrical aperture,

a plurality of slots formed parallel to the central axis of said feed horn in said corrugated conical section, each slot of said plurality of slots having an inner surface with an outer end closest to the central axis of said feed horn and an outer surface furthest from the central axis, said plurality of slots having a first slot connected to said smooth conical region,

said smooth conical region connecting said cylindrical throat to said outer end of said first slot of said plurality of slots, said smooth conical region having a first predetermined angle from the central axis of said feed horn through said first slot connection, said smooth conical region providing an impedance match between said corrugated conical region and said cylindrical throat so as to increase the bandwidth of said feed horn,

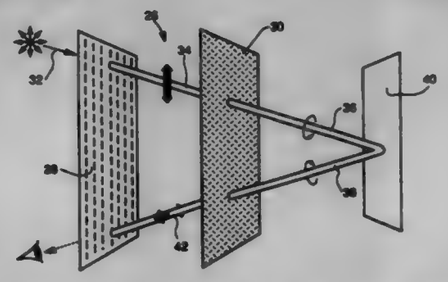
each slot of said plurality of slots having the outer end of the inner surface formed on a conical shape having a second predetermined angle from the central axis through said first slot connection, said second predetermined angle being greater in value than said first predetermined angle.

5,486,840

HEAD UP DISPLAY WITH INCIDENT LIGHT FILTER

Diego A. Borrego, Lafayette; Alan R. Greenland, Westfield, both of Ind.; Charles R. Allison, Flint, Mich.; Robert A. Bordo, Harrison Township, Mich., and Steven A. Stringfellow, Oakland, Mich., assignors to Delco Electronics Corporation, Kokomo, Ind.

Continuation of Ser. No. 210,855, Mar. 21, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 479,253
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—7 **3 Claims**



1. A head up display for reflecting information from a combiner wherein the angle of reflection effects light polarization, the display including optical filtering of extraneous reflections due to external incident light comprising:

a light emitting image source for generating display information, the image source comprising selectively energized segments subject to undesired illumination by external light incident on the combiner;

an optical system for projecting light from the image source onto the combiner at an incident angle near Brewster's angle to define a horizontal axis of polarization for light reflected from the combiner that originates from the image source; and

a circular polarizer between the optical system and the image source for suppressing external incident light reflected from the display surface, the circular polarizer comprising

a linear polarizer and quarter-wave plate in combination,

the linear polarizer and quarter-wave plate being disposed to circularly polarized external incident light reaching the image source and to absorb such polarized light after reflection from the image source, and

the linear polarizer having a polarization axis substantially parallel to the horizontal axis of polarization for horizontally polarizing light projected onto the combiner that originates from the image source to maximize the display efficiency.

5,486,841

GLASSES TYPE DISPLAY APPARATUS

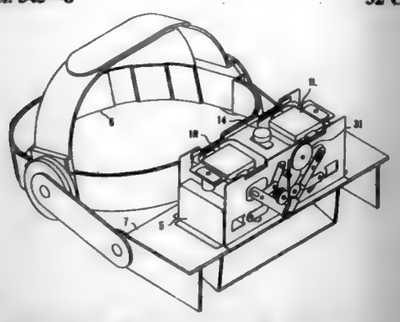
Nobuyuki Hara; Akira Kawamura, both of Kanagawa, and Takeshi Matsui, Tokyo, all of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 15, 1993, Ser. No. 76,953

Claims priority, application Japan, Jun. 17, 1992, 4-158262; Jun. 22, 1992, 4-162969

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—8 **32 Claims**



1. A glassed type display apparatus for displaying an image including left and right virtual images generated by respective left and right display means and transmitted through respective left and right lens systems, said left and right lens systems each having a corresponding focal point and each being disposed symmetrically with respect a center point of a main point axis, said glasses type display apparatus comprising:

left and right slide means for moving respective left and right display means with respect to said left and right lens systems along corresponding left and right segment lines, each segment line extending through said center point of said main point axis and the focal point of a corresponding left or right lens system; and

a beam splitter located in front of eyes of a user, said beam splitter having a predetermined inclination with respect to optical axes of said left and right lens systems.

5,486,842

ON-SCREEN DISPLAY CIRCUIT OF THE INTERLACED SCANNING TYPE

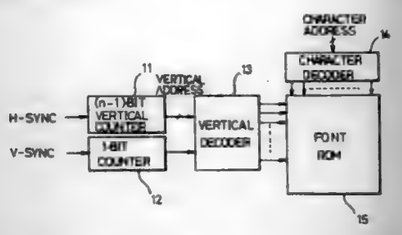
Ho H. Kim, Daeku, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Choongchungbook-do, Rep. of Korea

Filed Jan. 5, 1995, Ser. No. 368,960

Claims priority, application Rep. of Korea, Jan. 7, 1994, 212/1994

Int. Cl.[6] G09G *1/16*

U.S. Cl. 345—26 **2 Claims**



1. An on-screen display circuit of the interlaced scanning type comprising:

a vertical counter for counting a horizontal synchronous signal inputted thereto and outputting the counted values as higher-order bits of a vertical address;

a 1-bit counter for counting a vertical synchronous signal inputted thereto by one bit and outputting the counted value as a least significant bit of the vertical address;

a vertical decoder for decoding output signals from said vertical counter and said 1-bit counter to designate a decoded vertical address;

a character decoder for decoding a character address inputted thereto to designate a decoded horizontal address; and

a font read only memory for outputting font data in its location corresponding to the-decoded vertical address from said vertical decoder and the decoded horizontal address from said character decoder.

5,486,843

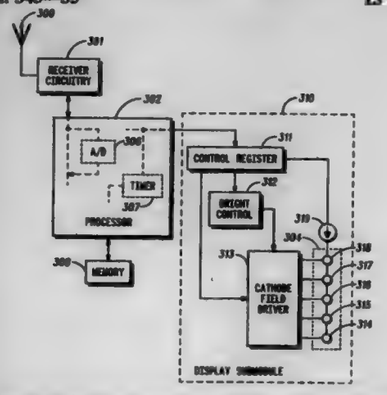
SIGNAL LEVEL INDICATOR AND ASSOCIATED METHOD

Marcia J. Otting, Mundelein, and John P. Kramer, Elk Grove Village, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 23, 1994, Ser. No. 264,656

Int. Cl.[6] G09G *3/04;3/14;* G08C *19/00*

U.S. Cl. 345—35 **15 Claims**



1. A portable electronic device having a signal level indicator for visually indicating the magnitude of at least one input signal, comprising:

a plurality of visual elements; and

a processor circuit operatively coupled to said plurality of visual elements for perceivably strobing said plurality of visual elements in response to the at least one input signal, said processor circuit determining a number of said plurality of visual elements to be individually illuminated during a display period said number of said plurality of visual elements based on the magnitude of the at least one input signal, and said processor circuit individually illuminating each one of said number of said plurality of visual elements for an individual illumination period during said display period such that no more than one of said number of said plurality of visual elements is illuminated at any one time.

5,486,844

METHOD AND APPARATUS FOR SUPERIMPOSING DISPLAYED IMAGES

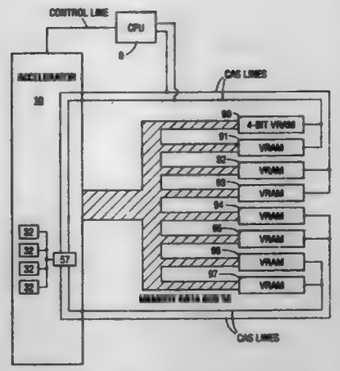
Martin Randall, Santa Cruz; Paul Campbell, Berkeley, and Douglas J. Gilbert, Livermore, all of Calif., assignors to Radius Inc, Sunnyvale, Calif.

Continuation of Ser. No. 876,758, May 1, 1992, abandoned. This application Feb. 1, 1994, Ser. No. 190,731

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—113 **2 Claims**

1. A system for performing a transparent data transfer operation



on a destination image comprised of destination pixels stored in a video memory, without reading any of the destination pixels from the video memory, including:

an internal memory for storing source pixels and background data, wherein the source pixels consist of foreground source pixels and background source pixels, and each of the source pixels corresponds with one of the destination pixels, and wherein the internal memory stores none of the destination pixels;

comparison and identification means for comparing the source pixels stored in the internal memory with the background data stored in the internal memory, and identifying each of said source pixels as a foreground source pixel or a background source pixel as a result of such comparison; and

means for writing only those source pixels identified as foreground source pixels to the video memory to substitute the source pixels identified as foreground source pixels for the destination pixels corresponding to said source pixels identified as foreground source pixels, wherein said means for writing includes means for generating a column address strobe signal for the video memory and selectively asserting said column address strobe signal to a first control line so as to disable transfers of the source pixels identified as background pixels to said video memory, thereby preventing said source pixels identified as background pixels from overwriting any of said destination pixels, wherein the comparison and identification means receives parallel streams of the source pixels and said comparison and identification means includes:

at least two banks of arithmetic logic units, each of said banks connected to receive a different one of the streams of the source pixels, said banks outputting parallel marked source pixel streams, each of the marked source pixel streams including source pixels of one of the streams of the source pixels, and marking data identifying each of the source pixels in said one of the streams of the source pixels as a foreground source pixel or a background source pixel, each of said banks including means for comparing each of the source pixels in said one of the streams with said background data, identifying said each of the source pixels in said one of the streams as a foreground source pixel or a background source pixel, and generating said marking data for said one of the streams;

at least one set of multiplexers, each of said multiplexers receiving source pixels from at least two of the marked source pixel streams and selectively combining said received source pixels into a multiplexed source pixel stream; and

a set of pipelined registers for receiving each said multiplexed source pixel stream from the multiplexers and asserting each said received multiplexed source pixel stream to a data bus coupled to the video memory.

5,486,845

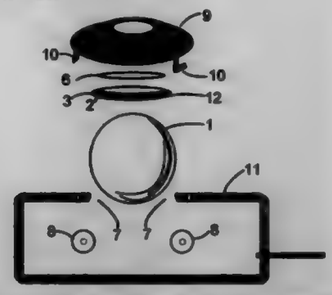
NON-LINTING BALL GASKET FOR COMPUTER MOUSE DEVICES AND METHOD

Abraham I. Chait, 730 Clearfield Dr., Millbrae, Calif. 94030

Continuation-in-part of Ser. No. 208,385, Mar. 10, 1994, abandoned. This application Nov. 3, 1994, Ser. No. 333,734

Int. Cl.[6] G09G *5/08*

U.S. Cl. 345—163 **12 Claims**



1. An improved cleaning gasket for use in a cursor positioning control device having movable ball control rollers mounted in engagement therewith, said gasket comprising:

a pad of material suitable for absorption of at least one of an oil and water;

a substantially lint-free netting secured to a side of said pad to be mounted in contract with the movable ball of said cursor positioning control device; and

said gasket further being formed and dimensioned to be mounted in a position in said control device substantially reducing the transmission of debris, lint, moisture and oil from the movable ball to the control rollers with said netting contacting said ball and said pad positioned to absorb materials wiped off of said ball by said netting.

5,486,846

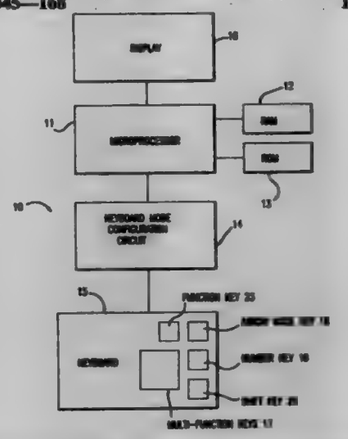
INTELLIGENT KEYPAD OVERLAY FOR PORTABLE PERSONAL COMPUTERS

Keith Comer, Mission Viejo; Gary Eleanor, Cerritos, both of Calif., and Takano Iwakiri, Tokyo, Japan, assignors to Toshiba America Information Systems, Inc., Irvine, Calif.

Continuation of Ser. No. 970,413, Nov. 2, 1992, abandoned. This application Aug. 9, 1994, Ser. No. 287,426

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—168 **15 Claims**



1. An apparatus for setting and indicating a current operational

mode of a keyboard having at least three modes of operation, the at least three modes of operation including a normal mode and a cursor mode and a number mode, the current operational mode being defined by an overlay flag and a numlock flag, the apparatus comprising:

at least two special actuation means, each for setting a mode of said keyboard, wherein one of said at least two special actuation means is a cursor mode actuator and wherein another of said at least two special actuation means is a number mode actuator; and

mode configuration means, responsive to actuation of one of said cursor mode actuator and said number mode actuator, for setting the operational mode of the keyboard to be one of the at least three modes of operation,

wherein said mode configuration means comprises cursor mode setting means for setting said overlay flag and for clearing said numlock flag when said cursor mode actuator is actuated, and

wherein said mode configuration means further comprises number mode setting means for setting said overlay flag and for setting said numlock flag when said number mode actuator is actuated.

5,486,847

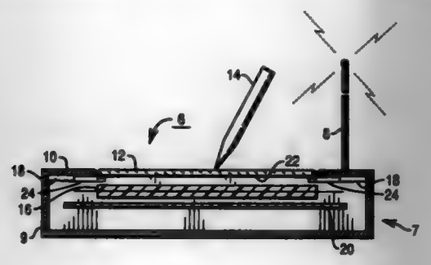
APPARATUS FOR A STYLUS INPUT SYSTEM FOR SHIELDING RFI/EMI FIELDS

Karl-Heinz Ranf, Friedberg, Germany, and Jack R. Penrod, Dayton, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 21, 1992, Ser. No. 994,973

Int. Cl.[6] G09G 5/00

U.S. Cl. 345—173 **26 Claims**



1. A notepad computer, comprising:

a cabinet having an opening and defining a chamber, said cabinet having a first RFI/EMI shield positioned thereon;

a digitizer positioned within the chamber of said cabinet and producing an electromagnetic field;

a display device located over said digitizer;

a transparent plate located substantially within the opening of said cabinet and over said display device, said transparent plate having an outer side and an inner side, wherein the electromagnetic field produced by said digitizer is able to be altered by contacting the outer side of said transparent plate with an input stylus; and

a transparent second RFI/EMI shield located between said transparent plate and said digitizer.

5,486,848

RECORDING APPARATUS WHICH TWICE EJECTS DROPLETS TO THE SAME POSITION AND IMAGE FORMING APPARATUS WITH U-SHAPED MATERIAL PATH

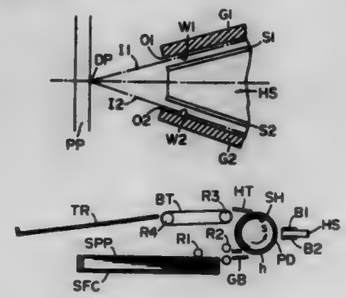
Naoki Ayata; Yoshiaki Shirato, both of Yokohama; Yasushi Takatori, Sagamihara, and Mitsuaki Seki, Machida, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 193,897, Feb. 9, 1994, abandoned, which is a continuation of Ser. No. 957,451, Oct. 7, 1992, abandoned, which is a continuation of Ser. No. 732,583, Jul. 18, 1991, abandoned, which is a division of Ser. No. 489,339, Mar. 6, 1990, abandoned, which is a division of Ser. No. 379,668, Jul. 13, 1989, abandoned, which is a continuation of Ser. No. 287,527, Dec. 19, 1988, abandoned, which is a continuation of Ser. No. 36,179, Apr. 8, 1987, abandoned, which is a continuation of Ser. No. 624,714, Jun. 26, 1984, abandoned, which is a division of Ser. No. 133,327, Mar. 24, 1980, Pat. No. 4,463,359. This application Mar. 23, 1995, Ser. No. 409,638

Claims priority, application Japan, Apr. 2, 1979, 54-39467; Apr. 2, 1979, 54-39468; Apr. 2, 1979, 54-39469; Apr. 2, 1979, 54-39470; Apr. 2, 1979, 54-39471; Apr. 2, 1979, 54-39472; Apr. 11, 1979, 54-43849; Feb. 22, 1980, 55-21348

Int. Cl.[6] B41J 2/05

U.S. Cl. 347—15 **17 Claims**



1. An information recording apparatus comprising:

recording means for recording on a recording medium, said recording means having a plurality of heat energy generating elements corresponding to a plurality of ejection portions for ejecting ink, wherein each said heat energy generating element generates heat in response to a drive signal that causes a bubble to grow rapidly in the ink and then vanish gradually, so that the bubble forms more quickly than it vanishes, thereby ejecting ink droplets from corresponding ejection portions and attaching the ink droplets to the recording medium;

control means for causing said recording means to eject two ink droplets from different ejection portions to a same position on the recording medium so that the tone of the recording is emphasized; and

driving means for sequentially driving plural blocks of said heat energy generating elements, each said block including plural heat energy generating elements, by applying the drive signal to selected said heat energy generating elements in each said block in accordance with recording information.

5,486,849

THERMAL RECORDING DEVICE WITH HEAT EXCHANGE

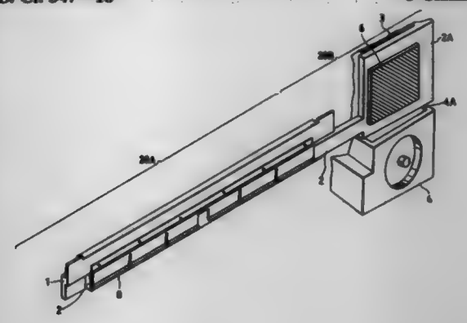
Yasushi Miura, Kawasaki; Haruhiko Moriguchi, Yokohama; Yasushi Murayama, Tokyo, and Hideyuki Tanaami, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1991, Ser. No. 681,068

Claims priority, application Japan, Apr. 6, 1990, 2-090101; Apr. 6, 1990, 2-090102; Apr. 6, 1990, 2-090103; Apr. 6, 1990, 2-090104; Apr. 6, 1990, 2-090105; Apr. 6, 1990, 2-090107; Apr. 6, 1990, 2-090108; Apr. 6, 1990, 2-090109

Int. Cl.[6] B41J 2/01;2/05;29/377

U.S. Cl. 347—18 **5 Claims**



1. A recording apparatus for recording onto a recording medium having a recording width by using heat energy, while conveying said recording medium, comprising:

a recording head unit having a balance area;

a recording head having plural heating elements for generating said heat energy, said recording head being included in said recording head unit;

a first heat exchange member for exchanging heat with said recording head and which is joined with said recording head, and which is included in said recording head unit;

a heat exchange unit comprising a second heat exchange member for exchanging heat with an atmosphere and which is provided outside of an area where said recording head is disposed, said second heat exchange member being connected to said first heat exchange member at a connecting section for heat exchange therebetween, and which is included in said recording head unit, said heat exchange unit exchanging heat between said second heat exchange member and said atmosphere;

a support member for supporting at least a vicinity of said balance area of said recording head unit, said first heat exchange member including an end opposite the connecting section between said first and second heat exchange members; and

moving means connected to said support member to move said recording head unit between a recording position and a non-recording position,

wherein said support member supports at least a vicinity of the balance area of said recording head unit so that said recording unit is supported in a desired balance, thus reducing a load for said moving mea.is.

5,486,858

INK JET RECORDING APPARATUS FOR CLEANING THE RECORDING HEAD IN ACCORDANCE WITH THE RECORDING COLOR

Fumiharu Nakamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

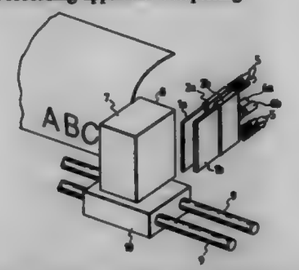
Continuation of Ser. No. 968,000, Dec. 9, 1992, abandoned, which is a continuation of Ser. No. 884,775, May 13, 1992, abandoned, which is a division of Ser. No. 514,732, Apr. 26, 1990, Pat. No. 5,126,765. This application Oct. 21, 1994, Ser. No. 328,343

Claims priority, application Japan, Apr. 26, 1989, 1-106575; Apr. 18, 1990, 2-102418

Int. Cl.[6] B41J 2/165

U.S. Cl. 347—24 **14 Claims**

1. An ink jet recording apparatus comprising:



a carriage carrying a recording head and scanned in both a recording area and a non-recording area;

a cleaning member contacting a discharge port forming surface of said recording head for discharging an ink to clean the discharge port forming surface, said cleaning member comprising a plurality of cleaning blades, each said blade having an elasticity; and

recording mode setting means for setting a first recording mode in which a plurality of colors are used for recording and a second recording mode in which a single color is used which is different from the colors of the first recording mode,

wherein the discharge port forming surface is cleaned by said plurality of cleaning blades when the first recording mode is set and the discharge port forming surface is cleaned by a single said cleaning blade when the second recording mode is set.

5,486,851

ILLUMINATION DEVICE USING A PULSED LASER SOURCE A SCHLIEREN OPTICAL SYSTEM AND A MATRIX ADDRESSABLE SURFACE LIGHT MODULATOR FOR PRODUCING IMAGES WITH UNDIFRACTED LIGHT

Andreas Gehner; Günther Hess; Heinz Köck, all of Duisburg, and Holger Vogt, Mülheim, all of, Germany, assignors to Fraunhofer-Gesellschaft zur Forderung der Angewandten Forschung E.V., Munich, Germany

PCT No. PCT/DE91/00859, § 371 Date Jul. 19, 1994, § 102(e) Date Jul. 19, 1994, PCT Pub. No. WO93/09469, PCT Pub. Date May 13, 1993

PCT Filed Oct. 30, 1991, Ser. No. 232,005

Int. Cl.[6] G03B 27/54

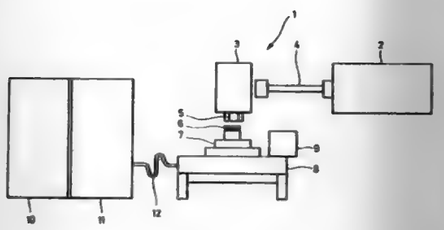
U.S. Cl. 347—258 **13 Claims**

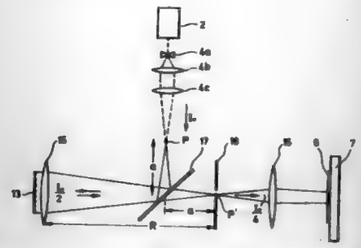
1. An illumination device for producing models used for manufacturing electronic elements, or for direct illumination of wafers or substrates during photolithographic steps for producing the electronic elements, or for direct illumination of structures including light-sensitive layers, comprising:

a pulsed laser light source;

a pattern generator;

an object onto which light emitted by said laser light source is focussed, said object being selected from the group consisting of a model, a disk, a substrate and a structure;





said pattern generator includes an optical Schlieren system and an active, matrix-addressable surface light modulator,

said surface light modulator has a reflective surface having addressed surface areas which diffract incident light and non-addressed surface areas which reflect incident light,

said Schlieren system comprises a Schlieren lens arranged on a side of said surface light modulator, a projection lens facing away from said surface light modulator, and a mirror device which is arranged between said Schlieren lens and said projection lens for directing light coming from said pulsed laser light source onto said reflective surface on said surface light modulator,

wherein said Schlieren lens is arranged from said surface light modulator a distance less than a focal length of said Schierlen lens,

focussing means for focussing the light coming from said light source in at least one point which is spaced apart from said mirror device and which is adapted to have associated therewith at least one virtual point light source by reflecting a point at said mirror device,

a filter device arranged in a diffraction image plane of the virtual point light source between said Schlieren lens and said projection lens, said filter device being designed to filter out diffracted light reflected by the addressed surface areas of said surface light modulator and permit undiffracted light reflected by said non-addressed surface areas to pass through said projection lens to the model, the disk, the substrate, or the structure, and to filter out undiffracted light reflected by said non-addressed surface areas of said surface light modulator, and permit said diffracted light reflected by said addressed surface areas to pass through said projection lens to the model, the disk, the substrate, or the structure, and

a displaceable positioning table capable of having the model, the disk, the substrate or the structure secured thereon in position so that a sharp image of said surface areas of said surface light modulator can be formed on the model, the disk, the substrate, or the structure,

wherein said pulsed laser light source is constructed such that a pulse duration of said pulsed laser light source is shorter than a minimum structural dimension of the model, the disk, the substrate or the structure divided by a displacement rate of said positioning table, and

wherein, during the displacement of said positioning table, the model, the disk, the substrate or structure are composed of a plurality of partial images by adequate addressing of said surface light modulator.

5,486,852

CAMERA-INTEGRATED VIDEO RECORDER SYSTEM HAVING MOUNTABLE AND DEMOUNTABLE REMOTE-CONTROL UNIT

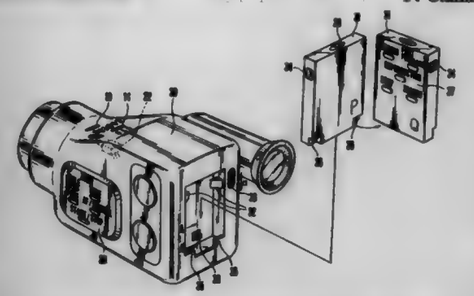
Takashi Arai, Tokyo, Japan, assignor to Canon Kabushiki Knisha, Tokyo, Japan

Continuation of Ser. No. 699,205, May 13, 1991, abandoned. This application Jun. 29, 1993, Ser. No. 85,131

Claims priority, application Japan, May 22, 1990, 2-132892

Int. Cl.[6] H04N *5/225;5/232*

U.S. Cl. 348—211 **14 Claims**



1. A camera-integrated video recorder system having an operation switch for a camera shooting mode and an operation switch for a video recorder mode, comprising:

a) a system body;

b) a remote-control unit which is detachably mountable on said system body; and

c) change-over means for switching between a camera shooting mode and a video recorder mode in association with an operation of mounting and demounting said remote-control unit on or from said system body, wherein only said operation switch for the camera shooting mode is usable when said remote-control unit is mounted on said system.

5,486,853

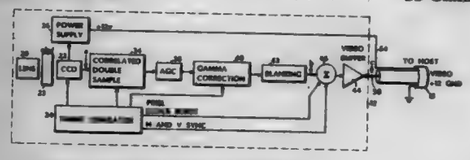
ELECTRICAL CABLE INTERFACE FOR ELECTRONIC CAMERA

Larry K. Baxter, Gloucester, and John J. Coffey, Northborough, both of Mass., assignors to PictureTel Corporation, Peabody, Mass.

Filed Dec. 13, 1994, Ser. No. 355,036

Int. Cl.[6] H04N *5/228*

U.S. Cl. 348—222 **33 Claims**



1. A video camera system comprising:

an electronic camera head comprising:

a solid-state video imager for providing a video signal waveform comprising analog video signals, and

timing generating circuitry for generating horizontal and vertical synchronizing signals and a pixel clock signal;

a host video processor, located externally from the electronic camera head for receiving the analog video signals from the solid-state video imager and the horizontal and vertical synchronizing signals and the pixel clock signal from the timing generating circuitry, comprising:

an analog to digital converter for converting the analog video signals to digital video signals, and

digital signal processing circuitry for processing the digital video signals; and

an electrical cable for carrying the video signal waveform from the electronic camera head and the horizontal and vertical synchronizing signals and the pixel clock signal to the host video processor.

5,486,854

INK JET RECORDING APPARATUS

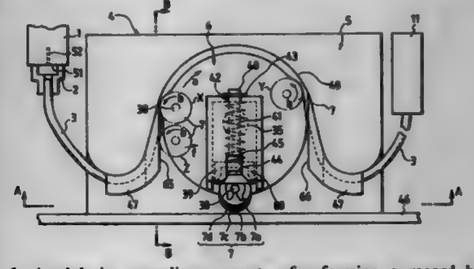
Haruo Uchida, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1992, Ser. No. 942,419

Claims priority, application Japan, Sep. 11, 1991, 3-259724; Jan. 16, 1992, 4-025728

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—30 **4 Claims**



1. An ink jet recording apparatus for forming a record by discharging ink from a recording means for recording onto a recording material, the recording means having a plurality of discharge openings, the apparatus comprising:

more than three tube pumps for effecting an ink discharge recovery by causing at least one of suction and pressurization of said discharge openings of said recording means, each said tube pumps having;

a tube for communicating with a corresponding said discharge opening; and

a pressure roller for deforming said tube by first pressing and releasing said tube at a predetermined timing; and

deforming control means for controlling a timing with which said tube of said tube pumps are deformed by pressing and releasing,

wherein the timing of the pressing of each said tube, or the timing of the releasing from pressing of each said tube, or the timing of both the pressing and the releasing from pressing of each said tube, is such that a time period of a pressure variation for recovery is substantially duplicated for each said tube, so that each said tube experiences a pressure change at approximately a same time, yet so that the pressure changes of each respective tube begin and end at slightly different times from one another.

5,486,855

APPARATUS FOR SUPPLYING INK TO AN INK JET PRINTER

Michael Carlotta, Sodus; Steven J. Dietl, Ontario, and Richard A. Morano, Lyons, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 634,585, Dec. 27, 1990, Pat. No. 5,233,369. This application Jan. 28, 1993, Ser. No. 10,045

Int. Cl.[6] B41J *2/175*

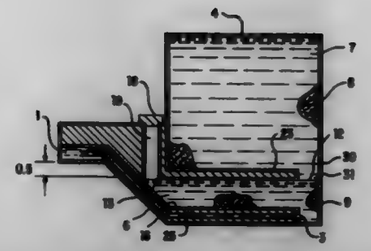
U.S. Cl. 347—87 **21 Claims**

1. An ink jet cartridge for an ink jet printer comprising:

a cartridge housing having a first chamber and a second chamber for containing ink at a negative pressure, said first chamber being disposed above said second chamber;

a printhead disposed at a vertical height greater than a top level of said second chamber;

a supply line for conveying ink to said printhead; and



means for conducting ink from said first chamber and said second chamber to said supply line, said means for conducting ink being maintained at a pressure lower than the negative pressure in each of said first chamber and said second chamber.

5,486,856

COLOR THERMAL PRINTER

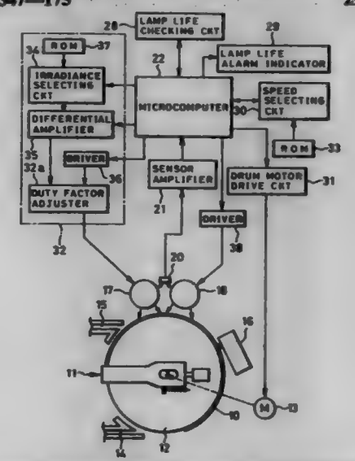
Nobuo Katsuma; Satoshi Ueda, and Hiroyuki Matsukawa, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 28, 1994, Ser. No. 277,624

Claims priority, application Japan, Jul. 22, 1993, 5-181480

Int. Cl.[6] B41J *2/32;* **B41M** *5/28;5/34*

U.S. Cl. 347—175 **29 Claims**



21. A color thermal printing method for use with color thermosensitive recording material including a support and first to third thermosensitive coloring layers formed thereon, said first to third coloring layers arranged toward said support from an obverse of said recording material, relative movement caused between said recording material and a thermal head relative to one another, said relative movement subjecting said first to third coloring layers to thermal recording sequentially in an order listed, and wherein a first ultraviolet lamp is actuated for optical fixation of said first coloring layer after said thermal recording, and a second ultraviolet lamp is actuated for optical fixation of said second coloring layer after said thermal recording, said color thermal printing method comprising steps of:

measuring, with a sensor, a first irradiance of said first lamp while actuated by a drive signal set at a duty factor;

measuring, with said sensor, a second irradiance of said second lamp while actuated;

determining a target irradiance in accordance with said first irradiance;

redetermining said duty factor of said drive signal in accordance with said first irradiance and said target irradiance, said drive

signal supplied to said first lamp, to actuate said first lamp at said target irradiance;
determining a first relative speed in accordance with heat sensitivity of said first coloring layer;
maintaining said first lamp at said target irradiance;
causing said relative movement of said recording material at said first speed, for said thermal recording to said first coloring layer through said thermal head, and for fixing said first coloring layer with said first lamp after said thermal recording;
determining a second relative speed in accordance with said first irradiance;
causing said relative movement of said recording material at said second speed, for supplementary fixation of said first coloring layer with said first lamp;
determining a third relative speed in accordance with heat sensitivity of said second coloring layer;
causing said relative movement of said recording material at said third speed, for said thermal recording to said second coloring layer through said thermal head, and for fixing said second coloring layer with said second lamp after said thermal recording;
determining a fourth relative speed in accordance with said second irradiance; and
causing said relative movement of said recording material at said fourth speed, for supplementary fixation of said second coloring layer with said second lamp.

5,486,857

THERMAL IMAGING SYSTEM

David P. H. Smith, Sawbridgeworth; Mark T. Leonard, and David W. Swan, both of Harlow, all of, United Kingdom, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

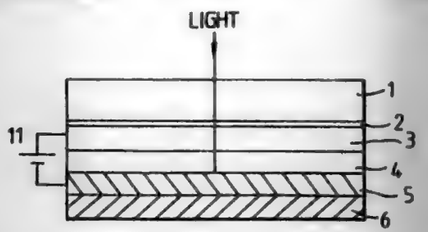
Continuation of Ser. No. 720,118, Jun. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 563,288, Aug. 6, 1990, Pat. No. 5,262,800. This application Jan. 13, 1993, Ser. No. 3,690

Claims priority, application United Kingdom, Aug. 15, 1989, 8918622

The portion of the term of this patent subsequent to Nov. 16, 2010, has been disclaimed.

Int. Cl.[6] B41J *2/435*

U.S. Cl. 347—224 **15 Claims**



1. A thermal imaging device having a print surface for providing localized heating to a layer comprising a thermally activatable component of an image forming system, the device comprising the following sequential layers:
(a) a transparent or semi-transparent electrically conductive layer,
(b) a photoconductive layer which when illuminated by radiation of 633 nm wavelength and intensity of 4.0×10^6 W/m^2 has a conductivity of at least 0.01 S/cm and a photosensitive ratio of at least 1×10^3, layer (b) being in contact with layer (a) and layer (c),
(c) an electrically conductive layer in electrical contact with the photoconductive layer (b) and in contact with:
(d) said layer comprising said thermally activatable component of said image forming system;
wherein the layers are constructed and arranged such that when a voltage potential is applied across layers (a) and (c) and the device is exposed through layer (a) to form exposed areas of layer (b), the exposed areas of layer (b) become conductive, enhancing current flow and generating heat in layer (b) at points corresponding to the exposed areas of layer (b) and causing localized heating at areas at the print surface adjacent exposed areas of layer (b) sufficient to thermally activate said thermally activatable component of said image forming system, the device not containing ferromagnetic garnet materials.

5,486,858

METHOD AND CIRCUIT FOR A NOISE-REDUCED PROCESSING OF PERIODICAL OPTICAL SIGNALS

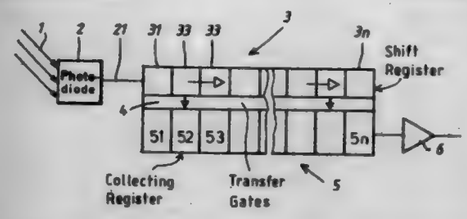
Klaus Knupfer, Essingen, Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Germany

Filed Oct. 19, 1992, Ser. No. 963,395

Claims priority, application Germany, Jan. 19, 1991, 41 34 666.1

Int. Cl.[6] H04N *5/335*

U.S. Cl. 348—303 **14 Claims**



1. A method for processing optical signals being periodical and having a first frequency, the method comprising the steps of:
converting the optical signals into electrical signals in a single photoelectric converter;
inputting the electrical signals into an analog shift register at a clock frequency which is an integer multiple of said first frequency greater than one;
after each lapse of a period of said first frequency, transmitting the content of said analog shift register in parallel to a collecting register;
repeating the above steps over a specific number of periods of said first frequency for accumulating a charge pattern in said collecting register;
after each lapse of said specific number of periods, emitting a sequential output to a downstream circuit; and,
said optical signals being sinusoidal and said clock frequency of said analog shift register and said collecting register being three to eight times said first frequency.

5,486,859

CHARGE-COUPLED DEVICE TYPE SOLID STATE IMAGING DEVICE MAKING BEST USE OF EFFECTIVE PIXELS AND OBTAINING IMAGES OF DIFFERENT TWO OR MORE KINDS OF ASPECT RATIOS

Fumiyoshi Matsuda, Souraku, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

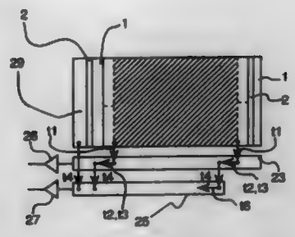
Filed Nov. 3, 1993, Ser. No. 147,850

Claims priority, application Japan, Nov. 6, 1992, 4-296920; Jan. 12, 1993, 5-254131

Int. Cl.[6] H04N *5/335;5/225*

U.S. Cl. 348—311 **11 Claims**

1. A CCD type solid state imaging device, comprising:
a light receiving portion for receiving light and generating charges corresponding to the light;
a vertical CCD for transferring the charges from the light receiving portion in a vertical direction;
a first horizontal CCD for receiving the charges from the vertical CCD and transferring the charges in a horizontal direction;



a second horizontal CCD which is arranged in parallel to the first horizontal CCD and transfers the charges received from the first horizontal CCD in the same horizontal direction, said second horizontal CCD being shorter than the first horizontal CCD;
a coupling for transferring the charges, which are being transferred in the horizontal direction by the first horizontal CCD, to the second horizontal CCD at any arbitrary time point during horizontal transfer by the first horizontal CCD;
first output circuit connected to said first horizontal CCD and responding to an output of said first horizontal CCD to provide an image signal of a first aspect ratio; and
second output circuit connected to said second horizontal CCD and responding to an output of said second horizontal CCD to provide an image signal of a second aspect ratio narrower than said first aspect ratio.

5,486,860

VIDEO CAMERA WITH AUTOFOCUS FUNCTION AND METHOD OF CONTROLLING THE SAME

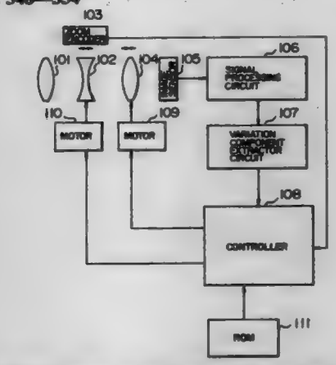
Junji Shiokawa; Hiroshi Chiba; Toshio Murakami; Yoshihiro Todaka; Ichiro Ohsaka, all of Yokohama, and Takashi Azumi, Katsuta, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 154,263, Nov. 18, 1993, abandoned. This application Apr. 6, 1995, Ser. No. 417,440

Claims priority, application Japan, Nov. 30, 1992, 4-320339

Int. Cl.[6] H04H *5/232*

U.S. Cl. 348—354 **19 Claims**



1. A video camera which performs autofocus by moving a focusing lens in accordance with information obtained from a video signal produced from an image sensor and changes the zooming magnification by moving a variator lens, comprising:
first drive means for moving said variator lens;
second drive means for moving said focusing lens including means for slightly vibrating said focusing lens on an optical axis;
detection means for detecting a direction and a degree of a shift of said focusing lens from an in-focus position on the basis of a phase and an amplitude of a variation component of the video signal produced from said image sensor;
memory means for storing a plurality of relations each defined between a position of said variator lens and a position of said focusing lens in respect of constant subject distances, one of said relations being used to form an image of an object located at a one of the constant subject distances; and
control means for controlling said second drive means in accordance with the detected direction and degree of the shift by controlling, when said variator lens is moved by said first drive means, said second drive means in compliance with movement of said variator lens pursuant to a one of said relations which is specified by positions assumed by said variator leans and focusing lens when the direction and the degree of the shift is indicated by the variation component to be less than a predetermined value, and adjusting the movement of the focusing lens by a predetermined correction amount when the direction and degree of the shift is indicated by the variation component to be greater than the predetermined value so that said movement of said variator lens is made pursuant to a second one of said plurality of specified relations.

5,486,861

ELECTRONIC CAMERA WITH DUAL EXPOSURE AND SELECTIVE RECORDING

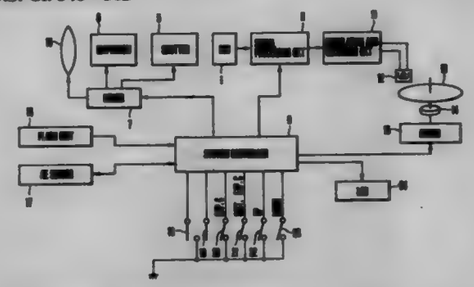
Ryosuke Miyamoto; Makoto Sekita, and Shohei Takeda, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 970,288, Nov. 2, 1992, abandoned, which is a division of Ser. No. 325,547, Mar. 20, 1989, Pat. No. 5,189,519. This application Oct. 20, 1994, Ser. No. 326,813

Claims priority, application Japan, Mar. 22, 1988, 63-065859; Jun. 7, 1988, 63-139620; Jun. 7, 1988, 63-139621; Jun. 16, 1988, 63-146908

Int. Cl.[6] H04N *5/235*

U.S. Cl. 348—362 **33 Claims**



1. An image sensing device comprising:
(a) image sensing means for converting an optical image into an electrical signal;
(b) light measuring means, arranged separately from said image sensing means, for detecting light coming from an object to be photographed to form first light measurement data;
(c) control means for controlling an exposure condition of said image sensing means, making a first exposure on said image sensing means in accordance with said first light measurement data, and reading out an output of said image sensing means formed by the first exposure to form second light measurement data;
said control means also being operable to make a second exposure on said image sensing means in accordance with said second light measurement data; and
(d) recording means operating with selection of one of a first mode in which the output of said image sensing means formed by the first exposure is read out and recorded and a second mode in which the output of said image sensing means formed by the second exposure is read out and recorded.

5,486,862

MOTION PICTURE ENCODING SYSTEM

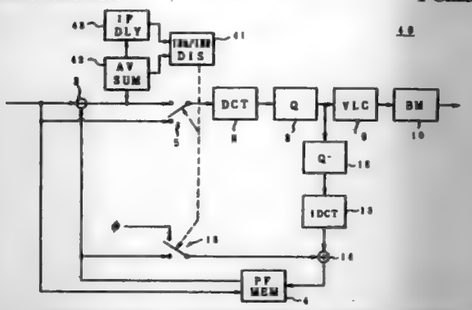
Yoichi Yagasaki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 949,397, Sep. 22, 1992. This application May 2, 1995, Ser. No. 432,793

Claims priority, application Japan, Sep. 30, 1991, 3-278808

Int. Cl.[6] H04N *7/24*

U.S. Cl. 348—399 **1 Claim**



1. A motion picture encoding system for either intra-frame encoding or inter-frame encoding a motion picture which includes a sequence of frames, comprising:

a first encoding means for encoding at least a portion of the motion picture by intra-frame encoding;

a second encoding means for encoding at least a portion of the motion picture by inter-frame encoding;

means for obtaining inter-frame difference data for a current frame;

means for obtaining inter-frame difference data for a frame next to be encoded; and

means for selecting the first encoding means if the difference data for the next frame to be encoded is greater than a multiple of a predetermined integer (equal to or greater than one) times the difference data for the current frame, and otherwise selecting the second encoding means.

5,486,863

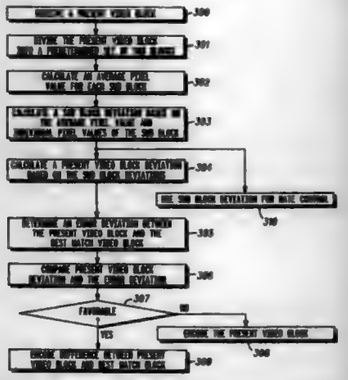
METHOD FOR DETERMINING WHETHER TO INTRA CODE A VIDEO BLOCK

Cheung Auyeung; Kevin J. O'Connell, both of Palatine, and Stephen N. Levine, Itasca, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 29, 1994, Ser. No. 235,611

Int. Cl.[6] H04N *7/50*

U.S. Cl. 348—420 **11 Claims**



1. In a video encoder, a method for determining, for an incoming video frame, whether a present video block of the incoming video frame will be encoded or whether a difference between the present video block and a best match video block of a previously stored video frame will be encoded, the method comprising the steps of:

a) for the present video block, dividing the present video block into a predetermined set of sub blocks;

b) for each sub block of the predetermined set of sub blocks, calculating an average pixel value;

c) for each sub block of the predetermined set of sub blocks, calculating a sub block deviation based on the average pixel value and individual pixel values of the sub block;

d) for the present video block, calculating a present video block deviation based on the sub block deviation for each of the sub blocks in the predetermined set of sub blocks;

e) determining an error deviation between the present video block and the best match video block;

f) when a comparison of the present video block deviation to the error deviation is unfavorable, encoding the present video block; and

g) when the comparison of the present video block deviation to the error deviation is favorable, encoding the difference between the present video block and the best match video block.

5,486,864

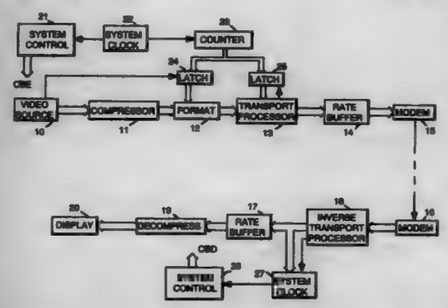
DIFFERENTIAL TIME CODE METHOD AND APPARATUS AS FOR A COMPRESSED VIDEO SIGNAL

Joel W. Zdepski, Belle Mead, N.J., assignor to RCA Thomson Licensing Corporation, Princeton, N.J.

Filed May 13, 1993, Ser. No. 60,924

Int. Cl.[6] H04N *7/13*

U.S. Cl. 348—423 **16 Claims**



1. Apparatus for providing a compressed video signal comprising:

a source of compressed video signal;

means for segmenting said compressed video signal and forming segments of said compressed video signal into video transport packets having transport headers and compressed video payloads;

means for generating time stamps;

means for forming auxiliary transport packets having auxiliary transport headers and payloads including said time stamps and a modifiable field for including further timing information related to incremental delays incurred by the auxiliary transport packet during subsequent transmission processing of said auxiliary transport packet; and

means for interspersing said video transport packets with said auxiliary transport packets to form a compressed video signal for transmission.

5,486,865

DATA DECODER ADAPTED TO DECODE DATA OF DIFFERENT RATES AND/OR ENCODED FORMATS

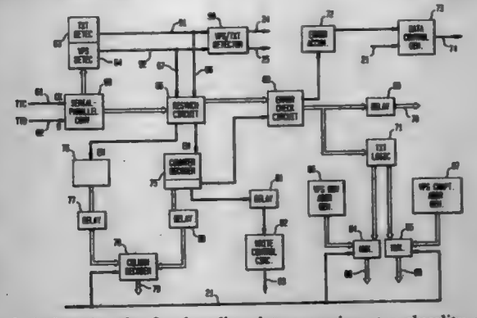
Shirley J. James, Southampton, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 25, 1993, Ser. No. 36,771

Claims priority, application United Kingdom, Mar. 25, 1992, 9206495

Int. Cl.[6] H04N *7/08*

U.S. Cl. 348—465 **21 Claims**



1. A data decoder for decoding data occurring at a plurality of data rates and/or encoding formats and transmitted in one or more lines of a field blanking interval of a television signal, said data decoder comprising control means having a first state which causes the decoder to attempt to detect data transmitted at a first data rate and having a first encoding format and having one or more further states which cause the decoder to attempt to detect data transmitted at one or more different data rates and/or different encoding formats, and means for detecting invalid data, and wherein said control means is arranged to change state in response to the detection of invalid data.

5,486,866

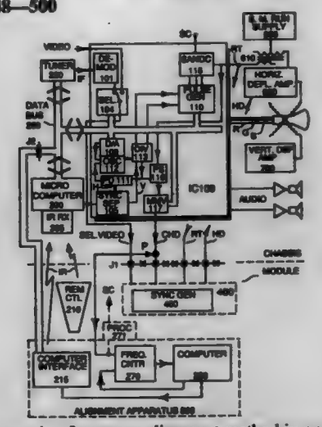
OSCILLATOR FREE RUN FREQUENCY SETTING BY DATA BUS CONTROL

Kenneth J. Helfrich; Joseph C. Stephens, both of Fishers; Kevin E. McClain, and Brian Lee, both of Indianapolis, all of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jun. 21, 1994, Ser. No. 264,132

Int. Cl.[6] H04N *5/04*

U.S. Cl. 348—500 **20 Claims**



1. A free running frequency alignment method in a video display having a sync generator comprising a first oscillator having a first frequency and a second oscillator having a second frequency, where a free running frequency of said first oscillator is to be controllably aligned to a standard frequency, an output of said first oscillator being modulated by said second oscillator having a free running frequency different from said standard frequency, said alignment method comprising the steps of:

(a) applying to said first oscillator a frequency determining control signal having a first value;

(b) measuring, in accordance with modulation imposed by said second oscillator on said first oscillator output, said free running frequency of said first oscillator responsive to said control signal;

(c) determining a difference in frequency between the measured frequency and said standard frequency and generating said control signal having a new value responsive to said difference; and

(d) applying said control signal having said new value to said first oscillator for alignment with said standard frequency.

5,486,867

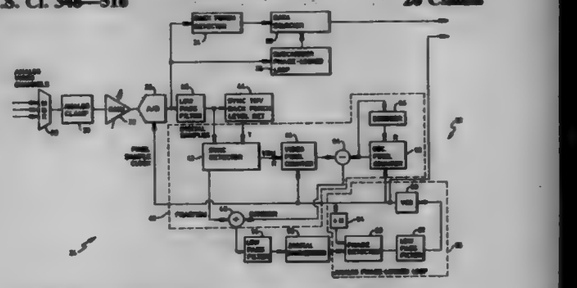
HIGH RESOLUTION DIGITAL PHASE DETECTOR

De D. Hsu, San Diego, Calif.; Frederick A. Williams, Bellevue, Wash., and Wendy L. Liu, San Diego, Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Nov. 30, 1993, Ser. No. 159,975

Int. Cl.[6] H04N *5/04*

U.S. Cl. 348—516 **26 Claims**



9. Apparatus comprising:

analog to digital converter means responsive to an analog video signal having periodic substantially linear synchronization regions for providing a sequence of digital samples at intervals in accordance with a pixel sample clock;

means for providing a threshold value corresponding to a predetermined level of said synchronization region of said analog video signal;

synchronization detector means responsive to said threshold value and the sequence of digital samples for providing a first control signal when a first one of said sequence of digital samples crosses said threshold value;

said synchronization detector means further comprising means for interpolating between S(i) and S(i−1) to provide a second control signal representative of when the threshold signal was crossed during the time interval between S(i) and S(i−1) where S(i) is said first one of said sequence of digital samples to cross said threshold value and S(i−1) is the immediately preceding digital sample before said threshold value was crossed; and

means responsive to said first and second control signals for adjusting said pixel sample clock to synchronize said pixel sample clock with said analog video signal and to cause said pixel sample clock to have a subpixel phase wherein a subsequent crossing of said threshold value occurs at a predetermined position in the time interval between two consecutive digital samples where one of the two consecutive digital samples occurs before and the other after the subsequent crossing.

20. A method of digitizing an analog video signal having periodic substantially linear synchronization regions, comprising the steps of:

converting the analog video signal to a sequence of digital samples at intervals in accordance with a pixel sample clock;

providing a threshold value corresponding to a predetermined level of said synchronization region of said analog video signal;

providing a first control signal when a first one of said sequence of digital samples crosses said threshold value;

providing a second control signal in accordance with the threshold value relative to values of S(i) and S(i−1) where S(i) is said first one of said sequence of digital samples to cross said threshold value and S(i−1) is the immediately preceding digital sample before said threshold value was crossed;

adjusting in response to the first signal the phase and frequency of said pixel sample clock into coincidence with said analog video signal; and

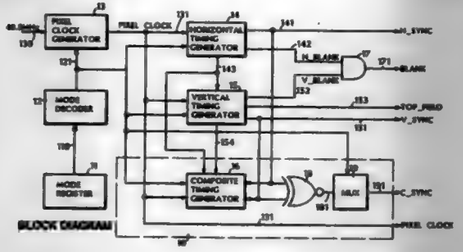
adjusting in response to the second control signal the subpixel phase of said pixel sample clock to provide a predetermined relationship between said threshold value and subsequent values of consecutive digital samples immediately before and immediately after crossing said threshold value.

5,486,868

GENERATOR FOR SCAN TIMING OF MULTIPLE INDUSTRIAL STANDARDS

Rong-Fuh Shyu, and Wen-I Chu, both of Hsinchu, Taiwan, Prov. of China, assignors to Winbond Electronics Corporation, Hsinchu, Taiwan, Prov. of China

Filed May 19, 1995, Ser. No. 445,336
Int. Cl.[6] H04N *5/06;5/04*
U.S. Cl. 348—524 **9 Claims**



1. A video scan timing generator, the video scan timing generator inputting a single timing clock, comprising:

a programmable mode register for storing and outputing a mode value which corresponds to a predetermined mode operation;

a mode decoder, adapted to receive the mode value, for outputing a mode control signal;

a first timing generator, adapted to receive the mode control signal and the single timing clock, for generating a pixel clock corresponding to the predetermined mode operation;

a second timing generator, adapted to receive the pixel clock and the mode control signal, for generating a horizontal synchronization signal and a horizontal blanking signal corresponding to the predetermined mode operation, the second timing generator including a first counter outputing a pixel_count value;

a third timing generator, adapted to receive the pixel clock, the pixel_count value and the mode control signal, for generating a vertical synchronization signal, a vertical blanking signal and a top_field signal corresponding to the predetermined mode operation, the third timing generator including a second counter outputing a horizontal_count value;

a fourth timing generator, adapted to receive the pixel clock, the pixel_count value, the horizontal_count value, the horizontal synchronization signal, the vertical synchronization signal and the mode control signal, for selectively generating an interlace composite synchronization signal;

AND gate, adapted to receive the horizontal and the vertical blanking signal, for generating a composite blanking signal;

EXCLUSIVE NOR gate, adapted to perform EXCLUSIVE NOR operation to the horizontal synchronization signal and the vertical synchronization signal, for generating a non-interlaced composite synchronization signal;

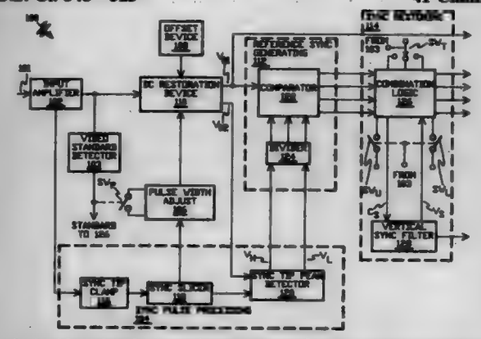
a selector, in response to the mode control signal, for selectively outputing the non-interlace composite synchronization signal and the interlace composite synchronization signal.

5,486,869

SYNCHRONIZING SIGNAL SEPARATING APPARATUS AND METHOD

J. Carl Cooper, Twin Parks Bldg., 718 University Ave., Suite 210, Los Gatos, Calif. 95030

Continuation of Ser. No. 837,323, Feb. 18, 1992, abandoned. This application Dec. 13, 1993, Ser. No. 165,688
Int. Cl.[6] H04N *5/08*
U.S. Cl. 348—525 **41 Claims**



1. A video signal processing apparatus for use with the synchronizing pulses thereof, said synchronizing pulses having at least a leading edge and a trailing edge including in combination:

at least one sampling circuit for sampling said synchronizing pulses in response to a plurality of sampling signals to generate at least a first reference signal and a second reference signal, said reference signals respectively representing different levels of said synchronizing pulses, wherein said sampling circuit includes DC restoring for restoring said synchronizing pulses to a predetermined DC reference level which said DC restored synchronizing pulses are coupled to at least one comparing circuit for comparing said video signal with a level responding to said reference signals thereby providing at least a precision sliced pulse signal, with said sampling being independent of said precision sliced pulse signal.

5,486,870

APPARATUS FOR THE DISPLAY OF PICTURES HAVING AN ASPECT RATIO 4/3 ON A DISPLAY HAVING AN ASPECT RATIO OF 16/9

Alain Decreamer, Garches, France, assignor to U.S. Philips Corporation, New York, N.Y.

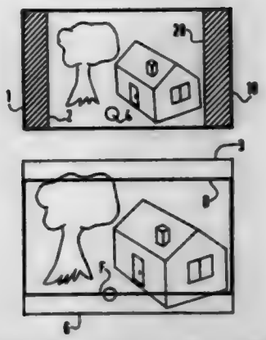
Filed Oct. 9, 1992, Ser. No. 958,895
Claims priority, application France, Jan. 16, 1991, 91 12765; Jan. 30, 1991, 91 13402
Int. Cl.[6] H04N *5/46*
U.S. Cl. 348—556 **2 Claims**

1. A picture display apparatus for displaying an input video picture, the apparatus comprising:

a video display means having a first aspect ratio R_1, where aspect ratio is the ratio of width to height; and

displaying means coupled to said video display means, said displaying means including:

horizontal and vertical scanning circuits for displaying an input video picture in whole or in part as a displayed video picture on the video display means, the displayed video picture having a plurality of lines, each having a line length L, and being mutually separated from one another vertically by a vertical spacing W, wherein L has a value L_0 and W has a value W_0 when the input video picture has the first aspect ratio R_1, and is normally displayed on the video display means;



horizontal scanning control means of a continuously variable type coupled to said horizontal scanning circuit and operating directly on said horizontal scanning circuit; and

vertical scanning control means of a continuously variable type coupled to said vertical scanning circuit and operating directly on said vertical scanning circuit, wherein said horizontal scanning control means and said vertical scanning control means are coupled, and said horizontal and vertical scanning control means at least enable a user, at least in the situation that the input video picture has a second aspect ratio R_2, which is smaller than the first aspect ratio R_1, to continuously select said line length L and said vertical spacing W, while maintaining a relation between the line length L and the vertical spacing W in such a way that:

$$\frac{L/W}{L_0/W_0} = \frac{R_2}{R_1},$$

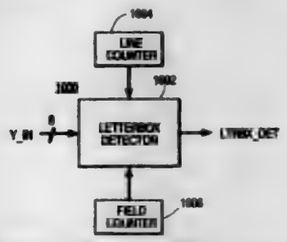
the value of L remaining L_0R_2/R_1 and L_0.

5,486,871

AUTOMATIC LETTERBOX DETECTION

Paul D. Filliman, Indianapolis; Nathaniel H. Ersoz, Brownsburg; Timothy W. Saeger, Indianapolis; David J. Duffield, Indianapolis, and Karl F. Horlander, Indianapolis, all of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

PCT No. PCT/US91/03739, § 371 Date Nov. 3, 1992, § 102(e) Date Nov. 3, 1992, PCT Pub. No. WO91/19390, PCT Pub. Date Dec. 12, 1991
PCT Filed May 29, 1991, Ser. No. 940,877
Claims priority, application United Kingdom, Jun. 1, 1990, 9012326
Int. Cl.[6] H04N *5/68;7/01*
U.S. Cl. 348—558 **14 Claims**



1. A video control system, comprising:

a deflection system having a vertically adjustable picture display characteristic;

means responsive to video luminance levels of a video signal during active scanning for detecting a letterbox video source signal; and,

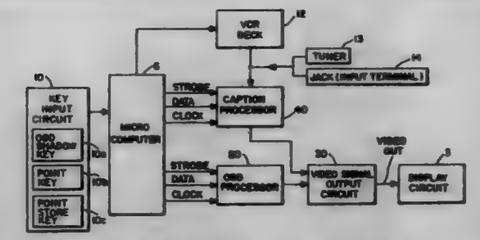
means for controlling said adjustable picture display characteristic responsive to said detecting means.

5,486,872

METHOD AND APPARATUS FOR COVERING AND REVEALING THE DISPLAY OF CAPTIONS

Si Young Moon, Inchon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Continuation-in-part of Ser. No. 23,676, Feb. 26, 1993, abandoned. This application Jun. 30, 1994, Ser. No. 269,094
Int. Cl.[6] H04N *5/262;5/278;5/445*
U.S. Cl. 348—564 **6 Claims**



1. In a method of displaying a caption in a video reproducing apparatus comprising a key input circuit containing a plurality of keys including an OSD shadow key and point key, which is selected by a user, a microcomputer coupled to said key input circuit for controlling the apparatus in response to a selected key input, an OSD processor coupled to said microcomputer for processing OSD characters in accordance with a first output of said microcomputer, a caption processor coupled to said microcomputer for generating a caption in accordance with a second output of said microcomputer, a video signal output circuit coupled to said OSD processor and to said caption processor for generating a composite video signal including the OSD characters, an optional caption, and a video signal, and a display for displaying an image corresponding to the composite video signal, said method comprising:

an initial routine comprising the steps of placing the apparatus in an OSD shadow mode by selecting the OSD shadow key of the key input circuit, determining whether a translated caption is displayed horizontally or vertically on the display, and setting a pointer at an initial position corresponding to whether the translated caption is displayed horizontally or vertically; and

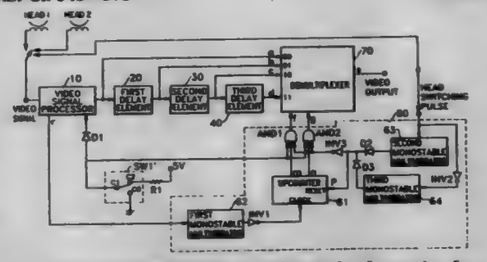
an OSD character output routine comprising the steps of selecting a start position and an end position using a point key, and displaying OSD characters between the selected start position and end position so as to cover the translated caption.

5,486,873

SCREEN-ART CIRCUIT ADOPTING AN ANALOG METHOD

Hong-gyu Han, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Oct. 13, 1993, Ser. No. 135,487
Claims priority, application Rep. of Korea, Jan. 13, 1992, 92-18789
Int. Cl.[6] H04N *5/262*
U.S. Cl. 348—578 **7 Claims**



1. A screen-art circuit having an analog mode of operation for a video signal processing device including a video signal processor

having a color killer circuit for eliminating a color signal from an applied video signal received via a plurality of heads, said screen-art circuit comprising:

an art mode selector for selecting one of an operating mode and a non-operating mode of said screen-art circuit;

a plurality of delay devices, each of said delay devices delaying an output video signal generated from said video signal processor by one horizontal scanning period (1H);

a switch for selectively switching the output video signal generated from said video signal processor and said delay devices at 1H intervals, when an art mode is selected by said art mode selector, to produce screen art representing the output video signal; and

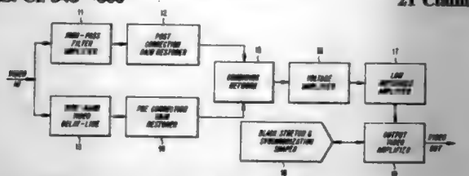
control signal generator for generating a control signal by logical combination of a switching signal for switching the heads and a composite sync signal generated from said video signal processor so as to control said switch.

5,486,874

METHOD AND APPARATUS FOR IMPROVING TRANSMITTED VIDEO SIGNAL STRUCTURE

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Filed May 13, 1994, Ser. No. 242,170
Int. Cl.[6] H04N 5/14
U.S. Cl. 348—600 **21 Claims**



1. A video processor, having an input and an output, for compensating accumulated phase and amplitude errors encountered during transmission over a communications channel, of a video signal coupled to said input, comprising:

a high-pass filter, coupled to said input, having a bandwidth characteristic inverse to a low-pass characteristic encountered during transmission of a video signal over the communications channel;

an inverting amplifier, coupled to said high-pass filter, for inverting a high-pass-filtered video signal;

a post-correction-phase-and-gain restorer, coupled to said high-pass filter and to said inverting amplifier, for restoring a signal level of the high-pass-filtered video signal, as a restored-inverted-video signal;

a wide-band-video-delay line, coupled to said input, for delaying the video signal by an odd integer multiple of a half cycle at a subcarrier frequency as a delayed-video-signal;

a pre-correction-gain restorer, coupled to said wide-band-video-delay line, for restoring the delayed-video signal as a restored-delayed-video signal; and

a combining network, coupled to said output, to said post-correction-phase-and-gain restorer, and to said pre-correction-gain restorer, for combining the restored-inverted-video signal and the restored-delayed-video signal, and outputting a composite-video signal at said output.

9. A video processor, having an input and an output, for compensating accumulated phase and amplitude errors encountered during transmission over a communications channel, of a video signal, comprising:

high-pass-filter-and-amplifier means, coupled to said input, having a bandwidth characteristic inverse to a low-pass characteristic encountered during transmission of the video signal over the communications channel, for filtering the video signal as a filtered-video signal and for inverting the filtered-video signal as an inverted-filtered-video signal;

post-restorer means for restoring the inverted-filtered-video signal to a restored-signal level, thereby generating a restored-inverted-filtered-video signal;

delay means, coupled to said input, for delaying the video signal as a delayed-video signal; and

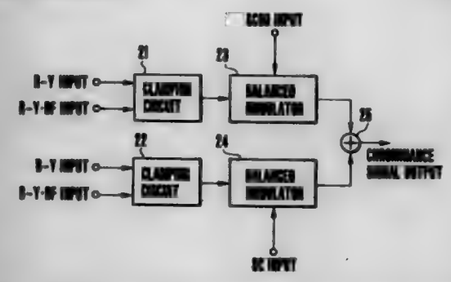
combining means for combining the restored-inverted-filtered-video signal and the delayed-video signal to generate a composite-video signal at said output.

5,486,875

IMAGE SIGNAL PROCESSING DEVICE

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Filed Jun. 25, 1992, Ser. No. 904,188
Claims priority, application Japan, Jul. 2, 1991, 3-161518
Int. Cl.[6] H04N 9/65
U.S. Cl. 348—642 **8 Claims**



1. An image signal processing device for processing an image signal, comprising:

(A) a first differential amplifier for receiving a color-difference signal and a reference signal;

(B) a second differential amplifier for receiving a burst flag signal and the reference signal; and

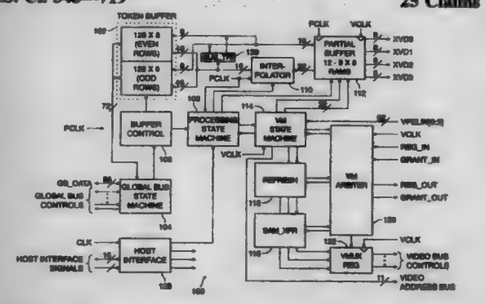
(C) a modulator for receiving together signals outputted from said first and second differential amplifiers and modulating the received signals by using a carrier signal.

5,486,876

VIDEO INTERFACE UNIT FOR MAPPING PHYSICAL IMAGE DATA TO LOGICAL TILES

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Filed Apr. 27, 1993, Ser. No. 54,684
Int. Cl.[6] H04N 5/907
U.S. Cl. 348—719 **25 Claims**



12. In a video processing system having a video memory for storing image data having P rows and Q columns, a device for reading and writing data to the video memory comprising:

means, coupled to a video bus, for mapping a physical image data having P rows and Q columns logically subdivided into a plurality of tiles having dimensions of p rows and q columns, to a storage memory, by placing the image data located on an

even numbered row of said p rows and an even numbered column of said q columns in a first buffer memory; and

means, coupled to said video bus, for mapping said given one of said tiles to said storage memory by placing the image data located at an odd numbered row of said p rows and at an odd numbered column of said q columns in to a second buffer memory.

23. In a video processing system having a video memory for storing image data having P rows and Q columns, a device for reading and writing data to the video memory comprising:

means, coupled to a video bus, for mapping a physical image data having P rows and Q columns logically subdivided into a plurality of tiles having dimensions of p rows and q columns, to a storage memory, a given one of said tiles, by placing the image data located on an even numbered row of said p rows and an even numbered column of said q columns in a first buffer memory and

for mapping said given one of said tiles to said storage memory by placing the image data located at an odd numbered row of said p rows and at an odd numbered columns of said q columns into a second buffer memory;

a circular buffer, coupled to said first and to said second buffer memory for storing a first set of data from said first buffer together with a second set of data from said second buffer as an array of image data having alternating odd and even rows;

an interpolator, coupled to said circular buffer for interpolating the array of image data;

an arbiter, coupled to the video bus, for controlling access to the video bus; and

a state machine, coupled to the means for mapping, to said interpolator and to said arbiter for sequencing operation of said means for mapping, said interpolator, and said arbiter.

25. A latch device for a DRAM memory interface comprising:

a latching signal pin on the DRAM memory interface coupled to a CAS signal output from the DRAM memory interface CAS pin to the DRAM memory;

a latch having:

an input coupled to an output of the DRAM memory;

an output coupled to said interface;

a latching signal input coupled to said latching signal pin; and

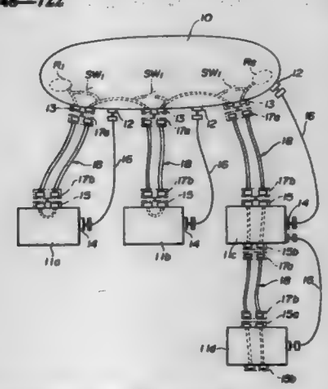
wherein when said latching signal pin is disabled, said latch is transparent.

5,486,877

AUDIO VISUAL SYSTEM WITH AUTOMATIC CLOSING OF A BUS CIRCUIT WHEN AN AV UNIT IS DISCONNECTED

Shigeo Tanaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 4, 1994, Ser. No. 317,870
Claims priority, application Japan, Jan. 8, 1993, 5-252679
Int. Cl.[6] H04N 5/222
U.S. Cl. 348—722 **9 Claims**



1. An audio-visual system, comprising:

an audio-visual system control component including at least one control connector, said control connector including an input terminal group and an output terminal group;

an AV bus cable;

switching means provided between said input terminal group and said output terminal group and operable so as to close an audio-visual bus circuit of said audio-visual system in response to detachment of a plug of said AV bus cable from said control connector and to open said audio-visual bus circuit of said audio-visual system in response to attachment of the plug of said AV bus cable to said control connector;

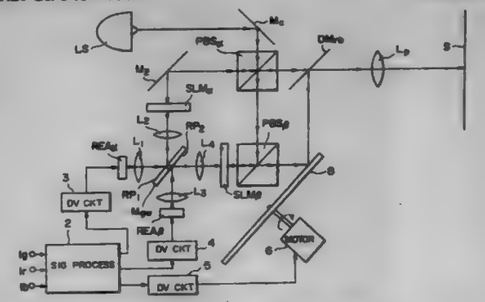
said AV bus cable including input side and output side plugs interconnected via a bus line, each of said input side plugs being receivable by said control connector and a corresponding one of said input side plugs being receivable by an image source connector provided on an image source component of said audio-visual system to be connected to said control component.

5,486,878

COLOR IMAGE DISPLAY APPARATUS WITH REFLECTION MIRRORS SIMULTANEOUSLY OSCILLATED

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Filed Sep. 23, 1994, Ser. No. 313,585
Claims priority, application Japan, Sep. 24, 1993, 5-261654; Sep. 30, 1993, 5-268387; Jan. 8, 1993, 5-277687
Int. Cl.[6] H04N 9/31
U.S. Cl. 348—757 **18 Claims**



1. A color image display apparatus, comprising:

light deflecting means having a first and a second oscillating reflection mirror attached to a common oscillating shaft a predetermined distance away from each other for deflecting a first light beam and a second light beam simultaneously by oscillating the first and second oscillating reflection mirrors at a predetermined period;

first light emitting means for emitting the first light beam intensity-modulated on the basis of an image signal of a specific primary color of three primary colors of additive color mixture for constituting a color image to be displayed, to the first oscillating reflection mirror of said light deflecting means;

second light emitting means for emitting the second light beam intensity-modulated on the basis of an image signal of two remaining primary colors, to the second oscillating reflection mirror of said light deflecting means, the two remaining primary colors being complementary to the specific primary color and the two remaining primary color light beams being separatable in space or time;

first focusing means for focusing the light beam deflected by the first oscillating reflection mirror to a first light-written type spacial light modulation element composed of at least a photo-conductive layer member and a light modulation sub-

stance layer member, to write the light beam deflected by the first oscillating reflection mirror;

second focusing means for focusing the light beam deflected by the second oscillating reflection mirror to a second light-written type spacial light modulation element composed of at least a photo-conductive layer member and a light modulation substance layer member, to write the light beam deflected by the second oscillating reflection mirror;

light resolving means for resolving light emitted by a read light source to three read lights of predetermined wave length bands corresponding to the three primary colors of the additive color mixture, respectively;

first light introducing means for introducing a resolved read light with a wave length band of the specific primary color, to said first light-written type spacial light modulation element as a read light;

second light introducing means for selectively introducing two remaining read lights with two wave length bands of the two primary colors complementary to the specific primary color, to said second light-written type spacial light modulation element as two read lights, separately in correspondence to light writing portions at which the second light beam intensity-modulated on the basis of the image signal of the two remaining primary colors has been written;

light synthesizing means for synthesizing two read lights intensity-modulated on the basis of the respective color image information and read from said first and second light-written type spacial light modulation elements separately, into light intensity-modulated on the basis of the respective image information; and

projecting means for projecting the light synthesized by said light synthesizing means onto a screen.

2. A color image display apparatus, comprising:

light deflecting means having a first and a second oscillating reflection mirror formed with a first reflective surface and a second reflective surface on both right and reverse sides thereof, the first and second mirrors being attached to a common oscillating shaft a predetermined distance away from each other for deflecting a first, a second, and a third light beams simultaneously by oscillating the first oscillating reflection mirror and the second oscillating reflection mirror;

first light emitting means for emitting the first light beam intensity-modulated on the basis of an image signal of a specific primary color of three primary colors of additive color mixture for constituting a color image to be displayed, to the first oscillating reflection mirror of said light deflecting means;

second light emitting means for emitting the second light beam intensity-modulated on the basis of an image signal of one of two remaining primary colors, to the first reflective surface of the second oscillating reflection mirror of said light deflecting means;

third light emitting means for emitting the third light beam intensity-modulated on the basis of an image signal of the other of two remaining primary colors, to the second reflective surface of the second oscillating reflection mirror of said light deflecting means;

first focusing means for focusing the light beam deflected by the first oscillating reflection mirror to a first light-written type spacial light modulation element composed of at least a photo-conductive layer member and a light modulation substance layer member;

second focusing means for focusing the light beam deflected by the first reflective surface of the second oscillating reflection mirror to a second light-written type spacial light modulation element composed of at least a photo-conductive layer member and a light modulation substance layer member;

third focusing means for focusing the light beam deflected by the second reflective surface of the second oscillating reflection mirror to a third light-written type spacial light modulation element composed of at least a photo-conductive layer member and a light modulation substance layer member;

light resolving means for resolving light emitted by a read light source to three read lights with wave length bands of the three primary colors of the additive color mixture, respectively;

light introducing means for introducing each of the three resolved read lights with three wave length bands of the three primary colors, to said first, second and third light-written type spacial light modulation elements, as a read light, respectively;

light synthesizing means for synthesizing three lights intensity-modulated on the basis of the respective color image signals and read from said first, second and third light-written type spacial light modulation elements separately, into light intensity-modulated on the basis of the respective image information; and projecting means for projecting the light synthesized by said light synthesizing means onto a screen.

3. A color image display means, comprising:

a first light-written type reflective spacial light modulation element composed of at least a photo-conductive layer member and a light modulating substance member, for writing two-dimensional image information of a first light beam intensity-modulated on the basis of an image signal of a specific primary color of three primary colors of additive color mixture for constituting a color image to be displayed;

a second light-written type reflective spacial light modulation element composed of at least a photo-conductive layer member and a light modulating substance member, for writing two-dimensional image information of a second light beam intensity-modulated on the basis of an image signal of two remaining primary colors, the two remaining primary colors being complementary to the specific primary color and the two remaining primary color light beams being separatable in space or time;

a first polarizing light beam splitter arranged on a read light incoming side of said first light-written type reflective spacial light modulation element;

a second polarizing light beam splitter arranged on a read light incoming side of said second light-written type reflective spacial light modulation element;

separating means for separating read light emitted by a read light source to a first read light of the specific primary color of three colors of additive color mixture and second read lights of two remaining primary colors complementary to the specific primary color;

light introducing means for introducing the separated first read light to the read light incoming side of said first light-written type reflective spacial light modulation element through said first polarizing light beam splitter;

selective light introducing means for selectively introducing the separated second read lights with two wave length bands of the two primary colors complementary to the specific primary color, to the read light incoming side of said second light-written type reflective spacial light modulation element through said second polarized light beam splitter, in correspondence to light writing portions at which the second light beams intensity-modulated on the basis of the image signal of the two remaining primary colors has been written;

synthesizing means for synthesizing the first read light having image information of the specific primary color of the three primary colors of additive color mixture, reflected by said first light-written type reflective light modulation element and outputted through said first polarizing light beam splitter; and the second read light having image information of the two remaining primary colors complementary to the specific primary color and separatable in space or time, reflected by said second light-written type reflective light modulation element, and outputted through said second polarizing light beam splitter, into light intensity-modulated on the basis of the respective image information; and

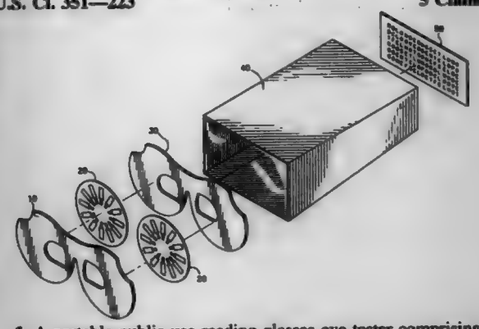
projecting means for projecting the light synthesized by said light synthesizing means onto a screen.

5,486,879

PORTABLE, PUBLIC USE READING GLASSES EYE TESTER

Mark Barnett, 2260 El Cajon Blvd. #119, San Diego, Calif. 92104

Filed Jun. 6, 1994, Ser. No. 254,567
Int. Cl.[6] A61B 3/02
U.S. Cl. 351—223 5 Claims



1. A portable public use reading glasses eye tester comprising:

a. a front section comprising 2 view plates with openings for two eyes and an indentation for a nose sandwiching two series of non prescription reading glass magnification lenses of increasing power, one series for each eye, and means for a user to adjust the lenses independently for each eye, and

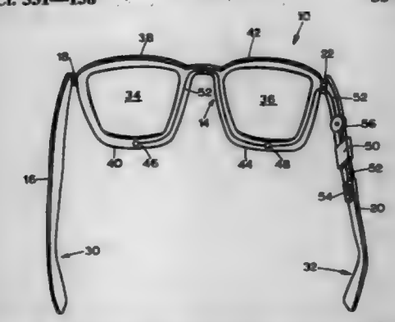
b. a rear section view tunnel with 2 open ends, a first open end attached to said front section and at a second open end a series of characters of predetermined size mounted on an end plate of light permeable rigid material at a predetermined distance from the lenses of the front section.

5,486,880

APPARATUS FOR CAUSING PUPIL CONSTRICTION

Paul M. House, 20 Boat La., Oswego, Ill. 60543

Filed Jun. 1, 1994, Ser. No. 252,369
Int. Cl.[6] G02C 1/00
U.S. Cl. 351—158 35 Claims



1. An apparatus for causing constriction of the pupil of an eye of a person having a deformity in the cornea of said eye so that light is not refracted through said deformity, impairing the vision of the person, said apparatus comprising:

light-generating means for generating light of an intensity sufficient to cause constriction of said pupil of the person to a degree sufficient to prevent light from being refracted through said deformity and thus to prevent impairment of the vision of the person; and

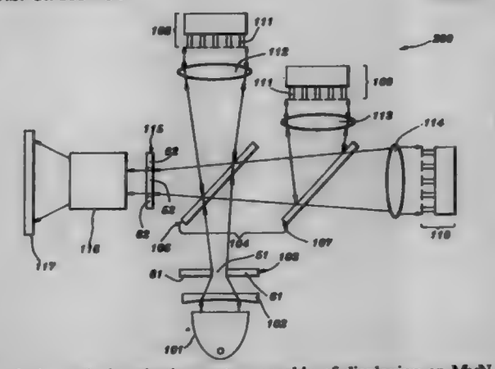
support means for supporting said light-generating means in a fixed position with respect to said eye of the person so that said light generated by said light-generating means is directed towards said pupil of the person and causes constriction of said pupil without substantially obstructing the vision of the person.

5,486,881

UNIQUE OPTICAL PROJECTION SYSTEM

Jin Hwang, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 9, 1995, Ser. No. 401,324
Claims priority, application Rep. of Korea, Mar. 9, 1994, 944521
Int. Cl.[6] G03B 21/28
U.S. Cl. 353—34 4 Claims



1. An optical projection system capable of displaying an M×N number of pixels, wherein M and N are integers, comprising:

a non-point white light source for emitting a white light along a first optical path on a first optical plane, wherein the white light consists of a first, second and a third primary light beams, each of the primary light beams being one of the primary colors;

a trinity of arrays of M×N actuated mirrors, including a first, a second and a third array of M×N actuated mirrors, each of the actuated mirrors having an actuator and a mirror attached thereto, each of the actuated mirrors in the arrays being capable of changing the optical path of the primary light beams reflected therefrom;

a source stopper, provided with a light transmitting portion having a specific configuration and a light stopping portion and being placed on the first optical path on the first optical plane, for shaping the white light from the non-point white light source into a predetermined configuration; a source lens, disposed between the source stopper and the non-point white light source, for focussing the white light emitted by the non-point white light source onto the source stopper;

an optical means including a first and a second dichroic mirrors, for isolating each of the primary light beams in the white light from the source stopper and illuminating each of the primary light beams to the corresponding array of actuated mirrors, wherein the first dichroic mirror, disposed between the source stopper and the first array of actuated mirrors facing the second dichroic mirror, is used for isolating one of the primary light beams, transmitting thereof to the first array of actuated mirrors and reflecting the remaining two primary light beams onto the second dichroic mirror disposed between the first dichroic mirror and the third array of actuated mirrors facing the second array of actuated mirrors, and the second dichroic mirror, upon receiving the remaining two primary light beams from the first dichroic mirror, isolates one of the two remaining primary light beams, reflects the isolated primary light beams onto the second array of actuated mirrors and transmits the remaining primary light beam to the third array of actuated mirrors;

a trinity of field lenses including a first, a second and third field lenses, each of the first, second and third field lenses being located between the first dichroic mirror and the first array of actuated mirrors, between the second dichroic mirror and the second array of actuated mirrors, and between the second dichroic mirror and the third array of actuated mirrors, respectively, wherein each of the field lenses is used for collimating each of the primary light beams onto the corresponding array

of actuated mirrors and for refocussing each of the primary light beams reflected from each of the actuated mirrors in each of the arrays;

a projection screen for displaying an image made of the M×N number of pixels thereon; a projection stopper, provided with a light transmitting portion and a light stopping portion, for passing a predetermined amount of the reflected primary light beams from the trinity of the arrays of M×N actuated mirrors; and

a projection lens for projecting the primary light beams from the projection stopper onto the projection screen, thereby displaying each of the pixels corresponding thereto.

5,486,882

IMAGE PROJECTING APPARATUS

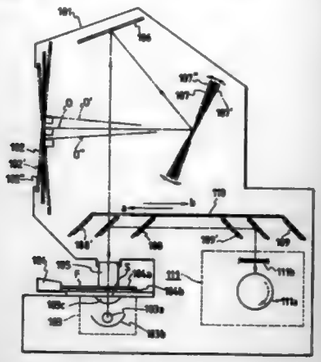
Yukuo Yamaguchi; Kazuhiko Onuki, both of Tokyo, and Kazuhide Sugiyama, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1994, Ser. No. 195,198

Claims priority, application Japan, Feb. 17, 1993, 5-051449; Feb. 25, 1993, 5-036584; Mar. 12, 1993, 5-052231

Int. Cl.[6] G03B *21/28*

U.S. Cl. 353—77 **24 Claims**



1. An image projecting apparatus comprising:

illuminating means disposed in an apparatus body for illuminating an image carrying member;

a screen disposed in said apparatus body such that an inclination angle of said screen can be adjusted;

an optical system for projecting an image of said image carrying member illuminated by said illuminating means on said screen, said optical system including at least one mirror with an adjustable inclination angle; and

means for inclining said screen and said mirror, with said inclining means inclining said mirror in accordance with inclination of said screen so that said screen and said mirror may be inclined at different angles from each other.

5,486,883

TRANSPARENCY PROTECTOR

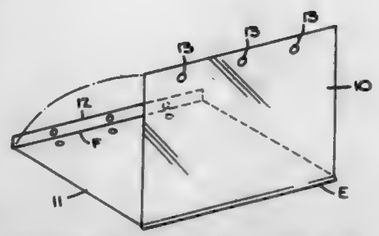
Thomas A. Candido, Hauppauge, N.Y., assignor to Enbee Plastics, Inc., Long Island City, N.Y.

Filed Mar. 3, 1993, Ser. No. 25,619

Int. Cl.[6] G03B *21/64*

U.S. Cl. 353—120 **4 Claims**

1. A composite protector adapted to accommodate a transparency to maintain it in a clean, dust-free and dry condition so that it may be used with an overhead optical projector to cast the image carried by the transparency onto a viewing screen, the protector comprising an open-ended rectangular sleeve whose dimensions are appropriate to those of the transparency, the sleeve including a front panel formed of transparent, acetate film of relatively low strength that is breathable to permit a transparency inserted in the sleeve in a wet state to dry out, a rear panel formed of a transparent, synthetic-plastic film of high strength having the same length as the front panel and joined thereto at one side edge to form a folder to receive the transparency so that it is then sandwiched between the panels, the width of the rear panel being greater than that of the front panel to form a high strength flap that is folded over to define at the other edge of the sleeve a margin, said margin being provided with a set of punch holes whereby the transparency-loaded protector can be kept when not in use in a ring binder, said rear panel being formed of polypropylene.



5,486,884

REFLECTING IMAGE PROJECTION SCREEN AND IMAGE PROJECTION SYSTEM COMPRISING SUCH A SCREEN

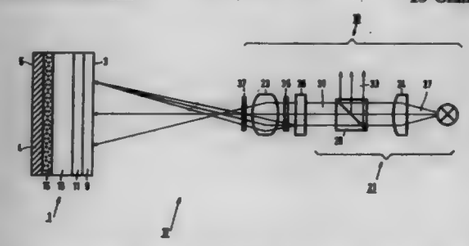
Adrianus J. S. M. De Vaan, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 25, 1994, Ser. No. 218,482

Claims priority, application Belgium, Jan. 6, 1993, 09301042

Int. Cl.[6] G03B *21/00*

U.S. Cl. 353—122 **15 Claims**



1. A reflecting image projection screen comprising a linear polarizer and a reflecting layer for reflecting radiation which is incident on the reflecting layer via the polarizer, characterized in that the reflecting layer is a depolarizing diffuser layer and in that the image projection screen includes a cholesteric filter between the polarizer and the reflecting layer and a λ/4 plate between the polarizer and the cholesteric filter, the direction of polarization of the radiation from the cholesteric filter corresponding to the direction of polarization of the polarizer after conversion by the λ/4 plate.

5,486,885

CHARACTER IMAGE DISPLAY APPARATUS FOR A CAMERA

Fumiharu Matsumoto, 4-802, 31, 1-chome, Hon-cho, Nakano-Ku, Tokyo, Japan

Filed Mar. 7, 1994, Ser. No. 206,878

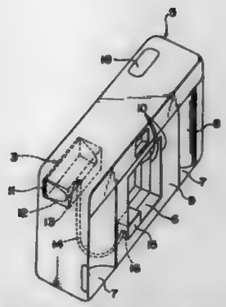
Claims priority, application Japan, Mar. 5, 1993, 5-014623 U

Int. Cl.[6] G03B *17/24*

U.S. Cl. 354—106 **6 Claims**

1. A character image display apparatus for a camera, comprising:

a camera body having a film exposure portion and a film plane;



a flash unit having a reflector for illuminating a subject being photographed, the flash unit being housed on the camera body;

a light guide having an end thereof connected to the reflector through a hole in the reflector, thereby light emitted from the flash unit being transmitted through said light guide;

a diffusion block fixed to the camera body within the exposure portion of the body, the diffusion block having a display plane substantially parallel to the film plane of the camera body, and a positive film of a display image being disposed on said display plane and thereby facing the film plane of the camera body, and an opposite end of the light guide disposed in the diffusion block such that during the photographic process light from the flash unit is introduced through the light guide to the diffusion block to uniformly illuminate the display image and thereby the display image being simultaneously photographed with a subject being photographed.

5,486,886

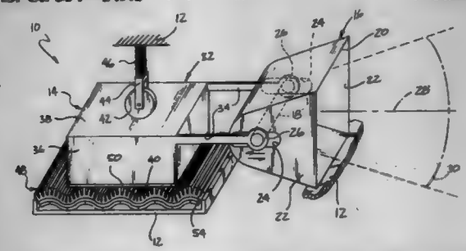
VARIABLE ANGLE FLASH WITH LINEAR MOTOR DRIVE

Mikhail Vaynshteyn, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 21, 1994, Ser. No. 210,984

Int. Cl.[6] G03B *15/05*

U.S. Cl. 354—149.1 **9 Claims**



1. A variable angle flash apparatus for a photographic camera comprising a light source member and a reflector member which are relatively movable along an optical axis for focusing light from said source with a desired illumination angle and means for varying the distance along said axis between said light source and said reflector for changing said illumination angle, is characterized in that:

said means for varying the distance between said light source and said reflector includes a follower connected with one of said light source and reflector members, said follower being movable along a linear path parallel with said optical axis for moving said one member relative to the other member along said axis, said follower being connected with a movable part of a linear motor having a second part fixed with respect to said other of the light source and reflector members, said linear motor being operative when energized to move said follower along said linear path, thereby varying the distance between the light source and reflector members and changing the illumination angle of the flash.

5,486,887

PHOTOGRAPHIC CAMERA WITH STROBE

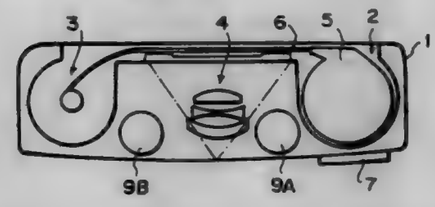
Akio Omiya, Saitama, Japan, assignor to Fuji Photo Optical Co., Ltd., Ohmiya, Japan

Filed Sep. 15, 1994, Ser. No. 305,315

Claims priority, application Japan, Jan. 14, 1993, 5-256782

Int. Cl.[6] G03B *15/03;17/02*

U.S. Cl. 354—149.11 **4 Claims**



1. A photographic camera comprising a film magazine chamber, a film-take-up spool chamber, an optical system disposed between the film magazine chamber and the film-take-up spool chamber and a strobe energized by a strobe driving circuit, wherein the strobe driving circuit includes a plurality of capacitors for accumulating charge from a power source, said plurality of capacitors being disposed in a space between the optical system and at least one of the film magazine chamber and the film-take-up spool chamber such that the capacitors do not interfere with a light bundle entering the optical system and emanating therefrom.

5,486,888

CAMERA

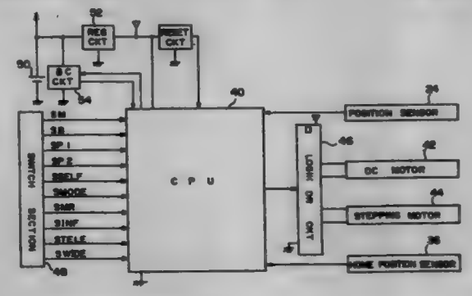
Michihiro Shiina; Jun'ichi Iwamoto, and Fumio Iwai, all of Oomiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed May 12, 1994, Ser. No. 242,019

Claims priority, application Japan, May 14, 1993, 5-113437

Int. Cl.[6] G03B *3/10;17/04*

U.S. Cl. 354—187 **19 Claims**



1. A camera comprising:

a camera body;

a lens barrel arranged as movable backward and forward relative to said camera body;

a first motor for driving said lens barrel;

a front lens group coaxially mounted in a front end portion of said lens barrel;

a rear lens group coaxially disposed in said lens barrel behind said front lens group so as to be independently movable backward and forward;

a second motor for driving said rear lens group; and

a lens barrel storage control apparatus for controlling said first motor and said second motor in storing said lens barrel at a retracted position in said camera body, said lens barrel storage control apparatus including first means for driving said second motor to locate said rear lens group at a predetermined standby position in said lens barrel, second means for detecting if said rear lens group is located at said standby position, third means for driving said first motor to retract said lens barrel to the retracted position in said camera body while keeping said rear lens group at said standby position when said second means detects that said rear lens group is located at said standby position, and fourth means for driving said first motor to locate said lens barrel at a suitable position within a range where said lens barrel can be set in a photographable state when said second means detects that said rear lens group is not located at said standby position.

5,486,889

LENS BARRIER MECHANISM FOR USE IN A CAMERA

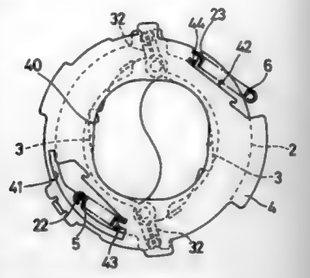
Dai Shintani, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 13, 1994, Ser. No. 274,444

Claims priority, application Japan, Jul. 14, 1993, 5-173887

Int. Cl.[6] G03B *17/00*

U.S. Cl. 354—202 **9 Claims**



1. A lens barrier mechanism comprising:

a barrier blade arranged in front of a lens for opening and closing a photographic optical path;

a barrier driver plate for driving said barrier blade;

a spring for pushing said barrier blade in a predetermined direction,

wherein a space constituted by a cutout or a through hole is formed in said barrier driver plate at a position which does not interfere with an opening and closing locus of said barrier blade and wherein said spring is arranged in the space.

5,486,890

SYSTEM FOR CONTROLLING THE TEMPERATURES OF PROCESSING SOLUTIONS IN PHOTOSENSITIVE MATERIAL PROCESSORS

Fumio Mogi, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

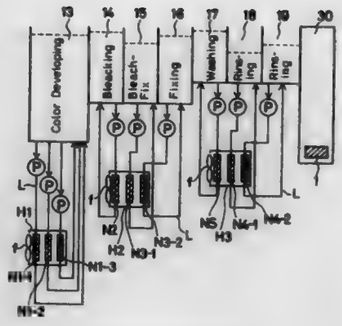
Filed Jul. 21, 1994, Ser. No. 278,221

Claims priority, application Japan, Jul. 26, 1993, 5-183687

Int. Cl.[6] G03D *13/00*

U.S. Cl. 354—299 **8 Claims**

1. In a photosensitive material processor including a plurality of tanks for processing photosensitive material and a drier, a system for controlling the temperatures of processing solutions in said processor characterized in that at least one processing tank is provided with a plurality of independently controllable electric heaters capable of heating the processing solution therein.



5,486,891

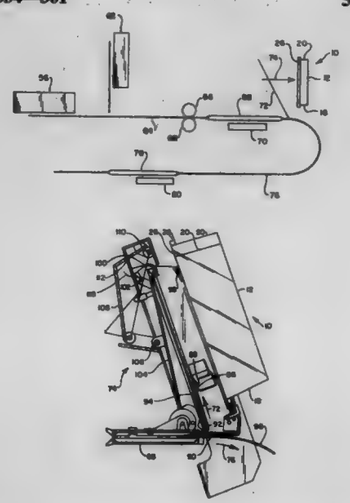
ECOLOGICAL SYSTEM FOR DELIVERING FILM UNITS, A CONTAINER FOR HOLDING FILM UNITS AND AN APPARATUS FOR PACKAGING TRASH FOR RECYCLING

Arthur S. Rousmaniere, Andover, and Frederick Slavitter, Needham, both of Mass., assignors to Polaroid-Corporation-Patent Department, Cambridge, Mass.

Filed Oct. 14, 1994, Ser. No. 324,030

Int. Cl.[6] G03D *9/00*

U.S. Cl. 354—301 **51 Claims**



1. A process for developing film and disposing of the residue, comprising the steps of:

mating a positive film sheet with an exposed negative film sheet;

spreading a layer of processing liquid between said sheets,

peeling said negative film sheet and any residual portion of said liquid from said positive film sheet, after allowing a suitable period of time for said processing liquid to work;

pushing said peeled negative film sheet and residual liquid into a trash container; and

sealing said container for shipment to a recycling and disposal location.

5,486,892

CAMERA WITH VISUAL AXIS DETECTING DEVICE

Kenji Suzuki; Akira Ishizaki; Keiji Ohtaka; Yasuo Suda; Hidehiko Fukahori, all of Yokohama; Akihiko Nagano, Kawasaki; Kazuki Konishi, Hino, and Tokuichi Tsunekawa, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

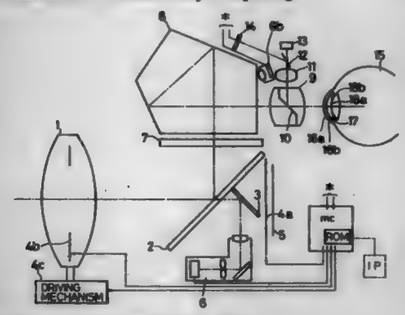
Continuation of Ser. No. 3,954, Jan. 19, 1993, abandoned, which is a continuation of Ser. No. 671,656, Mar. 19, 1991, abandoned, which is a continuation of Ser. No. 327,784, Mar. 23, 1989, abandoned. This application Oct. 28, 1994, Ser. No. 331,154

Claims priority, application Japan, Mar. 23, 1988, 63-070297; Apr. 26, 1988, 63-105298; Apr. 28, 1988, 63-106808; Mar. 16, 1989, 1-64630

Int. Cl.[6] G03B *5/00;13/36;17/20*

U.S. Cl. 354—402 **39 Claims**

1. A camera or a camera body comprising:



finder means for inspecting an object;

illumination means for illuminating an operator's eye looking into the finder means;

a condensing optical system for condensing light reflected from the operator's eye;

photoelectric converter means for receiving the condensed reflected light;

calculation means for calculating the direction of a visual axis of the operator's eye on the basis of an output of said photoelectric converter means; and

condition setting means, having a light-receiving portion for receiving a light beam passing through an objective lens, operable in response to the result of the calculation of said calculation means, for setting a photographing condition of the camera, wherein said condensing optical system includes an image reduction system and said photoconverter means includes a member in which pixels are two-dimensionally arranged.

5,486,893

CAMERA HAVING A DISPLAY FOR PREDICTED IMAGES

Tadao Takagi, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 312,985, Oct. 3, 1994, abandoned, which is a continuation of Ser. No. 133,798, Oct. 8, 1993, abandoned, which is a continuation of Ser. No. 822,954, Jan. 21, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 456,371

Claims priority, application Japan, Feb. 4, 1991, 3-035725

Int. Cl.[6] G03B *7/00;13/02*

U.S. Cl. 354—410 **25 Claims**

1. A camera having a predicted image displaying device including:

a setting device which sets control values of different photographing information manually or automatically;

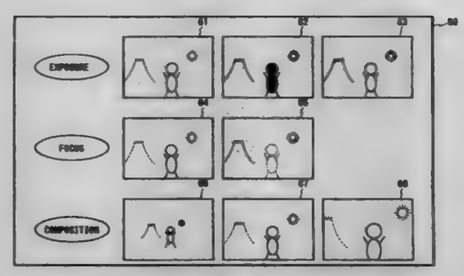
a predicting circuit which predicts image signals for the same photographing scene based on at least one control value among the control values of the photographing information set by said setting device;

an image storing device which stores the image signals predicted by said predicting circuit;

a displaying device which displays a plurality of images based on the image signals stored by said image storing device;

a selecting device which selects at least one image among a plurality of the images displayed by said displaying device; and

a photographing device which performs photographing on the basis of the control values of the photographing information for the image selected by said selecting device.



5,486,894

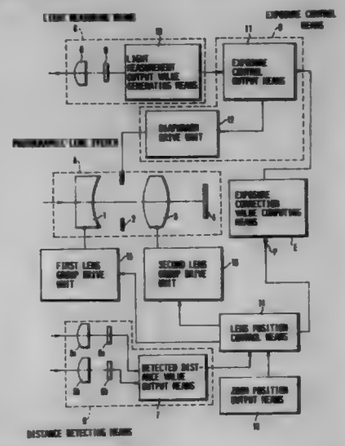
CAMERA WITH EXPOSURE CONTROL INTERLOCKED WITH LENS MOVEMENT

Kazuo Fujibayashi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 968,253, Oct. 29, 1992, abandoned. This application Apr. 26, 1995, Ser. No. 427,882

Int. Cl.[6] G03B *3/10;7/08*

U.S. Cl. 354—446 **7 Claims**



1. A camera comprising:

(a) a first lens group for controlling zooming operation;

(b) a diaphragm arranged behind said first lens group for controlling exposure operation;

(c) a second lens group arranged behind said diaphragm, for a focusing operation and said zooming operation;

(d) light measuring means for measuring light intensity, said light measuring means being separately arranged from said first and second lens groups;

(e) exposure control means for controlling said diaphragm on the basis of an output of said light measuring means; and

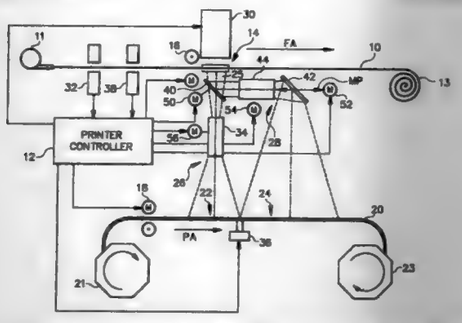
(f) correction means for correcting said exposure according to a position of said second lens group at least in infinite distance when in said zooming operation.

5,486,895

OPTICAL SYSTEM FOR PRINTING NORMAL AND PANORAMIC IMAGES

Carl F. Leidig; Lee R. Estelle, both of Rochester, and William E. Moore, II, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 22, 1994, Ser. No. 231,418
Int. Cl.[6] G03B *27/52*
U.S. Cl. 355—50 **24 Claims**



1. A method of printing first and second format image frames from a negative filmstrip onto elongated, continuous, photographic print paper having a selected width at magnifications related to the selected paper width comprising the steps of:

advancing a negative filmstrip having first or second format image frames in a film transport path including an exposure gate for supporting a filmstrip image frame to be printed and a light source for projecting light through an image frame in the exposure gate to provide an image bearing light beam;

determining if an image frame of said negative filmstrip in said transport path to be printed in said printer exposure gate is of said first or second format;

upon determining that said image frame is of said first format:

advancing in a paper advance direction and positioning a first unexposed length of said elongated, continuous, photographic print paper in a first format projection plane centered with respect to a first format projection path, said first format projection plane having a width corresponding to the selected paper width and a first format projection plane length;

operating said light source to project light through the first format image frame in said exposure gate to provide a first format image bearing light beam;

focusing and magnifying said first format image bearing light beam in said first format projection path, at a selected first format image frame magnification related to the selected paper width, onto said photographic print paper in said first format projection plane, thereby defining a first format, projection plane length boundary at said selected first image frame magnification; and

upon determining that the image frame is of said second format:

advancing in said paper advance direction and positioning a second unexposed length of said elongated, continuous, photographic print paper in a second format projection plane displaced, in the paper advance direction, entirely in a non-overlapping manner from said first format projection plane, said second format projection plane centered with respect to a second format projection path and having a width corresponding to the selected paper width and a second format projection plane length;

positioning a second format, adjustable magnification, optical system with respect to said image bearing light beam to project a second format image bearing light beam in said second format projection path; and

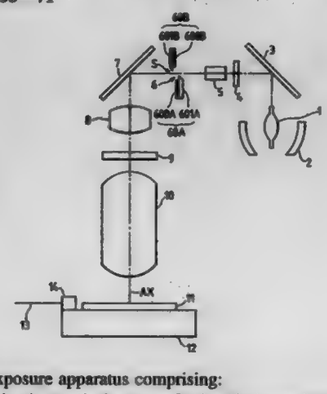
operating said light source to project light through the second format image frame in said exposure gate to provide said second format image bearing light beam for projection through said second format optical system and through said second format projection path onto said photographic print paper in said second format projection plane, displaced apart from said first format projection plane, at a selected second image frame magnification related to the selected paper width, thereby defining a second format, projection plane length boundary at said selected second image frame magnification substantially coinciding with said first format, projection plane length boundary.

5,486,896

EXPOSURE APPARATUS

Junji Hazama; Masamitsu Yanagihara, both of Yokohama; Hideji Goto, Kawasaki, and Masaichi Murakami, Tokyo, all of, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Feb. 14, 1994, Ser. No. 195,192
Claims priority, application Japan, Feb. 19, 1993, 5-030150; Apr. 12, 1993, 5-084764; Jun. 11, 1993, 5-140974
Int. Cl.[6] G03B *25/72*
U.S. Cl. 355—71 **13 Claims**



1. An exposure apparatus comprising:

an illumination optical system for irradiating at least one mask with a light beam from a light source;

a projection optical system for projecting images of patterns on said at least one mask, illuminated by said light beam, onto a photosensitive substrate; and

light attenuation means disposed in a position in said illumination optical system that is substantially conjugate with said at least one mask, said attenuation means decreasing an amount of light in a peripheral portion of an image of a pattern projected onto said photosensitive substrate, as the distance from the center of said image increases.

5,486,897

DECORATIVE CARDS

Shakar Z. Mohmand, P.O. Box 49503, Omariya, Kuwait

Continuation of Ser. No. 751,666, Aug. 23, 1991, abandoned, which is a continuation of Ser. No. 576,138, Aug. 24, 1990, abandoned, which is a continuation of Ser. No. 356,530, May 24, 1989, abandoned. This application Jul. 28, 1993, Ser. No. 97,928
Claims priority, application United Kingdom, May 27, 1988, 8812622
Int. Cl.[6] G03B *27/02*
U.S. Cl. 355—132 **11 Claims**

1. A method of manufacturing a card bearing an image comprising the steps of:

a) providing an image;

b) transferring the image to an original microfiche having a plurality of discrete frames using a microfiche duplicating apparatus including a microfilm camera, wherein the image extends over a plurality of the discrete frames, by the steps of:

i) providing a master alignment strip on a copy board such that the master alignment strip extends across a field of the microfilm camera, the master alignment strip having opposite parallel sides bounding the width of the master alignment strip;

ii) providing each portion of the image to appear in a single frame of the original microfiche with an image alignment strip having a width equal to the width of the master alignment strip;

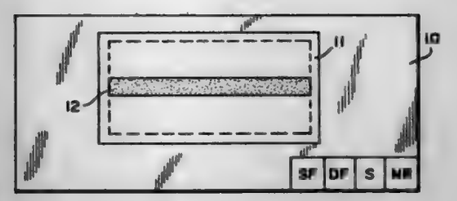
iii) aligning a portion of the image to appear in a single frame such that the image alignment strip is coincident with the master alignment strip;

iv) photographing the aligned portion of the image onto the original microfiche; and,

v) repeating steps iii) and iv) until the entire image has been transferred to the original microfiche whereby the discrete frames cooperate to form the complete image;

c) transferring the image on the original microfiche to one side of a second microfiche which is to be viewed from an opposite side; and,

d) affixing a protective layer on the one side so as to protect the transferred image.

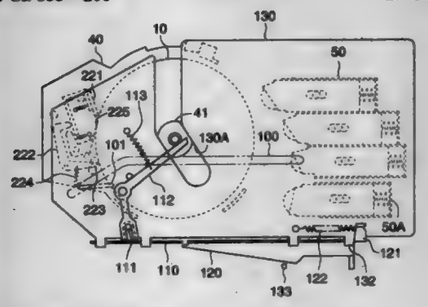


5,486,898

COLOR IMAGE FORMING APPARATUS WITH PHOTORECEPTOR PROTECTOR

Yozo Fujii; Hiroyuki Moriguchi; Yoshikazu Ikemoni; Masahiko Matsunawa; Akihiko Tamura; Kazuo Yasuda; Tadashi Miwa; Tatsumi Horiuchi; Tadao Kishimoto; Yoshihide Fujimaki; Hiroyuki Takagiwa, and Takashi Tamura, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jul. 8, 1994, Ser. No. 272,331
Claims priority, application Japan, Jul. 14, 1993, 5-174570; Nov. 29, 1993, 5-298361; Nov. 29, 1993, 5-298367
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—200 **25 Claims**



1. A color image forming apparatus, comprising:

an image retainer having an image retaining surface on which a color toner image is retained;

a charger for charging the image retaining surface;

an exposure device for forming a latent image on the charged image retaining surface;

a plurality of developing devices for developing the latent image on the image retaining surface so as to form a toner image;

a transferring device for transferring the toner image from the image retaining surface at a transfer section to a recording sheet;

a conveyor for conveying the recording sheet to the transfer section on the transferring device;

a cleaner for cleaning residual toner on the image retaining surface;

a holder for holding the image retainer, the charger, the plurality of developing devices and the cleaner in one body;

a housing;

a support for supporting the holder dismountably in the housing so that the holder is drawable out from a first position at which the holder is set in the housing to a second position at which jam disposition is conducted, wherein the holder is drawable out of the housing in a direction parallel to a recording sheet-conveying direction of the conveyor; and

a member comprising a manual feed tray forming a portion of the apparatus, the member covering the image retaining surface at the transfer section when the holder is at the second position.

5,486,899

IMAGE FORMING APPARATUS HAVING A FUNCTION OF IDENTIFYING A TONER CARTRIDGE

Akiro Imori, and Kazushige Morihara, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

PCT No. PCT/JP93/00859, § 371 Date Jul. 18, 1994, § 102(e) Date Jul. 18, 1994, PCT Pub. No. WO93/15445, PCT Pub. Date Aug. 5, 1993
PCT Filed Jan. 28, 1993, Ser. No. 256,351
Claims priority, application Japan, Jan. 22, 1992, 4-009180; Sep. 24, 1992, 4-254873
Int. Cl.[6] G03G *15/00;15/06*
U.S. Cl. 355—203 **7 Claims**



1. An image forming apparatus having a developing device designed to develop an electrostatic latent image formed on an image carrier, by supplying a developing agent onto the electrostatic latent image, characterized by comprising:

a developing-agent replenishing device detachably connected to said developing device and comprising:

a storage section for storing a developing agent;

a supply section for supplying the developing agent from said storage section to said developing device;

first input means for receiving a first data signal;

memory means storing a plurality of processing rules based on which the first data signal input through said first input means is is to be processed;

processing means for performing a processing on the first data signal input from said first input means, based on the processing rules stored in said memory means, thereby to generate a second data signal; and

a first output means for outputting the second data signal generated by said processing means; and

generating means for generating data for selecting a specific one of the plurality of processing rules stored in said memory means;

second output means for outputting to said first input means the data generated by said generating means for selecting the specified one of the plurality of processing rules and also the first data signal when said developing-agent replenishing device is connected to said developing device;

second input means for receiving the second data signal generated by said processing means and output from said first output means, when said developing agent replenishing device is connected to said developing device; and

discriminating means for comparing the second data signal input through said second input means with the first data signal, thereby to discriminating conformability of said developing-agent replenishing device, when said developing-agent replenishing device is connected to said developing device.

5,486,900

MEASURING DEVICE FOR AMOUNT OF CHARGE OF TONER AND IMAGE FORMING APPARATUS HAVING THE MEASURING DEVICE

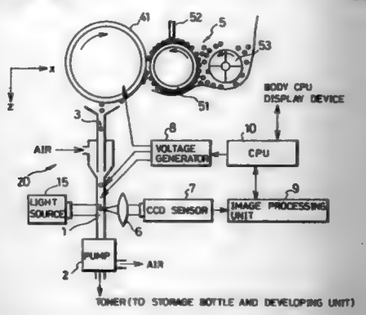
Takasumi Wada, Nara; Keiji Taniguchi, Fukui, and Yoichi Yamamoto, Nara, all of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 5, 1994, Ser. No. 349,663

Claims priority, application Japan, Dec. 6, 1993, 5-305577

Int. Cl.[6] G01R *29/24*; G03G *15/08*

U.S. Cl. 355—203 **16 Claims**



1. A measuring device for an amount of charge of toner, comprising:

countered first and second electrodes for forming an electric field which accelerates toner particles;

a voltage generator for applying a voltage across said first and second electrodes;

a magnifying optical system for magnifying an image of the toner particles which move between said first and second electrodes;

a light source for illuminating a vicinity of a focus of said magnifying optical system

a CCD sensor for receiving an optical image of the toner particles magnified by said magnifying optical system so as to convert the optical image into an image signal; and

control means for controlling a voltage from said voltage generator based upon the image signal so that the toner particles pass a prescribed position in the vicinity of the focus of said magnifying optical system and for obtaining an amount of charge of toner particles from a value of the voltage.

5,486,901

COLOR IMAGE RECORDING APPARATUS WITH A DETECTOR TO DETECT A SUPERIMPOSED TONER IMAGE DENSITY AND CORRECTING ITS COLOR BALANCE

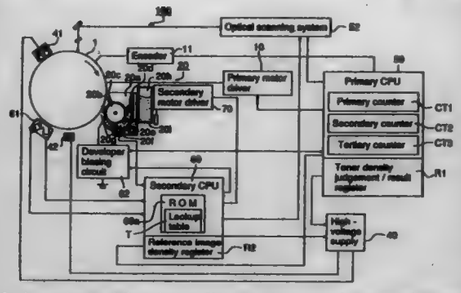
Masakazu Fukuchi; Shizuo Morita; Shizuo Kayano, and Kunihisa Yoshino, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Mar. 8, 1993, Ser. No. 27,871

Claims priority, application Japan, Mar. 10, 1992, 4-087667; Apr. 14, 1992, 4-121437; May 15, 1992, 4-148429

Int. Cl.[6] G03G *15/01*

U.S. Cl. 355—208 **20 Claims**



1. A method of forming yellow, magenta and cyan color toner images on a photoreceptor, comprising the steps of:

charging a photoreceptor to a charged electric potential;

exposing the photoreceptor so as to form a reference latent image for each of three colors with an exposure light having a reference image density;

developing the reference latent images respectively with yellow, magenta and cyan color toners so as to form a superimposed three color toner image;

separating a reflected light obtained from the superimposed three color toner image formed on the photoreceptor into a plurality of separate colors;

detecting a color balance between the superimposed three color toner images from the separated colors; and

consuming at least one color toner of the yellow, magenta and cyan color toners in accordance with a detection result of the color balance so that a new color balance of the superimposed three color toner images will have a desired color balance.

5,486,902

COLOR IMAGE FORMING APPARATUS FOR FORMING COLOR IMAGE BY TRANSFERRING COLOR TONER TO TRANSFER MATERIAL

Akira Ito, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1994, Ser. No. 200,691

Claims priority, application Japan, Feb. 24, 1993, 5-059750

Int. Cl.[6] G03G *15/08*

U.S. Cl. 355—208 **8 Claims**

1. An image forming apparatus comprising:

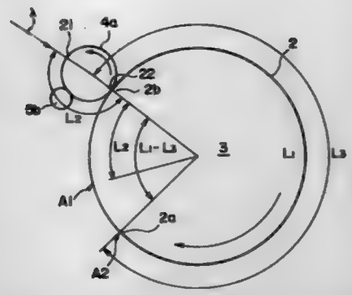
a rotary photosensitive member;

charge means for charging said photosensitive member;

exposure means for image-exposing said photosensitive member charged by said charge means at an exposure station to thereby form an electrostatic image;

a plurality of developing device for developing the electrostatic image on said photosensitive member;

changing means for changing said developing devices to be used for developing the electrostatic image; and



a transfer rotary member onto which the developing image on said photosensitive member is transferred at a transfer station;

wherein defining a peripheral length of said transfer rotary member is L_1, a distance between the exposure station and the transfer station is L_2, and a maximum transfer length in a moving direction of said photosensitive member is L_3, the relation of $(L_1-L_3)>L_2$ is established; and said changing means changes said developing devices between a completion of the transferring and start of a next image exposure.

5,486,903

IMAGE FORMING APPARATUS WITH PAPER THICKNESS DETECTOR

Satoru Kanno, Yokohama; Toru Katsumi, Kawasaki, and Ikuo Takeuchi, Tokyo, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1994, Ser. No. 271,679

Claims priority, application Japan, Jul. 16, 1993, 5-176494

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—208 **6 Claims**

1. An image forming apparatus comprising:

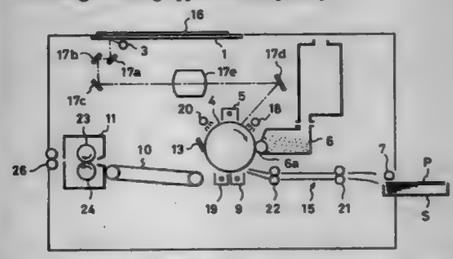


image forming means for forming an image on a recording material;

an air capacitor comprising two opposing conductor plates spaced at a predetermined distance larger than the thickness of the recording material; and

control means for controlling an image forming condition made by said image forming means on the basis of an electrostatic capacity when the recording material is inserted between the conductor plates.

5,486,904

METHOD FOR DETERMINING RESIN PARTICLES IN PAPER STOCKS

Dieter Horn, Heidelberg; Erik Laeddecke, Mutterstadt; Alfred Gierulski, Heidelberg-Ziegelhausen; Thomas Kroebl, Mainz, and Primoz Lorencak, Ludwigshafen, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP91/02350, § 371 Date Jun. 7, 1993, § 102(e) Date Jun. 7, 1993, PCT Pub. No. WO92/11534, PCT Pub. Date Jul. 9, 1992

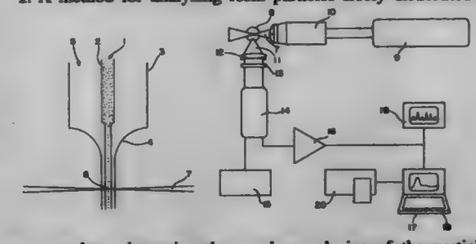
PCT Filed Dec. 9, 1991, Ser. No. 70,414

Claims priority, application Germany, Dec. 18, 1990, 40 40 463.3

Int. Cl.[6] G01N *21/64;33/34;15/14*

U.S. Cl. 356—73 **5 Claims**

1. A method for analyzing resin particles freely distributed in



paper stock to determine the number and size of the particles which comprises: forming a suspension of the paper stock in water; separating the resin particles from the suspension by filtration; marking the separated particles with a fluorescent dye; isolating the marked particles; exciting the particles to produce light emission signals, and detecting the light emission signals and evaluating the signals to count the marked particles and to determine the size of the marked particles.

5,486,905

DEVELOPING AGENT RECOVERY APPARATUS AND IMAGE FORMING APPARATUS USING SUCH RECOVERY APPARATUS

Atsushi Takeda; Michiro Koike, both of Kawasaki; Hironobu Saito, Yokohama, and Toru Katsumi, Kawasaki, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

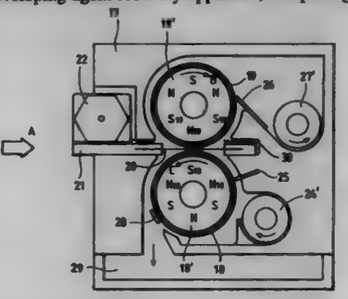
Filed Jan. 31, 1994, Ser. No. 188,883

Claims priority, application Japan, Feb. 1, 1993, 5-034008; May 10, 1993, 5-108231; Jun. 29, 1993, 5-158964

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—215 **20 Claims**

1. A developing agent recovery apparatus, comprising:



recovery means for recovering a magnetic toner from a mixture of said magnetic toner and foreign substances, said recovery means having magnetic force generating means for generating a magnetic force to attract the magnetic toner, and a filter for preventing substances other than said magnetic toner of said mixture from passing therethrough, said filter being disposed

in a region in which said magnetic toner is moved by said magnetic force generating means,

wherein said magnetic force generating means is disposed upstream of said filter in a gravity working direction.

5,486,906

CONTACT CHARGER AND IMAGE FORMING APPARATUS COMPRISING THE SAME

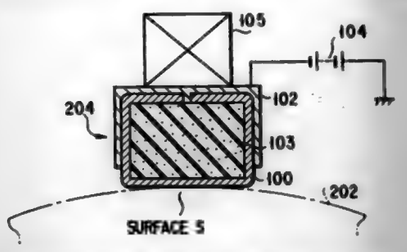
Kenichi Tsuneeda, Yokohama; Sachiko Yoshida, and Masato Ogasawara, both of Tokyo, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 10, 1994, Ser. No. 194,524

Claims priority, application Japan, Mar. 23, 1993, 5-062366

Int. Cl.[6] G03G *15/02*

U.S. Cl. 355—219 **24 Claims**



1. A contact charger for charging an object, comprising:

conductive nonwoven fabric in surface contact with the object;

voltage applying means for applying a voltage to the conductive nonwoven fabric so as to charge the object; and

pressing means for pressing the conductive nonwoven fabric against the object under a surface contact pressure of 0.1 to 10 gf/mm^2.

5,486,907

BRUSH CHARGING DEVICE FOR AN IMAGE FORMING APPARATUS AND A METHOD FOR MANUFACTURING THE SAME

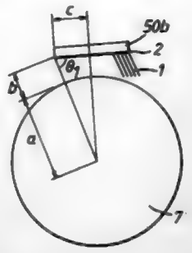
Takeshi Watanabe; Minoru Yoshida, both of Tokyo; Shigeru Fujiwara, and Masashi Takahashi, both of Kanagawa, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 11, 1994, Ser. No. 208,708

Claims priority, application Japan, Mar. 25, 1993, 5-066302

Int. Cl.[6] G03G *15/02*

U.S. Cl. 355—219 **3 Claims**



1. A brush charging device for an image forming apparatus wherein the brush charging device charges a surface of an image carrier rotating in a predetermined direction comprising:

a linear mount member;

a base cloth mounted on the mount member; and

a brush member having fibers mounted on the base cloth at an angle θ_1, the angle θ_1 satisfying the following formula:

$$\cos\theta_1 > c/(a+b)$$

wherein a represents the radius of the image carrier, b represents the length of the brush fibers and c represents the distance between a point of intersection where a perpendicular line extending from the center of the image carrier to the base cloth intersects the base cloth and an edge portion of the base cloth located upstream going in the direction of the image carrier and where the brush fibers contact the surface of the image carrier.

5,486,908

FIXING UNIT HAVING HEATING ROLLER AND PRESSURE ROLLER

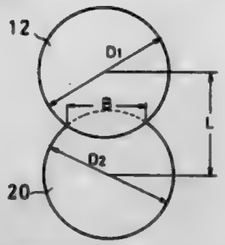
Takeshi Miyamoto; Kouji Okumura, and Motohiro Suzaki, all of Gifu, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed May 24, 1994, Ser. No. 248,478

Claims priority, application Japan, May 24, 1993, 5-121021

Int. Cl.[6] G03G *15/20*

U.S. Cl. 355—290 **12 Claims**



1. A fixing unit, comprising:

a pair of a heating roller and a pressure roller having an elastic member formed on a surface of at least one of said heating roller and the pressure roller, said heating roller and said pressure roller being brought into pressure-contact with each other in a state that said elastic member is elastically deformed; and

supporting means for rotatably supporting said heating roller and pressure roller at respective fixed positions such that a center distance L between said heating roller and pressure roller satisfies the following equation:

$$L=D1/2+D2/2-B^2/4\ (1/D1+1/D2)$$

where D1 is a diameter of said heating roller, D2 is a diameter of said pressure roller, and B is a nip width between said heating roller and said pressure roller.

5,486,909

DEVELOPING DEVICE FOR AN IMAGE FORMING APPARATUS

Eiji Takenaka, Isehara; Kazuhiro Yuasa, Zama; Shuichi Endoh, Isehara; Iwao Matsumae, Tokyo; Yoshiaki Tanaka, Kawasaki; Hiroshi Hosokawa, Yokohama; Mugijiroh Uno, Isehara; Hiroshi Saitoh, Ayase; Toshihiro Sugiyama, Atsugi; Tetsuo Yamanaka, Tokyo; Eisaku Murakami, Hiratsuka, and Satoru Komatsubara, Atsugi, all of, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 11, 1995, Ser. No. 439,123

Claims priority, application Japan, May 13, 1994, 6-099991; Mar. 23, 1995, 7-064374

Int. Cl.[6] G03G *15/08*

U.S. Cl. 355—259 **2 Claims**

1. A developing device for developing a latent image electrostatically formed on an image carrier by toner, comprising:

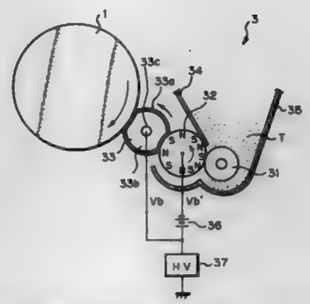
a first developing roller made of a relatively hard material and formed with fine N-S magnetic poles on a periphery thereof, and for conveying the toner magnetically deposited on said periphery;

a blade contacting said first developing roller, and for regulating an amount of the toner being conveyed by said first developing roller, and for charging said toner being passed through between said blade and said first developing roller by friction;

a second developing roller made of a material softer than the material of said first developing roller and held in contact with said first developing roller, and for causing the toner adequately charged to be electrostatically transferred from said first developing roller to said second developing roller, and for conveying said toner to the image carrier; and

a bias power source for applying a particular bias voltage to each of said first and second developing rollers;

wherein said second developing roller has a surface roughness whose ratio to a mean particle size of the toner is less than or equal to 1.5.



5,486,910

IMAGE FORMING APPARATUS HAVING PAPER FEEDING MECHANISM FOR FEEDING SHEET FROM SHEET A STORAGE PORTION TO AN IMAGE FORMING PORTION

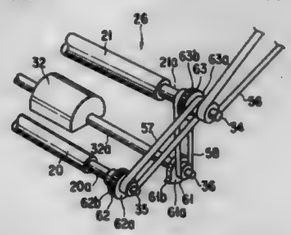
Kentaro Harada, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 24, 1994, Ser. No. 201,242

Claims priority, application Japan, Mar. 26, 1993, 5-068907

Int. Cl.[6] G03G *15/00*

U.S. Cl. 355—309 **11 Claims**



1. An image forming apparatus comprising:

storage means for storing a plurality of sheets;

image forming means for forming an image on a sheet; and

paper feeding means for feeding the sheets one by one from the storage means to the image forming means,

the paper feeding means including a transportation path for guiding a fed sheet from the storage means to the image forming means, a first feed roller for delivering the fed sheet from the storage means to the transportation path, a second feed roller in the transportation path for transporting the fed sheet delivered by the first feed roller, a third feed roller for aligning the fed sheet delivered thereto by the second feed roller and transporting the fed sheet to the image forming means, and drive means for rotating the first feed roller, the second feed roller, and the third feed roller,

the drive means including a drive source, first transmission means for transmitting the driving force of the drive source to the third feed roller in an interruptible manner, second transmission means for transmitting the driving force of the drive source to the second feed roller in an interruptible manner, third transmission means for transmitting the transmitted driving force of the third feed roller to the first feed roller in an interruptible manner, a first locking member movable between a first locking position, in which the first locking member engages the first transmission means to interrupt transmission of the driving force by the first transmission means, and a transmission position, in which the first locking member is disengaged from the first transmission means, first switching means for shifting the first locking member between the first locking position and the transmission position, a second locking member movable between a second locking position, in which the second locking member engages the second transmission means to interrupt transmission of the driving force by the second transmission means, and a third locking position, in which the second locking member engages the third transmission means to interrupt transmission of the transmitted driving force by the third transmission means, and second switching means for shifting the second locking member between the second locking position and the third locking position.

5,486,911

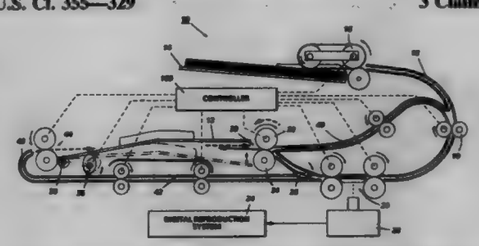
DOCUMENT HANDLER FOR IMAGING SYSTEM WITH PLURAL MODE OUTPUT TRAY

Robert F. Rubscha, Fairport, and Margaret C. Tsai, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 8, 1994, Ser. No. 352,017

Int. Cl.[6] G03G *21/00*; **B65H** *31/04*

U.S. Cl. 355—329 **3 Claims**



1. In a document handling system for feeding either simplex or duplex document sheets to be imaged at an imaging station, and for restacking the simplex or duplex document sheets in proper collated order in a single output stacking tray; including a reversible exit nip for the reversal of a duplex document sheet in said exit nip while extending therefrom before returning said duplex document sheet to said imaging station for the imaging of its second side, and for document sheet ejection and stacking into said output stacking tray from said exit nip without reversal, the improvement comprising:

a pivotable mounting system for said output stacking tray so that one end of said output stacking tray is pivotable from a position substantially below said reversible exit nip to a raised position above said reversible exit nip;

an unobstructed duplex document sheet reversing space under said output stacking tray in said raised position of said output stacking tray above said reversible exit nip; and

a control system for automatically pivoting said output stacking tray to said raised position above said exit nip for said reversal of said duplex document sheet in said reversible exit nip, so that said extension of said duplex document sheet from said exit nip occurs underneath said output stacking tray in said unobstructed duplex document sheet reversing space, said control system automatically pivoting said output stacking tray down to said position substantially below said exit nip for said ejection and stacking of document sheets in said output stacking tray from said exit nip.

5,486,912

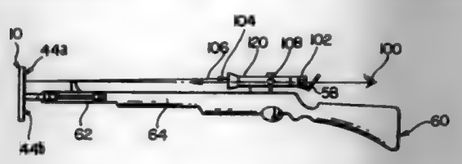
Patent Not Issued For This Number

5,486,913

BORESIGHT ASSEMBLY

Oren Aharon, Commack, N.Y., assignor to PLX, Inc., Deer Park, N.Y.

Filed Nov. 10, 1993, Ser. No. 150,416
Int. Cl.[6] G01B 11/26; F41G 1/54
U.S. Cl. 356—153 19 Claims



1. A boresight assembly for use by a user weapon to align said weapon, comprising:

a rod having a first longitudinal axis and being removably slidable within a bore of said weapon, said bore having a second longitudinal axis coaxial with said first longitudinal axis when said rod is within said bore; and

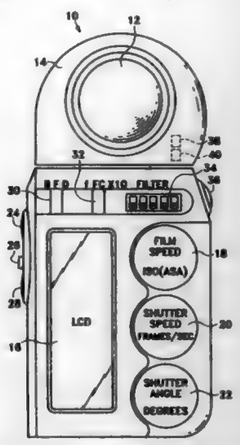
a reflecting member extending from said rod having at least one reflecting surface, wherein said at least one reflecting surface is substantially perpendicular to both said first and second longitudinal axes through said rod and said bore, respectively.

5,486,914

LCD BARGRAPH MOTION PICTURE LIGHT METER

Thomas F. Denove, Agoura Hills, and William L. Blowers, Newhall, both of Calif., assignors to GDB Enterprises, Inc., Burbank, Calif.

Continuation of Ser. No. 883,416, May 14, 1992, abandoned. This application Jun. 27, 1994, Ser. No. 266,102
Int. Cl.[6] G01J 1/42
U.S. Cl. 356—221 25 Claims



1. A cinematographic incident-illumination-sensing motion picture camera setup instrument for (a) sensing and registering a series of incident illumination readings made at a location of a cinematographic subject, (b) registering a group of user-entered settings of a motion picture camera for filming the subject, and (c) calculating therefrom and displaying for each illumination reading a corresponding f-stop setting for the motion picture camera, said instrument comprising:

a light-sensitive element, including a hemispheric wideangle lens, providing an electrical signal proportional to incident illumination readings taken at the location of a subject;

user control means comprising a plurality of user data entry switch units, for independent entry of quantitative data pertaining to a respective motion picture camera parameter and each provided with direct setting indication means, such that all entered data can be observed fully and directly;

an electronic processor receiving the signal from said light sensitive element and converting the signal into corresponding stabilized logarithmic display data including motion picture camera f-stop data as calculated by said processor from the signal and the user-entered switch settings, said electronic processor including memory means for temporarily storing data from a series of readings;

a vertically-oriented solid-state electro-optical display panel, constructed and arranged to receive and display the motion picture camera f-stop display data; and

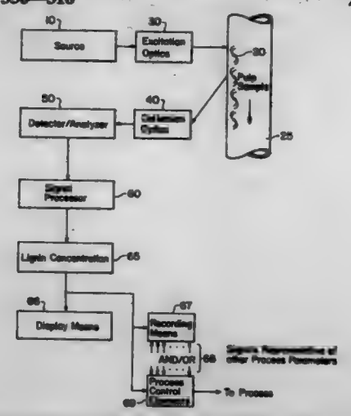
a hand-held housing containing said light-sensitive element, said electronic processor, said display panel, and said user control means.

5,486,915

ON-LINE MEASUREMENT OF LIGNIN IN WOOD PULP BY COLOR SHIFT OF FLUORESCENCE

Larry A. Jeffers, Washington Township, Stark County, and Michael L. Malito, Liberty Township, Trumbull County, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Apr. 12, 1994, Ser. No. 226,801
Int. Cl.[6] G01N 21/64; D21C 7/14
U.S. Cl. 356—318 23 Claims



1. An apparatus employing a color shift of fluorescence for measuring lignin concentration in at least one undiluted sample on a real-time, in-situ basis based upon a spectral distribution of fluorescent emission light from the sample, comprising:

light source means for applying excitation light at a selected wavelength to the at least one undiluted sample for causing the sample to produce fluorescent emission light having a spectral distribution of fluorescent intensity;

light detector means for detecting the fluorescent intensity of the emission light and determining the spectral distribution of fluorescent intensity and establishing signals indicative thereof;

signal processing means operatively connected to the light detector means for calculating a lignin concentration from the spectral distribution signals and producing a signal indicative thereof; and

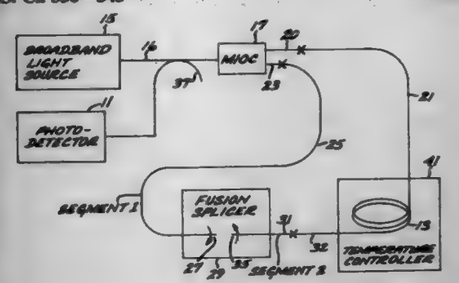
means for displaying the signal indicative of the calculated lignin concentration for viewing by an operator.

5,486,916

FIBER DEPOLARIZER USING HEATED FIBER COIL AND FUSION SPLICER AND TWO POLARIZATION PRESERVING FIBERS AND METHOD

Ronald J. Michal, Wrightwood; James R. Steele, Northridge, both of Calif., and Mark E. Jones, Blacksburg, Va., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Filed Jul. 29, 1994, Ser. No. 282,684
Int. Cl.[6] G01B 9/02
U.S. Cl. 356—345 6 Claims



1. The method of making a fiber depolarizer by splicing together the ends of two sections of polarization preserving fiber with their respective principal birefringent axes oriented at 45 degrees to each other, comprising the steps of:

using a reciprocal interferometer responsive to light from a broadband source to direct the light through a light polarizer and beam splitter over a first output to a single mode low birefringent fiber optical coil via an optical fiber in one direction;

inserting a fusion splicer, connected to the coil by a polarization preserving fiber and connected to the other output of the splitter by a further polarization preserving fiber for receiving light directed in the opposite direction;

heating the coil to increase its temperature while orienting the ends of the polarization preserving fibers in the fusion splicer;

sensing light returning from the beam splitter to detect a predetermined pattern of light intensity versus time; and,

fusing said ends upon the detection of said pattern.

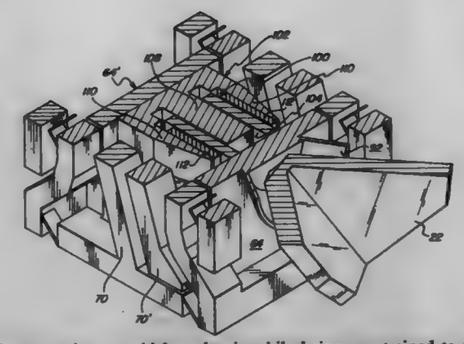
5,486,917

FLEXTURE PLATE MOTION-TRANSFER MECHANISM, BEAM-SPLITTER ASSEMBLY, AND INTERFEROMETER INCORPORATING THE SAME

Robert M. Carangelo, Glastonbury; Mark D. Dettori, Farmington; Lawrence J. Grigely, South Windsor, all of Conn.; Terence C. Murray, Winchester, Mass.; Peter R. Solomon, West Hartford, Conn.; C. Peter Van Dine, Bolton, Conn., and David D. Wright, Vershire, Vt., assignors to On-Line Technologies Inc, East Hartford, Conn.

Continuation-in-part of Ser. No. 837,622, Jan. 6, 1992, Pat. No. 5,349,438, which is a continuation-in-part of Ser. No. 773,225, Oct. 9, 1991, Pat. No. 5,196,902. This application Feb. 25, 1994, Ser. No. 201,757
Int. Cl.[6] G01B 9/02
U.S. Cl. 356—346 25 Claims

1. A flexure plate, integrally formed as a single piece and constructed for assembly with at least one identical plate to provide a motion-transfer assembly, said plate being substantially planar and being substantially identical in orientations rotated 180° about an axis normal to its plane, said plate having lateral half-sections defined to the opposite sides of a transverse axis extending transversely through said normal axis, and having transverse half-sections defined to the opposite sides of a lateral axis extending laterally through said normal axis and perpendicular to said transverse axis, each of said lateral half-section comprising a mounting element and an elongate rocker element interconnected to said mounting element by a flexible connecting element that is so constructed and located as to permit said rocker element to rock about a point on said lateral axis while being constrained to the plane of said plate, each of said transverse half-sections comprising a support element, each of said support elements and each of said rocker elements having opposite end portions, each of said opposite end portions of each support element being interconnected by a said connecting element to the one of said end portions of said rocker elements disposed therewith in each of said transverse half-sections, whereby said support elements can reciprocate in said plane along axes substantially parallel to said lateral axis as said rocker elements rock about said points thereon.

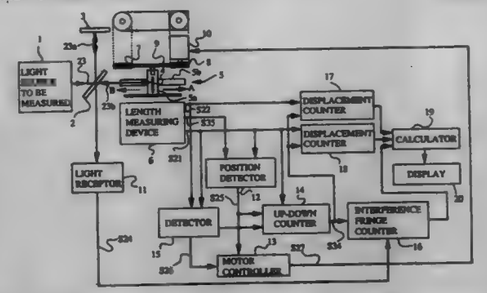


5,486,918

OPTICAL WAVELENGTH METER WITH AN UP-DOWN COUNTER WHICH MEASURES THE AMOUNTS OF THE OVERSHOOT AND THE BACK-SHIFT OF THE MOVING MIRROR

Shinya Nagashima, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1995, Ser. No. 389,397
Claims priority, application Japan, Feb. 28, 1994, 6-054586
Int. Cl.[6] G01B 9/02
U.S. Cl. 356—346 4 Claims



1. An optical wavelength meter, wherein a wavelength of light to be measured is measured by an interferometer, the optical wavelength meter comprising:

a light source to be measured which outputs the light to be measured;

a beam splitter for splitting the light to be measured into two light portions;

a moving mirror for reflecting one portion of the two light portions to the beam splitter;

a linear moving mechanism for moving the moving mirror in one of the directions along the light axis of the light source by a motor;

a length measuring device, including a scale and a sensor, for outputting first and second pulse signals whose phases differ from each other when the moving mirror moves, each pulse corresponding to the resolution of displacement of the sensor, and for outputting an origin signal when the sensor passes the center of the scale;

a position detector for counting a predetermined number of waves of the first pulse signal by taking the origin signal from the length measuring device as a trigger signal, and for outputting a position signal when detecting that the moving mirror has moved a predetermined distance corresponding to the predetermined number;

a motor controller for outputting an inverting signal to the motor and outputting a direction signal of the present rotation of the motor when inputting the position signal from the position detector;

a state detector for detecting a state that the moving mirror is back shifted based on the direction signal of the rotation output from the motor controller and the first and second pulse signals from the length measuring device, and for outputting a detection signal; and

an up-down counter for inputting the first pulse signal from the length measuring device, position signal from the position detector, and the detection signal from the state detector; calculating a quantity of overshoot of the moving mirror based on the position signal and the first pulse signal, the overshoot being caused by inertial force of the motor occurring at the stopping of the motor when the motor receives the inverting signal from the motor controller; calculating a quantity of back-shift of the moving mirror occurring at the stopping of the motor based on the detection signal and the first pulse signal; conducting an inverse operation for the quantities of the overshoot and the back-shift when the motor starts to rotate by reversing the rotational direction, so as to detect a state in which the moving mirror reaches the position at which the inverting signal was input to the motor; and when detecting said state, outputting a starting signal for measuring the wavelength.

5,486,919

INSPECTION METHOD AND APPARATUS FOR INSPECTING A PARTICLE, IF ANY, ON A SUBSTRATE HAVING A PATTERN

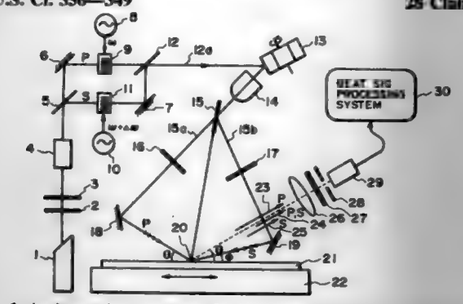
Toshihiko Tsuji, Ayase; Seiji Takeuchi, Kawasaki; Kyoichi Miyazaki, Mitaka; Minoru Yoshii, Tokyo; Noriyuki Nose, and Tetsuzo Mori, both of Atsugi, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 900,736, Jun. 16, 1992, abandoned, and a continuation-in-part of Ser. No. 26,288, Mar. 4, 1993, abandoned. This application Jun. 15, 1993, Ser. No. 76,951

Claims priority, application Japan, Apr. 27, 1992, 4-107678; May 28, 1992, 4-136982; Jun. 16, 1992, 4-156842; Nov. 16, 1992, 4-305422; Nov. 16, 1992, 4-305433; Feb. 10, 1993, 4-022675; Mar. 9, 1993, 4-048064; Apr. 26, 1993, 4-099541

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—349 **25 Claims**



1. An inspection apparatus for inspecting a particle, if any, on a substrate having a pattern, said apparatus comprising:

light producing means for producing (i) first light having a first state of polarization and a first wavelength, and (ii) second light having a second state of polarization, different from the first state of polarization, and a second wavelength, different from the first wavelength;

light projecting means for projecting at least the first light to a position of inspection upon the substrate;

detecting means for detecting heterodyne interference light produced on the basis of the second light and light scattered at the inspection position and having its state of polarization changed, by the scattering, from the first state of polarization; and

inspecting means for inspecting a particle, if any, on the substrate on the basis of an output of said detecting means.

5,486,920

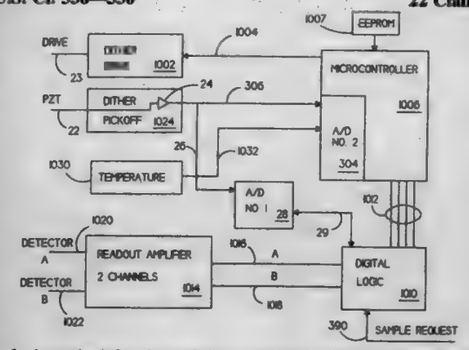
LASER GYRO DITHER STRIPPR GAIN CORRECTION METHOD AND APPARATUS

Joseph E. Killpatrick, Minneapolis; Dale F. Berndt, Plymouth; Keith R. Fritze, Long Lake, and Gregory E. Cary, Mounds View, all of Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Oct. 1, 1993, Ser. No. 137,669

Int. Cl.[6] G01C *19/66*

U.S. Cl. 356—350 **22 Claims**



1. A method for determining a stripped change in gyro angle comprising the steps of:

(a) sensing a plurality of peak amplitudes P_1, P_2, $P_3 \ldots P_n$ from a dither drive signal wherein each of the plurality of peak amplitudes has corresponding times t_1, t_2, $t_3 \ldots t_n$;

(b) simultaneously sensing a plurality of ring laser gyro output angles at each of the corresponding times t_1, t_2, $t_3 \ldots t_n$; and

(c) determining a stripped change in gyro angle, $\Delta\phi$, according to a relationship wherein $\Delta\phi=(\phi_n-\phi_{n-1})-(\alpha_n-\alpha_{n-1})K$, where K is a correction factor, ϕ_n is an unstripped gyro angle sampled at time t_n and t_{n-1}, and α is a dither angle.

5,486,921

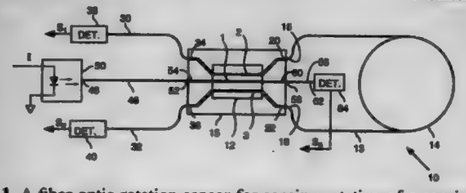
OPTIMUM COUPLER CONFIGURATION FOR FIBER OPTIC RATE GYROSCOPE USING [3×3] COUPLER

John F. Priest, Tomball, Tex., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Filed Apr. 5, 1994, Ser. No. 223,049

Int. Cl.[6] G01C *19/22*

U.S. Cl. 356—350 **4 Claims**



1. A fiber optic rotation sensor for sensing rotation of a sensing loop of optical fiber about a sensing axis perpendicular to the plane of the sensing loop, comprising:

a optical coupler that includes first, second and third optical waveguides formed in a substrate and arranged to have coupling ratios such that the fractions of light coupled from any one of the first, second and third optical waveguides to the other two optical waveguides are constant, independent of temperature changes in the optical coupler

an optical signal source arranged to provide an input optical signal to the first optical waveguide such that portions of the input optical signal are coupled from the first optical waveguide into the second and third optical waveguides; and

the optical fiber in which the sensing loop is formed having ends that are coupled to the second and third optical waveguides to receive optical signals that form counterpropagating optical waves in the sensing loop and to combine the counterpropagating optical waves after they have traversed the sensing loop.

5,486,922

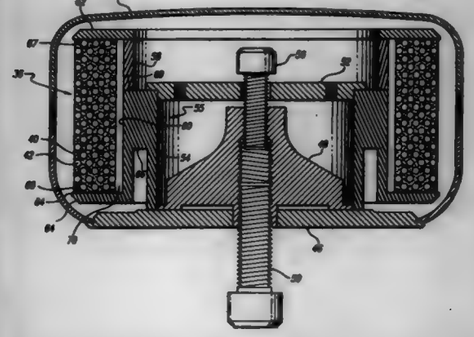
SENSOR COIL WITH THERMOMECHANICALLY-MATCHED SPOOL FOR FIBER OPTIC GYROSCOPE

Amado Cordova, West Hills, Calif., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Filed Dec. 20, 1994, Ser. No. 359,424

Int. Cl.[6] G01C *19/64*

U.S. Cl. 356—350 **29 Claims**



1. A rotation sensor for use in a fiber optic gyroscope comprising, in combination:

a) a spool adapted to receive a coil comprising a plurality of layers of coaxial turns of a continuous optical fiber;

b) said coil being encapsulated in a potting material whereby said potted coil is characterized by a first coefficient of thermal expansion in the radial direction and by a second coefficient of thermal expansion in the axial direction;

c) said spool comprising a substantially cylindrical central hub and a substantially-planar flange located at at least one end thereof;

d) said at least one flange being of a first material having a coefficient of thermal expansion that approximates said first coefficient of thermal expansion; and

e) said hub comprising a second material so that the coefficient of thermal expansion of said hub approximates said second coefficient of thermal expansion.

5,486,923

APPARATUS FOR DETECTING RELATIVE MOVEMENT WHEREIN A DETECTING MEANS IS POSITIONED IN THE REGION OF NATURAL INTERFERENCE

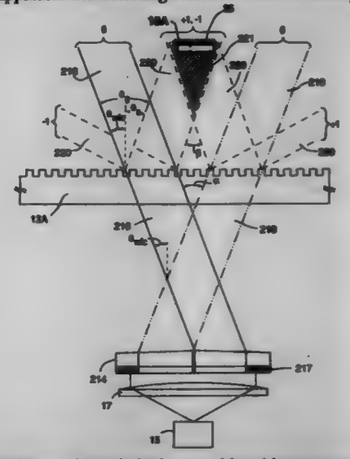
Donald K. Mitchell, Newton, and William G. Thorburn, Whitinsville, both of Mass., assignors to MicroE, Needham Heights, Mass.

Continuation of Ser. No. 250,666, May 27, 1994, abandoned, which is a continuation-in-part of Ser. No. 878,494, May 5, 1992, abandoned. This application Feb. 24, 1995, Ser. No. 394,224

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—356 **40 Claims**

1. An apparatus for detecting relative movement comprising



a diffraction grating relatively movable with respect to a source and having a period P and a characteristic which diffracts light at a preselected wavelength λ into positive and negative first orders which interfere with one another in a region of natural interference adjacent the diffraction grating;

means for illuminating with first and second beams of light of wavelength λ a region of said diffraction grating;

a periodic detector having a sensing plane positioned within the region of natural interference of the diffraction grating between positive and negative first orders from the first and second beams of light;

wherein the periodic detector has a period which is a function of the preselected wavelength λ and the period P of the diffraction grating, wherein the periodic detector provides an output signal in response to light incident thereon, whereby the periodic detector responds principally to interference at said sensing plane between the positive and negative first orders diffracted from said diffraction grating.

5,486,924

METHOD AND APPARATUS FOR MEASUREMENT OF ROUGHNESS AND HARDNESS OF A SURFACE

Christopher Lacey, San Diego, Calif., assignor to Phase Metrics, San Diego, Calif.

Division of Ser. No. 781,820, Oct. 23, 1991, Pat. No. 5,280,340. This application Dec. 22, 1993, Ser. No. 172,471

Int. Cl.[6] G01B *9/02*

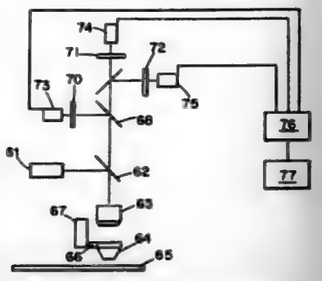
U.S. Cl. 356—357 **9 Claims**

1. A method for simultaneously measuring roughness and hardness of a surface which comprises:

splitting light having a plurality of wavelengths λ into a first portion and a second portion;

directing said first portion along a light path toward an interface between a transparent probe and said surface at a first location of said surface;

attaching a load cell to said probe;



reflecting said first portion from said interface;
combining the reflected said first portion and said second portion to generate fringe patterns;
storing maximum and minimum intensity of said fringe patterns for each wavelength λ;
calculating spacing using said maximum and minimum intensity;
moving said probe toward said surface while continuously generating said fringe patterns and storing their maximum and minimum intensity; and
detecting a contact load between said probe and said surface while said probe deforms said surface.

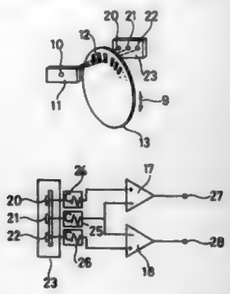
5,486,925

DISPLACEMENT SENSING APPARATUS FOR A MOVABLE MEMBER

Masashi Sano, and Tadayoshi Ogawa, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Jun. 1, 1993, Ser. No. 69,772
Int. Cl.[6] G01B *11/14;11/02*
U.S. Cl. 356—373 **5 Claims**

1. A displacement sensing apparatus for a movable member,



comprising:
a light emitting device and a light receiving device arranged to be opposite to each other with a predetermined space therebetween;
a movable member arranged between the light emitting device and the light receiving device to be movable in a direction perpendicular to an optical axis of a light beam emitted from the light emitting device and incident on the light receiving device; and
a plurality of slits formed in the movable member for allowing light emitted from the light emitting device to pass therethrough when the slits come to a position of the optical axis,
wherein at least three light receiving devices are provided, and wherein first and second comparators are provided which generate pulsed first and second outputs by using an output of one of the three light receiving devices as a reference value and comparing outputs of the other two light receiving devices with the one of the three light receiving devices used as the reference value.

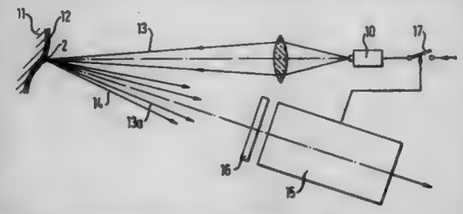
5,486,926

METHOD AND A DEVICE FOR A HIGHLY ACCURATE MEASUREMENT OF DISTANCES, WHICH MAY CHANGE, IF A NECESSARY, BETWEEN AN OBJECT, FOR EXAMPLE A CLAMP WORKPIECE, AND A POINT OF REFERENCE

Gerd Hausler, Erlangen, Germany, assignor to MAHO Aktiengesellschaft, Germany

Filed Mar. 1, 1993, Ser. No. 22,652
Claims priority, application Germany, Mar. 2, 1992, 42 06 499.6
Int. Cl.[6] G01B *11/14;11/00*
U.S. Cl. 356—375 **17 Claims**

1. A method for distance measurement between a subject and a



point of reference said method comprising the steps of:
exposing said subject at a point of light, to electromagnetic radiation from a radiation source to excite said subject with said electromagnetic radiation to emit spatially incoherent radiation;
finding a distance between said subject and said point of reference by:
capturing radiation coming from said point of light with a measuring head;
separating said spatially incoherent radiation emitted at said subject from said radiation coming from said point of light; and
determining said distance between said subject and said point of reference using said spatially incoherent radiation emitted by said subject.

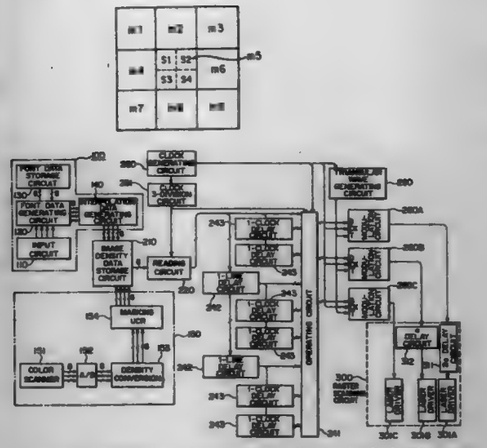
5,486,927

DIGITAL IMAGE FORMING APPARATUS USING SUBDIVIDED PIXELS

Noboru Koizumi; Satoshi Haneda; Yoshiyuki Ichihara; Takashi Hasebe, and Tetsuya Niitsuma, all of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Aug. 10, 1992, Ser. No. 927,746
Claims priority, application Japan, Aug. 19, 1991, 3-206883; Aug. 26, 1991, 3-213678; Sep. 10, 1991, 3-230485; Jan. 15, 1991, 3-166519
Int. Cl.[6] H04N *1/387;1/29;1/40;* **G01D** *15/14*
U.S. Cl. 358—298 **11 Claims**

1. A method of forming an image in a form of two-dimensional image lines of pixels, comprising:
processing image signals of neighboring pixels which are around and surround a target pixel to obtain a density distribution around the target pixel, wherein the neighboring pixels comprise pixels on three image lines including:
a current image line having the target pixel therein; an image line preceding the current image line; and an image line succeeding the current image line;
dividing the target pixel into plural sub-pixels to form a matrix that includes n rows×m columns, wherein each sub-pixel is smaller in size than the target pixel;
obtaining a density ratio for each sub-pixel in the target pixel on a basis of the density distribution of the neighboring pixels around the target pixel;
determining a density of one of the sub-pixels by multiplying a density of the target pixel, by a constant P and by the density ratio obtained for the one of the sub-pixels, whereby a sub-



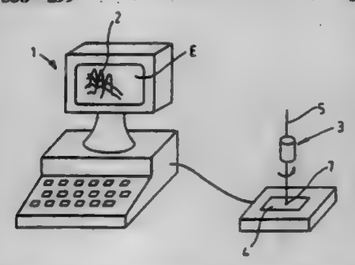
density distribution of a plurality of sub-pixels in the target pixel is obtained; and
forming a dot image for the target pixel on a basis of the sub-density distribution of the plurality of sub-pixels in the target pixel.

5,486,928

METHOD FOR MANUFACTUING A STAMP TO EMBOSS WIRE CLOTHS IN ORDER TO MAKE WATERMARKS AND EQUIPMENT TO IMPLEMENT THIS METHOD

Pierre Doublet, Jouy sur Morin; Claude Passebecq, Paris, and Etienne Bigot, Jouy sur Morin, all of, France, assignors to Arjo Wiggins S.A., Paris, France

PCT No. PCT/FR91/00202, § 371 Date Sep. 14, 1992, § 102(e) Date Sep. 14, 1992, PCT Pub. No. WO91/14217, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 12, 1991, Ser. No. 934,452
Claims priority, application France, Mar. 13, 1990, 90 03415
Int. Cl.[6] H04N *1/21;1/23*
U.S. Cl. 358—299 **21 Claims**



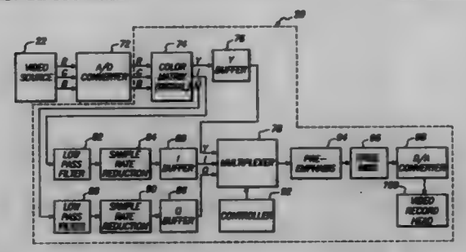
1. A method for manufacturing an embossing stamp used to emboss wire cloths in the manufacture of watermarked paper, wherein values of an image are sensed and digitized, said values including positions of image dots and gray levels of these dots, wherein the improvement comprises the steps of associating a continuous three-dimensional surface with the digital image values and plotting elevation contour lines of this continuous surface, processing the elevation contour lines and deriving continuous control values for a path of an engraving tool, said path being continuous, and engraving the stamp in an automated manner.

5,486,929

TIME DIVISION MULTIPLEXED VIDEO RECORDING AND PLAYBACK SYSTEM

Lawrence F. Heyl, Mountain View, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Sep. 3, 1993, Ser. No. 116,313
Int. Cl.[6] H04N *9/79*
U.S. Cl. 358—320 **38 Claims**



1. A system for recording component television signals onto an analog video tape, comprising:
means for generating a digital luminance signal, a first digital chrominance signal, and a second digital chrominance signal, said digital luminance signal, said first digital chrominance signal, and said second digital chrominance signal compatible with a predetermined composite television signal standard and having a first sampling rate;
first sample rate reduction means, coupled to said first digital chrominance signal for generating therefrom a first sample rate reduced digital chrominance signal having a second sampling rate;
second sample rate reduction means coupled to said second digital chrominance signal for generating therefrom a second sample rate reduced digital chrominance signal having a third sampling rate;
multiplexer means, coupled to said digital luminance signal, said first sample rate reduced digital chrominance signal, and said second sample rate reduced digital chrominance signal, for generating therefrom a digital time division multiplexed video signal;
digital signal processing means, coupled to said digital time division multiplexed video signal, for generating therefrom a digital frequency modulated time division multiplexed video signal; and
digital to analog converter means for converting said digital frequency modulated time division multiplexed video signal into an analog frequency modulated time division multiplexed video signal capable of being recorded onto said analog video tape;
said system having a bandwidth capacity no greater than necessary for common consumer VCR standards.

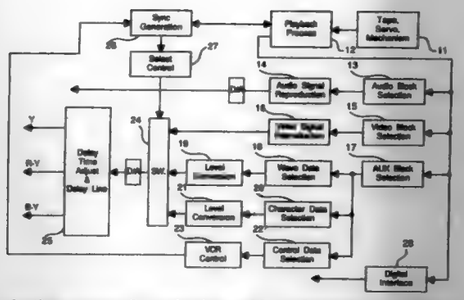
5,486,930

APPARATUS FOR RECORDING AND REPRODUCING A VIDEO SIGNAL USING A DIGITAL VIDEO CASSETTE RECORDER

Akira Iketani, Higashiosaka; Susumu Ikeda, Kobe; Susumu Yamaguchi, Nishinomiya; Chiyoko Matsumi, Suita, and Takayasu Yoshida, Toyono, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 16, 1993, Ser. No. 78,572
Claims priority, application Japan, Jun. 16, 1992, 4-156355; Nov. 27, 1992, 4-318240
Int. Cl.[6] H04N *5/76;* **G11B** *5/00;5/09*
U.S. Cl. 358—335 **8 Claims**

6. An apparatus for reproducing a non-character digital video signal containing a predetermined number of different quantized wave form data having m-bits, said apparatus comprising:
reproducing processing means for reproducing said non-character digital video signal from a recording medium;



selecting means for selecting said predetermined number of different quantized wave form data;

counter conversion means for converting said predetermined number of different quantized wave form data to a non-character digital wave form data of n-bits, said non-character digital wave form data having a predetermined number of different levels; and

adder means for adding said non-character digital wave form data in a vertical blanking period of said non-character digital video signal.

5,486,931

DIGITAL VIDEO SIGNAL RECORDING AND REPRODUCING METHOD AND APPARATUS THEREOF

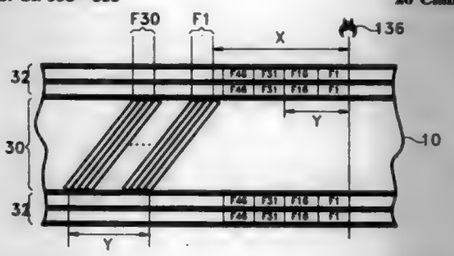
Jong-kuk Kim, Daegu, and Kwang-ho Moon, Seoul, both of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Jul. 14, 1993, Ser. No. 91,128

Claims priority, application Rep. of Korea, Jul. 14, 1992, 92-12524

Int. Cl.[6] H04N *5/76*

U.S. Cl. 358—335 **20 Claims**



1. A digital video recording and reproducing method comprising the steps of:

reserving a first region of a magnetic tape;

helically scanning said first region of the magnetic tape while the magnetic tape is running at a normal speed to record a digital data train on a plurality of sloped tacks;

simultaneously with said scanning step recording single frame data at an interval of N pictures on a second region of the magnetic tape, the second region being different from the first region;

reproducing the data recorded only on the first region during a normal reproduction; and

reproducing the data recorded on the second region while the magnetic tape runs at an N-times speed for a variable speed reproduction.

5,486,932

DOCUMENT SCANNER AND VACUUM TABLE THEREFOR

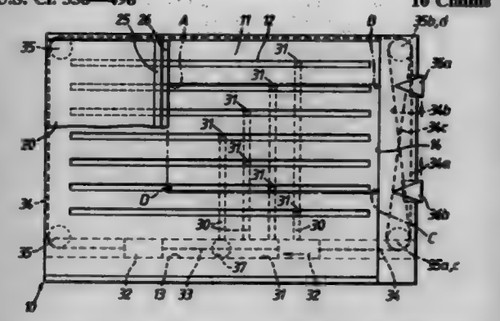
Jacques V. Leonard, Antwerpen, Belgium, assignor to Agfa-Gevaert N. V., Mortsel, Belgium

Continuation of Ser. No. 102,240, Aug. 5, 1993. This application Nov. 2, 1994, Ser. No. 333,999

Claims priority, application European Pat. Off., Aug. 11, 1992, 92202459

Int. Cl.[6] H04N *1/04*

U.S. Cl. 358—496 **10 Claims**



1. In a vacuum table for holding a generally rectangular flexible sheet of variable dimensions in position, which table comprises a supporting surface having a length and width for supporting said flexible sheet thereon with one axis of such sheet parallel with the length of said surface, a vacuum source, and connected to said source a vacuum distribution line which, in the absence of such a sheet on said surface, is in gas flow communication with the ambient atmosphere over a generally rectangular vacuum zone on the table surface via openings distributed over that surface to define said vacuum zone, in combination, the improvement wherein said openings are arranged in rows extending generally lengthwise of said surface along generally parallel lines spaced apart widthwise of said supporting surface, said rows of opening having substantially the same length, and said table further comprises means for obstructing said rows of openings for gas flow communication therethrough over an adjustable generally common end portion of the length thereof whereby the length of the vacuum zone may be matched to the dimension of said flexible sheet parallel to the length of said surface, and control means independent of the obstructing means for disconnecting from said vacuum distribution line selected ones of said lengthwise extending rows of openings whereby the dimension of the vacuum zone parallel to the surface width may be matched to the corresponding dimension of such flexible sheet.

5,486,933

MONOCHROMATIC-LIGHT REPRODUCTION TYPE HOLOGRAM, AND METHOD AND APPARATUS FOR ITS IMAGE REPRODUCTION

Naoaki Shindo; Takehide Kita; Nagahisa Matsudaira; Akihiko Kobayashi; Yoshiaki Tada; Takashi Sato, and Atsushi Sato, all of Tokyo, Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1993, Ser. No. 170,910

Claims priority, application Japan, Dec. 28, 1992, 4-347733; Mar. 29, 1993, 5-070560

Int. Cl.[6] G02B *5/32;* G03H *1/28*

U.S. Cl. 359—2 **1 Claim**

1. An apparatus for reproducing a hologram image from a light transmission monochromatic-light reproduction type hologram, comprising;

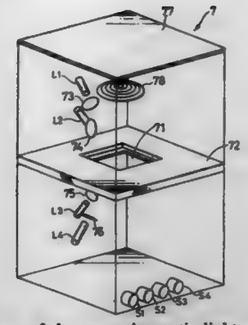
a holding means for setting a light transmission monochromatic-light reproduction type hologram recorded article at a given position;

a plurality of upper-side monochromatic light irradiation means provided above the holding means and by which a hologram recorded area of the monochromatic-light reproduction type hologram recorded article set on the given position is irradiated with monochromatic light rays at given angles to reproduce by reflected diffracted light a hologram image having a first identity information function;

a plurality of lower-side monochromatic light irradiation means provided below the holding means and by which a hologram recorded area of the monochromatic-light reproduction type hologram recorded article set on the given position is irradiated with monochromatic light rays at given angles to reproduce by transmitted diffracted light a hologram image having a second identity information function;

said hologram recorded area being an area in which a plurality of hologram images different from each other in the directionality of interference fringes are recorded, and being irradiated with said monochromatic light rays at given angles corresponding to the directionality of interference fringes of the recorded respective hologram images; and

an image forming screen on which the hologram image reproduced by the reflected diffracted light and the hologram image reproduced by the transmitted diffracted light are synthesized to reproduce a single information pattern having a third identity information function different from said first identity information function and said second identity information function and substantially infeasible for a dead copy.



5,486,934

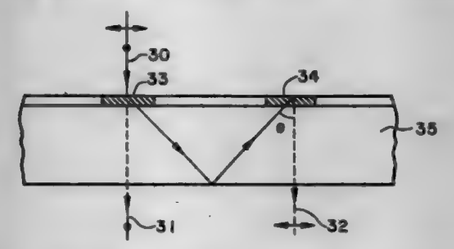
POLARIZATION BEAMSPLITTER WITH A SUBSTRATE-MODE HOLOGRAPHIC STRUCTURE

Yang-Tung Huang, Hsinchu, Taiwan, Prov. of China, assignor to National Science Council, Taipei, Taiwan, Prov. of China

Filed Feb. 17, 1994, Ser. No. 198,176

Int. Cl.[6] G02B *5/32;5/30;5/28;5/18*

U.S. Cl. 359—15 **7 Claims**



1. A polarization beamsplitter for performing the function of polarization selection, comprising:

an optically transmissible substrate;

an input coupling grating formed on a first side of said optically transmissible substrate for separating an input beam, having an input beam wavelength, into an direction-unchanged linear polarization beam and a first diffracted linear polarization beam, wherein the polarization of said direction-unchanged linear polarization beam is perpendicular to the polarization of said diffracted linear polarization beam, said direction-unchanged linear polarization beam and said first diffracted linear polarization beam having a first diffraction angle therebetween, said input coupling grating having an input coupling grating film thickness and an input coupling grating index modulation; and

an output coupling grating formed on said first side of said optically transmissible substrate for diffracting said first diffracted linear polarization beam to become a secondly diffracted linear polarization beam after said first diffracted linear polarization beam has propagated through said optically transmissible substrate followed by internal reflecting, said secondly diffracted linear polarization beam and said first diffracted linear polarization beam after said internal reflecting having a second diffraction angle therebetween, said output coupling grating having an output grating film thickness and an output grating index modulation, wherein the input coupling grating index modulation, the output coupling grating index modulation, the input coupling grating film thickness, the output coupling grating film thickness and the input beam wavelength are selected such that said first diffraction angle and said second diffraction angle are selected from the group consisting of 48.2°, 41.1° and 60.0°, and said secondly diffracted linear polarization beam being transmitted out of said optically transmissible substrate on an opposite side of said first side of said optically transmissible substrate with a direction parallel to said direction-unchanged linear polarization beam.

5,486,935

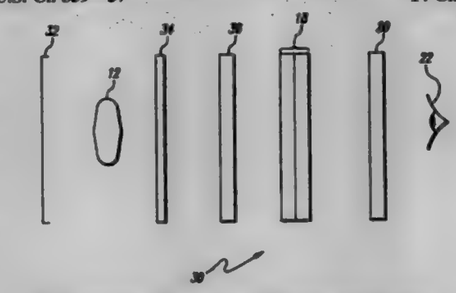
HIGH EFFICIENCY CHIRAL NEMATIC LIQUID CRYSTAL REAR POLARIZER FOR LIQUID CRYSTAL DISPLAYS HAVING A NOTCH POLARIZATION BANDWIDTH OF 100 NM TO 250 NM

Michael H. Kalmanash, Los Altos, Calif., assignor to Kaiser Aerospace and Electronics Corporation, Foster City, Calif.

Filed Jun. 29, 1993, Ser. No. 84,634

Int. Cl.[6] G02F *1/13;1/1335*

U.S. Cl. 359—37 **14 Claims**



1. An assembly for a direct view apparatus comprising:

a light source;

circularly polarizing means in the optical path in a first, forward direction, said circularly polarizing means including a polymer chiral nematic liquid crystal, said polymer chiral nematic liquid crystal having a notch polarization bandwidth sufficient to allow transmission of circularly polarized light within a 100 nm to 250 nm band selected from the range of visible light;

rear reflecting means adjacent said light source in a second, rearward direction;

converting means for converting circularly polarized radiation to linearly polarized radiation directly adjacent said circular polarizing means;

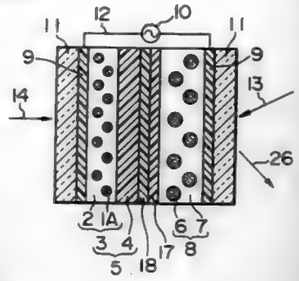
display means directly adjacent said converting means for converting linearly polarized light to a direct view display; and

polarization means directly adjacent said display means for absorbing radiation not contributing to the direct view display image.

5,486,936
OPTICALLY ADDRESSED SPATIAL LIGHT MODULATOR

Hideo Fujikake; Kuniharu Takizawa, both of Tokyo; Juichi Hirose, and Tatsushi Kobayashi, both of Shizuoka, all of, Japan, assignors to Tomoegawa Paper Co., Ltd., and Nippon Hoso Kyokai, both of Tokyo, Japan

Filed Mar. 22, 1993, Ser. No. 35,206
Claims priority, application Japan, Mar. 25, 1992, 4-097348; Mar. 25, 1992, 4-097446
Int. Cl.[6] G02F 1/13;1/135;1/03; G03G 15/02
U.S. Cl. 359—51 11 Claims



1. An optically addressed spatial light modulator comprising a photoconductive layer, a liquid crystal layer, and transparent electrodes characterized in that:

the photoconductive layer is a multilayer-type photoconductive layer comprising a charger carrier generation layer which is made of one kind or more than two kinds of photoconductive material, and a charge carrier transport layer which is made of a carrier material having a large mobility;

the liquid crystal layer is a liquid crystal/resin composite layer comprising a nematic liquid crystal, cholesteric liquid crystal, smetic liquid crystal, or a blended liquid crystal, and a transparent resin having an equivalent refractive index to ordinary refractive index of the liquid crystal, where either the resin is dispersed into the liquid crystal, or the liquid crystal is dispersed into the resin;

said charge carrier transport layer is located on the charge carrier generation layer on the side where the liquid crystal/resin composite layer is located; and

the transparent electrodes are fixed to the two diametrically opposite side of these layers.

5,486,937
LATEX CONTAINMENT MEANS FOR A LIQUID CRYSTAL WINDOW

Yuichi Yano, Itami; Naoki Kinugasa, and Akio Takigawa, both of Nishinomiya, all of, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 958,298, Oct. 8, 1992, abandoned. This application Jun. 20, 1994, Ser. No. 262,345
Claims priority, application Japan, Jan. 18, 1991, 3-270934
Int. Cl.[6] G02F 1/13
U.S. Cl. 359—51 14 Claims

1. A light modulating window comprising:

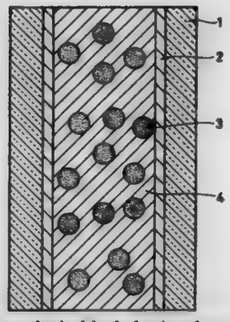
a pair of transparent substrates,

transparent conductive films respectively disposed on the inner surfaces of said transparent substrates, and

a containment means containing a liquid crystal material in gaps interposed between said transparent conductive films,

wherein said containment means includes a latex, and

wherein a difference between an extraordinary index (n_e) and an ordinary index (n_o) of said liquid crystal material is less than 0.23, and an average refractive index (n_a) of said liquid crystal material, a refractive index (n_b) of said containment means, a volume ratio (V) of said liquid crystal material to the total volume of said liquid crystal material and said containment means, an average diameter (D) of each of said gaps in



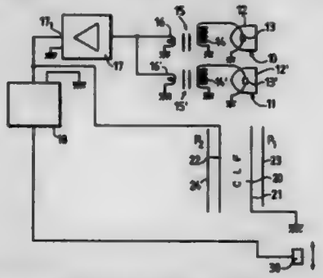
terms of a true spherical body having the same volume and a distance (t) between said transparent conductive films satisfy the following equation,

$$|n_e - n_b| \times (6 \times V/D) \times t \geq .2.$$

5,486,938
ANTI-DAZZLE SYSTEM FOR VEHICLES

Pierre Algrain, Paris, France, assignor to Thomson-CSF, Puteaux, France

Continuation of Ser. No. 94,025, Jul. 29, 1993, abandoned.
This application Apr. 10, 1995, Ser. No. 419,754
Claims priority, application France, Feb. 19, 1991, 91 01929
Int. Cl.[6] G02F 1/135;1/13
U.S. Cl. 359—72 11 Claims



1. An anti-dazzle system for a vehicle, comprising:

headlamp control means for controlling at least one headlamp of said vehicle whereby said headlamp outputs periodic light pulses having a duration which is short with regard to their period;

a screen arranged in front of a driver of said vehicle having a variable light transmission coefficient;

means responsive to said period pulses to vary the transmission coefficient of said screen whereby said screen is transparent only during the duration of said light pulses and wherein said transmission coefficient is substantially lower; but high enough to allow said driver to see headlamps of oncoming vehicles between said pulses.

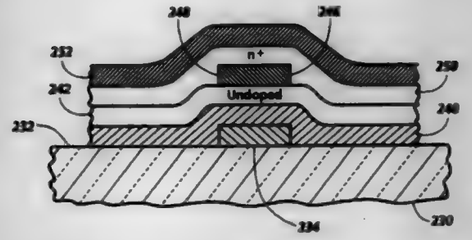
5,486,939
THIN-FILM STRUCTURE WITH INSULATING AND SMOOTHING LAYERS BETWEEN CROSSING CONDUCTIVE LINES

Ronald T. Fulks, Mountain View, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 28, 1994, Ser. No. 284,885
Int. Cl.[6] G02F 1/1333; H01L 23/48
U.S. Cl. 359—74 25 Claims

1. A product comprising:

a substrate that has a surface; and



a thin-film structure formed at the surface of the substrate; the thin-film structure comprising:

first and second conductive lines;

first and second leads for connecting components to be second conductive line at first and second connecting points; the second conductive line extending between the first and second connecting points; the second conductive line crossing over the first conductive line in a crossover region between the first and second connecting points so that the first conductive line is between the second conductive line and the surface of the substrate in the crossover region; the first conductive line having an edge in the crossover region;

a first insulating layer between the second conductive line and the surface and the substrate; the first insulating layer being between the first and second conductive lines in the crossover region so that the first insulating layer covers the first conductive line;

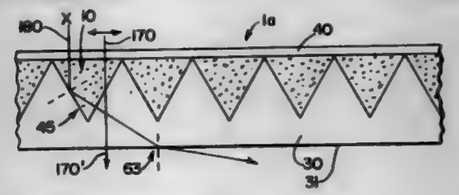
a second insulating layer between the first insulating layer and the second conductive line in the crossover region; the second insulating layer being sufficiently thick that signals in the first and second conductive lines are isolated from each other and do not couple; the second insulating layer having an edge under the second conductive line between the first and second connecting points; and

a smoothing layer under the second conductive line between the first and second connecting points; the smoothing layer being between the second insulating layer and the second conductive line in the crossover region; the smoothing layer having an outer surface shaped so that the second conductive line is continuously formed over the edge of the first conductive line and over the edge of the second insulating layer and so that the second conductive line electrically connects the first and second leads.

5,486,940
LIQUID CRYSTAL LIGHT POLARIZER AND METHOD

James L. Fergason, Atherton; Arthur L. Berman, San Jose, both of Calif., and Stephen D. Jacobs, Pittsford, N.Y., assignors to Optical Shields, Inc., Menlo Park, Calif.

Continuation of Ser. No. 79,106, Jun. 17, 1993, abandoned.
This application May 23, 1995, Ser. No. 447,915
Int. Cl.[6] G02F 1/1333;1/13
U.S. Cl. 359—74 38 Claims



1. A polarizer, comprising

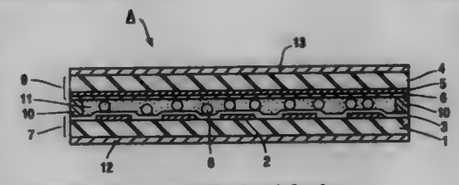
liquid crystal material, and

surface means for cooperating with said liquid crystal material to control polarization of light on said polarizer by refraction or total internal reflection of one polarization component of said light while transmitting the other polarization component substantially without refraction or total internal reflection, said surface means including plural grooves in cooperative relationship with said liquid crystal material.

5,486,941
FINE SPHERE, A SPHERICAL SPACER FOR A LIQUID CRYSTAL DISPLAY ELEMENT AND A LIQUID DISPLAY ELEMENT USING THE SAME

Kazuo Saiuchi, Otsu; Minoru Kohara, Otokuni; Kunikazu Yamada, Kurita, and Kazuhiko Kaneki, Uji, all of, Japan, assignors to Sekisui Fine Chemical Co., Ltd., Osaka, Japan

PCT No. PCT/JP91/01285, § 371 Date May 28, 1992, § 102(e) Date May 28, 1992, PCT Pub. No. WO92/06402, PCT Pub. Date Apr. 16, 1992
PCT Filed Sep. 27, 1991, Ser. No. 859,408
Claims priority, application Japan, Sep. 29, 1990, 2-261728; May 9, 1991, 3-104298; May 9, 1991, 3-104299; May 9, 1991, 3-104300
Int. Cl.[6] G02F 1/1339;1/1345; G09F 9/35
U.S. Cl. 359—81 14 Claims



1. A fine sphere having: a K-value defined as

$$K = (3/\sqrt{2}) \cdot F \cdot S^{-3/2} \cdot R^{-1/2}$$

(wherein F and S represent a load value (kgf) and a compression displacement (mm) at 10% compression deformation of said fine sphere, respectively, and R represents a radius (mm) of said fine sphere) which is in the range of 250 kgf/mm^2 to 700 kgf/mm^2 at 20° C.; and a recovery factor after the compression deformation which is in the range of 30% to 80% at 20° C.,

wherein said fine sphere is made of divinylbenzene-tetramethylolmethane tetraacrylate copolymer.

5,486,942
METHOD OF MOUNTING A LIQUID CRYSTAL DISPLAY EMPLOYING SHOCK MOUNTS WITH RECEIVING SLOTS

Shinpei Ichikawa, Cupertino; Paul R. Hamerton-Kelly, Palo Alto, and Noah L. Anglin, San Jose, all of Calif., assignors to Fujitsu Personal Systems, Inc., Santa Clara, Calif.

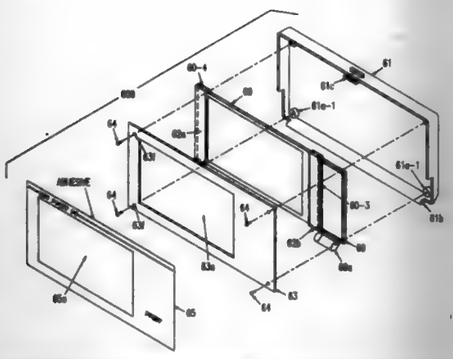
Division of Ser. No. 889,536, Jan. 29, 1992, Pat. No. 5,363,227, which is a continuation-in-part of Ser. No. 359,191, May 31, 1989, Pat. No. 5,002,368. This application Jul. 28, 1994, Ser. No. 283,112
Int. Cl.[6] G02F 1/1335;1/1333
U.S. Cl. 359—83 8 Claims

1. A method of mounting a liquid crystal display (LCD) assembly having first and second opposing edges, said method comprising the steps of:

mounting first and second resilient shock mounts on an associated one of the opposing edges of the LCD assembly by positioning a slot in each shock mount over each said associated edge of the LCD assembly, each said slot having a pair of closed ends which secure said associated edge, thereby retaining said edges within said associated slots;

installing the LCD assembly and said mounted shock mounts into a housing;

placing a horizontal plate into said housing over the LCD assembly and said shock mounts, said horizontal plate covering said shock mounts; and



joining together said horizontal plate with said housing with said shock mounts interposed between said housing and said horizontal plate to fixedly position the LCD assembly and shock mounts with respect to said housing, wherein the LCD assembly is suspended away from said horizontal plate and said housing.

5,486,943

PHOTONIC FREQUENCY DIVISION MULTIPLEXED FIFO BUFFER

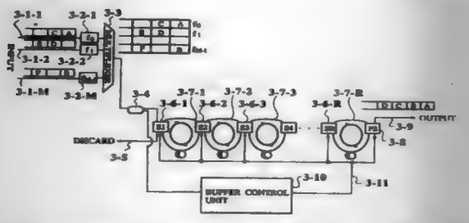
Koji Sasayama, Saitamaken, and Keishi Habara, Tokyo, Japan, assignors to Nippon Telegraph and Telephone Corp., Tokyo, Japan

Filed Jul. 14, 1994, Ser. No. 275,121

Claims priority, application Japan, Jul. 14, 1993, 5-174507; May 24, 1994, 5-109508

Int. Cl.[6] H04J *14/00;4/00;14/08*

U.S. Cl. 359—123 **14 Claims**



1. A photonic frequency division multiplexed FIFO buffer for inputting a plurality of optical signals on a plurality of time division multiplexed input highways as frequency division multiplexed input optical signals and outputting output optical signals at timeslots on a time division multiplexed output highway, comprising:

splitter means for splitting the input optical signals into two;

a plurality of loop shaped optical waveguide delay lines for storing the input optical signals;

a plurality of 2×2 optical switch means for connecting the loop shaped optical waveguide delay lines in series with one output of the splitter means, and selectively transferring the input optical signals among the loop shaped optical waveguide delay lines;

1×2 frequency channel selector means, connected at a last stage of the loop shaped optical waveguide delay lines, for selectively outputting optical signals in specific frequency channels among the input optical signals stored by the last stage of the loop shaped optical waveguide delay lines as the output optical signals to the output highway; and

buffer control means for generating a control signal for controlling a selective transferring by each of the 2×2 optical switch means and a selective outputting by the 1×2 frequency channel selector means according to another output of the splitter means.

5,486,944

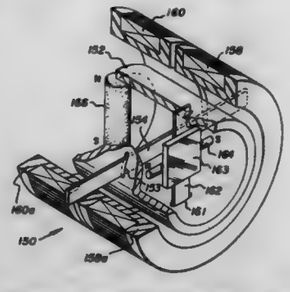
SCANNER MODULE FOR SYMBOL SCANNING SYSTEM

Simon Bard, Stony Brook; Askold Strat, Patchogue, and Paul Dvorkis, Stony Brook, all of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Continuation of Ser. No. 61,070, May 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 884,734, May 19, 1992, which is a continuation-in-part of Ser. No. 868,401, Apr. 14, 1992, Pat. No. 5,280,165, which is a division of Ser. No. 520,464, May 8, 1990, Pat. No. 5,168,149, which is a continuation-in-part of Ser. No. 428,770, Oct. 30, 1989, Pat. No. 5,099,110. This application Sep. 6, 1994, Ser. No. 302,071

Int. Cl.[6] G06K *7/10;* **G02B** *26/10*

U.S. Cl. 359—198 **4 Claims**



1. An optical scanner module for directing a light beam in a pattern to scan an encoded symbol, the scanner module comprising, in combination:

an optical element for directing the light beam;

a first permanent magnet for establishing a first magnetic field having a first magnetic axis;

a first elongated flex element, having opposed ends, for mounting said optical element and said first permanent magnet in back-to-back relation at a location intermediate said opposed ends;

means for mounting said opposed ends of said first flex element;

a second permanent magnet mounted by said mounting means and establishing a second magnetic field having a second magnetic axis;

a second elongated flex element, having fixedly mounted opposed ends, for mounting said mounting means at a location intermediate said opposed ends; and

electromagnetic coil means for receiving an AC drive current to establish a third magnetic field having a third magnetic axis oriented in orthogonal relation to said first and second magnetic axes, whereby interaction of the first, second and third magnetic fields generates oscillatory motions of said optical element in a first direction about a first axis defined by said first flex element and in a second direction about a second axis defined by said second flex element to produce bidirectional scanning movement of the light beam.

5,486,945

OPTICS FOR PASSIVE FACET TRACKING

Ellis D. Harris, Claremont, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1994, Ser. No. 360,480

Int. Cl.[6] G02B *26/08*

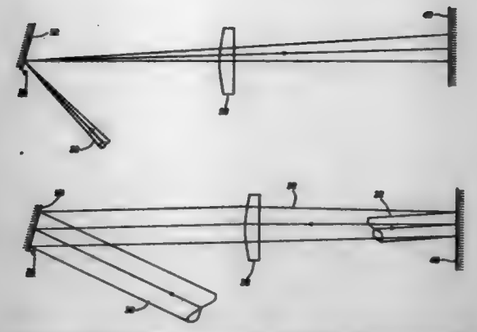
U.S. Cl. 359—216 **8 Claims**

1. A passive facet tracking system comprising:

A) a dual mirror rotating polygon having an axis of rotation and two facets, one facet located above the other in a direction which is along the axis of rotation, one of said facets being a flat facet and the other of said facets being a convex facet,

B) a retro-reflector which has no power in a sagittal plane,

C) a lens means,



D) said polygon, said lens means and said retro-reflector being so constructed and arranged relative to each other for said polygon convex facet to reflect a beam along a first path through said lens means to said retro-reflector, said retro-reflector receiving the beam reflected from said polygon convex facet and reflecting the beam through a second path through said lens means to said polygon flat facet, and said polygon flat facet reflecting the beam received from said retroreflector in a post scan direction, and

E) said lens means being so constructed to partially collimate the beam, which has been focussed on said polygon convex facet, in a tangential plane after reflection from said polygon convex facet along the first path as the beam passes through said lens means and to complete collimation of the beam in the tangential plane after reflection from said retro-reflector along the second path as it passes through said lens means so that the beam is collimated in the tangential plane when it arrives at said polygon flat facet and to partially converge the beam, which has been collimated at said polygon convex facet, in a sagittal plane after reflection from said polygon convex facet along the first path as the beam passes through said lens means and to complete convergence of the beam in the sagittal plane after reflection from said retro-reflector along the second path as it passes through said lens means so that the beam is focussed in the sagittal plane when it arrives at said polygon flat facet.

5,486,946

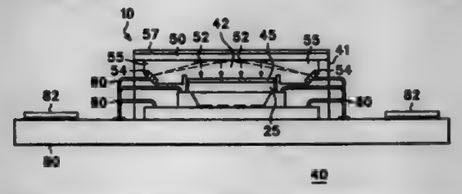
INTEGRATED ELECTRO-OPTIC PACKAGE FOR REFLECTIVE SPATIAL LIGHT MODULATORS

Karen E. Jachimowicz, Laveen; George R. Kelly, Gilbert, and Michael S. Lebby, Apache Junction, all of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Dec. 21, 1994, Ser. No. 360,505

Int. Cl.[6] G02F *1/03*

U.S. Cl. 359—263 **26 Claims**



1. An integrated electro-optic package for reflective spatial light modulators comprising:

an array of reflective spatial light modulator pixels formed on a substrate with each pixel including a control circuit formed in the substrate, each control circuit including control terminals adjacent an outer edge of the substrate, a mirror positioned on the substrate in overlying relationship to the control circuit, and spatial light modulator material positioned in overlying relationship to the mirror so that light passing through the spatial light modulator material is reflected back through the spatial light modulator material;

a light polarizing layer positioned in overlying relationship to the array of reflective spatial light modulator pixels;

a housing with an internal cavity formed to receive the array of reflective spatial light modulator pixels and the light polarizing layer therein, the housing defining an opening generally parallel with and spaced from the light polarizing layer and including an optical layer positioned in the opening;

an at least partially reflective member affixed to the optical layer;

a light source mounted in the housing so that light emanating from the light source is directed onto the reflective member and is reflected substantially uniformly onto the light polarizing layer; and

the optical layer including a diffuser forming an image plane for reflected light from the array of reflective spatial light modulator pixels.

5,486,947

OPTICAL FIBER FOR OPTICAL AMPLIFIER

Yasutake Ohishi; Terutoshi Kanamori; Yoshiki Nishida; Atsushi Mori, and Shoichi Sudo, all of Mito, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

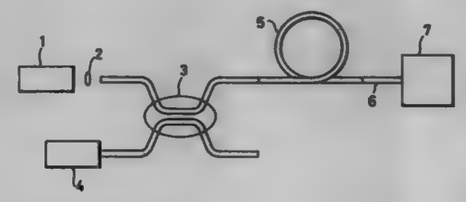
Division of Ser. No. 934,242, Aug. 25, 1992, Pat. No. 5,351,335. This application May 6, 1994, Ser. No. 238,936

Claims priority, application Japan, Aug. 26, 1991, 3-213568; Mar. 30, 1992, 4-74394; Apr. 21, 1992, 4-101424; Jun. 15, 1992, 4-155386; Jun. 16, 1992, 4-157058

Int. Cl.[6] H01S *3/17*

U.S. Cl. 359—341 **46 Claims**

1. An optical fiber amplifier comprising:



a pump light source;

a light focusing means for focusing the pump light from said pump light source;

a signal source for generating a signal light;

a photocoupling means which couples the pump light with the signal light to give a coupled light; and

an optical fiber having a core and a cladding, said optical fiber receiving the coupled light from said photocoupling means and amplifying the coupled light,

wherein said optical fiber is a fluoride glass optical fiber containing rare earth metal ions in a core glass, a relative refractive index difference between the core and the cladding being at least 1.4%, and

wherein said core glass contains PbF_2 in a proportion which is not greater than 25 mol % based on the total composition of said core glass.

5,486,948

STEREO IMAGE FORMING APPARATUS HAVING A LIGHT DEFLECTION MEMBER IN EACH OPTICAL PATH

Hitoshi Imai, Yokohama; Muneharu Sugiura, Tokyo, and Katsutoshi Hoashi, Yokohama, all of, Japan, assignors to Canon Hanbai Kabushiki Kaisha; Canon Kabushiki Knisha, and Ikegami Tsushinki Co., Ltd., all of Tokyo, Japan

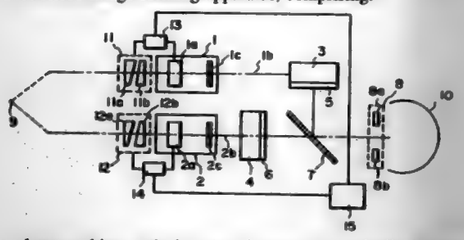
Continuation of Ser. No. 34,173, Mar. 18, 1993, abandoned, which is a continuation of Ser. No. 701,334, May 9, 1991, abandoned, which is a continuation of Ser. No. 497,352, Mar. 22, 1990, abandoned. This application May 16, 1994, Ser. No. 243,515

Claims priority, application Japan, Mar. 24, 1989, 1-72459

Int. Cl.[6] G02B *27/22*

U.S. Cl. 359—462 **33 Claims**

1. A stereo image forming apparatus, comprising:



a photographing optical system having two optically independent optical axes;

a focusing operation unit for outputting a focus signal corresponding to a focus condition of said photographing optical system;

a light deflection member located on each said optical axis for deflecting light; and

adjusting means for adjusting a light deflection condition of each said light deflection member in response to the focus signal output by said focusing operation unit to cause two deflected light paths to cross each other.

5,486,949

BIREFRINGENT INTERFERENCE POLARIZER

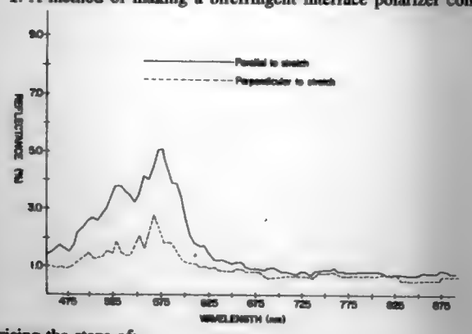
Walter J. Schrenk; John A. Wheatley, both of Midland, Mich., and Victor S. Chang, Ellicott City, Md., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 463,645, Jan. 11, 1990, Pat. No. 5,122,906, and a continuation-in-part of Ser. No. 466,168, Jan. 17, 1990, Pat. No. 5,122,905, each , Jan. 17, 0which is a continuation-in-part of Ser. No. 368,695, Jun. 20, 1989, abandoned. This application Nov. 26, 1990, Ser. No. 618,191

Int. Cl.[6] G02B *5/30;* **B29D** *11/00;* **B29C** *47/06*

U.S. Cl. 359—498 **11 Claims**

1. A method of making a birefringent interface polarizer com-



prising the steps of:

providing at least first and second polymeric materials having respective nonzero stress optical coefficients,

coextruding said first and second polymeric materials in multiple alternating layers in which said layers increase in thickness to produce a player thickness gradient, and

stretching said layers such that said first and second polymeric materials become oriented and produce a refractive index mismatch in a first plane which is different from the refractive index mismatch between said first and second polymeric materials in a second plane normal to said first plane.

5,486,950

PHASE CORRECTING ZONE PLATE

Gary Collinge, Suffolk, United Kingdom, assignor to Flat Antenna Company Limited, United Kingdom

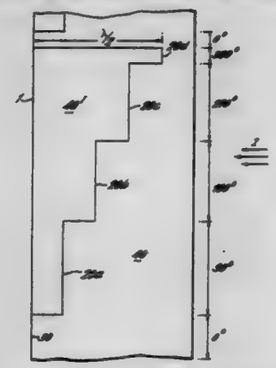
Filed Mar. 30, 1993, Ser. No. 39,860

Claims priority, application United Kingdom, Jul. 9, 1992, 9214562

Int. Cl.[6] G02B *27/44*

U.S. Cl. 359—565 **18 Claims**

1. A zone plate for focusing radiation, the zone plate comprising:



a plurality of reflective surface portions corresponding to zones of said zone plate; wherein said zone plate is a 1/L zone plate, and L is an integer greater than 2; said surface portions being positions in a plurality P of adjacent parallel planes from a first plane to a Pth plane, where P=nL+1 and n is an integer; said surface portions being arranged in a plurality of groups, adjacent surface portions in each group being positioned in adjacent parallel plens to form a succession of adjacent surface portions from said first plane to said P^{th} plane, so that each surface portion diffracts radiation out of phase with respect to adjacent surface portions such that radiation diffracted by said surface portions constructively interferes at a focus of said zone plate;

wherein the Pth plane is dielectrically spaced from the first plane by $n\lambda/2$, where λ is the wavelength of the radiation and n is an integer greater than zero, and the width of the surface portions provided in the first and P^{th} planes is less than the width of the adjacent surface portions in adjacent second and $(P-1)^{th}$ planes respectively, the sum of the widths of a surface portion in the first plane of one group and a surface portion in the Pth plane of an adjacent group is equal to a 1/L wave zone of said zone plate, and said surface portions in the first and P^{th} planes diffract radiation in phase.

5,486,951

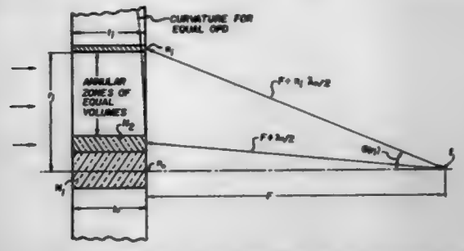
GRADIAL ZONE LENS AND METHOD OF FABRICATION

David P. Hamblen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 16, 1993, Ser. No. 169,839

Int. Cl.[6] G02B *5/18;27/44;* **B29D** *11/00*

U.S. Cl. 359—565 **10 Claims**



1. A method of making a diffractive lens, comprising the steps of:

providing a mold having an axis and a mold cavity symmetrically surrounding the axis, the cavity having a desired geometry for at least one exterior surface of the diffractive lens;

spinning the mold about the axis;

injecting a first volume of optically transparent material into the cavity during the spinning, thereby placing the first volume at a periphery of the cavity to define a radially outer zone of the diffractive lens;

curing the first volume within the outer zone to at least partially solidify the material;

injecting a second volume of optically transparent material into the cavity during the spinning, thereby placing the second volume against an inner periphery of the outer zone to define a first radially inner zone of the diffractive lens;

curing the second volume within the first inner zone to at least partially solidify the material; and

repeating the injecting and curing steps to define and cure subsequent inner zones of the diffractive lens until the mold cavity is filled with concentric zones of cured material.

5,486,952

DEVICE FOR DRIVING AN EC ANTIGLARE MIRROR

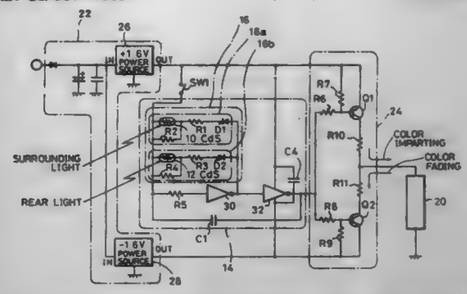
Mitsuyoshi Nagao; Hidenori Sato, and Michiaki Hattori, all of Fujieda, Japan, assignors to Murakami Kaimeido Co., Ltd., Japan

Filed Apr. 6, 1995, Ser. No. 418,062

Claims priority, application Japan, Apr. 13, 1994, 6-099291

Int. Cl.[6] G02B *27/00;5/08;* **G02F** *1/15;* **G01J** *1/20*

U.S. Cl. 359—603 **5 Claims**



1. A device for driving an EC antiglare mirror in which reflectivity is variably controlled by an EC element comprising:

surrounding light quantity detection means for detecting quantity of light surrounding a vehicle;

rear light quantity detection means for detecting quantity of light in the rear of the vehicle;

oscillation means for generating an oscillation signal of an "H" level and an oscillation signal of an "L" level repeatedly and alternately, said oscillation means being capable of individually controlling duration of the "H" level and duration of the "L" level;

inversion period control means for variably controlling duration of one of the "H" and "L" levels of the oscillation signal generated by said oscillation means in response to light quantity detected by said surrounding light quantity detection means and variably controlling duration of the other of the "H" and "L" levels of the oscillation signal in response to light quantity detected by said rear light quantity detection means;

a drive power source for driving the EC element; and

EC element drive means for inverting the polarity of drive voltage supplied from the drive power source in response to the "H" or "L" level of the oscillation signal generated by said oscillation means and applying the inverted drive voltage to the EC element,

said inversion period control means performs control, when said EC element drive means is so set that it drives the EC element in a color imparting direction at the one level of the oscillation signal and in a color fading direction at the other level of the oscillation signal, in such a manner that, when the surrounding light quantity is larger, the duration of the one level is shorter and, when the surrounding light quantity is smaller, the duration of the one level is longer and that, when the rear light quantity is larger, the duration of the other level is shorter and, when the rear light quantity is smaller, the duration of the other level is larger and, when said EC element drive means is so set that it drives the EC element in a color fading direction at the one level of the oscillation signal and in a color imparting direction at the other level of the oscillation signal, in such a manner that, when the surrounding light quantity is larger, the duration of the one level is longer and, When the surrounding light quantity is smaller, the duration of the one level is shorter and that, when the rear light quantity is larger, the duration of the other level is longer and, when the rear light quantity is smaller, the duration of the other level is shorter.

5,486,953

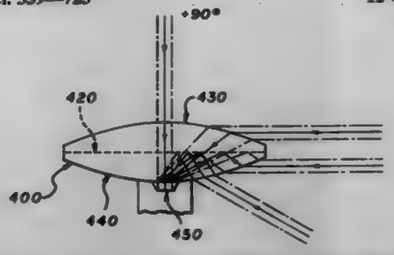
HYPERHEMISPHERICAL FIELD OF VIEW OPTICAL SENSOR HEAD

Ker-Li Shu, New Milford, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 20, 1993, Ser. No. 170,137

Int. Cl.[6] G02B *13/06;5/14;* **G01J** *1/20*

U.S. Cl. 359—725 **12 Claims**



1. An optical sensor head for providing a wide field of view comprising:

first and second lenses, each of the lenses having a planar surface and a convex surface, said first and second lenses positioned so that their planar surfaces face each other and are parellel;

a beam splitting means for reflecting a portion of light thereon, said beam splitting means being positioned between said planar surfaces;

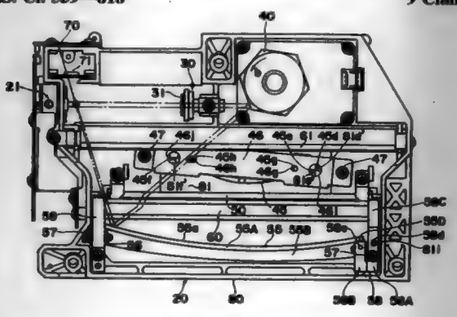
a optical sensor means for detecting light, said optical sensor means located adjacent to and facing the convex surface of the second lens.

5,486,954

OPTICAL DEVICE HAVING AN OPTICAL LENS AND A MOUNTING ASSEMBLY

Tetsuji Nitkawa; Hiromu Nakamura; Toshio Naiki, and Jun Kohsaka, all of Toyokawa, Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Division of Ser. No. 619,898, Nov. 28, 1990, Pat. No. 5,301,060. This application Jan. 4, 1994, Ser. No. 177,263
Claims priority, application Japan, Nov. 30, 1989, 1-312951; Nov. 30, 1989, 1-312952
Int. Cl.[6] G02B *7/02*
U.S. Cl. 359—818 **9 Claims**



1. An optical device comprising:
a base plate which has a mounting surface;
a lens which has an elongated transmitting surface and a pressing surface brought into pressing contact with the mounting surface of said base plate such that said lens is supported on the mounting surface;
said lens being provided, on a surface of said lens opposite to the pressing surface, with first and second projections; and
a clamp member which has a clamp surface and depresses said lens downwardly through contact of the clamp surface with said lens so as to mount said lens on the mounting surface;
said clamp member being formed, on the clamp surface, with first and second holes engageable with said first and second projections of said lens, respectively;
the second hole being an elongated opening extending in a longitudinal direction of said lens.

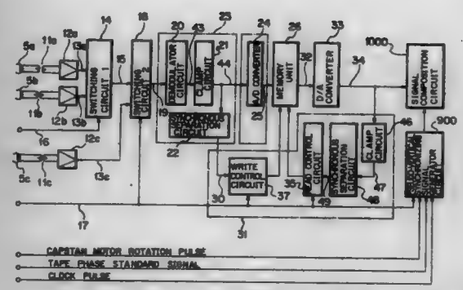
5,486,955

VIDEO TAPE RECORDER IN WHICH A VIDEO SIGNAL TO BE DISPLAYED IS PRODUCED BY UTILIZNG A SINGLE MAIN MAGNETIC HEAD

Masafumi Kodama, Kyoto, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 968,689, Oct. 30, 1992, abandoned, which is a division of Ser. No. 459,307, Dec. 29, 1989, Pat. No. 5,179,477. This application Mar. 14, 1994, Ser. No. 209,491
Claims priority, application Japan, Jan. 21, 1989, 1-12962; Jan. 21, 1989, 1-12963; Feb. 1, 1989, 1-24345
Int. Cl.[6] H04N *5/78*
U.S. Cl. 360—10.3 **10 Claims**

1. A video tape recorder comprising:
a rotary drum including,
primary record/reproduction means consisting essentially of an independent single rotary head, and
at least a pair of other rotary heads,
said independent single rotary head developing an FM display signal having a video signal only in FM field intervals which alternate with no-signal field intervals;



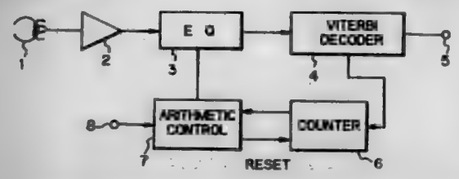
inserting means for inserting FM non-display signals developed by said pair of other rotary heads into said no-signal field intervals of said FM display signal developed by said independent single rotary head to produce a continuous FM signal;
signal processing means for demodulating the continuous FM signal to develop a demodulated FM display signal including demodulated video signal portions and FM non-display signal portions; and
replacing means for replacing the FM non-display signal portions of said demodulated FM display signal with the demodulated video signal portions of said demodulated FM display signal to produce a compensated reproduced video signal.

5,486,956

DIGITAL SIGNAL REPRODUCING CIRCUIT WHICH COUNTS THE INCREASING AMOUNT OF BRANCH METRIC TO CONTROL AN EQUALIZER

Kaoru Urata, Kanagawn, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 8, 1993, Ser. No. 148,344
Claims priority, application Japan, Nov. 13, 1992, 4-328620
Int. Cl.[6] G11B *5/035; 5/09;* H03D *1/00*
U.S. Cl. 360—65 **3 Claims**



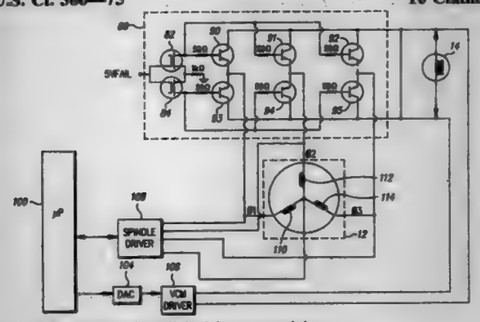
1. A digital signal reproducing circuit for reproducing a digital signal recorded on a recording medium, comprising:
an equalizing circuit for receiving an RF signal reproduced from the recording medium and varying at least one of gain characteristics and phase characteristics thereof with a control signal;
a Viterbi decoder for receiving an output signal of said equalizing circuit; and
a control unit for generating said control signal for said equalizing circuit,
wherein said control unit is adapted to generate said control signal to control said equalizing circuit so as to minimize an increasing amount of a branch metric of said Viterbi decoder and wherein said control unit comprises:
a counter for counting the increasing amount of the branch metric of said Viterbi decoder; and
an arithmetic control unit for generating said control signal fed to said equalizing circuit corresponding to an output of said counter.

5,486,957

DISK DRIVE WITH RECTIFIER CIRCUIT FOR PARKING THE HEAD CARRIERS ON POWER DOWN

Thomas R. Albrecht, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 1, 1994, Ser. No. 252,304
Int. Cl.[6] G11B *21/02*
U.S. Cl. 360—75 **10 Claims**



1. A data recording disk drive comprising:
at least one data disk;
a multi-phase spindle motor having a winding for each phase and connected to the disk for rotating the disk;
a transducer for writing data to or reading data from the disk;
a carrier supporting the transducer;
a voice coil motor actuator connected to the carrier for moving the carrier generally radially across the disk so the transducer may access different regions of data on the disk; and
a circuit for converting back electromotive force from the spindle motor to current for the actuator when power to the spindle motor is removed, the circuit comprising a switch responsive to the removal of power to the spindle motor and a plurality of paired bipolar transistors, each pair of transistors being associated with a different one of the windings, each transistor having its emitter-base junction connected in series between its associated winding and the switch and its emitter-collector junction connected in series between its associated winding and the coil of the actuator; whereby in response to closing of the switch the freely rotating spindle motor generates current through successive windings to emitter-base junctions of associated transistors to successively turn on the transistors and thereby direct remaining current from the windings to the coil of the actuator.

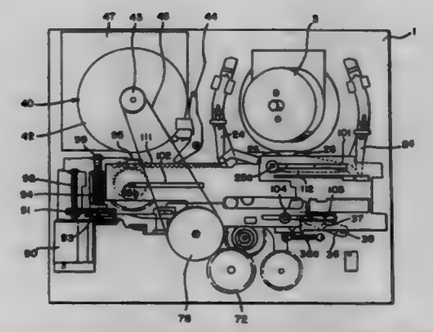
5,486,958

VIDEO CASSETTE TAPE RECORDER WITH SINGLE LOADING MOTOR, ACTUATING PLATE AND FAST WINDING PLATE

Jeong D. Choi; In K. Cheon, both of Seoul; Geun H. Song, Kyungki, and Hee Y. Park, Seoul, all of, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 17, 1993, Ser. No. 153,899
Claims priority, application Rep. of Korea, Nov. 21, 1992, 21990/1992; Nov. 21, 1992, 23016/1992
Int. Cl.[6] G11B *5/027*
U.S. Cl. 360—85 **12 Claims**

1. A video cassette tape recorder having a base plate and a rotation head drum for recording video and audio signals on a magnetic tape and reproducing the recorded signals, comprising:
a supply reel and a take-up reel rotatably mounted on said base plate;
a single loading motor fixedly mounted to the base plate and adapted to generate a force for both loading a cassette and threading the tape;
mode switch means for sensing an operation mode and controlling said single loading motor according to the sensed operation mode;



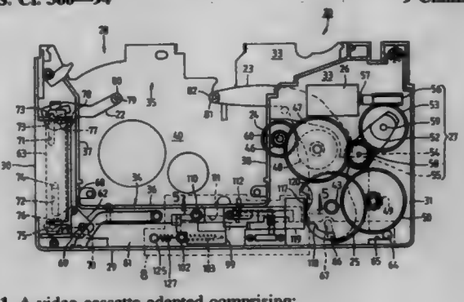
an actuating plate is drivingly connected to said single loading motor;
a pair of slant post assemblies for guiding the tape out of a tape cassette, each of said slant post assemblies having a slant post and a guide roller;
a pair of link type loading arms connected between said slant post assemblies and a pair of loading gears which are driven by said actuating plate, whereby each of said slant post assemblies are moved between a tape threaded position and a tape unthreaded position;
a capstan motor and a pinch drive assembly disposed on said base plate for feeding the tape, said pinch drive assembly being driven by said single loading motor and including a pinch roller for pressing the tape against a capstan shaft of said capstan motor;
idler means, in connection with said capstan motor, for rotating said supply reel and said take-up reel;
brake means for braking the supply reel and the take-up reel;
means for initiating a fast winding operation mode for winding the tape at a high speed in response to movement of the actuating plate to a predetermined position, said means for initiating including a fast winding plate engageable and disengageable with said actuating plate and means for engaging said idler means when said fast winding plate is engaged with said actuating plate to thereby rotate the supply reel and the take-up reel at a high speed; and
a front loading housing operatively connected with said single loading motor to move said tape cassette between a tape cassette loading position and a tape cassette unloading position.

5,486,959

ADAPTER MECHANISM FOR EXTRACTING AND RETRACTING VIDEO TAPE FROM MINIATURE CASSETTES

David Tai, 1st Fl., No. 17, Lane 180, Ho-Chiang Street, Taipei, Taiwan, Prov. of China

Filed Jul. 12, 1994, Ser. No. 273,796
Int. Cl.[6] G11B *5/008*
U.S. Cl. 360—94 **9 Claims**



1. A video cassette adapted comprising:

a housing having a front portion, a back portion, a first and second side portion, a top wall, a bottom wall and a recess for receiving a video cassette, said recess having a front portion communicating with said front portion of said housing, a back portion, a first and second side portions, a top opening and a bottom wall;

a first tape-driving member one end of which is pivotally disposed between said first side portion of said housing and said first side portion of said recess, and the other end of which is reversibly moveable from said front portion of said recess to said front portion of said housing and having a roller rotatably coupled thereto for engaging a portion of a tape of the video cassette;

a second tape-driving member one end of which is pivotally coupled to said housing between said second side portion of said housing and said second side portion of said recess by a pivot shaft, and the other end of which is reversibly moveable from said front portion of said recess to said front portion of said housing and having a roller rotatably coupled thereto for engaging a portion of the tape of the video cassette;

linkage means disposed within said housing and coupled to both said first tape-driving member and said second tape-driving member for displacing each with respect to the other;

a first gear rotatably disposed in said housing and extending into said second side portion of said recess for meshing with a gear disposed on a tape-winding shaft of the video cassette;

a second gear coaxially coupled to said pivot shaft for rotation with said second tape-driving member;

a motor disposed in said housing, said motor being selectably operable to rotate a motor shaft in both a clockwise and a counterclockwise direction; and

a selective power-transmitting mechanism including a power inputting portion and a power outputting portion, said power inputting portion being operably connected with said motor shaft, said selective power-transmitting mechanism being pivotally disposed in said housing with said power outputting portion automatically displaced between a first selection position to couple said power outputting portion with said first gear responsive to counterclockwise rotation of said motor shaft and a second selection position to couple said power outputting portion with said second gear responsive to clockwise rotation of said motor shaft said power outputting portion driving said second tape-driving member through said second gear and said first tape driving arm through said linkage means to move from said front portion of said recess to said front portion of said housing and pull a tape of the video cassette out of the cassette to said front portion of said housing responsive to said clockwise rotation of said motor shaft, said power outputting portion driving said first gear responsive to said counterclockwise rotation of said motor shaft for driving the gear of the tape-winding shaft of the video cassette to wind the tape respectively engaging said rollers of said first and second tape-driving members from said front portion of said housing into the video cassette and thereby displace said first and second tape driving members respectively from said front portion of said housing to said front portion of said recess.

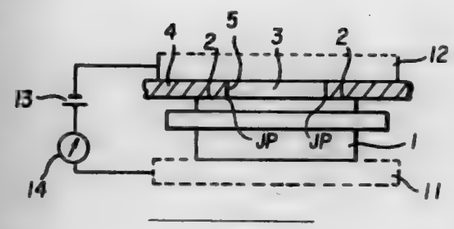
5,486,960

DISK STORAGE DEVICE WITH ELECTROSTATICALLY BONDED INFORMATION STORAGE DISK

Shigemasa Saito, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Japan

Filed Sep. 7, 1994, Ser. No. 301,460
Claims priority, application Japan, Sep. 9, 1993, 5-223761
Int. Cl.[6] G11B *17/02*
U.S. Cl. 360—99.08 **14 Claims**

1. A disk storage device including: a spindle motor; a hub rotatably coupled to the spindle motor; and a magnetic information storage disk including a disk hole fixed to the hub by an electrostatically bonded fixing portion that forms a permanent physical bond between the disk hole and the hub.

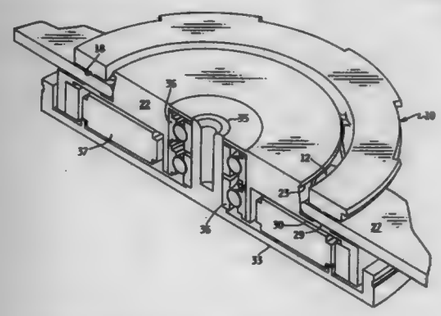


5,486,961

RESILIENT COMPLIANT CLAMP FOR DATA STORAGE DISK DRIVES

Zine-Eddine Boutaghou; Randy J. Bornhorst, and Douglas W. Johnson, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 30, 1994, Ser. No. 298,490
Int. Cl.[6] G11B *17/02*
U.S. Cl. 360—99.12 **6 Claims**



1. A disk data storage device comprising:

a base;

at least one disk having first and second surfaces, said first surface being axially spaced from said second surface, at least one of said first and second surfaces having a layer for recording data;

a hub mounted for rotation on said base, said hub supporting said at least one disk at said first surface of said disk and presenting a flange in axial spaced relation to said at least one disk at said second surface of said disk;

a resilient clamping member clamping said disk to said hub, comprising

(a) an annulus formed of resilient material including a first portion at an inner radius of said annulus, the annulus first portion extending radially inward and axially toward said flange to fixedly secure said annulus first portion to said hub and maintain said annulus in a deformed state, and

(b) a projecting portion of said annulus at an annulus lower surface of said annulus, the projecting portion confronting said at least one disk and deforming against the second surface of said disk when said annulus is maintained in said deformed state and said annulus first portion is retained by said flange, whereby said disk is compressively clamped to said hub; and

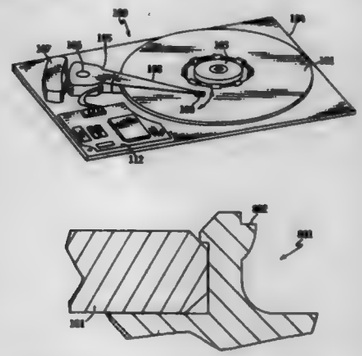
a transducer mounted on an actuator for accessing data recorded in said layer of said disk.

5,486,962

INTEGRAL HUB AND DISK CLAMP FOR A DISK DRIVE STORAGE DEVICE

Zine-Eddine Boutaghou, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 12, 1994, Ser. No. 322,716
Int. Cl.[6] G11B *17/028*
U.S. Cl. 360—99.12 **1 Claim**



1. A rotating disk data storage device, comprising:

a disk drive base;

a rotatably mounted disk for recording data, said disk having an axis of rotation, first and second surfaces perpendicular to said axis of rotation, and a circular aperture at its center;

a rotatable hub for mounting said disk;

a clamping structure for clamping said disk to said rotatable hub, said clamping structure comprising a supporting surface contacting said first surface of said rotatably mounted disk, and a plurality of circumferentially spaced fingers, each said finger including a pawl at one end thereof, said fingers extending through said circular aperture of said disk, said pawls engaging said disk and imparting an axial force to said disk forcing said first surface of said disk against said supporting surface; wherein each said finger contains a projecting tab for engagement with a disk removal tool, said projecting tab projecting from a side of said finger facing said disk axis

a spindle motor for rotating said disk;

at least one transducer head for reading data stored on said disk; and

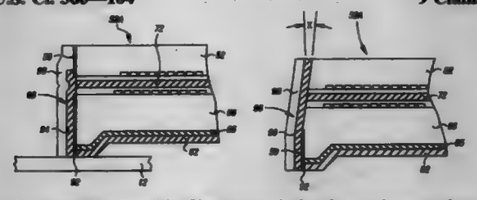
a moveable actuator mounted on said disk drive base for positioning said transducer head to read data recorded on said disk.

5,486,963

INTEGRATED TRANSDUCER-SUSPENSION STRUCTURE FOR LONGITUDINAL RECORDING

Robert E. Jones, Jr., San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 932,826, Aug. 19, 1992, abandoned. This application Jun. 1, 1994, Ser. No. 252,147
Int. Cl.[6] G11B *5/105;5/127*
U.S. Cl. 360—104 **9 Claims**



1. A combination thin film magnetic head transducer and suspension system for longitudinal recording comprising:

a horizontal thin film first pole piece having a pole tip;

a substantially vertical thin film magnetic gap layer having oppositely facing first and second substantially vertical thin film surfaces;

the first and second vertical thin film surfaces being made by a process of thin film deposition without lapping;

the first thin film surface of the thin film magnetic gap layer directly contacting the pole tip of the horizontal thin film first pole piece;

a thin film second pole piece having a vertical component which has a pole tip directly contacting the second vertical thin film surface of the thin film magnetic gap layer and a horizontal component magnetically isolated from but adjacent and parallel to said first pole piece said first and second pole pieces magnetically connected at a back gap region and magnetically isolated at their pole tips by said magnetic gap;

a thin film coil electrically isolated from but magnetically activating said first and second pole pieces and encircling the horizontal component of said second pole piece;

said first and second pole pieces configured with a wider surface at their backgap region and narrower surfaces at their pole tips;

a suspension layer of a thin film layer of a resilient material at least covering said second pole piece horizontal component and electrically and magnetically isolated from said second pole piece and said coil, said resilient material extending beyond the back gap region;

the pole tip of the first pole piece being horizontal and substantially perpendicular to the vertical component of the second pole piece;

the first pole piece having a downwardly sloping portion which is adjacent to the pole tip of the first pole piece;

the first pole piece narrowing in width from said sloping portion to the pole tip; and

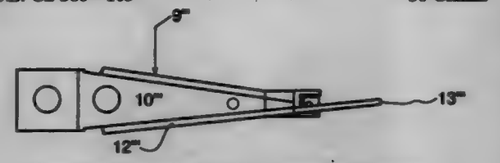
the vertical component of said second pole piece having an essentially vertical portion on an end adjacent to said magnetic gap layer and having a portion on a second end which is angled away from the essentially vertical portion to contact the horizontal component of said second pole piece.

5,486,964

MINIATURE DISK DRIVE WITH DYNAMIC HEAD LOADING WITH SKEWED LIFTING TAB

James H. Morehouse, Jamestown; David M. Furay; Steven B. Volk, both of Boulder; Michael R. Utenick, Englewood; James A. Dunckley; John H. Blagaila, both of Boulder; James F. Hopper, Louisville, and Thomas A. Klein, Boulder, all of Colo., assignors to Integral Peripherals, Inc., Boulder, Colo.

Continuation of Ser. No. 112,909, Aug. 27, 1993, abandoned, which is a division of Ser. No. 629,948, Dec. 19, 1990, abandoned. This application May 5, 1995, Ser. No. 435,243
Int. Cl.[6] G11B *5/54*
U.S. Cl. 360—105 **30 Claims**



1. A disk drive information storage device comprising:

a housing having a first external dimension of about 51 mm;

disk means for recording and reproducing information, said disk means being supported by said housing for rotation;

an actuator comprising a body portion supported by said housing for rotation about an axis, and a load beam connected to said body portion for rotation of a first end of said load beam in a plane substantially parallel to a surface of said disk means, said load beam having a centerline and said load beam further including an elongated lift tab having a free end which

extends beyond said first end of said load beam, said lift tab extending along an axis which is skewed from said centerline of said load beam;

a slider body including a transducer means for recording information on and reproducing information from said disk means;

means connected to said load beam and said slider body for supporting said slider body adjacent to said first end of said load beam and at a position intermediate said first end of said load beam and said axis of rotation of said body portion; and

a cam assembly supported by said housing adjacent to said lift tab and the edge of said disk means, said cam assembly including a cam surface positioned in operative relationship with said lift tab, whereby a contact between said cam surface and said lift tab provides a lifting force on said load beam.

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ROTARY INFORMATION RECORDING/REPRODUCING APPARATUS CARRIAGE ACTUATOR ARRANGEMENT

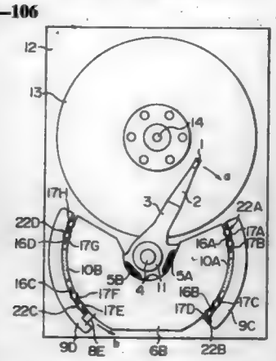
Takeshi Yoshida; Hideaki Amano, both of Odawara; Takashi Kohno, Ibaraki; Kenji Mori, Hadano; Takashi Yoshida, Ibaraki, and Hiromu Hirai, Tsukuba, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 18, 1994, Ser. No. 198,593

Claims priority, application Japan, Feb. 18, 1993, 5-029230

Int. Cl.[6] G11B *5/55*

U.S. Cl. 360—106 **39 Claims**



1. A rotary information recording/reproducing apparatus including at least one disk for recording information, a carriage supporting a head to record/reproduce information on or from said disk and being rotatable in a substantially radial direction of said disk to position said head relative to said disk, a carriage actuator for applying a torque to said carriage, and a housing comprising a base and a cover to support and accommodate said disk, said head, said carriage and said carriage actuator, said carriage actuator including two driving coils fixed to said carriage and a magnet-yoke assembly which comprises permanent magnets and at least one yoke, the arrangement being such that an angle formed between a line connecting a center of the first driving coil and a center of a carriage pivot shaft and another line connecting said head and the center of said carriage pivot shaft is not larger than 90 degrees and that an angle formed between the center lines of the first and second driving coils about the center of said carriage pivot shaft is within the range of from 100 degrees to 150 degrees, said first and second driving coils being flat in shape, means for supporting said magnet-yoke assembly, said supporting means being mounted on one surface of said base outwardly of an outer peripheral surface of said magnet-yoke assembly, said magnet-yoke assembly supporting means being arranged to be within a distance between said one surface of said base and an end face of said magnet-yoke assembly spaced from said one base surface.

5,486,966

HEAD DRUM GROUND SYSTEM FOR USE IN A VIDEO CASSETTE RECORDER

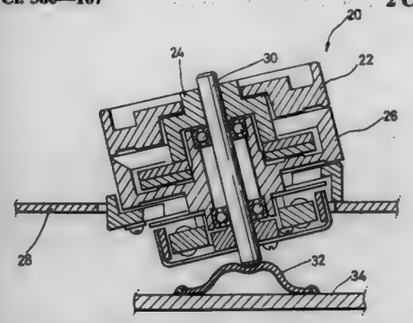
Seong-Ick Ahn, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 22, 1994, Ser. No. 294,529

Claims priority, application Rep. of Korea, Aug. 24, 1993, 93-16474

Int. Cl.[6] G11B *5/52;5/027*

U.S. Cl. 360—107 **2 Claims**



1. A video cassette recorder incorporating therein a ground system for discharging static electricity generated from a head drum assembly therein which includes a rotary drum having a rotating shaft rotatably supported by at least one bearing, and a stationary drum mounted on a deck within the video cassette recorder, said ground system comprising:

a printed circuit board having a grounding terminal; and

an electrical coupler electrically connected to the grounding terminal of the printed circuit board at its opposite ends and resiliently contacted with a lower segment of the rotating shaft, said electrical coupler being a flexible printed circuit board having an electrically conductive member for contacting with the lower segment of the rotating shaft and an enclosure surrounding said conductive member for resiliently supporting the same, the enclosure having a cutout portion for allowing a part of the conductive member to be exposed.

5,486,967

MAGNETIC DISK MEMORY SYSTEM

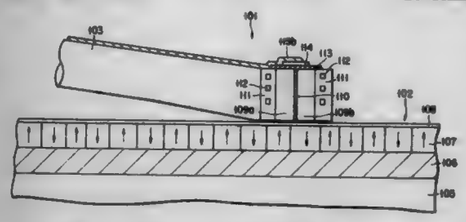
Yoichiro Tanaka, Kawasaki; Kazushi Tanimoto, Tokyo; Hiroshi Ohashi, Tokyo; Takashi Hikosaka, Tokyo; Yasuo Ohtsubo, and Shigeru Hoshina, both of Yokohama, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 14, 1994, Ser. No. 212,120

Claims priority, application Japan, Mar. 15, 1993, 5-054367

Int. Cl.[6] G11B *5/39;5/31*

U.S. Cl. 360—113 **20 Claims**



1. A magnetic disk memory system comprising:

a magnetic disk of a perpendicular recording type, including a soft magnetic backing layer and a magnetic recording layer of a perpendicular magnetic anisotropy formed on said backing layer; and

a magnetic head for writing and reading data with respect to said magnetic disk wherein said magnetic head comprises:

(a) a pair of main magnetic poles each being made of a material having a high magnetic permeability and each having a first end and a second end, each second end defining a second end surface, said first end of each magnetic pole being located so as to face a surface of said magnetic disk;

(b) a non-magnetic interlayer provided between said pair of main magnetic poles;

(c) a recording coil disposed so as to generate a magnetic flux passing through said magnetic disk via said pair of main magnetic poles; and

(d) an MR element having a film-like shape provided via an insulation layer on each of said second ends of said pair of main magnetic poles, said MR element having a film surface parallel to said second end surfaces of said pair of main magnetic poles, and being magnetically coupled with said pair of main magnetic poles.

5,486,968

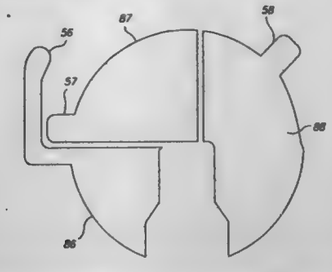
METHOD AND APPARATUS FOR SIMULTANEOUS WRITE HEAD PLANARIZATION AND LEAD ROUTING

Hin P. E. Lee, San Jose, and Douglas J. Werner, Fremont, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 10, 1993, Ser. No. 149,891

Int. Cl.[6] G11B *5/31;5/17;5/39*

U.S. Cl. 360—126 **51 Claims**



1. An inductive head assembly formed on a substantially planar first surface, comprising:

a lower pole piece formed over a first portion of said first surface, having a first pole tip and a first back gap portion

at least two electrically isolated planar sections of conductive material formed over a second portion of said first surface in close proximity to and substantially coplanar with said lower pole piece to provide therewith a substantially planar second surface;

a coil formed over said substantially planar second surface, wherein the center of said coil is disposed over said first back gap portion; and

an upper pole piece formed over a portion of said coil, said upper pole piece having a second pole tip and a second back gap portion connected to said first back gap portion through said center of said coil, wherein said first and second pole tips form a write gap.

5,486,969

MAGNETIC HEAD CORE HAVING FERRITE MEMBER REINFORCED BY NON-MAGNETIC MATERIAL

Fuminori Takeya, Iwakura, and Tomio Suzuki, Yokkaichi, both of, Japan, assignors to NGK Insulators, Ltd., Japan

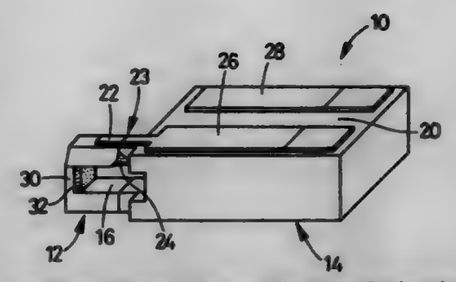
Filed Jun. 13, 1994, Ser. No. 258,836

Claims priority, application Japan, Jun. 28, 1993, 5-185467

Int. Cl.[6] G11B *5/133*

U.S. Cl. 360—127 **8 Claims**

1. A head core for a magnetic head for recording information on a magnetic recording medium, comprising:



a first ferrite member and a second ferrite member butted and bonded together to form an annular, closed magnetic path around a coil-winding groove, upper portions of said first and second ferrite members providing a sliding surface to which the magnetic recording medium is opposed, said sliding surface extending across the first and second ferrite members in a direction in which said recording medium slides;

a coil attached to a coil-winding portion of said first ferrite member; and

a non-magnetic material secured to at least one of an inner surface and an outer surface of said coil-winding portion of said first ferrite member and spaced from said second ferrite member, said inner and outer surfaces being opposed to one another in said direction, such that said non-magnetic material extends over the entire length of said coil-winding portion, said non-magnetic material being spaced below said sliding surface apart from the magnetic recording medium by a portion of said first ferrite member which provides a part of said sliding surface.

5,486,970

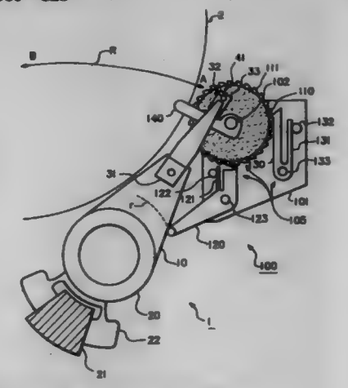
CLEANING APPARATUS FOR HEADS OF DATA STORAGE DISKS

Nevilk K. Lee, Sherborn, and Hitoshi Katao, Shrewsbury, both of Mass., assignors to Quantum Corporation, Milpitas, Calif.

Division of Ser. No. 293,106, Aug. 19, 1994, Pat. No. 5,467,238, which is a continuation of Ser. No. 88,293, Jul. 6, 1993, abandoned. This application Mar. 21, 1995, Ser. No. 408,415

Int. Cl.[6] G11B *5/41;3/58*

U.S. Cl. 360—128 **8 Claims**



1. A head cleaning apparatus comprising;

a base;

a read/write head;

a disk rotatably journalled to the base;

an actuator movably mounted relative to the base upon an air bearing formed by relative rotation of the head and disk and carrying said head in operable relationship with the disk, movements of said actuator for positioning said head relative

to said disk and for placing said head into a cleaning contact relationship with a rotating head cleaning pad;

the rotating head cleaning pad having a plurality of head cleaning paths;

a toothed wheel rotatably mounted to the base, said toothed wheel having side surfaces, the head cleaning pad mounted on one of said side surfaces;

a first pawl pivotally mounted on the base, said first pawl positioned and dimensioned relative to the toothed wheel and the actuator such that as the actuator places said head into the cleaning contact relationship with the cleaning pad, the actuator contacts a first end on the first pawl, initiating a second end on the first pawl to rotationally advance the toothed wheel as the head simultaneously wipes across the cleaning pad to define one of the plurality of head cleaning paths;

a biasing means integral with the first pawl for engaging the second end of the first pawl with a subsequent tooth of the toothed wheel after the cleaning contact relationship is complete and the actuator loses contact with the first end of the first pawl; and

a second pawl mounted on the base and engaged coupled to the toothed wheel to bias the rotation of the toothed wheel.

5,486,971

CENTRAL HUBS FOR FLEXIBLE MAGNETIC DATA DISCS FORMED OF MAGNETICALLY SOFT POLYACETAL COMPOSITIONS

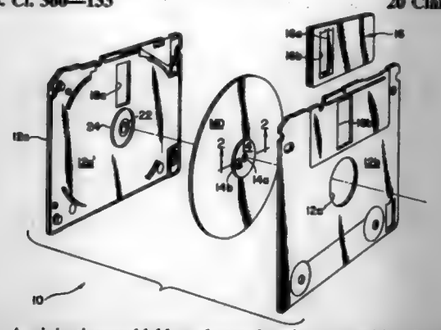
Patrick M. Hughes, Plano, Tex., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 683,953, Apr. 12, 1991, Pat. No. 5,214,555. This application Dec. 23, 1992, Ser. No. 996,333

The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.

Int. Cl.[6] G11B *23/03*

U.S. Cl. 360—133 **20 Claims**



1. An injection-moldable polyacetal resin composition having soft magnetic properties characterized by high initial and maximum permeabilities, magnetic remanence closely approaching saturation, and small coercive force and hysteresis loss, said composition consisting essentially of a polyacetal base resin, and at least about 40% by weight, based on the total composition weight, of elemental iron particles wherein the iron particles are homogeneously dispersed through the resin to impart magnetically soft properties to the composition.

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AC POWERED ELECTRICAL CONTROL DEVICE WITH LOGIC LEVEL CONTROL

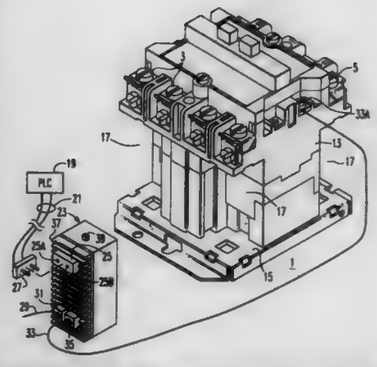
Glen D. Taylor, Fayetteville, N.C., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 30, 1993, Ser. No. 176,151

Int. Cl.[6] H01H *47/32;50/04;45/12*

U.S. Cl. 361—154 **13 Claims**

1. An electric power switching device operated by ac power and comprising:



an insulated housing including an exterior surface defining a cavity that is exterior of said housing; separable electrical contacts within said housing; electromagnetic means within said housing including a coil energized by said ac power to move said separable contacts between open and closed positions; a control module mounted in said cavity comprising solid state switching means responsive to an externally generated logic level signal for selectively connecting said coil to said ac power receiving means for receiving said logic level signal operatively connected to said solid state switching means.

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POSTAGE METER INCLUDING A SAFETY LOCKING CIRCUIT

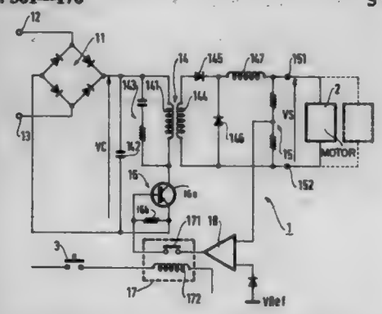
Jean-Pierre Meur, La Ville Du Bois, France, assignor to Neopost Industrie, Bagneux, France

Filed Sep. 15, 1994, Ser. No. 306,330

Claims priority, application France, Sep. 24, 1993, 93 11395

Int. Cl.[6] H02M *3/335;* G07B *17/00;* H01H *13/18*

U.S. Cl. 361—170 **5 Claims**



1. A mail-processing machine including an electrical power supply for powering at least one control motor, and a safety locking circuit electrically connected to a cover switch of the machine and co-operating with the electrical power supply to switch the power supply off whenever the cover of the machine is open, said electrical power supply including a chopper electrical power supply comprising at least one power chopper circuit having a control circuit, and wherein the safety locking circuit includes at least one electromechanical relay electrically connecting the power chopper circuit to its control circuit.

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ELECTROSTATIC ATTRACTION BOARD SYSTEM

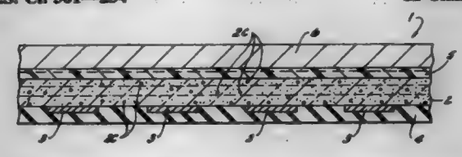
Keiji Kasahara, Kakegawa, Japan, assignor to Abisare Co., Ltd., Shizuoka, Japan

Filed Aug. 27, 1993, Ser. No. 113,396

Claims priority, application Japan, Dec. 3, 1992, 4-324307; Mar. 10, 1993, 5-049611

Int. Cl.[6] H02N *13/00*

U.S. Cl. 361—234 **12 Claims**



1. An electrostatic attraction board system for use with a power source comprising:

(a) an attraction layer formed of a layered dielectric substance having a volume resistivity of 10^{11} to 10^{14} Ωcm;

(b) a coating layer formed on a first face of the attraction layer so as to cover the first face, the coating layer having a volume resistivity of 10^{10} to 10^{13} Ωcm, a thickness of 5 to 50μ a small vapor permeability and oxygen barrier properties; and

(c) at least a pair of electrodes on a second face of the attraction layer such that the electrodes are electrically separated from each other in a laminate structure, said electrodes adapted to be connected to the power source for establishing an electric field in order to cause polarization charge at the attraction layer, said attraction layer, said coating layer and said electrodes forming a laminate structure;

wherein an object placed on the first face of the attraction layer with the coating layer interposed therebetween can be attracted and held by means of coulomb force resulting from the electric field.

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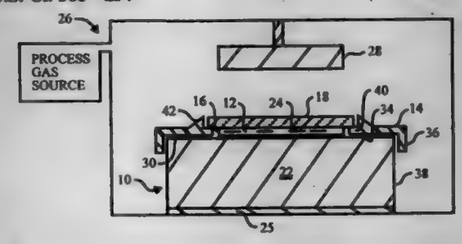
CORROSION RESISTANT ELECTROSTATIC CHUCK

Shamouil Shamouilian, San Jose, and Yoshi Tanase, Campbell, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Jan. 31, 1994, Ser. No. 189,811

Int. Cl.[6] H02N *13/00*

U.S. Cl. 361—234 **24 Claims**



1. A corrosion resistant apparatus for holding a substrate during processing with a corrosive gas, the apparatus comprising:

(a) an electrostatic chuck having an electrically insulative layer, the insulative layer having a top surface and an exposed side surface, the chuck being chargeable for holding the substrate thereon by electrostatic force; and

(b) a guard substantially enclosing the exposed side surface of the insulative layer for protecting the insulative layer against the corrosive gas, the guard being made from a sacrificial material that corrodes at least as quickly as the insulative layer corrodes when exposed to the corrosive gas.

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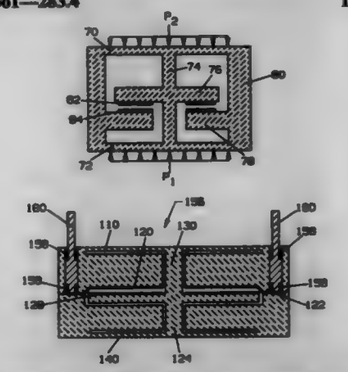
PRESSURE TRANSDUCER APPARATUS HAVING A RIGID MEMBER EXTENDING BETWEEN DIAPHRAGMS

Thomas J. Charboneau, Plainville; Douglas B. Strott, Attleboro; Dale R. Sogge, Wrentham, and Thomas R. Maher, Plainville, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 14, 1994, Ser. No. 339,040

Int. Cl.[6] H01G *7/00;* G01L *9/12*

U.S. Cl. 361—283.4 **10 Claims**



1. A pressure responsive capacitive transducer comprising

a generally rigid, annular wall extending along a longitudinal axis forming an opening between first and second ends,

first and second relatively thin, flexible diaphragms closing the first and second ends of the annular wall respectively,

a rigid pin attached to and extending between a central portion of the first and second diaphragms, a first rigid platform connected to the pin and extending laterally outwardly from the pin toward the annular wall but spaced therefrom,

a second rigid platform connected to the annular wall and extending laterally inwardly from the annular wall toward the pin but spaced therefrom and spaced a selected distance along the longitudinal axis from the first platform, the platforms having surface portions aligned with and facing each other with a selected gap between the platforms,

first and second electrical capacitor plates disposed on the surface portions of the first and second platforms, and

means to provide an electrical connection with the capacitor plates.

5,486,977

TANTALUM CAPACITOR CHIP, PROCESS FOR MAKING THE SAME AND TANTALUM CAPACITOR INCORPORATING THE SAME

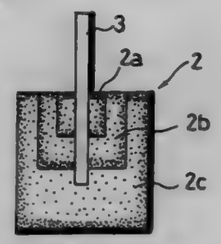
Miki Hasegawa, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Nov. 30, 1993, Ser. No. 159,386

Claims priority, application Japan, Dec. 8, 1992, 4-328154

Int. Cl.[6] H01G *9/052*

U.S. Cl. 361—529 **4 Claims**



1. A tantalum capacitor chip comprising:

a chip body which is a compacted mass of tantalum powder; and

an anode wire partially inserted into and partially projecting from the chip body;

wherein the chip body has a plurality of integrated mass portions which have been divisionally compacted, each of the mass portions having a lower density region and at least one higher density region alternate with the lower density region; and

wherein the anode wire extends at least from one mass portion into another and penetrates through at least two higher density portions of said one and another mass portions,

wherein the respective mass portions are cross-sectionally different with one arranged around another.

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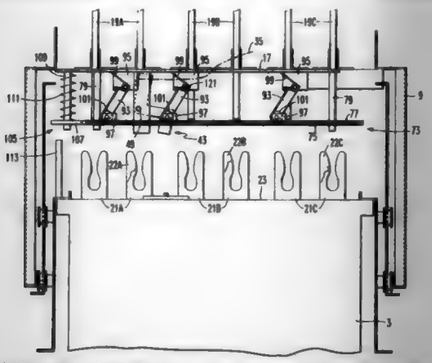
DRAW-OUT CIRCUIT BREAKER UNIT WITH COORDINATED CABLE INTERLOCK AND SHUTTER

Anthony J. Fishovitz, Freedom, Pa., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 4, 1994, Ser. No. 334,834

Int. Cl.[6] H02B *1/14*

U.S. Cl. 361—617 **11 Claims**



1. A draw-out circuit breaker unit breaker electrical distribution system having conductors with stabs on ends thereof; said unit comprising:

a first circuit breaker having connectors projecting from a rear face thereof for connection to said stabs, separable contacts for interrupting said current through said conductors, and a trip mechanism for tripping said separable contacts open in response to selected conditions of current in said conductors;

an enclosure having a rear wall in which said stabs on said conductors are mounted and means supporting said first circuit breaker for movement toward said rear wall to an installed position in which said connectors engage said stabs to connect said circuit breaker in a said electric power distribution system, and for movement away from said rear wall to disconnect said connectors from said stabs for removal of said circuit breaker from said enclosure;

a second circuit breaker;

interlock means comprising linking means linking said first circuit breaker with said second circuit breaker, and actuating means associated with said first circuit breaker for actuating said linking means to prevent closing of said second circuit breaker when said first circuit breaker is in said installed position and said separable contacts or said first circuit breaker are closed;

prevent means preventing actuation of said link means when said first circuit breaker is not in said installed position; and

said linking means comprising a drive member mounted adjacent said rear wall of said rear wall of said enclosure and a cable attached between said drive member and said second circuit breaker and wherein said actuating means comprises a plunger extending from said rear face of said first circuit breaker when said separable contacts are closed and operating said drive member to actuate said cable when extended with said first circuit breaker in said installed position, and wherein said prevent means prevents operation of said drive member when said first circuit breaker is moved out of said installed position.

5,486,979

ELECTRICITY SUPPLY ASSEMBLY

Peter W. Bowen, Sutton Coldfield, and Darren J. Shotter, Handsacre, both of, England, assignors to Crabtree Electrical Industries Limited, Walsall, United Kingdom

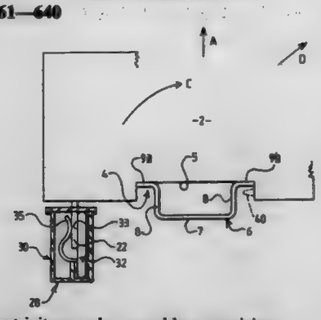
PCT No. PCT/GB92/00254, § 371 Date Feb. 16, 1994, § 102(e) Date Feb. 16, 1994, PCT Pub. No. WO93/04514, PCT Pub. Date Mar. 4, 1993

PCT Filed Feb. 12, 1992, Ser. No. 196,174

Claims priority, application European Pat. Off., Aug. 21, 1991, 91307670

Int. Cl.[6] H02B *1/04*

U.S. Cl. 361—640 **12 Claims**



1. An electricity supply assembly comprising:

a) an elongate housing of insulating material secured to and extending between two end support members;

b) an elongate supply member mounted in said housing, said supply member providing a contact face, said housing being provided with at least one narrow slot for access to said supply member;

c) an elongate mounting rail secured to and extending between said end support members, said mounting rail providing spaced mounting surfaces on which a circuit breaker is positioned, said circuit breaker having flat parallel sides which extend transversely of said mounting rail; wherein

i) said circuit breaker is provided in an underside thereof with a mounting recess receiving said mounting rail;

ii) said circuit breaker comprises a contact member projecting through an aperture in the underside of said circuit breaker to one side of said recess and through said slot into said housing;

iii) said contact member has a contact surface which lies in a plane extending transversely to the parallel sides of said circuit breaker; and

iv) resilient means is provided in said housing for urging said contact member transversely thereof so that said contact surface of said contact member is in face-to-face engagement with said contact face of said supply member.

5,486,980

METHOD AND APPARATUS FOR DISSIPATING THERMAL ENERGY

William D. Jordan, and Howard G. Hinshaw, both of Dallas, Tex., assignors to Thermalloy, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 39,955, Mar. 30, 1993, abandoned. This application Sep. 8, 1994, Ser. No. 302,336

Int. Cl.[6] H05K *7/20*

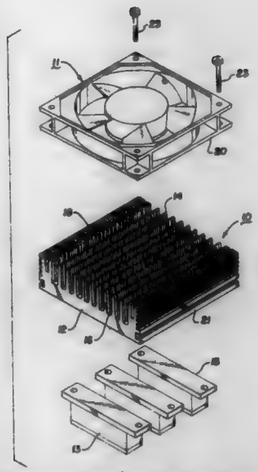
U.S. Cl. 361—697 **14 Claims**

7. Heat sink apparatus for attachment to an electronic device package comprising:

(a) a heat sink body to be attached in contact with an electronic device package, said heat sink body comprising a base having a bottom surface and a top surface with parallel pins extending outwardly from said top surface of said base with said pins separated by two sets of intersecting grooves; and

(b) a fan mounted at the outward extremity of said pins for forcing air through said grooves toward said base at an average velocity of at least about 400 feet per minute, the surface area of said heat sink body being sufficiently large to produce a thermal impedance of less than about 0.3° C./W under impingement cooling by said fan.

9. Heat sink apparatus as defined in claim 7 further comprising an insulated gate bipolar transistor affixed to said bottom surface.



5,486,981

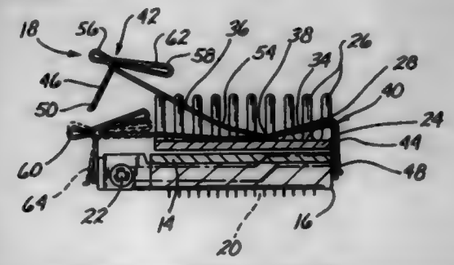
HEAT DISSIPATING ASSEMBLY

Michael L. Blomquist, Newbury Park, Calif., assignor to International Electronic Research Corporation, Burbank, Calif.

Filed Aug. 12, 1994, Ser. No. 289,925

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—704 **15 Claims**



1. A spring clip element for use in a heat dissipating assembly which includes a heat conductive body including a heat receiving surface adapted to be mounted in heat receiving relationship with a heat emitting surface of an electronic component and a heat discharging surface generally opposed to said heat receiving surface, said spring clip element being adapted to removably hold the heat conductive body in assembled configuration with the electronic component, said spring clip element comprising:

a generally elongated leaf spring segment normally having spring tension therein and having

a first end,

a second end,

a fulcrum location between said first and second ends,

a first leaf spring segment normally having a first spring tension therein,

a second leaf spring segment normally having a second spring tension therein,

said second end including generally a pivot location and normally having anti-rotation spring tension therein, and

a first leg element depending generally from said first end, a second leg element depending generally from said second end, said first leaf spring segment extending generally between said fulcrum location and said first leg element, and said second leaf spring segment extending generally between said fulcrum location and said second leg element,

said second leg element forming a post of a lever member, a bar member forming a cross piece of said lever member, said bar member including a release arm and an engagement arm, said bar member being adapted to cause said second leg element to rotate generally around said pivot location against the anti-rotation spring tension responsive to force applied to said bar member.

5,486,982

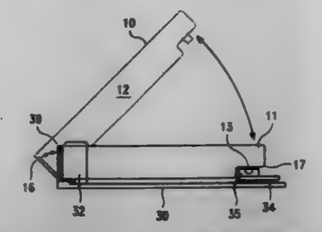
MODULAR ELECTRONIC PACKAGING FOR COMPUTER SERVERS

Winston Hsu, 14508 Pebblewood Dr., Gaithersburg, Md. 20878

Filed Jun. 10, 1994, Ser. No. 258,662

Int. Cl.[6] H05K *7/10*

U.S. Cl. 361—728 **32 Claims**



1. A modularized electronic system for packaging and assembling a plurality of electronic modules comprising:

(1) an enclosure case having at least one lower case assembly with a lower horizontal panel in it for module loading; the lower panel of the lower case assembly comprises at least one U-shaped holding means having two vertical planner panels on its left- and right-hand sides;

(2) an electronic backplane assembly having at least one receptacle and the backplane assembly is removably mounted to the lower case assembly for module connection;

(3) at least one electronic module assembly having a module head in its front end and a substantially rectangular module body behind the module head; the module head comprises a module connector on its bottom wherein the module connector of the module head is vertically plugged in and latched to the receptacle of the backplane assembly in a removable manner, and the left- and right-hand sides of the rear end of the module body engage and removably attach to the two vertical planner panels of the U-shaped holding means of the lower case assembly whereby the module assembly is reliably mounted to the lower case assembly by having its front end mounted to the receptacle of the backplane assembly and its rear end mounted to the U-shaped holding means;

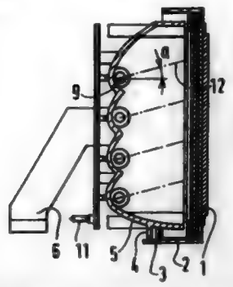
the rear end of the module body further comprises a latching means and the rear end of the U-shaped holding means further comprises a correspondent latch receiving means wherein the latching means of the module body engages and removably attaches to the latch receiving means of the U-shaped holding means to prevent the rear end of the module body from moving upward after the module assembly is mounted to the lower case assembly.

5,486,983

LIGHTING MODULE FOR INSTRUMENTS WITH A LIQUID-CRYSTAL MATRIX

Maurice Cordier, Paris, and Bernard Veislinger, Parmain, both of, France, assignors to Sextant Avionique, France

Filed Sep. 16, 1994, Ser. No. 307,370
Claims priority, application France, Sep. 21, 1993, 93 11208
Int. Cl.[6] G02F *1/1335*
U.S. Cl. 362—29 3 Claims



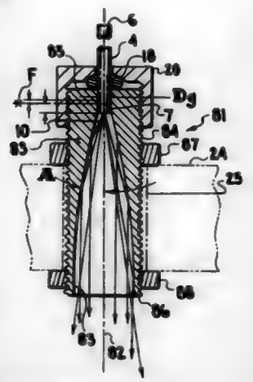
1. A lighting module for instruments having a liquid-crystal matrix lying in a plane, said module comprising:
- a casing including back and lateral walls wherein the matrix forms a wall of the casing opposite said back wall;
- a fluorescent tube disposed in the casing near said back wall; and
- a reflective surface shaped to form at least one parabolic cylindrical surface, said cylindrical surface having a focal line and a plane of symmetry, the axis of said fluorescent tube being substantially coaxial with said focal line and the planes of symmetry of said parabolic cylindrical surfaces being inclined with respect to the plane of the said liquid-crystal matrix.

5,486,984

PARABOLIC FIBER OPTIC LUMINAIRE

Jack V. Miller, 700 N. Auburn Ave., Sierra Madre, Calif. 91024

Filed Aug. 19, 1991, Ser. No. 746,749
The portion of the term of this patent subsequent to May 20, 2010, has been disclaimed.
Int. Cl.[6] F21V *7/04*
U.S. Cl. 362—32 5 Claims



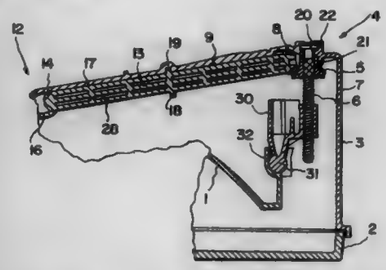
1. A fiber optic luminaire including:
- an elongated fiber optic light guide having a cylindrical diameter, a first end accepting light from a remote source of illumination and a second end emitting light;
- a paraboloidal reflector having a focus near a first end of a parabola of revolution about an optical axis and an open second end;
- wherein the second end of the elongated fiber optic light guide extends into a first end of the paraboloidal reflector towards the open second end of the paraboloidal reflector to a point whereat the diameter of the elongated fiber optic light guide intersects a paraboloidal surface of the paraboloidal reflector at an angle between 10° and 30° to the optical axis.

5,486,985

ADJUSTING APPARATUS FOR HEADLIGHT REFLECTOR

Wolfgang Kemper, Rüthen, and Heiko Briese, Lippstadt, both of, Germany, assignors to Hella KG Hueck & Co., Lippstadt, Germany

Filed Dec. 12, 1994, Ser. No. 354,784
Claims priority, application Germany, Dec. 16, 1993, 43 42 881.9
Int. Cl.[6] B60Q *1/06*
U.S. Cl. 362—69 20 Claims



1. Adjusting apparatus for one or more headlight reflectors by means of which a reflector, which is enclosed in an interior of a housing by a light-transmissive shield, is pivotal about an axis, the adjusting apparatus comprising first and second angled transmission units coupled to one another in the interior of the housing, the first angled transmission unit including a first miter gear mechanism having a toothed-gear pair, with an adjusting pin toothed-gear thereof being coupled to, and rotatable with, an adjusting pin which couples the reflector with a rearward housing wall and with a shaft toothed-gear thereof, which is attached to a rigid shaft being set between the adjusting pin toothed-gear and a bearing box of the rearward housing wall, and the second angled transmission unit being rotatably mounted in an opening of the housing and having a rotatable knob manipulatable from an exterior of the housing;
- wherein the second angled transmission unit, which is coupled to the first angled transmission unit by the rigid shaft, comprises a second miter gear mechanism including a shaft toothed-gear attached to the rigid shaft and a rotation-part toothed-gear attached to the rotatable knob; and
- wherein said rigid shaft is of rigid material having a first free end coupled to the shaft toothed-gear of the first miter gear mechanism for rotation therewith and a second free end coupled to, and rotatable with, the shaft toothed-gear of the second miter gear mechanism, said rigid shaft extending adjacent the rearward housing wall of the housing on the interior thereof, at least the ends of the shaft having the toothed-gears mounted thereon being in the bearing box of the rearward wall, the bearing box being trough-shaped with the shaft being held radially therein by girding elements for the pin and rotation-part toothed-gears whose teeth interengage with the shaft toothed-gears.

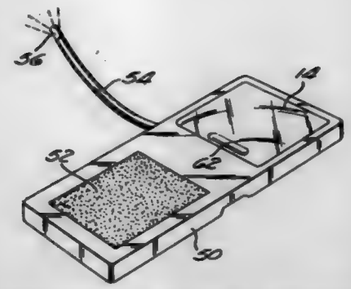
5,486,966

REMOTE CONTROL ILLUMINATED MAGNIFIER

Carla R. Brada, 28072 Via Del Cerro, San Juan Capistrano, Calif. 92675

Filed Mar. 29, 1994, Ser. No. 221,086
Int. Cl.[6] F21V *33/00*
U.S. Cl. 362—85 8 Claims

1. An attachment for a television remote control having a plurality of controls, said attachment comprising:



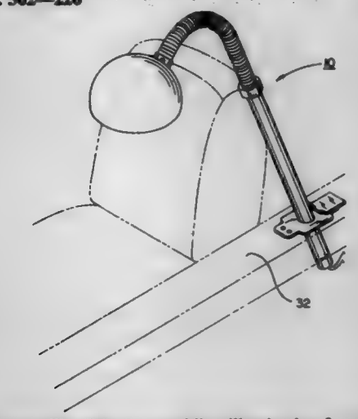
- a) a housing having first and second opposed sides thereof attachable to a television remote control;
- b) a first light source formed upon a flexible arm attached to said housing; and
- c) a second light source formed upon the second side of said housing;
- d) wherein said first and second light sources are configured to facilitate substantially simultaneous viewing of said controls and reading of printed matter remote from the television remote control.

5,486,987

BOAT UTILITY LIGHT

Jack D. Fritz, Jr., 9003 Marsh Rd., Plainwell, Mich. 49080-8520

Filed Jan. 5, 1995, Ser. No. 368,969
Int. Cl.[6] H01R *33/00*; F21V *21/28*
U.S. Cl. 362—226 4 Claims



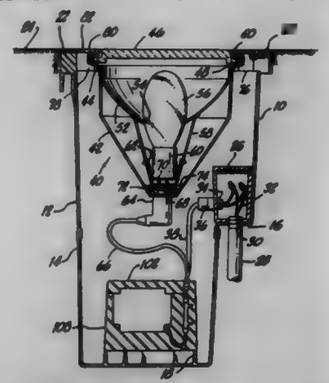
1. A boat utility light for providing illumination for a fisherman who is fishing under conditions of limited visibility comprising, in combination:
- a rigid base further comprising:
  - a planar cover plate with a top surface, a bottom surface, and a generally petaloid periphery interconnecting the surfaces formed of a front edge, a rear edge, and opposed side edges, a central bore disposed thereon, a first pair of through holes disposed thereon near the front edge, a second pair of through holes disposed thereon near the rear edge and with each through hole sized for receipt of a screw for securing the bottom surface in facing contact with a recipient supporting surface;
  - a generally rectangular planar cover hingeably coupled to the top surface of the cover plate and positionable in facing contact with the top surface of the cover plate for preventing access through the bore; and
  - a holding tube having an upper end coupled to the bottom surface of the cover plate in alignment with the bore thereof and a lower end projected angularly downwards therefrom to thereby create an acute angle between the holding tube and the bottom surface of the cover plate;
- an elongated rigid linear lamp supporting tube having an upper end and a lower end and with the lower end slidably disposed within the bore of the cover plate and frictionally removably secured within the holding tube;
- a lamp socket having a threaded base end, an electrically conductive threaded tip end, and an electrically-energizeable power switch coupled thereto, the power switch having one orientation for allowing electrical energy to be delivered to the tip end and another orientation for preventing such delivery;
- a rigid and generally hemispheric light shroud secured about the lamp socket between the ends thereof and with the shroud having a circular opening with a diameter that is about 22% of the length of the lamp supporting tube;
- a lamp adjustment tube formed of a piece of flexible tubing secured between the base end of the lamp socket and the upper end of the lamp supporting tube, the lamp adjustment tube having an extended linear length that is about 37% of the length of the lamp supporting tube;
- a lamp removably secured within the tip end of the lamp socket within the shroud for providing illumination when electrically energized; and
- a pair of electrically conductive wires with each wire having a first end coupled to the power switch and a second end extended through the lamp adjustment tube and lamp supporting tube for coupling with an external source of electrical energy.

5,486,988

LIGHTING SYSTEM

Glenn M. Tyson, La Crescenta, Calif., assignor to GTY Industries, Sylmar, Calif.

Continuation of Ser. No. 177,231, Jan. 4, 1994, Pat. No. 5,408,397, which is a division of Ser. No. 40,295, Mar. 30, 1993, Pat. No. 5,276,583, which is a division of Ser. No. 653,619, Feb. 11, 1991, Pat. No. 5,198,962, which is a division of Ser. No. 389,363, Aug. 3, 1989, Pat. No. 5,041,950. This application Apr. 11, 1995, Ser. No. 419,906
Int. Cl.[6] F21V *31/02*
U.S. Cl. 362—267 8 Claims



1. A lighting system comprising
- a lamp assembly including a socket enclosure, a lens and a first electrical connector element defining a lamp cavity sealed against moisture from outside of the lamp assembly and against moisture from passing through the first connector element into the lamp cavity;
- an electrical circuit including a transformer, an electrical conductor and a second electrical connector element configured to mate with the first electrical connector element;
- a potting body impervious to moisture, the transformer being encapsulated in the potting body and sealed against moisture

from around the transformer by the potting body and against moisture from passing through the second connector element to the transformer;

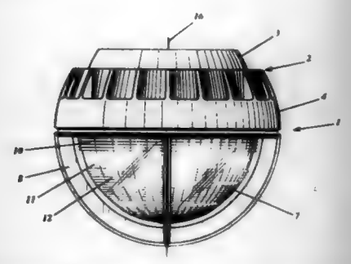
a housing containing the lamp assembly, the electrical circuit and the potting body.

5,486,989

LUMINAIRE WITH MODULAR LOUVER SHIELDS

Wayne W. Compton, Chino Hills, Calif., assignor to Kim Lighting, Inc., City of Industry, Calif.

Filed Nov. 12, 1993, Ser. No. 150,958
Int. Cl.[6] F21V *13/00*
U.S. Cl. 362—291 **28 Claims**



1. A luminaire for lighting a parking garage, comprising

a housing comprising a housing body to protect the luminaire from the elements, and a mounting cap attached to the housing body,

a socket in said housing for receiving a light bulb, to provide light from said luminaire,

a lens attached to said housing to refract said light in a desired vertical and horizontal pattern,

a lens frame positioned around the lens and formed with a plurality of sections, whereby a louver assembly can be removably mounted in each section, and

at least one louver assembly removably mounted with respect to the lens frame and disposed about at least a segment of the lens and arranged to control the vertical flow of light from the luminaire.

5,486,990

LAMP COVER IN PARTICULAR FOR FLUORESCENT LAMPS

Günther Sejkora, Schwarzenberg, Austria, assignor to Zumtobel Licht GmbH, Austria

PCT No. PCT/EP92/00684, § 371 Date Dec. 8, 1993, § 102(e) Date Dec. 8, 1993, PCT Pub. No. WO92/18805, PCT Pub. Date Oct. 29, 1992
PCT Filed Mar. 27, 1992, Ser. No. 133,016
Claims priority, application Germany, Apr. 10, 1991, 9104316 U
Int. Cl.[6] F21V *3/02*
U.S. Cl. 362—309 **11 Claims**

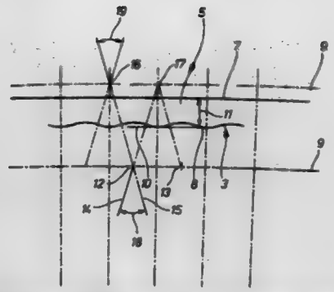
1. A lamp cover particularly for a fluorescent lamp, comprising:

an elongate cover member of light-transmitting material having a longitudinal axis, an outer surface and an inner surface;

one of said inner or outer surfaces of the cover member being of wavelike structure comprising alternating wave peaks and troughs which are oriented substantially parallel to the longitudinal axis of the cover member;

the wavelike structure comprising at least three wave trains and comprising means for expanding a light beam to a predetermined expansion angle;

the light-transmitting material having a refractive index n, the wave train having a tangent with a maximum gradient to a parallel plate at an angle α, and a light beam exiting the cover



member having a half angle γ of ray expansion which satisfies the following relation:

$$\gamma = \arcsin\left[n \cdot \sin\left[\alpha - \arcsin\left(\frac{\sin\alpha}{n}\right)\right]\right]; \text{ and}$$

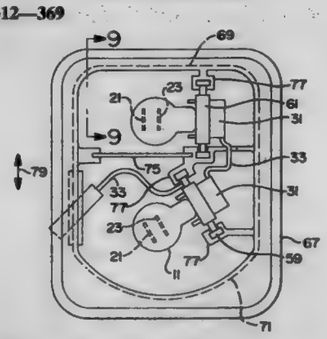
the wave structure having a half width of 4 mm, a half depth of 0.12 mm, and the light beam exiting the cover member having a half angle of ray expansion of 4°, respectively.

5,486,991

VEHICLE SIGNAL LAMP ASSEMBLY

Jack D. Bodem, Jr., Kokomo, Ind., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Jul. 29, 1994, Ser. No. 283,105
Int. Cl.[6] F21V *15/04*
U.S. Cl. 312—369 **8 Claims**



1. A vehicle signal lamp assembly, comprising:

a lamp having a housing that includes a bulb and a base having generally flat opposed major side portions and opposed end portions, at least one pair of relatively stiff filament support wires embedded in said base to extend within the bulb, and a filament supported between the support wires in each said pair of support wires;

a rigid dielectric socket having a cavity receiving said lamp base, said cavity defining a first pair of opposed rigid internal dielectric side wedge surfaces diverging upwardly from a bottom portion of said cavity for engaging and securing said major side portions of said base within said socket, and a second pair of rigid internal dielectric side wedge surfaces for preventing side to side movement of said base within said socket whereby said lamp can be securely plugged into and removed from said socket;

electrical contacts disposed within said cavity and resiliently biased toward said major side portions of said lamp base; and

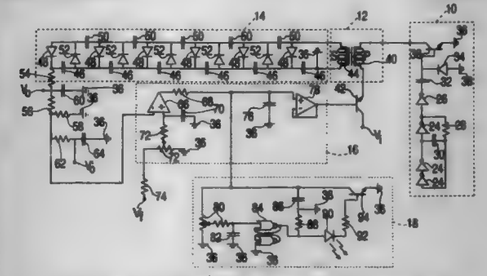
a resilient elastomeric mounting supporting said socket, whereby said socket and associated lamp are partially isolated from vibratory forces exerted through said resilient mounting.

5,486,992

HIGH VOLTAGE DIRECT CURRENT POWER SUPPLY WITH FEEDBACK CONTROL AND CIRCUIT PROTECTION

Thomas E. Koscica, Clark, and William C. Drach, Tinton Falls, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 9, 1995, Ser. No. 370,590
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—21 **8 Claims**



1. A direct current high voltage power supply comprising:

oscillator means for providing a periodic signal output voltage;

transformer means, coupled to the periodic signal output voltage of said oscillator means, for increasing the voltage of the periodic signal output voltage;

multiplier means coupled to an output of said transformer means, for multiplying the voltage at the output of said transformer means;

feedback control means, coupled to a divided portion of an output of said multiplier means, for providing feedback of the output of said multiplier means to said transformer means, wherein said feedback control means includes: a comparator; a variable resistor coupled to an input of said comparator; and a buffer coupled to an output of said comparator; and

protection means, coupled to said feedback control means, for providing short circuit and over-voltage protection,

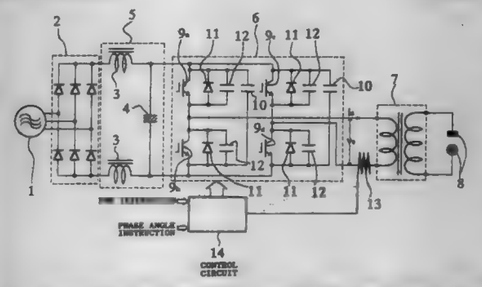
whereby a stable, accurate, protected voltage is obtained.

5,486,993

CONTROLLING APPARATUS FOR HIGH FREQUENCY HIGH VOLTAGE POWER SOURCE FOR CORONA DISCHARGE PROCESSING

Yukihira Sakurai, and Takehiko Ueda, both of Tokyo, Japan, assignors to Kasuga Denki, Incorporated, Tokyo, Japan

Filed Oct. 25, 1993, Ser. No. 140,549
Claims priority, application Japan, Jan. 26, 1992, 4-309823
Int. Cl.[6] H02M *5/44*
U.S. Cl. 363—98 **4 Claims**



1. A controlling apparatus for a high frequency high voltage power source for corona discharge processing of the type wherein an ac voltage from a commercial ac power supply is rectified into a dc voltage by a rectifier circuit and then converted into a voltage of a high frequency, comprising:

a high frequency invertor including a plurality of switching semiconductor elements connected in a bridge connection for converting the rectified voltage into a voltage of high frequency,

a high voltage transformer, having a discharge electrode for corona discharge processing, for boosting the voltage of high frequency and applying the boosted voltage to said discharge electrode, said high voltage transformer and at least said discharge electrode forming a resonance circuit with respect to said high frequency invertor, said controlling apparatus comprising:

current detection means for detecting a current flowing between said high frequency invertor and said high voltage transformer;

a phase locked loop circuit including a phase comparator and a voltage controlled oscillator for outputting a signal having a phase corresponding to the detection current of said current detection means and a frequency corresponding to a voltage of a signal output by said phase comparator;

a pulse density modulation circuit for inputting an output signal of said phase locked loop and thinning out the inputted output signal in accordance with an arbitrary instruction value to output a pulse signal synchronized with the inputted output signal and having a zero voltage outputting period of an arbitrary time length; and

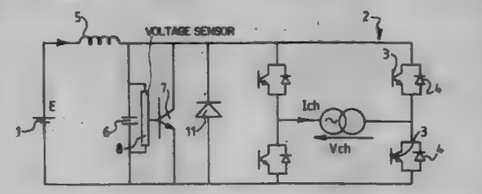
a gate signal generation circuit for inputting the pulse signal from said pulse density modulation circuit and outputting a gate signal to said switching semiconductor elements of said high frequency invertor so that said resonance circuit may be put into and remain in a short-circuited condition within the zero voltage outputting period.

5,486,994

DEVICE FOR CONTROL OF THE OSCILLATING CIRCUIT OF A VOLTAGE INVERTER OPERATING UNDER QUASI-RESONANCE WITH PULSE MODULATION REGULATION

Hervé Pouliquen, and Khaled Elloumi, both of Clamart, France, assignors to Electricite de France-Service National, Paris, France

Filed Mar. 11, 1994, Ser. No. 208,524
Claims priority, application France, Mar. 12, 1993, 93 02898
Int. Cl.[6] H02M *3/24;3/335;7/5387*
U.S. Cl. 363—98 **7 Claims**



1. Voltage inverter operating under quasi-resonance with pulse width modulation regulation, including a monophase or polyphase bridge (2) with controlled components (3) operating in blocked/saturated (energizing/de-energizing) mode under control of a control signal, and an oscillating circuit arranged on a DC voltage side and consisting of an inductance (5) in series with a DC voltage source (1) and a capacitor (6) connected in parallel with the controlled-component bridge (2), in which pulse width modulation regulation is carried out, a sampling period for which is much greater than a resonance period of the oscillating circuit, characterized in that said inverter includes a switching element (7) for sustaining resonance and comprising a plurality of series-connected controlled components (9) operating in blocked/saturated mode, said switching element being connected in parallel with the capacitor (6) of the oscillating circuit and a voltage sensor (8) connected in parallel with the capacitor (6) of the oscillating circuit, said resonance switching element (7) being controlled by said voltage sensor (8) so as to short-circuit the capacitor (6) of the oscillating circuit when the voltage across the terminals of the

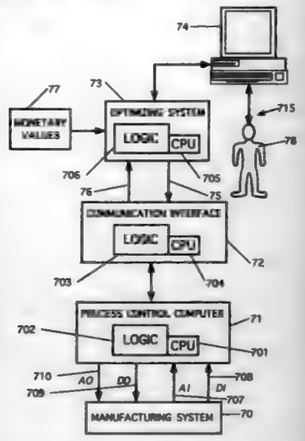
capacitor is zero and to enable the transitions of the signal for control of the pulse width modulation regulation.

5,486,995

SYSTEM FOR REAL TIME OPTIMIZATION

Johannes H. A. Krist, Terneuzen, Netherlands; Martine R. Lapère, Knokke-Heist, Belgium; Steven G. Wassink, Axel, and Johannes L. A. Koolen, Terneuzen, both of, Netherlands, assignors to Dow Benelux N.V., Netherlands

Filed Mar. 17, 1994, Ser. No. 210,191
Int. Cl.[6] G05B *13/04*
U.S. Cl. 364—149 **43 Claims**



1. In a process control system having first input means, for receiving input signals indicative of measured process attributes in physical process equipment, and output means, for transmitting command signals which include at least one manipulated parameter variable that is used to govern the physical process equipment, an adaptive controller comprising:

second input means for acquiring the monetary value of at least one fluctuating economic variable;

interactive optimization means for determining the value of at least one manipulated parameter variable for said physical process equipment at selected intervals, said interactive optimization means having at least an input signal reconciliation model, for deriving a reconciled input signal set from the input signals, and an optimizing engine means, for converging upon an optimized value for said manipulated parameter variable in response to the reconciled input signal set and the monetary value of at least one fluctuating economic variable; and

real-time executive means for directing the operation of said interactive optimization means, said real-time executive means having means for periodically transferring at least some of said input signals from said inputs means to said interactive optimization means and means for transferring at least one manipulated parameter variable from said interactive optimization means to said output means.

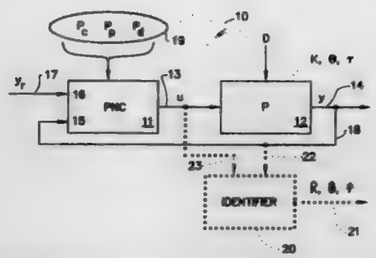
5,486,996

PARAMETERIZED NEUROCONTROLLERS

Tariq Samad; Wendy K. F. Graber, both of Minneapolis, and Ahmet F. Konar, Circle Pines, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 22, 1993, Ser. No. 8,963
Int. Cl.[6] G05D *13/02*
U.S. Cl. 364—152 **9 Claims**

1. A controller of a process which accepts modification of its behavior through input signals representative of parameters that are



members of a set of parameters including: control parameters p_c, process parameters p_p, and disturbance parameters p_d (which may collectively be called P) wherein said controller comprises a neural network;

wherein the neural network is trained to mimic an existing controller which receives inputs from the set of all P inputs or any subset thereof (except only the subset including only P, I and D inputs), and x_p, y, y_r, u and all algebraic, differential and integral operators of these x_p, y, y_r and u inputs, and has an output in a closed loop use, said training occurring by:

collecting said P parameters, said x_p, y_r, y, u and any other of said inputs as data, and

using said collected data as training data in a learning program which modifies the neural network in a training phase at least until an output from said neural network is similar or identical to the acceptable output generated by said existing controller; wherein:

x_p is dynamic state variables of the process,

y is a process output signal,

y_r is a reference input signal, and

u is a control-adjustment signal and,

coupling said modified neural network to a second process similar to a first process previously controlled by the existing controller; and

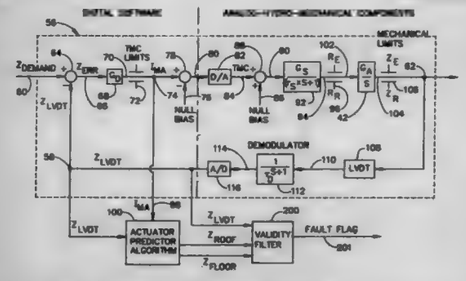
applying said neural network to the second process using inputs that the existing controller would have used to control the first process so that the neural network controls the second process.

5,486,997

PREDICTOR ALGORITHM FOR ACTUATOR CONTROL

Paul R. Reismiller, West Chester, and George A. Brunemann, Jr., Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Aug. 4, 1994, Ser. No. 285,836
Int. Cl.[6] G05B *13/02*
U.S. Cl. 364—165 **26 Claims**



1. A control system for an actuator, comprising:

(a) an actuator feedback control for said actuator including:

(i) means for providing a feedback signal indicative of an output position of said actuator;

(ii) means for comparing an output position demand signal for said actuator with said feedback signal for providing an actuator output position error signal; and

(iii) means for providing to said actuator an input signal proportional to said output position error signal; and

(b) a fault detection system including:

(i) an algorithm for continuously determining a maximum limit and a minimum limit for said actuator output position based on a maximum estimated rate of actuator output and a minimum estimated rate of actuator output; and

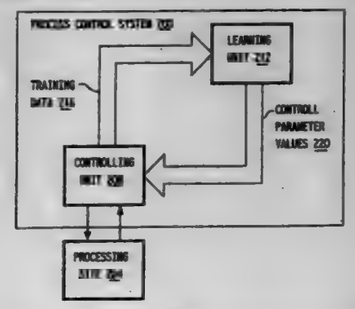
(ii) means for comparing said feedback signal to said actuator output position maximum and minimum limits and providing a fault indication upon exceeding the bounds thereof.

5,486,998

PROCESS STABILIZING PROCESS CONTROLLER

Ronald Corso, Indianapolis, Ind., assignor to Amax Coal West, Inc., Gillette, Wyo.

Filed Jun. 14, 1993, Ser. No. 77,244
Int. Cl.[6] G05B *13/02*; G06F *15/18*
U.S. Cl. 364—152 **71 Claims**



1. An automated control processing method comprising the steps of:

conducting a process which is controlled as said process is performed;

establishing, within a learning means, at least one learned relationship between data for at least a first process control parameter for controlling said process, and data for at least a first process influencing factor, said learning means receiving process training data output in said step of conducting;

generating at least a first data cluster, said first data cluster generated from an output of said learning means, said first data cluster including first control data related to said first process control parameter and including first applicability data related to said first process influencing factor for determining when said control data is to be used in controlling said process;

entering said first data cluster into a plurality of stored data clusters, each said data cluster having control data related to said first process control parameter and applicability data related to said first process influencing factor for determining when said control data is to be used in controlling said process;

controlling said process using said first data cluster as an accessed data cluster obtained from said plurality of stored data clusters;

post-filtering said plurality of stored data clusters to retain said first data cluster when used as said accessed data cluster and said process has acceptable performance.

5,486,999

APPARATUS AND METHOD FOR CATEGORIZING HEALTH CARE UTILIZATION

Andrew H. Mebane, 75-683 Hua-ai, Kailua-Kona, Hi. 96740

Filed Apr. 20, 1994, Ser. No. 232,512
Int. Cl.[6] G06F *15/00*
U.S. Cl. 364—401 **9 Claims**



1. A system to aid in identifying patients potentially seeking inappropriate health care, said system comprising:

a plurality of patient characteristics for a plurality of patients, said patient characteristics representing medical usage and psychological information about said patients; and

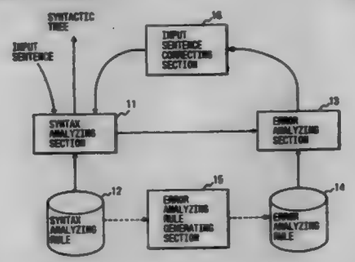
a neural network responsive to input variables generated from said plurality of patient characteristics, said neutral network configured to categorize the plurality of patients according to utilization characteristics of said patients based on said input variables, one category of utilization characteristics identifying patients who are potentially seeking inappropriate health care.

5,487,000

SYNTACTIC ANALYSIS APPARATUS

Masanori Takahashi, Yokohama; Tadashi Nagano, Kodaira; Hideko Mori, Kawasaki, and Masaki Kiyono, Ashiya, all of, Japan, assignors to Mitsubishi Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 17, 1994, Ser. No. 197,995
Claims priority, application Japan, Feb. 18, 1993, 5-029361
Int. Cl.[6] G06F *17/27*
U.S. Cl. 364—419.08 **14 Claims**



1. A syntactic analysis apparatus for performing a syntactic analysis of an input sentence according to a given syntax analyzing rule for generating a syntactic tree of the input sentence, said syntactic analysis apparatus comprising:

syntax analyzing means for outputting syntactic subtrees of said input sentence created by said syntax analyzing means up to a time point when said syntax analyzing means fails in said syntactic analysis of said input sentence due to a syntactic error included in said input sentence;

error analyzing means for receiving said syntactic subtrees from said syntax analyzing means and for identifying said syntactic error by applying a given error analyzing rule to said received syntactic subtrees,

error analyzing rule generating means for generating said error analyzing rule by logically inverting said syntax analyzing rule,

said error analyzing rule defining a condition of said syntactic subtrees which represents said syntactic error, wherein said error analyzing rule further defines a correction command for correcting said syntactic error represented by said condition; and

input sentence correcting means responsive to said correction command for correcting said input sentence in accordance with said correction command;

whereby the apparatus identifies and corrects said syntactic error when said condition of the applied error analyzing rule matches said syntactic error.

5,487,001

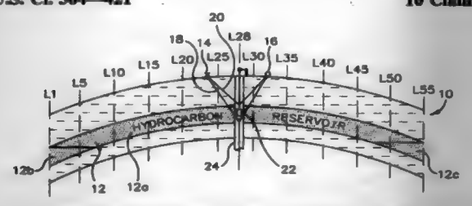
METHOD FOR DETERMINING PETROPHYSICAL PROPERTIES OF A SUBTERRANEAN LAYER

Dennis B. Neff, 2225 Bridget Ct., Bartlesville, Okla. 74006

Filed May 28, 1993, Ser. No. 69,247

Int. Cl.[6] G01V *1/00*

U.S. Cl. 364—421 **10 Claims**



1. A method for determining petrophysical properties of a subterranean layer comprising the computer implemented steps of:

(1) providing at least one reference seismic trace corresponding to at least one reference lateral location and at least one nonreference seismic trace corresponding to at least one nonreference lateral location offset from said at least one reference lateral location, wherein each of the seismic traces results from the detection of the reflection of at least one seismic pulse as generated by at least one seismic source, and wherein each of the seismic traces includes a pair of reflection events respectively corresponding to the upper and lower boundaries of a subterranean layer of interest;

(2) providing a velocity log and a density log, which together comprise a reference log-pair, for the layer at said at least one reference lateral location so as to provide at least one reference-log pair having associated therewith at least one corresponding known value of at least one petrophysical property of the layer;

(3) determining at least one reference reflection coefficient based on said at least one corresponding reference log-pair;

(4) providing at least one, seismic wavelet which is representative of said at least one seismic pulse at the layer and which when convolved with said at least one reference reflection coefficient produces at least one reference synthetic seismogram which approximates said at least one reference seismic trace;

(5) deriving a set of a predetermined number of modified log-pairs, wherein each modified log-pair is different from one another and comprises a velocity log and a density log, each of which logs is a modified version of the respective velocity log and density log of said at least one reference log-pair, and wherein each of the modified log-pairs has associated therewith at least one value of said at least one petrophysical property of the layer which is different than said at least one known value of said at least one petrophysical property and wherein such modified log-pairs are representative of probable variations of said at least one petrophysical property for said at least one nonreference lateral location;

(6) determining a modified reflection coefficient based on the velocity log and density log of each of the modified log-pairs to thereby result in a number of modified reflection coefficients equivalent to the predetermined number of modified log-pairs;

(7) convolving each of the modified reflection coefficients with said at least one seismic wavelet to produce a modified synthetic seismogram for each of the modified reflection coefficients to thereby result in a number of modified synthetic seismograms equivalent to the predetermined number of modified log-pairs, each of the modified synthetic seismograms having reflect ton events corresponding to the upper and lower boundaries of the layer and also having associated therewith at least one value of said at least one petrophysical property associated with the corresponding modified log-pair;

(8) comparing a comparison window of said at least one nonreference seismic trace to a corresponding comparison window of each of the modified synthetic seismograms, where each comparison window includes the reflection events corresponding to the upper and lower boundaries of the layer;

(9) selecting those modified synthetic seismograms which match said at least one nonreference seismic trace sufficiently in step (8) to pass at least one predetermined matching threshold;

(10) assigning to said at least one nonreference seismic trace the values of said at least one petrophysical property corresponding to the respective modified synthetic seismograms selected in step (9), thereby providing a range of values of said at least one petrophysical property associated with said at least one nonreference seismic trace and said at least one corresponding nonreference lateral location of the layer.

5,487,002

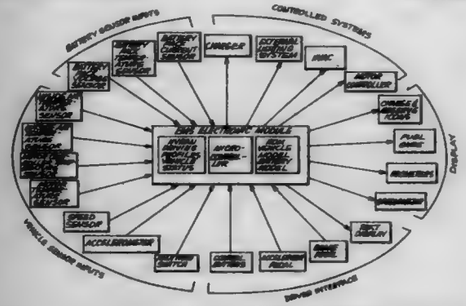
ENERGY MANAGEMENT SYSTEM FOR VEHICLES HAVING LIMITED ENERGY STORAGE

Robert W. Diller, and Jeffrey W. Paviat, both of Pasadena, Calif., assignors to Amerigon, Inc., Monrovia, Calif.

Filed Dec. 31, 1992, Ser. No. 999,491

Int. Cl.[6] B60K *6/04*

U.S. Cl. 364—424.01 **12 Claims**



1. An energy management system, for vehicles employing a limited energy storage system, comprising:

means for receiving power status data from the energy storage system;

means for storing a plurality of predetermined driving profiles to model expected vehicle performance;

selection means for selection by the driver of one of said driving profiles;

calculation means connected to the receiving means and storage means for calculating range for the limited energy storage system based on the selected driving profile; and,

output means to display the range calculation to the driver.

5,487,003

SIMULATION METHOD AND DEVICE FOR AIDING THE DESIGN OF A FLUID TORQUE CONVERTER

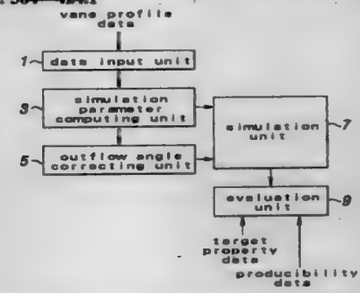
Kenjiroh Iwasawa, and Hiroya Abe, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1993, Ser. No. 35,395

Claims priority, application Japan, Apr. 8, 1992, 4-116950

Int. Cl.[6] G06F *19/00*; F16D *33/00*; B60K *41/12*

U.S. Cl. 364—424.1 **8 Claims**



5. A device for designing a fluid torque converter by simulating properties of the fluid torque converter, comprising:

a data input unit for accepting data on a vane profile of a vane wheel of a fluid torque converter;

a simulation parameter computing unit for computing a plurality of parameters including a fluid passage angle and a fluid passage resistance according to data on said vane profile of said vane wheel supplied from said data input unit;

a fluid passage angle correcting unit for computing a correction value as a function of a slip ratio which is given as a ratio of a pump rotational speed to a turbine rotational speed of said fluid torque converter, and correcting said fluid passage angle computed by said simulation parameter computing unit according to said correction value;

a simulation unit for simulating properties of said fluid torque converter according to said various parameters given from said simulation parameter computing unit, said fluid passage angle corrected by said fluid passage angle correcting unit, and a relationship between input and output torque of said torque converter; and

an evaluation unit for comparing a result of simulation supplied from said simulation unit with a combination of target property data and producibility data, wherein said producibility data is indicative of the suitability of said vane wheel for fabrication, and evaluating the feasibility of said vane profile.

5,487,004

CONTROL SYSTEM/METHOD FOR AUTOMATED MECHANICAL TRANSMISSION SYSTEMS

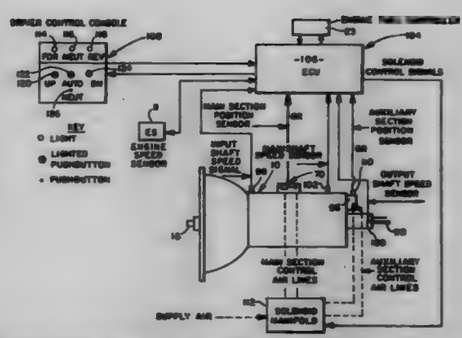
Marcel Amsallen, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 29, 1993, Ser. No. 143,230

Int. Cl.[6] F16H *59/48*; G06F *19/00*

U.S. Cl. 364—424.1 **8 Claims**

1. A control system (**104**) for at least partially automatic implementation of selected shifts of a mechanical change gear transmission system comprising a fuel throttle controlled engine (E), a multispeed change gear mechanical transmission (**10**) having an input shaft (**16**) and an output shaft (**90**)and having a plurality of selectably engageable gear ratios, a non-positive coupling (C) driving interposed between the engine and the transmission, a first sensor (**98**) for providing a first input signal (IS) indicative of input shaft rotational speed, a second sensor (**100**) for providing a second input signal (OS) indicative of output shaft rotational speed, a third sensor (**70/110**) for providing a third signal indicative of currently engaged transmission ratio, a non- manually controllable transmission actuator (**112, 70, 96**) for controlling shifting of the transmission, and a central processing unit (**106**) for



receiving said first, second and third input signs and for processing same in accordance with predetermined logic rules to select and implement upshifts and downshifts from the currently engaged gear ratio and to issue command output signals to implement said upshifts and downshifts by the sequence of disengaging a first positive clutch and then engaging a second positive clutch, both of said positive clutches comprising a first clutch member (**80, 82, 84**) having a rotational speed determined by the rotational speed of the vehicle engine and a second clutch member (**86, 88, 90**) having a rotational speed determined by vehicle speed, said shift actuator having a first mode of operation wherein a maximum force is applied for disengaging said first positive clutch; said central processing unit including:

logic rules effective for determining a value equal to a difference between said input signal indicative of input shaft rotational speed and the product of said input signal indicative of output shaft rotational speed multiplied by currently engaged transmission ratio, and if an absolute value of the difference between said first input signal and said product is less than a first reference value (|IS– (OS*GR)|<REF_1)corresponding to an expected value of said absolute value in the absence of a fault in said first, second or third input signals, upon sensing a selection of a transmission shift from a currently engaged ratio, for (i) determining a presence or absence of conditions indicative of non-jaw clutch torque lock conditions if said absolute value of said difference is less than a second reference value equal to or less than 10 RPM (|IS–(OS*GR)|<$REF_2 \leqq 10$ RPM); and (ii) for prohibiting issuing command output signals to said transmission actuator to cause disengagement of said currently engaged transmission ratio in said first mode of operation until it is determined that said conditions indicative of non-jaw clutch torque lock conditions are present.

5,487,005

METHOD/SYSTEM FOR DETERMINATION OF GROSS COMBINED WEIGHT OF VEHICLES EQUIPPED WITH ELECTRONIC DATA LINKS

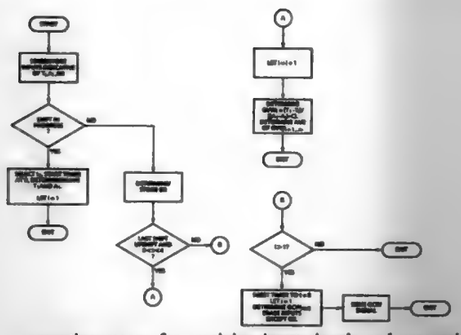
Thomas A. Genise, Dearborn, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 192,522, Feb. 7, 1994. This application Aug. 3, 1994, Ser. No. 285,467

Int. Cl.[6] G06F *19/00*; G06G *7/00*; F16H *59/48*;*59/30*

U.S. Cl. 364—424.1 **16 Claims**

1. On a vehicle equipped with an internal combustion engine, a change-gear transmission and an electronic data link carrying information indicative of engine torque, engine speed and vehicle ground speed, a control system for controlling an at least partially automated device separate from the transmission, said control system comprising:



a computing means for receiving input signals and processing same according to predetermined logic rules to issue output signals;

means allowing said computing means to access said data link;

means for sensing completion of shifts in said transmission;

memory means associated with said computing means and containing logic rules to determine, only immediately after completion of a transmission upshift, a value indicative of vehicle gross combined weight (GCW) as a function of information on said data link; and

means for controlling said device as a function of said value.

5,487,006

SYSTEM FOR DETECTING ROAD ROUGHNESS FOR SUSPENSION CONTROL AND AUTOMOTIVE SUSPENSION CONTROL SYSTEM UTILIZING THUS DETECTED ROAD ROUGHNESS AS CONTROL PARAMETER

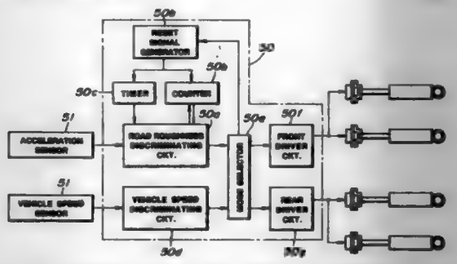
Shinobu Kakizaki; Minoru Taniguchi, and Fukashi Kanai, all of Kanagawa, Japan, assignors to Atsugi Unisia Corporation, Kanagawa, Japan

Continuation of Ser. No. 433,151, Nov. 8, 1989, abandoned. This application Nov. 16, 1993, Ser. No. 152,880

Claims priority, application Japan, Nov. 14, 1988, 63-287072; Nov. 29, 1988, 63-155439 U

Int. Cl.[6] B60G *25/00*

U.S. Cl. 364—424.05 **24 Claims**



3. A system for detecting road conditions comprising:

a lateral G sensor for monitoring lateral acceleration exerted on a vehicular body and for producing a lateral acceleration signal indicative thereof;

means for detecting each occurrence of the lateral acceleration indicative signal having a magnitude greater than a predetermined value and for producing a detection signal each time the magnitude of the lateral acceleration signal is greater than the predetermined value, said predetermined value being set larger than or equal to a maximum value (B) of a bandwidth which has a center that generally corresponds to a zero level of the longitudinal acceleration signal;

means for counting each occurrence of said detection signal over a predetermined period and for providing a counter signal indicative of the counted value over said predetermined period; and

means for comparing the counter signal value with a predetermined threshold value for producing a rough road indicative signal when the counter signal value is greater than or equal to the threshold value, said predetermined threshold value being a first number of times per said predetermined time period which exceeds a second number of times per said predetermined time period by a predetermined amount, said second number of times per said predetermined time period being generally indicative of a rolling motion of the vehicle, and said predetermined amount being selected to separate said first predetermined number from said second number sufficiently to ensure that rolling motion of the vehicle body and rough road conditions can be distinguished from one another.

5,487,007

CONTROL SYSTEM AND CONTROL METHOD FOR CONTROLLING POWER STEERING APPARATUS

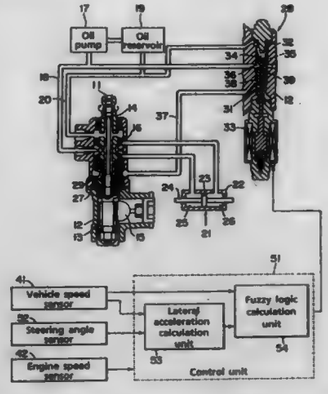
Hidekazu Suzuki, Aichi; Mitsuhiko Harara, and Tadao Tanaka, both of Okazaki, all of, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1994, Ser. No. 251,951

Claims priority, application Japan, Jun. 1, 1993, 5-130363

Int. Cl.[6] B62D *6/00*

U.S. Cl. 364—424.05 **12 Claims**



1. A control system for a power steering apparatus which controls a steering assist amount of a steering mechanism of a vehicle to coincide with a target steering assist amount, comprising:

vehicle speed detection means for detecting a vehicle speed;

lateral acceleration detection means for determining a lateral acceleration acting upon-the vehicle; and

a controller for receiving the detected vehicle speed as a first input factor and setting a first target amount which is decreased according to an increase in the detected vehicle speed, for receiving a product of the detected vehicle speed and the determined lateral acceleration as a second input factor and setting a second target amount which is decreased according to an increase in the product, and for setting the target steering assist amount according to the first target amount and the second target amount.

5,487,008

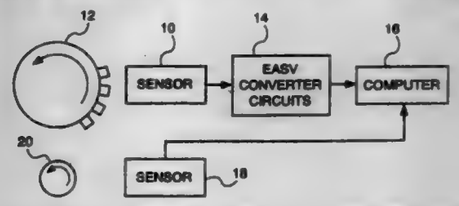
METHOD AND SYSTEM FOR DETECTING THE MISFIRE OF A RECIPROCATING INTERNAL COMBUSTION ENGINE IN FREQUENCY DOMAIN

William B. Ribbens, Ann Arbor, and Jaehong Park, Rochester, both of Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 512,779, Apr. 20, 1990, Pat. No. 5,200,899, and a continuation-in-part of Ser. No. 741,338, Aug. 21, 1991, Pat. No. 5,239,473, and a continuation-in-part of Ser. No. 759,397, Sep. 13, 1991, Pat. No. 5,278,760. This application Feb. 26, 1993, Ser. No. 23,342

Int. Cl.[6] G06F *19/00*; F02P *5/00*; G01L *3/26*

U.S. Cl. 364—431.04 **10 Claims**



1. A method for detecting a misfire of a reciprocating internal combustion engine including a plurality of reciprocating components having an engine cycle frequency, N cylinders and a crankshaft, the method comprising the steps of:

generating an electrical signal as a function of crankshaft angular velocity, the electrical signal containing data;

sampling the data synchronously with crankshaft angular position at a sampling rate to obtain sampled data;

transforming the sampled data to an equivalent frequency domain spectrum, including frequency components having complex amplitudes at the engine cycle frequency and harmonics thereof; and

applying an algorithm to the magnitudes of the frequency components, which algorithm distinguishes between a true misfire and normal cycle variability which characterizes the combustion process in each cylinder of the engine to thereby obtain a misfire signal and wherein the method further comprises the step of shifting the sampled data for (N-1) of the cylinders prior to the step of transforming to identify the cylinder in which the misfire occurred.

5,487,009

METHOD FOR DETERMINING THE COURSE OF A LAND VEHICLE BY COMPARING SIGNALS FROM WHEEL SENSORS WITH SIGNALS OF A MAGNETIC SENSOR

Heldebrecht Hill, Remchingen Noe, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE91/00856, § 371 Date May 5, 1993, § 102(e) Date May 5, 1993, PCT Pub. No. WO92/08953, PCT Pub. Date May 29, 1992

PCT Filed Nov. 5, 1991, Ser. No. 50,228

Claims priority, application Germany, Nov. 7, 1990, 40 35 370.2

Int. Cl.[6] G06F *15/50*; G01C *21/20*

U.S. Cl. 364—449 **11 Claims**

1. A method for correcting a course of a land vehicle in a navigation system wherein a driving distance and course changes are derived from wheel pulses generated by sensors in the course of revolution of wheels of a vehicle axle by respectively a preset angle, wherein the course changes derived from the wheel pulses are compared with comparison course changes which are detected with the aid of a magnetic sensor, and wherein correction factors are derived from the result of the comparison and stored, the method comprising the steps of:

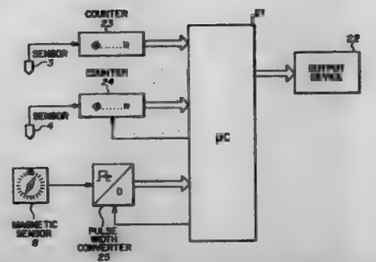
observing the course changes and the comparison course changes over the course of an observation course driven by the vehicle, such that the observation course is greater at higher vehicle speeds than at lower vehicle speeds,

calculating a difference between the course changes and the comparison course changes during course changes over said observation course which are greater than a preset minimum value,

changing said stored correction factors to provide changed, stored correction factors, as follows:

increasing said stored correction factors if the course changes are less than the comparison course changes, and

reducing the stored correction factors if the course changes are greater than the comparison course changes.



5,487,010

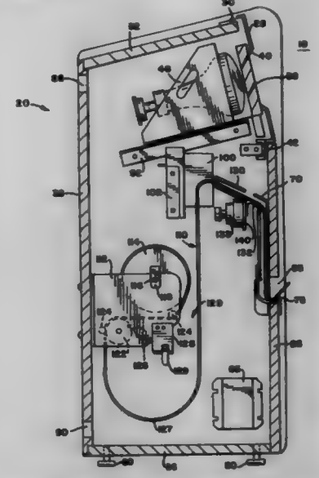
BUMPER STICKER PRINTING MACHINE

Charles S. Drake, Norcross, Ga.; Bernhard O. Williams, Elmhurst, Ill.; Adrian T. Dombrowski, Remington, Ind., and Athur R. Harth, Chicago, Ill., assignors to B.M.D., Inc., Norcross, Ga.

Filed Jun. 25, 1993, Ser. No. 81,116

Int. Cl.[6] G06F *17/60*

U.S. Cl. 364—479 **20 Claims**



18. A bumper sticker printing machine for printing bumper stickers selected by a user through interaction with said machine, said machine comprising:

a machine housing;

a synthetic bumper sticker stock mounted in said housing;

interaction means for allowing said user to design said bumper stickers, said interaction means mounted in said housing;

means for printing mounted in said housing, said means for printing including means for pulling said bumper sticker stock therethrough during printing; and

a feed mechanism for forming a free hanging loop in said bumper sticker stock between said stock and said means for printing, said feed mechanism including a motorized pinch

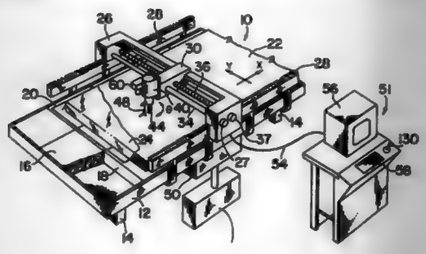
roller, associated guide rollers mounted proximate said pinch roller, a spring loaded lever cooperatively associated with said pinch roller, and a switch for activating said pinch roller, said means for pulling contracting said loop during printing, the contracting loop contacts and raises an arm of said switch to engage said switch, thereby operating said motorized pinch roller to create a new loop.

5,487,011

GARMENT MARKER SYSTEM HAVING COMPUTER ASSISTED ALIGNMENT OF VARIABLE CONTRAST CLOTH DESIGNS

Craig L. Chaiken, Spring, Tex., assignor to Gerber Garment Technology, Inc., Tolland, Conn.

Filed Mar. 17, 1994, Ser. No. 210,303
Int. Cl.[6] G06F *19/00*; G05B *19/18*; G06K *9/00*; G01N *21/84*
U.S. Cl. 364—470 20 Claims



52

8. A method for aligning a garment segment pattern at a selected location in a marker with a high contrast geometric design in a fabric web on an upper surface of a table in a system having a moveable video sub-system including a camera having an array of pixel elements configured to receive light from a portion of the fabric web and provide electrical signal equivalents thereof; said method comprising the steps of:

receiving marker signals including garment segment pattern signals and a reference signal corresponding to a reference location in said marker of said fabric design and camera pixel element alignment therewith;

receiving, from said camera video sub-system signals including signals corresponding to said fabric web design at said reference location;

receiving, from said camera video sub-system signals including signals corresponding to said fabric web design at a match location;

generating, for said reference location and said match location signals, signals corresponding to respective low resolution images including the steps of:

configuring a blurring pixel array corresponding to a subset of a plurality of pixel element positions centered about a given pixel element;

assigning a weighting value for each of said pixel array subset element positions;

computing, for each of said reference and match image pixel signals, a weighted pixel signal value corresponding the sum of the product of the pixel intensity value for each pixel and the corresponding weighting value divided by the number of element positions in said array subset;

computing minimum and maximum signal values for said low resolution reference and match images;

computing a magnitude range for said low resolution reference and match images;

calculating signals corresponding to a scaling factor for said low resolution reference and match images;

computing, with said scale factor, scaled low resolution reference and match image signals;

configuring, for said low resolution reference and match images, respective computational pixel arrays corresponding to a first central subset of a pixel element positions, including;

dividing each pixel row of said first computational pixel arrays into a plurality of row segments;

computing an average pixel intensity value for each of said row segments;

dividing each pixel column of said computational pixel arrays into a plurality of column segments;

computing an average pixel intensity value for each of said column segments;

generating, for each of said row segments, previous row transition signals corresponding to a difference between average intensity values for a current one of said row segments and a corresponding row segment in a previous row;

generating previous row transition difference signals corresponding to a difference between each corresponding one of said previous row transition signals in said match and image first computational pixel arrays;

generating, for each of said row segments, subsequent row transition signals corresponding to a difference between average intensity values for said current one of said row segments and a corresponding row segment in a subsequent column;

generating subsequent row transition difference signals corresponding to a difference between each corresponding one of said subsequent row transition signals in said match and image first computational pixel arrays;

generating, for each of said column segments, previous column transition signals corresponding to a difference between average intensity values for a current one of said column segments and a corresponding column segment in a previous column;

generating previous column transition difference signals corresponding to a difference between each corresponding one of said previous column transition signals in said match and image first computational pixel arrays;

generating, for each of said column segments, subsequent column transition signals corresponding to a difference between average intensity values for said current one of said column segments and a corresponding column segment in a subsequent column;

generating subsequent row transition difference signals corresponding to a difference between each corresponding one of said subsequent row transition signals in said match and image first computational pixel arrays;

generating signals indicative of a first sum of said column segment and said row segment transition differences;

configuring, for said match image, a computational pixel array corresponding to a second, non-centered, subset of pixel element positions, including;

dividing each pixel row of said second computational pixel arrays into a plurality of row segments;

computing an average pixel intensity value for each of said row segments;

dividing each pixel column of said second computational pixel arrays into a plurality of column segments;

computing an average pixel intensity value for each of said column segments;

generating, for each of said row segments, previous row transition signals corresponding to a difference between average intensity values for a current one of said row segments and a corresponding row segment in a previous row;

generating previous row transition difference signals corresponding to a difference between each corresponding one of said previous row transition signals in said match and image second computational pixel arrays;

generating, for each of said row segments, subsequent row transition signals corresponding to a difference between average intensity values for said current one of said row segments and a corresponding row segment in a subsequent column;

generating subsequent row transition difference signals corresponding to a difference between each corresponding one of said subsequent row transition signals in said match and image second computational pixel arrays;

generating, for each of said column segments, previous column transition signals corresponding to a difference between average intensity values for a current one of said column segments and a corresponding column segment in a previous column;

generating previous column transition difference signals corresponding to a difference between each corresponding one of said previous column transition signals in said match and image second computational pixel arrays;

generating, for each of said column segments, subsequent column transition signals corresponding to a difference between average intensity values for said current one of said column segments and a corresponding column segment in a subsequent column;

generating subsequent row transition difference signals corresponding to a difference between each corresponding one of said subsequent row transition signals in said match and image second computational pixel arrays;

generating signals indicative of a second sum of said column segment and said row segment transition differences; and

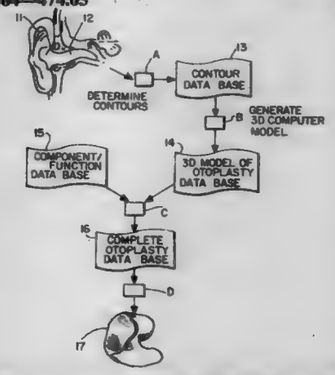
generating signals selecting as a match the one of said match computational arrays corresponding to the lowest of said first and second sums.

5,487,012

METHOD OF PREPARING AN OTOPLASTY OR ADAPTIVE EARPIECE INDIVIDUALLY MATCHED TO THE SHAPE OF AN AUDITORY CANAL

Jan Topholm, Holte; Svend V. Andersen, Espergaerde, and Soren E. Westermann, Hellerup, all of, Denmark, assignors to Topholm & Westermann APS, Vaerloese, Denmark

Continuation of Ser. No. 920,561, Aug. 19, 1992, abandoned.
This application Oct. 12, 1994, Ser. No. 322,039
Claims priority, application Germany, Dec. 21, 1990, 40 41 105.2
Int. Cl.[6] G06F *19/00*; G05B *19/4097*; G06T *17/00*
U.S. Cl. 364—474.05 38 Claims



1. A method for computer-controlled production of otoplasties or adaptive earpieces comprising at least one part which is individually matched to contours of an auditory canal, said method comprising the steps of:

tracing of the contours of the auditory canal to obtain contour data, digitization of the contour data and storage of the digitized values;

converting the digitized values into a multi-dimensional computer model of the external contours of the otoplasty or adaptive earpiece; and

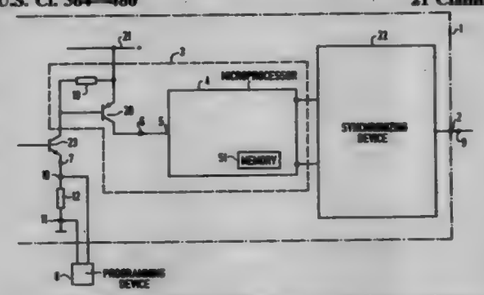
automatically or interactively selecting the components/functions for the interior of the computer model while simultaneously defining the wall thickness and optimizing the positions of the components/functions with respect to optimum function, position and minimum bulk.

5,487,013

SYSTEM AND METHOD FOR READING OPERATING PARAMETERS INTO AN OPERATIONALLY READY PROXIMITY SWITCH

Ernst Luber, Neukirchen, Germany, assignor to Siemens Aktiengesellschaft, München, Germany

Continuation of Ser. No. 893,436, Jun. 4, 1992, abandoned.
This application Mar. 10, 1995, Ser. No. 402,756
Claims priority, application European Pat. Off., Jun. 13, 1991, 91109720
Int. Cl.[6] G08B *21/00*; H03K *17/945*
U.S. Cl. 364—480 21 Claims



1. A system for loading operating parameters into a microprocessor of a prefabricated proximity switch, comprising:

an overcurrent detection device including said microprocessor;

a programming device which simulates an overcurrent condition across a switching output of the proximity switch by generating a pulse corresponding to the simulated overcurrent condition, wherein the generated pulse represents information about at least one of said operating parameters in a bit pattern form and wherein the generated pulse is received by said overcurrent detection device;

an enabling input of said proximity switch which receives synchronizing pulses;

a synchronizing device synchronizing said microprocessor in response to said synchronizing pulses received by said enabling input of said proximity switch; and

an input of said microprocessor which receives said pulse generated by said programming device and received by said overcurrent detection device in response to said synchronizing pulses received by said synchronizing device from said enabling input of the proximity switch to load the bit pattern form information about at least one of the operating parameters into the microprocessor.

5,487,014

LOW COST AUTOMATED SYSTEM FOR EVALUATING THE ELECTRICAL CHARACTERISTICS OF FERROELECTRIC MATERIALS

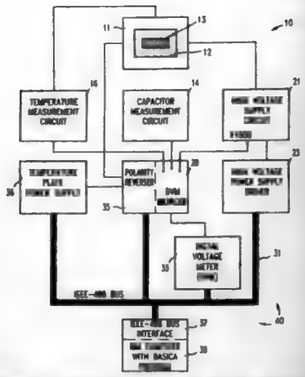
William C. Drach, Tinton Falls; Richard W. Babbitt, Fair Haven, and Thomas E. Koscica, Clark, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 26, 1994, Ser. No. 296,824
Int. Cl.[6] G01R *1/00*
U.S. Cl. 364—481 4 Claims

1. A low-cost automated system for measuring the electrical characteristics of a ferroelectric material, comprising:

a fixture having a temperature plate upon which the ferroelectric material is placed, said temperature plate having a temperature sensor positioned thereon directly beneath the ferroelectric material;

a computer controlled measuring circuit electrically connected to the ferroelectric material and said fixture for applying a predetermined range of temperature and electric potential to said ferroelectric material, and for automatic and simultaneous measurement of the electrical characteristics of the ferroelectric material at each said predetermined temperature and electrical potential;



said computer controlled measuring circuit having a computer with a IEEE-488 Interface, an IEEE-488 Bus electrically coupled to said IEEE-488 Interface, a temperature plate power supply electrically coupled to said computer through said IEEE-488 Bus, a digital voltmeter electrically coupled to said computer through said IEEE-488 Bus, a high voltage power supply driver electrically coupled to said computer through said IEEE-488 Bus, a multiplexor and a polarity reverser electrically coupled to said computer through said IEEE-488 Bus, a temperature measuring circuit electrically coupled to said multiplexer and said fixture, a capacitor measuring circuit electrically coupled to said multiplexer and said fixture, a high voltage power supply electrical coupled to said high voltage power supply driver, said multiplexer and said fixture, said polarity reverser electrically connected to said temperature plate, said power supply and said fixture.

5,487,015

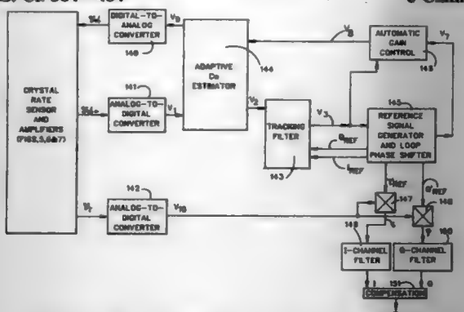
SELF-OSCILLATING DRIVER CIRCUIT FOR A QUARTZ RESONATOR OF AN ANGULAR RATE SENSOR

Stanley A. White, San Clemente, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Sep. 13, 1993, Ser. No. 119,637

Int. Cl.[6] G01R *25/04*

U.S. Cl. 364—484 **6 Claims**



4. A drive circuit for exciting a resonator at a resonant frequency of said resonator, said resonator having a pair of terminals, said drive circuit comprising:

(a) an adjustable phase shifter connected in a feedback loop including said resonator for adjusting a phase shift of a periodic signal circulating in said feedback loop; and

(b) a phase detector responsive to phase shift across said terminals and connected to said phase shifter for adjusting said phase shifter for obtaining a phase shift of said periodic signal of approximately zero across said terminals; and

(c) an adaptive circuit connected to said adjustable phase shifter and said phase detector for canceling a component of said periodic signal passing through shunt capacitance of said resonator between said terminals, wherein said adaptive circuit includes:

(1) a test oscillator connected in said feedback loop for exciting said resonator with a test signal;

(2) a multiplier connected to said adaptive circuit for generating a cancellation signal proportional to said periodic signal and a shunt capacitance estimating signal;

(3) a combiner connected in said feedback loop and connected to said multiplier for canceling said component of said periodic signal passing through said shunt capacitance of said resonator; and

(4) a shunt capacitance estimator connected to said combiner and said multiplier for adjusting said shunt capacitance estimating signal in order to minimize the presence of said test signal passing in said feedback loop from said combiner by the steps of:

(A) multiplying an estimate of the shunt capacitance by the test signal to produce a product signal;

(B) scaling and delaying the product signal to produce the cancellation signal;

(C) demodulating the combined signal by the test signal produce a residual;

(D) calculating the difference between:

(1) a scaled and delayed residual and

(2)the sum of a delayed residual and a double delayed residual;

(E) increasing the estimate of shunt capacitance if the difference is positive; and

(F) decreasing the estimate of shunt capacitance if the difference is negative.

5,487,016

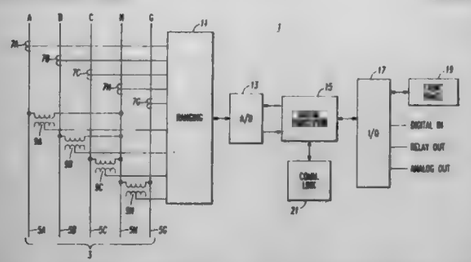
APPARATUS FOR GENEARTING A SIGNAL REPRESENTATIVE OF TOTAL HARMONIC DISTORTION IN WAVEFORMS OF AN A/C ELECTRICAL SYSTEM

Robert T. Elms, Monroeville, Pa., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 4, 1994, Ser. No. 334,506

Int. Cl.[6] G01R *23/00*

U.S. Cl. 364—484 **7 Claims**



1. Apparatus for generating a signal representative of total harmonic distortion in an ac waveform having a fundamental frequency, said apparatus comprising:

sensing means generating a sensed signal representative of said ac waveform;

means generating from said sensed signal a fundamental signal representative of a fundamental frequency component of said sensed signal;

means generating a harmonics signal as a difference between said sensed signal and said fundamental signal; and

means generating a total harmonic distortion signal from said fundamental signal and said harmonics signal.

5,487,017

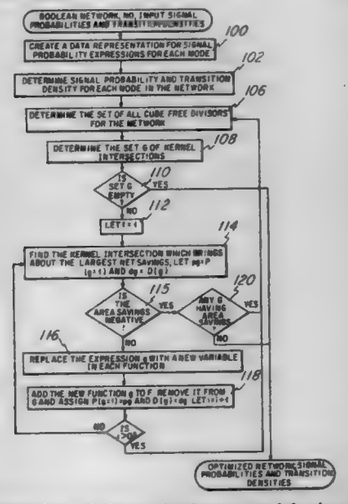
CIRCUIT ACTIVITY DRIVEN MULTILEVEL LOGIC OPTIMIZATION FOR LOW POWER RELIABLE OPERATION

Sharat Prasad, Dallas, and Kaushik Roy, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 18, 1993, Ser. No. 18,984

Int. Cl.[6] H03M *5/00*

U.S. Cl. 364—488 **14 Claims**



1. A method for optimizing a boolean network having a plurality of functions, a plurality of inputs and a plurality of nodes, comprising the steps of:

a. locating any cube-free divisors in the boolean network which apply to at least two of said plurality of functions;

b. selecting the greatest divisor, wherein said greatest divisor is the cube-free divisor which brings about the largest net savings and wherein the net savings comprises both an area savings component and a power savings component;

c. replacing the greatest divisor with a variable in each of said plurality of functions so as to enable further optimization; and

d. adding said variable to said boolean network to create an optimized boolean network.

5,487,018

ELECTRONIC DESIGN AUTOMATION APPARATUS AND METHOD UTILIZING A PHYSICAL INFORMATION DATABASE

Joann Lees, Palo Alto; Chao-Yuan Wang, Newark, and Mossaddeq Mahmood, San Jose, all of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Aug. 13, 1993, Ser. No. 106,104

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—489 **20 Claims**

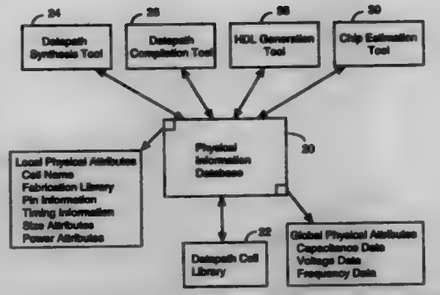
11. A method of analyzing a circuit specification corresponding to a desired functional operation, said method comprising the steps of:

providing a datapath cell library including a plurality of circuit elements that may be selected to implement said desired functional operation;

operating a plurality of electronic design automation tools, including at least one synthesis tool and at least one analysis tool, to process said circuit specification;

constructing a shared physical information database with information corresponding to said plurality of circuit elements; and

using said plurality of electronic design automation tools to analyze said circuit specification, wherein at least one synthesis tool and at least one analysis tool access common information in said shared physical information database.



5,487,019

DIGITAL DATA TRANSFER METHOD

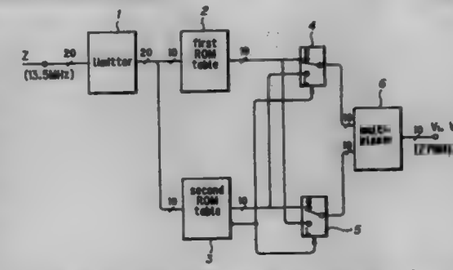
Motomu Ueta, and Tetsuya Harada, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 29, 1994, Ser. No. 219,708

Claims priority, application Japan, Mar. 31, 1993, 5-094992

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—514 R **4 Claims**



1. A method for transferring (N*m) bit depth data Z for digital image processing apparatus using an m-bit digital data transfer format, N being a positive integer greater than or equal to 2, M being a number of values representable by m bits of digital data first K sequential values starting from a lowest of the M values of the m-bit digital data being forbidden codes in the m-bit digital data transfer format which are reserved for control information and information other than image data, and L values within the M values of the m-bit digital data being forbidden codes in the m-bit digital data transfer format, comprising the steps of:

(a) dividing the (N*m) bit depth data Z into N items of m-bit digital data V_1 to V_N, where

$$Z = \Sigma_{n=1}^{N} \{(M-L)^{n-1}(V_n - K)\} \text{ and}$$
$$Z = (M-L)^{N-1}(V_N - K) + (M-L)^{N-2}(V^{N-1} - K) + (M-L)^{N-3}(V_{N-2} - K) + \ldots + (M-L)(V_2 - K) + (V_1 - K);$$

(b) transmitting the m-bit digital data V_1 to V_N obtained in step (a) along with control information and information other than picture data using the m-bit digital data transfer format;

(c) receiving the transmitted m-bit digital data V_1 to V_N; and

(d) restoring the received m-bit digital data V_1 to V_N to a form of the (N*m) bit depth data Z based on the equation

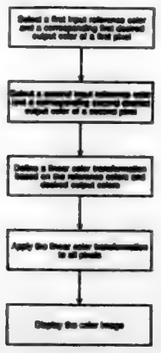
$$Z = \Sigma_{n=1}^{N} \{(M-L)^{n-1}(V_n - K)\}.$$

5,487,020

REFINEMENT OF COLOR IMAGES USING REFERENCE COLORS

Timothy Long, West Pymble, Australia, assignor to Canon Information Systems Research Australia PTY Ltd., N. Ryde, Australia, and Canon Inc., Tokyo, Japan

Filed Jan. 12, 1994, Ser. No. 180,295
Claims priority, application Australia, Jan. 18, 1993, PL6840
Int. Cl.[6] H04N 9/64; G03F 3/00
U.S. Cl. 364—571.01 3 Claims



1. A method for color correcting a predetermined portion of a color image, said color image comprising a plurality of pixels and a plurality of color information channels for each of said plurality of pixels, said method comprising the steps of:

selecting in said predetermined portion a first input reference color of a first pixel and a corresponding first desired output color of the first pixel;

selecting in said predetermined portion a second input reference color of a second pixel and a corresponding second desired output color of the second pixel;

defining a linear color transformation for each color information channel based on the input reference colors and the desired output colors;

applying said linear color transformation to all pixels in said predetermined portion; and

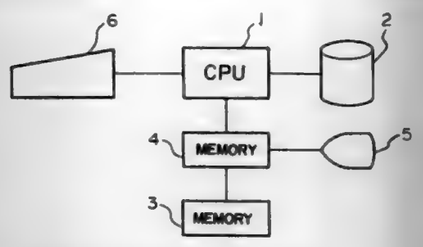
displaying the color image.

5,487,021

COMPUTER-AIDED DESIGN SYSTEM

Shigehisa Fujita, and Kenji Sato, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 30, 1993, Ser. No. 84,073
Claims priority, application Japan, Jun. 30, 1992, 4-173522
Int. Cl.[6] G06F 17/00
U.S. Cl. 364—578 11 Claims



1. A computer-aided design system comprising:

storage means for storing computer-aided design data of a plurality of parts of an object;

display means, coupled to said storage means, for displaying image data corresponding to said computer-aided design data;

operation means for performing plotting and drawing of said plurality of parts of said object in accordance with values input to said operation mean by a system user; and

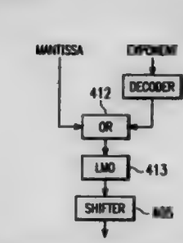
control means, operatively coupled to said storage means, said display means and said operation means, for reading from said storage means said computer-aided design data of said plurality of parts of said object, combining image data corresponding to said computer-aided design data, displaying said combined image data on said display means, calculating clearances between said plurality of parts of said combined image data displayed on said display means in accordance with said input values, and displaying said clearances on said combined image data as contour lines.

5,487,022

NORMALIZATION METHOD FOR FLOATING POINT NUMBERS

Richard Simpson, Carlton, United Kingdom; Erick D. Oakland, Zavalla, Tex., and Graham M. Barr, Raunds, United Kingdom, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 8, 1994, Ser. No. 207,992
Int. Cl.[6] G06F 7/38
U.S. Cl. 364—715.04 6 Claims



1. A floating point normalization circuit receiving a mantissa part and an exponent part of a floating point number, the exponent part having a minimum expressible exponent, said circuit comprising:

an exponent decoder receiving the exponent part of the floating point number and generating a coded multibit output corresponding to a maximum decrease in the exponent part of the floating point number within the minimum expressible exponent, said exponent decoder including

a two to four line decoder for each pair of bits of the exponent part of the floating point number, and

an AND gate connected to selected outputs of said two to four line decoders for each bit of said mantissa;

a bit-wise OR circuit connected to said exponent decoder, receiving the mantissa part of the floating point number and said coded multibit output and forming a logical OR output of each bit of the mantissa part with a corresponding bit of said coded multibit output;

a left most one circuit connected to said bit-wise OR circuit detecting a bit position of a most significant bit of said logical OR output having a "1";

a left shifter circuit connected to said left most one circuit and receiving the mantissa part of the floating point number, said left shifter left shifting the mantissa part the floating point number an amount equal to said detected bit position of a most significant bit having a "1"; and

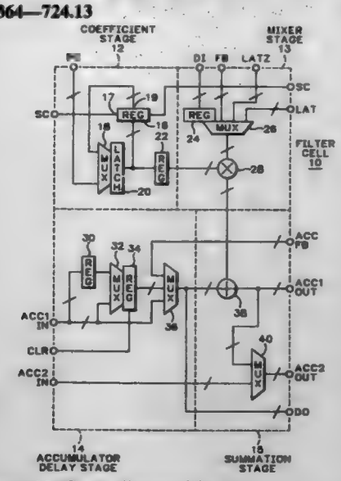
a decrementer connected to said left most one circuit and receiving the exponent part of the floating point number, said decrementer decrementing the exponent part of the floating point number an amount equal to said detected bit position of a most significant bit having a "1".

5,487,023

REPEATABLE FINITE AND INFINITE IMPULSE RESPONSE INTEGRATED CIRCUIT STRUCTURE

Michael C. Seckora, Gales Creek, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Feb. 14, 1994, Ser. No. 194,963
Int. Cl.[6] G06F 17/10
U.S. Cl. 364—724.13 23 Claims



1. A repeatable filter cell comprising:

a coefficient input stage having at least two coefficient inputs for receiving respective input coefficients, a means for selecting one of the input coefficients, and a coefficient output for providing the selected coefficient as output of the coefficient input stage,

a mixer stage having at least two data value inputs for receiving respective input data values, a means for selecting one of the input data values, a multiplier means for receiving the selected coefficient from the coefficient input stage and the selected input data value and multiplying the selected input data value by the selected coefficient to form a mixer stage product, and a product output for providing the mixer stage product as output of the mixer stage,

an accumulator delay stage having at least one input for receiving at least one input accumulation value, a selectively variable delay means for imposing a selected delay on the input accumulation value, and an accumulation delay output for providing the selectively delayed input accumulation value as output of the accumulator delay stage, and

a summation stage having an input for receiving the accumulator delay stage output, an input for receiving the mixer stage output, a means for summing the accumulation value and the mixer stage output, and a summation stage output for providing the sum of the accumulation value and the mixer stage output as output of the filter cell.

5,487,024

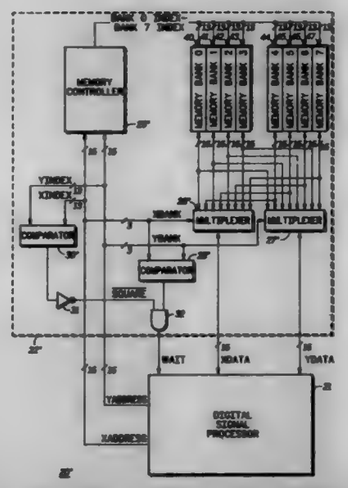
DATA PROCESSING SYSTEM FOR HARDWARE IMPLEMENTATION OF SQUARE OPERATIONS AND METHOD THEREFOR

James W. Girardeau, Jr., Toulouse, France, assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 677,919, Apr. 1, 1991, abandoned.
This application Nov. 15, 1993, Ser. No. 152,075
Int. Cl.[6] G06F 7/552
U.S. Cl. 364—753 13 Claims

1. A data processing system comprising:

a data processor coupled to first and second data paths and to first and second addresses corresponding thereto, respectively, each of said first and second addresses having a first portion and a second portion, said data processor delaying an access to said second data path in response to a wait signal being active;



first and second memory portions;

multiplex means coupled to said first and second memory portions and to said first and second data paths, for multiplexing data from said first memory portion onto either said first or said second data path in response to said first portion of said first address, and from said second memory portion onto either said first or said second data path in response to said first portion of said second address; and

logic means coupled to said data processor, for activating said wait signal if both, said first portion of said first address and said first portion of said second address are equal, and, said second portion of said first address and said second portion of said second address are unequal, and for keeping said wait signal inactive if, said first portion of said first address and said first portion of said second address are equal and said second portion of said first address and said second portion of said second address are equal.

5,487,025

CARRY CHAIN ADDER USING REGENERATIVE PUSH-PULL DIFFERENTIAL LOGIC

Hamid Partovi, Westboro, Mass., and Donald A. Draper, San Jose, Calif., assignors to Intergraph Corporation, Huntsville, Ala.

Filed Nov. 15, 1993, Ser. No. 152,561
Int. Cl.[6] G06F 7/50
U.S. Cl. 364—788 2 Claims

1. A circuit for adding binary numbers comprising:

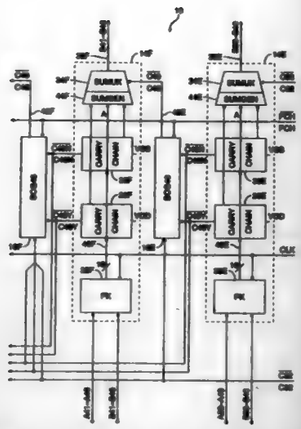
a carry indicating circuit for generating a carry-in signal indicating whether the addition of a first plurality of bits of the binary numbers to be added results in a carry;

a first carry chain circuit connected to the carry indicating circuit for generating a first carry-out signal indicating whether the addition of a second plurality of bits of the binary numbers to be added together with a carry from the addition of the first plurality of bits of the binary numbers to be added results in a carry;

a second carry chain circuit connected to the carry indicating circuit for generating a second carry-out signal indicating whether the addition of the second plurality of bits of the binary numbers to be added without a carry from the addition of the first plurality of bits of the binary numbers to be added results in a carry; and

wherein the first and second carry chain circuits each include:

a first transistor connected to a second transistor so that the first and second transistors may be initially biased in a noncon-



ducting state when a first node is at a first voltage potential and a second node is at a second voltage potential, the first voltage potential being different from the second voltage potential; and

altering means for altering the voltage potential at the first and second nodes and for causing the first and second transistors to be in a conducting state and for accelerating the voltage change at the first and second nodes to final voltage potentials; and

selection circuitry, coupled to the carry indicating circuit and to the first and second carry chain circuits, for selecting either the first carry-out signal or the second carry-out signal in response to the carry-in signal.

5,487,026

MULTIPLYING DEVICE, LINEAR ALGEBRAIC PROCESSOR, NEUROMORPHIC PROCESSOR, AND OPTICAL PROCESSOR

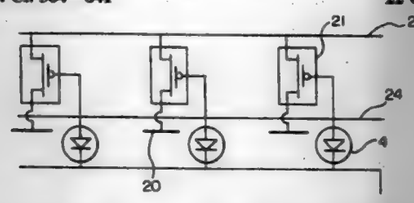
Michael G. Robinson, Stadhampton, United Kingdom, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 10, 1993, Ser. No. 28,834

Claims priority, application United Kingdom, Mar. 10, 1992, 9205161

Int. Cl.[6] G06G *7/16*

U.S. Cl. 364—841 **22 Claims**



1. A multiplying device comprising an electro-optical emitter which emits optical radiation as a function of a first input signal, an opto-electric transducer, and a controllable attentuator having controllable non-volatile attenuation to optical radiation as a function of a second input signal and being disposed between the emitter and the transducer such that the opto-electric transducer provides an output signal representative of a multiplication of the first and second input signals.

5,487,027

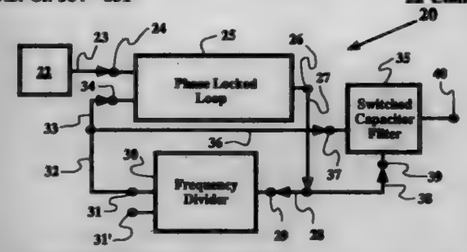
PROCESS AND APPARATUS FOR PROVIDING AN ANALOG WAVEFORM SYNCHRONIZED WITH AN INPUT SIGNAL

Michael C. Heath, and Steve C. Southward, both of Cary, N.C., assignors to Lord Corporation, Cary, N.C.

Filed May 18, 1994, Ser. No. 245,719

Int. Cl.[6] G06G *7/16*; G06J *1/00*

U.S. Cl. 364—851 **22 Claims**



1. A waveform generator, comprising:

(a) a phase-locked loop having a first phase-locked loop input for receiving an input signal from a source, a second phase-locked loop input, and a phase-locked loop output for outputting a multiplied square wave signal whose frequency is a multiple of a frequency of said input signal from said source;

(b) a frequency divider having a frequency divider input for receiving said multiplied square wave signal from said phase-locked loop, a frequency divided output including at least one divided output signal, one of said at least one divided output signal being received by said second phase-locked loop input of said phase-locked loop; and

(c) a first switched-capacitor filter having a first clock input for receiving said multiplied square wave signal from said phase-locked loop, a first switched-capacitor filter input of said first switched-capacitor filter for also receiving one of said at least one divided output signal, and a switched-capacitor filter output for outputting a first analog wave which is synchronized to said input signal from said source.

5,487,028

METHOD FOR ARRANGING COLUMN DECODERS IN A VIDEO RAM

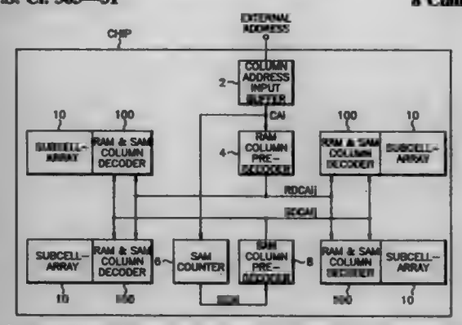
Sei S. Yoon, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 22, 1994, Ser. No. 279,171

Claims priority, application Rep. of Korea, Jul. 31, 1993, 1993-14845

Int. Cl.[6] G11C *5/02*

U.S. Cl. 365—51 **8 Claims**



1. A method of arranging column decoders in a video RAM, comprising the steps of:

dividing a memory cell array into a plurality of memory sub-cell arrays, each memory sub-cell array having a plurality of memory cells arranged in columns and rows;

arranging the plurality of memory sub-cell arrays around centrally located peripheral circuits including a predecoder; and,

arranging a column decoder to one side of each memory sub-cell array between the memory sub-cell array and the peripheral circuits, each column decoder comprising a RAM column decoder section and a SAM column decoder section.

5,487,029

SEMICONDUCTOR MEMORY DEVICE HAVING A NON-VOLATILE MEMORY COMPOSED OF FERROELECTRIC CAPACITORS WHICH ARE SELECTIVELY ADDRESSED

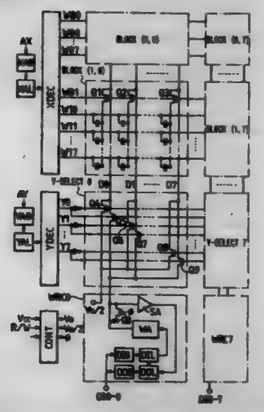
Kenichi Kuroda, Tachikawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 24, 1993, Ser. No. 111,507

Claims priority, application Japan, Aug. 27, 1992, 4-252326

Int. Cl.[6] G11C *11/22*

U.S. Cl. 365—145 **30 Claims**



1. A semiconductor memory device comprising a first unit memory block, a second unit memory block and a first data line, wherein said first unit memory block comprises:

a first sub-data line;

a first address selecting line;

a second address selecting line;

a third address selecting line;

a first switch coupled between said first data line and said first sub-data line, said first switch having a control terminal coupled to said first address selecting line;

a first ferroelectric capacitor coupled between said second address selecting line and said first sub-data line; and

a second ferroelectric capacitor coupled between said third address selecting line and said first sub-data line, and

wherein said second unit memory block comprises:

a second sub-data line;

a fourth address selecting line;

a fifth address selecting line;

a sixth address selecting line;

a second switch coupled between said first data line and said second sub-data line, said second switch having a control terminal coupled to said fourth address selecting line;

a third ferroelectric capacitor coupled between said fifth address selecting line and said second sub-data line; and

a fourth ferroelectric capacitor coupled between said sixth address selecting line and said second sub-data line, each of said first through fourth ferroelectric capacitors having a pair of electrodes to be electrically coupled to a corresponding address selecting line and a corresponding sub-data line, respectively.

5,487,030

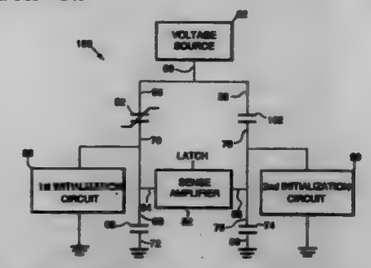
FERROELECTRIC INTERRUPTIBLE READ MEMORY

John J. Drab, Encitas, and O. Glenn Ramer, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 26, 1994, Ser. No. 296,836

Int. Cl.[6] G11C *11/22*

U.S. Cl. 365—145 **8 Claims**



1. A memory, comprising:

a ferroelectric capacitor having a minimum ferroelectric capacitance;

a reference capacitor in parallel arrangement with the ferroelectric capacitor, the reference capacitor having a capacitance greater than the minimum ferroelectric capacitance of the ferroelectric capacitor;

means for writing controllably different saturation polarization states into the ferroelectric capacitor using a single input signal;

means for sensing the difference in capacitance of the ferroelectric capacitor and the reference capacitor, the means for sensing causing only a partial switching in the polarization state of the ferroelectric capacitor when the ferroelectric capacitor is in a state of capacitance greater than the reference capacitor and no change in the polarization state of the ferroelectric capacitor when the ferroelectric capacitor is in a minimum capacitance state, the means for sensing leaving the capacitance of the ferroelectric capacitor greater than that of the reference capacitor; and

means to restore the original ferroelectric polarization of the ferroelectric capacitor following operation of the means for sensing.

5,487,031

THREE-DIMENSIONAL FERROELECTRIC INTEGRATED CIRCUIT HAVING INSULATION LAYER BETWEEN MEMORY LAYERS

Bruce E. Gnade, Rowlett; Russell F. Pinizzotto, Dallas, and Christopher L. Littler, Denton, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 954,211, Sep. 30, 1992, Pat. No. 5,375,085. This application Sep. 26, 1994, Ser. No. 311,806

Int. Cl.[6] G11C *11/22*

U.S. Cl. 365—145 **11 Claims**

1. A ferroelectric integrated circuit comprising:

a base layer;

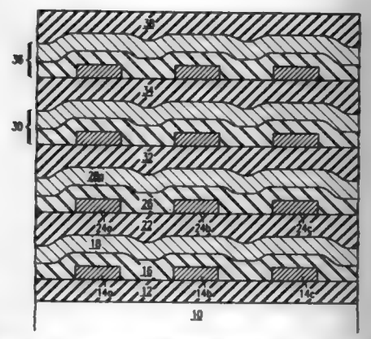
a plurality of memory cell layers formed overlying said base layer, each of said plurality of memory cell layers including:

a first layer of conducting lines;

a ferroelectric layer overlying said first layer of conducting lines;

a second layer of conducting lines overlying said ferroelectric layer, wherein each of said conducting lines of said second layer is substantially perpendicular to said conducting lines of said first layer; and

a plurality of areas of said ferroelectric layer between intersecting conducting lines in said first and second layers capable of being polarized by potentials placed on said intersecting conducting lines in said first and second layers; and



a plurality of inter-layer insulating layers, each of said inter-layer insulating layers interleaved between successive memory cell layers, wherein polarization of a particular area of said plurality of areas in said memory cell layers is capable of causing polarization of other areas proximate to said particular area.

5,487,032

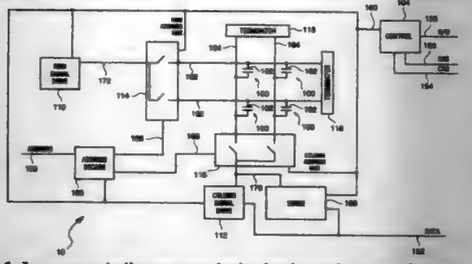
METHOD AND APPARATUS FOR REDUCED FATIGUE IN FERROELECTRIC MEMORY ELEMENTS

Takashi Mihara, Saitama; Hitoshi Watanabe, Tokyo; Hiroyuki Yoshimori, Kanagawa, all of, Japan; Carlos A. Paz de Araujo, and Larry D. McMillan, both of Colorado Springs, Colo., assignors to Symetrix Corporation, Colorado Springs, Colo., and Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1994, Ser. No. 338,003

Int. Cl.[6] G11C *11/22*

U.S. Cl. 365—145 **18 Claims**



1. In a non-volatile memory device having at least one ferroelectric memory element within at least one memory cell, wherein a polarization state of said ferroelectric memory element is associated with a stored logic "1" and another polarization state of said ferroelectric memory element is associated with a stored logic "0", a method for reducing polarizability fatigue of said ferroelectric memory element comprising the steps of:

receiving a request to coerce the state of polarization of said ferroelectric memory element to a desired state of polarization;

generating, responsive to said request, a waveform electric field signal having a directional polarity and having a maximum amplitude sufficient to alter said state of polarization of said ferroelectric memory element, said signal having a predetermined rise time, during which the amplitude of said signal changes from a first level to said maximum amplitude, wherein said predetermined rise time is selected from the group comprising, about one half the plate rise time of said ferroelectric memory element, and about one half the sense delay time of said ferroelectric memory element; and

applying, responsive to said request, said signal to said ferroelectric memory element such that the state of polarization of said ferroelectric memory element is coerced to said desired state of polarization.

5,487,033

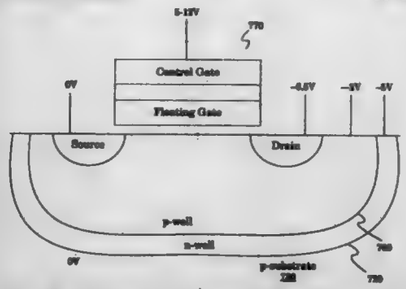
STRUCTURE AND METHOD FOR LOW CURRENT PROGRAMMING OF FLASH EEPROMS

Stephen N. Keeney, Sunnyvale, and Gregory E. Atwood, San Jose, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 28, 1994, Ser. No. 267,815

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—185.19 **18 Claims**



8. A low current method for programming a cell of an electrically erasable programmable read only memory (EEPROM), said EEPROM comprising at least one cell, each cell having a floating gate, a control gate, a source junction and drain junction, said method comprising the steps of:

placing the cells in a first well which is contained in a second well in a substrate;

applying a gate voltage to the control gate of the cell;

applying a drain voltage to the drain junction of the cell, said drain voltage set to cause hot electron injection of electrons onto the floating gate;

applying a first well bias voltage to the first well, the first well bias voltage to eliminate the need for applying a source bias voltage; and

applying a second well bias voltage to the second well.

5,487,034

SEMICONDUCTOR MEMORY DEVICE AND METHOD FOR WRITING DATA THEREIN

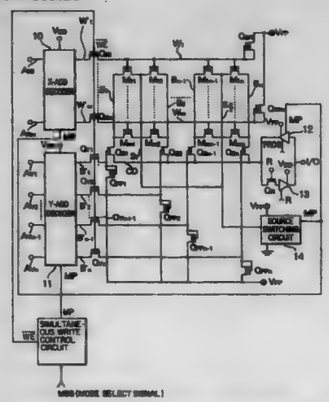
Tatsuro Inoue, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 19, 1994, Ser. No. 308,342

Claims priority, application Japan, Sep. 27, 1993, 5-239710

Int. Cl.[6] G11C *7/00;11/409*

U.S. Cl. 365—185.18 **9 Claims**



5. A semiconductor memory device comprising: a semiconductor substrate; a plurality of memory transistors arrayed in rows and columns on said semiconductor substrate, said memory transistors each having a source and a drain regions, a floating gate and a control gate electrode; a word line disposed for each row of said memory transistors and connected to each control gate electrode of corresponding row of said memory transistors; a bit line disposed for each column of said memory transistors and connected to each said drain region of corresponding column of said memory transistors; a source line disposed for each pair of columns of said memory transistors and connected to each said source region of corresponding one of said memory transistors; a word line selection circuit for selecting at least one said word line to apply a first positive voltage thereto relative to said semiconductor substrate; a bit line selection circuit for selecting at least one bit line to apply a second positive voltage thereto relative to said semiconductor substrate, said second voltage being lower than said first voltage; a simultaneous-selection control circuit for controlling said word line selection circuit and said bit line selection circuit to simultaneously select a plurality of said word lines and a plurality of said bit lines; and a switching circuit for applying said second positive voltage to each said source line corresponding to each of the selected bit lines in response to the selective operation of the simultaneous selection control circuit.

5,487,035

METHOD OF MULTIPLEXED DATA READING/WRITING SUITABLE FOR VIDEO-ON-DEMAND SYSTEM

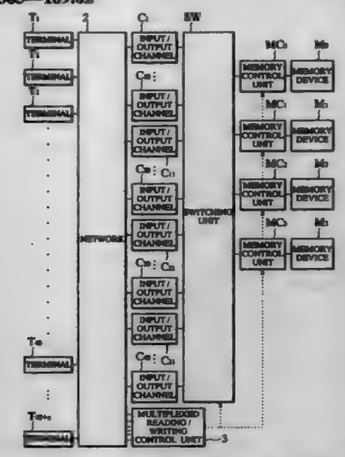
Kazutoshi Nishimura, Tokyo; Hideki Sakamoto, Saitamaken, and Hideharu Suzuki, Tokyo, all of, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Aug. 26, 1994, Ser. No. 296,725

Claims priority, application Japan, Aug. 26, 1993, 5-234218

Int. Cl.[6] H04Q *11/04*; G11C *7/00*

U.S. Cl. 365—189.02 **8 Claims**



1. A method of multiplexed data reading/writing with respect to a plurality of memory devices through m memory control means connected to the memory devices and m×n input/output channels selectively connected to said m memory control means via switching means, where m and n are integers greater than one, the method comprising the steps of:

(a) dividing each data into a plurality of segment data and storing the segment data of each data in a prescribed order among the memory devices;

(b) connecting said m memory control means with said m×n input/output channels selectively and sequentially by the switching means in units of time-slots such that each of said m memory control means is connected with each of said m×n input/output channels at least once within a prescribed period; and

(c) carrying out the reading/writing operations of the segment data stored by the step (a) in the memory devices by making accesses from said m memory control means in parallel at each time-slot such that each segment data read/written by each of said m memory control means from/into one of the memory devices connected thereto at each time-slot is transmitted to/from one of said m×n input/output channels connected by the step (b) thereto at each time-slot.

5,487,036

NONVOLATILE SEMICONDUCTOR MEMORY

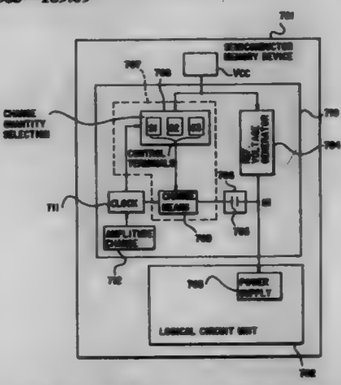
Takao Akaogi; Masanobu Yoshida, both of Kawasaki; Yasushige Ogawa, Kasugai; Yasushi Kasa, and Shoichi Kawamura, both of Kawasaki, all of, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 996,942, Dec. 28, 1992. This application Jul. 6, 1994, Ser. No. 268,580

Claims priority, application Japan, Dec. 27, 1991, 3-346663; May 28, 1992, 4-137080; Jul. 20, 1992, 4-191793; Sep. 17, 1992, 4-248023; Jan. 9, 1992, 4-271869; Jan. 13, 1992, 4-274355; Dec. 3, 1992, 4-324302; Dec. 4, 1992, 4-325544

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.09 **9 Claims**



1. A nonvolatile semiconductor memory having a matrix (1) of nonvolatile erasable memory cells (Mij) formed at intersections of word lines (WL1 to Wlm) and bit lines (BL11 to BL1K, . . . , Bln1 to Blnk), a row decoder (3), a column decoder (5), and sense amplifiers (7) connected to the bit lines (BL11 to BL1k, . . . , Bln1 to Blnk), respectively, the nonvolatile semiconductor memory involving a plurality of read modes requiring different source voltages, the nonvolatile semiconductor memory comprising:

a source voltage input portion;

reference voltage generation means connected to said source voltage input portion;

boost means, connected to said source voltage input portion and said reference voltage generation means, including a capacitance element; and

charging quantity changing means, connected to said boost means, for changing a charge quantity of said capacitance element in several levels according to different voltages required for said read modes, and said charge quantity changing means including charging means for charging said capacitance element.

5,487,037

PROGRAMMABLE MEMORY AND CELL

Robert D. Lee, Denton, Tex., assignor to Dallas Semiconductor Corporation, Dallas, Tex.

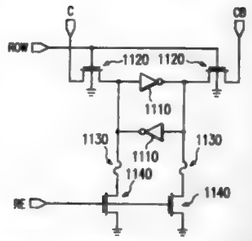
Continuation of Ser. No. 352,142, May 15, 1989, Pat. No. 4,995,004. This application Feb. 19, 1991, Ser. No. 657,717

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.11 **1 Claim**

1. An integrated circuit convertible memory cell, comprising:

(a) a bistable element having two states;



(b) a programmable clamp which when both programmed and activated puts said bistable element into a fixed one of said two states;

(c) a control node connected to said programmable clamp, with activation of said programmable clamp controlled by a signal on said control node, wherein:

(d) said bistable element includes two inverters with an output of each of said two inverters connected to an input of another of said two inverters;

(e) said programmable clamp includes for each of said inverters a fuse and a switch in series between said output and ground; and

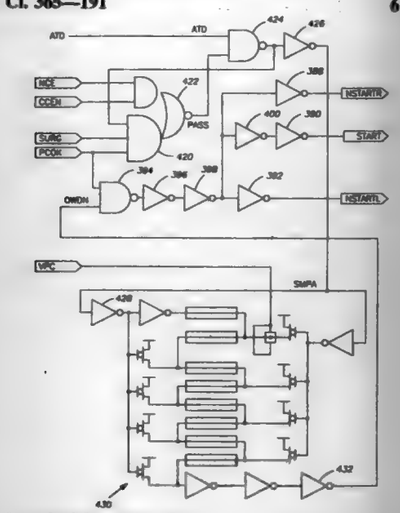
(f) said signal on said control node controls said switches.

5,487,038

METHOD FOR READ CYCLE INTERRUPTS IN A DYNAMIC READ-ONLY MEMORY

James A. Komarek, Newport Beach; Clarence W. Padgett, Westminster; Scott B. Tanner, Irvine, all of Calif.; Shin-ichi Kojima, Amagasaki, Japan; Jack L. Minney; Motohiro Oishi, both of Irvine, Calif.; Keiji Fukumura, and H. Nakanishi, both of Hyougo, Japan, assignors to Creative Integrated Systems, Inc., Santa Ana, Calif., and Rocoh Company, Ltd., Tokyo, Japan

Filed Aug. 15, 1994, Ser. No. 290,549
Int. Cl.[6] G11C *7/00;8/00*
U.S. Cl. 365—191 **6 Claims**



1. A method for clocking the read cycle of a memory to avoid address skew errors comprising the steps of:

receiving a first one of a plurality of sample address control signals, (SMPA.), indicating an input address change;

generating a primary clock signal, (START), in response to receipt of said first one of said sample address signals, (SMPA), said clock signal, (START), having a predetermined time duration;

maintaining said primary clock signal, (START), active for a duration long enough to provide adequate precharge time for said memory given variations in supply voltage, temperature and manufacturing process variation and further to permit adequate discharge time for the address word line in said memory even when driven high in a previous memory cycle so that a precharge phase of said memory is begun;

receiving a second one of said plurality of sample address signals, (SMPA); and

continuing said precharge phase of said memory notwithstanding receipt of said second one of said sample address signals, (SMPA), by virtue of setting said primary clock signal, (START), signal high for said predetermined time period after receipt of each one of said plurality of sample address signals, (SMPA),

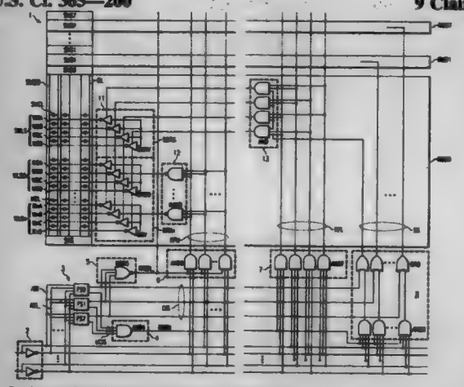
whereby address skew errors are avoided.

5,487,039

SEMICONDUCTOR MEMORY DEVICE

Shunichi Sukegawa, Oume, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 28, 1993, Ser. No. 69,221
Claims priority, application Japan, May 28, 1992, 4-162244
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—200 **9 Claims**



1. A semiconductor memory device comprising:

an array of memory cells made up of a plurality of subarrays of memory cells;

each of said subarrays of memory cells being arranged in a matrix of rows and columns of individual memory cells;

spare sets of redundant memory cells corresponding to at least some of said subarrays of memory cells;

address generating means for providing an address signal to selectively drive one of the row and column of memory cells included in a subarray of memory cells;

sets of short circuit elements for selecting a spare set of redundant memory cells from any one of the spare sets of redundant memory cells regardless of which subarray of memory cells corresponds thereto instead of the selected one of the row and column of memory cells included in a subarray of memory cells when said selected one of the row and column of memory cells included in the subarray of memory cells contains at least one defective memory cell;

redundancy enable generating means responsive to the detection of an address corresponding to a defective memory cell for producing a redundancy enable signal; and

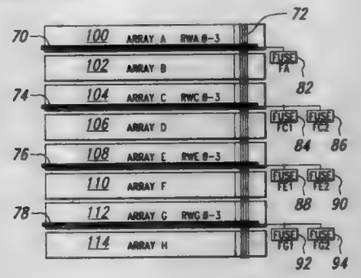
sets of spare drivers corresponding to said spare sets of redundant memory cells, a respective set of spare drivers responsive to a redundancy enable signal from said redundancy enable generating means for selectively driving a spare set of redundant memory cells in accordance with a selection status of said sets of short circuit elements.

5,487,040

SEMICONDUCTOR MEMORY DEVICE AND DEFECTIVE MEMORY CELL REPAIR CIRCUIT

Shunichi Sukegawa, Oume, and Tetsuya Saeki, Tachikawa, both of, Japan, assignors to Texas Instruments Incorporated, Dallas, Tex., and Hitachi Ltd., Japan

Filed Jul. 12, 1993, Ser. No. 90,848
Claims priority, application Japan, Jul. 10, 1992, 4-207332
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—200 **6 Claims**



1. A semiconductor memory device comprising:

a plurality of memory blocks, each of said memory blocks having an array of memory cells provided thereon arranged in a matrix of rows and columns of individual memory cells

each array of memory cells including a main array sector of rows and columns of memory cells as part of a regular memory configuration, at least some of the arrays of memory cells including a redundant group of a plurality of one of the rows and columns of memory cells as redundant memory;

a plurality of redundant group selection lines corresponding in number to the plurality of said one of the rows and columns of memory cells included in each of said redundant groups;

the plurality of said one of the rows and columns of memory cells included in each of said redundant groups having a first redundant address of a portion only of the number of address bits to be provided on an address signal line for addressing memory cells of the regular memory configuration;

a first plurality of programmable fuses respectively connected to an address signal line;

a redundant memory address group decoder for selecting one redundant group of a plurality of said one of the rows and columns of memory cells in response to the first redundant address defined by said portion of the address bits provided on the address signal line;

a second plurality of programmable fuses respectively connected to the address signal line; and

a redundant memory address decoder for selecting a portion of a selected one redundant group in response to a second redundant address having a number of address bits constituting all of the address bits as provided on the address signal line to define the address of a memory cell.

5,487,041

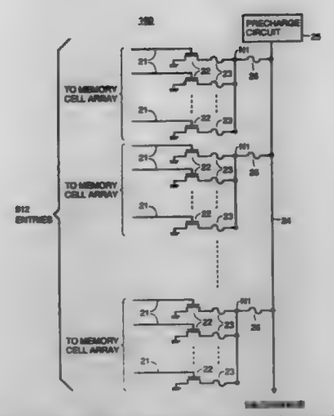
SEMICONDUCTOR MEMORY DEVICE WHICH CAN BE PROGRAMMED TO INDICATE DEFECTIVE MEMORY CELL

Tomohisa Wada, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan.

Filed Sep. 21, 1994, Ser. No. 309,823
Claims priority, application Japan, Jan. 25, 1993, 5-265934
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—200 **8 Claims**

1. A cache memory device for increasing the operating speed of a cache memory comprising:

a plurality of cache memory cell arrays each including a plurality of memory cell rows, each of said plurality of memory cell rows including a plurality of memory cells;



a plurality of first programming means each provided corresponding to a memory cell row and programmed to indicate whether the corresponding memory cell row is defective or not; and

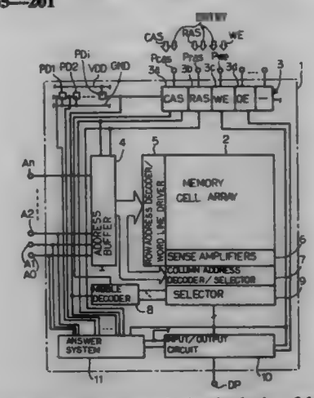
a plurality of second programming means each provided corresponding to a memory cell array and programmed to indicate whether the corresponding cache memory cell array is defective or not.

5,487,042

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE EQUIPPED WITH ANSWER SYSTEM FOR TEACHING OPTIONAL FUNCTIONS TO DIAGNOSTIC SYSTEM

Yasuhiro Edo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 3, 1994, Ser. No. 205,101
Claims priority, application Japan, Mar. 4, 1993, 5-043435
Int. Cl.[6] G11G *7/00*
U.S. Cl. 365—201 **6 Claims**



1. A semiconductor integrated circuit device fabricated on a single semiconductor chip and selectively entering into a standard mode and a diagnostic mode, comprising:

a) a main functional circuitry for achieving tasks through one of optional sub-modes of said standard mode of operation selected by a user, said main functional circuitry being subjected to a test operation in said diagnostic mode;

b) a signal source operative to fix mode signals respectively indicative of said optional sub-modes of operation selectively to an active level representative of selection of said user and an inactive level representative of non-selection of said user, the mode signal of said active level establishing the optional sub-mode selected by said user in said main functional circuitry; and

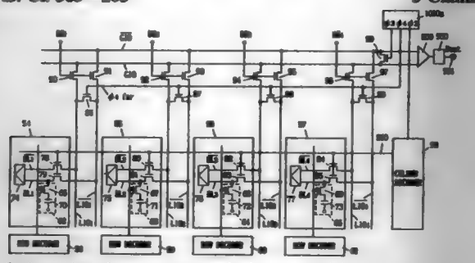
c) an answer system enabled in said diagnostic mode, and responsive to an inquiry signal from a diagnostic system for sequentially supplying said mode signals to said diagnostic system.

5,487,043

SEMICONDUCTOR MEMORY DEVICE HAVING EQUALIZATION SIGNAL GENERATING CIRCUIT

Kiyohiro Furutani; Tadaaki Yamauchi, and Makiko Aoki, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1994, Ser. No. 306,098
Claims priority, application Japan, Sep. 17, 1993, 5-231701
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—203 **5 Claims**



1. A semiconductor memory device, comprising:

first and second signal lines juxtaposed and extending respectively in a predetermined direction for receiving potentials corresponding to data from a memory cell;

a plurality of signal line pairs provided along said predetermined direction, each pair extending perpendicularly to said predetermined direction and consisting of a third signal line corresponding to said first signal line and a fourth signal line corresponding to said second signal line, in which the third and fourth signal lines are connected to corresponding first and second signal lines via connecting means for carrying out connection and disconnection in response to a connection signal;

amplifying means for receiving potentials on said first and second signal lines, and outputting read data which attains a first level when the potential on said first signal line is higher than that on said second signal line by at least a first predetermined voltage and which attains a second level when the potential on said first signal line is lower than that on said second signal line by at least a second predetermined voltage;

equalize signal generating means for receiving a write signal which attains a third level at the time of data reading and changes from said third level to a fourth level at the time of data writing and an address signal, and outputting a first equalize signal having two levels which changes from a fifth level to a sixth level in response to said write signal changing from said fourth level to said third level to hold the sixth level for a predetermined period and which attains said fifth level at the time of data reading, and a second equalize signal which changes from a seventh level to an eighth level in response to the change of said address signal when said write signal is at said third level, changes from said seventh level to said eighth level in response to the change of said address signal at the time of data writing, and changes from said eighth level to said seventh level in response to said write signal changing from said fourth level to said third level;

first signal line equalizing means provided corresponding respectively to said plurality of signal line pairs, each receiving said first equalize signal, for equalizing the potentials on said third and fourth signal lines when the first equalize signal is at said sixth level and stopping equalization when the first equalize signal is at said fifth level; and

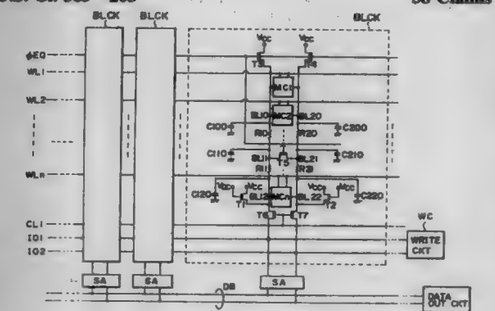
second signal line equalizing means connected to said first and second signal lines for receiving said second equalize signal for equalizing the potentials on said first and second signal lines when the second equalize signal is at said seventh level and stopping equalization when the second equalize signal is at said eighth level.

5,487,044

SEMICONDUCTOR MEMORY DEVICE HAVING BIT LINE EQUALIZING MEANS

Takayuki Kawaguchi, Yokohama; Shigeto Mizukami, Kawasaki; Yasumitsu Nozawa, and Kouji Nakao, both of Yokohama, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 34,417, Mar. 19, 1993, abandoned.
This application Jan. 17, 1995, Ser. No. 372,906
Claims priority, application Japan, Mar. 19, 1992, 4-063637
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—203 **38 Claims**



29. A semiconductor memory device, comprising:

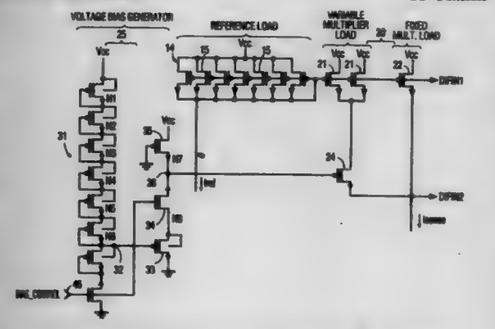
a plurality of memory cells arranged in a column direction for outputting complementary data of each of the memory cells via a pair of bit lines, wherein bit line equalizing means for equalizing the pair of bit lines, prior to a data read operation, is connected between the pair of bit lines at approximately a middle position of the plurality of the memory cells arranged in the column direction and equalizes the pair of bit lines at memory cells located on each. Side of the middle position.

5,487,045

SENSE AMPLIFIER HAVING VARIABLE SENSING LOAD FOR NON-VOLATILE MEMORY

Thomas J. Trodden, Albuquerque, N.M., assignor to Philips Electroics North America Corporation, New York, N.Y.

Filed Sep. 16, 1994, Ser. No. 308,047
Int. Cl.[6] G11C *29/00*
U.S. Cl. 365—205 **11 Claims**



1. A sensing device for a memory operating with a supply

voltage and comprising a plurality of memory cells each of whose ON and OFF states represents stored memory information and a reference cell which is maintained continuously in one of the ON and OFF states, said sensing circuit comprising:

(a) a reference circuit connected to the reference cell and representing a reference load capable of carrying a first reference load current,

(b) a sensing circuit connected to at least one of the memory cells and representing a sensing load for the memory cell, said sensing load being capable of carrying a second sensing load current, the ratio of said first reference load current to said second sensing load current being non-zero,

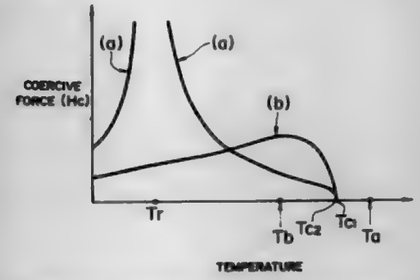
(c) means responsive to a value of the supply voltage for changing the ratio of said first reference load current to said second sensing load current.

5,487,046

MAGNETO-OPTICAL RECORDING MEDIUM HAVING TWO MAGNETIC LAYERS WITH THE SAME CURIE TEMPERATURE

Atsuyuki Watada, Kawasaki; Toshiki Tokita, Zama, and Motoharu Tanaka, Mishima, all of, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 890,631, May 28, 1992, Pat. No. 5,369,629. This application Jul. 28, 1994, Ser. No. 282,212
Claims priority, application Japan, May 31, 1991, 3-155434
Int. Cl.[6] G11B *13/04*
U.S. Cl. 369—13 **1 Claim**



1. A magneto-optical recording medium comprising

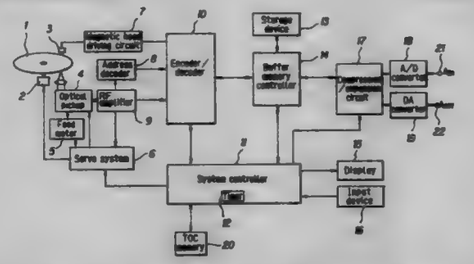
a substrate and at least two magnetic recording layers overlaid thereon, including a first magnetic recording layer and a second magnetic recording layer in view of the incident direction of a laser beam to be applied thereto for recording information and/or reproducing recorded information, each of said first and second magnetic recording layers comprising as the main component an amorphous alloy of a rare earth metal and an iron-family transition metal, and constituting a perpendicular magnetic layer, the Curie temperatures of said first magnetic recording layer and said second magnetic recording layer being substantially the same, said first magnetic recording layer being bonded to said second magnetic recording layer through exchange force, the compensation point of said first magnetic recording layer being near room temperature, the magnetic moment of said rare earth metal of said alloy in said second magnetic recording layer exceeding the magnetic moment of said iron-family transition metal of said alloy in said second magnetic recording layer, and the compensation point of said second magnetic recording layer being not present in the range between room temperature and the Curie temperature of said second magnetic recording layer.

5,487,047

MAGNETOOPTICAL RECORDING APPARATUS FOR RECORDING INFORMATION IN A LEAD-IN REGION OF A RECORDING MEDIUM

Nobuyuki Oka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 20, 1993, Ser. No. 50,536
Claims priority, application Japan, Apr. 24, 1992, 4-131884
Int. Cl.[6] G11B *17/22;7/00*
U.S. Cl. 369—32 **4 Claims**



1. A magnetooptical recording apparatus for recording data in a recording region of a magnetooptical recording medium and information representing contents of the recorded data in a lead-in region of the magnetooptical recording medium, said recording apparatus comprising:

a recording head for recording the data on the magnetooptical recording medium;

signal processing means for processing data supplied thereto and supplying the processed data to the recording head;

a timer for measuring a recording time in which the recording head records the data on the magnetooptical recording medium;

control means for controlling the recording head, wherein the control means interrupts a recording operation of the recording head for recording the data on the magnetooptical recording medium when the recording time measured by the timer coincides with a predetermined value, moves the recording head to the lead-in region of the magnetooptical recording medium, and causes the recording head to record information representing the contents of the data in the lead-in region of the magnetooptical recording medium;

first memory means for temporarily storing the data provided by the signal processing means, wherein the first memory means is controlled by the control means so that the data is read therefrom at a transmission rate higher than a transmission rate at which the data provided by the signal processing means is written therein; and

second memory means for storing the information representing the contents of the data recorded in the recording region of the magnetooptical recording medium.

5,487,048

MULTIPLEXING SENSE AMPLIFIER

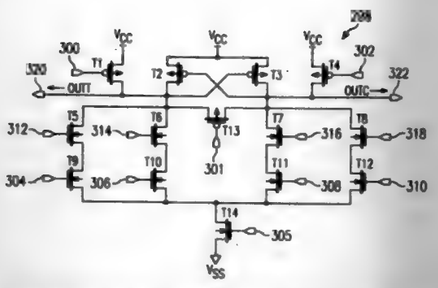
David C. McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Mar. 31, 1993, Ser. No. 41,321
Int. Cl.[6] G11C *7/06*
U.S. Cl. 365—207 **13 Claims**

1. A memory system comprising:

a memory array having at least first and second pairs of data lines corresponding to columns in the memory array; and

a multiplexing sense amplifier including a selection stage having input lines connected to the first and second pairs of data lines, the selection stage also having a true output line and a complement output line, wherein output signals generated in the output lines are controlled by a first and second set of transistors, wherein each transistor in the first set has a gate connected to one of the input lines and each transistor in the second set is connected in series with one of the transistors in



the first set and may be selectively turned on and turned off, wherein one of the two pairs of data lines may be selected by turning transistors on and off in the second set, wherein said multiplexing sense amplifier includes a common current source provided by a control transistor having a first source/drain connected to a power supply voltage and a second source/drain connected to the first and second sets of transistors by a common node, wherein the multiplexing sense amplifier may be enabled and disabled by turning the control transistor on and off, and wherein the selection stage further includes a p-channel cross-coupled amplifier.

5,487,049

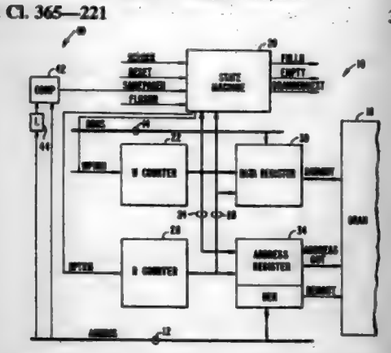
PAGE-IN, BURST-OUT FIFO

Chia-Lun Hang, San Jose, Calif., assignor to Samsung Semiconductor, Inc., San Jose, Calif.

Filed Nov. 23, 1994, Ser. No. 344,758

Int. Cl.[6] G11C *7/00;8/00*

U.S. Cl. 365—221 **3 Claims**



1. A FIFO system for interfacing a system bus, including an address bus and a data bus, to a DRAM, with the DRAM operating in a normal access mode and a page mode, with data transferred at a higher page mode rate in the page mode, and with each storage location in the DRAM specified by a row address and a column address, said system comprising:

a data register having an input coupled to said data bus and an output coupled to a data input of the DRAM;

an address register, having an input coupled to said address bus and an output coupled to an address input of the DRAM;

a write control unit, coupled to said data and address registers, for writing page data having a first row address into said data register and writing column addresses of said page data into said address register; and

a read control unit, coupled to said data and address registers, for initiating a read operation to provide said page data to the data input of said DRAM and said column addresses to the address input of said DRAM at the page mode rate when the number of page data stored in said data register exceeds a predetermined number; and

a page change detection unit, coupled to said address bus and said read control unit, for initiating a read operation when a second row address transmitted on said address bus is different from the first row address of the page data stored in said data register.

5,487,050

DECODING CIRCUIT AND METHOD FOR A SEMICONDUCTOR MEMORY DEVICE

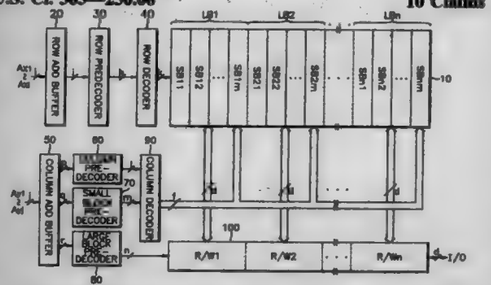
Kyeong-Rae Kim, Suwon; Seung-Kweon Yang, Seoul; Hee-Choul Park, Suwon, and Du-Eung Kim, Yongin, all of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 18, 1994, Ser. No. 229,082

Claims priority, application Rep. of Korea, Apr. 16, 1993, 6413/1993

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.06 **10 Claims**



1. A decoding circuit for semiconductor memory device having a memory cell array including a plurality of large blocks, each large block comprising of m small blocks (wherein m=2,3, . . .) including a plurality of memory cells being arranged in a matrix form, said circuit comprising:

a column decoder for selecting said small blocks and a bit line therein;

a small block predecoder for receiving a small block selection address to select said small blocks and for outputting said small block selection address to said column decoder;

a column predecoder for outputting a column selection address signal to said column decoder to select a predetermined column in said small blocks;

a reading/writing circuit for selecting said large blocks and for designating a data input/output path; and

a large block predecoder for receiving a large block selection signal and, after decoding said large block selection signal, for outputting the decoded signal to only said reading/writing circuit.

5,487,051

IMAGE PROCESSOR MEMORY FOR EXPEDITING MEMORY OPERATIONS

John R. Providenza, Beaverton, and Lee Boekelheide, Tigard, both of Oreg., assignors to Network Computing Devices, Inc., Mountain View, Calif.

Division of Ser. No. 77,705, Jun. 14, 1993, Pat. No. 5,345,555, Continuation of Ser. No. 617,359, Nov. 23, 1990. This application Mar. 18, 1994, Ser. No. 210,355

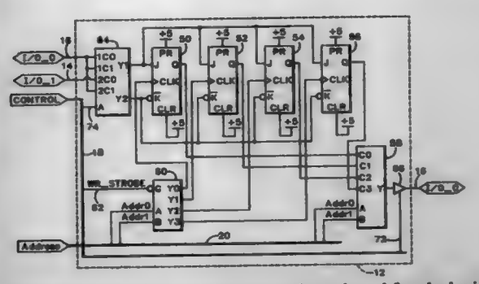
Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—233 **13 Claims**

1. An electronic data storage system for effecting a selected algebraic operation between previously stored data and source data, and for storing the result in place of the previously stored data, wherein the result is predictable independently of accessing the value of the previously stored data, said system comprising:

a memory cell array for storing binary data, a memory cell thereof including memory cell modification means for performing logic operations within a said cell,

data storage selection means for accessing a cell in said array,



data input means for receiving source data adapted for algebraic combination with the previously stored data in said cell, and control input means responsive to the selected algebraic operation for controlling said memory cell modification means to perform a said logic operation in the accessed memory cell to selectively change the previously stored value in said memory cell in accordance with the data input and the algebraic operation.

5,487,052

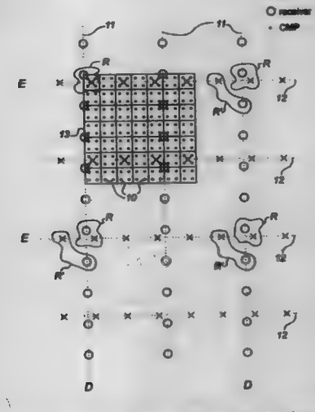
THREE DIMENSIONAL SEISMIC DATA ACQUISTION USING A REPEATING OFFSET ARRANGEMENT OF SOURCE AND RECEIVER LINES

Andreas Cordsen, Calgary, Canada, assignor to Geophysical Exploration & Development Corporation, Calgary, Canada

Continuation-in-part of Ser. No. 134,173, Oct. 8, 1993, Pat. No. 5,402,391. This application Aug. 18, 1994, Ser. No. 292,403

Int. Cl.[6] G01V *1/20*

U.S. Cl. 367—56 **4 Claims**



1. An improved method of three-dimensional seismic acquisition with respect to sub-surface acoustic impedance boundaries in the earth, comprising:

(a) providing a plurality of equally spaced seismic energy sources in a linear array to form a source line;

(b) providing a plurality of equally spaced seismic energy receivers in a linear array to form a receiver line;

(c) repeating steps (a) and (b) to form a patch having the source lines substantially equally spaced and parallel and the receiver lines also substantially equally spaced and parallel with the source lines intersecting the receiver lines in a rectangular grid pattern, said pattern having a ratio of the spacing between receiver lines and the spacing between sources which yields a remainder greater than zero and a ratio of the spacing between source lines and the spacing between receivers which also yields a remainder greater than zero, said source line, receiver line, receiver and source spacings being selected so that sources and receivers are relatively offset and so that the relative offset between a source and a receiver is only substantially repeated at every second to tenth intersection of the source and receiver lines; and

(d) initiating seismic disturbances from the sources and reflecting seismic energy from sub-surface acoustic impedance boundaries and receiving said seismic reflections at the receivers.

5,487,053

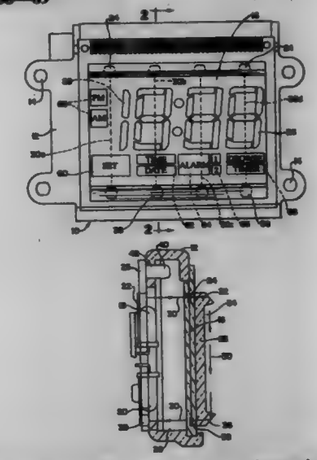
DIGITAL CLOCK

John L. Beiswenger, Strasburg, Pa., and Robert I. Schwimmer, Glendoe, Ill., assignors to Technomarket, L.P., Chicago, Ill.

Division of Ser. No. 98,464, Jul. 28, 1993, Pat. No. 5,381,388. This application Jul. 25, 1994, Ser. No. 179,524

Int. Cl.[6] G04C *17/00;19/00;* G09G *5/00*

U.S. Cl. 368—69 **20 Claims**



1. A digital clock which comprises an electronic timekeeping circuit, an electronic digital display connected to said timekeeping circuit to display time as controlled by said circuit, and an electronic control to cause changing of individual numerals displayed by said display in a plurality of locations by manually pointing at said individual numerals, said electronic control comprising a transparent touch-sensitive detector positioned in front of said digital display to permit the electronic control to determine touch location.

5,487,054

METHOD AND APPARATUS FOR SETTING A CLOCK IN A COMPUTER SYSTEM

Stephen P. Capps, San Carlos, and Martin R. Gaanholm, Belmont, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

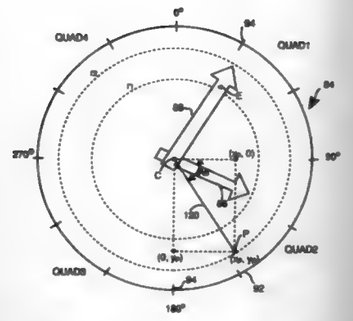
Filed Jan. 5, 1993, Ser. No. 1,111

Int. Cl.[6] G04B *18/00*

U.S. Cl. 368—185 **7 Claims**

1. A method for setting a clock in a computer system comprising:

displaying an analog clock face on a screen of a computer system the clock face having an origin at a center location thereof, wherein said analog clock face displays an hour hand extending radially outwardly from said origin, said hour hand corresponding to a current hour parameter of a real-time clock, and further displays a minute hand extending radially outwardly from said origin, said minute hand corresponding to the current minute parameter of said real-time clock, said hour hand and said minute hand being different in length;



making a stroke on said screen using a pointer means by contacting the pointer means with at least a portion of said clock face;

determining whether the distance from the clock origin to a selected point in said stroke is closer to the length of said hour hand or length of said minute hand; and

moving one of said hour hand and said minute hand to indicate a new hand position indicative of a new clock time, wherein the determination of which hand is to be moved is based at least in part upon whether the distance to the selected point of said stroke is closer to the length of the hour hand or the length of the minute hand; and

resetting said real-time clock to correspond to said new clock time.

5,487,055

INFORMATION RECORDER WITH TRACKING AND SEEKING OPERATIONS USING LOW FREQUENCY TRACKING AND LENS POSITION SIGNALS

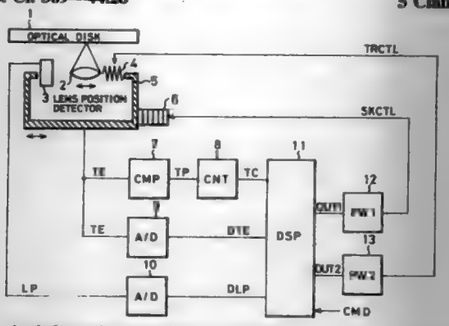
Haruyuki Suzuki, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 14, 1994, Ser. No. 196,298

Claims priority, application Japan, Feb. 19, 1993, 5-030675

Int. Cl.[6] G11B *7/085*

U.S. Cl. 369—44.28 **5 Claims**



1. An information recorder comprising:

light spot displacing means for displacing a light spot irradiated onto a rotating disk-shaped recording medium in a direction crossing a track on the recording medium;

tracking error detecting means for detecting a deviation in relative position between the light spot and a track to be followed up and outputting a tracking error signal;

speed detecting means for detecting a track crossing speed of the light spot;

target speed generating means for generating a target speed of the light spot;

phase compensating means for receiving the tracking error signal from the tracking error detecting means and advancing a phase of the tracking error signal;

extracting means for receiving the tracking error signal from the tracking error detecting means and extracting a low frequency region component of the tracking error signal;

subtracting means for obtaining a difference in speed between the track crossing speed and the target speed;

first adding means for adding the low frequency region component extracted by the extracting means to the phase advanced component obtained by the phase compensating means;

second adding means for adding the low frequency region component extracted by the extracting means to the difference in speed obtained by the subtracting means; and

driving means for operating the light spot displacing means so as to make the light spot follow up an arbitrary track on the recording medium in accordance with an output of the first adding means in a track following mode and to make the light spot cross the track in accordance with an output of the second adding means in a seek mode.

5,487,056

OPTICAL RECORDING MEDIUM AND RECORDING AND/OR REPRODUCING APPARATUS USING SUCH OPTICAL RECORDING MEDIUM

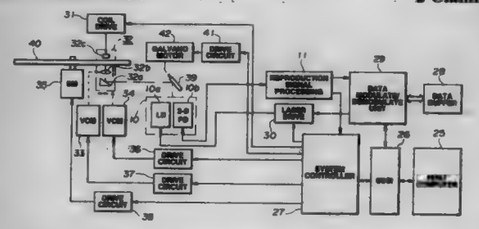
Shigeaki Wachi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 189,543, Jan. 26, 1994. This application Apr. 4, 1995, Ser. No. 416,141

Claims priority, application Japan, Jan. 29, 1993, 5-034461; Jun. 30, 1993, 5-186699

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—44.34 **2 Claims**



1. A recording/reproducing apparatus for carrying out recording or reproduction by using an optical recording medium on which a data recording area, where pairs of guide grooves are formed on both sides of tracks for recording a data signal, and a predetermined area, where no guide groove is formed and grooves are formed at the track center positions, are caused to have the same length and are arranged one after another in a track direction, with one end side of the groove in the predetermined area overlapping with the data recording area, and wherein an area including no groove is formed at the boundary between the other end side of the groove in the predetermined area and a next data recording area, the apparatus comprising;

bisected photo detecting means for detecting a return light of a laser beam irradiated onto the optical recording medium;

difference signal output means for taking a difference between output signals from the bisected photo detecting means to generate a tracking error signal;

inverting means for inverting the polarity of the tracking error signal from the difference output means; and

signal switching means for carrying out switching between the tracking error signal from the difference signal output means and the inverted tracking error signal from the inverting means at each boundary between the data recording area and the predetermined area;

determining means for determining the boundary between the data recording area and the predetermined area by detecting a start position and an end position of the predetermined area in an area where one end side of the groove of the predetermined area overlaps with the data recording area and an area where no groove is formed on the other end side of the groove to switch between the tracking error signal and the inverted tracking signal in accordance with the detected start position and the detected end position.

5,487,057

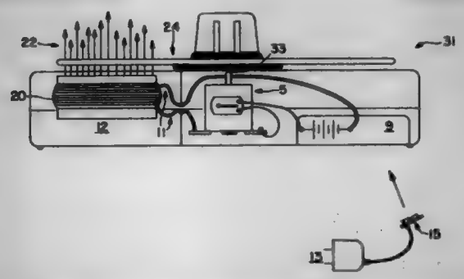
APPARATUS AND METHOD FOR REDUCING ELECTRONIC RELAXATION NOISE PRESENT INFORMATION RECORDING MEDIUM

John C. Bedini, Coeur d'Alene, Id., assignor to Bedini Electronics, Inc., Coeur d'Alene, Id.

Continuation-in-part of Ser. No. 15,897, Feb. 10, 1993, abandoned, and a continuation of Ser. No. 897,892, Jun. 12, 1992, abandoned, which is a continuation of Ser. No. 521,690, May 8, 1990, abandoned. This application Jun. 22, 1994, Ser. No. 264,074

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—107 **19 Claims**



14. A method for reducing relaxation noise in an information recording medium comprising rotating said information recording medium through a non-visible modulated electromagnetic field.

5,487,058

OPTICAL PICK-UP SYSTEM WITH IMPROVED LIGHT-CONVERGENCE CONSTRUCTION

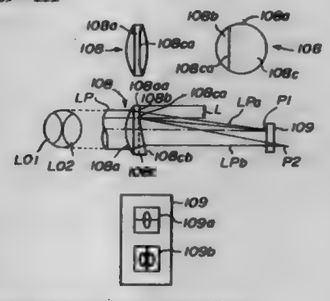
Junichi Kitabayashi, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 2, 1994, Ser. No. 191,321

Claims priority, application Japan, Feb. 9, 1993, 5-021177; May 6, 1993, 5-127783; May 20, 1993, 5-139839

Int. Cl.[6] G11B *7/135*

U.S. Cl. 369—112 **24 Claims**



1. An optical pick-up system comprising:

a light source for emitting light;

an objective lens for causing light emitted from said light source to converge onto an optical recording medium;

a beam splitter for separating light, reflected from said optical recording medium, from the bundle of rays emitted from said light source;

a detective lens for causing said light, reflected from said optical recording medium and then separated by means of said beam splitter, to converge; and

a detective photosensitive element disposed at a position at which the light converged by means of said detective lens approximately converges;

and wherein:

said detective lens has first and second surfaces, said second surface of said detective lens being behind said first surface;

said first surface faces said beam splitter and is formed to be convex so as to cause the bundle of rays to converge; and

said second surface comprises two component surfaces which are combined with one another so that the line of intersection, formed where said two component surfaces meet, does not intersect the axis associated with the convexity of said first surface.

5,487,059

HEAT SHUT OFF CONDITION DETERMINATION METHOD AND APPARATUS FOR OPTICAL RECORDING, AND OPTICAL RECORDING METHOD AND APPARATUS

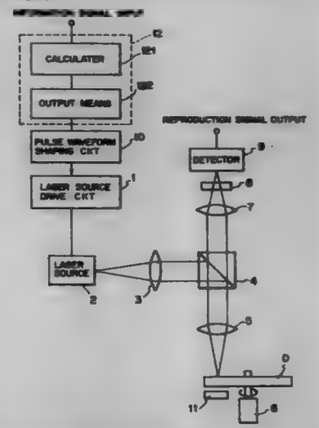
Jun Saito, Tokyo, and Shinichi Kurita, Yokohama, both of, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Oct. 19, 1993, Ser. No. 137,967

Claims priority, application Japan, Jan. 20, 1992, 4-281723

Int. Cl.[6] G11B *11/12;13/04*

U.S. Cl. 369—116 **12 Claims**



4. An optical recording apparatus comprising:

a laser source for emitting a laser beam;

radiation means for radiating the laser beam onto an optical recording medium;

moving means for changing a radiation position of the laser beam on said medium;

modulation means operative in a recording mode for raising an intensity of the laser beam to be radiated onto said medium from an intensity P_{pre} for maintaining a pre-heat state, in which the temperature of the medium surface becomes a predetermined temperature Θ_{pre}, to an intensity P_{W1} higher than P_{pre} so as to form a mark, reducing the intensity to an intensity P_{LB} lower than P_{pre} after the intensity P_{W1} is maintained for a time T_{W1}, and raising the intensity to P_{pre} after an elapse of a time T_{off} preparatory to forming a next mark; and

condition determination means for determining the respective values as a combination for satisfying the following formula:

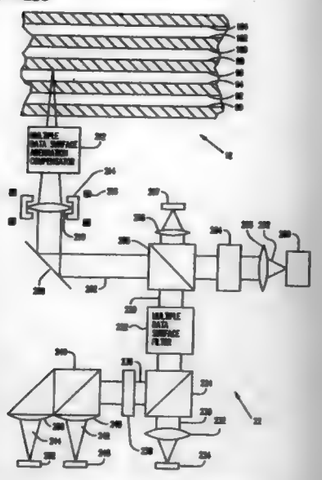
$$T_{off} \approx \tau \times \ln [\{(P_{W1} - P_{LB}) - (P_{W1} - P_{pre}) \times \exp(-T_{W1}/\tau)\} \div (P_{pre} - P_{LB})]$$

where τ is a thermal time constant of said optical recording medium.

5,487,060
MULTIPLE DATA SURFACE DATA STORAGE SYSTEM AND METHOD

Hal J. Rosen, Los Gatos; Kurt A. Rubin, Santa Clara, and Timothy C. Strand, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 710,227, Jun. 4, 1991, abandoned.
This application Dec. 6, 1993, Ser. No. 168,116
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—118 16 Claims



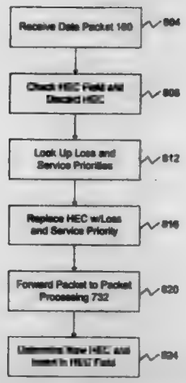
4. An optical data storage system comprising:
a laser;
an optical medium having a plurality of data surfaces separated by light transmissive elements;
an optical transmission device, including an adjustable focus device, for focusing a light beam from the laser to one of the data surfaces of the medium;
a control device connected to the focus device for controlling the focus device to focus the light beam to one of the data surfaces; and
an optical reception device for receiving the light beam after it is reflected from the optical medium and providing a data signal responsive thereto, the optical reception device having a collimation device for collimating the light beam reflected from the data surface to which the light beam was focussed, and passing as noncollimated light the light that was reflected from the other data surfaces, and a filter for passing said collimated reflected light and rejecting said noncollimated light, wherein the filter comprises a focus lens for focusing said collimated light to a focal spot, a first light blocking member located in a plane of said focal spot and having an aperture at said focal spot, a second light blocking member located between the focus lens and the first blocking member, the second blocking member having an annular shaped aperture for allowing light to pass, and a collimating lens for collimating the light passing through said aperture of the first blocking member.

5,487,061
SYSTEM AND METHOD FOR PROVIDING MULTIPLE LOSS AND SERVICE PRIORITIES

Thomas A. Bray, Sarasota, Fla., assignor to Loral Fairchild Corporation, Syosset, N.Y.

Filed Jun. 27, 1994, Ser. No. 265,969
Int. Cl.[6] H04J 3/14
U.S. Cl. 370—13 21 Claims

21. A system for implementing service class features in a packet switch, comprising:

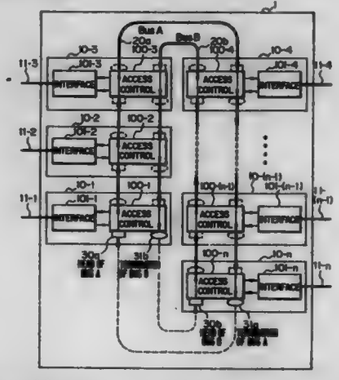


(a) means for determining service class parameters based on information contained in a header of a received packet; and
(b) means for inserting said service class parameters in a temporarily unused error code field in said header of said received packet header before said received packet is sent through a switch fabric.

5,487,062
LOOPED BUS SYSTEM FOR CONNECTING PLURAL NODES OR PLURAL CIRCUIT CARDS

Junichirou Yanagi, Kodaira; Akihiko Takase, Tokyo, and Setsuo Takahashi, Yokohama, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 19, 1994, Ser. No. 230,152
Claims priority, application Japan, Apr. 19, 1993, 5-091065
Int. Cl.[6] H04L 12/437
U.S. Cl. 370—16.1 8 Claims

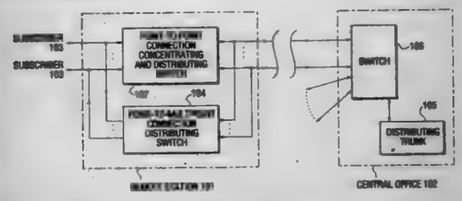


1. A looped bus system comprising a plurality of node means; and first and second buses connecting the plurality of node means in a loop and having opposite directions of signal transmission, wherein each of the node means includes a head of bus function and a termination of bus function for each of the first and second buses such that said system is operable under normal and failure conditions in such a manner that:
the head of bus function for the first bus and the termination of bus function for the second bus are activated in one of the node means;
the termination of bus function for the first bus and the head of bus function for the second bus are activated in another one of the node means, and
the head of bus function and the termination of bus function are inactive in the other node means.

5,487,063
POINT-TO-MULTIPOINT CONNECTION SYSTEM

Satoshi Kakuma; Shiro Uriu; Shuji Yoshimura; Yasuhiro Aso, and Masami Murayama, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 848,933, Mar. 10, 1992, abandoned.
This application Feb. 14, 1994, Ser. No. 194,805
Claims priority, application Japan, Mar. 19, 1991, 3-055018
Int. Cl.[6] H04L 12/18;12/56; H04M 7/00
U.S. Cl. 370—56 5 Claims



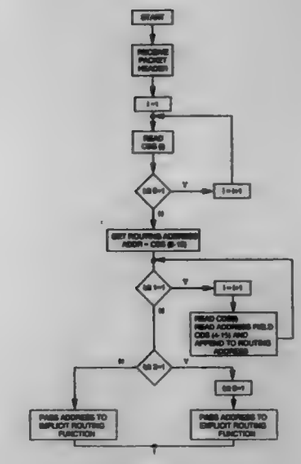
1. A point-to-multipoint connection system using a broadband ISDN switching system to be operated in an asynchronous transfer mode, said connection system having one or more configurations in which a plurality of remote stations for concentrating and distributing data from and to subscribers are accommodated from a central office, said connection system comprising:
point-to-point connection concentrating and distributing switch means, in each of said remote stations, for receiving ATM cells and for concentrating, switching and distributing to a subscriber accommodated in each remote station a first cell having an attribute of a point-to-point broadband asynchronous transfer mode connection among the received ATM cells and which is distributed from the central office, and
point-to-multipoint connection distributing switch means, provided in parallel with said point-to-point connection concentrating and distributing switch means in each of said remote stations, for receiving the ATM cells and for switching and distributing to one or more subscribers accommodated in each remote station a second cell which has an attribute of a point-to-multipoint connection among the received ATM cells and which is distributed from the central office.

5,487,064
NETWORK LAYER PACKET STRUCTURE

Claude Galand, Cagnes sur Mer, and Gerald Lebizay, Vence, both of, France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1994, Ser. No. 251,073
Claims priority, application European Pat. Off., Jun. 3, 1993, 93480068
Int. Cl.[6] H04L 12/56
U.S. Cl. 370—60 4 Claims

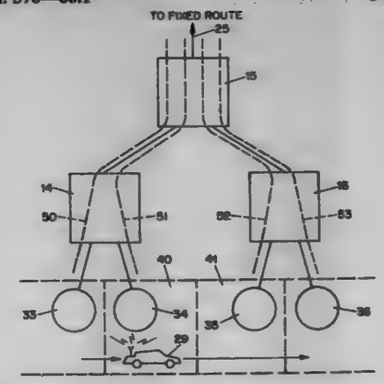
1. For use in a fast packet switching network used for transporting digital data packets, each packet having a header structure which includes a plurality of command and data segments, each with a disable indicator and one or more control bits, said network having a plurality of switching nodes interconnected by transmission links, a method of processing packets, said method being implemented at one or more of the switching nodes and including the steps of:
receiving packets from other switching nodes over the transmission links;
detecting the state of the disable indicator in each of the command and data segments in the header structure of each received packet;
passing over any command and data segment having a disable indicator having a predetermined first value; and
performing predetermined operations on the packet in accordance with the control bits found in the first command and data segment encountered having a disable indicator having a predetermined second value.



5,487,065
METHOD AND APPARATUS FOR SUPPORTING MOBILE COMMUNICATIONS IN ASYNCHRONOUS TRANSFER MODE BASED NETWORKS

Anthony S. Acampora, Freehold, N.J., and Mahmoud Naghshineh, Fishkill, N.Y., assignors to The Trustees of Columbia University in the City of New York, N.Y.

Continuation-in-part of Ser. No. 67,717, May 26, 1993. This application Mar. 4, 1994, Ser. No. 206,443
Int. Cl.[6] H04L 12/56;12/66; H04B 7/26
U.S. Cl. 370—60.1 5 Claims



1. A mobile-communications connection-and-routing method comprising the steps of:
detecting an attempted mobile communication in the vicinity of a first base station in a network comprising a plurality of switches, communication links and base stations, each base station corresponding to a geographical cell;
setting up a connection tree within the network, the connection tree comprising a plurality of communication routes, each route extending from a first switch within the network through at least one other switch and at least two communication links to a base station, each base station situated within a predetermined distance of the first base station, so that a route is defined from each of the base stations within the predetermined distance to the first switch;
setting up a fixed route within the network which extends from the first switch to a location within the network and outside of the connection tree;
providing the first switch with first routing information from the first switch to the connection tree and with second routing information from the first switch to the location within the network and outside of the connection tree;

admitting the communication to the connection tree; and

routing the communication through a first route between the first base station and the first switch, the first route being one of the plurality of communication routes within the connection tree, and between the first switch and the location outside of the connection tree through the fixed route, whereby the mobile user can communicate back and forth along a complete communication route with the location outside of the connection tree;

further comprising, at the first switch and upon a communication from the connection tree to the location within the network and outside of the connection tree, the steps of:

storing a virtual channel identifier,

identifying a current base station,

determining whether the identified current base station differs from a previously identified base station, and, in case of difference,

replacing the first routing information with new first routing information from the first switch to the connection tree.

5,487,066

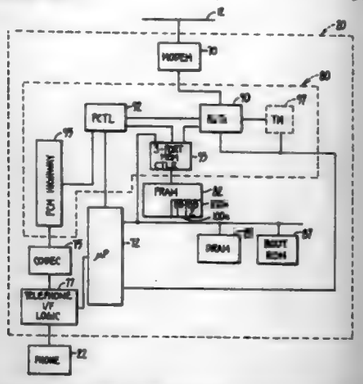
DISTRIBUTED INTELLIGENCE NETWORK USING TIME AND FREQUENCY MULTIPLEXING

Robert P. McNamara, San Jose; Alan Suldinger, Cupertino; Robert J. Cringle, Mountain View; Gigi C. Chu, Santa Clara; Shanubhog G. Sangameswara, Cupertino; Peterpaul Vita, Saratoga; Michael M. Ouye, Mountain View; David R. F. Stevens, Los Altos; Celeste Baranski, Palo Alto; Cai U. Monsson, Capitola; Timothy P. Murphy, Mountain View; Kevin T. Murphy, Los Altos; Gary M. Ellis, San Jose, and Ranjit Ghate, Oakland, all of Calif., assignors to First Pacific Networks, Inc., San Jose, Calif.

Continuation of Ser. No. 345,490, Apr. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 170,968, Mar. 21, 1988, abandoned. This application Jan. 21, 1994, Ser. No. 185,673

Int. Cl.[6] H04J *3/26*; **H04L** *12/26*

U.S. Cl. 370—85.2 **37 Claims**



1. A method for transmitting boot images to a number of nodes in a network, comprising:

the step, performed continuously, of generating a periodic timing mark to define a series of cycles wherein (i) at least one interval within each cycle is designated a signalling packet ("SP") interval, and (ii) a plurality of other intervals within each cycle are designated timeslots;

the step, performed by a network boot unit ("NBU"), of transmitting a boot control signalling packet ("BCSP") in a given SP interval, wherein the BCSP (i) contains boot control information signifying that a boot image is to be transmitted, (ii) specifies at least one timeslot in which the boot image is to be transmitted in later cycles, and (iii) contains image descriptor information identifying the boot image; and

the steps, performed by the NBU, of transmitting boot packets, each containing a portion of the identified boot image, within the specified timeslot or timeslots for each of a number of cycles subsequent to the frame in which the BCSP was transmitted.

5,487,067

AUDIO DATA COMMUNICATIONS

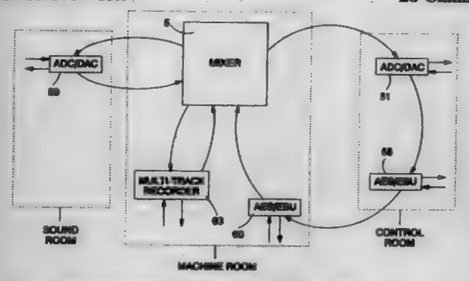
Takashi Matsushige, Stanton Harcourt, England, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 1, 1994, Ser. No. 189,783

Claims priority, application United Kingdom, Apr. 1, 1993, 9306879

Int. Cl.[6] H04L *12/423*

U.S. Cl. 370—85.7 **26 Claims**



1. Data communications apparatus comprising:

a master device for processing digital audio data; and

a plurality of slave devices connected in a ring network with the master device, each slave device having a plurality of data channels associated therewith and being arranged to supply audio data from the ring network to the data channels associated with the slave device and/or to supply audio data to the ring network from the data channels associated with the slave device;

wherein the master and slave devices are arranged for serial communication via the ring network of frames of digital audio data, each frame comprising a plurality of data blocks which contain audio sample data corresponding to respective audio signals; and

wherein the master and slave devices are further arranged for communication via the ring network of set-up data comprising set-up commands transmitted by the master device to the slave devices and set-up responses transmitted by the slave devices to the master device, whereby the master device determines the arrangement of slave devices around the ring network and the number of data channels associated with each slave device, and, in dependence upon the arrangement and the number of data channels, allocates to a slave device, which is arranged to supply audio data from the network to the data channels associated with the slave device, a sequence of data blocks within each frame of the digital audio data format in which audio data will be transmitted to that slave device.

5,487,068

METHOD FOR PROVIDING ERROR CORRECTION USING SELECTIVE AUTOMATIC REPEAT REQUESTS IN A PACKET-SWITCHED COMMUNICATION SYSTEM

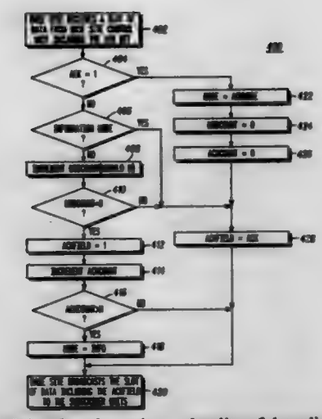
Jeffrey C. Smolinske, Hoffman Estates; Phieu M. Tran, Lincolnwood; Christopher L. Clanton, Chicago, and Robert C. Scheibel, Jr., Schaumburg, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 29, 1994, Ser. No. 283,085

Int. Cl.[6] H04L *1/16*

U.S. Cl. 370—94.1 **4 Claims**

1. A method for providing a contention-free access uplink channel for a subscriber unit for transmission of predetermined types of messages in a slotted communication system, comprising the steps of:



A) transmitting, by a base site, a plurality of downlink packets to a first subscriber unit, wherein a packet includes segments;

B) utilizing, by the base site, subscriber unit control information to reserve a next time slot for automatic repeat request information from the first subscriber unit;

C) transmitting, by the first subscriber unit, using the reserved time slot, information on the success/failure of received segments of a first packet of the plurality of packets;

D) temporarily interrupting, by the base site, a packet currently being transmitted to retransmit segments of the first packet that have an error/errors; and

E) recycling to step B until the entire first packet is successfully transmitted.

5,487,069

WIRELESS LAN

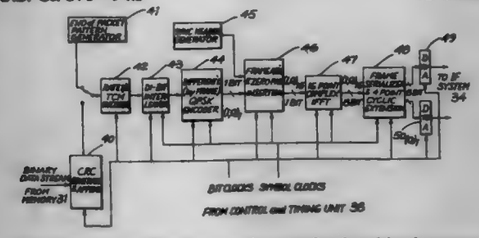
John D. O'Sullivan, Ermington; Graham R. Daniels, Willoughby; Terence M. P. Percival, Lane Cove; Diethelm I. Ostry, Petersham, and John F. Deane, Eastwood, all of, Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Australia

Division of Ser. No. 12,432, Feb. 20, 1993. This application Nov. 23, 1993, Ser. No. 157,375

Claims priority, application Australia, Nov. 27, 1992, PL6069

Int. Cl.[6] H04B *7/01*

U.S. Cl. 370—94.3 **72 Claims**



49. A transmitter for operation in a confined multipath transmission environment, said transmitter comprising antenna means coupled to transmission signal processing means in turn coupled to an input data channel, said transmitter being operable to transmit data at radio frequencies in excess of 10 GHz, and said transmission signal processing means comprising modulation means for modulating input data of said input data channel into a plurality of sub-channels comprised of a sequence of data symbols such that the period of a sub-channel symbol is longer than a predetermined period representative of the time delay of significant ones of non-direct transmission paths.

5,487,070

APPARATUS FOR REPRODUCING RECEIVED DATA

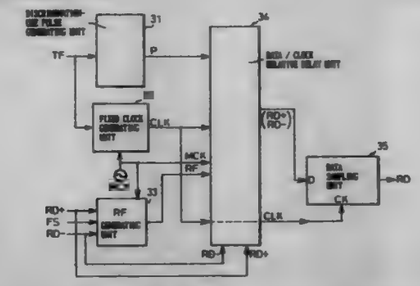
Yukio Furukawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 30, 1993, Ser. No. 84,021

Claims priority, application Japan, Jul. 2, 1992, 4-175464

Int. Cl.[6] H04J *3/06*

U.S. Cl. 370—108 **11 Claims**



1. An apparatus for reproducing received data which received transmitted signals from a plurality of slave stations at a master station connected to the plurality of slave stations by a bus mode and samples the received data signals by clock signals to obtain the reproduced received data, comprising:

a single fixed clock generating unit for generating the clock signals,

a data sampling unit which receives as input the above received data signals, and samples said data signals at intervals defined by said single fixed clock generating unit, and outputs the reproduced received data, and

a relative delay unit coupled to the data sampling unit and causing a relative delay between a phase of said received data signals and a phase of said clock signals.

5,487,071

RADIO LINK FAILURE

Ingrid V. Nordstrand, Sundbyberg, and Stig R. Bodin, Spånga, both of, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

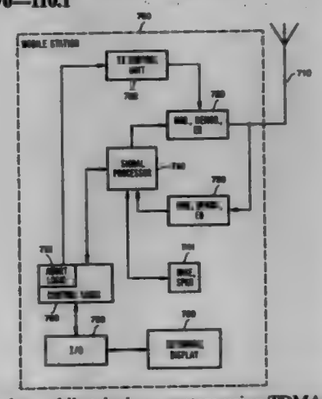
PCT No. PCT/SE93/00085, § 371 Date Oct. 5, 1993, § 102(e) Date Oct. 5, 1993, PCT Pub. No. WO93/16562, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 3, 1993, Ser. No. 129,095

Claims priority, application Sweden, Feb. 5, 1992, 9200336

Int. Cl.[6] H04J *3/14*

U.S. Cl. 370—110.1 **1 Claim**



1. A cellular mobile telephone system using TDMA-type signalling structured in layers described by an OSI model, comprising

a plurality of mobile radio units which are connected with

a communication network via radio channels, the communication network including radio base stations,

wherein signalling between the mobile radio units and the network is effected on a data link layer with at least one first signal flow responsible for maintaining a physical connection, and a second signal flow responsible tier transmitting data which is not concerned with maintaining said physical connection, and

wherein at least one of the mobile radio units and the communication network include means for aborting the physical connection, and means for monitoring correct transmission of the first and second signal flows,

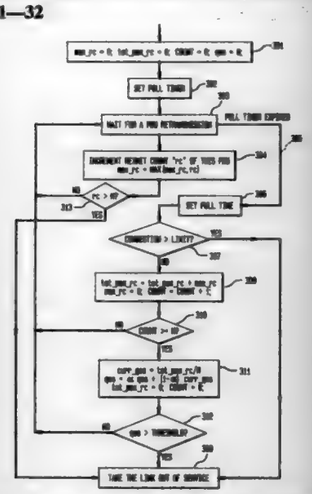
wherein the aborting means are activated when the monitoring means indicate a broken connection based on the first signal flow and the aborting means are not activated when the monitoring means indicate a broken connection based on the second signal flow.

5,487,072

ERROR MONITORING ALGORITHM FOR BROADBAND SIGNALING

Krishna Kant, Township of Marlboro, Monmouth County, N.J., assignor to Bell Communications Research Inc., Morristown, N.J.

Filed Jun. 30, 1994, Ser. No. 269,267
Int. Cl.[6] G06F *11/00*; G08C *25/02*; H04L *1/18*
U.S. Cl. 371—32 **14 Claims**



1. A method of error monitoring a communications link on which messages are transmitted between a transmitter and a receiver, which transmitter retransmits only those messages either received in error or not received by the receiver, and which transmitter stores each message until it is correctly received by the receiver together with a retransmission count of the number of times each message is retransmitted, said method comprising the steps of:

1) in a fixed interval, determining the maximum retransmission count for each message stored in the transmitter;

2) for a block comprising a plurality (N) of successive fixed intervals, computing the average of the maximum retransmission counts for those messages stored in the transmitter during those successive fixed intervals to determine a quality of service factor, said quality of service factor being determined after every current fixed interval based on the average Of the maximum retransmission coupes of a block that ends with the current fixed interval;

3) comparing said quality of service factor with a predetermined threshold; and

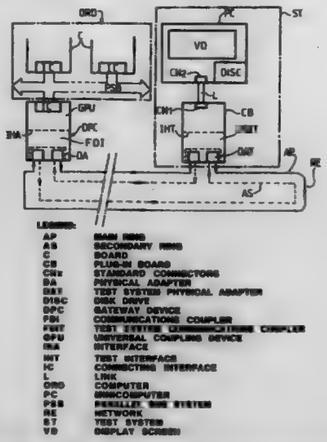
4) removing the link from service if the quality of service factor of the block is greater than the predetermined threshold.

5,487,073

TEST SYSTEM FOR A VERY HIGH-SPEED RING NETWORK AND AN OPERATING PROCEDURE FOR THE SYSTEM

Pascal Urien, Villepreux, France, assignor to Bull S.A., Paris, France

Filed Oct. 5, 1992, Ser. No. 956,631
Claims priority, application France, Jan. 8, 1991, 91 12372
Int. Cl.[6] H04Q *3/00*; H04J *3/14*
U.S. Cl. 371—20.6 **5 Claims**



1. A test system (ST) for a high-speed ring network (RE), the test system comprising:

a data processing unit (PC) equipped with a data display device (VD) connected through a link (L) to a communications coupler (FDIT) connected to the network, transferring data frames thereon the communications coupler comprising:

a transfer management controller (CGT) including a microprocessor (MP) and a set of slave elements (SERV) with a set of function tests, the transfer management controller being associated with a control bus (BC) to which the microprocessor (MP), the set of slave elements (SERV), and an interface (IHAC) are connected;

a network access controller (CAR) in turn coupled both to a device (DA) for physical access to the network and to the control bus (BC);

a high-speed bus (BHD) coupled to the interface and to the network access controller (CAR); and

a storage memory (MST) coupled respectively to high-speed bus (BHD) and to the network access controller (CAR) through a command line (LC),

the control bus carrying control blocks including control characters that relate to the constitution of the frames, and information relating to the nature of the operations to be performed on each frame by the communications coupler,

the high-speed bus carrying the useful data from the frames corresponding to control blocks carried on the control bus, and

the management controller being for reading the control blocks and interpreting them to form the control characters that frame the useful data of the frames to be sent on the network, and for forming control blocks to be sent to the data processing unit, beginning with the control characters framing the useful data of a frame coming from network (RE);

a network test program (LOGT) running on the data processing unit; and

a set (ETF) of function tests implemented in communications coupler (FDIT) for stimulating the transfer of test frames on the network,

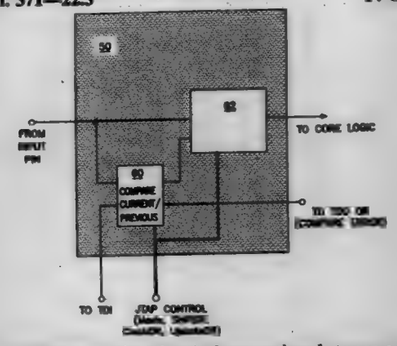
the test program (LOGT) both controlling the communications coupler by sending it commands that allow running the set of tests, and also the test program controlling the communications coupler by displaying data on the status of the network, such as data received by the coupler and sent by the coupler to the processing unit.

5,487,074

BOUNDARY SCAN TESTING USING CLOCKED SIGNAL

Patrick Sullivan, Chippewa Falls, Wis., assignor to Cray Research, Inc., Eagan, Minn.

Filed Mar. 20, 1995, Ser. No. 406,571
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—22.3 **14 Claims**



1. Apparatus for testing electrical connections between a plurality of integrated circuits each integrated circuit comprising

an integrated circuit chip;

a plurality of electrical input and output connectors attached to the integrated circuit chip;

a boundary scan cell connected to each of the plurality of input and output connectors; and

boundary scan cell control logic located on the integrated circuit chip of each integrated circuit;

the boundary scan cells associated with the output connectors of the integrated circuit comprising a register having an output which toggles in response to a clock signal;

the boundary scan cells associated with the input connectors of the integrated circuit comprising a latch which latches a current state of the input connector, a register for storing a prior state of the input connector, and a comparator which compares the current and the prior states of the input connector and generates an error signal according to pre-determined criteria.

5,487,075

HIGH-SPEED STAGED DECODER/QUANTIZER

Guiseppe Caire, Turin, Italy; Javier Ventura Traveset, Leiden; Martin Hollreiser, Den Haag, both of, Netherlands, and Ezio Biglieri, Turin, Italy, assignors to Agence Spatiale Europeenne, Paris, France

Filed May 20, 1994, Ser. No. 246,516
Int. Cl.[6] G06F *11/10*; H03M *13/00*
U.S. Cl. 371—37.1 **9 Claims**

1. A decoder/quantizer comprising:

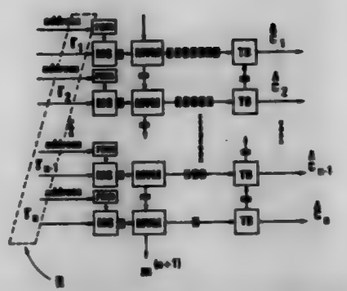
at least one stack of layered processor structure having n layers, each of the layers of the layered processor structure comprising a metric generator for receiving a component code to determine a matrix of metrics corresponding to branches of a trellis section;

a matrix-vector multiplier for receiving matrix data from the metric generator associated therewith and vector metrics for updating the matrix data;

a trace-back processing element for receiving updated matrix data from the matrix-vector multiplier associated therewith to produce a respective symbol of a selected codeword,

wherein each matrix-vector multiplier in the stack of layered processor structure updates the matrix data from the metric generator associated therewith in a same layer in response to the updated matrix data from the matrix-vector multiplier in a next lower layer, and

wherein each trace-back processing element in the stack of layered processor structure updates the matrix data from the metric generator associated therewith in a same layer in response to the updated matrix data from the trace-back processing element in a next upper layer.

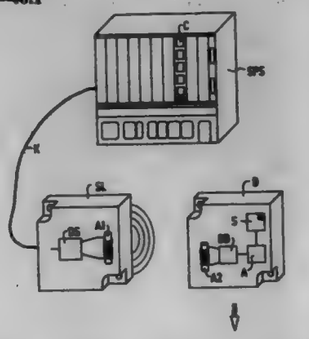


5,487,076

METHOD FOR SECURING DATA IN READ-WRITE MEMORIES IN MOBILE DATA STORAGE SYSTEMS

Heinrich Meyer, Nürnberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 29, 1993, Ser. No. 85,265
Claims priority, application Germany, Jun. 30, 1992, 42 21 406.8
Int. Cl.[6] H03M *13/00*
U.S. Cl. 371—40.1 **2 Claims**



1. A method for securing data in a conventional write-read memory in a mobile data storage system comprising the steps of:

a) generating a specified number of error-correction data in a stationary coding device from a subset of useful data;

b) filing the total quantity of useful data block-by-block in the write-read memory each block being composed of useful data and the error-correction data (F) assigned to the useful data of that block, wherein the write-read memory has a standard word width and contains no separate redundancy-generating device, and wherein the width of a unit of error correction data is adapted to the standard word width;

c) when a memory query of one useful data unit is made, reading a block of data containing this data unit from the corresponding write-read memory using the stationary coding device, whereupon the useful data of the read block are checked at the coding device with the aid of the error-correction data of that block while correcting each incorrect useful data unit which is clearly recognized, using the stationary coding device; and

e) generating an error message as an output if it is not possible to correct at least one useful data unit.

5,487,077

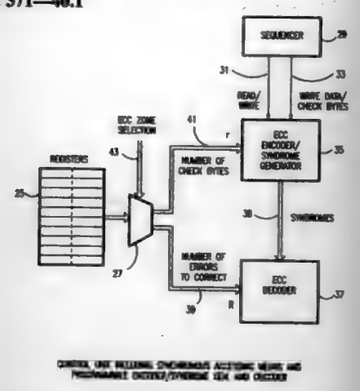
LOCATION DEPENDENT VARIABLE ERROR CORRECTION PROCESSING FOR MULTI-TRACK RECORDING MEDIA USING VARIABLE LENGTH CODING MEANS

Martin A. Hassner, Palo Alto; Luke C. K. Lang, Cupertino; Norman K. Ouchi, San Jose, all of Calif., and Uwe Schwiegelshohn, Dortmund Kirchhoerde, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 23, 1994, Ser. No. 247,446

Int. Cl.[6] G06F *11/10*

U.S. Cl. 371—40.1 **7 Claims**



1. A method for adjusting an error correction code capability according to a linear recording density of a zone of contiguous recording tracks on a storage surface or volume having at least two zones of different average linear recording density in a moving magnetic storage subsystem, comprising the steps of:

(a) associating with each zone a parameter pair (r,R), said pair defining the number r of error correction symbols (ECC) to be appended to data blocks to form a codeword written to tracks within the zone and the number R of correctable errors in the event of a non-zero remainder detected upon readback of a codeword from a track within the zone;

(b) writing a block of k data symbols to a track in a first one of the zones by adjusting a length of a shift register encoder by the r parameter, generating r ECC symbols by convolving the data block through said adjusted encoder and recorder a k+r symbol codeword in the track in said first zone; and

(c) at any time subsequent to step (b) reading back the codeword by adjusting the length of the shift register encoder operating as a syndrome generator by the parameter r associated with the first zone, and convolving it through the encoder to ascertain the presence of a non-zero remainder.

5,487,078

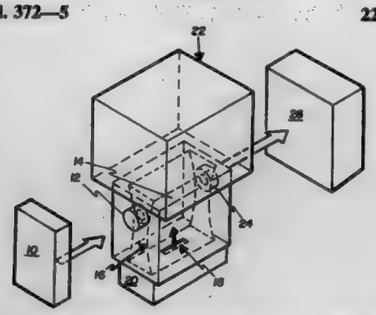
APPARATUS AND METHOD FOR GENERATING PROMPT X-RADIATION FROM GAS CLUSTERS

Charles K. Rhodes, Chicago, Ill., and Keith Boyer, Los Alamos, N.M., assignors to Board of Trustees of the University of Illinois, Urbana, Ill.

Filed Mar. 14, 1994, Ser. No. 213,601

Int. Cl.[6] H01S *3/30*

U.S. Cl. 372—5 **22 Claims**



1. A method for generating prompt X-radiation, said method comprising the steps of:

a. generating pulsed laser radiation having a chosen intensity and wavelength;

b. generating gaseous atomic clusters having a chosen density and size; and

c. directing the laser radiation into the gas clusters, whereby multiphoton coupling with the clusters occurs producing rapid atomic excitation, thereby removing selected inner-shell atomic electrons without removing all of the electrons in the next outermost shell.

5,487,079

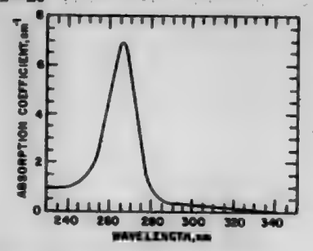
CONTINUOUSLY TUNABLE UV CE:LISAF SOLID STATE LASER

Leon Esterowitz, Springfield, Va., and Joseph F. Pinto, Laurel, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 5, 1995, Ser. No. 368,821

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—20 **21 Claims**



1. An ultraviolet solid state laser, comprising:

a laser cavity defined by a first mirror and an opposing second mirror;

a laser medium disposed in said laser cavity, consisting essentially of a LiSAF host material doped with an amount of cerium ions sufficient to produce a longitudinal mode laser emission when said laser medium is pumped by pumping means; and

means for pumping said laser medium.

5,487,080

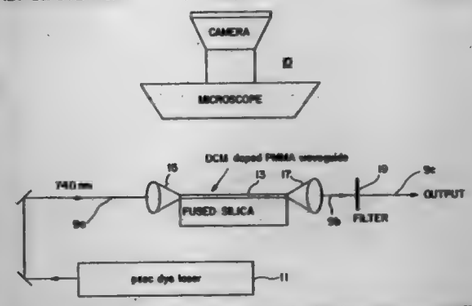
PRINCIPLE AND APPLICATIONS OF MULTIPHOTON PUMPED UPCONVERTED LASERS

Anadi Mukherjee, Albuquerque, N.M., assignor to University of New Mexico, Albuquerque, N.M.

Continuation-in-part of Ser. No. 787,309, Oct. 30, 1991, abandoned. This application Mar. 11, 1993, Ser. No. 29,838

Int. Cl.[6] H01S *3/09*

U.S. Cl. 372—69 **19 Claims**



15. Laser apparatus for producing desired coherent output radiation having substantial intensity levels thoughout at least the entire visible spectrum comprising:

a) a substrate;

b) an essentially planar body of material mounted on said substrate, said material being capable of simultaneous multiphoton absorption, and upconverted fluorescence, and

c) a source of pumping radiation providing a beam of radiation directed into said body, said pumping radiation comprising a pulse train of coherent, essentially infrared radiation having characteristics and an intensity level sufficient to produce two-photon pumped upconverted lasing in said body whereby the desired radiation is emitted therefrom.

5,487,081

PROCESS AND APPARATUS FOR THE TREATMENT OF THE WASTE GASES OF AN ARC FURNACE

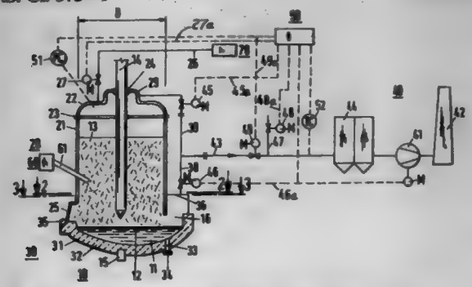
Heinrich Becker, Düsseldorf, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Mar. 22, 1993, Ser. No. 35,353

Claims priority, application Germany, Mar. 23, 1992, 42 09 765.7

Int. Cl.[6] F27D *17/00*

U.S. Cl. 373—9 **21 Claims**



7. An arc furnace for melting metal, comprising:

a furnace vessel for smelting a charge column, metal melt and slag, said furnace vessel having an upper portion and a lower portion, the charge column, the melt and the slag being disposed in the lower portion, at least one of gases, dust and vapors being generated in the furnace vessel by the smelting;

a cover operably connected to said upper portion for covering said furnace vessel; and

exhaust means in communication with said lower portion of said furnace vessel for guiding the at least one of gases, dust and vapors generated during smelting in said furnace vessel in a direction opposite to a naturally occurring flow direction through the charge column for bringing the at least one of the gases, dust and vapors into contact with the melt and the slag after leaving the charge column, and for removing the at least one of gases, dust and vapors from the arc furnace vessel in a region between said lower and upper portions of said furnace vessel.

5,487,082

ELECTRODE FOR ELECTROSLAG REMELTING AND PROCESS OF PRODUCING ALLOY USING THE SAME

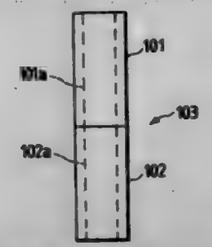
Tomoo Takenouchi; Yoshiaki Ichinomiya; Junji Ishizuka, all of Hokkaido; Junji Itagaki, Tokyo; Shuzo Ohkushi, Hokkaido; Tsukasa Azuma, Hokkaido, and Yasuhiko Tanaka, Hokkaido, all of, Japan, assignors to The Japan Steel Works, Ltd., Tokyo, Japan

Division of Ser. No. 73,465, Jun. 9, 1993. This application May 17, 1994, Ser. No. 243,736

Claims priority, application Japan, Jun. 11, 1992, 4-175976; Jul. 31, 1992, 4-223642; Aug. 14, 1992, 4-237607; Jan. 21, 1992, 4-305876; Jan. 22, 1992, 4-308054; Nov. 20, 1992, 4-333753; Jan. 21, 1993, 5-24974

Int. Cl.[6] H05B *3/60*

U.S. Cl. 373—42 **8 Claims**



5. A process of producing a high medium and low pressure turbine rotor having pressure portions made of an ingot, said ingot essentially consisting of a chemical composition which varies along with said pressure portions of the rotor from a high-medium pressure portion to a low pressure portion of the rotor, respectively, said process comprising the steps of providing an electrode having a bole which is formed along an axial direction in a core of said electrode, said electrode being made of a material corresponding to said chemical composition, melting said electrode to form said ingot, and forming said turbine rotor from the material.

5,487,083

HAND-OFF METHOD AND MOBILE STATION FOR SPREAD SPECTRUM MOBILE COMMUNICATION

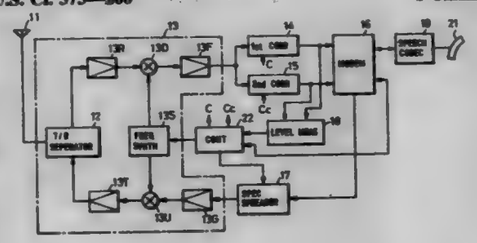
Nobuo Nakajima, and Kenji Imamura, both of Yokohama, Japan, assignors to NTT Mobile Communications Network Inc., Tokyo, Japan

Filed Apr. 29, 1994, Ser. No. 235,789

Claims priority, application Japan, May 12, 1993, 5-110544; May 12, 1993, 5-110545

Int. Cl.[6] H04K *1/10*

U.S. Cl. 375—200 **8 Claims**



1. A hand-off method for a spread spectrum cellular mobile communication system wherein a service area is split into a plurality of radio zones, a base station is provided in each radio zone, and a mobile station hands off a communication channel over which said mobile station is currently communicating from a base station to which said communication channel belongs to another base station in the same service area or a base station in another service area according to the movement of the mobile station and continues the communication;

said method comprising the steps of:

assigning a common radio channel to all radio zones in a service area, said common radio channel having a frequency common to all radio zones in the service area, each of the radio zones being assigned a number of radio channels corresponding to the traffic volume of said radio zone, said number of radio channels having different frequencies from one another;

assigning to said common radio channel, for each radio zone, spectrum spreading codes for control to define control channels and at least one spectrum spreading code communication to define a communication channel, said spectrum spreading codes being different from one another at least between adjoining radio zones;

providing a mobile station with at least two correlators;

and, when the mobile station hands off a radio channel over which the mobile station is currently communicating by using one of said at least two correlators, causing the mobile station to perform the following steps:

switching the currently communicating radio channel to a communication channel of the radio channel common to all radio zones;

scanning, while continuing the communication using said one correlator, the spectrum spreading codes for control in each radio zone and measuring received signal levels thereof using the other correlator, and determining the radio zone having the highest received signal level among the measured received signal levels to be a destination radio zone;

informing the base station through which the mobile station is currently communicating of the determined destination radio zone to request a channel switching; and

setting a communication channel specified by the base station through which the mobile station is currently communicating in response to the channel switching request and continuing the communication through a base station in the destination zone.

5,487,084

GENERATION OF A CLOCK FREQUENCY IN A SMART CARD INTERFACE

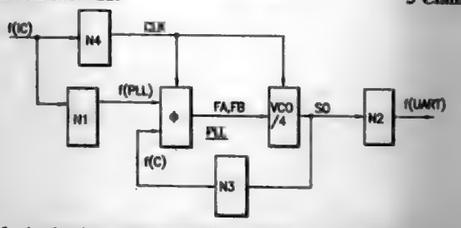
Rune Lindholm, Salo, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Continuation of Ser. No. 899,721, Jun. 17, 1992. This application Aug. 11, 1994, Ser. No. 288,976

Claims priority, application Finland, Jun. 26, 1991, 913108

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—215 **5 Claims**



1. A circuit arrangement for generating a clock signal of a predetermined frequency for a smart card interface which couples data from a smart card to a device, the data being transferred at a predetermined data rate, the arrangement comprising means for deriving the smart card interface clock signal from a smart card clock signal coupled to the arrangement, such that the frequency of the smart card interface clock signal and the data rate are of a predetermined ratio;

wherein said deriving means comprises gating means for outputting selective pulses of the smart card clock signal to serve as said smart card interface clock signal;

said deriving means of the arrangement comprises a phase locked loop and at least one counter coupled to an input thereof, said one counter dividing a frequency of said smart card clock signal to output an input signal to said phase locked loop, the phase locked loop including said gating means, said one counter having a predetermined coefficient to provide said predetermined ratio;

said phase locked loop is a digitally operated phase locked loop responsive to a drive clock signal, said arrangement further comprising a second counter for dividing the frequency of said smart card clock signal to output said drive clock signal; and

said phase locked loop has a locking range inversely proportional to a frequency division ratio of said second counter, the frequency division ratio of said one counter placing a frequency of said input signal to said phase locked loop within said locking range.

5,487,085

TRANSMISSION SYSTEM WITH IMPROVED EQUALIZER

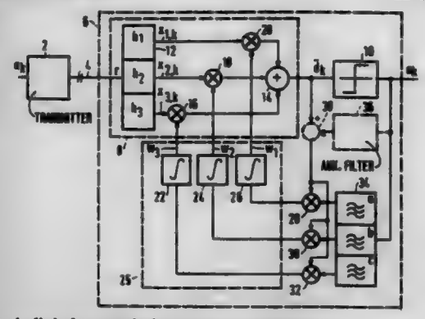
Ho W. Wong-Lam; Johannes W. Bergmans, both of Eindhoven, Netherlands, and Kevin D. Fisher, Palo Alto, Calif., assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 20, 1994, Ser. No. 262,726

Claims priority, application Belgium, Jun. 23, 1993, 9300642

Int. Cl.[6] H03H *7/30*

U.S. Cl. 375—230 **11 Claims**



1. A digital transmission system comprising:

A. a transmitter generating a signal, a receiver, and a channel coupling the transmitter-generated signal to an input of the receiver;

B. said receiver comprising:

(a) an equalizer for receiving the signal from the receiver input and for deriving from the received signal a detection signal,

(b) a detector for receiving and for deriving from the detection signal detected symbols,

(c) said equalizer comprising: (i) an equalization filter comprising at least first and second branches for deriving at least first and second equalization signals, (ii) combining means for combining the first and second equalization signals weighted with respective first and second weight factors,

(d) adapting means for adapting the first and second weight factors in response to a correction signal associated with the respective first and second weight factors,

(e) first means for deriving a first auxiliary signal from the detection signal,

(f) second means for deriving a second auxiliary signal from the detected symbols,

(g) third means for combining the first and second auxiliary signals for deriving respective correction signals for the adapting means,

(h) said second means comprising symbol filters for respective first and second weight factors,

(i) said correction signals being dependent on at least two successively detected symbol values.

5,487,086

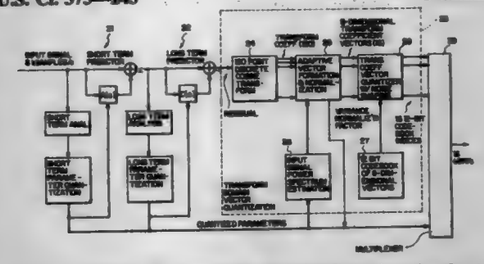
TRANSFORM VECTOR QUANTIZATION FOR ADAPTIVE PREDICTIVE CODING

B. R. Udaya Bhaskar, Gaithersburg, Md., assignor to Comsat Corporation, Bethesda, Md.

Filed Sep. 13, 1991, Ser. No. 759,361

Int. Cl.[6] H04B *14/04*

U.S. Cl. 375—243 **5 Claims**



1. An apparatus for processing digital information signals at a transmitter end of a communications system before said signals are transmitted to a receiver end, said apparatus comprising:

input means for receiving an input digital signal;

adaptive prediction means for performing adaptive prediction upon said input digital signal received by said input means; and

transform domain vector quantization means for transforming the output of said adaptive prediction means into frequency domain coefficients, grouping said coefficients into vectors and quantizing said vectors, wherein said transform domain vector quantization means further includes:

an input signal power spectrum estimation means for estimating the input signal power spectrum of said input digital signal; and

coefficient grouping means for grouping said coefficients into vectors in an adaptive manner based on results obtained from said input signal power spectrum estimation means.

5,487,087

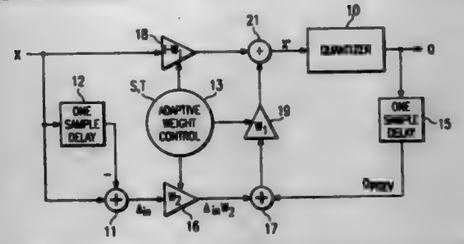
SIGNAL QUANTIZER WITH REDUCED OUTPUT FLUCTUATION

Alan V. McCree, Dallas, and Vishu R. Viswanathan, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 17, 1994, Ser. No. 245,090

Int. Cl.[6] H04B *14/06*

U.S. Cl. 375—245 **8 Claims**



1. A signal quantizer with reduced output fluctuation comprising:

a signal quantizer for providing a quantized output signal Q;

means responsive to an input signal X for multiplying said input signal by $1-w_1$ where w_1 is a first weight factor having a value between 0 and 1;

means responsive to said input signal X to be quantized for providing a difference signal Δ_{in} w_2 equal to the difference between said input signal X and a previous input signal X_{prev} multiplied by a second weight factor w_2 where w_2 has a value between 0 and 1;

means for adding to a previous quantizer output signal Q_{prev} said difference signal Δ_{in} w_2 and multiplying by said weight factor w_1 to yield w_1 $(Q_{prev}+w_2\Delta_{in})$;

means for summing $(1-w_1)$ X and w_1 $(Q_{prev}+w_2\Delta_{in})$ to yield X';

means for applying X' to said quantizer.

5,487,088

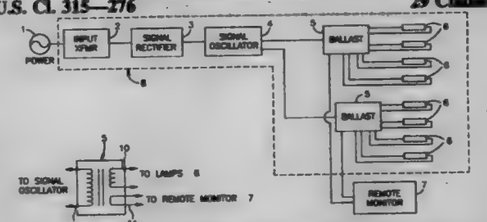
APPARATUS FOR MONITORING LAMP SYSTEM STATUS

Richard Weltz, Richmond, Va., and David J. Milius, El Paso, Tex., assignors to Infico Degremont, Inc., Richmond, Va.

Filed Oct. 28, 1993, Ser. No. 144,637

Int. Cl.[6] H05B *41/16*

U.S. Cl. 315—276 **29 Claims**



1. Ballast monitoring apparatus for a lamp system having one or more lamps and one or more ballasts connected to said lamps comprising:

a sense winding contained on an output side of said ballasts for inducing a ballast status signal;

ballast monitoring means for receiving and processing said ballast status signal; and

means for displaying said processed ballast status signal.

5,487,089

NYQUIST FILTER FOR DIGITAL MODULATION

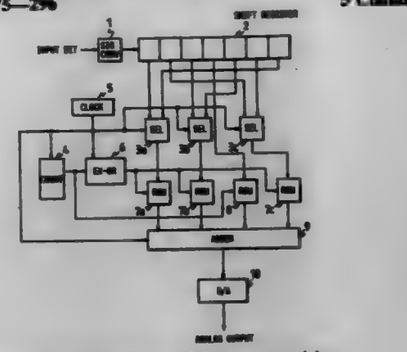
Kouei Misaizu, Kawasaki; Shoichiro Honda, Fukuoka, and Hiroshi Ohnishi, Tokyo, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 11, 1993, Ser. No. 16,222

Claims priority, application Japan, Feb. 17, 1992, 4-028765; Jan. 14, 1993, 5-004633

Int. Cl.[6] H04K *1/02*

U.S. Cl. 375—296 **5 Claims**



5. A Nyquist filter for digital modulation, comprising:

a first ROM for storing data representing first portions of predetermined impulse response waveforms which do not cause intersymbol interference, wherein the predetermined impulse response waveforms have second portions and central portions different from the first portions thereof, and the first portions and the second portions of the predetermined impulse response waveforms are symmetrical with respect to the central portions thereof;

a second ROM for storing data representing the central portions of the predetermined impulse response waveforms;

first means for accessing the first ROM and the second ROM to read out the data from the first ROM and the second ROM in response to an input signal, and for generating first data according to the data read out from the first ROM and the second ROM, the first data representing first and central portions of impulse response waveforms corresponding to the input signal;

second means for accessing the first ROM to read out the data from the first ROM in response to the input signal, for generating second data on the basis of the data read out from the first ROM, the second data representing second portions of impulse response waveforms corresponding to the input signal; and

means for combining the first data generated by the first means and the second data generated by the second means,

wherein each of said first portions of the predetermined impulse response waveforms corresponds to one symbol of the input signal, add each of said central portions of the predetermined impulse response waveforms corresponds to another symbol of the input signal.

5,487,090

SELECTIVELY CALLED RADIO RECEIVER IN WHICH BIT RATE DETECTION IS CONTROLLED WITH A PREDETERMINED RANGE

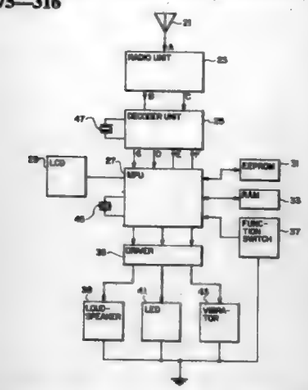
Motoki Ide, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 12, 1993, Ser. No. 134,683

Claims priority, application Japan, Jan. 12, 1992, 4-272165; Jan. 23, 1992, 4-285664

Int. Cl.[6] H04L *7/00*; H04Q *7/00*

U.S. Cl. 375—316 **8 Claims**



1. A selectively called radio receiver including a receiving unit operable with battery saving to produce a demodulated signal having a specific bit rate, said radio receiver comprising:

a synchronizing unit for establishing and keeping synchronism between said demodulated signal and operation of said receiving unit;

a bit rate detecting unit for detecting said bit rate with a controllable sensitivity to assist operation of said synchronizing unit when said synchronizing unit fails to keep said synchronism; and

bit rate detection control means connected to said synchronizing and said bit rate detectiong units for controlling said sensitivity within a predetermined sensitivity range while said synchronizing unit fails to keep said synchronism.

5,487,091

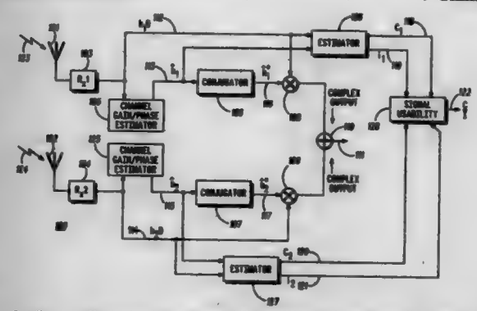
METHOD FOR DETERMINING SIGNAL USABILITY IN A DIVERSITY RECEIVER

Steven C. Jasper, Hoffman Estates, and Mark A. Birchler, Roselle, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 13, 1993, Ser. No. 106,170

Int. Cl.[6] H04B *7/10*

U.S. Cl. 375—347 **7 Claims**



1. In a diversity receiver that receives modulated signals, wherein the diversity receiver includes at least two receiver branches, wherein each of the at least two branches includes an antenna operably coupled to a receiver, the receiver operably coupled to a channel gain/phase estimator, the channel gain/phase estimator operably coupled to a complex conjugator, the complex conjugator operably coupled to a complex mixer to provide a complex output, and wherein the complex outputs of at least two receiver branches are combined to produce a diversity resultant, a method for determining signal usability of the diversity resultant, the method comprises the steps of:

a) receiving, by each of the at least two receiver branches, a modulated signal;

b) producing, by each of the at least two receiver branches, the complex output based on the modulated signal;

c) in each of the at least two receiver branches, estimating a desired component based on the modulated signal to produce estimated desired components;

d) in each of the at least two receiver branches, estimating an undesired component based on the modulated signal to produce estimated undesired components;

e) combining, independent of the undesired component on each of the at least two receiver branches, the complex output of each of the at least two receiver branches to produce the diversity resultant; and

f) estimating signal usability of the diversity resultant based on a functional mapping of the estimated desired components and the estimated undesired components into an estimated desired-to-undesired component power ratio.

5,487,092

SYSTEM FOR HIGH-SPEED SYNCHRONIZATION ACROSS CLOCK DOMAINS

Damon W. Finney, San Jose, Calif., and Michael J. Rayfield, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1994, Ser. No. 363,121

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—354 **19 Claims**

1. A method for transferring digital signals representing a plurality of data words including pad words from an output bus in an external clock domain operating in synchrony with an external clock signal having a frequency and an interval across an asynchronous boundary to an input bus in an internal clock domain operating in synchrony with an internal clock signal having a frequency and an interval, said method comprising the steps of:

(a) storing in a first register, in synchrony with said external clock signal, each in turn of a sequence of said data words from said output bus;

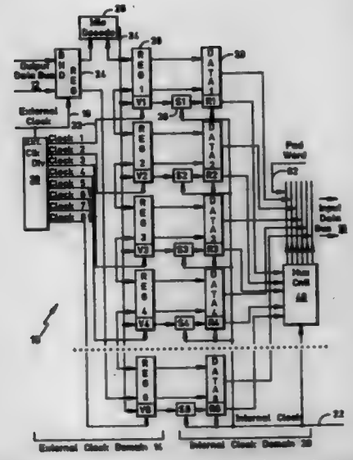
(b) producing, in synchrony with said external clock signal, a plurality of N of prolonged external clock signals each associated with one of a plurality N of second registers and each having an interval substantially equal to a plurality N of said external clock intervals;

(c) for each said prolonged external clock signal, transferring in synchrony with said each prolonged external clock signal said data word from said first register to said one second register associated with said each prolonged external clock signal and setting a valid flag in said one second register if said first register word is not an incoming pad word;

(d) transferring to a plurality N of third registers, each having a ready flag, said data word from each said second register associated with one of said third registers in which said ready flag is set;

(e) in synchrony with said internal clock signal, setting said ready flag in said third register associated with each said second register in which said valid flag has been set for more than one said internal clock signal interval; and

(f) connecting in sequence to said input bus, in synchrony with said internal clock signal, said data word from each said third register in which said ready flag is set and resetting said ready flag.



5,487,093

AUTORANGING DIGITAL ANALOG PHASE LOCKED LOOP

Bernhard H. Andresen, Dallas, and Roger A. Cline, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 26, 1994, Ser. No. 249,564

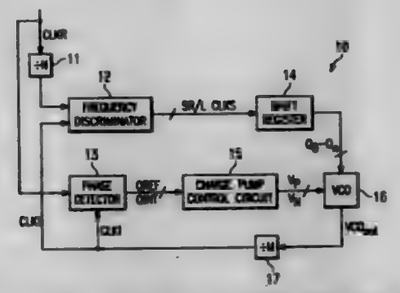
Int. Cl.[6] H03D *3/24*

U.S. Cl. 375—376 **8 Claims**

1. A phase locked loop circuit, comprising:

a frequency discriminator circuit for comparing the frequency of a first signal with the frequency of a second signal. and providing a first set of control signals in response to the comparison;

a shift register coupled to the frequency discriminator circuit, the shift register receiving the first set of control signals from the frequency discriminator circuit and shifting a binary value to the left or right in response to the first set of control signals, the shifting of the binary value to the left or right thereby creating a digital word;



an oscillator circuit coupled to the shift register, the oscillator circuit adjusting the frequency and phase of the second signal in a digital manner in response to the digital word from the shift register;

a phase detector for comparing the phase of the first signal with the phase of the second signal, and for providing a second set of control signals in response to the comparison; and

a control circuit coupled to the phase detector and the oscillator circuit, the control circuit converting the second set of control signals into analog control signals, the oscillation circuit being responsive to the analog control signals for adjusting the phase of the second signal in an analog manner.

5,487,094

DOUBLE-LAYER PELLET, METHOD OF MANUFACTURING THE SAME, AND APPARATUS FOR MANUFACTURING THE SAME

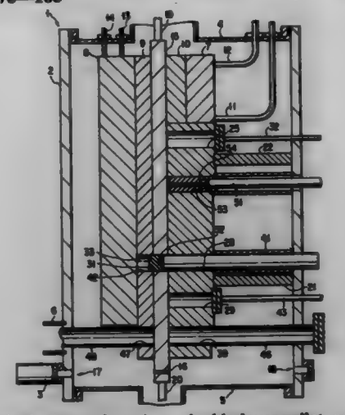
Shigeru Sudo, Nagoya, Japan, assignor to The Director-General of the National Institute for Fusion Science, Nagoya, Japan

Filed Sep. 1, 1994, Ser. No. 298,309

Claims priority, application Japan, Sep. 30, 1993, 5-244214

Int. Cl.[6] G21B *1/00*

U.S. Cl. 376—100 **6 Claims**



1. A method of manufacturing a double-layer pellet, comprising:

a first step of supplying a first material for forming an outer layer, into a space provided in a pellet carrier body;

a second step of cooling and solidifying the first material in said space, thereby forming a block of the first material; a third step of forming a hole in a first end of the block;

a fourth step of supplying a second material for forming a core, into the hole formed in the first end of the block;

a fifth step of cooling and solidifying the second material in said hole, thereby forming a core;

a sixth step of scraping a second end of said block, which is opposite to the first end; and

a sevénth step of supplying an additional amount of the first material onto the first end of said block, cooling and solidify-

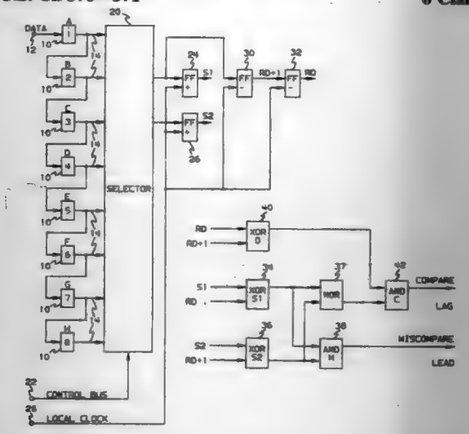
ing the additional amount of the first material, thereby forming a layer covering the core of the second material.

5,487,095

EDGE DETECTOR

Richard C. Jordan, Lake Katrine; Robert S. Capowski, Verbank; Daniel F. Casper, Poughkeepsie; Frank D. Ferraiolo, New Windsor, all of N.Y.; William C. Laviola, Round Rock, Tex., and Peter R. Tomaszewski, Wake Forest, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 17, 1994, Ser. No. 262,087
Int. Cl.[6] A04L 7/00
U.S. Cl. 376—371 6 Claims



1. A method for locating a transition in a digital stream with respect to a transition in a clock signal, comprising the steps of:

generating at least three phase shifted versions of said digital data stream;

selecting a first pair of two adjacent phase shifted versions of said digital data stream from said at least three phase shifted versions of said digital data stream;

comparing said first pair of two adjacent phase shifted versions of said digital data stream with said clock signal to determine whether or not a transition of said clock signal falls between transitions of said first pair of two adjacent phase shifted versions of said digital data stream;

selecting a second pair of two adjacent phase shifted versions of said digital data stream from said at least three phase shifted versions of said digital data stream if said comparing step for said first pair of two adjacent phase shifted versions of said digital data stream determines that said clock signal does not fall between transitions of said first pair of two adjacent phase shifted versions of said digital data stream;

repeating said comparing step for said second pair of two adjacent phase shifted versions of said digital data stream; and

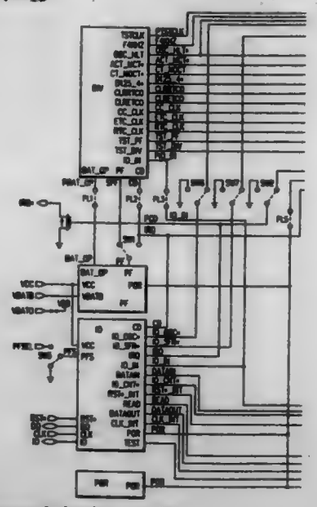
repeating said selecting and comparing steps for other pairs of two adjacent phase shifted versions of said digital data stream until a determination is made that said clock signal falls between transitions of a pair of two adjacent phase shifted versions of said digital data stream.

5,487,096

INTEGRATED CIRCUIT WITH REAL TIME, ELAPSED TIME, AND CYCLE COUNTER CLOCKS

Ronald W. Pearson, Denton; Kevin E. Deierling, Dallas, and Clark R. Williams, Plano, all of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Continuation of Ser. No. 728,230, Jul. 10, 1991, abandoned.
This application Jun. 14, 1994, Ser. No. 259,421
Int. Cl.[6] G06M 3/02
U.S. Cl. 377—15 7 Claims



1. An integrated circuit, comprising:

an oscillator which produces tick signals at a constant average frequency;

first counter system connected to said oscillator, which first counter system counts said tick signals to provide a current time value;

a second counter system connected to said oscillator and to a first input pin, which second counter system counts said tick signals only when said first input pin is in a first state;

third counter system connected to a second input pin, which third counter system is incremented each time said second input pin transactions into a second state;

interface circuitry which provides read access to said first, second, and third counter systems; and

a system power input pin and a battery input pin, and wherein said first and second input pins are said system power input pin, and said first state occurs whenever power is applied to said system power supply input pin, and wherein said first counter system is powered from said battery input pin when said system power input pin is not powered.

5,487,097

PERIOD MEASURING DEVICE

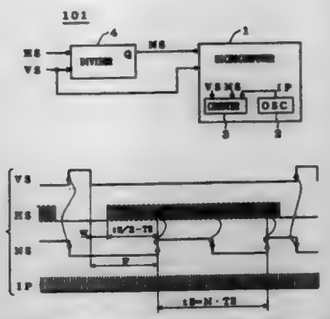
Makoto Hatakenaka, Itami; Haruo Sakurai, Nagasaki, and Hideo Nagano, Itami, all of, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1994, Ser. No. 291,285
Claims priority, application Japan, Aug. 23, 1993, 5-207791
Int. Cl.[6] G01R 23/10
U.S. Cl. 377—20 22 Claims

1. A period measuring device for measuring a period of a first signal which is periodically activated, comprising:

(a) an input terminal for inputting a second signal which has a period larger than that of said first signal and has a predetermined relation with said first signal;

(b) an oscillator for generating a third signal which has a period smaller than that of said first signal;



(c) a first counter for counting the number of times of activation of said third signal in a measurement period determined by said second signal;

(d) operation means for obtaining the period of said first signal from an output of said first counter, the period of said third signal and said predetermined relation; and

(e) a divider for N-dividing said first signal to generate said second signal and supplying it to said input terminal;

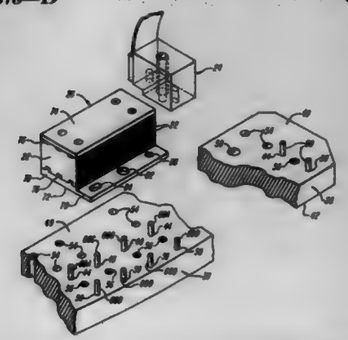
wherein said first counter is activated after a fourth signal is detected and said first counter counts the number of times of activation of said third signal during a next full period of the second signal after the fourth signal activates the counter.

5,487,098

MODULAR DETECTOR ARRANGEMENT FOR X-RAY TOMOGRAPHIC SYSTEM

John Dobbs, Hamilton, and David Banks, Boxford, both of Mass., assignors to Analogic Corporation, Peabody, Mass.

Continuation of Ser. No. 190,945, Feb. 3, 1994, abandoned.
This application May 22, 1995, Ser. No. 447,181
Int. Cl.[6] A61B 6/02
U.S. Cl. 378—19 41 Claims



1. A modular arrangement for X-ray detector assembly for use with a source of X-rays in a X-ray system, said arrangement comprising:

at least one detector module, said detector module including a reference surface and one or more detectors, fixed relative to said reference surface, for detecting X-rays generated by said source;

at least one anti-scatter module, said anti-scatter module including a second reference surface and means, fixed relative to said second reference surface, for reducing the amount of scattered X-rays that are received by said detector; and

base support means, adapted to be secured to said X-ray system, for supporting said detector and anti-scatter modules and having a base reference surface and including positioning means for properly positioning and fixing each of said modules to said base support means and with respect to each other;

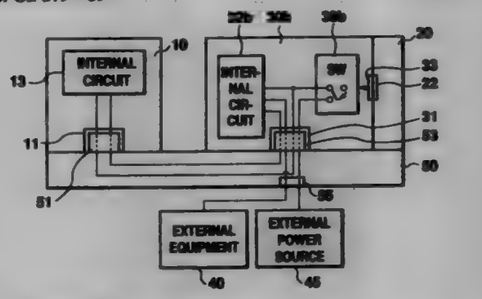
wherein said positioning means comprises three pins extending through said base reference surface and fixed relative to said base support means such that a first of said pins cooperates with said detector module, the second of said pins cooperates with said anti-scatter module and the third of said pins cooperates with and is common with respect to both said detector and anti-scatter modules so that the reference surfaces of each of said modules is in mutually confronting relationship with the base reference surface and so that the detector module and anti-scatter module are accurately positioned with respect to one another and to said source when said modules and base support means are secured to said X-ray system.

5,487,099

PORTABLE TELEPHONE HAVING AN ADDITIONAL DEVICE FOR MAKING EXTERNAL CONNECTIONS

Hitoshi Maekawa, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 162,964, Dec. 8, 1993, abandoned. This application Sep. 22, 1994, Ser. No. 310,056
Claims priority, application Japan, Jan. 29, 1993, 5-013115
Int. Cl.[6] H04Q 7/32
U.S. Cl. 379—59 4 Claims



1. A portable telephone comprising:

a portable telephone main body having a wireless communication function and means for connecting the telephone main body to a telephone line;

a battery pack for supplying power to said telephone main body; and

an additional device detachably connected between said battery pack and said telephone main body, said additional device comprising:

a connector for making external connections; first connecting means for detachably connecting said additional device to said portable telephone main body;

second connecting meads for detachably connecting said battery pack to said additional device with said additional device being interposed between said battery pack and said telephone main body;

means for interconnecting to said portable telephone main body through said first connecting means a signal supplied to said connector from equipment external to said portable telephone main body while connecting electric power from said battery pack to said portable telephone main body through said first and second connecting means; and

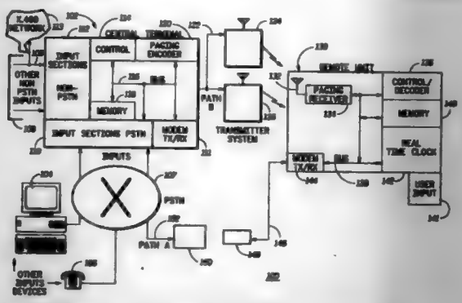
means functioning to store electric power in an additional battery located within said additional device and to supply the power stored in said additional battery to Said portable telephone main body.

5,487,100

ELECTRONIC MAIL MESSAGE DELIVERY SYSTEM

John R. Kane, Wellington, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 954,179, Sep. 30, 1992, abandoned. This application May 17, 1994, Ser. No. 248,853
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—57 12 Claims



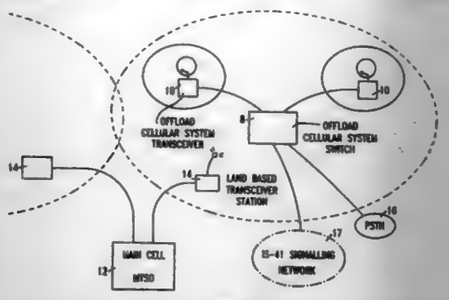
1. An electronic mail delivery system comprising:
an electronic mail network for delivering a first message from an originating device to a destination device, the first message including message data and a network address for identifying the originating and destination devices, the network address comprising a first number of characters;
a paging terminal coupled to the electronic mail network for receiving the
first message and automatically generating from the network address therein an alias of the originating device having a second number of characters less than the first number of characters without user intervention further than that required for initiation of the first message, wherein the paging terminal further encodes the message data and the alias, rather than the network address, into a second message for transmission to at least one selective call receiver;
paging transmitting means for transmitting the second message over a paging communication channel; and
at least one portable selective call receiver for receiving the second message over the paging communication channel and for presenting at least the message data of the second message to a user of the at least one portable selective call receiver.

5,487,101

OFF-LOAD CELLULAR SYSTEM FOR OFF-LOADING CELLULAR SERVICE FROM A MAIN CELLULAR SYSTEM TO INCREASE CELLULAR SERVICE CAPACITY

Anthony G. Fletcher, Corinth, Miss., assignor to Celcore, Inc., Memphis, Tenn.

Filed Mar. 26, 1993, Ser. No. 37,170
Int. Cl.[6] H04Q *7/36;7/38*
U.S. Cl. 379—60 11 Claims



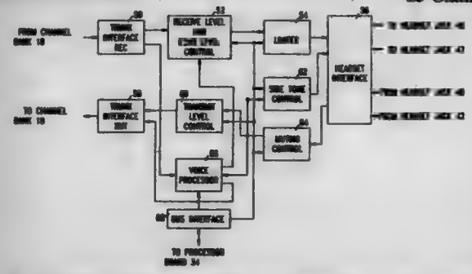
2. A control system for controlling cellular service between a main cellular system providing cellular service in at least one main cellular service area and an off-load cellular system providing off-load cellular service in an off-load cellular service area that is smaller than and within the at least one main cellular service area, the control system comprising:
a receiver circuit for monitoring the off-load cellular service area and receiving an origination message broadcast from a mobile telephone located in the off-load cellular service area, said receiver circuit having an output for outputting said received origination message;
a controller for receiving said origination message output from said receiver circuit, and for instructing the off-load cellular system whether to provide off-load cellular service to said mobile telephone responsive to said origination message; and
wherein said origination message includes calling information, and said controller determines whether said calling information is valid based upon predetermined criteria, and
when said calling information is valid, said controller instructs the off-load cellular system to provide said off-load cellular service to said mobile telephone, and
when said calling information is invalid, said controller instructs the off-load cellular service not to provide said off-load cellular service and to notify said mobile telephone to tune to the main cellular system, shedding said mobile telephone from the off-load cellular system.

5,487,102

VOICE INTERFACE BOARD FOR USE IN AN OPERATOR SYSTEM

Ralph F. Rothschild, Monsey, N.Y.; George D. Kontopidis, Dedham, and Charles C. Linton, Southboro, both of Mass., assignors to Volt Information Sciences, Inc., New York, N.Y.

Filed Dec. 10, 1992, Ser. No. 988,554
Int. Cl.[6] H04M *1/00;3/00;* H03G *3/00*
U.S. Cl. 379—67 25 Claims



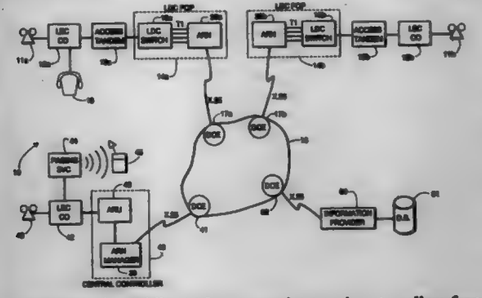
21. In an operator workstation for use by an operator to service calls from subscribers in a public telephone network, a circuit board for controlling audio characteristics of audio signals in the public telephone network comprising:
an interface for receiving receive analog audio signals from a telecommunications network interface and for transmitting transmit analog audio signals to the telecommunications network interface;
an audio characteristics control circuit coupled to the interface, for adjusting the audio characteristics of the receive and transmit analog audio signals and for recording and generating voice messages to be transmitted to the telecommunications network via the interface, the audio characteristics control circuit further comprising a voice processor coupled to the interface for generating control signals to control the adjustment of at least one of the audio characteristics of the analog audio signals; and
a headset interface coupled to the audio characteristics control circuit for transmitting the adjusted receive analog audio signals from the audio characteristics control circuit to at least one operator headset and for transmitting the analog transmit audio signals from at least one operator headset to the audio characteristics control circuit.

5,487,103

ENHANCED WIDE AREA AUDIO RESPONSE NETWORK

Charles T. Richardson, Jr., Gwinnett County, and Kevin L. Austin, Fulton County, both of Ga., assignors to United States Advanced Network, Inc., Norcross, Ga.

Continuation of Ser. No. 852,491, Mar. 16, 1992, Pat. No. 5,317,627, which is a continuation of Ser. No. 591,047, Oct. 1, 1990, Pat. No. 5,113,430. This application Apr. 12, 1994, Ser. No. 226,560
Int. Cl.[6] H04M *1/64;11/00;3/42*
U.S. Cl. 379—88 6 Claims



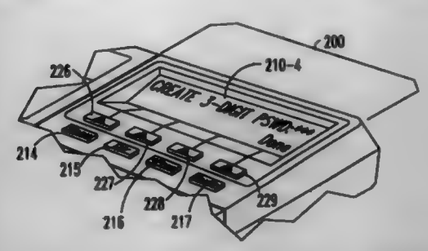
1. Method of providing voice messaging services to callers from a wide area network system, the method comprising the steps of:
providing and activating a plurality of audio devices located remotely across a wide area network from each other and connected to user telephone lines, and a central device connected to the plurality of audio devices for communicating with the plurality of audio devices;
connecting a caller on a user telephone line to an audio device of the plurality of audio devices;
receiving a destination number and a caller audio message at the audio device;
storing the caller audio message in the audio device;
calling the destination number from the audio device to communicate with a message recipient; and
reproducing to the message recipient the caller audio message from the audio device.

5,487,104

ARRANGEMENT FOR DISPLAYING MENU SCREENS ON A TELEPHONE TERMINAL

Kimberly A. Banks, Matawan; Kathleen J. Chylinski, Bridgewater; Darren A. Kall, Highland Park, and Gary C. Smith, Freehold, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 47,590, Apr. 13, 1993, abandoned. This application Dec. 22, 1994, Ser. No. 363,562
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—96 22 Claims



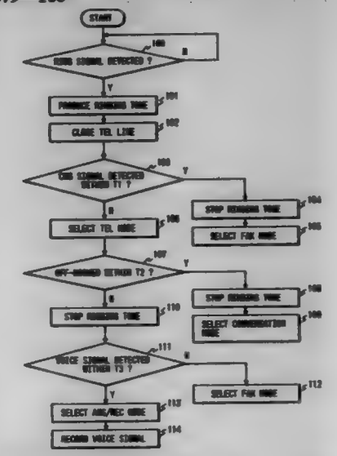
1. An arrangement for displaying menu screens of information messages in a limited available space in a display device at a telephone terminal, the arrangement comprising:
means for generating a plurality of sets of information messages in the telephone terminal, each one of the sets of information messages being displayed in an associated menu screen in said limited available space of said display device; and
means for assigning different tasks for a selected information message, each task requiring movement from a displayed menu screen to another menu screen upon the completion of a specific task for another information message in the set of information messages in said displayed menu screen, and the selected information message being commonly displayed in each one of different sets of information messages.

5,487,105

FACSIMILE APPARATUS OPERABLE IN FACSIMILE OR TELEPHONE MODE

Hajime Sakai, Oonojo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 20, 1993, Ser. No. 169,901
Claims priority, application Japan, Dec. 21, 1992, 4-340017; Dec. 21, 1992, 4-340018; Dec. 21, 1992, 4-340020
Int. Cl.[6] H04M *11/00;1/64*
U.S. Cl. 379—100 23 Claims



1. A facsimile apparatus comprising:
telephone line closing means for closing a telephone line in response to receipt of a ring signal;
ringing tone producing means for producing a ringing tone in response to the receipt of the ring signal;
facsimile communication means;
facsimile communication start signal detecting means for detecting a facsimile communication start signal sent through the telephone line;
automatic telephone answering/recording means for sending an outgoing voice message to the telephone line and for recording an incoming voice signal received through the telephone line;
first control means for selecting a facsimile mode to operate said facsimile communication means when said facsimile communication start signal detecting means detects said facsimile communication start signal within a first predetermined time after said telephone line closing means closes the telephone line; and
second control means for selecting a telephone conversation mode when an operation in response to said ringing tone is performed within a second predetermined time after the receipt of said ring signal and for selecting an automatic telephone answering/recording mode to operate said automatic telephone answering/recording means when the operation is not performed in response to said ringing tone within said second predetermined time, said second control means performing said selection between said telephone conversa-

tion mode and said automatic telephone answering/recording mode when said facsimile mode is not selected by said first control means.

5,487,106

COMMUNICATION APPARATUS CAPABLE OF UTILIZING PORTABLE DEVICE

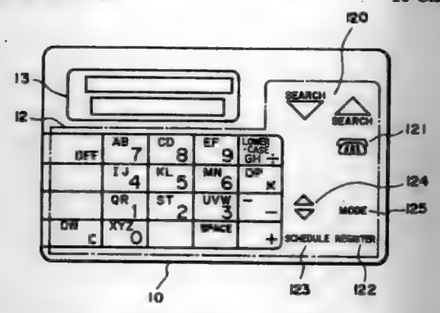
Toshio Kenmochi, and Masao Kiguchi, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 633,303, Dec. 24, 1990, abandoned. This application Mar. 8, 1994, Ser. No. 207,111

Claims priority, application Japan, Dec. 26, 1989, 1-339204

Int. Cl.[6] H04M *11/00; 1/00*

U.S. Cl. 379—100 **10 Claims**



1. A data transmission apparatus comprising:

receiving means for receiving transmission control data from a portable device;

dialing means for dialing a communication partner's number specified by the transmission control data; and

transmitting means for transmitting confidential communication identification when confidential communication mode data is set in the transmission control data.

5,487,107

METHOD AND APPARATUS FOR PROCESSING TELEPHONE CALLS CHARGED TO CREDIT CARDS

Jean Atkins, Naperville, Ill.; Richard M. Harris, Hoboken; Julie M. Ladieu-Walton, Freehold, both of N.J., and David C. McChristian, Naperville, Ill., assignors to AT&T IPM Corp., Coral Gables, Fla.

Continuation of Ser. No. 918,726, Jul. 22, 1992, Pat. No. 5,287,403. This application Feb. 14, 1994, Ser. No. 195,414

The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.

Int. Cl.[6] H04M *1/64; 11/00; 15/00; 17/00*

U.S. Cl. 379—144 **15 Claims**

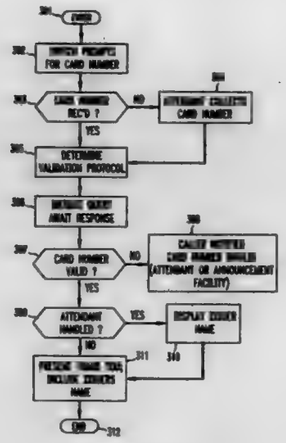
1. A method for use in processing telephone calls that are charged to cards, each of said cards being identified by an associated card number and each being issued by a respective one of a plurality of card issuers, the method comprising the steps of:

receiving a card number supplied by a caller;

identifying the issuer of said card from said card number;

validating said card number; and

responsive to said identifying, supplying to said caller an announcement including the name of said card issuer identified in said identifying step and the name of a carrier carrying the call.



5,487,108

PROGRAMMABLE DIALLER FOR A MOBILE TELEPHONE

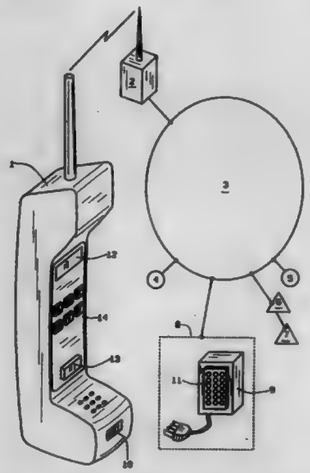
Richard S. Atkins, Ipswich, United Kingdom; Tommy W. Gibson, Tifton, Ga., and Philip P. Ransome, Port St Mary, United Kingdom, assignors to AGR Industries Limited, United Kingdom

Filed Jul. 24, 1992, Ser. No. 919,729

Claims priority, application United Kingdom, Jul. 25, 1991, 9116073

Int. Cl.[6] H04M *1/57*

U.S. Cl. 379—355 **8 Claims**



1. A dialler for a cellular mobile telephone instrument including a key or keys arranged, on actuation, to send a code to a memory which results in an initiation of a telephone call to a respective predetermined authorized telephone number embedded in the dialler, wherein the predetermined authorized telephone number or numbers associated with the keys are configured to be set or changed only by using coding means external to the telephone instrument.

5,487,109

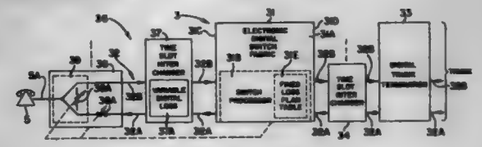
END OFFICE OF A TELEPHONE SYSTEM WITH A ZERO LOSS PLAN

Robert A. Sutton, Montevallo, Ala., assignor to BellSouth Corporation, Atlanta, Ga.

Filed May 17, 1994, Ser. No. 245,457

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—410 **17 Claims**



1. An end office of a telephone system,

said end office continuing calls to and from subscriber locations connected to the end office and comprising:

an electronic digital switch having a line side and a trunk side, said trunk side of said electronic digital switch adapted to be connected to a trunk;

and line side equipment connected to the line side of said electronic digital switch, said line side equipment having a transmit path and a receive path associated with a subscriber location and being exclusive of means for introducing analog and digital loss into said receive path for reducing echo signals in said receive path.

5,487,110

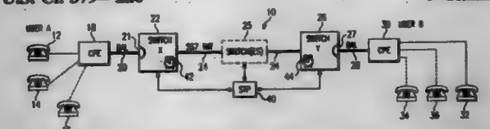
APPARATUS AND METHOD FOR VIRTUAL PRIVATE TELEPHONE LINE WITH AUTOMATIC RING DOWN

Paul M. Bray, Garland; Douglas R. Cardy, Plano, and Charles P. Shelton, McKinney, all of Tex., assignors to DSC Communications Corporation, Plano, Tex.

Filed Feb. 1, 1994, Ser. No. 189,904

Int. Cl.[6] H04M *7/10*

U.S. Cl. 379—220 **9 Claims**



1. Apparatus for a virtual private telephone connection between a User A telephone equipment and a User B telephone equipment, comprising:

a first telephone switch coupled to said User A telephone equipment, said first telephone switch capable for switching a plurality of trunk groups including at least one virtual private line trunk group, said at least one virtual private line trunk group including one or more trunk circuit;

a second telephone switch coupled to said first telephone switch and further coupled to said User B telephone equipment, said second telephone switch capable for switching a plurality of trunk groups including at least one virtual private line trunk group, said at least one virtual private line trunk group including one or more trunk circuit;

a database accessible by said first and second telephone switches, said database being capable of associating said virtual private line trunk group of said first switch with said virtual private line trunk group of said second switch;

said first and second telephone switches processing virtual private telephone connections between said User A and User B telephone equipment;

means coupled to said User A telephone equipment for detecting said User A telephone being on-hook;

means for transmitting an SS7 Suspend message to said second telephone switch in response to said User A telephone being on-hook;

a suspend timer residing in said first telephone switch for beginning timing in response to said User A telephone being on-hook, said suspend timer expiring after a predetermined amount of time;

means for detecting said User A telephone being off-hook prior to the expiration of said suspend timer and alerting said first switch accordingly; and

means residing in said first telephone switch for transmitting an SS7 Resume message to said second telephone switch in response to the alert from said detecting means and reestablishing the virtual private line connection.

5,487,111

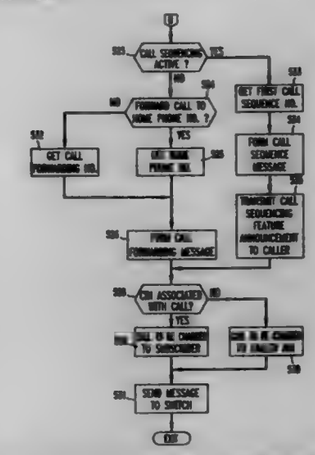
TELECOMMUNICATIONS SYSTEM SEQUENCE CALLING

Ronald D. Slusky, Highland Park, N.J., assignor to AT&T IPM Corp., Coral Gables, Fla.

Filed Jul. 29, 1993, Ser. No. 99,114

Int. Cl.[6] H04M *1/72*

U.S. Cl. 379—211 **20 Claims**



1. A method, for use in a telecommunications system, for automatically routing a call made to a particular called number in accordance with a previously stored sequence of telephone numbers, the method comprising the steps of:

retrieving said sequence of telephone numbers in response to receipt of said called number, and

in response to a signal supplied by said caller, routing said call to a particular one of said telephone numbers of the retrieved sequence even if said call was completed to a previous telephone number in said sequence.

5,487,112

METHOD AND APPARATUS FOR TIME-RESOLVED MEASUREMENTS OF LYMPHOCYTE FUNCTION AND AGGREGATE STRUCTURE USING COMPUTER-AUTOMATED MICROSCOPY

Kyriacos Zygourakis; John L. Bednarczyk; Bradley W. McIntyre, and Michael W. Glacken, all of Houston, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

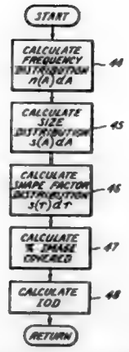
Filed Feb. 20, 1990, Ser. No. 483,038

Int. Cl.[6] G06K *9/00;* **G06F** *15/00;* **G01N** *33/48*

U.S. Cl. 382—6 **12 Claims**

1. A method of characterizing the structure of cells and aggregates of cells in a cell suspension, including the steps of:

incubating a cell suspension and reagent to produce non-aggregated cells and aggregates of cells;



producing at least one image of said non-aggregate cells and aggregates of cells;

characterizing an extent of aggregation of said cell suspension according to a ratio of a total area of said at least one image covered by sells and cell aggregates to total area of said at least one image covered by non-aggregated cells before aggregation begins.

5,487,113

METHOD AND APPARATUS FOR GENERATING AUDIOSPATIAL EFFECTS

Steven D. Mark, Newport Beach, and David Doleshal, Lido Isle, both of Calif., assignors to Spheric Audio Laboratories, Inc., Santa Ana, Calif.

Filed Nov. 12, 1993, Ser. No. 151,362

Int. Cl.[6] H04R 3/00

U.S. Cl. 381—17 **65 Claims**



1. A method for producing one or more desired three-dimensional audiospatial effects in an original audio signal, said method comprising the steps of:

generating a noise signal having one or more amplitude variations introduced at selected frequencies, said frequencies and amplitude variations being selected so as to yield the desired three-dimensional audiospatial effects; and

applying said noise signal to said original audio signal, thereby producing the desired three-dimensional audiospatial effects.

5,487,114

MAGNETLESS SPEAKER

Khanh Dinh, 1618 SW. 76th Ter., Gainsville, Fla. 32607

Filed Feb. 2, 1994, Ser. No. 191,325

Int. Cl.[6] H04R 25/00

U.S. Cl. 381—192 **5 Claims**

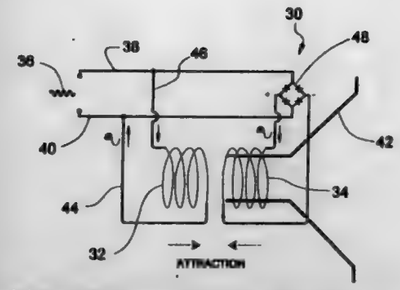
1. A magnetless speaker comprising:

A. a frame;

B. a movable membrane supported on said frame;

C. first and second conductors connected to an amplifier;

D. a stationary coil mounted on said frame and having first and second leads connected to said first and second conductors so as to be powered directly by said amplifier;



E. a bridge rectifier having (1) first and second leads connected to said first and second conductors in parallel with said first and second leads of said stationary coil and (2) third and fourth leads; and

F. a movable coil mounted on said membrane in close proximity to said stationary coil and having first and second leads connected to said third and fourth leads of said bridge rectifier so as to be powered indirectly by said amplifier, wherein said stationary and movable coils produce interacting magnetic fields upon excitation by said amplifier, thereby causing said membrane to vibrate and to produce sound without the action of an auxiliary power source and without the action of a permanent magnet.

5,487,115

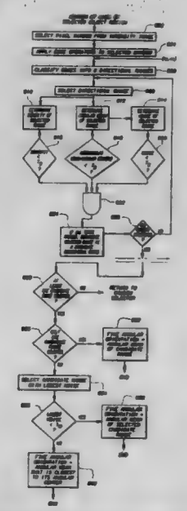
METHOD AND APPARATUS FOR DETERMINING THE FINE ANGULAR ORIENTATION OF BAR CODE SYMBOLS IN TWO-DIMENSIONAL CCD IMAGES

Stefan Surka, Sandy Hook, Conn., assignor to United Parcel Service, Atlanta, Ga.

Continuation-in-part of Ser. No. 883,853, May 14, 1992, abandoned. This application Aug. 17, 1993, Ser. No. 108,086

Int. Cl.[6] G06K 9/32

U.S. Cl. 382—296 **34 Claims**



1. A method for determining the fine angular orientation of a bar code symbol in a two-dimensional pixel image comprising the steps of:

(A) selecting a window from said two-dimensional image for processing;

(B) determining an edge magnitude and an edge direction for a plurality of pixels in said selected window;

(C) selecting a pixel from said plurality of pixels;

(D) if said edge magnitude associated with said selected pixel exceeds a first predetermined threshold, then associating said edge magnitude and said edge direction of said selected pixel with at least one of a plurality of directional ranges;

(E) repeating steps (C)–(D) for each pixel in said plurality of pixels;

(F) selecting one directional range from said plurality of directional ranges;

(G) determining a density value associated with said selected directional range in accordance with the number of pixels associated with said selected directional range;

(H) repeating steps (F)–(G) for each of said plurality of directional ranges;

(I) selecting at least one candidate directional range in accordance with said associated density values; and

(J) determining said fine angular orientation in accordance with said edge directions associated with said at least one candidate directional range.

5,487,116

VEHICLE RECOGNITION APPARATUS

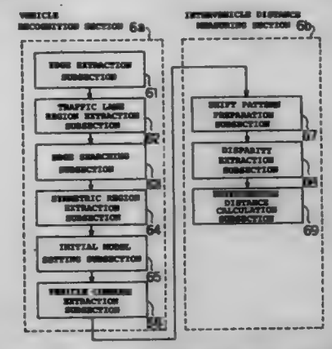
Nobuyuki Nakano, Hirakata, and Nobuhiko Yasui, Moriguchi, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 20, 1994, Ser. No. 246,634

Claims priority, application Japan, May 25, 1993, 5-147025; Nov. 8, 1993, 5-277217

Int. Cl.[6] G06K 9/00

U.S. Cl. 382—104 **5 Claims**



1. A vehicle recognition apparatus which recognizes a preceding vehicle from road images input by use of vehicle-mounted video cameras and measures a distance to the recognized vehicle, comprising:

stereo image input means mounted on a vehicle for picking up stereo road scenes in front of the vehicle;

image storage means for storing the road scenes information input from said stereo image input means;

edge extraction means for applying a differential processing to the road scenes information stored in said image storage means, to thereby extract edges;

traffic lane region extraction means for extracting a traffic lane region from the road scenes information stored in said image storage means;

vehicle edge searching means for producing a histogram by projecting edges which are extracted by said edge extraction means and are included within the traffic lane region extracted by said traffic lane region extraction means, to thereby produce axes of the image, said vehicle edge searching means further provided for extracting a position at which the histogram converges as an edge of a preceding vehicle existing region candidate;

symmetric region extraction means for extracting a symmetric region within the preceding vehicle existing region candidate defined by said vehicle edge searching means and for further limiting the preceding vehicle existing region candidate;

initial model setting means for setting an initial contour model for the preceding vehicle from a ratio of a width and height of the preceding vehicle existing region candidate defined by said symmetric region extraction means, said initial model setting means further provided for selecting an initial model having a most adequate configuration among prepared models having various configurations, said initial model setting means further expanding or compressing the selected initial model based on a size of the preceding vehicle existing region candidate, such that a center of the expanded or compressed initial model coincides with a center of the preceding vehicle existing region candidate;

contour extraction means for defining various features of the preceding vehicle as an energy function, the features being present in the road scenes information stored in said image storage means, said contour extraction means further provided for dynamically transforming the initial model obtained from said initial model setting means by evaluating the energy function, to obtain a closer contour of the preceding vehicle; and

intervehicle distance measuring means for measuring a distance to the preceding vehicle on the basis of the contour of the preceding vehicle extracted by said contour extraction means.

5,487,117

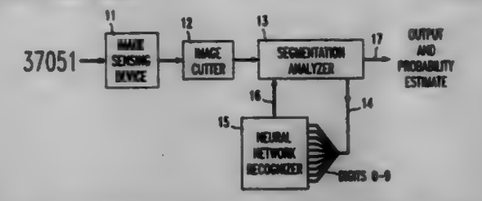
GRAPHICAL SYSTEM FOR AUTOMATED SEGMENTATION AND RECOGNITION FOR IMAGE RECOGNITION SYSTEMS

Christopher J. Burges, Freehold; Yann A. Le Cun, Lincroft, both of N.J., and Ofer Matan, Escondido Village, Calif., assignors to AT&T Corp, Murray Hill, N.J.

Continuation of Ser. No. 227,082, Apr. 8, 1994, abandoned, which is a continuation of Ser. No. 816,415, Dec. 31, 1991, abandoned. This application Oct. 11, 1994, Ser. No. 327,339

Int. Cl.[6] G06K 9/00

U.S. Cl. 382—173 **29 Claims**



1. In symbol recognition apparatus comprising an image sensor, an image segmenter, a memory, a recognizer including a library of known images and a comparison means for generating a measure of probability that a sensed image is a one of said known images, the improvement in recognizing one or more unknown alphanumeric symbols, comprising:

means for sensing an image of said symbol string with said image sensor;

means for segmenting the image of said symbol string with said segmenter to construct candidate cuts through said string, thereby creating a multiplicity of image segments potentially greater in number than the symbols present in said string and sufficient in number to include the correct segmentation;

means for arranging in said memory said segments as a sequence of nodes, the nodes at the beginning point of said sequence corresponding to the left-hand side of said string, and the nodes at the end-point in said sequence corresponding to the right-hand side of said string;

means for identifying all nodes corresponding to segments which are legal neighbors and connecting with arcs from left to right all such nodes, thereby creating multiple paths across said sensed image, each said path corresponding to a particular legal segmentation of said image;

means for comparing said segments to predetermined data in a definite cut database thereby to identify all nodes which straddle a definite cut;

means for eliminating from said memory said last-named nodes as well as all arcs connected to each said node;

means for identifying nodes which because of the preceding step no longer have a parent-child connection, and recursively eliminating all said nodes and associated arcs from said memory;

means for generating in said recognizer a measure of probability for each remaining node returning said measure to said memory for association with the respective node; and

means for combining said probability measures associated with all of the nodes in each said remaining node path, thereby to produce outputs consisting of a symbol identification and a total probability measure associated with each particular node path.

5,487,118

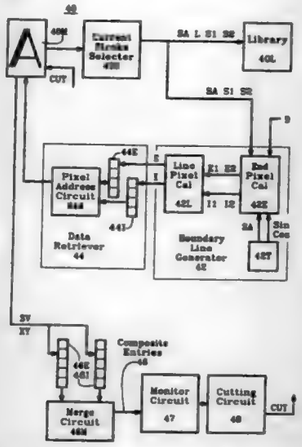
SEQUENTIAL EXTRACTION OF STROKES FROM A STROKE BASED SYMBOL APPARATUS AND METHOD

Roger D. Melen, Los Altos Hills, Calif., assignor to Canon Inc., Tokyo, Japan

Continuation of Ser. No. 787,615, Nov. 4, 1991, abandoned. This application Apr. 8, 1994, Ser. No. 224,786

Int. Cl.[6] G06K *9/46*

U.S. Cl. 382—202 **19 Claims**



1. The computer-implemented method of extracting an individual stroke from a pixel bit map of a stroke based symbol, said method comprising the steps of:

providing, within a storage area of a computer, a pixel bit map of the stroke based symbol formed by

stroke pixels having stroke status forming fixed node regions of contiguous node pixels common to a stroke and one or more other strokes within the stroke based symbol,

and by

stroke pixels having stroke status forming fixed body regions of contiguous body pixels unique to a stroke,

and by

background pixels having background status forming non-stroke areas between strokes;

selecting an individual stroke to be extracted from the stroke based symbol;

defining a pair of straight detection boundary lines each formed by a series of boundary pixels along each side of the individual stroke to be extracted, the boundary lines being displaced from the individual stroke and extending parallel to the individual stroke, each boundary pixel in one boundary line having a corresponding pixel in the other boundary line;

monitoring the status of the boundary pixels to determine the presence and location of

stroke pixels from strokes outside of the individual stroke to be extracted indicating the presence of node regions within the individual stroke,

and

background pixels from non-stroke areas outside of the individual stroke to be extracted indicating the presence of body regions within the individual stroke;

causing the computer to cue body regions of the individual stroke to be extracted from the bit map of the stroke based symbol by deleting pixels forming the body regions; and

protecting the node regions of the individual stroke to be extracted from cutting by not deleting node pixels.

5,487,119

METHOD OF DETERMINING QUANTIZATION STEP IN A SUBBAND CODING SYSTEM

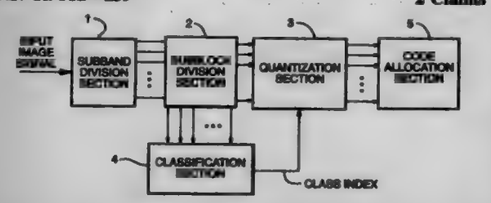
Shunichi Kimura; Yutaka Koshi, and Koh Kamizawa, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1994, Ser. No. 306,490

Claims priority, application Japan, Sep. 17, 1993, 5-232074

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—239 **2 Claims**



1. An image coding method for an image coding apparatus which includes a subband division section for dividing an input image signal into a plurality of subband signals having frequency bands different from each other and having predetermined bit numbers distributed individually thereto, a subblock division section for dividing the subband signals obtained from said subband division section into a plurality of subblocks each having a spatial spread, a classification section for classifying the subband signals for each of the subblocks obtained from said subblock division section, a quantization section for quantizing the subband signals for each of the subblocks obtained from said subblock division section by linear quantization and outputting a quantization index, quantization by said quantization section being performed with a step width determined in response to a class outputted from said classification section, and a code allocation section for allocating the quantization index from said quantization section as a codeword, said image coding method comprising the steps of:

calculating, for each subblock, boundary points of the quantization step corresponding to the number of bits required for quantization in response to the dynamic range of signals of the subblock;

re-arranging the boundary points of the quantization steps of all of the subblocks in the class in order beginning with that of the greatest quantization step; and

successively adding the corresponding bit numbers beginning with that of the greatest quantization step and determining the quantization step when the sum reaches a required bit number as the quantization step of the class for use in said quantization section.

5,487,120

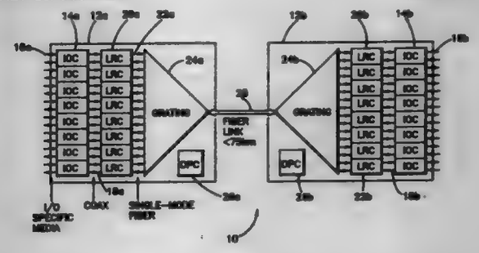
OPTICAL WAVELENGTH DIVISION MULTIPLEXER FOR HIGH SPEED, PROTOCOL-INDEPENDENT SERIAL DATA SOURCES

Michael M. Choy, Hsinchu, Taiwan, Prov. of China; Paul E. Green, Jr., Mt. Kisco, N.Y.; William E. Hall, Clinton; Frank J. Janniello, Stamford, both of Conn.; Jeff K. Kravitz, Yorktown Heights, N.Y.; Karen Liu, Montclair, N.J.; Rajiv Ramaswami, Ossining, N.Y., and Franklin F. Tong, Stamford, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 9, 1994, Ser. No. 193,969

Int. Cl.[6] G02B *6/00;6/36*

U.S. Cl. 385—24 **12 Claims**



1. Communications apparatus, comprising:

a plurality of input/output (I/O) interface units, each of said I/O interface units including means for coupling to a communications network for receiving a signal from the network and for transmitting a signal to the network, each of said I/O interface units further including an input buffer means having an input for receiving a first electrical signal representing information to be transmitted to the network, each of said I/O interface units further including an output buffer means having an output for providing a second electrical signal representing information received from the network;

a plurality of optical transmitter and receiver units each including an optical transmitter means and an optical receiver means, individual ones of said optical transmitter and receiver units being coupled to one of said I/O interface units for providing said first electrical signal thereto and for receiving said second electrical signal therefrom, said second electrical signal being supplied to said optical transmitter means for modulating an output thereof, said first electrical signal being output from said optical receiver means, each of said optical transmitter and receiver units having an optical transmitter means that generates an optical signal that differs in wavelength from others of said optical transmitter means; and

optical multiplexing and demultiplexing means having a plurality of inputs, individual ones of said inputs being coupled to an output of an optical transmitter means of one of said optical transmitter and receiver units, said optical multiplexing and demultiplexing means further having a plurality of outputs, individual ones of said outputs being coupled to an input of an optical receiver means of one of said optical transmitter and receiver units, said optical multiplexing and demultiplexing means having a port for bidirectionally coupling to an optical fiber and operating to wavelength division multiplex said inputs from said plurality of optical transmitter means before application to the optical fiber and to wavelength division demultiplex optical signals received from the optical fiber and to separately provide demultiplexed optical signals to said plurality of outputs; wherein

at least two of said I/O interface units are coupled to networks that operate with different network protocols.

5,487,121

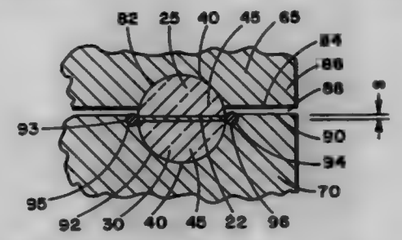
OPTICAL SIGNAL COUPLING APPARATUS

Edward J. Miesak, Orlando, Fla., assignor to University of Central Florida, Orlando, Fla.

Filed Dec. 28, 1994, Ser. No. 359,702

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—39 **14 Claims**



1. An optical coupler comprising:

a transmitter optical fiber member including a generally curved upper surface and a substantially flat lower surface running lengthwise along the transmitter optical fiber member, the transmitter optical fiber member including an input end;

a first cladding layer situated on the upper surface of the transmitter optical fiber member;

a receiver optical fiber member including a generally curved lower surface and a substantially flat upper surface running lengthwise along the receiver optical fiber member, the receiver optical fiber member including an output end;

a second cladding layer situated on the lower surface of the transmitter optical fiber member, the flat surface of the receiver optical fiber member being oriented to face the flat surface of the transmitter optical fiber member in spaced apart relationship thereto; and

an index matching member situated between the flat surface of the receiver optical fiber member and the flat surface of the transmitter optical fiber member to couple light from the transmitter optical fiber member to the receiver optical fiber member while permitting the transmitter optical fiber member to move with respect to the receiver optical fiber member.

5,487,122

STAR COUPLER INCLUDING WAVEGUIDES HAVING DIFFERENT RADIUS OF CURVATURES

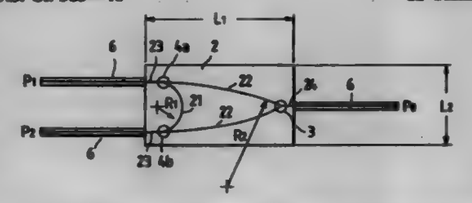
Takeshi Ota, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1993, Ser. No. 15,161

Claims priority, application Japan, Feb. 12, 1992, 4-025407

Int. Cl.[6] G02B *6/28*

U.S. Cl. 385—46 **12 Claims**



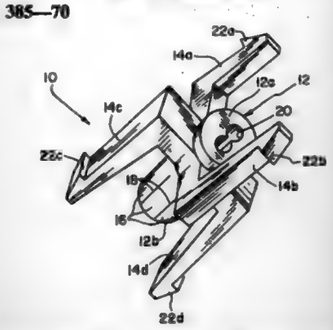
1. A star coupler comprising first, second and third waveguides, each of said second and third waveguides being curved so as to have a radius of curvature, said second and third waveguides branching from said first waveguide and said second waveguide having a different radius of curvature than said third waveguide.

5,487,123

CONNECTORS FOR OPTICAL FIBERS INCLUDING RESILIENT/EXPANDABLE MEMBERS

Juliana V. Fowble, Ithica, N.Y., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Oct. 31, 1994, Ser. No. 332,303
Int. Cl.[6] G02B 6/38
U.S. Cl. 385—70 20 Claims



1. A connector for securing a first optical member to a mounting member so as to align the first optical member with a second optical member, the connector comprising:

a body having a longitudinal axis, a first end and an oppositely disposed second end located on the longitudinal axis;

an internal passage formed within the body along the longitudinal axis, the internal passage being tapered so as to have a smaller cross-section at the second end than at the first end, the internal passage at the first end being sized to receive the first optical member;

expandable members formed at the second end of the body so as to enable the internal passage at the second end to radially expand to accommodate the first optical member;

a pair of resilient members extending from the body, each of the pair of resilient members having a longitudinal portion extending towards one of the first and second ends of the body; and

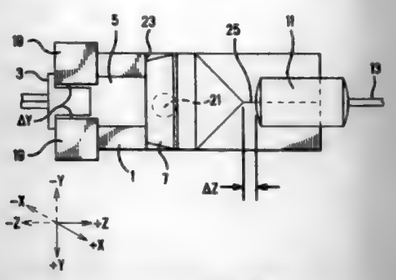
retention means disposed on the longitudinal portion of each of the pair of resilient members for engaging and securing the pair of resilient members to a corresponding feature formed in the mounting member.

5,487,124

BIDIRECTIONAL WAVELENGTH DIVISION MULTIPLEX TRANSCEIVER MODULE

Terry P. Bowen, Etters; Warren H. Lewis, Elizabethtown, both of Pa., and Richard C. Bergstrom, Morgan Hill, Calif., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 30, 1994, Ser. No. 269,428
Int. Cl.[6] G02B 6/36
U.S. Cl. 385—93 29 Claims



1. A compact optical transceiver comprising:

a mounting block including at least first and second positioning grooves formed therein;

a light generating means, abutting a first end of the mounting block, for generating light of a first wavelength;

a light focusing means, mounted to the mounting block, for receiving and focusing the generated light to an optical fiber;

a beamsplitting means, mounted in the first positioning groove of the mounting block, for receiving and passing the generated light of the first wavelength and for receiving and deflecting light of a second wavelength different from the first wavelength;

a detecting means, abutting the mounting block, for receiving and detecting the deflected light of the second wavelength; and

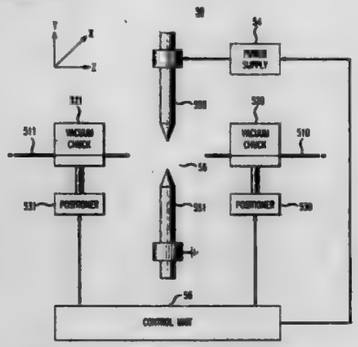
a ferrule, attachable to the optical fiber and supported in the second positioning groove of the mounting block, for receiving the focused light of a first wavelength passed through the beamsplitting means and for outputting light of a second wavelength from the optical fiber to the beamsplitting means.

5,487,125

METHOD AND APPARATUS FOR FUSION SPLICING OPTICAL FIBERS

Guenther W. Kammlott, Watchung; Sandra G. Kosinski, Murray Hill; John T. Krause, New Providence, and Richard S. Riggs, Branchburg Township, Somerset County, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Division of Ser. No. 267,704, Jun. 28, 1994. This application Nov. 2, 1994, Ser. No. 333,566
Int. Cl.[6] G02B 6/36
U.S. Cl. 385—96 4 Claims



1. An optical fiber splicing apparatus comprising:

a fiber-holder for holding an end portion of each of two lengths of optical fiber;

an aligning member for aligning the ends of the fibers in a linearly opposing manner;

at least two electrodes, the electrodes having associated therewith a rate of particle emission, including an initial rate of particle emission at the time an electric arc is started;

a power supply for maintaining an electrical arc between the at least two electrodes;

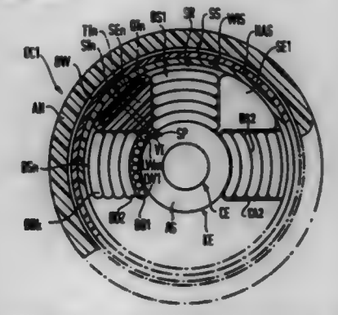
a control unit for initiating an electric arc between the at least two electrodes for at least a time t_c when the fiber holder has the fiber ends positioned outside the electric arc-forming space, where t_c is the time at which the rate of particle emission from the at least two electrodes is 50% of the initial rate of particle emission, the control unit moving the fiber ends within the electric arc-forming space after at least time t_c.

5,487,126

OPTICAL CABLE AND PROCESS FOR PRODUCING THE SAME

Ulrich Oestreich, München, and Reiner Schneider, Ebersdorf b. Coburg, both of, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE93/00146, § 371 Date Sep. 2, 1994, § 102(e) Date Sep. 2, 1994, PCT Pub. No. WO93/18424, PCT Pub. Date Sep. 16, 1993
PCT Filed Feb. 19, 1993, Ser. No. 295,812
Claims priority, application Germany, Mar. 3, 1992, 42 06 652.2
Int. Cl.[6] G02B 6/44; B21F 17/00
U.S. Cl. 385—105 39 Claims



1. An optical cable comprising: a core element, a plurality of ribbon stacks, each stack being formed by a plurality of optical waveguide ribbons, said stacks being arranged in at least one layer around said core element and supporting elements adjacent to the ribbon stacks said supporting elements being designed as independent profiles and each of said supporting elements being arranged in the interspace between two adjacent ribbon stacks, said supporting elements extending in radial direction at least as far as the ribbon stacks and lying with their inner ends on the core element such that said supporting elements contribute for positionally securing the ribbon stacks relative to each other.

33. A method for producing an optical cable comprising the steps of:

supplying a plurality if ribbon stacks, each of said stacks being formed by at least one layer of optical waveguide ribbons;

attaching the plurality of ribbon stacks to a core element; and

supplying and securing support elements into interspaces between adjacent ribbon stacks on the core element to secure the ribbon stacks in position relative to each other.

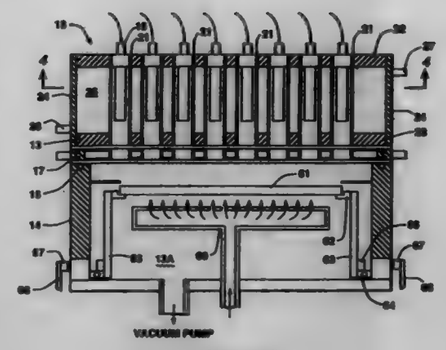
5,487,127

RAPID THERMAL HEATING APPARATUS AND METHOD UTILIZING PLURALITY OF LIGHT PIPES

Christian M. Gronet, and James F. Gibbons, both of Palo Alto, Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Division of Ser. No. 882,656, May 13, 1992, Pat. No. 5,317,492, which is a division of Ser. No. 781,632, Oct. 24, 1991, Pat. No. 5,155,336, which is a continuation of Ser. No. 467,808, Jan. 19, 1990, abandoned. This application Oct. 5, 1993, Ser. No. 131,830
Int. Cl.[6] H05B 3/40; C23C 16/00; H01L 21/00
U.S. Cl. 392—416 9 Claims

1. A vacuum chamber window assembly comprising a plurality of short light pipes brazed to upper and lower flange plates adapted to be sealed to at least one wall of a vacuum chamber and sealed between two thin quartz window plates.

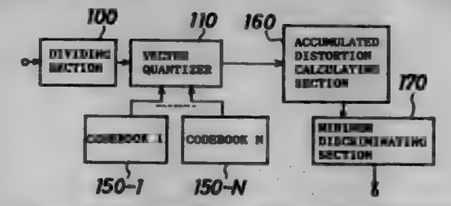


5,487,128

SPEECH PARAMETER CODING METHOD AND APPPARATUS

Kazunori Ozawa, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 26, 1992, Ser. No. 841,726
Int. Cl.[6] G10L 5/00; 9/14
U.S. Cl. 395—2.31 7 Claims



1. A speech parameter coding method, comprising the steps of:

receiving an input speech signal;

dividing the received speech signal into a plurality of frames each of a predetermined time length;

finding spectrum parameters, each of which corresponds to first to P-th order, of the speech signal for each of the frames;

dividing the spectrum parameters into a plural number of said spectrum parameters in accordance with their orders;

searching a spectrum codebook for the divided spectrum parameters and calculating a distortion due to quantizing by use of codevectors in said codebook to obtain a plurality of candidate codevectors.

5,487,129

SPEECH PATTERN MATCHING IN NON-WHITE NOISE

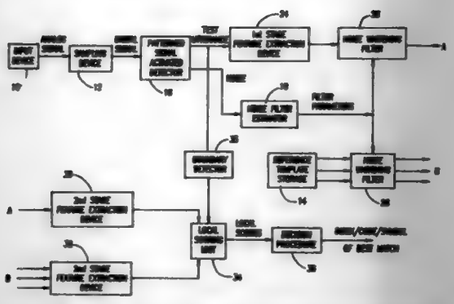
Omri Pass, Tel Aviv; Ilan D. Shallom, Ashdod; Feltx Flomen, Rishon Lezion, and Raziel Haimi-Cohen, Jerusalem, all of, Israel, assignors to The DSP Group, San Jose, Calif.

PCT No. PCT/US92/06351, § 371 Date Jun. 13, 1994, § 102(e) Date Jun. 13, 1994, PCT Pub. No. WO93/03480, PCT Pub. Date Feb. 18, 1993
PCT Filed Jul. 30, 1992, Ser. No. 190,887
Claims priority, application Israel, Aug. 1, 1991, 99041
Int. Cl.[6] G10L 9/00
U.S. Cl. 395—2.42 33 Claims

1. A system for matching an input signal, comprising non-white noise and a patterned signal corrupted by said non-white noise, to a plurality of reference signals, said system comprising:

an estimator estimating noise features of said non-white noise and producing from said noise features at least one noise whitening filter;

a filter filtering said input signal and said plurality of reference signals using said at least one noise whitening filter and producing a filtered input signal, having a white noise component, and a plurality of filtered reference signals; and



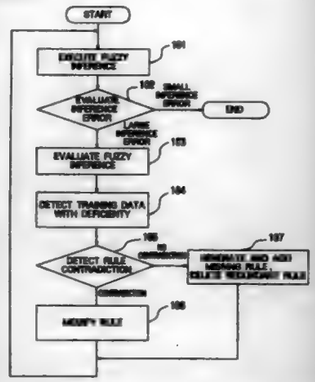
a pattern matcher for matching said filtered input signal to one of said filtered reference signals.

5,487,130

FUZZY RULE ACQUISITION METHOD AND APPARATUS FOR FUZZY INFERENCE SYSTEM AND FUZZY INFERENCE SYSTEM USING THE APPARATUS

Toshihide Ichimori, Kawasaki; Akira Maeda, Yokohama; Motohisa Funabashi, Sagamihara, and Toshihiko Nakano, Ibaraki, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 21, 1993, Ser. No. 140,665
Claims priority, application Japan, Jan. 22, 1992, 4-284179
Int. Cl.[6] G06F *15/18;15/00*
U.S. Cl. 395—3 **15 Claims**



1. A fuzzy rule acquisition method for a fuzzy inference system in which a fuzzy inference is achieved based on a fuzzy knowledge including fuzzy rules, each of the fuzzy rules described in a format having an IF part and a THEN part, and membership functions defining meanings of propositions described in the IF part and the THEN part, said fuzzy rule acquisition method comprising the steps of:

(a) executing a fuzzy inference for at least one input value by using said fuzzy rules of said fuzzy knowledge, and obtaining a result of the execution of the fuzzy inference;

(b) comparing the result of the execution of the fuzzy inference with a teaching value, and obtaining an inference error;

(c) obtaining errors of said fuzzy rules by using said inference error by referring to at least one of combinations of IF parts of said fuzzy rules, combinations of THEN parts of said fuzzy rules, and both of the combinations of the IF part and the THEN part of said fuzzy rules;

(d) determining whether a pair of said fuzzy rules are mutually contradictory, based on a pair of errors corresponding to said pair of fuzzy rules, by comparing the errors of each pair of fuzzy rules among all pairs of said fuzzy rules;

(e) determining each pair of fuzzy rules as contradictory rules if a ratio between the errors of each pair of fuzzy rules is within a predetermined range and one of the errors is negative and the other of the errors is positive;

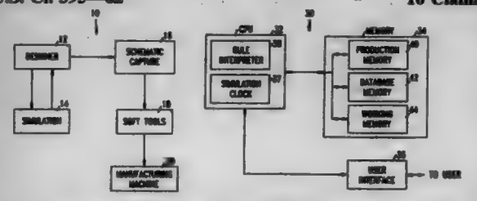
(f) modifying a fuzzy rule determined as contradictory to dissolve the contradiction by comparing the areas corresponding to the IF parts of each pair of fuzzy rules determined as contradictory and modifying the IF part of the fuzzy rule determined as having a larger area by the comparison result.

5,487,131

METHOD FOR ANALYZING THE FLOW OF DATA THROUGH A COMPLEX INFORMATION EXCHANGE SYSTEM

Amal A. Kassatly, Shrewsbury; Taylor S. Chaney, Arlington, and Peter Floss, Graton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 511,560, Apr. 20, 1990, abandoned. This application Dec. 9, 1991, Ser. No. 804,481
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—62 **10 Claims**



1. A computer implemented method for analyzing information flows in an information exchange system, the information exchange system comprises a plurality of processes intercoupled by a plurality of data paths, comprising the steps of:

(a) developing a model of the information exchange system based upon behavior of the plurality of processes utilizing computer implemented objects to respectively represent the plurality of processes in the information exchange system being modeled and events that occur in the information exchange system;

(b) simulating the information exchange system being modeled to emulate the information flows by transferring messages between the objects, the messages being representative of information transferred between the plurality of processes in the information exchange system;

(c) storing the messages;

(d) locating stored messages that satisfy preconditions of a plurality of rules; and

(e) executing each one of the plurality of rules whose preconditions were satisfied in step (d) to identify optimal data paths for information flows in the information exchange system.

5,487,132

END USER QUERY FACILITY

Viktor C. H. Cheng, 164 Lentor Loop #07-01, Singapore 2678, Singapore

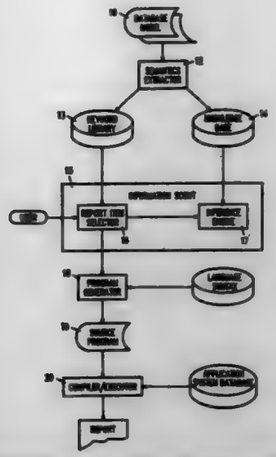
Continuation of Ser. No. 154,343, Nov. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 846,522, Mar. 4, 1992, Pat. No. 5,325,465. This application Nov. 30, 1994, Ser. No. 348,742
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—63 **37 Claims**

1. An end user query facility for accessing a database having a plurality of database files formed using a database model, comprising:

a knowledge base which stores key-types of items of said database files and a set of linkages of the database model;

a keyword library which stores a set of keywords of said database model representative of items of said database files;

a semantics extractor for reading said database model and extracting the semantics of said database model, and which



stores in said knowledge base said key-types of items and said set of linkages and which stores in said keyword library said set of keywords;

an information scout for interfacing with a user to obtain from the user a designation of the information to be extracted from said database;

an inference engine which, based upon said designation of information to be extracted from said database, identifies one or more of said database files which Contain the desired information and searches said knowledge base to determine the linkage(s) connecting said one or more identified files;

a program generator which accesses the linkages obtained by said inference engine and generates a program to extract said desired information from said database; and

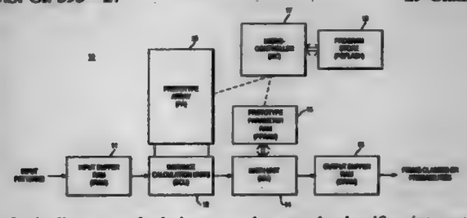
a model purifier for interfacing with a user to alter said key-types of items and said set of linkages in the knowledge base.

5,487,133

DISTANCE CALCULATING NEURAL NETWORK CLASSIFIER CHIP AND SYSTEM

Chin S. Park; Mark A. Holler, both of Palo Alto; Jay M. Diamond, San Jose; Siang-Chun The, Fremont, all of Calif.; Umberto Santoni, Scottsdale, Ariz., and Kenneth R. Buckmann, San Jose, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jul. 1, 1993, Ser. No. 86,514
Int. Cl.[6] G06F *9/00;15/16*
U.S. Cl. 395—27 **29 Claims**



1. A distance calculating neural network classifier integrated circuit chip comprising:

a. an input buffer for receiving and buffering an unknown input data vector with N elements at an input port of the input buffer, and an output port for sequentially outputting the vector elements;

b. a prototype memory array for storing a multiplicity of M prescribed prototype vectors, each prototype vector having N elements, and having M output ports for sequentially outputting the elements of each prototype vector in parallel;

c. a distance calculating unit having a multiplicity of parallel distance processing units, each processing unit having a first and a second input, the first input of each connected to the output port of the input buffer, the second input of each connected to a prescribed output port of the prototype memory array for sequentially calculating a distance metric representative of a vector distance between the unknown input data vector and each of the M prescribed prototype vectors, and the distance calculating unit having an output port for outputting the calculated distance metrics;

d. a prototype parameter memory for storing a prescribed set of M prototype vector distance classification parameters, one for each of the M prototype vectors, and an output port for reading out the stored classifications;

e. a mathematical processing unit having a first input port connected to the output port of the distance calculating unit, a second input port connected to the output port of the prototype parameter memory, for comparing the M calculated distance metrics with each of the M prototype vector distance classification parameters, and for producing a firing indicator associated with each of the M prototype vector distance classification parameters after each comparison that shows the distance metric to be less than the prototype vector distance classification parameter; and

f. a microcontroller having a program memory for storing a prescribed classification program and having a control bus for distributing control signals throughout the chip, so that the classifier integrated circuit chip operates in accordance with the prescribed classification program.

5,487,134

REAL-TIME RULE BASED PROCESSING SYSTEM

Dan Ballard, San Diego, Calif., assignor to Reticular Systems, Inc., San Diego, Calif.

Continuation of Ser. No. 23,059, Feb. 25, 1993, abandoned. This application Feb. 23, 1995, Ser. No. 393,241
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—51 **11 Claims**

1. An inference circuit which simultaneously forms a plurality of inferences from a plurality of input variables, said inference circuit comprising:

a set of logic gates representative of a rule network comprising a plurality of rule network portions, wherein each said portion comprises one or more of said logic gates connected together, wherein each said portion is capable of forming one of said inferences, and wherein each rule network portion simultaneously forms a one of said inferences;

a set of working memory storage elements representative of a working memory comprising a plurality of working memory groups, wherein each said group comprises one or more of said elements, each said element capable of storing one of said inferences;

a first set of signal lines connecting an output of each of the rule network portions to an input of a respective one of the working memory storage elements so that each inference is simultaneously stored in one of said working memory storage elements; and

a second set of signal lines connecting the output of each working memory storage element from a selected one of said

working memory groups to an input of a respective selected group of said rule network portions so that the inferences stored in said selected working memory group are available for subsequent inferences by the selected group of said rule network portions.

5,487,135

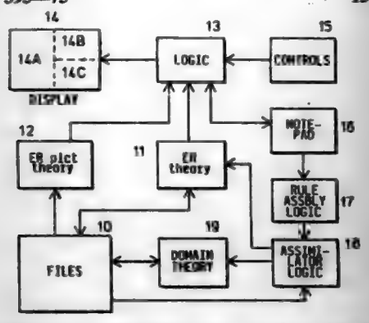
RULE ACQUISITION IN KNOWLEDGE BASED SYSTEMS

Paul R. W. Freeman, Southville Bristol, England, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 799,300, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 438,487, Feb. 12, 1990, abandoned. This application Aug. 12, 1994, Ser. No. 289,838

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—75 **15 Claims**



8. A method for constructing a new rule for a domain theory having an associated entity relationship (ER) theory represented by data which relates to the domain theory and which can be represented diagrammatically, wherein said domain theory includes one or more existing rules, comprising the steps of:

(a) displaying an ER diagram obtained from the ER theory;

(b) selecting elements of the ER diagram and related expressions for use in constructing a new rule;

(c) storing the selected elements and related expressions as stored conditions indicative of a new rule; and

(d) generating the new rule from at least the stored conditions.

5,487,136

METHOD AND CIRCUIT FOR PROCESSING DOT MATRIX IMAGE DATA IN A PAGE PRINTER

Ji-Ho Ro, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 29, 1992, Ser. No. 997,086

Claims priority, application Japan, Nov. 27, 1992, 1992-22635

Int. Cl.[6] B41J *2/51*

U.S. Cl. 395—108 **7 Claims**

1. A circuit for processing dot matrix image data for printing in a page printer, comprising:

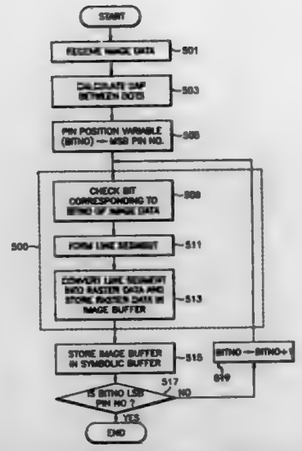
means for receiving the dot matrix image data from a host computer;

means for determining how many dots in said page printer correspond to one dot of the dot matrix image data received;

means for initializing a pin position variable, indicative of a location of a pin among a plurality of vertical pins of a dot matrix printer head, to a most significant bit pin number;

means for forming a line segment by checking a bit of the image data corresponding to the pin position variable;

means for checking whether the pin position variable corresponds to a least significant bit pin number;



means for increasing the pin position variable by one when said pin position variable does not correspond to the least significant bit pin number and returning to said step of forming a line segment; and

means for ending the processing of the dot matrix data when said pin position variable corresponds to the least significant bit pin number.

5,487,137

PRINT DATA PROCESSING APPARATUS

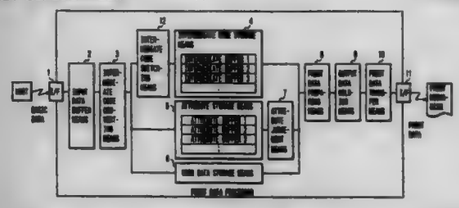
Masatoshi Matsuhira, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed May 25, 1993, Ser. No. 66,247

Claims priority, application Japan, Jun. 11, 1992, 4-152389

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—115 **6 Claims**



1. A print data processing apparatus coupled between a host computer and a print apparatus, said print data processing apparatus comprising:

input data holding means for holding basic data received through an interface from the host computer;

intermediate code converting means for preparing intermediate codes by converting the basic data held by said input data holding means;

intermediate code storage means having a plurality of intermediate buffers for dividing the intermediate codes into a plurality of intermediate code groups, and sequentially storing each of the intermediate code groups in an intermediate buffer;

an attribute storage means, having a plurality of attribute buffers, each attribute buffer storing modification data and position data in a sheet forwarding direction for each of the intermediate code groups stored in a corresponding intermediate buffer, the modification data and position data in a sheet forwarding direction being prepared using the basic data held by said input data holding means;

a single scanning line judgment means for selecting the intermediate buffers related to a single scanning line to be currently processed on the basis of the respective position data in the sheet forwarding direction stored in said attribute buffers in said attribute storage means; and

a print data preparing means for preparing print data from the intermediate code groups held by the intermediate buffers selected by said single scanning line judgment means and the respective modification data stored in the attribute buffers.

5,487,138

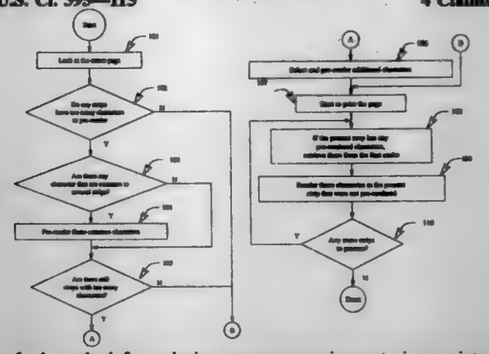
METHOD TO REDUCE MEMORY REQUIREMENTS IN ASIAN PRINTERS WHILE IMPROVING PERFORMANCE

Robert A. Rust, and Wayne A. Overby, both of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 2, 1993, Ser. No. 116,181

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—115 **4 Claims**



1. A method for reducing memory requirements in a printer means when printing a page of characters, said printer means capable of rendering a maximum number of characters per unit time, said method being performed by said printer means, said method comprising the steps of:

dividing said page into a plurality of strips;

scanning said plurality of strips for any strips that contain a number of characters that exceeds said maximum number;

for each strip that contains said number of characters that exceeds said maximum number, pre-rendering those characters that exceed said maximum number and storing said pre-rendered characters in a memory; and

rendering each character in a strip from said plurality of strips when said printer means is ready to print said strip, if any character in said strip was pre-rendered then retrieving said pre-rendered character from said memory.

5,487,139

METHOD AND SYSTEM FOR GENERATING A RASTER DISPLAY HAVING EXPANDABLE GRAPHIC REPRESENTATIONS

Charles H. M. Saylor, Manlius; Vincent N. Cavo, Utica; James A. Riccardi, Jr., Yorkville, and Alan T. Piszcz, New York Mills, all of N.Y., assignors to Niagara Mohawk Power Corporation, Syracuse, N.Y.

Filed Sep. 10, 1991, Ser. No. 758,875

Int. Cl.[6] G06F *15/00*

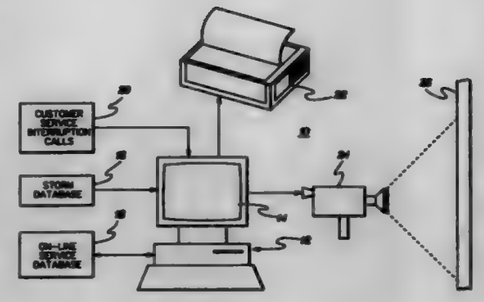
U.S. Cl. 395—135 **21 Claims**

1. A method for generating a raster display map having expandable graphic representations, said generating method employing an existing map and an object database containing information on addresses located within the territory represented by the existing map, said generating method comprising the steps of:

(a) obtaining and displaying a raster map corresponding to said existing map;

(b) providing a preexisting vector database having information characteristic to the territory represented by the raster map;

(c) displaying a vector map from said vector database, said displayed vector map containing said information characteristic to the territory depicted in said raster map;



(d) aligning corresponding areas of said raster map and said vector map;

(e) geocoding said object database information with X,Y coordinates relative to said vector database, at least some of said X,Y coordinates identifying addresses within the areas depicted by said aligned raster and vector maps; and

(f) displaying said raster map and a graphical representation of an address located within the area represented by the raster map, said graphical representation being expandable to provide object database information on said address.

5,487,140

DATA PROCESSING APPARATUS FOR OBTAINING PATTERN-IMAGE DATA

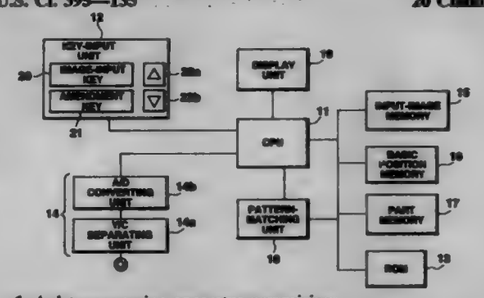
Masumi Toya, Akishima, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1993, Ser. No. 156,852

Claims priority, application Japan, Dec. 21, 1992, 4-340299

Int. Cl.[6] G06F *15/72*

U.S. Cl. 395—135 **20 Claims**



1. A data processing apparatus comprising:

input means for inputting image data of a face of a person, the image data being obtained by taking a picture of the person;

image-data storing means for storing the image data input by said input means;

component-data storing means for previously storing a plurality of pattern data of each of components which compose a human face, said components of the human face including at least eyes, a nose and a mouth, and said plurality of pattern data representing different shapes of the component, respectively;

component-deriving means for deriving component-image data corresponding to one of the components from the image data stored in said image-data storing means;

judging means for determining a degree of resemblance of the pattern data of each of the components to the component-image data of the relevant component derived by said component-deriving means, and for detecting pattern data of a highest degree of resemblance with respect to all the components based on the determined degree of resemblance of the pattern data; and

processing means for combining the pattern data detected by said judging means to compose a portrait of the person,

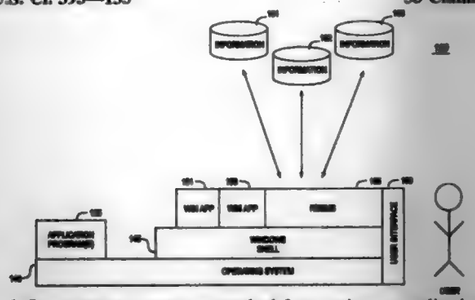
whereby a portrait is composed which shows a better resemblance to the face of the person.

5,487,141

DEVELOPMENT SYSTEM WITH METHODS FOR VISUAL INHERITANCE AND IMPROVED OBJECT REUSABILITY

Ronald A. Cain, Scotts Valley; Janet A. De Lu, Santa Cruz, and Ralph E. Lemke, Cupertino, all of Calif., assignors to Borland International, Inc., Scotts Valley, Calif.

Filed Jan. 21, 1994, Ser. No. 184,611
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—135 **35 Claims**



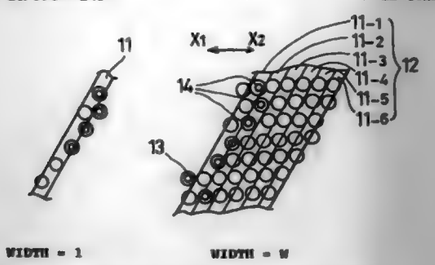
1. In a computer system, a method for creating an application program, the method comprising:
(a) providing a set of screen objects, each object having a set of properties and built-in methods for responding to user events, said set of objects including some objects which may be contained within other objects of the set;
(b) displaying a blank form for placement of objects;
(c) placing desired ones of said objects at desired locations on the form, each object having a visual boundary on screen;
(d) positioning first and second objects so that said first object is positioned inside the visual boundary of said second object; and
(e) in response to said positioning step, establishing an object hierarchy specifying a container relationship between said first and second objects, said container relationship specifying that user events occurring at said first object are passed to said built-in methods of said second object for processing after processing by said built-in methods of said first object.

5,487,142

ANTI-ALIASING LINE DISPLAY APPARATUS

Noriko Nakayama, and Hiroshi Nakayama, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 21, 1994, Ser. No. 184,153
Claims priority, application Japan, Mar. 19, 1993, 5-059918
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—143 **11 Claims**



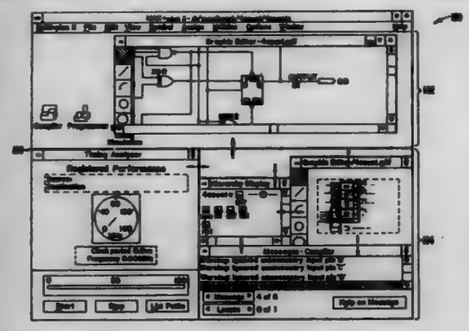
1. An anti-aliasing line display apparatus comprising:
an input means for inputting a coordinate and an attribute of a straight line which is to be displayed;
judging means for judging a width and a slope of the input straight line;
analyzing means for decomposing the input straight line into individual pixels and setting a drawing pixel to be drawn;
distance calculating means for calculating a distance from a center of the drawing pixel set by the analyzing means to the input straight line;
occupying ratio calculating means for calculating an occupying ratio of the input straight line with respect to the drawing pixel based on the distance calculated by the distance calculating means and the width judged by said judging means;
frame buffer means input with a color in advance;
blending means for blending a color of the drawing pixel and the color input in the frame buffer means in advance based on the occupying ratio, and for writing the blended color in the frame buffer means; and
display means for displaying the input straight line based on the color of the drawing pixel written in the frame buffer means.

5,487,143

COMPUTER USER INTERFACE HAVING TILED AND OVERLAPPED WINDOW AREAS

Timothy J. Southgate, San Carlos, Calif., assignor to Altera Corporation, San Jose, Calif.

Filed Apr. 6, 1994, Ser. No. 223,930
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—157 **12 Claims**



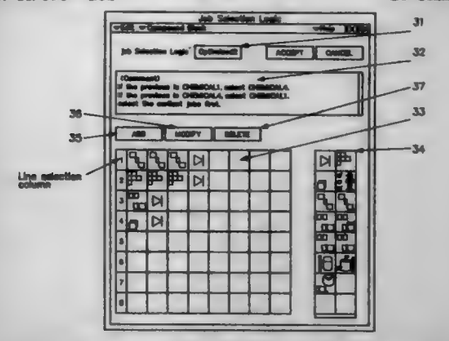
12. An apparatus for displaying multiple windows on a display area, wherein the display area is a window corresponding to an application program being executed, the apparatus comprising:
a processor coupled to the display area for executing instructions that control the displaying of windows on the display area;
allocation means for allocating first and second window areas on the display area, wherein the first window area is an overlapped window area and the second window area is a tiled window area;
designation means for designating a window as overlapped or tiled;
display means for displaying two or more overlapped windows in the overlapped window area, wherein two or more windows overlap, and for displaying tiled windows in the tiled window area wherein the windows area displayed without overlapping.

5,487,144

SCHEDULING SYSTEM

Kimikazu Takahashi; Haruko Mitake, and Shigeru Fujimura, all of Tokyo, Japan, assignors to Yokogawa Electric Corporation, Tokyo, Japan

Filed Sep. 20, 1993, Ser. No. 124,401
Claims priority, application Japan, Dec. 1, 1992, 4-321897; Dec. 7, 1992, 4-326521
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—161 **26 Claims**



1. A scheduling system for displaying, on a display field, a plurality of function blocks, each of which assigns a predetermined program operation, and for relocating the plurality of function blocks to realize a plurality of logics for scheduling, said scheduling system comprising
a logic formation interface for combining and relocating ones of said function blocks for assigning predetermined program operations, thereby assigning operational contents and operational order of a program and completing formed logics for scheduling;
a logic storage unit for storing the formed logics;
an execution unit for executing the scheduling by using the formed logics stored in said logic storage unit; and
wherein each of said plurality of function blocks comprises
means for performing evaluation on basis of element selection in a function block;
means for transferring a row of output elements from a first function block to an adjacent function block located in a first location when a row of input elements in said first function block is identical to the performed evaluation; and
means for transferring said row of input elements from said first function block to another adjacent function block located in a second location when said row of input elements in said first function block is not identical to the performed evaluation.

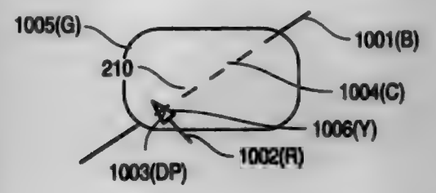
2. A method of generating a composite graphic image from a plurality of overlapping opaque and non-opaque graphic images, each of the plurality of graphic images being included in one of a plurality of groups, and within a group, the graphic image being displayed at a depth level which determines a visual distance of the graphic image from a viewer relative to other images of the group, each of the plurality of groups being associated with a group level indicative of a visual distance of the each group from the viewer relative to the other groups, the method comprising the steps of:
(a) selecting an active image from the plurality of graphic images and determining one of the plurality of groups in which the active image is located;
(b) determining whether the active image intersects graphic images located in the one group and having a higher depth level;
(c) determining whether graphic images in any of the plurality of groups having a higher group level than the one group intersect the active image; and
(d) combining the active image with all intersected non-opaque images to generate the composite graphical image including the step of locking a region of the active image defined by the smallest intersection of the active image and an intersecting image to minimize the amount of image data which is locked.

5,487,145

METHOD AND APPARATUS FOR COMPOSITING DISPLAY ITEMS WHICH MINIMIZES LOCKED DRAWING AREAS

Donald M. Marsh, Mountain View, and Jeff Zias, Santa Clara, both of Calif., assignors to Taligent, Inc., Cupertino, Calif.

Filed Jul. 9, 1993, Ser. No. 89,924
Int. Cl.[6] G06F *9/34*
U.S. Cl. 395—162 **15 Claims**

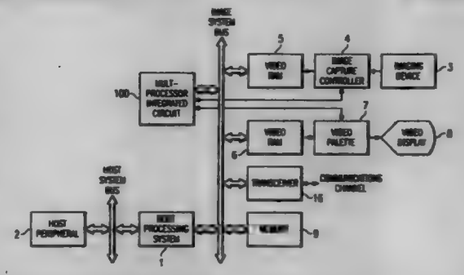


5,487,146

PLURAL MEMORY ACCESS ADDRESS GENERATION EMPLOYING GUIDE TABLE ENTRIES FORMING LINKED LIST

Karl M. Guttag, Sugarland; Sydney W. Poland, Katy, both of Tex.; Keith Balmer, Bedford, England; Robert J. Gove, Plano, and Christopher J. Read, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 8, 1994, Ser. No. 209,124
Int. Cl.[6] G06F *12/06*
U.S. Cl. 395—166 **18 Claims**



1. A data processing device comprising:
a memory storing data at a plurality of corresponding addresses;
a control circuit operative to receive a packet transfer request and packet transfer parameters, said packet transfer parameters including a start address, dimension values defining a block of addresses, a number of guide table entries and a table pointer;
a guide table including said number of guide table entries, each guide table entry including an address value, said table pointer initially pointing to a first guide table entry in said guide table; and
an address generating circuit coupled to said control circuit and to said guide table, said address generating circuit operative to receive said start address, said dimension values, said number of guide table entries and said table pointer from said packet transfer parameters, said address generating circuit forming a set of block of addresses for memory access corresponding said guide table entry by
forming a block start address from a predetermined combination of said start address and said address value of said guide table entry pointed to by said table pointer, a first block start address being said start address,
forming a block of addresses from said block start address and said dimension values,

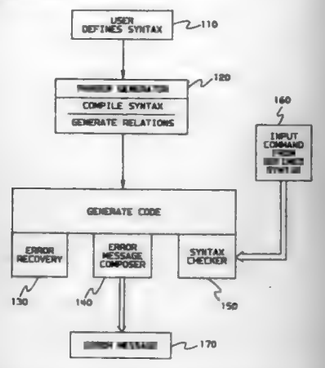
performing a memory access at said block of addresses, and updating said table pointer to point to a next entry in said guide table following said memory access if less memory accesses than said number of guide table entries have been performed.

5,487,147

GENERATION OF ERROR MESSAGES AND ERROR RECOVERY FOR AN LL(1) PARSER

James P. Brisson, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 5, 1991, Ser. No. 755,270
Int. Cl.[6] G06F *17/27*
U.S. Cl. 395—180 3 Claims



1. A method for dynamically producing a set of synchronizing symbols, said method comprising the steps of:

creating a copy of a parsing stack, said parsing stack being produced by a parser operating consistently with a set of grammar rules to create said stack;

adding a bottom of stack indicator to the set of synchronizing symbols;

scanning said stack to determine if the symbol at the top of the stack is the bottom of stack indicator and terminate synchronizing symbol accumulation if it is, otherwise, continue processing by:

determining if the symbol at the top of the stack is a nonterminal symbol in said grammar and, if so, adding First set symbols associated with said top of stack symbol to said set of synchronizing symbols and replacing said nonterminal symbol on said stack in accordance with a designated grammar rule for it, and continuing processing at said scanning step, but if said top of stack symbol is not a nonterminal symbol, continue processing by:

determining if said top of stack symbol is a terminal symbol in said grammar and, if so, adding said terminal symbol to said set of synchronizing symbols and removing said terminal symbol from said stack and continuing processing at said scanning step, but if said top of stack symbol is neither a terminal symbol nor a nonterminal symbol, continue processing by:

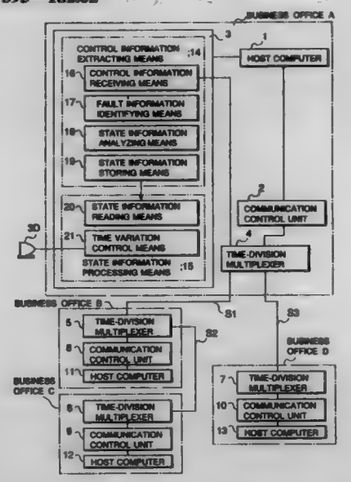
removing said neither terminal nor nonterminal symbol from said stack and continue processing at said scan step.

5,487,148

METHOD AND APPARATUS FOR DETECTING FAULTS IN A COMPUTER NETWORK

Naoki Komori, Tokyo; Akio Morita, Saitama, and Katsuaki Suzuki, Asaka, all of, Japan, assignors to Honda Giken Kogyo Kabushikikaisha, Tokyo, Japan

Filed Feb. 9, 1994, Ser. No. 194,075
Claims priority, application Japan, Feb. 12, 1993, 5-024310
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—182.02 4 Claims



2. A central monitoring system for detecting faults in a computer network comprising a plurality of computer systems interconnected to the central monitoring system by a communication network, each computer system capable of detecting occurrences of (1) fault conditions affecting such computer system, and (2) fault restoration conditions affecting such computer system, and further capable of generating and transmitting over the communication network to the central monitoring system information (1) fault information in response to the occurrence of a detected fault condition and (2) fault restoration information in response to the occurrence of a detected fault restoration condition, the central monitoring system including:

(1) receiving means for receiving fault information from one of the computer systems by means of the communication network;

(2) storing means for storing a data record for received fault information, each data record corresponding to the transmitting computer system and indicating occurrence of a first level fault;

(3) receiving means for receiving fault restoration information from one of the computer systems by means of the communication network;

(4) comparison means for comparing received fault restoration information to a corresponding stored data record, and resetting such data record to indicate a no-fault condition;

(5) search means for repeatedly accessing each data record, and changing each data record indicating a first level fault to indicate occurrence of a second level fault if the data record has not been reset to indicate a no-fault condition before lapse of a first pre-set time period;

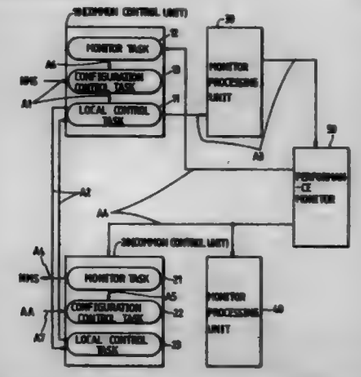
(6) indicator means for indicating an alarm condition corresponding to each data record set to the second level fault condition, the alarm condition indicating a serious fault condition.

5,487,149

COMMON CONTROL REDUNDANCY SWITCHI METHOD FOR SWITCHING A FAULTY ACTIVE COMMON CONTROL UNIT WITH AN INACTIVE SPARE COMMON CONTROL UNIT

Ki Y. Sung, Seoul, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Inc., Rep. of Korea

Filed Dec. 29, 1994, Ser. No. 366,262
Claims priority, application Rep. of Korea, Dec. 29, 1993, 93-30521
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—182.08 6 Claims



1. A common control redundancy switch method carried out in a common control device including a pair of common control units each adapted to manage and control a network of a very small aperture terminal system, one of the common control units being normally at an active state and having a first local control task, a first monitor task and a first configuration control task, the other being normally at an inactive state and having a second local control task, a second monitor task and a second configuration control task, a pair of monitor processing units each adapted to exchange information with both a network management system and each corresponding one of the common control units in a dual-ported ram manner and thereby function as an interface of a monitoring processor bus, and a performance monitor adapted to function as a switch for connecting the currently active one of the common control units with the monitoring processor bus so as to achieve a common control redundancy switching operation, the common control redundancy switch method comprising the steps of:

(A1) receiving a switch message from the network management system via the first configuration control task by the first local control task;

(A2) receiving the switch message from the first local control task by the inactive common control unit and transmitting a response to the received switch message to the first local control task;

(A3) transmitting information about a major error to be corrected in the first local control task to the monitor processing unit corresponding to the active common control unit and thereby executing a switching operation in the performance monitor;

(A4) continuously reading interface parts of the performance monitor at half second intervals by the monitor tasks of the common control units, checking whether respective current states of the common control units have been switched, on the basis of the result of the reading, transmitting the switch result to the network management system when the state of the inactive common control unit has been checked to be switched to its active state;

(A5) informing the second configuration control task by the second monitor task of the switch result that the inactive common control unit has been switched to its active state;

(A6) informing the first configuration control task by the first monitor task of the switch result that the active common control unit has been switched to its inactive state; and

(A7) checking states of operations performed by the active common control unit for the network of the very small aperture terminal system, by the second configuration control task of the inactive common control unit switched to the active state and an updating data base of the second configuration control task with the checked operation states.

5,487,150

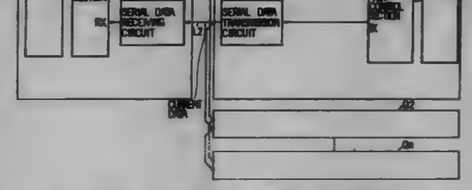
Patent Not Issued For This Number

5,487,151

TRANSMISSION ERROR DETECTION SYSTEM FOR USE IN A DISASTER PREVENTION MONITORING SYSTEM

Masamichi Kikuchi, Ayase, and Akio Adachi, Machida, both of, Japan, assignors to Hochiki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 859,104, Mar. 27, 1992, abandoned.
This application Dec. 14, 1994, Ser. No. 355,827
Claims priority, application Japan, Apr. 15, 1991, 3-082338; Apr. 15, 1991, 3-082340
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—185.02 3 Claims



1. A transmission error detection method in a disaster prevention monitoring system, for detecting errors in data transmission between a receiver and terminal units, comprising the steps of:

connecting a plurality of terminal units having specific address data to first and second transmission lines led out from a receiver;

sending out access data including said address in the form of a voltage from said receiver through said first transmission line;

sending back response data by a terminal unit specified in the access data in the form of an electric current through said second transmission line during a response time period;

said response data sent back by the terminal unit which has responded to the access data sent out by said receiver being formed of terminal state data and checksum data produced by adding the terminal state data to said specific address data;

said terminal units, whose address are in accordance with the address specified in the access data when said receiver carries out accessing by specifying the address of said terminal units, transfer said response data during said response time period, and the terminal units, whose address are not in accordance with the address specified in the access data, inhibit receiving the response data through said first transmission line during said response time period;

adding address data specified by the receiver at a time of accessing to the terminal state data sent back during said response time period by said receiver; and determining that a transmission error has occurred when said addition does not match said checksum data, a transmission error being checked for correctness by comparing checksum data with data formed by adding the terminal state data to said specific address data

at a receiver, and whether a response is present with state information transmitted from a specified address.

5,487,152

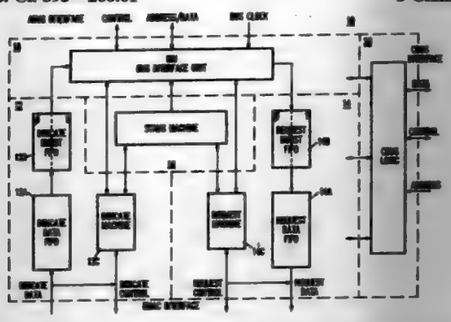
METHOD AND APPARATUS FOR FRAME HEADER SPLITTING IN A MEDIA ACCESS CONTROL/HOST SYSTEM INTERFACE UNIT

Desmond W. Young, Campbell, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 141,472, Oct. 22, 1993, abandoned, which is a division of Ser. No. 989,942, Dec. 10, 1992, abandoned, which is a continuation of Ser. No. 516,245, Apr. 27, 1990, abandoned. This application Sep. 19, 1994, Ser. No. 308,635

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.01 **3 Claims**



1. An interface system connected between a local area network communications medium and a network station for transferring information frames between the communications medium and a memory system associated with the network station, wherein each information frame consists of a sequence of frame segments having identifiable boundaries therebetween, and wherein the memory system includes a plurality of separate storage areas, the interface system comprising:

a bus interface unit connectable to the network station for transferring information frames between the interface system and the memory system;

indicate circuitry connected to the bus interface unit and connectable to the communications medium for transferring information frames received by the interface system from the communications medium to the memory system via the bus interface unit;

request circuitry connected to the bus interface unit and connectable to the communications medium for transferring information frames received by the interface system from the memory system via the bus interface unit to the communications medium;

frame segment detection circuitry connected to the indicate circuitry for identifying the identifiable boundary between first and second adjacent frame segments of an information frame prior to transfer of the information frame to the system memory via the bus interface unit; and

segment transfer control circuitry connected to the frame segment detection circuitry for providing a control signal to the bus interface unit such that the bus interface unit transfers the first of the adjacent frame segments to a first storage area of the memory system and the second of the adjacent frame segments to a second storage area of the memory system different from the first storage area.

5,487,153

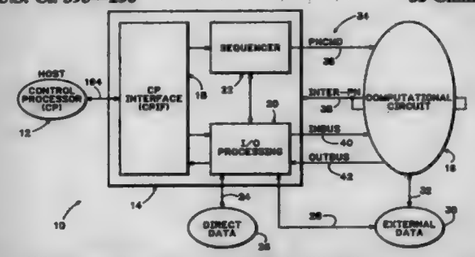
NEURAL NETWORK SEQUENCER AND INTERFACE APPARATUS

Daniel W. Hammerstrom, Aloha; Dean W. Mueller, and Stephen G. Owens, both of Portland, all of Oreg., assignors to Adaptive Solutions, Inc., Beaverton, Oreg.

Continuation of Ser. No. 752,769, Aug. 30, 1991, abandoned. This application Jun. 24, 1994, Ser. No. 267,005

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—250 **35 Claims**



1. A computational system (**10**) for use with a host processor (**12**) having a memory unit (**12***a*) therein, comprising:

at least one single-instruction multiple-data (SIMD) computational circuit component (**16**) having a first timing characteristic for processing inputs from an external device and for producing outputs thereto, wherein such inputs and outputs have a second timing characteristic that is different from said first timing characteristic;

at least one controller component (**14**) including transfer means (**22**) for effecting control instructions and bi-directional parallel data communications between said computational circuit component (**16**) and such external device.

5,487,154

HOST SELECTIVELY DETERMINES WHETHER A TASK SHOULD BE PERFORMED BY DIGITAL SIGNAL PROCESSOR OR DMA CONTROLLER ACCORDING TO PROCESSING TIME AND I/O DATA PERIOD

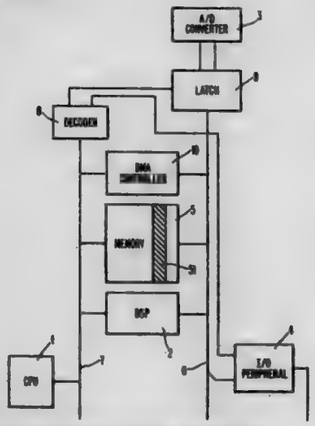
Keita Gunji, Tokyo, Japan, assignor to Hewlett-Packard Co., Palo Alto, Calif.

Filed Jul. 14, 1992, Ser. No. 913,608

Claims priority, application Japan, Jul. 18, 1991, 3-204008

Int. Cl.[6] G06F *13/12;13/14*

U.S. Cl. 395—842 **5 Claims**



1. A signal processing apparatus comprising:

memory means for storing digital signals and processes for processing said digital signals;

input and output (I/O) means for inputting and outputting said digital signals to and from said signal processing apparatus;

a direct memory access (DMA) controller connected to said memory means and said I/O means for storing/reading said digital signals to/from said memory means and said I/O means in a direct memory access mode;

a digital signal processor (DSP) connected to said DMA controller, said I/O means, and said memory means for processing said digital signals stored in said memory means, said DSP executing a data empty check program under the control of a real-time monitor including a semaphore for checking for the existence of said digital signals to be processed and executing another process when said digital signals are not available for processing; and

a host CPU connected to said DMA and said DSP for determining whether a data transfer requested by a task of said processes is performed by said DMA controller or said DSP based upon a comparison between an I/O data period and a processing time of said task, whereby said data transfer requested by said task is performed by said DMA when said I/O period is shorter than said processing time of said task.

5,487,155

DATA SWITCH WITH MULTIPLEXERS FOR FORMING DATA CONNECTIONS AND CONTROL UNIT FOR CHECKING PERMISSIBILITY OF CONNECTIONS

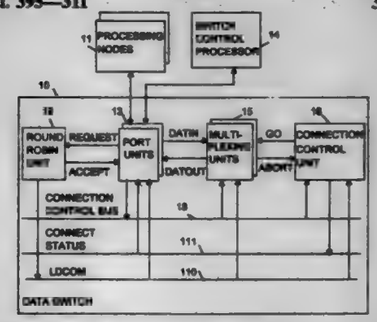
John R. Drewry, Stockport; Michael Collins, Withington, and Ashwani K. Korpal, Stockport, all of, England, assignors to International Computers Limited, London, England

Filed Sep. 30, 1994, Ser. No. 315,827

Claims priority, application United Kingdom, Nov. 23, 1993, 9324040

Int. Cl.[6] G06F *13/00;15/17*

U.S. Cl. 395—311 **3 Claims**



1. Data switching apparatus comprising:

(a) a plurality of input data channels and a plurality of output data channels;

(b) a command bus;

(c) means for sending a connection command on said command bus, said connection command specifying one of said input data channels as a source channel and specifying one of said output data channels as a destination channel for a proposed data connection;

(d) a plurality of multiplexing units connected to said input data channels, to said output data channels, and to said command bus, each of said multiplexing units comprising means for responding to said connection command, if said proposed connection is not already busy, by preparing said proposed data connection between said source channel and said destination channel, but without completing said connection; and

(e) a connection control unit connected to said command bus, said connection control unit comprising means for responding to said connection command by checking whether said proposed data connection is permissible and, if said proposed data connection is permissible, for sending a go-ahead signal to all of said multiplexing units;

(f) wherein each of said multiplexing units further includes means connected to receive said go-ahead signal from said connection control unit and for responding to said go-ahead signal by connecting said source channel to said destination channel, thereby completing said proposed data connection.

5,487,156

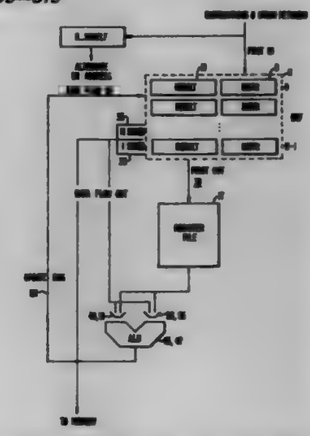
PROCESSOR ARCHITECTURE HAVING INDEPENDENTLY FETCHING ISSUING AND UPDATING OPERATIONS OF INSTRUCTIONS WHICH ARE SEQUENTIALLY ASSIGNED AND STORED IN ORDER FETCHED

Valeri Popescu, 12686 Monterey Cypress, San Diego, Calif. 92130; Merle A. Schultz, 1013 Fern St., Escondido, Calif. 92027; Gary A. Gibson, 2624 La Golandrina, Carlsbad, Calif. 92009; John E. Sprackien, 3540 Moultrie Ave., San Diego, Calif. 92117, and Bruce D. Lightner, 10305 Moselle St., San Diego, Calif. 92131

Continuation-in-part of Ser. No. 451,403, Dec. 15, 1989, abandoned. This application Dec. 5, 1990, Ser. No. 622,893

Int. Cl.[6] G06F *9/30*

U.S. Cl. 395—375 **36 Claims**



1. A data processing system for processing information in response to a series of instructions including instructions that control arithmetic operations on the information, the data processing system comprising:

register means for storing information;

fetching means for continuously fetching instructions from the series of instructions;

shelving means coupled to the fetching means to receive fetched instructions and to store multiple such instructions in the order fetched, wherein each instruction within said shelving means is identified by a sequential instruction identifier assigned in the order fetched;

scheduling means coupled to the shelving means for continuously selecting instructions in the shelving means for which all information required for execution is available in one of the register means or the shelving means and for issuing those instructions for execution in an order independent of the order in which those instructions were fetched;

arithmetic means coupled to the scheduling means for performing operations on information in one of the register means or the shelving means in response to instructions supplied from the shelving means to generate execution results, the arithmetic means further coupled to the shelving means so that the shelving means receives the results of execution of instructions and is capable of storing the result of the execution of every instruction stored within said shelving means; and

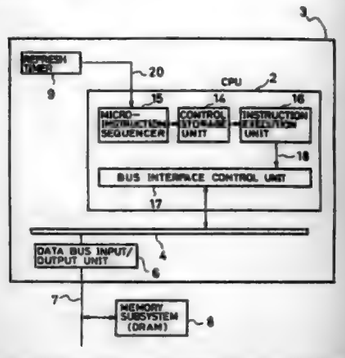
retirement means for copying results of the execution of the oldest instruction in the shelving means into the register means and removing that instruction from the shelving means.

5,487,157

MICROPROGRAMMED MICROCOMPUTER WITH HIGH-SPEED INTERRUPT FOR DRAM REFRESH

Shigeo Mizugaki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1994, Ser. No. 248,793
Claims priority, application Japan, Jun. 15, 1993, 5-143466
Int. Cl.[6] G06F *9/32*
U.S. Cl. 395—375 **10 Claims**



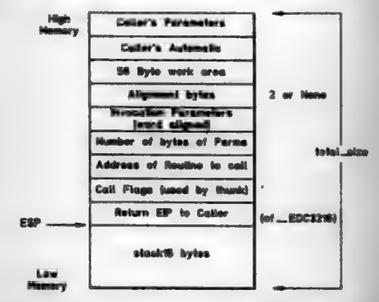
1. A microcomputer having a refresh function and comprising:
a CPU including a control storage unit for storing a set of microinstructions and control means for controlling the order of executing microinstructions by specifying addresses for storing the set of microinstructions, and
a timer for specifying a time interval of a refresh cycle for a dynamic memory, wherein a count termination signal of said timer is input into said control means;
wherein said CPU receives the count termination signal of said timer applied to said control means therein, interrupts the execution of a set of microinstructions, executes another set of microinstructions for generating a refresh cycle, and resumes the execution of the set of microinstructions when the execution of the set of microinstructions for generating the refresh cycle is completed.

5,487,158

METHOD AND PROCEDURE CALL MECHANISM FOR CALLING 16-BIT FUNCTIONS FROM 32-BIT FUNCTIONS

Ian R. Amelina; David M. Mooney, both of Toronto, and Kevin A. Stoodley, Richmond Hill, all of, Canada, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 43,454, Apr. 6, 1993, abandoned. This application Sep. 6, 1994, Ser. No. 301,280
Int. Cl.[6] G06F *9/40*
U.S. Cl. 395—375 **18 Claims**



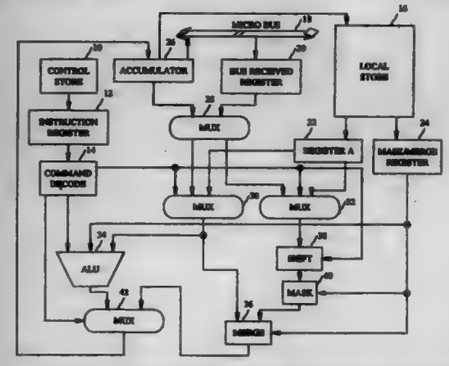
1. In a computing environment, a method for calling a 16-bit code from a 32-bit subroutine, in which at least one stack frame in a memory stack is allocated to the 32-bit subroutine, comprising the computer implemented steps of:
defining a consecutive series of 64K byte boundaries in the stack;
providing means for accessing variables and data objects spanning any 64K byte boundary defined in the stack from below the 64K byte boundary;
building a parameter list in the stack in 16-bit form; and
allocating stack space for data to be used by the 16-bit code.

5,487,159

SYSTEM FOR PROCESSING SHIFT, MASK, AND MERGE OPERATIONS IN ONE INSTRUCTION

Larry L. Byers, Apple Valley; Joseba M. De Subijana, Minneapolis, and Wayne A. Michaelson, Circle Pines, all of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 23, 1993, Ser. No. 172,526
Int. Cl.[6] G06F *9/305;9/315*
U.S. Cl. 395—375 **4 Claims**



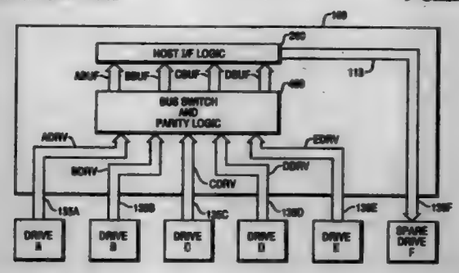
1. A system for selectively executing shift, mask, and merge operations on two operands specified by one computer instruction according to a programmably selectable shift count, a programmably selectable shift direction, and programmably selectable mask and merge conditions, comprising:
a first register to hold at least temporarily a first operand to be manipulated;
a second register to hold at least temporarily a second operand to be manipulated;
selection circuitry, coupled to said first and said second registers, for alternatively selecting true of said first and said second registers for shifting and masking, and then merging with the other register, based on the contents of the computer instruction;
shift circuitry, connected to said selection circuitry and said first and said second registers, for selectively shifting said selected one of said first and said second registers according to the programmably selectable shift count and shift direction;
a mask/merge register holding mask and merge indicators representing the programmably selectable mask and merge conditions, said mask indicators indicating a plurality of single-bit flags controlling masking of multiple-bit portions of a mask operand, said merge indicators including a plurality of single-bit flags controlling merging of multiple-bit portions of merge operands;
mark circuitry, connected to said shift circuitry and said mask/merge register, for selecting a portion of said shifted selected one of said first and said second registers to be merged, by masking said shifted selected one of said first and said second registers according to said mask indicators; and
merge circuitry, connected to said mask circuitry and said mask/merge register, for merging said selected portion of said shifted selected one of said first and said second registers with the other register, according to said merge indicators, to produce a merged result.

5,487,160

CONCURRENT IMAGE BACKUP FOR DISK STORAGE SYSTEM

Edward D. Bemis, Derby, Kans., assignor to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, Milpitas, Calif., and Symbios Logic Inc., Fort Collins, Colo.

Filed Dec. 4, 1992, Ser. No. 985,710
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—441 **9 Claims**



1. In a disk storage system, a method for concurrently backing up contents of said disk storage system to a backup storage device and processing a write I/O request received by said disk storage system, comprising the steps of:
sequentially copying data from said disk storage system to said backup storage device;
halting said process of sequentially copying data from said disk storage system to said backup storage device upon receipt of said write I/O request;
determining whether said write I/O request updates data residing in a storage area within said disk storage system which has not been copied to said backup device;
copying the data residing in said storage area to a temporary storage device if the data residing in said storage area has not been copied to said backup device;
executing said write I/O request to update the data residing in said storage area;
resuming said process of sequentially copying data from said disk storage system to said backup storage device; and
copying the contents of said temporary storage device to said backup storage device upon completion of said process of sequentially copying data from said disk storage system to said backup storage device.

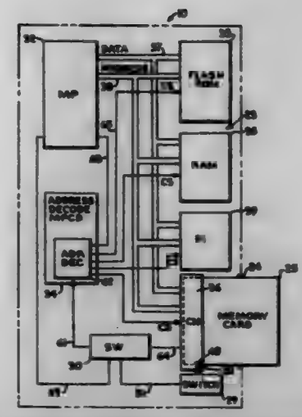
5,487,161

COMPUTERIZED DATA TERMINAL WITH SWITCHABLE MEMORY ADDRESS FOR START-UP AND SYSTEM CONTROL INSTRUCTIONS

Steven E. Koenck, Cedar Rapids; Rickey G. Austin, Lisbon, and Darrell L. Boatwright, Cedar Rapids, all of Iowa, assignors to Norand Corp., Cedar Rapids, Iowa

Filed Nov. 25, 1992, Ser. No. 982,303
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—442 **18 Claims**

1. Microprocessor controlled apparatus comprising:
a microprocessor device and a microprocessor operating circuit, the microprocessor device communicatively coupled into the microprocessor operating circuit;
reprogrammable memory coupled into the microprocessor operating circuit to communicatively interact with the microprocessor device, the reprogrammable memory containing a plurality of addressable memory locations;
means for addressing designated ones of the memory locations of the reprogrammable memory for start-up operations of the microprocessor;
means for selectively coupling additional memory locations into the microprocessor operating circuit to communicatively interact with the microprocessor device;



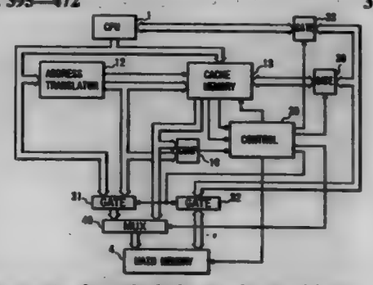
means for substituting designated ones of the additional memory locations for the designated ones of the reprogrammable memory to be addressed by the addressing means for start-up operations of the microprocessor; and
means for reversing the addresses of the designated ones of the memory locations of the reprogrammable memory having start-up operations of the microprocessor and the addresses of the additional memory locations having the start-up operations of the microprocessor.

5,487,162

CACHE LOCK INFORMATION FEEDING SYSTEM USING AN ADDRESS TRANSLATOR

Tetsuya Tanaka, Osaka, and Takashi Taniguchi, Moriguchi, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 841,106, Feb. 25, 1992, abandoned. This application Nov. 10, 1994, Ser. No. 338,818
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—472 **3 Claims**



2. An apparatus for cache lock control, comprising:
a cache memory having a plurality of data entries, each of said plurality of data entries being divided into a plurality of segments including: at least one data segment for storing data, at least one address segment for storing an address, and at least one cache lock segment for storing cache lock information;
means for controlling updating of said at least one data segment and said at least one address segment in any of the data entries of the cache memory in response to cache lock information in corresponding cache lock segments in said any of the data entries such that data segments and address segments of each of said plurality of data entries are selectively preventable from being overwritten by setting a corresponding cache lock segment therein;
an address translator having a plurality of address entries, each of said plurality of address entries divided into a plurality of segments including at least one cache locking segment storing cache lock information;

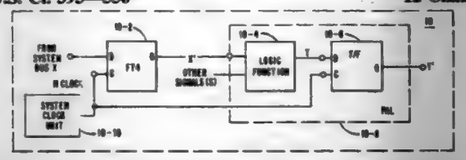
means for selecting one of the data entries of said cache memory;
means for updating a data segment and an address segment in a selected data entry of said cache memory; and
means for transferring cache lock information to a cache lock segment of the selected data entry of said cache memory from a cache locking segment in a corresponding address entry of said address translator when a data segment and an address segment in the selected data entry of said cache memory are updated;
wherein said means for controlling includes:
a control register for storing information represented by a cache lock control bit, and
means for selectively executing and inhibiting said updating of a data segment and an address segment in said any of the data entries of said cache memory in response to the information stored in the control register.

5,487,163

FAST SYNCHRONIZATION OF ASYNCHRONOUS SIGNALS WITH A SYNCHRONOUS SYSTEM

James W. Keeley, Nashua, N.H., assignor to Bull HN Information Systems Inc., Billerica, Mass.

Continuation of Ser. No. 593,438, Oct. 5, 1990, abandoned. This application Nov. 4, 1993, Ser. No. 148,030
Int. Cl.[6] H03K *5/13;5/135;19/003*
U.S. Cl. 395—550 **12 Claims**



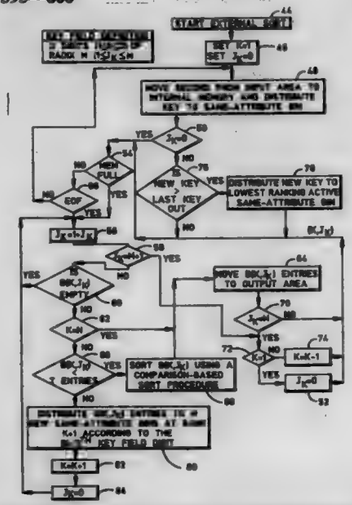
1. A method of synchronizing an asynchronous bilevel input signal with the operations of a synchronously operated unit which is resilient to metastability wherein operations of said unit are timed by clocking signals which have leading and trailing edges and a predetermined clock time period between successive clocking signals and said successive clocking signals being generated by a timing unit within said unit, said method including the steps performed within said synchronously operated unit of:
(a) establishing a clock frequency having said predetermined clock time period:
(b) storing the state of said asynchronous bilevel input signal directly applied to a data input terminal of a first clocked bistable device having a clock input terminal directly connected to receive said clocking signals from said timing unit in response to said leading edge of a first one of said clocking signals;
(c) selecting said first clocked bistable device to have a metastable time delay period which is less than a predetermined maximum delay period;
(d) selecting a programmable logic circuit which has a logic time delay and setup delay period whose sum is no greater than said predetermined clock time period minus said metastable time period;
(e) directly applying a metastable output signal representative of said state generated by said first clocked bistable device at an output terminal of said first clocked bistable device as a result of having stored said asynchronous input signal in response to said leading edge of said first one of said clocking signals which occurs in close proximity to the time occurrence of a transition in level in said asynchronous bilevel input signal, to one input of said programmable logic circuit element having a plurality of input terminals and at least one output terminal, said programmable logic circuit element having an asynchronously operated logic section selected as having a predetermined minimum time delay period for providing an output result signal in response to an input signal generated within said unit and a synchronously operated register section having a number of synchronously operated clocked bistable devices;
(f) applying at least one input logic signal to another one of said plurality of input terminals of said programmable logic circuit element for generating said output result signal by performing a programmed one of a predetermined set of logical operations on said metastable output signal and said one input logic signal; and,
(g) programming said programmable logic circuit element for directly applying said output result signal as an input to one of said number of said synchronously operated clocked bistable devices directly connected to said timing unit to receive said clocking signals for storing said result signal in response to said leading edge of said clocking signal following said first one of said clocking signals so as to provide a stable output signal at said output terminal after said setup time delay period of said one clocked bistable device within said predetermined clock time period which corresponds to the sum of said metastable time delay period, said logic time delay period and said setup time delay period so as to produce a valid stable output at said output terminal synchronized with said timing unit within a maximum of two clock periods notwithstanding occurrences of said metastability.

5,487,164

DISTRIBUTION-BASED REPLACEMENT SELECTION SORTING SYSTEM

Richard Kirchhofer, Fremont, and Bruce A. Wagar, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 14, 1993, Ser. No. 121,328
Int. Cl.[6] G06F *7/36*
U.S. Cl. 395—600 **8 Claims**



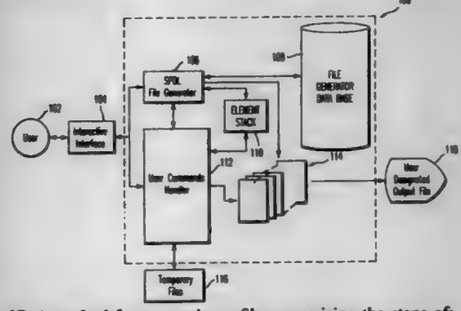
1. A computer-implemented method for distributively sorting a first plurality of data records according to their key fields, each said key field having a plurality N of digits of radix M, wherein said first plurality of data records are initially stored in unsorted order in an input storage area and are moved in intermediate or final sorted order to an output storage area, wherein N and M are positive integers, said method comprising the unordered steps of:
(a) moving a second plurality R of said data records from said input storage area into an internal memory means:
(b) assigning each of said second plurality R of said data records to a Jth same attribute bin, where J is the value of the most significant key field digit of said each data record:
(c) recursively distributing the record entries of each of said same-attribute bins, each recursion including the ordered steps of
(c.1) if said each same-attribute bin has no said record entries or one said record entry only or a plurality of identical said record entries only, then removing all said each bin record entries to said output storage area, otherwise
(c.2) comparing each said record entry of said each same-attribute bin against an extrinsic attribute and assigning said each record entry to one of a plurality M of same-attribute subgroups and
(d) until said input storage area is empty, replacing in said internal memory means some or all of said sorted record entries removed into said output storage area, each replacement including the ordered steps of:
(d.1) moving one or more of said first plurality of data records from said input storage area to said internal memory means, and
(d.2) assigning each said new data record to the Jth said same-attribute bin, where J is the value of the most significant key field digit of said each new data record, and
(d.3) if the key field value of said each new data record meets or exceeds the key field value of said sorted record entry most recently removed to said output storage area, assigning said each new data record to said same-attribute subgroup most closely matching said each new data record extrinsic attribute, otherwise holding said each new data record for assignment during a subsequent said recursion.

5,487,165

STANDARD PAGE DESCRIPTION LANGUAGE CLEARTEXT STRUCTURE GENERATOR

Donny Tsay, and Tetsuro Motoyama, both of San Jose, Calif., assignors to Ricoh Company, Ltd., Tokyo, Japan, and Ricoh Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 931,808, Aug. 11, 1992, Pat. No. 5,416,896, which is a continuation-in-part of Ser. No. 876,601, Apr. 30, 1992, Pat. No. 5,319,748, and a continuation-in-part of Ser. No. 876,251, Apr. 30, 1992, Pat. No. 5,325,484. This application Nov. 4, 1993, Ser. No. 147,603
Int. Cl.[6] G06F *17/22*
U.S. Cl. 395—600 **30 Claims**



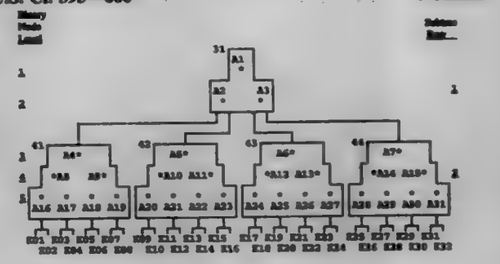
27. A method for generating a file, comprising the steps of:
displaying a first plurality of elements for a user to select;
inputting a first selection of a desired element, the first selection corresponding to a first predetermined position in a hierarchy of elements which can appear in said file;
adding a line, to said-file, which corresponds to the first inputted selection;
pushing an entry onto a stack which corresponds to the first inputted selection at a first predetermined hierarchical level;
popping off the entry on the stack which corresponds to the first inputted selection and adding a line to said file which indicates an end of the first inputted selection when the first predetermined hierarchical level ends;
determining a second plurality of elements for the user to select using the first inputted selection and said hierarchy of elements;
displaying the second plurality of elements for the user to select;
inputting a second selection of a second desired element, the second selection corresponding to an element which is below the element of the first selection in said hierarchy of elements;
adding a line, to said file, which corresponds to the second inputted selection at a second predetermined hierarchical level;
pushing an entry onto the stack which corresponds to the second inputted selection;
popping off the entry on the stack which corresponds to the second inputted selection and adding a line to said file which indicates an end of the second inputted selection when the second predetermined hierarchical level ends.

5,487,166

COMPUTER WITH TWO-DIMENSIONAL MERGE TOURNAMENT SORT USING OFFSET-VALUE CODING

David Cossock, Berkeley, Calif., assignor to Amdahl Corporation, Sunnyvale, Calif.

Filed Sep. 19, 1994, Ser. No. 308,751
Int. Cl.[6] G06F *7/24*
U.S. Cl. 395—600 **4 Claims**



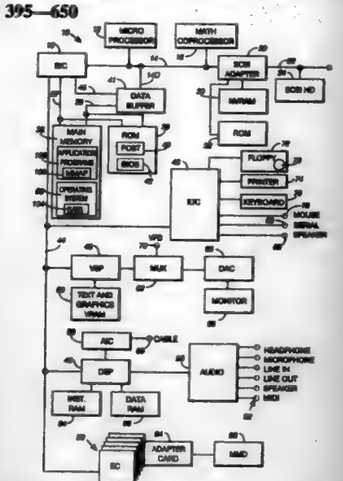
1. A computer system, comprising:
storage means for storing a list of records $R_1, \ldots, R_N$ to be sorted where each record is associated with a corresponding one of the keys $K_1, \ldots, K_N$, respectively, for ordering the records,
processing means for processing said records and keys and for controlling said storage means, said processing means including,
means for forming a two-dimensional tree having a tree structure in said storage means where said tree structure is formed of nodes including a single root node and a plurality of leaf nodes where each node except the root node is a child of exactly one parent node and wherein,
said nodes form a logical tree having a binary tree structure where each node is a parent node of at most two child nodes,
said two-dimensional tree is organized into a tree structure of a plurality of subtrees, where each subtree is formed by a plurality of said nodes organized in a binary tree structure, and where for each particular node in a particular subtree that is the root node in the particular subtree, then said particular node has a parent node that is a leaf node in another subtree whereby said another subtree is the parent subtree of the particular subtree,
code means for storing codes representing keys into said nodes,
sort means for performing a tree sort of said keys using said codes by accessing subtrees.

5,487,167

PERSONAL COMPUTER WITH GENERALIZED DATA STREAMING APPARATUS FOR MULTIMEDIA DEVICES

Chris A. Dinallo; Michael J. Koval; William W. Lawton, all of Boca Raton; Martin J. Paulat, Jr., Delray Beach; John G. Tyler, Boynton Beach; Scott L. Winters, Plantation, and Gary G. Allran, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 816,517, Dec. 31, 1991, abandoned.
This application Aug. 9, 1994, Ser. No. 288,650
Int. Cl.[6] G06F *13/00;17/00*
U.S. Cl. 395—650 7 Claims



1. A multimedia data processing system comprising;

a processor;

a memory for storing at least one multimedia application program and a multitasking operating system, for execution by said processor, said memory having a plurality of buffers therein;

a source device operable as an origin for media data;

a target device operable as a destination for receiving said data from said source device; and

data streaming apparatus operable under said operating system for streaming data from said source device to said target device, said apparatus comprising:

first means operative, in response to execution of a stream create instruction in said application program, to create a source thread for streaming data from said source device into said buffers and a target thread for streaming data from said buffers to said target device said threads being dispatchable units of execution that are selectively executable under said multitasking operating system;

second means operative, in response to a start instruction in said application program, to first execute said source thread and fill said buffers with data from said source device, to then execute said target thread and read data from said buffers into said target device, and to thereafter alternately execute both threads to alternately fill and read data from said buffers, until reaching an end of data from said source device;

wherein said first and second means comprise a plurality of stream handlers, one of said stream handlers being a source handler operative to control data flow from said source device to said buffers and another one of said stream handlers being a target stream handler operative to control data flow from said buffers to said target device; and

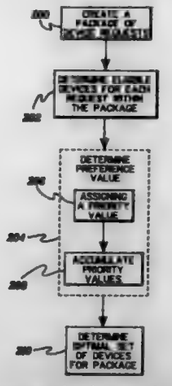
a stream manager operative to interact with said stream handlers and control operation thereof by sending stream helper commands (SHCs) to said handlers and by providing stream manager helper (SMH) services to said handlers in response to receiving SMH calls from said handlers.

5,487,168

METHOD AND SYSTEM FOR GLOBAL OPTIMIZATION OF DEVICE ALLOCATION

Robert V. Geiner, Poughkeepsie, and David L. Jensen, Peekskill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 898,619, Jun. 15, 1992, abandoned.
This application Dec. 20, 1994, Ser. No. 359,943
Int. Cl.[6] G06F *13/18*
U.S. Cl. 395—650 26 Claims



1. An automated, computer implemented method for allocating devices in order to satisfy requests for said devices, said method comprising the steps of:

creating a package of device requests, said package of device requests being stored in an electronic memory means of said computer;

determining for each of said device requests in said package one or more eligible devices capable of satisfying the device request;

determining a sequence of priority values associated with each eligible device of each device request, wherein priority values within said sequence of priority values are assigned to different positions;

assigning to each of said device requests an eligible device selected from said one or more eligible devices capable of satisfying said device request such that a different eligible device is assigned to each device request;

adding priority values at each common position for each selected device thereby obtaining a sequence of summed priority values, wherein said sequence of summed priority values satisfies a specific optimizing function; and

allocating, to each device request, said eligible device, said eligible device being used by said computer after said allocating.

5,487,169

METHOD FOR TRANSLATING A TEST PLAN SOURCE FILE CONTAINING MULTIPLE PROGRAMMING LANGUAGES

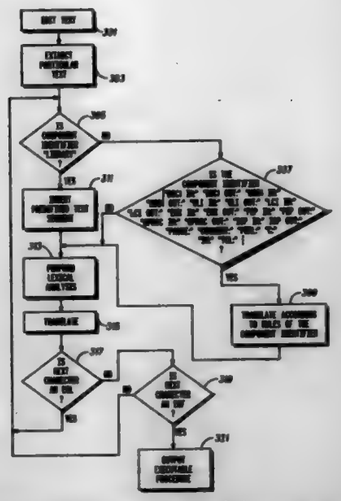
Lawrence E. Vraney, Cary; Michael S. Protofanousis, Glenview, both of Ill.; Dean R. Loew, Racine, Wis., and Robert W. van Daal, Glenview, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 18, 1993, Ser. No. 154,245
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—700 8 Claims

1. A method for translating a test plan source file containing multiple programming languages, each programming language being identified by a component identifier comprising the steps of:

(a) inputting the test plan source file to a translator;

(b) performing lexical analysis on the test plan source file to locate one of a plurality of component identifiers within the test plan source file, each component identifier having associated therewith a portion of text;



5,487,172

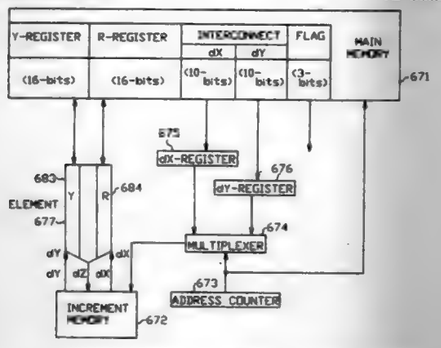
TRANSFORM PROCESSOR SYSTEM HAVING REDUCED PROCESSING BANDWITH

Gilbert P. Hyatt, P.O. Box 81230, Las Vegas, Nev. 89180

Continuation of Ser. No. 504,691, Jun. 15, 1983, which is a continuation of Ser. No. 754,660, Dec. 27, 1976, Pat. No. 4,486,850. This application Sep. 20, 1991, Ser. No. 763,461

Int. Cl.[6] G06F *17/14*

U.S. Cl. 395—800 72 Claims



SERIAL COMPUTATION INCREMENTAL PROCESSOR

1. A transform processor system comprising:

an input circuit generating a driving function signal;

a memory storing a plurality of input points, each input point having a plurality of parameters;

a coefficient processor generating transform coefficients in response to the driving function signal;

a first transform processor coupled to the coefficient processor and to the memory and generating a first transformed point in response to a first one of the plurality of input points stored by the memory and in response to the transform coefficients;

a second transform processor coupled to the coefficient processor and to the memory and generating a second transformed point in response to a second one of the plurality of input points stored by the memory and in response to the same transform coefficients as used for the generation of the first transform point; and

an output circuit coupled to the first transform processor and to the second transform processor and generating transformed output signals in response to the first transformed point and the second transformed point.

5,487,173

DTMF DETECTION IN AN INTEGRATED DATA PROCESSING SYSTEM

Israel Greiss, Raanana; Ronny Cohen, Ramat-Hasharon, and Omri Viner, Hod Hasharon, all of, Israel, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 75,273, Jun. 10, 1993, abandoned, which is a division of Ser. No. 806,082, Dec. 6, 1991, abandoned. This application Sep. 6, 1994, Ser. No. 301,737

Int. Cl.[6] G06F *17/10*

U.S. Cl. 395—800 1 Claim

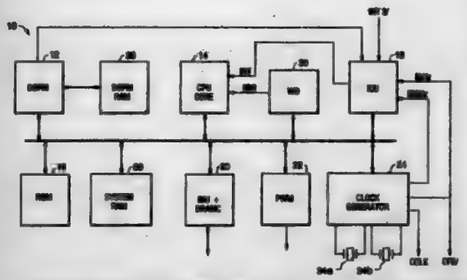
1. An integrated circuit data processing system comprising:

an internal bus for transferring both data and instructions;

a bus interface unit connected to the internal bus and adapted for connection via an external bus to an external memory array such that instructions and data stored in the external memory array may be transferred to the internal bus via the bus interface unit;

a general purpose (GP) central processing unit (CPU) connected to the internal bus for retrieving GP instructions, the GP CPU including means for executing GP instructions to process data retrieved by the GP CPU from the internal bus;

a digital signal processor (DSP) module connected to the internal bus, the DSP module including means for executing DSP



command-list code instructions to process an externally-provided signal received by the DSP module, execution of the DSP command-list code instructions by the DSP module being independent of and in parallel with execution of GP instructions by the GP CPU; and wherein

the DSP module executes a dual tone multi-frequency (DTMF) detection algorithm by executing a single command-list code instruction VCPOLY) that computes ACCEPT frequency detectors, REJECT frequency detectors and total signal energy; and wherein

the GP CPU includes decision logic that identifies a DTMF signal based on the ACCEPT frequency detectors, REJECT frequency detectors and total signal energy computed by the DSP module.

5,487,174

METHODS IN A CELLULAR MOBILE RADIO COMMUNICATION SYSTEM

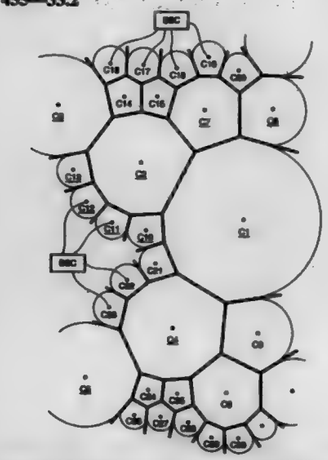
Bengt Y. Persson, Djursholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Mar. 23, 1993, Ser. No. 35,797

Claims priority, application Sweden, Mar. 24, 1992, 9200915

Int. Cl.[6] H04Q *7/22*

U.S. Cl. 455—33.2 15 Claims



1. A method of bidirectional communication in a cellular mobile telecommunication system having cells of substantially different size and a base station for each cell, comprising the steps of:

assigning a first base station of a first larger cell for a downlink of a bidirectional connection involving a mobile station and a second base station of a second cell smaller than the first cell for an uplink of the bidirectional connection;

transmitting from the mobile station radio signals pertaining to the connection;

measuring the strength of radio signals from the mobile station received by the first and second base stations;

comparing the measured strength of signals from the mobile station with each other and at least one desired value;

transmitting power control messages from the first base station to the mobile station in response to the result of the comparison;

monitoring the downlink and the uplink of the connection; and

when downlink handoff from the first cell to the second cell is desirable, performing handoff of the downlink of the connection from the first cell independently of handoff of the uplink of the connection.

5,487,175

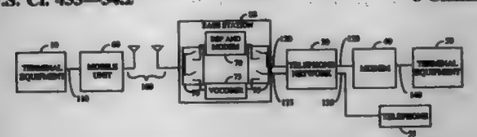
METHOD OF INVOKING AND CANCELING VOICE OR DATA SERVICE FROM A MOBILE UNIT

Gwain Bayley; Matthew S. Grob, both of San Diego; Gadi Karmi, Del Mar; Robert H. Kimball, and David S. Propach, both of San Diego, all of Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Filed Nov. 15, 1993, Ser. No. 152,162

Int. Cl.[6] H04B *1/00*

U.S. Cl. 455—54.2 6 Claims



1. A method of invoking and canceling data or voice service in a communication system comprised of a mobile unit having a data port for receiving and providing a terminal element signal, a voice port and vocoder for receiving and providing encoded voice signals, a wireless port for receiving and providing data signals and said encoded voice signals over a wireless link, and a keypad port for receiving and providing a manual user signal, said system further comprising a base station having a vocoder for receiving and providing said encoded voice signals, a modem for receiving and providing said data signals, and a wireless link port for receiving and providing said data signals and said encoded voice signals over said wireless link, wherein said communication system supports the simultaneous transfer of said encoded voice signals between said voice port and vocoder of said mobile unit and said vocoder of said base station on a voice connection and said data signals between said data port of said mobile unit and said modem of said base station on a data connection, wherein initially said communication system is in an initial state wherein said voice connection and said data connection are in an idle state, comprising the steps of:

receiving at said mobile unit when said communication system is in said initial state a first message on said terminal equipment signal wherein in said initial state said communication system is in a command mode such that said mobile unit interprets and acts upon said first message;

entering by said communication system a second state in response to said first message and establishing said voice connection over said wireless link wherein in said second state said communication system is in said command mode, said data connection is in said idle state, and said voice connection is in an active state;

receiving at said mobile station when said communication system is in said second state a second message on said manual user signal;

entering by said communication system a third state in response to said second message and establishing said data connection wherein in said third state said communication system is in said command mode, said data connection is in an active state, and said voice connection is in said active state;

receiving at said mobile station when said communication system is in said third state a third message on said terminal equipment signal;

entering by said communication system a fourth state in response to said third message and changing said communication system mode to a data mode wherein in said fourth state said communication system is in said data mode, said data connection and said voice connection are in said active state and wherein when said communication system is in said data mode said mobile unit passes said terminal equipment signal over said data connection as said data signals;

receiving at said mobile station when said communication system is in said fourth state a fourth message on said manual user signal;

entering by said communication system a fifth state in response to said fourth message and disconnecting said voice connection wherein in said fifth state said communication system is in said data mode, said data connection is in said active state and said voice connection is in said idle state;

receiving at said mobile station when said communication system is in said fifth state an escape sequence on said terminal equipment signal;

entering by said communication system a sixth state in response to said escape sequence and changing said communication system mode to said command mode wherein in said sixth state said communication system is in said command mode, said data connection is in said active state and said voice connection is in said idle state;

receiving at said mobile station when said communication system is in said sixth state a fifth message on said manual user signal; and

entering by said communication system said initial state in response to said fifth message and disconnecting said data connection.

5,487,176

RECEPTION AMPLIFIER FAILURE DETECTION DEVICE AND METHOD FOR RADIO TRANSCEIVER APPARATUS

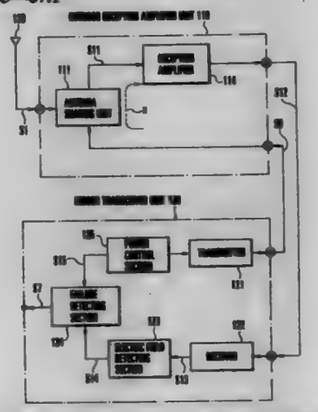
Yuzo Yoneyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 7, 1994, Ser. No. 271,740

Claims priority, application Japan, Jul. 7, 1993, 5-167569

Int. Cl.[6] H04B *17/00*

U.S. Cl. 455—67.1 9 Claims



1. A reception amplifier failure detecting device for a radio transceiver apparatus, comprising:

demultiplexing means for demultiplexing a transmission signal from a transmission system to an antenna, and also demultiplexing a reception signal from the antenna to a reception system;

reception amplification means, connected to an input stage of said reception system, for amplifying the reception signal demultiplexed by said demultiplexing means;

reception means for receiving an output signal from said reception amplification means;

electric field detecting means for detecting an electric field strength of a signal received by said reception means;

transmission means, constituting said transmission system, for outputting a transmission signal to said antenna via said demultiplexing means;

power control means for controlling transmission power of said transmission means on the basis of a standard transmission value, and outputting transmission power information; and

failure detecting means for performing failure determination by comparing electric field strength information from said electric field detecting means with a failure detection reference value set on the basis of a standard attenuation value set when a transmission signal from said transmission means leaks to said reception system in the demultiplexing means, a standard amplification value of said reception amplification means, and the transmission power information of said transmission means.

5,487,177

FM RECEIVER COMPRISING A CIRCUIT ARRANGEMENT FOR DETERMINING THE FIELD STRENGTH OF FM TRANSMITTERS

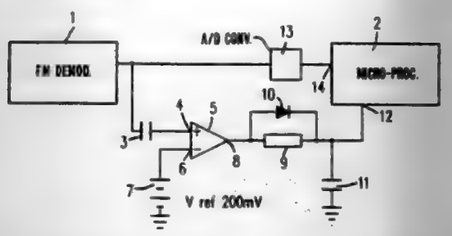
Heinz Lünter, Kinzenbach, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 22, 1993, Ser. No. 96,077

Claims priority, application Germany, Aug. 8, 1992, 42 26 346.8

Int. Cl.[6] H04B *17/00*

U.S. Cl. 455—67.3 **8 Claims**



1. In an FM receiver, a circuit for determining field strength of at least two FM transmitters operating at different frequencies, said circuit comprising:

an FM demodulator which produces at its output an output signal with a characteristic that indicates when the FM receiver is tuned to one or the other of said different frequencies, said output signal then having an amplitude value determined by the field strength of the FM transmitter to which the FM receiver is tuned,

a comparator having a first input coupled to the output of the FM demodulator and a second input coupled to a source of reference voltage, said comparator deriving at its output a binary output signal determined by said output signal characteristic,

an integrator stage having an input coupled to the output of the comparator and having an output at which is produced an activation signal only in response to said output signal characteristic of the FM demodulator, and

means for evaluating signals indicative of FM transmitter field strength and which has first and second inputs coupled to the output of the FM demodulator and to the output of the integrator stage, respectively, such that said first input of the evaluating signal means receives the FM demodulator output signal without a substantial delay.

5,487,178

RADIO SYSTEM BASE STATION INCLUDING PROVISION FOR GENERATING AND PROCESSING BOTH ANALOG AND DIGITAL RADIO LINK QUALITY MONITORING SIGNALS

Jouni Hänninen, Kiiminki, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

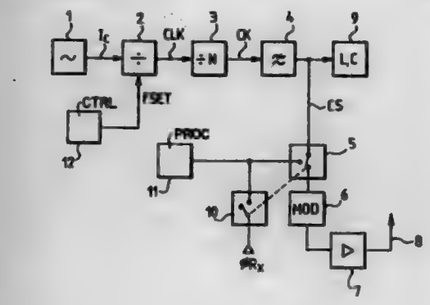
PCT No. PCT/FI92/00176, § 371 Date Feb. 5, 1993, § 102(e) Date Feb. 5, 1993, PCT Pub. No. WO92/22963, PCT Pub. Date Dec. 23, 1992

PCT Filed Jun. 5, 1992, Ser. No. 983,591

Claims priority, application Finland, Jun. 11, 1991, 912804

Int. Cl.[6] H04B *7/26*

U.S. Cl. 455—67.4 **3 Claims**



1. A base station for a radio system, the base station comprising, for monitoring the quality of a radio link between the base station and mobile stations:

generator means for generating a square wave signal having a desired baseband monitoring signal frequency;

control means for setting the baseband frequency of the square wave signal;

a filter means for generating a baseband monitoring signal from the baseband square wave signal; and

a means for modulating the baseband monitoring signal to a transmitting frequency and for transmitting the transmitting frequency monitoring signal to the mobile radio station;

said control means comprising means for alternatively providing a first and a second mode of operation, the control means being arranged for controlling the generator means in the first mode of operation to transmit an analog monitoring signal by maintaining the baseband frequency of the square wave signal generated by the generator means at a constant value throughout the duration of the monitored radio link, and the control means being arranged for controlling the generator means in the second mode of operation to transmit a digital monitoring signal by varying the baseband frequency of the square wave signal generated by the generator means during the monitored radio link between a first baseband frequency corresponding to a first logical state and a second baseband frequency corresponding to a second logical state according to logical states to be transmitted;

said generator means comprising an oscillator means and at least one adjustable divider circuit which is connected in series with the oscillator means and said filter means, and the frequency of the monitoring signal being determined by the divisor of said adjustable divider circuit.

5,487,179

ARRANGEMENT FOR DUPLEX TRANSMISSION HAVING TRANSMITTER POWER CONTROL

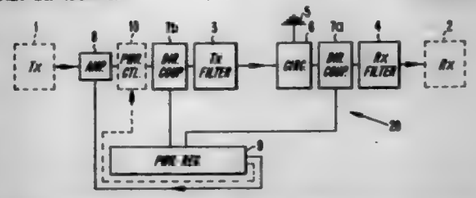
Jan A. Larsson, Torna Hällestad, Sweden, assignor to Ericsson GE Mobile Communications Inc., Research Triangle Park, N.C.

Filed Feb. 3, 1994, Ser. No. 191,170

Claims priority, application Sweden, Feb. 5, 1993, 9300349

Int. Cl.[6] H04B *1/48;1/04;* H01Q *11/12*

U.S. Cl. 455—69 **17 Claims**



17. A communication apparatus comprising: a transmitter connected with a transmitter filter, a receiver connected with a receiver filter, and an antenna, the transmitter filter and the receiver filter being connected through a circulator, means for detecting power to be received by the receiver filter and means for controlling and regulating power produced by a power amplifier of the transmitter to thereby limit damage to the receiver filter.

5,487,180

METHOD OF DETERMINING INITIAL TRANSMISSION POWER

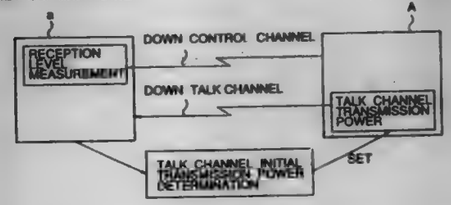
Koji Ohtake, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 17, 1994, Ser. No. 215,093

Claims priority, application Japan, Sep. 20, 1993, 5-256382

Int. Cl.[6] H04B *1/40*

U.S. Cl. 455—54.1 **8 Claims**



1. A method of determining an initial transmission power in a mobile communication system having a base station and at least one mobile station, a control channel leading from the base station to the mobile station and a talk channel leading from the base station to the mobile station, said method comprising the steps of:

(a) measuring, at the mobile station, a reception level of said control channel leading from the base station to the mobile station;

(b) obtaining a comparison result, at the mobile station, by comparing the measured reception level with a threshold value which is used to determine an initial transmission power value of said talk channel;

(c) determining, at the mobile station, the initial transmission power value of said talk channel based on the comparison result, and reporting the initial transmission power value of said talk channel to the base station; and

(d) setting, at the base station, the initial transmission power value of said talk channel, reported from the mobile station.

5,487,181

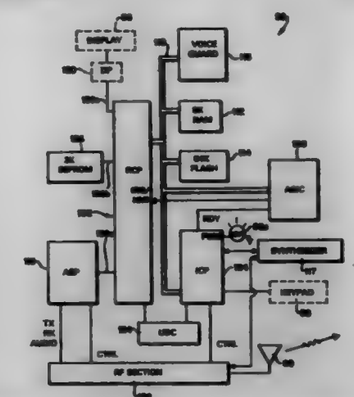
LOW POWER ARCHITECTURE FOR PORTABLE AND MOBILE TWO-WAY RADIOS

Timothy E. Dailey; Marc A. Dinsmoor, and Russell L. Croucher, all of Forest, Va., assignors to Ericsson GE Mobile Communications Inc., Lynchburg, Va.

Filed Oct. 28, 1992, Ser. No. 969,739

Int. Cl.[6] H04B *1/40;7/32*

U.S. Cl. 455—89 **35 Claims**



1. A battery powered portable radio transceiver compriting:

a housing;

an antenna mounted on said housing;

radio frequency circuitry, disposed within said housing and coupled to said antenna, for transceiving radio frequency signals over the air via said antenna, said radio frequency circuitry transmitting and receiving voice and data communications via an RF working channel and monitoring control signals on an RF control channel;

a processing device disposed within said housing, said processing device being switchable between an active mode and a software standby mode, said processing device performing tasks associated with said transceiving when in said active mode;

a controller, disposed within said housing, coupled to said radio frequency circuitry and connected to said processing device, said controller monitoring the RF control channel while the processing device is in the software standby mode and controlling said processing device to switch from said software standby mode to said active mode in response to at least one event associated with said transceiving; and

a battery removably coupled to said housing, said battery supplying power to said radio frequency circuitry, said processing device, and said controller,

wherein said housing including said radio frequency circuitry, processing device, and controller weighs about ten ounces or less, is not more than substantially four inches in length, and wherein current consumption is minimized in said standby mode.

5,487,182

HANDS-FREE MODULE

Hans M. Hansson, Lund, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Continuation of Ser. No. 715,585, Jun. 14, 1991, abandoned. This application Nov. 12, 1993, Ser. No. 181,350

Claims priority, application Sweden, Jun. 25, 1990, 9002243

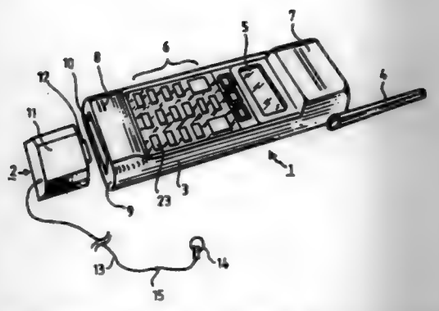
Int. Cl.[6] H04B *1/38;* H04M *9/08*

U.S. Cl. 455—90 **1 Claim**

1. A hands-free module for use with a mobile telephone, comprising:

a first microphone means;

ear phone means;



first connection means for connecting the first microphone means and said ear phone means;

a hands-free module housing provided with an insertion portion adapted for insertion into an opening provided in a housing of said mobile telephone, said insertion portion having a cross section corresponding to that of said opening,

said hands-free module housing comprising:

microphone amplifier means for said first microphone means,

limiter means for said ear phone means, and

second connector means for connecting said amplifier means and

said limiter means to microphone output means provided in said opening and for connecting said limiter means to loudspeaker output means provided in said opening.

5,487,183

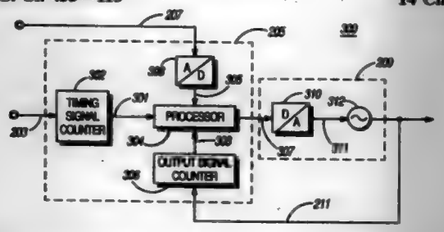
METHOD AND APPARATUS FOR A DATA TRANSMITTER

Peter Nanni, 1210 Countryside Dr., Algonquin, Ill. 60102; Steven J. Fink, 3850 Winston Dr., Hoffman Estates, Ill. 60195, and Jan P. Vanderspool, II, 8708 Bull Run Trail, Woodstock, Ill. 60098

Filed Apr. 4, 1994, Ser. No. 222,046

Int. Cl.[6] H04B *1/04*

U.S. Cl. 455—113 **14 Claims**



1. A data transmitter that includes a controllable oscillator operating nominally at a transmit frequency, an output of the controllable oscillator being modulated with an information signal, the data transmitter comprising:

means for receiving a precise timing signal, wherein the precise timing signal has a predetermined period;

converting means, arranged to receive the information signal, for converting the information signal into a digital information signal;

an output signal counter, arranged to receive the output of the controllable oscillator, for measuring transitions of the output of the controllable oscillator during the predetermined period to produce an output signal metric; and

a processor, operably coupled to the means for receiving, the converting means, the output signal counter, and the controllable oscillator, for computing a cumulative information metric which measures a cumulative effect of the digital information signal on the output of the controllable oscillator during the predetermined period and for computing a control metric based on the output signal metric, the cumulative information metric, and an expected output signal metric, wherein the control metric is used to correct the output of the controllable oscillator.

5,487,184

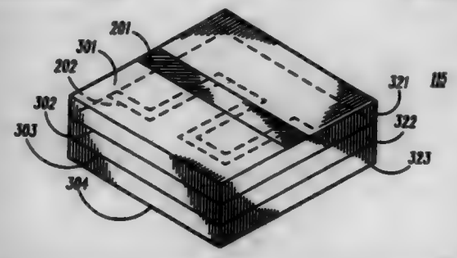
OFFSET TRANSMISSION LINE COUPLER FOR RADIO FREQUENCY SIGNAL AMPLIFIERS

Thomas D. Nagode, Chicago, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 9, 1993, Ser. No. 150,504

Int. Cl.[6] H01P *5/10*; H04B *1/04*

U.S. Cl. 455—126 **22 Claims**



1. Radio frequency (RF) signal coupler circuitry for detecting an RF signal generated by a signal source and producing an RF detect signal, said RF signal coupler circuitry comprising:

a substrate having top and bottom surfaces and a predetermined dielectric constant;

a first transmission line having a predetermined shape and being disposed on the top surface of the substrate, the first transmission line coupled to the RF signal, the first transmission line having a predetermined width; and

a second transmission line disposed on the bottom surface of the substrate, the second transmission line having at least first and second portions electromagnetically coupled to the first transmission line for generating the RF detect signal having an amplitude related to the amplitude of the RF signal, the first and second portions of the second transmission line having a width less than tho predetermined width of the first transmission line, the first portion being offset a first predetermined distance to one side of the first transmission line, the second portion being offset a second predetermined distance to the other side of the first transmission line, the amount of coupling between the first portion and the first transmission line being substantially the same as the amount of coupling between the second portion and the first transmission line, and the second transmission line further having a third portion intercoupling the first and second portions.

5,487,185

METHOD FOR EXTENDING MEAN TIME BETWEEN FAILURES OF TRANSMITTERS USED IN A CELLULAR SYSTEM, BY INTERMITTENTLY SHIFTING AMONG THEM WHICH IS TRANSMITTING A CONTROL CHANNEL VERSUS WHICH IS TRANSMITTING A TRAFFIC CARRIER

Harri Halonen, Jääli, Finland, assignor to Nokia Telecommunications OY, Espoo, Finland

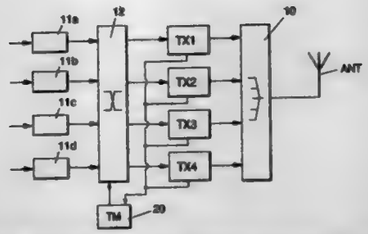
Filed Oct. 20, 1993, Ser. No. 137,128

Claims priority, application Finland, Feb. 24, 1992, 920793

Int. Cl.[6] H04B *1/04*; H04Q *7/30*

U.S. Cl. 455—127 **7 Claims**

1. A method for extending mean time between failures of a plurality of transmitters of a base station in a cellular system transmitting on at least one control channel at a higher average power level and transmitting on at least one traffic carrier at a lower average power level, compared with mean time between



failures for said plurality of transmitters when one of said transmitters is dedicated to transmitting on said at least one control channel, comprising:

while operating said cellular system, from time to time and independently of instigation due to occurrence of actual failure of any one of said transmitters, changing between or among which of said transmitters is or are being used for transmitting on said at least one control channel.

5,487,186

AUTOMATIC FREQUENCY CONTROL USING SPLIT-BAND SIGNAL STRENGTH MEASUREMENTS

Carl G. Scarpa, Edison, N.J., assignor to Hitachi America, Ltd., Tarrytown, N.Y.

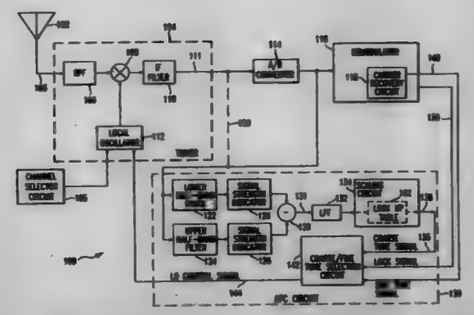
Continuation of Ser. No. 83,630, Jun. 28, 1993, abandoned. This application Jan. 4, 1995, Ser. No. 368,747

Int. Cl.[6] H04B *1/16*

U.S. Cl. 455—192.2 **22 Claims**

1. In a communications receiver having a tuner containing a frequency tunable local oscillator, and a demodulator, wherein the tuner mixes an output frequency of the local oscillator with a received signal to generate an intermediate frequency (IF) signal for application to the demodulator, the received and IF signals have an equal modulation bandwidth and first and second center frequencies, respectively, and wherein the first and second center frequencies are different, apparatus for generating a frequency control signal applied to the tuner for tuning the output frequency provided by the local oscillator in order to bring the second center frequency into coincidence with a pre-defined frequency for the IF signal, the apparatus comprising:

a first filter, connected to said tuner, for filtering the IF signal so as to produce a first filtered signal, said first filter having a first pre-defined frequency characteristic with a first bandwidth equivalent to a pre-defined upper portion of the modulation bandwidth and a third center frequency set to a frequency higher than the second center frequency;



a second filter, connected to said tuner, for filtering said IF signal so as to produce a second filtered signal, said second filter having a second pre-defined frequency characteristic with a second bandwidth equivalent to a pre-defined lower portion of the modulation bandwidth and a fourth center frequency set to a frequency below the second center frequency, wherein the upper and lower portions represent separate substantially non-overlapping portions of the modulation bandwidth;

means, connected to both said first and second filters, for producing a first tuning signal responsive to a difference, in terms of signal strength, between said first and second filtered signals;

a carrier recovery circuit, operative in conjunction with the demodulator, for producing a second tuning signal for adjusting, within a pre-defined capture range of the demodulator, the output frequency of the local oscillator so that the second center frequency coincides with the pre-defined frequency for the IF signal; and

means, connected to both the first and second tuning signals and responsive to the demodulator, for selecting, as the frequency control signal, either the first or second tuning signals whenever the second center frequency lies respectively outside of or within the capture range of the demodulator whereby the first and second tuning signals function to provide coarse and fine tuning, respectively, of the output frequency of the local oscillator.

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DESIGN PATENTS

GRANTED JAN. 23, 1996

ERRATA

For CLASS	See PATENT NO.
D11–006	D366,449
D11–155	D366,450
D11–162	D366,451
D12–165	D366,485

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1996
UMI

DESIGNS

JANUARY 23, 1996

366,351
BRASSIERE
Claude C. Winchell, P.O. Box 100, First National Bank Trust Department, Russellville, Ark. 72801
Filed Dec. 9, 1994, Ser. No. 32,264
Term of patent 14 years
U.S. Cl. D2—706



366,352
HAT
Andrew H. Shoemaker, 13733 127th St. N., Stillwater, and William K. Paatalo, 1685 Regatta Dr., Woodbury, both of Minn. 55125
Filed Sep. 21, 1994, Ser. No. 28,742
Term of patent 14 years
U.S. Cl. D2—874



366,353
INNER SOLE
Joseph P. Famolare, Jr., R.R. 4, Windmill Hill Rd., Putney, Vt. 05346
Filed Apr. 29, 1994, Ser. No. 22,195
Term of patent 14 years
U.S. Cl. D2—961



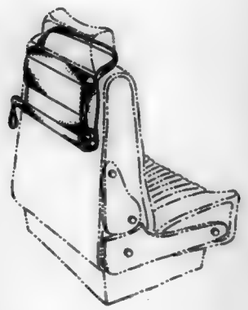
366,354
SHOE SOLE
Kazumasa Yoshikawa, Osaka; Katsuhiko Uno, and Wataru Ueda, both of Kobe, all of, Japan, assignors to Asics Corporation, Hyogo, Japan
Filed Sep. 6, 1994, Ser. No. 27,992
Claims priority, application Japan, Mar. 9, 1994, 6-6192
Term of patent 14 years
U.S. Cl. D2—953



366,355
NECKTIE
Michael P. Wade, 3304 Shakertown Ct., Antioch, Tenn. 37013
Filed Nov. 28, 1994, Ser. No. 31,447
Term of patent 14 years
U.S. Cl. D2—607



366,356
AUTOMOBILE ACCESSORY
Ronald A. Theis, West Bend, Wis., assignor to Amity Leather Products Company, West Bend, Wis.
Continuation of Ser. No. 6,795, Apr. 7, 1993, abandoned. This application Dec. 16, 1994, Ser. No. 32,396
Term of patent 14 years
U.S. Cl. D3—11



366,357
KEY RING HOLDER
Brian K. Prothro, 8427 Rock Cliff Dr., Jonestown, Tex. 78645
Filed Jun. 4, 1993, Ser. No. 9,112
Term of patent 14 years
U.S. Cl. D3—207



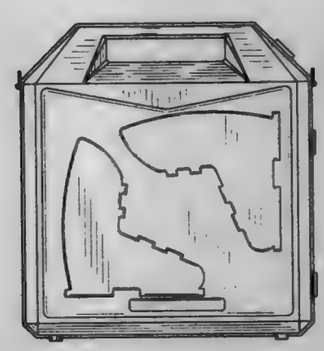
366,358
TIMER KEY RING
Barbara Ravizza, 2663 Union St., San Francisco, Calif. 94123
Filed Aug. 26, 1994, Ser. No. 27,687
Term of patent 14 years
U.S. Cl. D3—211



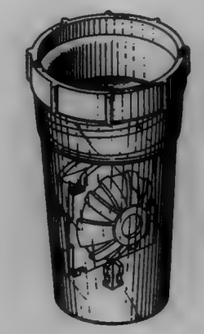
366,359
KEY CHAIN
Harry Riedl, Cunningenstrasse 13, D-75242 Neuhausen-Steinegg, Germany
Filed Oct. 20, 1994, Ser. No. 29,966
Claims priority, application Germany, Apr. 30, 1994, 94 03 730.2; Aug. 18, 1994, 94 06 547.0
Term of patent 14 years
U.S. Cl. D3—211



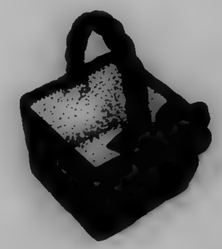
366,360
CARRYING CASE FOR SKIBOOTS
Robert C. Vincent, 104 Rose Twig La., North Wales, Pa. 19454
Filed Feb. 24, 1994, Ser. No. 19,149
Term of patent 14 years
U.S. Cl. D3—261



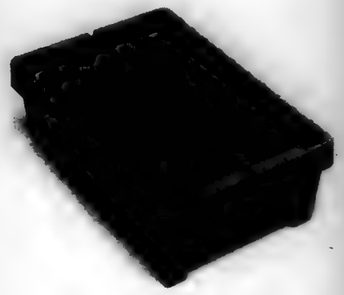
366,361
CONTACT LENS CASE
Rowland W. Kanner, Guntersville; Stephen P. Lisak, and Terry B. Kehne, both of Arab, all of Ala., assignors to Ryder International Corporation, Arab, Ala.
Division of Ser. No. 9,753, Jun. 18, 1993, Pat. No. Des. 356,591, which is a continuation of Ser. No. 13,812, Feb. 2, 1993, abandoned. This application Jul. 1, 1994, Ser. No. 25,429
Term of patent 14 years
U.S. Cl. D3—264



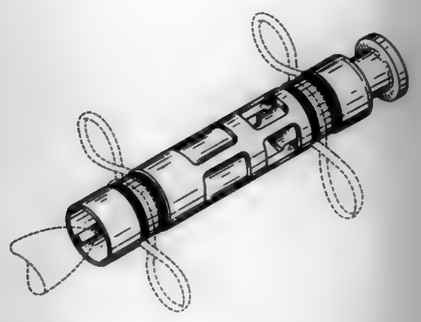
366,362
WOVEN BASKET
June M. Napier, and Jeffrey B. Napier, both of 5600 Glenwood Ave., Raleigh, N.C. 27612
Filed Jun. 6, 1994, Ser. No. 20,639
Term of patent 14 years
U.S. Cl. D3—306



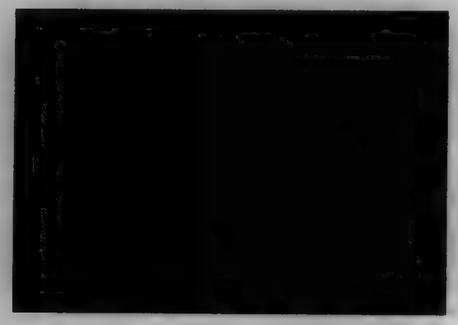
366,363
CONTAINER
Teunis J. (Tony) Berggren, Skillinge, Sweden, assignor to Aktiebolaget Volvo, Gothenburg, Sweden
Filed May 20, 1994, Ser. No. 23,251
Term of patent 14 years
U.S. Cl. D3—314



366,364
AMMUNITION CARRIER TUBE
Stephen Pollock, Tallahassee, Fla., assignor to Syn-Tech Systems, Inc., Tallahassee, Fla.
Filed Feb. 2, 1994, Ser. No. 18,229
Term of patent 14 years
U.S. Cl. D3—316



366,365
COATED ABRASIVE SHEET ARTICLE
Timothy L. Hoopman, River Falls, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 11, 1994, Ser. No. 22,718
Term of patent 14 years
U.S. Cl. D5—4



366,366
CLOSET GARMENT HANGER
Anthony Restaino, 2 Harriet La., Plainview, N.Y. 11803
Filed Sep. 2, 1994, Ser. No. 28,023
Term of patent 14 years
U.S. Cl. D6—315



366,367
V-BASE OTTOMAN
Michael S. Reese, P.O. Box 163241, Austin, Tex. 78716
Filed Jan. 3, 1995, Ser. No. 33,089
Term of patent 14 years
U.S. Cl. D6—349



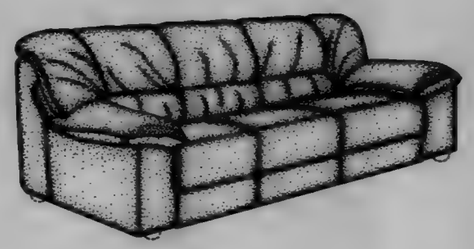
366,368
PORTABLE INFANT BED AND CHANGING PAD
Adam D. McCarthy, 3001-20 Inland Trail, Raleigh, N.C. 27613
Filed Dec. 12, 1994, Ser. No. 32,018
Term of patent 14 years
U.S. Cl. D6—333



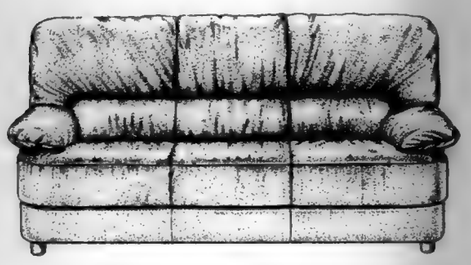
366,369
CHAIR
Sami Sagol, Ramat HaSharon, Israel, assignor to Keter Plastic LTD, Herzlyia, Israel
Filed Sep. 1, 1994, Ser. No. 27,985
Claims priority, application Israel, Mar. 3, 1994, 22290
Term of patent 14 years
U.S. Cl. D6—368



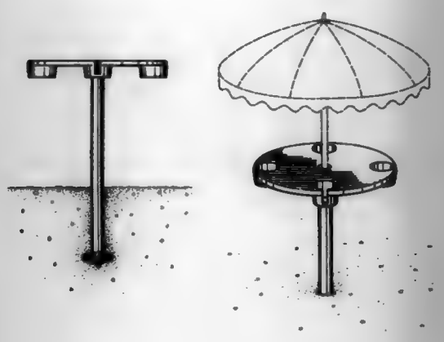
366,370
SEAT
Pasquale Natuzzi, Santeramo In Colle, and Arcangelo Scaratl, Taisano, both of, Italy, assignors to Industrie Natuzzi SPA, Bari, Italy
Filed Jun. 30, 1994, Ser. No. 25,341
Term of patent 14 years
U.S. Cl. D6—381



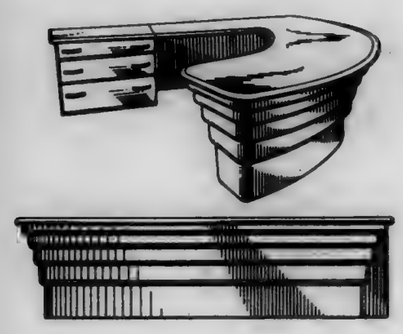
366,371
SOFA
Pasquale Natuzzi, Santeramo In Colle, and Arcangelo Scarnti, Taiuano, both of, Italy, assignors to Industrie Natuzzi Spa, Bari, Italy
Filed Apr. 11, 1994, Ser. No. 21,160
Term of patent 14 years
U.S. Cl. D6—381



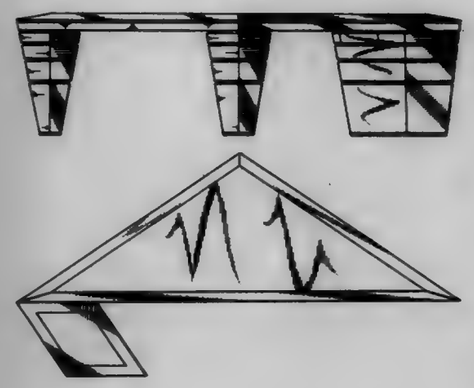
366,372
GROUND INSERTED BEACH TABLE
James F. Skarda, Jr., 4532 Todd Point La., Baltimore, Md. 21219
Filed Feb. 16, 1994, Ser. No. 18,798
Term of patent 14 years
U.S. Cl. D6—417



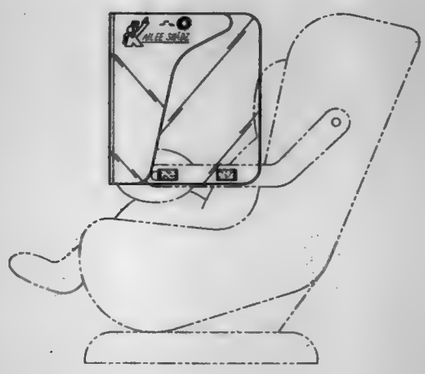
366,373
CURVED PEDESTAL DESK
Michael S. Reese, P.O. Box 163241, Austin, Tex. 78716
Filed Dec. 8, 1994, Ser. No. 31,931
Term of patent 14 years
U.S. Cl. D6—427



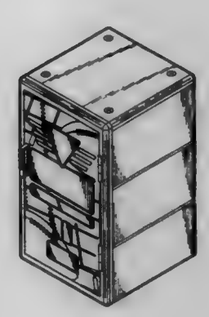
366,374
STACKED PEDESTAL DESK
Michael S. Reese, P.O. Box 163241, Austin, Tex. 78716
Filed Nov. 4, 1994, Ser. No. 30,666
Term of patent 14 years
U.S. Cl. D6—427



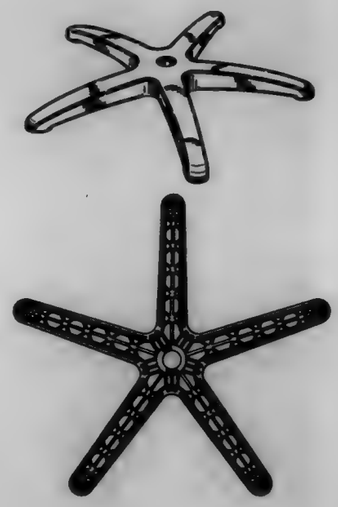
366,375
INFANT-SEAT ATTACHABLE SUNSHIELD AND PROTECTIVE BARRIER
Thomas J. Cross, 11422 Scott Dr., Fredricksburg, Va. 22407
Filed May 15, 1995, Ser. No. 38,884
Term of patent 14 years
U.S. Cl. D6—491



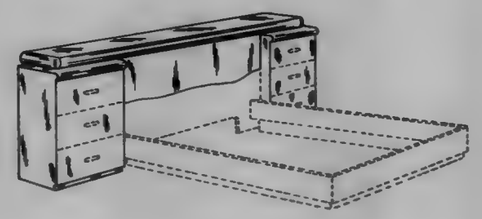
366,376
MID-SIZE FOOTBALL LOCKER
Thomas A. Tisbo, Barrington Hills; Stephen P. Whitehead, Elgin, and Lyle A. Rosine, Aurora, all of Ill., assignors to Suncast Corporation, Batavia, Ill.
Filed May 5, 1994, Ser. No. 22,466
Term of patent 14 years
U.S. Cl. D6—434



366,377
BASE FOR AN OFFICE CHAIR
Ludovic A. Perl, Willowdale, Canada, assignor to Shepherd Products Inc., Ontario, Canada
Filed Mar. 17, 1994, Ser. No. 20,129
Term of patent 14 years
U.S. Cl. D6—498



366,378
BED HEADBOARD
Carlo Bargagli-Stoffi, Union, N.J., assignor to San Giacomo N.A. Ltd., Union, N.J.
Filed Oct. 11, 1994, Ser. No. 29,604
Term of patent 14 years
U.S. Cl. D6—505



366,379

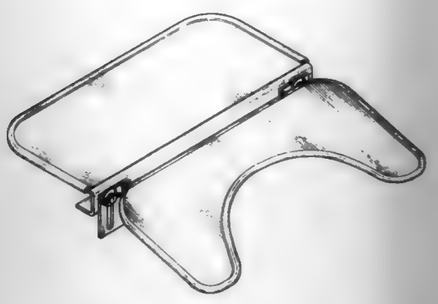
WORK STATION UPPER BODY SUPPORT

Mark Graeber, Everett, Wash., assignor to Promark, Inc., Seattle, Wash.

Filed Mar. 31, 1994, Ser. No. 20,740

Term of patent 14 years

U.S. Cl. D6—511



366,380

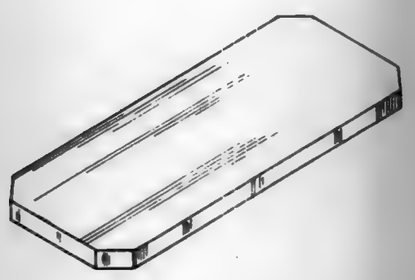
MULTIPLE USE ACTIVITY PAD

Ray G. Kelly, St. Louis County, Mo., assignor to Angeles Group, Inc., Pacific, Mo.

Division of Ser. No. 651,508, Feb. 6, 1991, Pat. No. Des. 350,237. This application Jun. 24, 1994, Ser. No. 24,958

Term of patent 14 years

U.S. Cl. D6—511



366,381

HOLDER FOR TOILET TISSUE ROLLS

Ramona B. Espinal, 1275 Broad St., Providence, R.I. 02905

Filed May 26, 1994, Ser. No. 23,567

Term of patent 14 years

U.S. Cl. D6—520



366,382

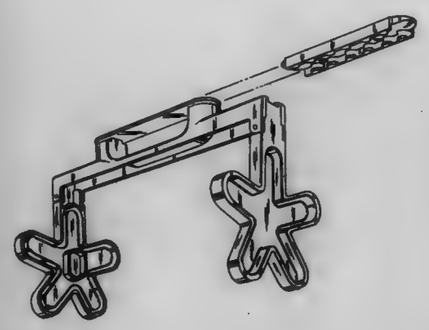
PAPER TOWEL DISPENSER

Louis D. Carillo, 22672 Lambert St., No. 620, Lake Forest, Calif. 92630

Filed Jan. 13, 1995, Ser. No. 33,472

Term of patent 14 years

U.S. Cl. D6—522



366,383

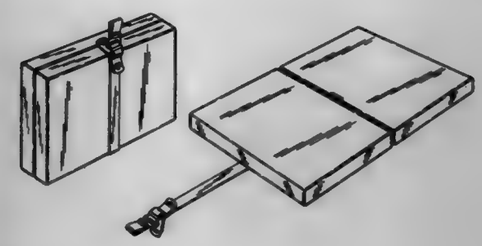
FOLDING ATTACHABLE SEAT CUSHION

Kenneth B. Briegleb, 7817 NE. 379th St., La Center, Wash. 98629, assignor to Kenneth B. Briegleb, La Center, Wash.

Filed Nov. 25, 1994, Ser. No. 31,388

Term of patent 14 years

U.S. Cl. D6—601



366,384

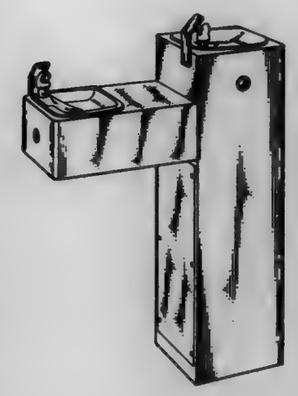
PEDESTAL MOUNTED DRINKING FOUNTAIN

Matthew I. Stein, Truckee, Calif., assignor to Haws Company, Sparks, Nev.

Division of Ser. No. 9,656, Jun. 21, 1993, Pat. No. Des. 356,229. This application Sep. 27, 1994, Ser. No. 29,008

Term of patent 14 years

U.S. Cl. D7—304



366,385

ELECTRIC COFFEE MAKER

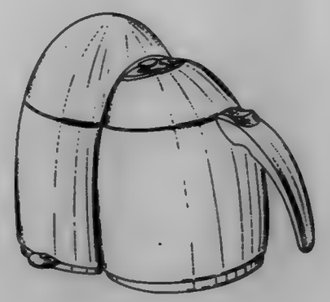
Alberto Alessi Anghii, Omegna; Alessandro Mendini, Milan, both of, Italy, and Chin Leong, Groningen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 4, 1994, Ser. No. 26,773

Claims priority, application Switzerland, Jul. 2, 1994, DM/029.477

Term of patent 14 years

U.S. Cl. D7—309



366,386

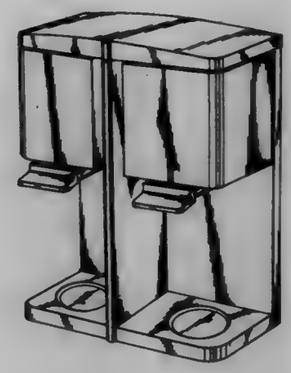
DISPENSER

David Riesner, c/o Sweetchoice Corporation, 700 E. Industrial Park Dr., and Robert S. Treisman, c/o TBI Corporation, 700 E. Industrial Park Dr., both of Manchester, N.H. 03109

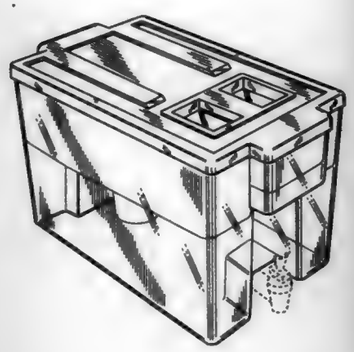
Filed May 4, 1994, Ser. No. 22,426

Term of patent 14 years

U.S. Cl. D7—311



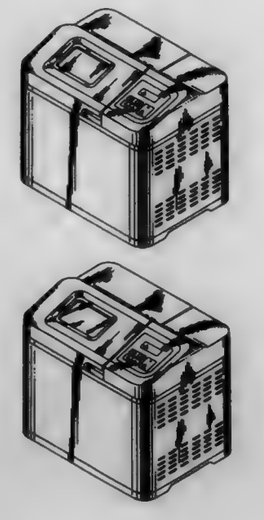
366,387
WATER COOLER
Richard D. Malmborg, San Ramon; Marcy A. Radlauer, San Francisco, both of Calif.; Curtis M. Berry, El Paso, Tex., and Jay L. Flom, Albany, Calif., assignors to The Clorox Company, Oakland, Calif.
Filed Oct. 28, 1994, Ser. No. 30,409
Term of patent 14 years
U.S. Cl. D7—313



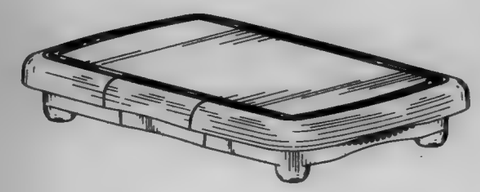
366,388
ELECTRIC WATER KETTLE
Alberto Alessi Anghini, Omegna; Allessandro Mendini, Milan, both of, Italy, and Roger N. Swales, Groningen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 4, 1994, Ser. No. 26,730
Claims priority, application Switzerland, Feb. 7, 1994, DM/029.477
Term of patent 14 years
U.S. Cl. D7—317



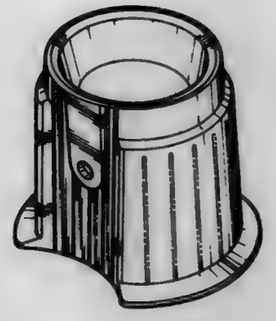
366,389
HOUSEHOLD BAKER
Tsunemichi Inoue, Osaka, Japan, assignor to Zojirushi Corp., Osaka, Japan
Filed Jun. 29, 1994, Ser. No. 25,300
Claims priority, application Japan, Apr. 13, 1994, 6-10533
Term of patent 14 years
U.S. Cl. D7—350



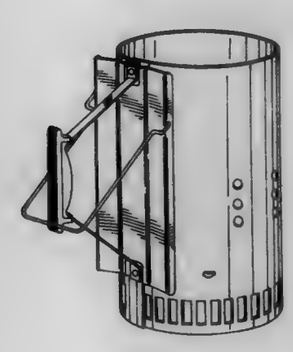
366,390
GRIDDLE
Louis A. Vitantonio, Mentor, Ohio, assignor to Kadee Products Ltd., Solon, Ohio
Filed Nov. 22, 1993, Ser. No. 15,617
Term of patent 14 years
U.S. Cl. D7—363



366,391
WATER DISPENSER
Vincent L. Haley, Orrville; Dennis K. Jenkins, Medina, and Rodney A. Nester, Wooster, all of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Dec. 12, 1994, Ser. No. 32,000
Term of patent 14 years
U.S. Cl. D7—397



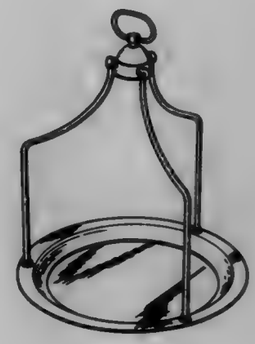
366,392
CHARCOAL IGNITER
James C. Stephen, Arlington Heights; Erich J. Schlosser, Barrington, and Ewald Sieg, Palatine, all of Ill., assignors to Weber-Stephen Products Co., Palatine, Ill.
Filed Jul. 29, 1994, Ser. No. 26,528
Term of patent 14 years
U.S. Cl. D7—417



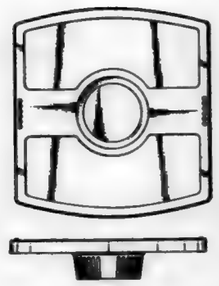
366,393
STEMWARE
David A. Harrison, Newton, and Richard J. Hughes, Morrisville, both of Pa., assignors to Lenox, Incorporated, Lawrenceville, N.J.
Filed Jan. 31, 1994, Ser. No. 18,125
Term of patent 14 years
U.S. Cl. D7—522



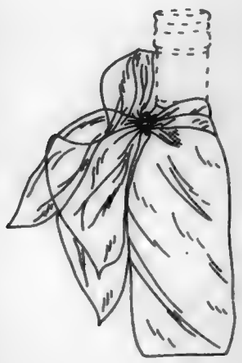
366,394
DRINKS TRAY
Chris Kypreos, 8 Elston St., Brooklyn Park, SA 5032, Australia
Filed Apr. 26, 1994, Ser. No. 21,915
Term of patent 14 years
U.S. Cl. D7—543



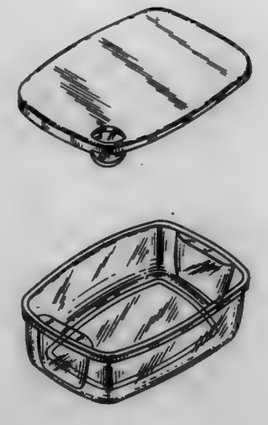
366,395
PARTY TRAY
William B. Wyatt, Brentwood, and Steven A. Silverstein, Nashville, both of Tenn., assignors to Aladdin Synergetics, Inc., Nashville, Tenn.
Filed Aug. 5, 1994, Ser. No. 26,806
Term of patent 14 years
U.S. Cl. D7—554



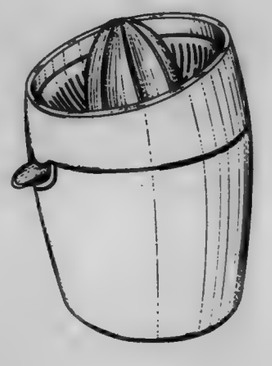
366,396
BOTTLE WRAP
Michael L. F. Chan, 1407 Arch St., Berkeley, Calif. 94708
Filed Aug. 12, 1994, Ser. No. 27,106
Term of patent 14 years
U.S. Cl. D7—624



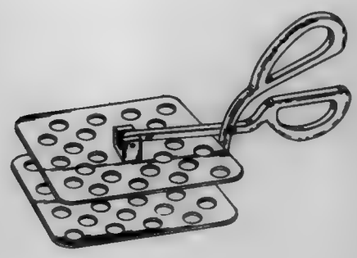
366,397
STORAGE CONTAINER
Larry G. Zimmerman, Hollis, N.H., assignor to Sterilite Corporation, Townsend, Mass.
Filed Aug. 22, 1994, Ser. No. 27,462
Term of patent 14 years
U.S. Cl. D7—629



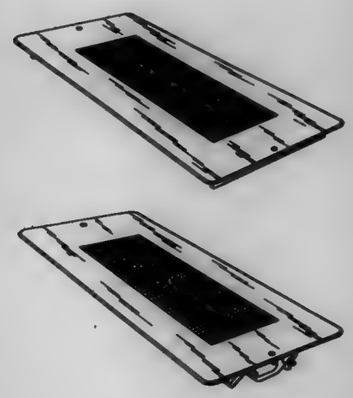
366,398
ELECTRIC CITRUSPRESS
Alberto Alessi Anghini, Omegna; Alessandro Mendini, Milan, both of, Italy, and Seiya Ohta, Hanover, Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 4, 1994, Ser. No. 26,771
Claims priority, application Hague Agreement, Feb. 7, 1994, DMA002421
Term of patent 14 years
U.S. Cl. D7—665



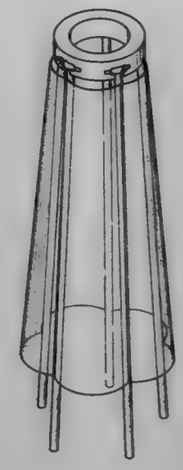
366,399
FOOD HANDLING TONGS
Alfred LaBoccetta, 3412 W. Schoolhouse La., Philadelphia, Pa. 19144
Filed May 16, 1994, Ser. No. 22,945
Term of patent 14 years
U.S. Cl. D7—687



366,400
FISH AND BAIT CUTTING BOARD FOR ATTACHMENT TO A BOAT
William M. Dentsbier, 716 Teson, St. Louis, Mo. 63042
Filed Apr. 12, 1993, Ser. No. 6,891
Term of patent 14 years
U.S. Cl. D7—698



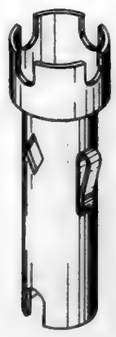
366,401
PLANT COVER
Robert L. Smith, 120 E. Elm, Algona, Iowa 50511
Filed Nov. 4, 1994, Ser. No. 30,696
Term of patent 14 years
U.S. Cl. D8—1



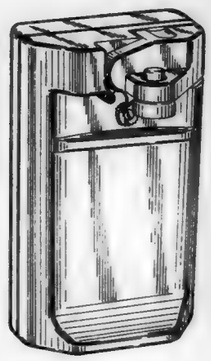
365,407
COMBINATION CAULKING TUBE CAP AND APPLICATOR
David E. Groene, Centerville, Ohio, and Earl E. Hoyt, Franklin Lakes, N.J., assignors to Dap Products, Inc., Dayton, Ohio
Division of Ser. No. 6,707, Apr. 5, 1993, Pat. No. D. 355,576.
This application Oct. 13, 1994, Ser. No. 29,672
Term of patent 14 years
U.S. Cl. D8—14.1



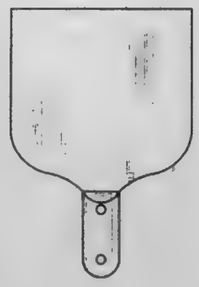
366,403
ELECTRIC FENCE WIRE INSULATOR TOOL
M. Deon Yearwood, Rte. 2, Box 23, Hydro, Okla. 73048
Filed Nov. 1, 1994, Ser. No. 30,559
Term of patent 14 years
U.S. Cl. D8—27



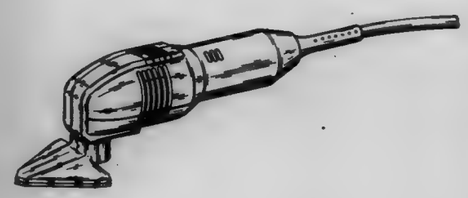
366,404
CAN OPENER
Antonio Indindoli, San Jose, Calif., assignor to The Rival Company, Kansas City, Mo.
Filed Apr. 5, 1994, Ser. No. 20,896
Term of patent 14 years
U.S. Cl. D8—36



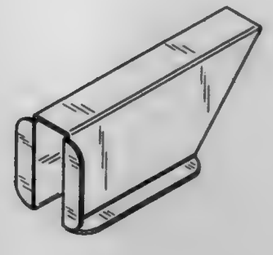
366,405
PUTTY PADDLE
Randy D. Stevens, 504 Quandary Ave., P.O. Box 114, Flagler, Colo. 80815
Filed Mar. 18, 1994, Ser. No. 20,115
Term of patent 14 years
U.S. Cl. D8—45



366,406
SANDER
Naoki Kikuchi, Chandler, Ariz., assignor to Ryobi Outdoor Products, Chandler, Ariz.
Continuation of Ser. No. 20,503, Mar. 28, 1994, abandoned.
This application Feb. 27, 1995, Ser. No. 35,427
Term of patent 14 years
U.S. Cl. D8—62



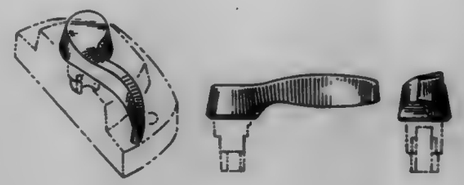
366,407
COMPACT DISC PACKAGING OPENER
Steven M. Kendall, 10341 Forest Brook, Unit H, St. Louis, Mo. 63146, and Gordon W. Gosh, 824 Bricken Pl., Warson Woods, Mo. 63122
Filed Dec. 21, 1994, Ser. No. 32,579
Term of patent 14 years
U.S. Cl. D8—98



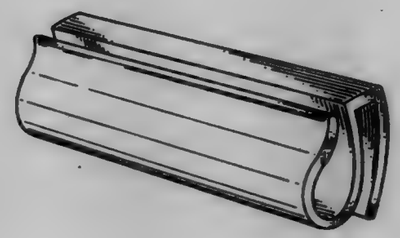
366,408
FOLDING KNIFE
George C. Sessions, Milwaukie, and Bradford J. Parrish, Oregon City, both of Oreg., assignors to Fiskars Inc., Madison, Wis.
Filed Aug. 18, 1994, Ser. No. 27,298
Term of patent 14 years
U.S. Cl. D8—99



366,409
WINDOW SASH LOCK HANDLE
Robbin J. Delaske, Waterville, Minn., assignor to Truth Hardware Corporation, Owatonna, Minn.
Filed Sep. 30, 1994, Ser. No. 29,222
Term of patent 14 years
U.S. Cl. D8—338



366,410
T-RAIL WIRE RETAINER CLIP
Dennis Schlabach, P.O. Box 191, Millersburg, Ohio 44654
Filed Feb. 16, 1994, Ser. No. 18,902
Term of patent 14 years
U.S. Cl. D8—395



366,411
CONTAINER FOR PRESERVED SEAFOOD
Diana G. Wilson, North Vancouver, and Clarence A. Wells, Vancouver, both of, Canada, assignors to Pacific Salmon Industries, Inc., Surrey, Canada
Filed Sep. 1, 1994, Ser. No. 27,936
Term of patent 14 years
U.S. Cl. D9—311



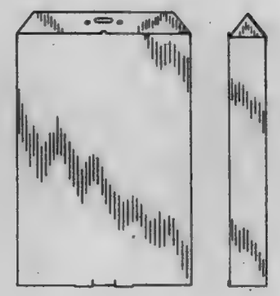
366,412
CARTON
Gregory C. Peischl, Bethel, Conn., and Eugene R. Syiva, New Vernon, N.J., assignors to Clairol, Inc., New York, N.Y.
Filed Dec. 21, 1994, Ser. No. 32,540
Term of patent 14 years
U.S. Cl. D9—415



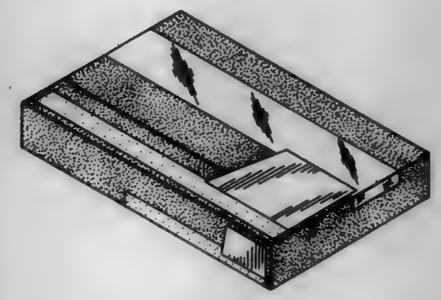
366,413
CANISTER
C. David Tober, 4092 E. Britain Ave., Benton Harbor, Mich. 49022-9727
Filed Feb. 24, 1994, Ser. No. 19,139
Term of patent 14 years
U.S. Cl. D9—429



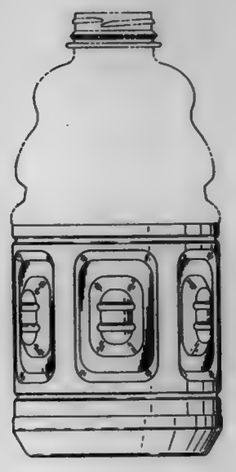
366,414
GARMENT BAG BOX
Joseph J. Dlugopolski, Lombard, Ill., assignor to Fidelity Container Corporation, Elk Grove Village, Ill.
Continuation-in-part of Ser. No. 16,385, Dec. 13, 1993, abandoned. This application Apr. 13, 1994, Ser. No. 21,312
Term of patent 14 years
U.S. Cl. D9—432



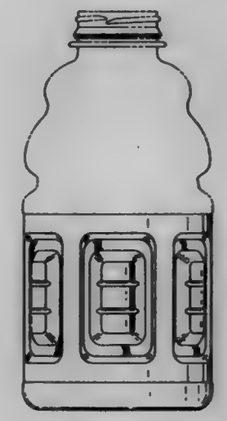
366,415
TAPE CASSETTE PACKAGE
Yoshie Nagasaka, Kanagawa, Japan, assignor to Sony Corp., Tokyo, Japan
Filed May 18, 1994, Ser. No. 23,137
Term of patent 14 years
U.S. Cl. D9—432



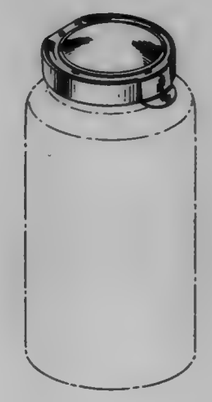
366,416
CONTAINER SIDEWALL AND BASE
Frank E. Semersky, Toledo, Ohio, assignor to Graham Packaging Corporation, York, Pa.
Filed Mar. 1, 1995, Ser. No. 35,527
Term of patent 14 years
U.S. Cl. D9—434



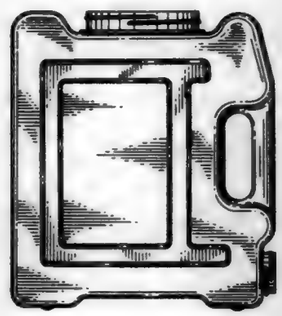
366,417
CONTAINER SIDEWALL AND BASE
Frank E. Semersky, Toledo, Ohio, assignor to Graham Packaging Corporation, York, Pa.
Filed Mar. 1, 1995, Ser. No. 35,526
Term of patent 14 years
U.S. Cl. D9—434



366,418
CONTAINER CLOSURE CAP
John M. Lown, Huntington Beach; Gregory F. Quinn, Fullerton, and Robert P. Mayercheck, Irvine, all of Calif., assignors to FloTool International, Inc., Tustin, Calif.
Filed Mar. 28, 1994, Ser. No. 20,518
Term of patent 14 years
U.S. Cl. D9—449



366,419
CONTAINER FOR BEVERAGES
Borge Hestehave, Alta Loma, and Kjeld Hestehave, Upland, both of Calif., assignors to Bomatic, Inc., Ontario, Calif.
Filed Sep. 12, 1994, Ser. No. 28,261
Term of patent 14 years
U.S. Cl. D9—520



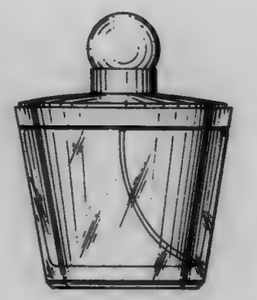
366,420
PERFUME FLACON
Ellen Gavin, Atlantic Highlands, N.J., assignor to Coty Inc., New York, N.Y.
Filed May 27, 1994, Ser. No. 23,636
Term of patent 14 years
U.S. Cl. D9—521



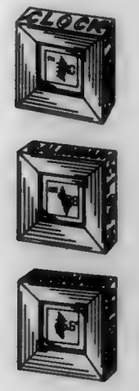
366,421
BOTTLE
Robert C. Best, Withamsville, Ohio, assignor to The Procter and Gamble Company, Cincinnati, Ohio
Filed Dec. 19, 1994, Ser. No. 32,462
Term of patent 14 years
U.S. Cl. D9—542



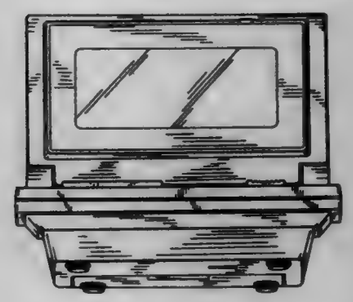
366,422
BOTTLE WITH CAP
Marc Gobe, New York, N.Y., assignor to Victoria's Secret Stores, Inc., Columbus, Ohio
Filed Dec. 5, 1994, Ser. No. 31,757
Term of patent 14 years
U.S. Cl. D9—544



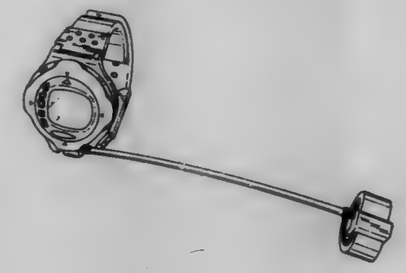
366,423
ROTATABLE DISPLAY UNIT
Junji Hiromori, Tokyo, Japan, assignor to Hiromori Inc., Tokyo, Japan
Filed Feb. 9, 1994, Ser. No. 18,524
Term of patent 14 years
U.S. Cl. D10—2



366,424
LCD ALARM CLOCK
Shu K. Wong, Hong Kong, Hong Kong, assignor to Ballanda Limited, Hong Kong
Filed Jan. 10, 1995, Ser. No. 33,317
Term of patent 14 years
U.S. Cl. D10—15



366,425
WRISTWATCH AND PULSE RATE MONITOR
Masanao Hirose, Sawa, Japan, assignor to Seiko Epson Corporation, Shinjuku, Japan
Filed Nov. 7, 1994, Ser. No. 31,192
Claims priority, application Japan, May 6, 1994, 6-12940
Term of patent 14 years
U.S. Cl. D10—31



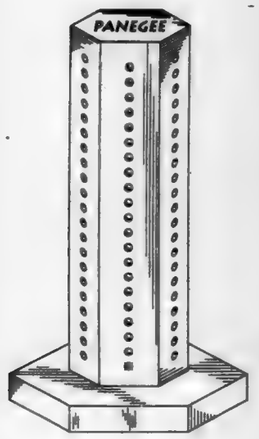
366,426
WRIST WATCH
Kazuyasu Kojima, Fussa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Feb. 15, 1995, Ser. No. 34,910
Term of patent 14 years
U.S. Cl. D10—39



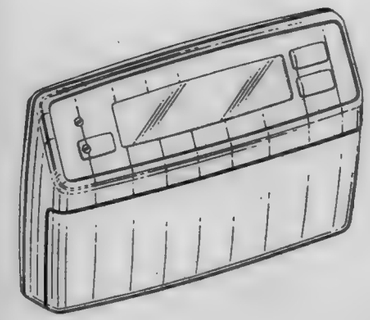
366,427
DESIGN FOR A WATCH
Jean-Louis Dumas, Paris, France, assignor to La Montre Hermes, S.A., Bienne, Switzerland
Filed Mar. 8, 1993, Ser. No. 5,595
Claims priority, application WIPO, Sep. 8, 1992, DM/023 840
The portion of the term of this patent subsequent to May 9, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D10—39



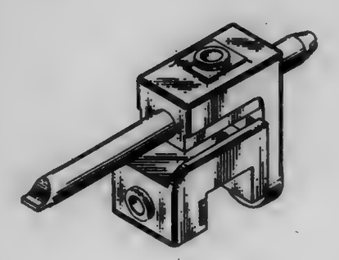
366,428
GAME SCORING TOWER
John Halse, and Steve Wren, both of 4 Harrow Ave, Lansvale 2166 N.S.W., Australia
Filed Sep. 12, 1994, Ser. No. 28,253
Term of patent 14 years
U.S. Cl. D10—46.1



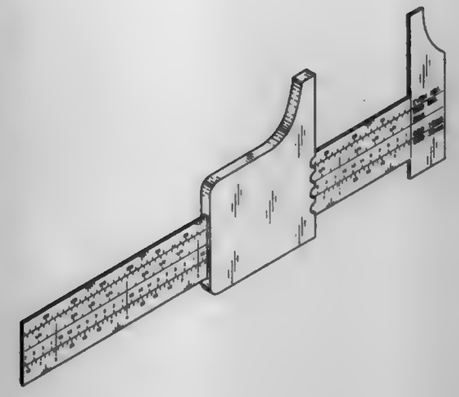
366,429
THERMOSTAT HOUSING
Andrea E. Dexter, Renton, Wash.; James E. Erickson, Eagan, Minn.; James A. Odom, Apple Valley, Minn.; Guy M. Shoultz, Delano, Minn., and N. Thomas Wolfe, Golden Valley, Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Sep. 2, 1994, Ser. No. 28,039
Term of patent 14 years
U.S. Cl. D10—50



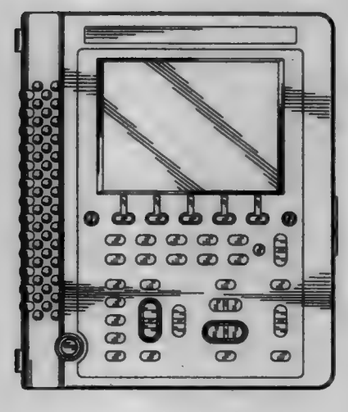
366,430
PRESS BRAKE GAUGE
John J. Grundl, 2341 Eastgate Pl., Glendale, Calif. 91208
Filed Dec. 13, 1994, Ser. No. 32,066
Term of patent 14 years
U.S. Cl. D10—65



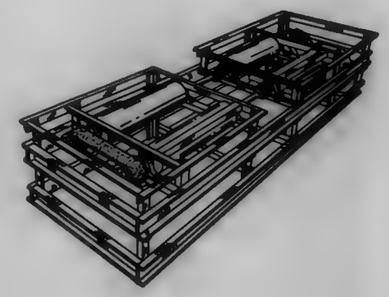
366,431
SIMPLIFIED EASY TO READ CALIPER
James Y. Saka, 2265 Gondar Ave., Long Beach, Calif. 90815
Filed May 19, 1995, Ser. No. 39,071
Term of patent 14 years
U.S. Cl. D10—73



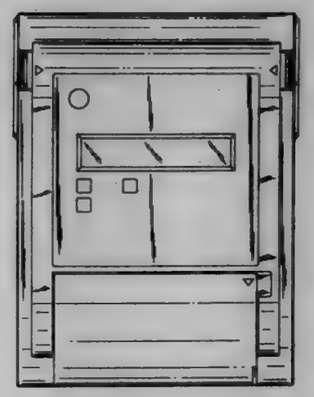
366,432
ELECTRONIC MEASUREMENT INSTRUMENT
Jerry L. Wrisley, Beaverton; Keith W. Kirkwood, Portland, and David T. Rosette, Tigard, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.
Filed Mar. 3, 1995, Ser. No. 35,666
Term of patent 14 years
U.S. Cl. D10—78



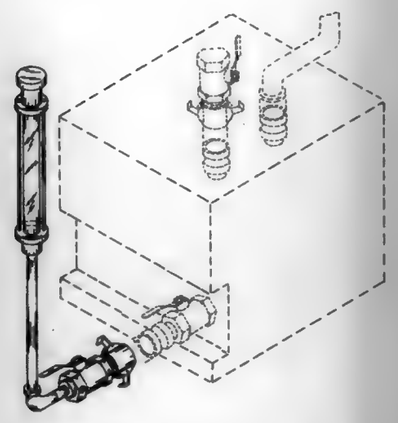
366,433
MULTIPLE FUNCTION CHASSIS DYNAMOMETER
Philip F. Evans, 447 King Rd., West Chester, Pa. 19380, and C. Eugene Hutcheson, 57 W. 58th St.- Apt. 3G, New York, N.Y. 10019
Filed Feb. 18, 1994, Ser. No. 18,926
Term of patent 14 years
U.S. Cl. D10—83



366,434
ELECTRONIC POWER METER AND DISPLAY
Donald R. Brown, III, Farmington, Conn., and Roy Watson, Pittsfield, Mass., assignors to General Electric Company, New York, N.Y.
Filed Oct. 17, 1994, Ser. No. 29,768
Term of patent 14 years
U.S. Cl. D10—99



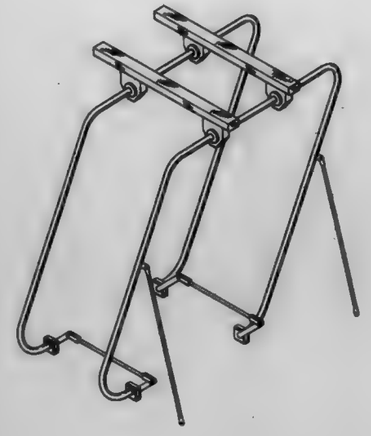
366,435
SIGHT GLASS GAUGE FOR FILLING STORAGE TANKS
Keith Malcolm, P.O. Box 131, Franklin, N.H. 03235
Filed Apr. 3, 1995, Ser. No. 37,035
Term of patent 14 years
U.S. Cl. D10—96



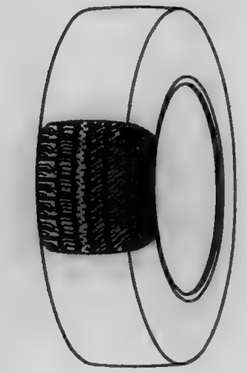
366,436
TAXIMETER
Andreas Biottko, and Reinhard Renner, both of Esslingen, Germany, assignors to VDO Kienzle GmbH, Villingen-Shwennungen, Germany
Continuation-in-part of Ser. No. 13,394, Sep. 23, 1993, abandoned. This application Feb. 1, 1995, Ser. No. 34,305
Claims priority, application Germany, Mar. 23, 1993, 93 02 317
Term of patent 14 years
U.S. Cl. D10—97



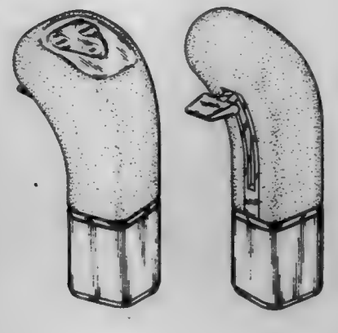
366,437
JET SKI LIFT FOR A TRAILER
Kelan D. Johnson, 261 Lamar St., Myrtle Creek, Oreg. 97457
Filed Dec. 30, 1994, Ser. No. 32,885
Term of patent 14 years
U.S. Cl. D12—106



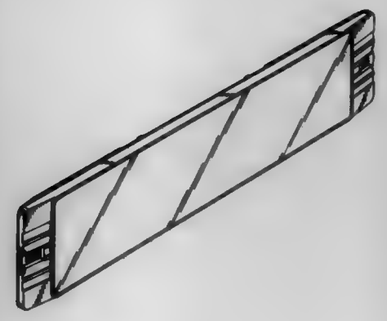
366,438
TIRE
Eileen A. McKisson, Akron, Ohio, assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Dec. 6, 1993, Ser. No. 16,045
Term of patent 14 years
U.S. Cl. D12—146



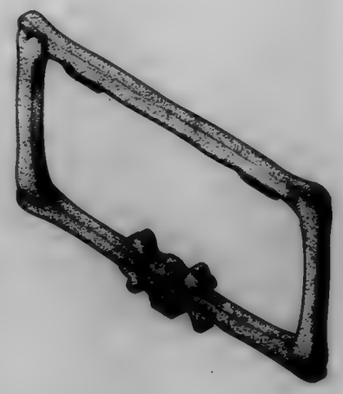
366,439
GEAR SHIFT LEVER WITH CRUISE CONTROL
Charles E. Allen, Jr., Rochester Hills, and Frank A. Palmeri, Troy, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.
Filed Sep. 20, 1994, Ser. No. 28,719
Term of patent 14 years
U.S. Cl. D12—179



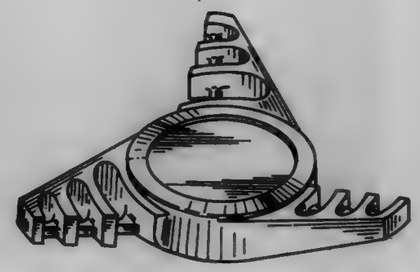
366,440
VISOR MIRROR WITH DAY AND DATE INDICATORS
Wing K. Tong, Chi Wah Ind.Bldg. 1-7 Kin Hon Str., Kwai Chung, Hong Kong
Filed Jun. 16, 1993, Ser. No. 9,521
Claims priority, application United Kingdom, May 10, 1993, 2030938
Term of patent 14 years
U.S. Cl. D12—191



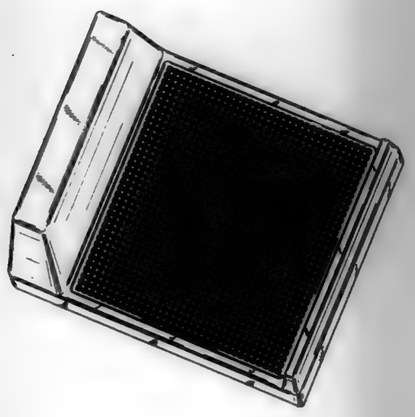
366,441
DECORATIVE FRAME FOR LICENSE PLATE
Chun-Feng Wu, No. 782, Wen-Shyan Rd., Pao An Tsun, Jen-Te Hsiang, Tainan Hsien, Taiwan, Prov. of China
Filed Mar. 17, 1995, Ser. No. 36,327
Term of patent 14 years
U.S. Cl. D12—193



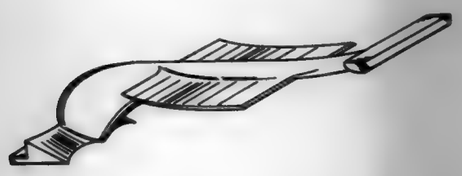
366,442
SPINNER FOR WHEELS
Raymond Marchisset, 12260 Marlowe, Tustin, Calif. 92680
Filed Jun. 16, 1994, Ser. No. 24,588
Term of patent 14 years
U.S. Cl. D12—213



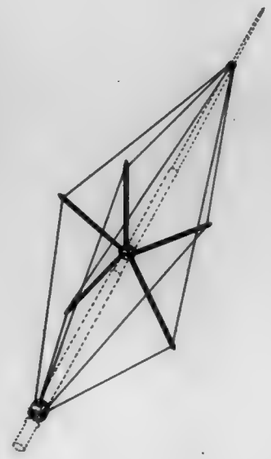
366,443
VEHICLE WHEEL STOP MAT
Gary M. Bach, Appleton, and James E. Buchman, Hortonville, both of Wis., assignors to Reynolds Consumer Products Inc., Appleton, Wis.
Filed Jan. 18, 1995, Ser. No. 33,662
Term of patent 14 years
U.S. Cl. D12—217



366,444
JET-PUMP WATERCRAFT INTAKE GRATE
Glendon L. Dilworth, 1215 E. 16th, Burley, Id. 83318, and Don R. Moyle, Rte. 1, Box 1762, Burley Burley, Id. 83318
Filed Oct. 13, 1994, Ser. No. 29,692
Term of patent 14 years
U.S. Cl. D12—317



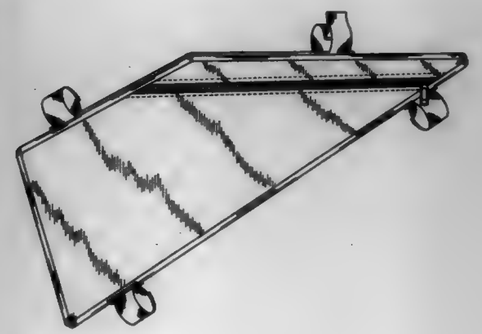
366,445
FISHING BOAT OUTRIGGER BRACE
Kurt V. Seggern, 2534 Arlington St., Sarasota, Fla. 34239
Filed Dec. 12, 1994, Ser. No. 32,031
Term of patent 14 years
U.S. Cl. D12—317



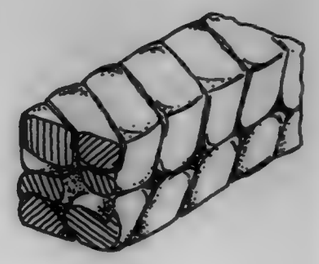
366,446
BICYCLE BAG
John A. Berman, San Anselmo, Calif., assignor to Dynacraft Industries Inc., Ashland, Mass.
Filed Oct. 25, 1994, Ser. No. 30,277
Term of patent 14 years
U.S. Cl. D12—409



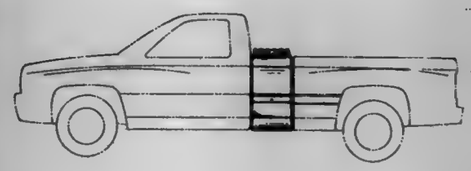
366,447
BICYCLE BAG
John A. Berman, San Anselmo, Calif., assignor to Dynacraft Industries Inc., Ashland, Mass.
Filed Oct. 25, 1994, Ser. No. 30,276
Term of patent 14 years
U.S. Cl. D12—409



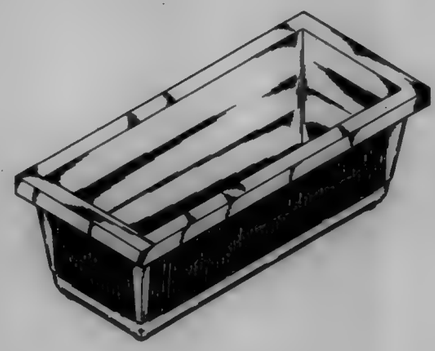
366,448
JEWELRY CHAIN
Luca Scortecci, and Marco Stocchi, both of Castiglion Fibocchi, Italy, assignors to S.I.L.O. S.p.A. Societa' Italiana Lavorazione Oro, Castiglion Fibocchi, Italy
Filed Oct. 7, 1994, Ser. No. 29,513
Claims priority, application Hague Agreement, May 2, 1994, DMA/002503
Term of patent 14 years
U.S. Cl. D11—6



366,449
COVER FOR VEHICLE STORAGE COMPARTMENT
Clyde W. Ney, Waterford, and Phillip E. Payne, Northville, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Feb. 16, 1994, Ser. No. 18,868
Term of patent 14 years
U.S. Cl. D12—423



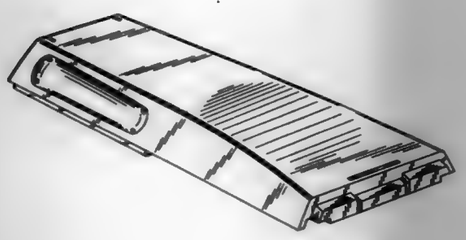
366,450
PLANTER
Sergio Rabito, Isola Vicentina, Italy, assignor to Euro 3 Plast Srl, Ponte di Barbarano VI, Italy
Filed Feb. 10, 1993, Ser. No. 4,648
Term of patent 14 years
U.S. Cl. D11—155



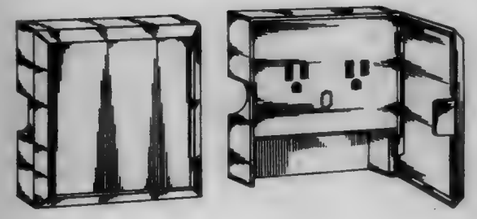
366,451
TWO-FACED OWL
Virgil L. Farstad, Douglas, N. Dak., assignor to Rice Lake Products, Inc., Minot, N. Dak.
Filed Sep. 8, 1994, Ser. No. 28,185
Term of patent 14 years
U.S. Cl. D11—162



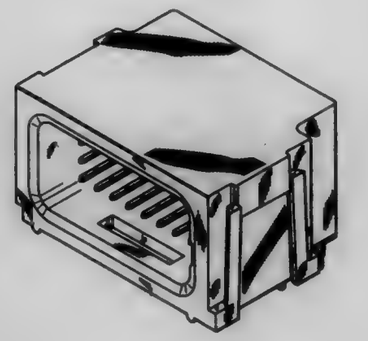
366,452
BATTERY
Richard Lindahl, Malmö , Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Division of Ser. No. 20,126, Mar. 18, 1994. This application Nov. 10, 1994, Ser. No. 31,186
Claims priority, application Sweden, Sep. 24, 1993, 932118
Term of patent 14 years
U.S. Cl. D13—103



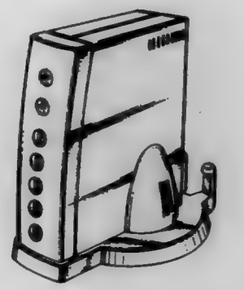
366,453
ELECTRICAL OUTLET UNIT WITH COVER THAT HOLDS CERAMIC TILE OR DECORATIVE ELEMENT
George F. W. Boesel, Canton, Mass., and Mark W. Geis, Carmel, Ind., assignors to Woods Industries, Inc., Carmel, Ind.
Filed Feb. 15, 1995, Ser. No. 34,887
Term of patent 14 years
U.S. Cl. D13—139



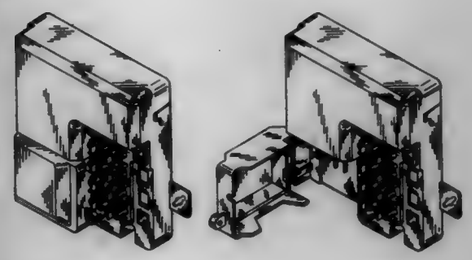
366,454
PARALLEL MOUNTING HYBRID MODULAR ELECTRICAL SIGNAL CONNECTOR
Larry D. Eaton, Fremont, Calif., assignor to TVM, Inc., Fremont, Calif.
Filed Sep. 22, 1994, Ser. No. 29,411
Term of patent 14 years
U.S. Cl. D13—147



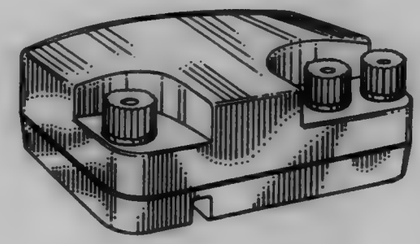
366,455
PORTABLE HUB
Dean Cheng, Hsin Chu, Taiwan, Prov. of China, assignor to D-Link Corporation, Hsin Chu, Taiwan, Prov. of China
Filed Nov. 9, 1994, Ser. No. 30,831
Term of patent 14 years
U.S. Cl. D13—147



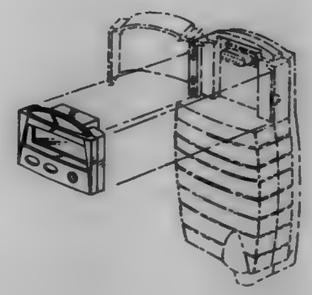
366,456
TELEPHONE NETWORK REMOTE TERMINAL HOUSING
Horace C. Rodriguez, Schaumburg; Leonardo D. Moral, Chicago; Walter T. Harwood, Streamwood, and Ronald M. Samson, Carol Stream, all of Ill., assignors to Charles Industries, Ltd., Rolling Meadows, Ill.
Filed Nov. 19, 1993, Ser. No. 15,556
Term of patent 14 years
U.S. Cl. D13—147



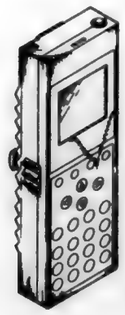
366,457
ELECTRIC FENCE CONTROLLER
Murray N. Pilcher, Auckland, New Zealand, assignor to Stafix Electric Fencing Limited, Auckland, New Zealand
Filed Dec. 9, 1994, Ser. No. 32,278
Claims priority, application New Zealand, Sep. 23, 1994, 26204
Term of patent 14 years
U.S. Cl. D13—162



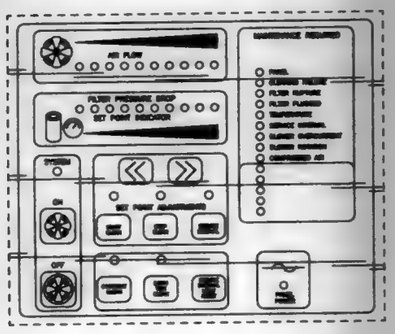
366,458
REMOVABLE PROGRAMMABLE CONTROL MODULE WITH DISPLAY FOR IRRIGATION CONTROL SYSTEM
Michael T. Pearson, West Molesey, and Kishan Gohil, New Malden, both of, United Kingdom, assignors to Imperial Underground Sprinkler Co., Lenexa, Kans.
Filed Sep. 1, 1994, Ser. No. 27,984
Term of patent 14 years
U.S. Cl. D13—162



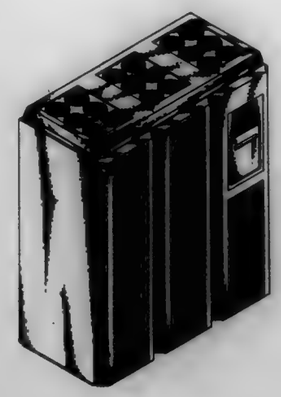
366,459
SERVOMOTOR DRIVE SETTING DEVICE
Junichi Kurokawa; Takeshi Majima; Katsuyoshi Nakano, and Hiromichi Kawashima, all of Ise, Japan, assignors to Shinko Electric Co., Ltd., Tokyo, Japan
Filed Jan. 5, 1995, Ser. No. 33,131
Claims priority, application Japan, Jul. 7, 1994, 6-20220
Term of patent 14 years
U.S. Cl. D13—164



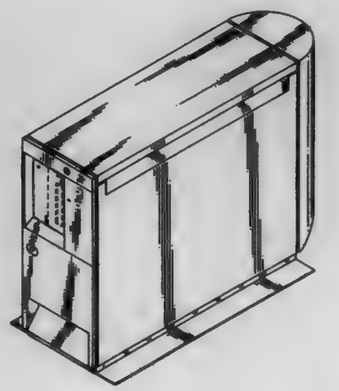
366,460
FRONT FACE OF A DISPLAY PANEL FOR A DUST COLLECTOR
Ronald L. Jorgenson, Apple Valley, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.
Filed Sep. 8, 1993, Ser. No. 12,672
Term of patent 14 years
U.S. Cl. D13—177



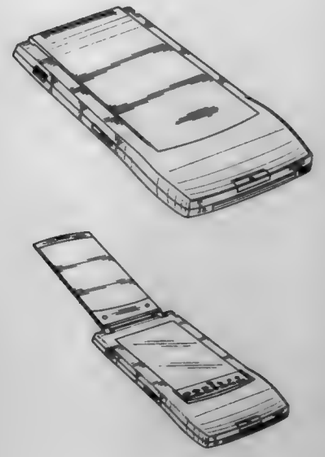
366,461
THREE-BAY ELECTRONICS CABINET
Lee Spechts, Billerica, Mass., assignor to EMC Corporation, Hopkinton, Mass.
Filed Feb. 10, 1994, Ser. No. 18,726
Term of patent 14 years
U.S. Cl. D13—184



366,462
DATA PROCESSING SYSTEM
David W. Hill, and Tim K. Murphy, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 3, 1994, Ser. No. 22,257
Term of patent 14 years
U.S. Cl. D14—100



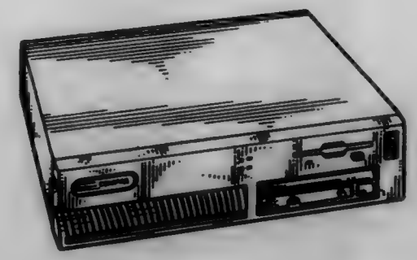
366,463
HANDHELD COMPUTER HOUSING
Jonathan P. Ive, San Francisco, and Ronald J. Moller, Boulder Creek, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Mar. 2, 1994, Ser. No. 19,471
Term of patent 14 years
U.S. Cl. D14—100



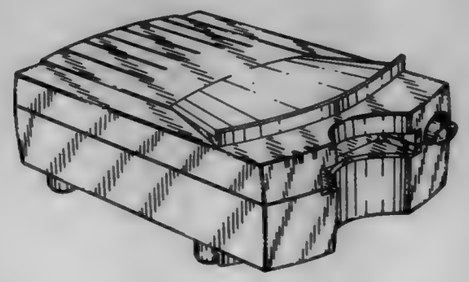
366,464
DATA PROCESSING EQUIPMENT UNIT
Randall W. Martin, The Woodlands, Tex., assignor to Compaq Computer Corporation, Houston, Tex.
Filed Sep. 24, 1992, Ser. No. 951,550
Term of patent 14 years
U.S. Cl. D14—100



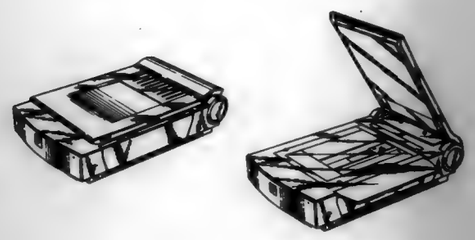
366,465
PERSONAL COMPUTER
Randall W. Martin, The Woodlands, Tex., assignor to Compaq Computer Corporation, Houston, Tex.
Filed Sep. 9, 1993, Ser. No. 12,541
Term of patent 14 years
U.S. Cl. D14—100



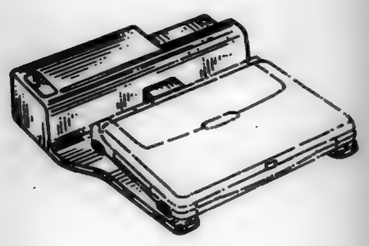
366,466
CARD READER
June Lee; William J. Evans, both of San Francisco, and Kevelyn K. Boyd, Berkeley, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.
Filed Dec. 15, 1994, Ser. No. 32,317
Term of patent 14 years
U.S. Cl. D14—105



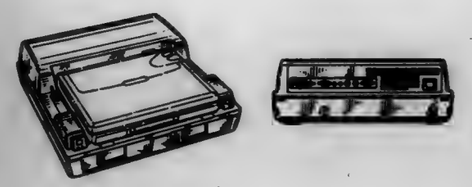
366,467
IMAGE SCANNER
Ikuo Masujima, and Toshimitsu Ohara, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Dec. 5, 1994, Ser. No. 31,723
Claims priority, application Japan, Jun. 3, 1994, 6-16251
Term of patent 14 years
U.S. Cl. D14—107



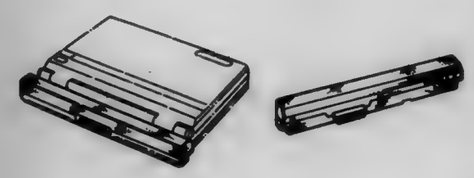
366,468
EXPANSION BASE FOR A NOTEBOOK PERSOANL COMPUTER
Sean P. Ryan, The Woodlands; Jeffrey L. Keaton, and Teodros Mesfin, both of Houston, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.
Filed Jan. 27, 1994, Ser. No. 18,099
Term of patent 14 years
U.S. Cl. D14—107



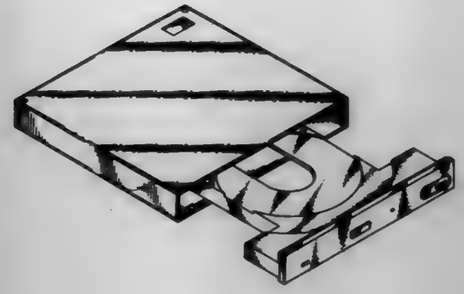
366,469
EXPANSION BASE FOR NOTEBOOK PERSONAL COMPUTER
John E. Youens, Tomball, Tex., assignor to Compaq Computer Corporation, Houston, Tex.
Filed Dec. 30, 1993, Ser. No. 16,944
Term of patent 14 years
U.S. Cl. D14—107



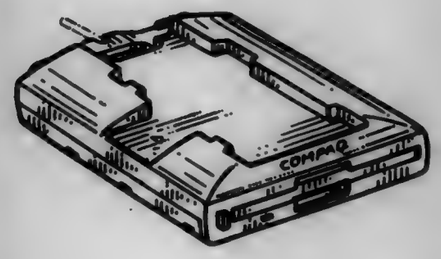
366,470
EXPANSION PORT CONVERTER FOR NOTEBOOK PERSONAL COMPUTER
John E. Youens, Tomball, Tex., and Christopher M. Paddon, Santa Cruz, Calif., assignors to Compaq Computer Corporation, Houston, Tex.
Filed Dec. 30, 1993, Ser. No. 16,941
Term of patent 14 years
U.S. Cl. D14—107



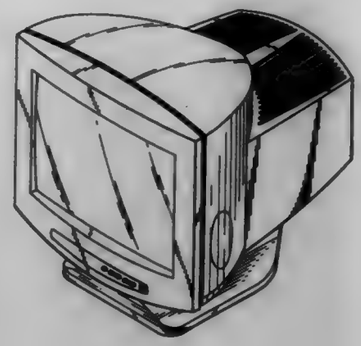
366,471
DISK DRIVE UNIT
Masafumi Ito, and Shigeru Hasegawa, both of Musashino, Japan, assignors to TEAC Corporation, Japan
Filed Nov. 29, 1994, Ser. No. 31,505
Claims priority, application Japan, Jun. 22, 1994, 6-18442
Term of patent 14 years
U.S. Cl. D14—109



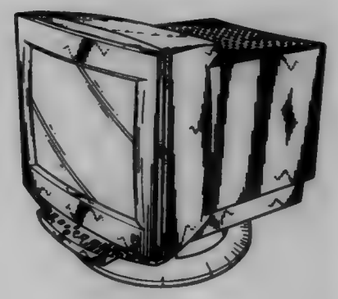
366,472
EXTERNAL FLOPPY DISK DRIVE FOR A NOTEBOOK PERSONAL COMPUTER
John E. Youens, Tomball, Tex., assignor to Compaq Computer Corporation, Houston, Tex.
Filed Jan. 27, 1994, Ser. No. 18,030
Term of patent 14 years
U.S. Cl. D14—109



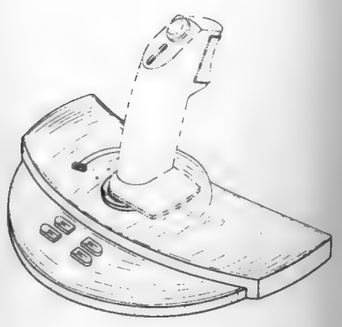
366,473
VIDEO DISPLAY TERMINAL
Yves A. Behar, San Francisco, Calif., assignor to Wyse Technology, Inc., San Jose, Calif.
Filed Oct. 5, 1994, Ser. No. 29,809
Term of patent 14 years
U.S. Cl. D14—113



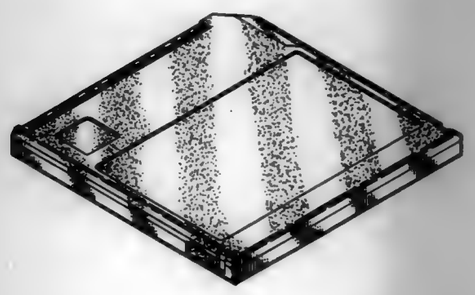
366,474
MONITOR FOR COMPUTERS
Jochen Backs, San Francisco, Calif., assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Jul. 7, 1994, Ser. No. 25,628
Claims priority, application Rep. of Korea, Mar. 18, 1994, 1994-5118
Term of patent 14 years
U.S. Cl. D14—113



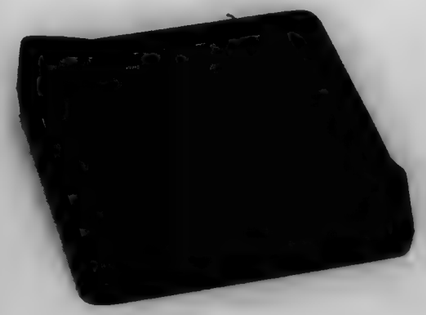
366,475
BASE FOR A COMPUTER JOYSTICK
Russell Sanchez; Mike Paull; Steve Kaneko, all of Seattle, Wash.; Henry Chin, Portland, Oreg.; Robert Dillon, Venice, Calif.; Michnel Knodt, Columbus, Ohio, and Claire Bellard, Seattle, Wash., assignors to Microsoft Corporation, Redmond, Wash.
Filed Dec. 6, 1994, Ser. No. 31,810
Term of patent 14 years
U.S. Cl. D14—114



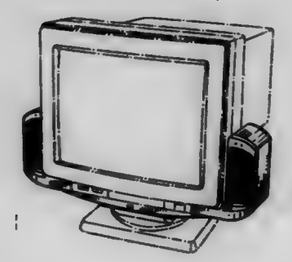
366,476
DISK CARTRIDGE
Jacques Bordes, Avranches, France, assignor to Nomai SA, Avranches Cedex, France
Filed Mar. 9, 1995, Ser. No. 36,019
Term of patent 14 years
U.S. Cl. D14—114



366,477
INFRARED ADAPTER FOR PRINTERS AND COMPUTERS
John W. Gassett; Jerry A. Thrasher, both of Lexington, and Stephen R. Wilson, Mt. Sterling, all of Ky., assignors to Lexmark International, Inc., Greenwich, Conn.
Filed Mar. 10, 1995, Ser. No. 36,045
Term of patent 14 years
U.S. Cl. D14—114



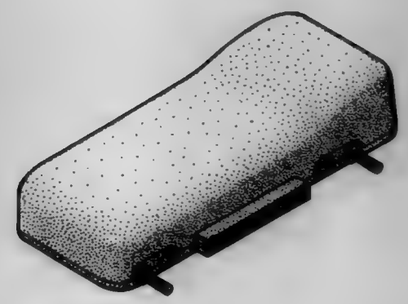
366,478
COMBINED MULTIMEDIA ATTACHMENT AND SPEAKERS FOR A COMPUTER MONITOR
George R. Daniels, Spring, Tex.; Thor R. Halseth, Simi Valley, and Daniel R. Vehse, Oxnard, both of Calif., assignors to Compaq Computer Corporation, Houston, Tex.
Filed Jun. 23, 1994, Ser. No. 24,922
Term of patent 14 years
U.S. Cl. D14—114



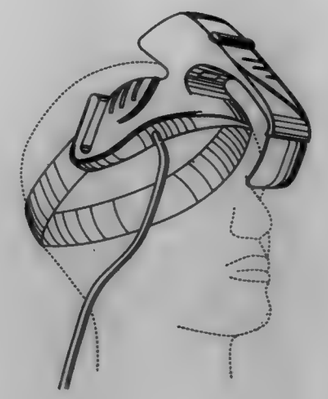
366,479
KEYBOARD
Theo Lievan, Wuerselen, Germany, assignor to Vobis Microcomputer AG, Wuerselen, Germany
Filed Sep. 9, 1994, Ser. No. 28,249
Term of patent 14 years
U.S. Cl. D14—115



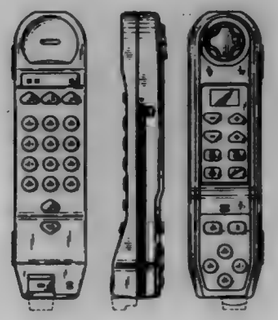
366,480
FACSIMILE MODEM
Eiichi Shimizu, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 30, 1994, Ser. No. 32,914
Claims priority, application Japan, Jun. 30, 1994, 6-19505
Term of patent 14 years
U.S. Cl. D14—118



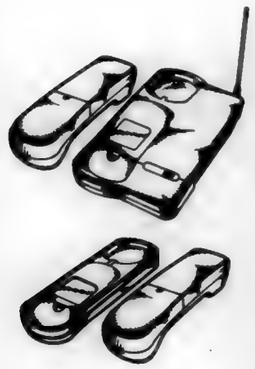
366,481
ELECTRONIC GAME VIEWING HEAD PIECE
Roni Raviv, Nes-Ziona, and Omri Rothschild, Tel Aviv, both of, Israel, assignors to Tiger Electronics, Inc., Vernon Hills, Ill.
Filed Jan. 13, 1995, Ser. No. 33,519
Term of patent 14 years
U.S. Cl. D14—124



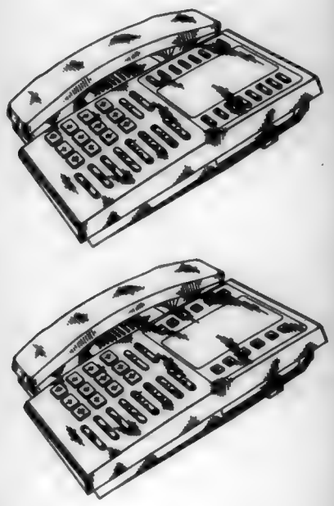
366,482
AIRLINE TELEPHONE HANDSET WITH DIGITAL PASSENGER CONTROL FUNCTIONS AND VIDEO GAME CONTROLS
Richard A. Shields, Jr., Bellevue, Wash., assignor to Claircom Communications Group, Inc., Seattle, Wash.
Continuation-in-part of Ser. No. 21,670, Apr. 21, 1994. This application Apr. 25, 1994, Ser. No. 21,880
The portion of the term of this patent subsequent to Oct. 10, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—146



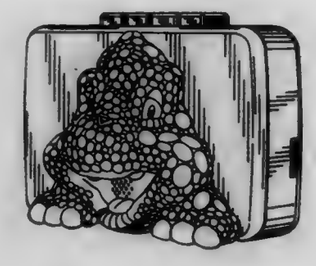
366,483
TELEPHONE SET
Ron Major, Cirencester, England, assignor to Video Technology Engineering, Ltd., Hong Kong, Hong Kong
Filed Sep. 3, 1993, Ser. No. 12,636
Claims priority, application United Kingdom, Mar. 8, 1993, 2029647
Term of patent 14 years
U.S. Cl. D14—149



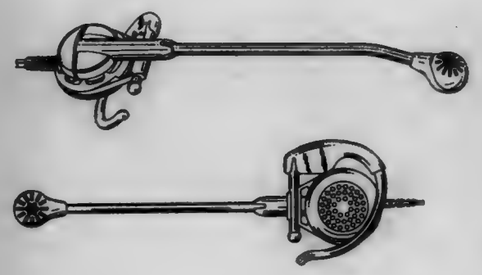
366,484
TELEPHONE SET
Monte Levin, New York, N.Y., assignor to TT Systems Corporation, Yonkers, N.Y.
Filed Aug. 15, 1994, Ser. No. 27,169
Term of patent 14 years
U.S. Cl. D14—151



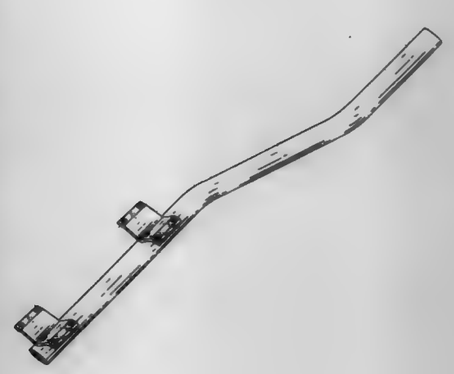
366,485
PORTABLE CASSETTE PLAYER
Mark Grasso, 19846 Pacific Coast Hwy., #2, Malibu, Calif. 90265; John Hamagami, Los Angeles, and Justin Carroll, Venice, both of Calif., assignors to Mark Grasso, Malibu, Calif.
Filed Dec. 30, 1993, Ser. No. 16,962
Term of patent 14 years
U.S. Cl. D14—165



366,486
HEADSET
Lars Runquist, St. Paul, and David J. Copeland, Minneapolis, both of Minn., assignors to Telex Communications, Inc., Minneapolis, Minn.
Filed Oct. 11, 1994, Ser. No. 29,556
Term of patent 14 years
U.S. Cl. D14—206



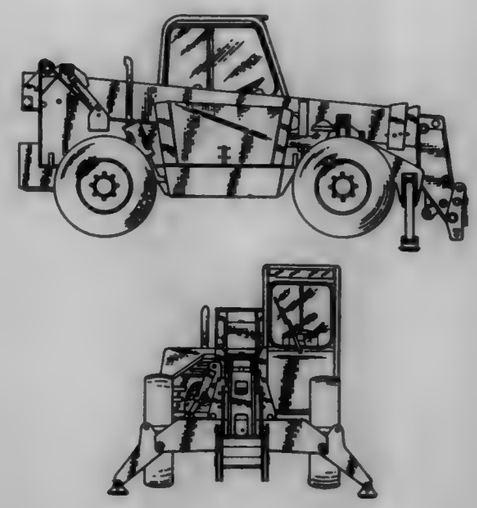
366,487
AUXILIARY ANTENNA MOUNT
John H. Jones, 1615 Brices Creek Rd., New Bern, N.C. 28562
Filed Mar. 29, 1994, Ser. No. 20,584
Term of patent 14 years
U.S. Cl. D14—238



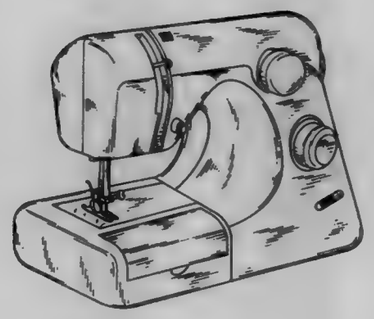
366,488
REFRIGERANT MOTOR COMPRESSOR
Biagio Alfano, Milan, and Edoardo Biscaldi, Saronno, both of, Italy, assignors to Necchi Compressori S.r.l., Pavia, Italy
Filed Sep. 23, 1994, Ser. No. 28,860
Claims priority, application Italy, Mar. 28, 1994, PV 94 0000002
Term of patent 14 years
U.S. Cl. D15—9



366,489
TELESCOPIC MATERIAL HANDLING VEHICLE
David J. Brown, Nr Thirst, England, assignee to Caterpillar Inc., Peoria, Ill.
Filed Apr. 19, 1994, Ser. No. 21,480
Term of patent 14 years
U.S. Cl. D15—22



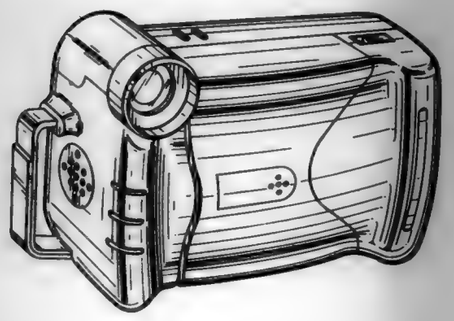
366,490
SEWING MACHINE
Chao-Jung Wu, No. 36, 135 Lane, Jyh-Shan Rd., Da-Li city, Taichung Hsien, Taiwan, Prov. of China
Filed Apr. 20, 1994, Ser. No. 21,534
Term of patent 14 years
U.S. Cl. D15—69



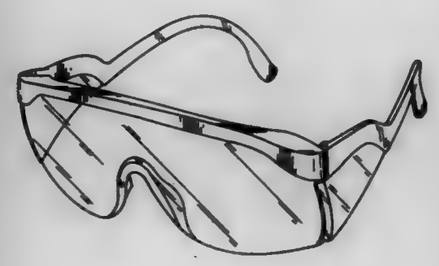
366,491
ELECTRIC SAW
Chiu-Tsun Chang, Taichung, Taiwan, Prov. of China, assignor to P & F Brother Indutrial Corporation, Taichung, Taiwan, Prov. of China
Filed Mar. 13, 1995, Ser. No. 36,093
Term of patent 14 years
U.S. Cl. D15—133



366,492
COMBINED MONITOR, VIDEO TAPE RECORDER AND CAMERA
Katsunori Kume, and Yasushi Fukuda, both of Tochigi, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed May 5, 1994, Ser. No. 22,450
Claims priority, application Japan, Nov. 18, 1993, 5-35220
Term of patent 14 years
U.S. Cl. D16—202



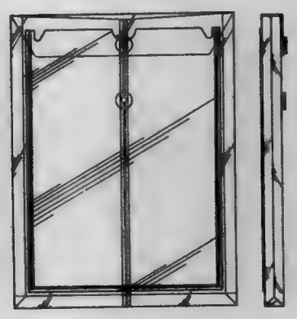
366,493
EYEWEAR
Guy Magdelaine, Vaux les Saint Claude, and Bernard Reymondet, Saint Claude, both of, France, assignors to WGM Safety Corp., Reading, Pa.
Filed Oct. 29, 1993, Ser. No. 14,700
Term of patent 14 years
U.S. Cl. D16—314



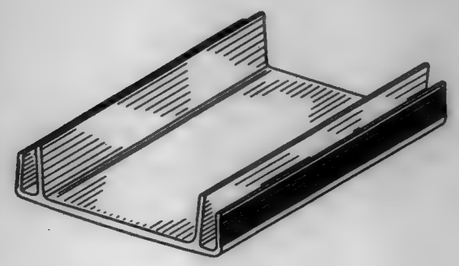
366,494
DUPLEX ATTACHMENT FOR A PRINTER
David C. Bishop, Lexington, Ky., assignor to Lexmark International, Inc., Greenwich, Conn.
Filed Sep. 2, 1994, Ser. No. 28,031
Term of patent 14 years
U.S. Cl. D18—49



366,495
ENVELOPE
Masafumi Hirai, Torrance, Calif., assignor to Lion Office Products, Inc., Gardena, Calif.
Filed Oct. 24, 1994, Ser. No. 30,100
Term of patent 14 years
U.S. Cl. D19—3



366,496
RING BINDER STABILIZER
Felix H. Yiu, 17234 Bullock St., Encino, Calif. 91316
Filed Dec. 29, 1994, Ser. No. 32,810
Term of patent 14 years
U.S. Cl. D19—32



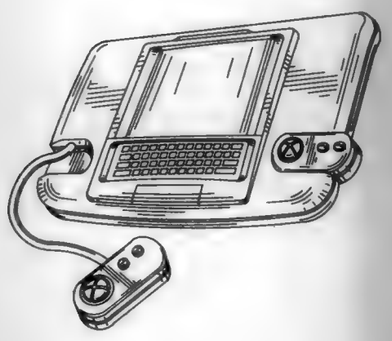
366,497
WRITING INSTRUMENT
Yasuo Otake, Los Angeles, Calif., assignor to Pentel of America, Ltd., Japan
Filed May 19, 1994, Ser. No. 23,209
Term of patent 14 years
U.S. Cl. D19—51



366,498
BALL POINT PEN
Shinichi Abe, and Teruya Yazawa, both of Tokyo, Japan, assignors to Zebra Co., Ltd., Tokyo, Japan
Filed Feb. 16, 1995, Ser. No. 34,977
Claims priority, application Japan, Aug. 19, 1994, 6-25040
Term of patent 14 years
U.S. Cl. D19—51



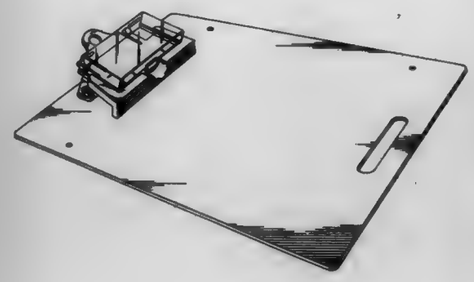
366,499
HOUSING FOR AN ELECTRONIC EDUCATIONAL GAME
Kwok K. Fung, Chai Wan, Hong Kong, assignor to VTech Industries, Inc., Wheeling, Ill.
Filed Jun. 2, 1994, Ser. No. 23,886
Claims priority, application United Kingdom, Dec. 6, 1993, 2035697
Term of patent 14 years
U.S. Cl. D19—60



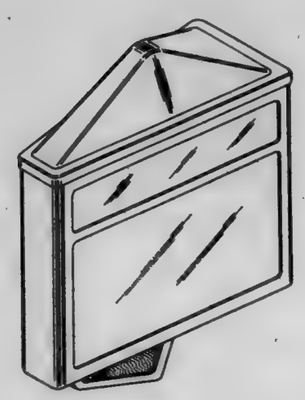
366,500
DESK CADDY FOR ASSORTED OFFICE ARTICLES
Stephen a. Goldthwaite, 14 Lanz La., Ellington, Conn.
Filed Jul. 25, 1994, Ser. No. 26,262
Term of patent 14 years
U.S. Cl. D19—82



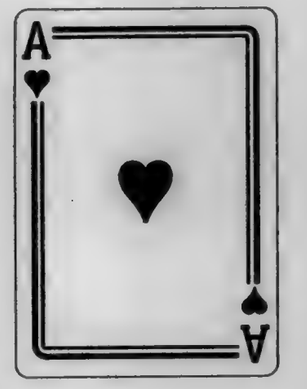
366,501
CLIPBOARD
Ellis N. Shamoon, 2833 Park Bridge Ct., Dallas, Tex. 75219
Filed Feb. 10, 1995, Ser. No. 34,732
Term of patent 14 years
U.S. Cl. D19—88



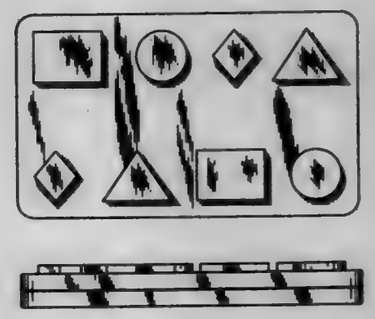
366,502
COMBINED MENU AND SPEAKER HOUSING FOR A DRIVE-IN RESTAURANT
Andrew Durco, Jr., P.O. Box 850223, Mesquite, Tex. 75185
Filed Jul. 30, 1993, Ser. No. 10,291
Term of patent 14 years
U.S. Cl. D20—19



366,503
BLACKJACK CARD DECK
Randy D. Sines, Spokane, Wash.; Steven L. Forte, Henderson, Nev., and David A. Krise, Spokane, Wash., assignors to Sines & Forte, Henderson, Nev.
Filed Sep. 23, 1994, Ser. No. 28,882
Term of patent 14 years
U.S. Cl. D21—45



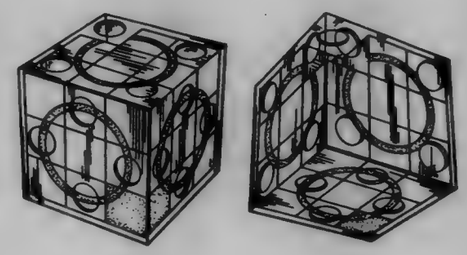
366,504
ACTIVITY TOY
Gustave E. Bannick, 6546 Elkrun Ct., Clarkston, Mich. 48348-2812
Filed Feb. 16, 1994, Ser. No. 18,841
Term of patent 14 years
U.S. Cl. D21—59



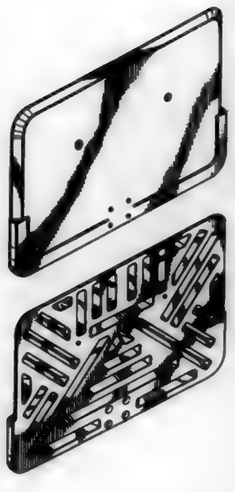
366,505
BALANCING TOY
Howard L. Dowdy, and Edna D. Dowdy, both of P.O. Box 4123, Ione, Calif. 95640-4123
Filed Feb. 16, 1995, Ser. No. 34,978
Term of patent 14 years
U.S. Cl. D21—102



366,506
GAME
Johan Lindquist, Björkforsvägen 32, S-930 55 Sangis, Sweden
Filed Mar. 2, 1995, Ser. No. 35,574
Claims priority, application Sweden, Sep. 6, 1994, 94-1782
Term of patent 14 years
U.S. Cl. D21—104



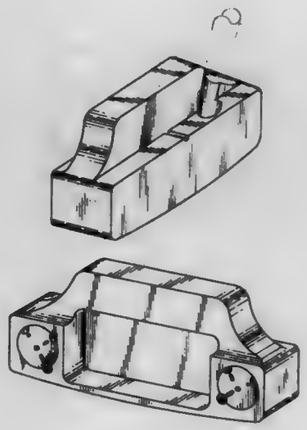
366,507
BASKETBALL BACKBOARD
Edward G. van Nimwegen, North Ogden, and Kelly Taylor, Layton, both of Utah, assignors to Lifetime Products, Inc., Clearfield, Utah
Filed Jan. 30, 1995, Ser. No. 34,213
Term of patent 14 years
U.S. Cl. D21—201



366,508
WOOD-TYPE GOLF CLUB HEAD
Patrice Hutin, Los Angeles, Calif., assignor to Roger Cleveland Golf Company, Inc., Cypress, Calif.
Filed Apr. 13, 1994, Ser. No. 21,252
Term of patent 14 years
U.S. Cl. D21—214



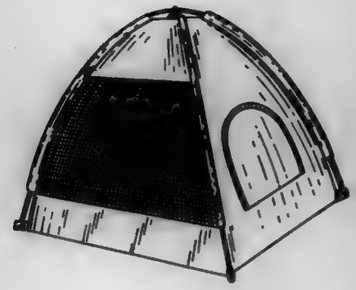
366,509
GOLF PUTTER HEAD
Edward Chiuminatta, and Alan R. Chiuminatta, both of 1112 Olympic Dr., Corona, Calif. 91718
Filed Mar. 3, 1994, Ser. No. 19,592
Term of patent 14 years
U.S. Cl. D21—219



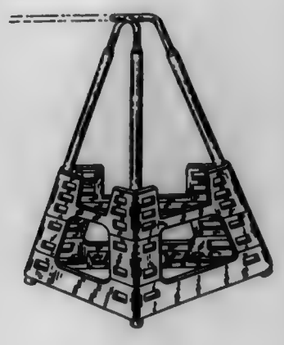
366,510
BOWLING PIN STORAGE BIN FOR A PIN DELIVERY MECHANISM
Michael W. Stephens, Richmond, Va., assignor to AMF Bowling, Inc., Mechanicsville, Va.
Filed Jan. 30, 1995, Ser. No. 34,199
Term of patent 14 years
U.S. Cl. D21—233



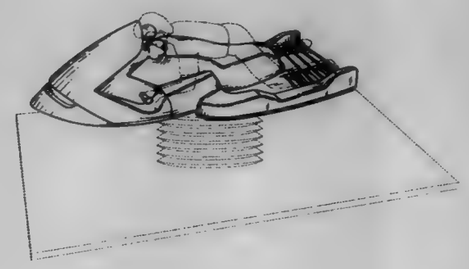
366,511
CHILDREN'S PLAY BALL ENCLOSURE
Russell J. Coddington, Jr., Imperial, Pa., assignor to Hedstrom Corporation, Bedford, Pa.
Filed Oct. 6, 1994, Ser. No. 28,624
Term of patent 14 years
U.S. Cl. D21—240



366,512
PYRAMID-TYPE SWING SUPPORT
William H. Ziegler, Jr.; Robert J. Boudreau, both of Bedford, and Russell J. Coddington, Jr., Imperial, all of Pa., assignors to Bedstrom Corporation, Bedford, Pa.
Filed Dec. 12, 1994, Ser. No. 32,648
Term of patent 14 years
U.S. Cl. D21—246



366,513
CONSOLE FOR PROVIDING VIRTUAL REALITY ENVIRONMENTS
Bernard J. Crowe; Scott J. Bennett, both of San Diego; Bernard L. Brown, La Mesa; Robert W. Beckstahler, Encinitas; William S. Buchwald, Alpine; John J. Volanski, San Diego; John A. Cupit, Del Mar, and Larry E. Brinker, Ramona, all of Calif., assignors to Greystone Technology, Inc., San Diego, Calif.
Filed Oct. 28, 1994, Ser. No. 30,428
Term of patent 14 years
U.S. Cl. D21—250



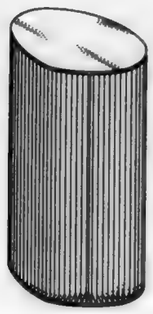
366,514
COMBINED HANDGRIP AND TRIGGER GUARD FOR A FIREARM
Paul M. Hochstrate, Plantsville, and Michael E. Gamache, Tolland, both of Conn., assignors to Colt's Manufacturing Company Inc., West Hartford, Conn.
Filed Dec. 9, 1994, Ser. No. 31,960
Term of patent 14 years
U.S. Cl. D22—108



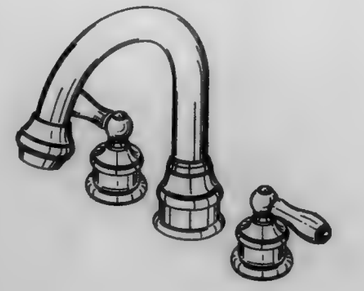
366,515
FIGHTER KNIFE
Lynn C. Thompson, 2747 Seahorse, Ventura, Calif. 93001
Filed Nov. 1, 1994, Ser. No. 30,534
Term of patent 14 years
U.S. Cl. D22—118



366,516
FILTER ELEMENT
Howard M. Stewart, Little Rock, Ark., assignor to Jacuzzi Inc., Little Rock, Ark.
Filed Jun. 7, 1994, Ser. No. 24,059
Term of patent 14 years
U.S. Cl. D23—209



366,517
FAUCET
Frederic C. Doughty, S. Pasadena, and Darren M. Mark, Castaic, both of Calif., assignors to Emhart, Inc., Newark, Del.
Filed Jan. 25, 1995, Ser. No. 33,977
Term of patent 14 years
U.S. Cl. D23—242



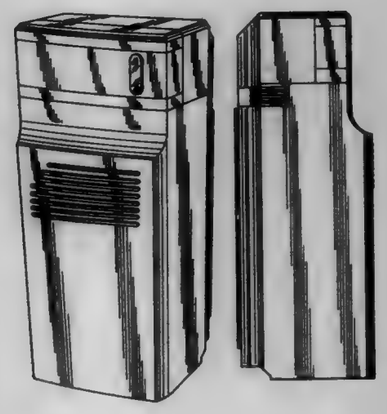
366,518
FAUCET HANDLE
In-Ho Moon, Seoul, Rep. of Korea, assignor to American Standard Inc., Piscataway, N.J.
Continuation of Ser. No. 18,875, Feb. 17, 1994, abandoned.
This application Mar. 20, 1995, Ser. No. 36,415
Claims priority, application Rep. of Korea, Aug. 18, 1993, 1993-16697
Term of patent 14 years
U.S. Cl. D23—252



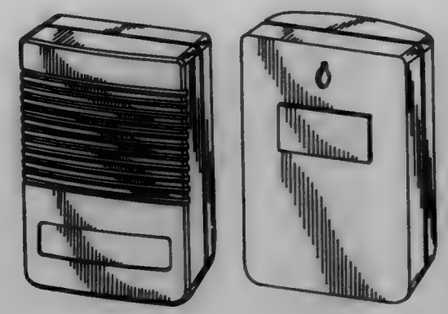
366,519
FAUCET HANDLE
Hans Lobermeier, Menden, Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Germany
Filed Mar. 29, 1995, Ser. No. 36,879
Claims priority, application Germany, Jan. 31, 1994, 94 08 477.7
Term of patent 14 years
U.S. Cl. D23—252



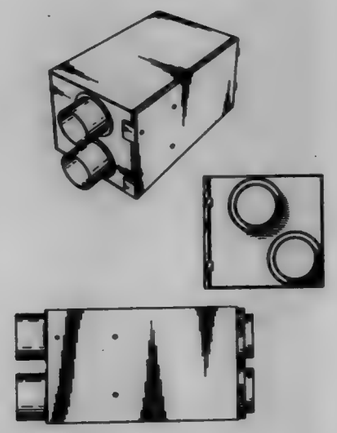
366,520
DRIP DISPENSER FOR FRAGRANCE AND ANTI-BACTERIAL FLUIDS
Kenneth J. Muderiak, Shorewood, Wis., assignor to Technical Concepts L.P., Elk Grove Village, Ill.
Filed Oct. 4, 1993, Ser. No. 13,655
Term of patent 14 years
U.S. Cl. D23—366



366,521
CONTAINER FOR ODOR ADSORBING MATERIALS
Nancy G. Wijaranakula, Clark, Wash., assignor to Infotix Systems, Incorporated, Vancouver, Wash.
Filed Nov. 14, 1994, Ser. No. 30,981
Term of patent 14 years
U.S. Cl. D23—366



366,522
VENTILATOR HOUSING
Frederic Lagace; Jean-Francois Grondin, both of Drummondville; Pierre Cusson, St-Germain de Grantham; Michel Julien, St-Nicéphore, and Daniel Marceux, Drummondville, all of, Canada, assignors to Venmar Ventilation Inc., Drummondville, Canada
Filed Jan. 13, 1995, Ser. No. 33,443
Term of patent 14 years
U.S. Cl. D23—370



366,523
FAN
Roderick L. Eyer, 2 Wallingford Dr., Melville, N.Y. 11747
Filed Apr. 3, 1995, Ser. No. 37,079
Term of patent 14 years
U.S. Cl. D23—378



366,524
THONG PANTY LINER
Pamela S. Chung, 1071 Autumn Wood La., Perris, Calif. 92571
Filed May 31, 1994, Ser. No. 23,727
Term of patent 14 years
U.S. Cl. D24—125



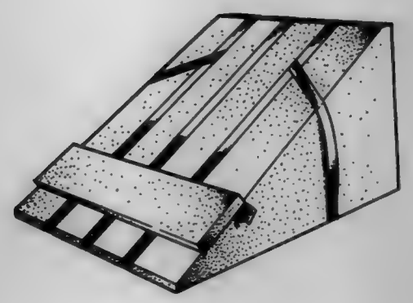
366,525
HANDLE FOR AN ENDOSCOPIC SURGICAL INSTRUMENT
Frederick K. Toy, 565 N. Hall St.; Roy T. Smoot, Jr., Rte. 4, Box 239, and Robert H. LaPrad, Rte. 1 - Box 337 B W, all of Seaford, Del. 19973
Filed Dec. 2, 1993, Ser. No. 15,947
Term of patent 14 years
U.S. Cl. D24—143



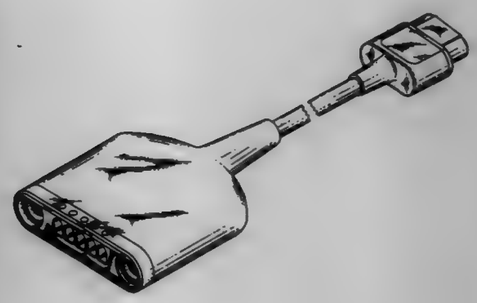
366,526
NASAL PROSTHESIS
Marco Rizzo, 1329 Lusitana St., Ste. 401, Honolulu, Hi. 96813
Filed Mar. 31, 1994, Ser. No. 20,744
Term of patent 14 years
U.S. Cl. D24—155



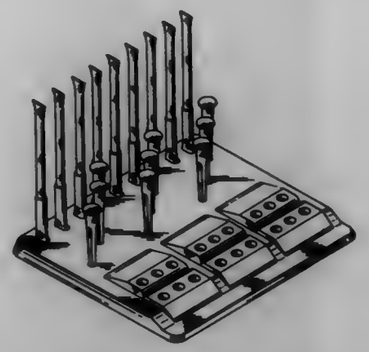
366,527
X-RAY ACCESSORY SUPPORT WEDGE
Virginia Paterson, 287 Brock St., Winnipeg, Manitoba, Canada
Filed May 22, 1992, Ser. No. 886,481
Term of patent 14 years
U.S. Cl. D24—158



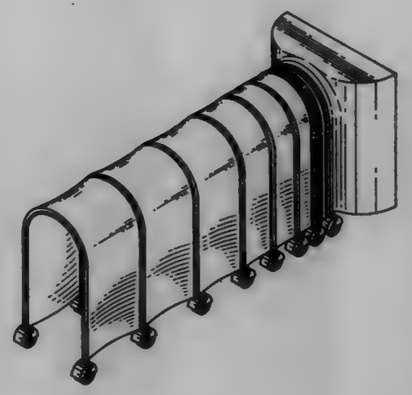
366,528
POD WITH CABLE FOR COUPLING A PLURALITY OF SENSORS TO A PATIENT MONITOR
Helen C. Crouse, Waltham, Mass., and Sheldon G. Phillips, Pasadena, Calif., assignors to Siemens Medical Systems, Inc., Iselin, N.J.
Filed Jun. 3, 1994, Ser. No. 23,917
Term of patent 14 years
U.S. Cl. D24—187



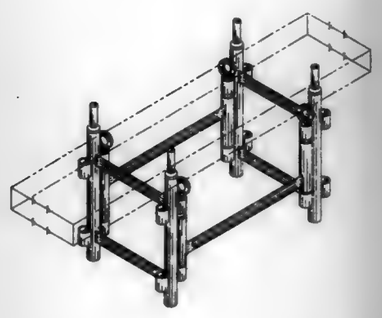
366,529
IMMUNOASSAY KIT FOR ANALYSIS OF BIOLOGICAL LIQUIDS
Kerinchan P. J. Babaogis; Norbert S. Norkus, both of Webster, and Randall S. Johnson, Fairport, all of N.Y., assignors to Johnson & Johnson Clinical Diagnostics, Inc., Rochester, N.Y.
Continuation-in-part of Ser. No. 681,588, Apr. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 604,285, Oct. 29, 1990, abandoned. This application Jan. 21, 1992, Ser. No. 823,224
Term of patent 14 years
U.S. Cl. D24—223



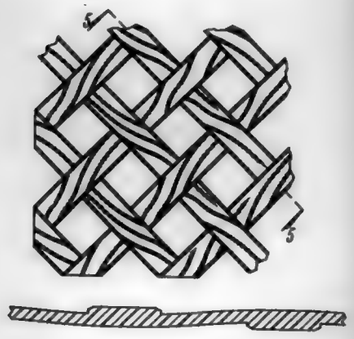
366,530
COMBINED PORTABLE AND RETRACTABLE TUNNEL
John Spitz, 6335 Cronin, Dearborn Heights, Mich. 48127, and James Maceroni, 984 McDonald, Northville, Mich. 48167
Filed Oct. 21, 1994, Ser. No. 30,168
Term of patent 14 years
U.S. Cl. D25—18



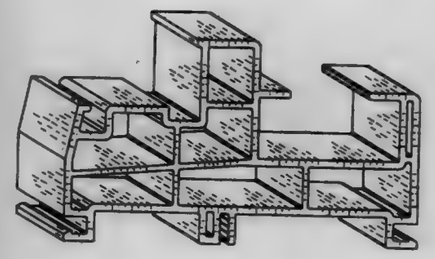
366,531
FOLDABLE SCAFFOLD
Donald Wedge, Rte. 1, Box 558C, Myakka City, Fla. 34251
Filed Feb. 7, 1994, Ser. No. 18,459
Term of patent 14 years
U.S. Cl. D25—66



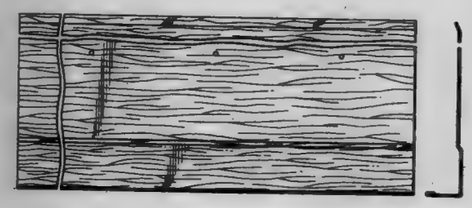
366,532
LATTICE
Walter B. Herbst, Evanston, and James F. Caruso, Chicago, both of Ill., assignors to Fort Wayne Plastics, Inc., Fort Wayne, Ind.
Filed Mar. 26, 1993, Ser. No. 6,355
Term of patent 14 years
U.S. Cl. D25—100



366,533
WINDOW COMPONENT EXTRUSION
Jeffrey R. Franson, Kent, Wash., assignor to Mikron Industries, Kent, Wash.
Filed May 31, 1995, Ser. No. 39,582
Term of patent 14 years
U.S. Cl. D25—124



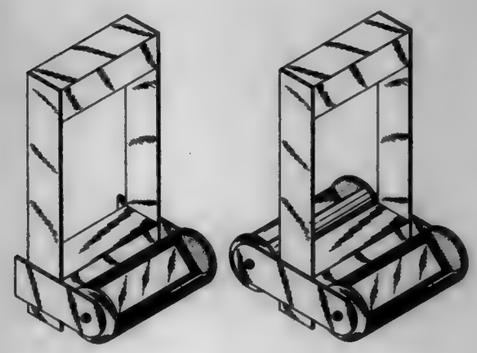
366,534
PRE-FORMED FASCIA
Danny L. McMahon, Acworth, Ga., assignor to Caldame, Inc., Acworth, Ga.
Filed Aug. 4, 1994, Ser. No. 26,722
Term of patent 14 years
U.S. Cl. D25—139



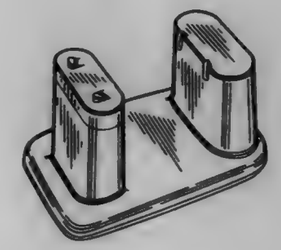
366,535
CHANDELIER
Patrick S. Dolan, 1901 NW. Upshur St., Portland, Oreg. 97209
Filed Jan. 4, 1995, Ser. No. 33,066
Term of patent 14 years
U.S. Cl. D26—86



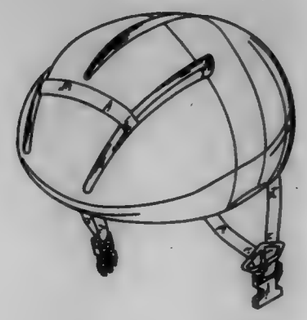
366,536
LUMINAIRE
Sylvan R. Shemitz, Woodbridge, Conn., assignor to Sylvan R. Shemitz Associates, Inc., West Haven, Conn.
Filed Sep. 29, 1994, Ser. No. 29,086
Term of patent 14 years
U.S. Cl. D26—88



366,537
FLOSS DISPENSER
James B. Johnsen; Hal J. Olen, both of Beaverton, Oreg., and Delbert L. Rice, Vancouver, Wash., assignors to Jordco, Inc., Beaverton, Oreg.
Filed Mar. 27, 1995, Ser. No. 36,751
Term of patent 14 years
U.S. Cl. D28—64



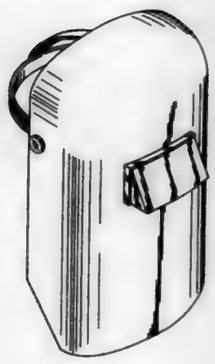
366,538
SAFETY HELMET
Chang-Hsien Ho, 12F., No. 16, Sec. 1, Ho-Ping F. Road, Taipei, Taiwan, Prov. of China
Filed Sep. 24, 1993, Ser. No. 13,421
Term of patent 14 years
U.S. Cl. D29—102



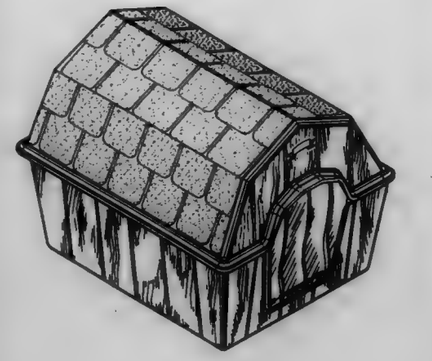
366,539
COMBINED CAP AND FACE MASK
Milan S. Lackovic, 424 Patrick Ct., Port Washington, Wis. 53074
Filed Dec. 30, 1994, Ser. No. 32,862
Term of patent 14 years
U.S. Cl. D29—106



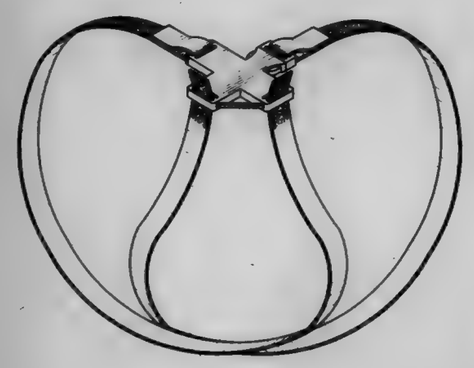
366,540
WELDING MASK
Gordon Elias, Box 1304 North Battleford, Saskatchewan, Canada
Filed Jan. 9, 1995, Ser. No. 33,271
Claims priority, application Canada, Jul. 7, 1994, 1994-1281
Term of patent 14 years
U.S. Cl. D29—110



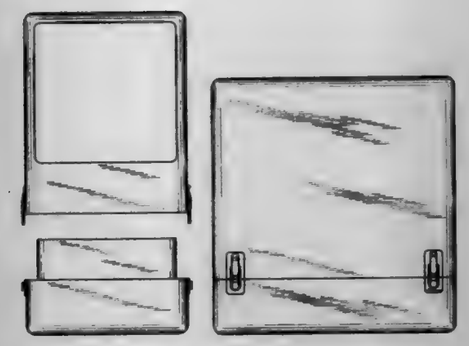
366,541
DOGHOUSE
Thomas A. Bradburn; Richard K. Garton, and Richard N. Sauerwein, all of Fort Wayne, Ind., assignors to Fort Wayne Plastics, Inc., Fort Wayne, Ind.
Filed Dec. 12, 1994, Ser. No. 32,008
Term of patent 14 years
U.S. Cl. D30—112



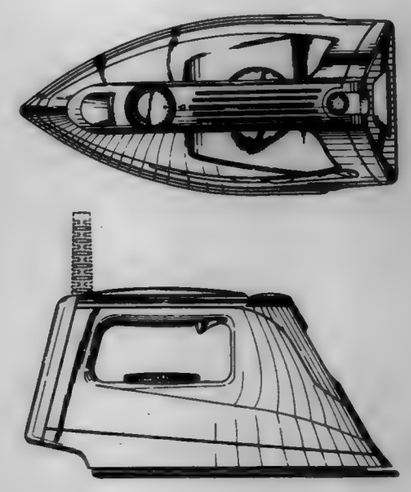
366,542
ANIMAL COLLAR
Zehra L. Pierson, 3010B Yorktown St., El Centro, Calif. 92243
Filed Jun. 6, 1994, Ser. No. 24,038
Term of patent 14 years
U.S. Cl. D30—152



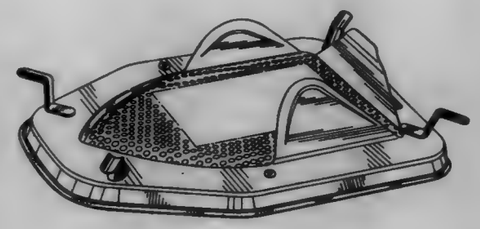
366,543
CAT LITTER BOX
Rosemary G. Lopes, 230 S. Walker St., Tauton, Mass. 02780
Filed Jul. 18, 1994, Ser. No. 26,047
Term of patent 14 years
U.S. Cl. D30—161



366,544
IRON
L. Wai Choi, 68 Jumbo Court, 45 Broadcast Drive, Kowloon, Hong Kong
Filed Nov. 30, 1994, Ser. No. 31,524
Term of patent 14 years
U.S. Cl. D32—70



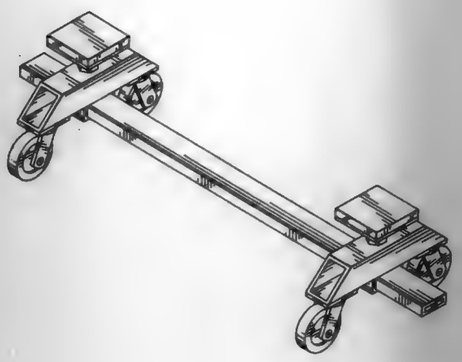
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IRON STAND
Narendran Sambamurti, 260 Seneca Hill Dr., #1803, Willowdale, Ontario M2J 4S6, Canada
Filed Dec. 5, 1994, Ser. No. 32,075
Term of patent 14 years
U.S. Cl. D32—73



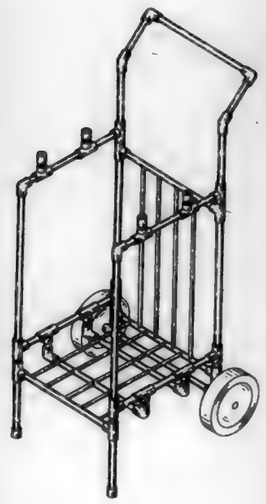
366,546
SHOPPING STROLLER/CART
Vaughan Schaub, Big Lake; Paul Schlough, Anoka; Carl R. VanHorn, Rogers; Jay R. Stemler, Owatonna, and Gary R. Ebling, Northfield, all of Minn., assignors to Dayton Hudson Corporation, Minneapolis, Minn.
Filed Feb. 17, 1995, Ser. No. 35,057
Term of patent 14 years
U.S. Cl. D34—20



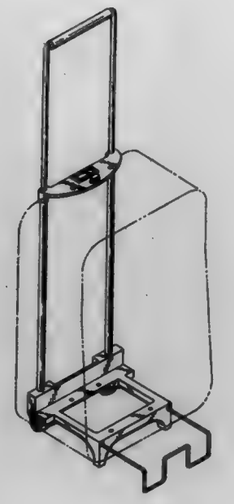
366,547
UNI-DOLLY
Russ Arn, P.O. Box 3013, Vancouver, Wash. 98668
Filed Oct. 5, 1994, Ser. No. 29,416
Term of patent 14 years
U.S. Cl. D34—23



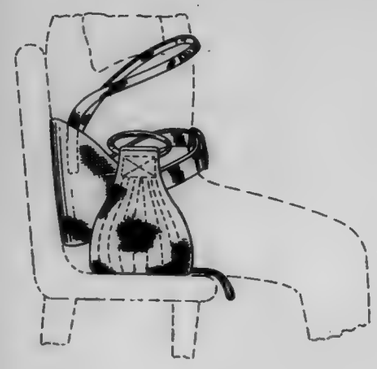
366,548
PET WASTE DISPOSAL HANDCART
Linda M. Morasse, 225 Pembroke Hill Rd., Suncook, N.H. 03275
Filed Oct. 21, 1994, Ser. No. 30,171
Term of patent 14 years
U.S. Cl. D34—24



366,549
LUGGAGE CART
Chris Yu, 2667 Clarellen St., Torrance, Calif. 90505
Filed Jul. 22, 1994, Ser. No. 26,854
Term of patent 14 years
U.S. Cl. D34—26



366,550
LIFTING AID
Leo Shapiro, 1175 York Ave., Apt. 18c, New York, N.Y. 10021
Filed Oct. 17, 1994, Ser. No. 29,835
Term of patent 14 years
U.S. Cl. D34—28



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23rd DAY OF JANUARY, 1996

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aab, Volker: *See*—
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ABB Environmental Systems, Div. of ABB Flakt, Inc.: *See*—
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ABB Power T&D Company Inc.: *See*—
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Summers, James B., Jr.; Davidsen, Steven K.; Curtin, Michael L.; Heyman, H. Robin; Sheppard, George S.; Xu, Lianhong; Carrera, George M., Jr.; and Garland, Robert B., 5,486,525, Cl. 514-303.000.

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Abe, Hiroya: *See*—
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Abe, Yoshiaki: *See*—
Matsushita, Osami; Yoneyama, Mitsuho; Takahashi, Naohiko; Fukushima, Yasuo; Hiroshima, Minoru; Kaneki, Tadashi; Abe, Yoshiaki; and Sakanashi, Naofumi, 5,486,729, Cl. 310-90.500.

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Albrecht, Carl F. De Vosa: *See*—
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Leung, Roger Y.-K.; and Gonczy, Stephen T., 5,486,250, Cl. 156-89.000.
Patko, Joseph M., 5,485,898, Cl. 188-71.500.
Allison, Charles R.: *See*—
Borrego, Diego A.; Greenland, Alan R.; Allison, Charles R.; Bordo, Robert A.; and Stringfellow, Steven A., 5,486,840, Cl. 345-7.000.
Allran, Gary G.: *See*—
Dinallo, Chris A.; Koval, Michael J.; Lawton, William W.; Paulat, Martin J., Jr.; Tyler, John G.; Winters, Scott L.; and Allran, Gary G., 5,487,167, Cl. 395-650.000.
Alps Electric Co., Ltd.: *See*—
Ishitaka, Yoshihiko; Sato, Yumiko; Abe, Munemitsu; Sasaki, Yorihiko; Kano, Mitsuru; Sato, Arao; and Sugawara, Kiyomi, 5,486,403, Cl. 428-167.000.
Altekrüger, Burkhard; Gesche, Roland; Flachsel, Martin; and Aufreiter, Joachim, to Leybold Aktiengesellschaft. Method and apparatus for pulling monocrystals from a melt. 5,485,802, Cl. 117-14.000.
Altera Corporation: *See*—
Southgate, Timothy J., 5,487,143, Cl. 395-157.000.
Veenstra, Kerry, 5,486,775, Cl. 126-38.000.
Althin Medical, Inc.: *See*—
Peterson, Bruce A.; Connell, Mark E.; Bedient, Robert A.; Elsen, Raymond; Hogard, Michael E.; Johnson, Harley D.; Kelly, Thomas D.; Long, Jean M.; Preston, William G., Jr.; and Smejtek, Dalibor J., 5,486,286, Cl. 210-87.000.
Alumina Ceramics Co. (ACI): *See*—
Talbert, Lloyd G.; and Brazil, Stephen M., 5,486,496, Cl. 501-90.000.
Alvarez, Vincent E.: *See*—
Mitchell, James D.; Alvarez, Vincent E.; Carty, Daniel T.; and Latham, James R., 5,486,212, Cl. 8-142.000.
Alyn Corporation: *See*—
Carden, Robin A., 5,486,223, Cl. 75-244.000.
Amano, Hideaki: *See*—
Yoshida, Takeshi; Amano, Hideaki; Kohno, Takashi; Mori, Kenji; Yoshida, Takashi; and Hirai, Hiromu, 5,486,965, Cl. 360-106.000.
Amatsu, Toshihiro: *See*—
Nakaya, Hidekazu; and Amatsu, Toshihiro, 5,485,971, Cl. 242-381.100.
Amax Coal West, Inc.: *See*—
Corso, Ronald, 5,486,998, Cl. 364-152.000.
Amdahl Corporation: *See*—
Cossock, David, 5,487,166, Cl. 395-600.000.
Amelina, Iam R.; Mooney, David M.; and Stoodley, Kevin A., to International Business Machines Corporation. Method and procedure call mechanism for calling 16-bit functions from 32-bit functions. 5,487,158, Cl. 395-375.000.
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Oda, Kenzo; and Amemiya, Shinji, 5,486,122, Cl. 439-752.000.
American Colloid Company: *See*—
Henderson, John A.; Tomlin, Anthony S.; and Lucas, David M., 5,486,569, Cl. 525-116.000.
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Failli, Amedeo A.; Bleyman, Oleg I.; Kao, Wenling; and Abou-Gharbia, Magid A., 5,486,522, Cl. 514-291.000.
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Yardley, John P.; Fletcher, Horace, III; Kelly, Michael G.; and White, Alan C., 5,486,518, Cl. 514-254.000.
American Maize Technology, Inc.: *See*—
Yoder, David; Chang, Shau-Gan; Xu, Ansui; and Domoras, Thomas, 5,486,375, Cl. 426-582.000.
American Standard Inc.: *See*—
Guy, Stephen E.; Sulfstede, Louis E.; and Hillmer, Eric, 5,485,954, Cl. 236-78.00R.
Amerigon, Inc.: *See*—
Diller, Robert W.; and Pavlat, Jeffrey W., 5,487,002, Cl. 364-424.010.
Amestica, Luis A.: *See*—
Marin-Carrillo, Edgar M.; Amestica, Luis A.; Figueroa, Francisco R.; and Ramirez-Semeco, Ana M., 5,486,297, Cl. 252-8.600.
AMP Corporation: *See*—
Voege, James A.; Voege, Richard B.; and Voege, John S., 5,485,983, Cl. 251-206.000.
Amsallen, Marcel, to Eaton Corpoaration. Control system/method for automated mechanical transmission systems. 5,487,004, Cl. 364-424.100.
Amundsen, Thomas L. Automatic transmission cooler flushing device. 5,485,857, Cl. 134-102.200.
An, Ki Ju, to Kumsan Material Co., Ltd. Raw material for producing ferrite dust for friction elements and method of reducing the same. 5,486,229, Cl. 106-36.000.
Analog Devices, Inc.: *See*—
Kierse, Oliver J., 5,486,720, Cl. 257-659.000.
Spitalny, Paul; and Mallinson, Martin, 5,486,791, Cl. 330-282.000.
Analogic Corporation: *See*—
Dobbs, John; and Banks, David, 5,487,098, Cl. 378-19.000.
Andersen Corporation: *See*—
Deaner, Michael J.; Puppin, Giuseppe; and Heikkila, Kurt E., 5,486,553, Cl. 524-13.000.
Andersen, Svend V.: *See*—
Topholm, Jan; Andersen, Svend V.; and Westermann, Soren E., 5,487,012, Cl. 364-474.050.
Anderson, James L., Jr.: *See*—
Guyomard, Daniel; Anderson, James L., Jr.; Frank, Alfred; and Chavaillaz, Georges, 5,485,941, Cl. 222-1.000.
Ando Electric Co., Ltd.: *See*—
Nagashima, Shinya, 5,486,918, Cl. 356-346.000.
Andonovic, Ivan: *See*—
Cruden, Andrew J.; McDonald, James R.; Andonovic, Ivan; Allan, Kenneth; and Porrelli, Raymond A., 5,486,754, Cl. 324-96.000.
Andreasen, Bernhard H.; and Cline, Roger A., to Texas Instruments Incorporated. Autoranging digital analog phase locked loop. 5,487,093, Cl. 375-376.000.
Andrew Corporation: *See*—
Dienes, Geza, 5,486,838, Cl. 343-781.00R.

Andrews, Steven W., to Allergan, Inc. Cyclopentane heptanoic or heptenoic acid, 2-arylalkyl or arylalkenyl and derivatives as therapeutic agents. 5,486,540, Cl. 514-530.000.
Andros, Marc R.: *See*—
Taylor, Robert D.; and Andros, Marc R., 5,486,248, Cl. 149-109.600.
Angelastro, Michael R.: *See*—
Weintraub, Philip M.; Gates, Cynthia A.; Angelastro, Michael R.; Curran, Timothy T.; and Johnston, J. O'Neal, 5,486,511, Cl. 514-178.000.
Angell, Adrian J. W.: *See*—
Capeci, Scott W.; Osborn, James W.; Angell, Adrian J. W.; and van Dijk, Paul, 5,486,303, Cl. 252-89.100.
Anglin, Noah L.: *See*—
Ichikawa, Shinpei; Hamerton-Kelly, Paul R.; and Anglin, Noah L., 5,486,942, Cl. 359-83.000.
Antikainen, Veijo; Paukkunen, Ari; Stormbom, Lars; Jauhiainen, Hannu; and Ponkala, Jorma, to Vaisala Oy. Method of measurement of relative humidity, in particular in radiosondes, and humidity detectors that make use of the method. 5,485,747, Cl. 73-335.030.
Antranikian, Garabed; and Jørgensen, Per L., to Novo Nordisk A/S. Thermostable Fervidobacterium pullulanases. 5,486,469, Cl. 435-210.000.
Aoki, Makiko: *See*—
Furutani, Kiyohiro; Yamauchi, Tadaaki; and Aoki, Makiko, 5,487,043, Cl. 365-203.000.
Aoyama, Masahiko, to Sumitomo Wiring Systems, Ltd. Battery terminal. 5,486,434, Cl. 429-178.000.
Apache Technologies, Inc.: *See*—
Ake, DuWain K., 5,486,690, Cl. 250-206.100.
Apple Computer, Inc.: *See*—
Capps, Stephen P.; and Gannholm, Martin R., 5,487,054, Cl. 368-105.000.
Heyl, Lawrence F., 5,486,929, Cl. 358-320.000.
Applied Materials, Inc.: *See*—
Gronet, Christian M.; and Gibbons, James F., 5,487,127, Cl. 392-416.000.
Shamouilian, Shamouil; and Tanase, Yoshi, 5,486,975, Cl. 361-234.000.
Ye, Yan; Rhoades, Charles S.; and Yin, Gerald Z., 5,486,235, Cl. 134-1.100.
Arai, Masatoshi; Inoue, Yoshifumi; and Ozai, Toshiyuki, to Shin-Etsu Chemical Co., Ltd. Primer compositions. 5,486,567, Cl. 524-863.000.
Arai, Takashi, to Canon Kabushiki Kaisha. Camera-integrated video recorder system having mountable and demountable remote-control unit. 5,486,852, Cl. 348-211.000.
Arakawa, Shigehiro: *See*—
Nishihara, Akira; Nakamura, Akihiro; and Arakawa, Shigehiro, 5,486,420, Cl. 428-405.000.
Aranyi, Ernie: *See*—
Mudry, Matthew; Aranyi, Ernie; and Nicholas, David A., 5,486,189, Cl. 606-171.000.
Arcadian Fertilizer, L.P.: *See*—
Kelley, David A., 5,486,246, Cl. 149-2.000.
Ariga, Yasuo; and Hirooka, Eiji, to Nohmi Bosai Ltd. Fire detector having optic base clamping optic elements to a circuit board. 5,486,816, Cl. 340-630.000.
Arike, Shigeharu; Iwasaki, Yorio; Shinada, Eiichi; Okamura, Toshiro; Murakami, Kanji; and Nakazato, Yuichi, to Hitachi Chemical Co., Ltd. Multiple wire adhesive on a multiple wire wiring board. 5,486,655, Cl. 174-259.000.
Arima, Hideaki, to Mitsubishi Denki Kabushiki Kaisha. DRAM having peripheral circuitry in which source-drain interconnection contact of a MOS transistor is made small by utilizing a pad layer and manufacturing method thereof. 5,486,712, Cl. 257-296.000.
Arima, Hidetoshi, to Tokai Kogyo Co., Ltd. Seal molding method and device. 5,486,325, Cl. 264-167.000.
Arisawa, Mikio; Götschi, Erwin; Hebeisen, Paul; Kamiyama, Tsutomu; Link, Helmut; Masciadri, Raffaello; Shimada, Hisao; and Watanabe, Junko, to Hoffmann-La Roche Inc. Process for the preparation of DNA gyrase inhibitors. 5,486,466, Cl. 435-106.000.
Aristo International Corporation: *See*—
Tolendano, Jacob M., 5,485,921, Cl. 206-545.000.
Arjo Wiggins S.A.: *See*—
Doublet, Pierre; Passebecq, Claude; and Bigot, Etienne, 5,486,928, Cl. 358-299.000.
Arjunan, Palanisamy, to Exxon Chemical Patents Inc. Process for converting polyketones to polyesters. 5,486,326, Cl. 264-176.100.
Arpaio, Jerry. Vibratory tumbling machine vessel for burnishing or cleansing metal, plastic or ceramic elements. 5,486,135, Cl. 451-326.000.
Array Microsystems, Inc.: *See*—
Lew, Stephen D.; Luikno, Gerry C.; and Kopet, Thomas G., 5,486,876, Cl. 348-719.000.
Arsac, Jean-Francois; Bonabal, Catherine; and Laurent, Betty, to Elf Atochem S.A. Heat-sealable and peelable film for polystyrene containers and process for sealing by means of said film. 5,486,571, Cl. 525-227.000.
Asahara, Norimi; Fukumura, Kagenori; Hojo, Yasuo; and Ozaki, Kazuhisa, to Aisin AW Co., Ltd. Hydraulic control circuit for automatic transmission. 5,486,146, Cl. 477-65.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Iima, Mitsunori; Hara, Kazuya; and Kaneko, Atsumi, 5,486,688, Cl. 235-462.000.
Asanger, James T.: *See*—
Robb, Richard A.; Grubb, Michael J.; Grubb, John J.; and Asanger, James T., 5,485,860, Cl. 134-166.00C.
Asano, Hiroaki; Kobayashi, Yasuhiro; Hotta, Shigeo; Yamakawa, Yoichi; Ito, Akira; and Sugiura, Hirotaka, to Toyoda Koki Kabushiki Kaisha. Apparatus for detecting contact with rotating body. 5,485,752, Cl. 73-660.000.
Asayama, Junko: *See*—
Takimoto, Akio; Wakemoto, Hirofumi; Tanaka, Eiichiro; Watanabe, Masanori; Asayama, Junko; Ogawa, Hisahito; Sato, Shigehiro; and Yokotani, Fumiko, 5,486,442, Cl. 430-78.000.
Asco Screen Products S.r.l.: *See*—
Rovaris, Lorenzo, 5,485,781, Cl. 101-129.000.
Ash, Carlton E., to Shell Oil Company. Crosslinked polyketone polymer. 5,486,581, Cl. 525-539.000.
Ashby, David C. Belt drive transmission. 5,486,143, Cl. 474-148.000.
Ashimori Kogyo Kabushiki Kaisha: *See*—
Nakaya, Hidekazu; and Amatsu, Toshihiro, 5,485,971, Cl. 242-381.100.
Aso, Takayuki; Ona, Isao; and Ozaki, Masaru, to Dow Corning Toray Silicone Company, Ltd. Fiber treatment compositions. 5,486,298, Cl. 252-8.600.
Aso, Yasuhiro: *See*—
Kakuma, Satoshi; Uriu, Shiro; Yoshimura, Shuji; Aso, Yasuhiro; and Murayama, Masami, 5,487,063, Cl. 370-56.000.
AST Research, Inc.: *See*—
Brainard, Gerald L., 5,486,749, Cl. 320-9.000.
AT&T Bell Laboratories: *See*—
Dautremont-Smith, William C.; Graebner, John E.; Jin, Sungho; and Katz, Avishay, 5,486,263, Cl. 216-33.000.
AT&T Corp: *See*—
Burges, Christopher J.; Le Cun, Yann A.; and Matan, Ofer, 5,487,117, Cl. 382-173.000.
AT&T Corp.: *See*—
Baals, Kimberly A.; Chylinski, Kathleen J.; Kall, Darren A.; and Smith, Gary C., 5,487,104, Cl. 379-96.000.
Baumert, Robert J.; and Pritchett, Robert L., 5,486,783, Cl. 327-147.000.
Kammlott, Guenther W.; Kosinski, Sandra G.; Krause, John T.; and Riggs, Richard S., 5,487,125, Cl. 385-96.000.
AT&T Global Information Solutions Company: *See*—
Bemis, Edward D., 5,487,160, Cl. 395-441.000.
AT&T IPM Corp.: *See*—
Atkins, Jean; Harris, Richard M.; Ladieu-Walton, Julie M.; and McChristian, David C., 5,487,107, Cl. 379-144.000.
Slusky, Ronald D., 5,487,111, Cl. 379-211.000.
Veitschegger, William K., 5,486,798, Cl. 333-116.000.
Atkins, Jean; Harris, Richard M.; Ladieu-Walton, Julie M.; and McChristian, David C., to AT&T IPM Corp. Method and apparatus for processing telephone calls charged to credit cards. 5,487,107, Cl. 379-144.000.
Atkins, Richard S.; Gibson, Tommy W.; and Ransome, Philip P., to AGR Industries Limited. Programmable dialler for a mobile telephone. 5,487,108, Cl. 379-355.000.
Atsugi Unisia Corporation: *See*—
Kakizaki, Shinobu; Taniguchi, Minoru; and Kanai, Fukashi, 5,487,006, Cl. 364-424.050.
Atwood, Gregory E.: *See*—
Keeney, Stephen N.; and Atwood, Gregory E., 5,487,033, Cl. 365-183.100.
Aufreiter, Joachim: *See*—
Altekrüger, Burkhard; Gesche, Roland; Flachsel, Martin; and Aufreiter, Joachim, 5,485,802, Cl. 117-14.000.
Austin, Fred M.: *See*—
Miller, Roy R.; Clark, Brian K.; and Austin, Fred M., 5,485,925, Cl. 209-615.000.
Austin, Kevin L.: *See*—
Richardson, Charles T., Jr.; and Austin, Kevin L., 5,487,103, Cl. 379-110.000.
Austin, Rickey G.: *See*—
Koenck, Steven E.; Austin, Rickey G.; and Boatwright, Darrell L., 5,487,161, Cl. 395-442.000.
Autoft Industries, Limited: *See*—
Baker, Malcolm J., 5,485,716, Cl. 56-14.300.
Automobiles Citroen: *See*—
Petiot, Jean-Paul, 5,486,039, Cl. 303-22.600.
Automobiles Peugeot: *See*—
Petiot, Jean-Paul, 5,486,039, Cl. 303-22.600.
Auxier, Thomas A.; and Hall, Kenneth B., to United Technologies Corportion. Leading edge cooling of turbine airfoils. 5,486,093, Cl. 416-97.00R.
Auyeung, Cheung; O'Connell, Kevin J.; and Levine, Stephen N., to Motorola, Inc. Method for determining whether to intra code a video block. 5,486,863, Cl. 348-420.000.
AV Flexologic B.V.: *See*—
Van Der Horst, Haas, 5,485,782, Cl. 101-216.000.
Avery, John R., to P.I., Inc. Reusable thermal pack and flow retardant gel for use therein. 5,486,206, Cl. 607-104.000.
Axicon Gear Company: *See*—
Rouverol, William S., 5,485,761, Cl. 74-462.000.
Axis USA, Inc.: *See*—
Sbalchiero, Federico; and Rossi, Alessandro, 5,486,672, Cl. 219-86.410.
Axline, Robert M., Jr.; Sloan, George R.; and Spalding, Richard E., to United States of America, Energy. Radar transponder apparatus and signal processing technique. 5,486,830, Cl. 342-43.000.
Aya, Yoichiro: *See*—
Sano, Keiichi; and Aya, Yoichiro, 5,486,237, Cl. 136-258.000.

Ayata, Naoki; Shirato, Yoshiaki; Takatori, Yasushi; and Seki, Mitsuaki, to Canon Kabushiki Kaisha. Recording apparatus which twice ejects droplets to the same position and image forming apparatus with u-shaped material path. 5,486,848, Cl. 347-15.000.

Aydin, Oral: *See*—
Kroener, Hubertus; Schupp, Eberhard; Wistuba, Eckehardt; Aydin, Oral; Schwarzenbach, Elmar; and Schnell, Klaus, 5,486,586, Cl. 526-332.000.

Ayers, Gregory M.; Alferness, Clifton A.; and White, Harley G. Atrial defibrillator and method for providing interval timing of successive intervals prior to cardioversion. 5,486,198, Cl. 607-5.000.

Azechi, Syuuichi: *See*—
Itagaki, Akinari; Azechi, Syuuichi; Kuwata, Satoshi; Tsutsumi, Yousuke; and Kodaiku, Masanori, 5,486,549, Cl. 523-161.000.

Azuma, Takanobu: *See*—
Masaki, Koichi; Fukuzawa, Yoshinao; Kitazawa, Kanji; Azuma, Takanobu; Naganuma, Naohiro; and Hosoda, Tetsuo, 5,486,731, Cl. 310-180.000.

Azuma, Tsukasa: *See*—
Takenouchi, Tomoo; Ichinomiya, Yoshiaki; Ishizaka, Junji; Itagaki, Junji; Ohhashi, Shuzo; Azuma, Tsukasa; and Tanaka, Yasuhiko, 5,487,082, Cl. 373-42.000.

Azumi, Takashi: *See*—
Shiokawa, Junji; Chiba, Hiroshi; Murakami, Toshio; Todaka, Yoshihiro; Ohsaka, Ichiro; and Azumi, Takashi, 5,486,860, Cl. 348-354.000.

B & G Ventures, Inc.: *See*—
Bertwell, Dale E.; and Markham, Joseph P., 5,485,807, Cl. 119-93.000.

B and P Plastics: *See*—
Browne, Bruce, 5,486,009, Cl. 273-424.000.

B&H Manufacturing Company: *See*—
Otruba, Svatoboj, 5,486,253, Cl. 156-215.000.

B.M.D., Inc.: *See*—
Drake, Charles S.; Williams, Bernhard O.; Dombrowski, Adrian T.; and Harth, Athur R., 5,487,010, Cl. 364-479.000.

Baals, Kimberly A.; Chylinski, Kathleen J.; Kall, Darren A.; and Smith, Gary C., to AT&T Corp. Arrangement for displaying menu screens on a telephone terminal. 5,487,104, Cl. 379-96.000.

Baba, Hajime: *See*—
Fukaya, Haruhiko; Abe, Takashi; Hayashi, Eiji; Hayakawa, Yoshio; and Baba, Hajime, 5,486,275, Cl. 204-157.600.

Babbitt, Richard W.: *See*—
Drach, William C.; Babbitt, Richard W.; and Koscica, Thomas E., 5,487,014, Cl. 364-481.000.

Babcock & Wilcox Company, The: *See*—
Jeffers, Larry A.; and Malito, Michael L., 5,486,915, Cl. 356-318.000.

Badley, Rickey D.; Benham, Elizabeth A.; and McDaniel, Max P., to Phillips Petroleum Company. Chromium catalyst compositions. 5,486,584, Cl. 526-95.000.

Bailey, James R.; and Harrison, Larry E., to Exxon Production Research Company. Low-density ball sealer for use as a diverting agent in hostile environment wells. 5,485,882, Cl. 166-284.000.

Bair, Thomas I.; and Camp, Carl E., to Du Pont de Nemours, E. I., and Company. Adsorbent biocatalyst porous beads. 5,486,292, Cl. 210-616.000.

Bajnógel, Judit; Blaskó, Gábor; Budai, Zoltán; Schmidt, Éva; Egyed, András; Fekete, Márton; Gacsályi, István; Gyertyán, István; Mezei, Tibor; Reiter née Esses, Kalára; Simig, Gyula; Szemerédi, Katalin; and Szirt née Kiszelly, Enikő, to Egis Gyogyszergyar Rt. Basic ethers and process for the preparation thereof. 5,486,528, Cl. 514-331.000.

Baker, Clark R., Jr., to Nellcor Puritan Bennett Incorporated. Pulse oximeter using a virtual trigger for heart rate synchronization. 5,485,847, Cl. 128-666.000.

Baker, Malcolm J., to Autoft Industries, Limited. Double row cane harvester. 5,485,716, Cl. 56-14.300.

Baker, Rick. Personalized instructional aid. 5,486,001, Cl. 273-183.100.

Balch, Richard A.: *See*—
Horan, Patrick J.; Balch, Richard A.; Elmore, David D.; and Legere, Joseph R., 5,486,755, Cl. 324-110.000.

Balducci, Sergio; and Giraldi, Roberto, to Balducci, Sergio. Covering for the partially coating of articles such as broom backs and articles such as broom backs so covered. 5,485,648, Cl. 15-175.000.

Baldwin, Leo B., to Emhart Glass Machinery Investments Inc. Glassware inspection machine comprising diffused light sources and two-dimensional cameras. 5,486,692, Cl. 250-223.00B.

Bales, Stephen E.: *See*—
Farah, Hani; and Bales, Stephen E., 5,486,577, Cl. 525-469.000.

Ballagh, Robert H.; and Jones, Jeff B., to St. Joseph Health Centre; Lawson Research Institute, The; Ballagh, Robert H.; and Jones, Jeff B. Method of treating tumour cells using catalase. 5,486,360, Cl. 424-94.400.

Ballard, Dan, to Reticular Systems, Inc. Real-time rule based processing system. 5,487,134, Cl. 395-51.000.

Ballard Power Systems Inc.: *See*—
Gorbell, Brian N.; Wozniczka, Beguslav M.; and Chow, Clarence Y., 5,486,430, Cl. 429-35.000.

Balmer, Keith: *See*—
Guttag, Karl M.; Poland, Sydney W.; Balmer, Keith; Gove, Robert J.; and Read, Christopher J., 5,487,146, Cl. 395-166.000.

Bank, Howard M.; and Decker, Gary T., to Dow Corning Corporation. Unsaturated alcohols as accelerators for hydrosilation. 5,486,637, Cl. 556-479.000.

Banks, David: *See*—
Dobbs, John; and Banks, David, 5,487,098, Cl. 378-19.000.

Baranski, Celeste: *See*—
McNamara, Robert P.; Saldinger, Alan; Cringle, Robert J.; Chu, Gigi C.; Sangameswara, Shanubhog G.; Vita, Peterpaul; Ouye, Michael M.; Stevens, David R. F.; Baranski, Celeste; Monsson, Cai U.; Murphy, Timothy P.; Murphy, Kevin T.; Ellis, Gary M.; and Ghate, Ranjit, 5,487,066, Cl. 370-85.200.

Barbee, Troy W., Jr.; Johnson, Gary W.; and O'Brien, Dennis W., to University of California, Regents of the. High performance capacitors using nano-structure multilayer materials fabriction. 5,486,277, Cl. 204-192.150.

Bard Manufacturing Company: *See*—
Derks, Irvin L., 5,485,878, Cl. 165-16.000.

Bard, Simon; Strat, Askold; and Dvorkis, Paul, to Symbol Technologies, Inc. Scanner module for symbol scanning system. 5,486,944, Cl. 359-198.000.

Barker, B. Thomas: *See*—
Hildebrand, Bryan D.; Small, Laura C.; Yuan, Hansen A.; Barker, B. Thomas; Morrison, Matthew M.; Salehi, Abraham; and Smith, Forrest C., 5,486,176, Cl. 606-71.000.

Barker, Robert A.: *See*—
Romm, Michael; Barker, Robert A.; and Morgan, Stuart K., 5,485,932, Cl. 211-87.000.

Barletta, Paolo: *See*—
Vacca, Alberto; and Barletta, Paolo, 5,486,451, Cl. 430-569.000.

Barnett, Charles J.; and Wilson, Thomas M., to Eli Lilly and Company. Intermediates for peparing antifolate compounds. 5,486,614, Cl. 546-207.000.

Barnett, Mark. Portable, public use reading glasses eye tester. 5,486,879, Cl. 351-223.000.

Barr, Graham M.: *See*—
Simpson, Richard; Oakland, Erick D.; and Barr, Graham M., 5,487,022, Cl. 364-715.040.

Barr, John F., Jr. Hair dryer caddy. 5,485,931, Cl. 211-70.600.

Barrett, David W.: *See*—
Kowalczyk, Thomas M.; McHugh, Thomas M.; Ahigian, Edward E.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kulak, Richard E.; and Barrett, David W., 5,485,896, Cl. 187-330.000.

Barrett, Terence W. Active signalling systems. 5,486,833, Cl. 342-204.000.

Barth, Tomislav: *See*—
Procházka, Zdenko; Bláha, Ivo; Žertová, Miroslava; Slaninová, Jiřina; Velek, Jiří ; Škopková, Jana; Lebl, Michal; Barth, Tomislav; Maletinská, Lenka; and Vilhardt, Hans, 5,486,596, Cl. 530-329.000.

Barton, Denny R. Fishing lure retrieval apparatus. 5,485,696, Cl. 43-17.200.

Barwell International Limited: *See*—
Cowley, Richard C., 5,486,104, Cl. 425-142.000.

BASF Aktiengesellschaft: *See*—
Hagen, Helmut; Nilz, Gerhard; Walter, Helmut; and Landes, Andreas, 5,486,618, Cl. 548-362.100.
Horn, Dieter; Lueddecke, Erik; Gierulski, Alfred; Kroehl, Thomas; and Lorencak, Primoz, 5,486,904, Cl. 356-73.000.
Kiefer, Hans; Betz, Roland; and Bewert, Wolfgang, 5,486,363, Cl. 424-442.000.
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Reinhardt, Robert; Reichelt, Helmut; and Merger, Roland, 5,486,609, Cl. 544-173.000.

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Guyomard, Daniel; Anderson, James L., Jr.; Frank, Alfred; and Chavaillaz, Georges, 5,485,941, Cl. 222-1.000.
Hagen, Gerry A.; and Li, Wei, 5,486,417, Cl. 428-357.000.
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Bastasch, Paul M.; Hanson, Randyl C.; Hill, Laclede L.; Norton, William E.; and Schoenbuchner, Hans W., to United Bakery Equipment Company. Bun slicing machine. 5,485,772, Cl. 83-873.000.

Bastian, Udo; and Stein, Manfred, to Herberts GmbH. Process for producing multi-layer costings by the use of clear lacquers which are capable of polymerization in radicalic and/or cationic manner. 5,486,384, Cl. 427-493.000.

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Hofmann, Jörg; Knetsch, Harald; Liebich, Kurt; Opper, Reinhold; Wiessler, Hans; and Bauer, Alois, 5,486,678, Cl. 219-127.000.

Bauer, François, to Institut Franco-Allemand de Recherches de Saint-Louis. Method of depolarizing a ferroelectric material using electrical means and its application to obtain a ferroelectric material of reinforced dielectric strength. 5,486,320, Cl. 264-408.000.

Bauman, Robert P. Method of precise guidance for directional atherectomy using ultrasound. 5,485,840, Cl. 128-660.030.

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Lai, Yu-Chin; and Valint, Paul L., Jr., 5,486,579, Cl. 525-479.000.

Baxter, Larry K.; and Coffey, John J., to PictureTel Corporation. Electrical cable interface for electronic camera. 5,486,853, Cl. 348-222.000.

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Guillemet, Guy, 5,485,705, Cl. 52-656.900.
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Eichenauer, Herbert; Piejko, Karl-Erwin; Bunte, Hans-Jürgen; and Thiem, Hans-Jürgen, 5,486,583, Cl. 526-68.000.
Kleiner, Frank-Gerald; and Becker, Robert, 5,486,642, Cl. 558-270.000.
Podszun, Wolfgang; and Müller, Michael, 5,486,548, Cl. 523-115.000.

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Bayley, Robert D.; Fox, Carol A.; Hoffend, Thomas R.; Paxson, James R.; and Grushkin, Bernard, to Xerox Corporation. Polyester processes for the preparation of toner. 5,486,444, Cl. 430-109.000.

Bayya, Shyam S.: *See*—
Jewell, John M.; Harbison, Barry B.; Aggarwal, Inhwar D.; and Bayya, Shyam S., 5,486,495, Cl. 501-10.000.

Beagley, Thomas; Kapaan, Hendrikus J.; Berryman, Leslie; and Message, Olivier, to SKF Industrial Trading & Development Company B.V. Bearing unit for a vehicle wheel. 5,486,053, Cl. 384-513.000.

Beck, Erhard; and Dinkel, Djeter, to ITT Automotive Europe GmbH. Brake pressure controller for a hydraulic vehicle brake system. 5,486,040, Cl. 303-113.200.

Becker, Heinrich, to Mannesmann Aktiengesellschaft. Process and apparatus for the treatment of the waste gases of an arc furnace. 5,487,081, Cl. 373-9.000.

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Peterson, Bruce A.; Connell, Mark E.; Bedient, Robert A.; Elsen, Raymond; Hogard, Michael E.; Johnson, Harley D.; Kelly, Thomas D.; Long, Jean M.; Preston, William G., Jr.; and Smejtek, Dalibor J., 5,486,286, Cl. 210-87.000.

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Beenfeldt, Eric; and Eason, Richard O., to Dexter Shoe Company. Apparatus and process for trimming a sole of a shoe. 5,485,643, Cl. 12-85.000.

Beiswenger, John L.; and Schwimmer, Robert L., to Technomarket, L.P. Digital clock. 5,487,053, Cl. 368-69.000.

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Hirano, Hirofumi; Hasegawa, Koh; Inoue, Hiroyuki; Bekki, Toshihiko; and Ikado, Masaharu, 5,485,991, Cl. 271-121.000.

Bekki, Yoichiro: *See*—
Hashiguchi, Koichi; Matsumoto, Yoshihiro; Imanaka, Makoto; Hira, Takaaki; Ikeda, Rinsei; Nishiyama, Naoki; Totsuka, Nobuo; Bekki, Yoichiro; and Nabae, Motohiro, 5,486,243, Cl. 148-552.000.

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Gareis, Galen M., 5,486,649, Cl. 174-36.000.

Bell, Allyn R.: *See*—
Strunk, Richard J.; and Bell, Allyn R., 5,486,610, Cl. 544-311.000.

Bell & Howell Phillipsburg Company: *See*—
McCay, Steve W.; Harshman, Keith A.; Gillette, Stephen J.; and Wentzel, Dale A., 5,485,989, Cl. 271-2.000.

Bell Communications Research Inc.: *See*—
Kant, Krishna, 5,487,072, Cl. 371-32.000.

Bell, James S.; Herman, Patricia L.; and Phillips, Richard L, to Dell USA, L.P. Beveled edge circuit board with channeled connector pads. 5,486,657, Cl. 174-261.000.

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Belleau, Bernard, deceased; and Ngayen-Ba, Nghe, 5,486,520, Cl. 514-274.000.

Bello, Vittorio: *See*—
Manganiello, Fausto; Duruz, Jean-Jacques; and Bello, Vittorio, 5,486,278, Cl. 204-243.00R.

BellSouth Corporation: *See*—
Sutton, Robert A., 5,487,109, Cl. 379-410.000.

Bemis, Edward D., to AT&T Global Information Solutions Company; Hyundai Electronics America; and Symbios Logic Inc. Concurrent image backup for disk storage system. 5,487,160, Cl. 395-441.000.

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Bemis, Peter F.; Albrecht, Loren C.; and Schick, Steven F., 5,486,327, Cl. 264-211.210.

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Badley, Rickey D.; Benham, Elizabeth A.; and McDaniel, Max P., 5,486,584, Cl. 526-95.000.

Bening, Robert C.; and St. Clair, David J., to Shell Oil Company. Protected functional initiated polymers capped with low surface energy fluorocarbons. 5,486,568, Cl. 525-102.000.

Bennett, James L. Cooler door display rack. 5,486,044, Cl. 312-321.500.

Benthos, Inc.: *See*—
Nellessen, Peter, Jr., 5,485,973, Cl. 242-386.000.

Berens, Randolph L.: *See*—
Marr, J. Joesph; Krug, Edward C.; Berens, Randolph L.; and Ke, Ou-Yang, 5,486,535, Cl. 514-450.000.

Berg Technologies, Inc.: *See*—
Northey, William A.; and Koser, James R., 5,486,115, Cl. 439-108.000.

Berger, Barry: *See*—
Samberg, Steve; and Berger, Barry, 5,485,919, Cl. 206-461.000.

Bergmann, Klaus; Schwab, Jacques; and Frauenfelder, Martin, to Mikron S. A. Agno. Machining center for machining a workpiece by means of at least two interchangeable tools. 5,486,151, Cl. 483-1.000.

Bergmans, Johannes W.: *See*—
Wong-Lam, Ho W.; Bergmans, Johannes W.; and Fisher, Kevin D., 5,487,085, Cl. 375-230.000.

Bergstrom, Richard C.: *See*—
Bowen, Terry P.; Lewis, Warren H.; and Bergstrom, Richard C., 5,487,124, Cl. 385-93.000.

Berman, Arthur L.: *See*—
Fergason, James L.; Berman, Arthur L.; and Jacobs, Stephen D., 5,486,940, Cl. 359-74.000.

Bernardus, Wilhelmus A.; and Pardijs, Hendrik J., to Stork RMS B.V. Method and device for stunning an animal for slaughter. 5,486,145, Cl. 452-58.000.

Berndt, Dale F.: *See*—
Killpatrick, Joseph E.; Berndt, Dale F.; Fritze, Keith R.; and Cary, Gregory E., 5,486,920, Cl. 356-350.000.

Bernfield, Merton: *See*—
Saunders, Scott; Bernfield, Merton; and Kato, Masato, 5,486,599, Cl. 530-395.000.

Bernhard, Gunnar: *See*—
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Bernstein, Peter R.; Shaw, Andrew; Thomas, Royston M.; Veale, Chris A.; Warner, Peter; and Wolanin, Donald J., to Zeneca Limited. Certain pyridyl ketones for treating diseases involving lenkocyte elastase. 5,486,529, Cl. 514-335.000.

Beroud, Claude: *See*—
Chevroulet, Tristan; and Beroud, Claude, 5,486,019, Cl. 280-730.100.

Berryman, Leslie: *See*—
Beagley, Thomas; Kapaan, Hendrikus J.; Berryman, Leslie; and Message, Olivier, 5,486,053, Cl. 384-513.000.

Berschied, John R., Jr., to Church & Dwight Co., Inc. Homogeneous cosmetic stick products. 5,486,355, Cl. 424-65.000.

Bershas, James P.; Kelly, Timm L.; and Rochfort, Gary L., to Henkel Corporation. Aqueous lubricant and surface conditioner for formed metal surfaces. 5,486,316, Cl. 252-547.000.

Bertwell, Dale E.; and Markham, Joseph P., to B & G Ventures, Inc. Hand-held brush. 5,485,807, Cl. 119-93.000.

Berwanger, Fred W., to AlliedSignal Inc. Aircraft brake piston hydraulic adjuster assembly. 5,485,902, Cl. 188-196.00A.

Bessho, Yoshihiro: *See*—
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Betz Laboratories, Inc.: *See*—
Brown, J. Michael, 5,486,294, Cl. 210-674.000.
Hollander, Orin, 5,486,334, Cl. 422-16.000.
Petrille, Joseph C., III; Vasconcellos, Stephen R.; and Werner, Michael W., 5,486,296, Cl. 210-749.000.

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Beyer, Eckhard: *See*—
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Eppeland, John R.; and Mannerud, Jack E., 5,485,985, Cl. 266-87.000.
Bhaskar, B. R. Udaya, to Comsat Corporation. Transform vector quantization for adaptive predictive coding. 5,487,086, Cl. 375-243.000.
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Biehl, Michael J.: *See*—
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Biemeck, Robert W.: *See*—
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Biglieri, Ezio: *See*—
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Bigot, Etienne: *See*—
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Billia, Mario; and Siladji, Sigron, to Solco Basel AG; and Greiter AG. Antisun product. 5,486,353, Cl. 424-59.000.
Billias, Athan: *See*—
Kay, Stephen R.; Billias, Athan; Igoshi, Yoshiyuki; and Hashida, Naoki, 5,486,647, Cl. 84-635.000.
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Guyon, Jean-François, 5,486,101, Cl. 425-192.00R.
Binney & Smith Inc.: *See*—
Miller, Richard E.; Couch, Charlene R.; and Krieger, Cheryl D., 5,486,228, Cl. 106-22.00B.
Binzer, Lothar. Modular fireplace with interchangeable burner assembly and heat exchange insert. 5,485,830, Cl. 126-512.000.
BioChemPharma, Inc.: *See*—
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della-Cioppa, Guy R.; Garger, Stephen J., Jr.; Holtz, Richard B.; McCulloch, Michael J.; and Sverlow, Genadie G., 5,486,351, Cl. 424-59.000.
Birchler, Mark A.: *See*—
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Bishop, David F.; and Ellis, Clifford J., to Kimberly-Clark Corporation. Fibrous nonwoven web surge layer for personal care absorbent articles and the like. 5,486,166, Cl. 604-366.000.
Bivens, Thomas H. Method of continuously filtering cooking oil. 5,486,370, Cl. 426-417.000.
Bizzotto, Wladimiro. High-pressure melamine reactor. 5,486,339, Cl. 422-193.000.
Black, William E.: *See*—
Bradley, Clifford A.; Kearns, Robert D.; Wood, Pauline P.; and Black, William E., 5,486,474, Cl. 435-262.000.
Blagaila, John H.: *See*—
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Blain, David A.: *See*—
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Blankenship, Dennis R., to Mitsubishi Semiconductor America, Inc. CMOS level shifter with feedforward control to prevent latching in a wrong logic state. 5,486,785, Cl. 327-306.000.
Blaskó, Gábor: *See*—
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Bleyman, Oleg I.: *See*—
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Bloomberg, Dan S.: *See*—
Zdybel, Frank, Jr.; Sang, Henry W., Jr.; Pederson, Jan O.; Smith, Z. E., III; Henderson, D. A., Jr.; Hecht, David L.; and Bloomberg, Dan S., 5,486,686, Cl. 235-375.000.
Blowers, William L.: *See*—
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Board of Trustees operating Michigan State University: *See*—
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Boatman, Jack K.; Parasworth, John T.; Johnson, Roger D.; and Young, Linda A., to Nestec S.A. Apparati for mixing fluid substances. 5,486,049, Cl. 366-175.200.
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BOC Group, Inc., The: *See*—
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Higginbotham, Paul, 5,485,729, Cl. 62-25.000.
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Bodden, Kurt S.: *See*—
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Bodem, Jack D., Jr., to Federal-Mogul Corporation. Vehicle signal lamp assembly. 5,486,991, Cl. 312-369.000.
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Nordstrand, Ingrid V.; and Bodin, Stig R., 5,487,071, Cl. 370-110.100.
Boehringer Mannheim GmbH: *See*—
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Peterson, Todd R.; and Walker, Michael A., 5,486,684, Cl. 219-633.000.
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Boersma, Drew H. Cup lid assembly. 5,485,938, Cl. 220-714.000.
Bogdanski, Michael S.: *See*—
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Boltswitch, Inc.: *See*—
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Arsac, Jean-Francois; Bonabal, Catherine; and Laurent, Betty, 5,486,571, Cl. 525-227.000.
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Bonne, Ulrich, to Honeywell, Inc. Determination of fuel characteristics. 5,486,107, Cl. 431-12.000.
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Booth, Hubert J.; Steagall, Paul H., III; and Wright, Michael W., to Wellman, Inc. Method and apparatus for sorting plastic items. 5,485,964, Cl. 241-27.000.
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Vande Streek, Penny R.; Young, Tyrone; Weiland, Frederick L.; and Borchert, Ronald, 5,485,835, Cl. 128-205.130.
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Borland International, Inc.: *See*—
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Bosworth, Jonathan E.: *See*—
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Bouillon, Eric; Leluan, Jean-Luc; and Lavasserie, Eric, to Societe Europeenne de Propulsion. Method of manufacturing a part made of composite material comprising fiber reinforcement consolidated by a liquid process. 5,486,379, Cl. 427-212.000.
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Caroline Christ Abgasfreie Werkzeugreinigungsapparate für die Kunststoffindustrie: *See*—
Schmidt, Rudolf, 5,485,858, Cl. 134-107.000.
Caron, Ronald N.; and Breedis, John F., to Olin Corporation. Process for improving the bend formability of copper alloys. 5,486,244, Cl. 148-554.000.
Carpenter, Alton D.; and Segler, Howard W., to Texas Instruments Incorporated. Method for encasing a printed wiring board. 5,485,672, Cl. 29-841.000.
Carpenter, Leslie E., II; and Eleveland, Robert A., to Dow Corning Corporation. Curable silicone coatings containing silicone resins. 5,486,578, Cl. 525-478.000.
Carr, Arthur G.; Durgin, Christopher A.; Griffiths, William D.; and Hill, J. Alexander, to Nomadic Structures, Inc. Carrying case having detachable step stool. 5,486,043, Cl. 312-235.100.
Carrera, George M., Jr.: *See*—
Summers, James B., Jr.; Davidsen, Steven K.; Curtin, Michael L.; Heyman, H. Robin; Sheppard, George S.; Xu, Lianhong; Carrera, George M., Jr.; and Garland, Robert B., 5,486,525, Cl. 514-303.000.
Carroll, Francis C., to EPP, Inc. Chewable animal toy. 5,485,809, Cl. 119-710.000.
Carter, Mark C. Collapsible shelter with elevated canopy. 5,485,863, Cl. 135-145.000.
Carter, Willie J.: *See*—
Norfleet, James; Carter, Willie J.; Frankel, Matthew J.; and Gaffar, Abdul, 5,486,350, Cl. 424-49.000.
Carty, Daniel T.: *See*—
Mitchell, James D.; Alvarez, Vincent E.; Carty, Daniel T.; and Latham, James R., 5,486,212, Cl. 8-142.000.
Carver, Edward L., Jr. Reagent system for improved multiple species blood analysis. 5,486,477, Cl. 436-17.000.
Cary, Gregory E.: *See*—
Killpatrick, Joseph E.; Berndt, Dale F.; Pritze, Keith R.; and Cary, Gregory E., 5,486,920, Cl. 356-350.000.
Casimir-Schenkel, Jutta; Fiechter, Armin; Gyula, Best; and Zimmermann, Wolfgang, to Clariant Finance (BVI) Limited. Thermostable endoxylanases. 5,486,468, Cl. 435-200.000.
Casio Computer Co., Ltd.: *See*—
Toya, Masumi, 5,487,140, Cl. 395-135.000.
Casper, Daniel F.: *See*—
Jordan, Richard C.; Capowski, Robert S.; Casper, Daniel F.; Ferraiolo, Frank D.; Laviola, William C.; and Tomaszewski, Peter R., 5,487,095, Cl. 376-371.000.
Cassella Aktiengesellschaft: *See*—
Schönafinger, Karl; and Bohn, Helmut, 5,486,531, Cl. 514-364.000.
Castonguay, Roger N.; Rocca, James L.; and Zaffetti, Mark A., to General Electric Company, Rating module unit for high ampere-rated circuit breaker. 5,486,667, Cl. 200-400.000.
Catalytica, Inc.: *See*—
Dalla Betta, Ralph A.; Reed, Daniel L.; and Schubert, Priscilla, 5,486,336, Cl. 422-90.000.
Caterpillar Inc.: *See*—
Kelley, Kurtis C., 5,486,413, Cl. 428-323.000.
Cathey, David A.; Hofmann, James J.; Dynka, Danny; and Stansbury, Darryl M., to Micron Display Technology, Inc. Spacers for large area displays. 5,486,126, Cl. 445-25.000.
Cavaliere, William A.; Kuder, Robert P., II; and Wu, Jin J., to International Business Machines Corporation. Mounting apparatus for cryogenic aerosol cleaning. 5,486,132, Cl. 451-75.000.
Cavazos, Frank G. Modular innerspring and box spring assemblies. 5,485,639, Cl. 5-259.100.
Cavo, Vincent N.: *See*—
Saylor, Charles H. M.; Cavo, Vincent N.; Riccardi, James A., Jr.; and Piszcz, Alan T., 5,487,139, Cl. 395-135.000.
Cawthorne, Chris E.; Peterson, Steve; Kar, Naresh J.; and Keshavan, Madapusi K., to Smith International, Inc. Rock bit. 5,485,890, Cl. 175-228.000.
Cedardell Limited: *See*—
Todd, Robert E., 5,486,812, Cl. 340-539.000.
Celcore, Inc.: *See*—
Fletcher, Anthony G., 5,487,101, Cl. 379-60.000.
Centecor, Inc.: *See*—
Heavner, George A., 5,486,595, Cl. 530-324.000.
Center for Innovative Technology**: *See*—
Hua, Guichao C.; and Lee, Fred C., 5,486,752, Cl. 323-222.000.
Century Products Company: *See*—
Harper, Marge, 5,486,037, Cl. 297-397.000.
Ceramaspeed Limited: *See*—
McWilliams, Joseph A., 5,486,323, Cl. 264-112.000.
Ceskoslovenska akademie ved: *See*—
Procházka, Zdenko; Bláha, Ivo; Žertová, Miroslava; Slaninová, Jiřina; Velek, Jiří; Škopková, Jana; Lebl, Michal; Barth, Tomislav; Maletínská, Lenka; and Vilhardt, Hans, 5,486,596, Cl. 530-329.000.
Cesna, Joseph V.; and Van Woerkom, Anthony G., to Speedfam Corporation. Device for conditioning polishing pads. 5,486,131, Cl. 451-56.000.
Chaiken, Craig L., to Gerber Garment Technology, Inc. Garment marker system having computer assisted alignment of variable contrast cloth designs. 5,487,011, Cl. 364-470.000.
Chait, Abraham I. Non-linting ball gasket for computer mouse devices and method. 5,486,845, Cl. 345-163.000.
Chan, Alexander; and Pan, Yuh-Gao, to Clairol, Inc. Direct dyes having a quaternary center with a long aliphatic chain. 5,486,629, Cl. 552-236.000.
Chan, Daniel S. H.: *See*—
Chim, Wai K.; Phang, Jacob C. H.; and Chan, Daniel S. H., 5,486,769, Cl. 324-751.000.
Chan, Francis H., to International Business Machines Corporation. Transmission line output driver. 5,486,782, Cl. 327-112.000.
Chan, John C.; and Compani, Hossein, to Alcatel Canada Wire Inc. Power cable with longitudinal waterblock elements. 5,486,648, Cl. 174-23.000.
Chan, Lawrence K. M.: *See*—

Gray, George W.; Lacey, David; Toyne, Kenneth J.; Scrowston, Richard M.; Shenouda, Ibrahim G.; Chan, Lawrence K. M.; Bradshaw, Madeline J.; Brimmell, Victoria; Constant, Jennifer; Raynes, Edward P.; Jackson, Adam; and Samra, Amarjit K., 5,486,309, Cl. 252-299.600.

Chaney, Don: *See*—
Cox, Verlon F.; and Chaney, Don, 5,485,816, Cl. 126-25.00R.

Chaney, Taylor S.: *See*—
Kassatly, Amal A.; Chaney, Taylor S.; and Floss, Peter, 5,487,131, Cl. 395-62.000.

Chang, Dong I.: *See*—
Yang, Chang M.; Hong, Jong Y.; Lee, Ki W.; Lee, Byeong G.; and Chang, Dong I., 5,486,624, Cl. 549-418.000.

Chang, Mike F.: *See*—
Hshieh, Fwu-Iuan; Choi, Calvin K.; Cook, William H.; Ching, Lih-Ying; and Chang, Mike F., 5,486,772, Cl. 324-769.000.

Chang, Shau-Gan: *See*—
Yoder, David; Chang, Shau-Gan; Xu, Aasui; and Domoras, Thomas, 5,486,375, Cl. 426-582.000.

Chang, Tien C.: *See*—
Tsai, Chia S.; and Chang, Tien C., 5,486,266, Cl. 156-657.100.

Chang, Victor S.: *See*—
Schreak, Walter J.; Wheatley, John A.; and Chang, Victor S., 5,486,949, Cl. 359-498.000.

Chang, Wei-Sun, to Molex Incorporated. Locking system for an electrical connector assembly. 5,486,117, Cl. 439-357.000.

Chang, Yuan F., to Gamemax Corporation. Paper money recognition and transmission system for vending machines. 5,485,907, Cl. 194-203.000.

Charboneau, Thomas J.; Strott, Douglas B.; Sogge, Dale R.; and Maher, Thomas R., to Texas Instruments Incorporated. Pressure transducer apparatus having a rigid member extending between diaphragms. 5,486,976, Cl. 361-283.400.

Chatigny, Joseph V.; Thompson, Mitchell; Radice, Peter F.; and Halvorsen, Donald L., to Whitaker Corporation, The. Traffic sensor having piezoelectric sensors which distinguish lanes. 5,486,820, Cl. 340-933.000.

Chavaillaz, Georges: *See*—
Guyomard, Daniel; Anderson, James L., Jr.; Frank, Alfred; and Chavaillaz, Georges, 5,485,941, Cl. 222-1.000.

Cheil Foods & Chemicals Inc.: *See*—
Lee, Yong W.; Lee, Yeong S.; Yon, Chang S.; Suh, Jung W.; Lee, Chul H.; Lim, Yoong H.; and Yoo, Ick D., 5,486,630, Cl. 554-1.000.

Chemrec Aktiebolag: *See*—
Nilsson, Bengt, 5,486,269, Cl. 162-31.000.

Chen, Chung-Te. Method for cooking food with heat energy generated from natural stone materials. 5,486,371, Cl. 426-510.000.

Chen, Ralph: *See*—
Olson, Todd; Meiser, Dan; Steed, Gary; Huffman, Eric; Otten, Matthew; VanOverloop, Ronald; Powell, Darrel; Knodell, Thomas; Rhad, Edward; Chen, Ralph; and Cook, Robert, 5,485,947, Cl. 227-176.100.

Chen, Teh-Yi J., to North American Philips Corporation. Method of fabrication of protected programmable transistor with reduced parasitic capacitances. 5,486,480, Cl. 437-29.000.

Cheng, Viktor C. H. End user query facility. 5,487,132, Cl. 395-63.000.

Cheon, In K.: *See*—
Choi, Jeong D.; Cheon, In K.; Song, Geun H.; and Park, Hee Y., 5,486,958, Cl. 360-85.000.

Cherney, Dale M.; and Hopkins, Keith, to Hayssen Manufacturing Company. Method of handling film on a vertical form, fill and seal machine. 5,485,712, Cl. 53-436.000.

Chernova, Nina I.: *See*—
Buchecker, Richard; Chernova, Nina I.; Ivaschenko, Alexander V.; Loseva, Marina V.; Petrashevich, Olga S.; Pozhidaev, Evgeniy P.; Rabinovich, Arnold Z.; and Schadt, Martin, 5,486,310, Cl. 252-299.610.

Chesebrough-Pond's USA Co.: *See*—
Faryniarz, Joseph R.; and Miner, Philip E., 5,486,305, Cl. 252-162.000.

Chess, Cyrus. Apparatus for treating cutaneous vascular lesions. 5,486,172, Cl. 606-20.000.

Chevrolet, Tristan; and Beroud, Claude, to SMH Management Services AG. Automotive vehicle including a security arrangement provided with an inflatable protective bag. 5,486,019, Cl. 280-730.100.

Chiang, David, to Xilinx, Inc. Antifuse-based programmable logic circuit. 5,486,776, Cl. 326-41.000.

Chiang, Wen-Chang: *See*—
Hsiue, Ging-Ho; Shy, Jow-Tsong; Liang, Jang-Jeng; and Chiang, Wen-Chang, 5,486,311, Cl. 252-299.660.

Chiba-Geigy Corporation: *See*—
Adam, Jean-Marie, 5,486,608, Cl. 544-108.000.

Chiba, Hiroshi: *See*—
Shiokawa, Junji; Chiba, Hiroshi; Murakami, Toshio; Todaka, Yoshihiro; Ohsaka, Ichiro; and Azumi, Takashi, 5,486,860, Cl. 348-354.000.

Chiba, Yoshio: *See*—
Miyata, Hiroshi; Chiba, Yoshio; and Noguchi, Osami, 5,486,671, Cl. 219-76.140.

Children's Medical Center Corporation: *See*—
Butler, James P.; Fredberg, Jeffrey J.; Ingber, Donald E.; and Wang, Ning, 5,486,457, Cl. 435-7.200.
Saunders, Scott; Bernfield, Merton; and Kato, Masato, 5,486,599, Cl. 530-395.000.

Chim, Wai K.; Phang, Jacob C. H.; and Chan, Daniel S. H., to National University of Singapore. Method and apparatus for measuring quantitative voltage contrast. 5,486,769, Cl. 324-751.000.

Chin, Steven S.: *See*—
Himes, Glenn R.; Spence, Bridget A.; Hoxmeier, Ronald J.; and Chin, Steven S., 5,486,574, Cl. 525-314.000.

Ching, Lih-Ying: *See*—
Hshieh, Fwu-Iuan; Choi, Calvin K.; Cook, William H.; Ching, Lih-Ying; and Chang, Mike F., 5,486,772, Cl. 324-769.000.

Chino, Hiroyuki; Akasaka, Toshiya; and Iwata, Minoru, to Ebara Corporation. Easily started DC motor apparatus. 5,486,742, Cl. 318-254.000.

Chiu, Tin-Ho: *See*—
Tang, Regianld T.; Mares, Frank; Boyle, William J., Jr.; Chiu, Tin-Ho; and Patel, Kundanbhai M., 5,486,593, Cl. 528-370.000.

Choi, Bongrak: *See*—
Kim, Heejo; Leem, Jongyong; Choi, Bongrak; Lee, Kyungsang; and Min, Kyungseol, 5,486,726, Cl. 307-120.000.

Choi, Calvin K.: *See*—
Hshieh, Fwu-Iuan; Choi, Calvin K.; Cook, William H.; Ching, Lih-Ying; and Chang, Mike F., 5,486,772, Cl. 324-769.000.

Choi, Jeong D.; Cheon, In K.; Song, Geun H.; and Park, Hee Y., to Goldstar Co., Ltd. Video cassette tape recorder with single loading motor, actuating plate and fast winding plate. 5,486,958, Cl. 360-85.000.

Chorne, Robert. Weighted golf iron club head. 5,486,000, Cl. 273-169.000.

Chou, Marilyn M., to Xintec Corporation. Transparent cap fiber optica laser beam angle delivery device. 5,486,171, Cl. 606-16.000.

Chow, Clarence Y.: *See*—
Gorbell, Brian N.; Wozniczka, Bogusiav M.; and Chow, Clarence Y., 5,486,430, Cl. 429-35.000.

Choy, Michael M.; Green, Paul E., Jr.; Hall, William E.; Janniello, Frank J.; Kravitz, Jeff K.; Liu, Karen; Ramaswami, Rajiv; and Tong, Franklin F., to International Business Machines Corporation. Optical wavelength division multiplexer for high speed, protocol-independent serial data sources. 5,487,120, Cl. 385-24.000.

Christopher, B. Joe: *See*—
Ray, Billy E.; Cox, Gregg T.; Bryant, Fred D.; Ray, Jimmie A.; Christopher, B. Joe; and Holcombe, Dan C., 5,485,967, Cl. 242-118.00A.

Chu, Ellen Y.: *See*—
Ford, Jeffrey E.; Chu, Ellen Y.; and Rude, Harold E., 5,486,219, Cl. 51-298.000.

Chu, Gigi C.: *See*—
McNamara, Robert P.; Saldinger, Alan; Cringle, Robert J.; Chu, Gigi C.; Sangameswara, Shanubhog G.; Vita, Peterpaul; Ouye, Michael M.; Stevens, David R. F.; Baranski, Celeste; Monsson, Cai U.; Murphy, Timothy P.; Murphy, Kevin T.; Ellis, Gary M.; and Ghate, Ranjit, 5,487,066, Cl. 370-85.200.

Chu, Wen-I: *See*—
Shyu, Rong-Puh; and Chu, Wen-I, 5,486,868, Cl. 348-524.000.

Chung, Ui-Shik, to Daewoo Electronics Co., Ltd. Directional changeover pump. 5,486,089, Cl. 415-146.000.

Church & Dwight Co., Inc.: *See*—
Berschied, John R., Jr., 5,486,355, Cl. 424-65.000.

Chylinski, Kathleen J.: *See*—
Baals, Kimberly A.; Chylinski, Kathleen J.; Kall, Darren A.; and Smith, Gary C., 5,487,104, Cl. 379-96.000.

Ciba-Geigy Corporation: *See*—
Deitz, Rolf; and Tzikas, Athanassios, 5,486,600, Cl. 534-634.000.
Gordon, Julian; Hawkes, Richard; Niday, Evelyn; and Towbin, Harry, 5,486,452, Cl. 435-5.000.
Moser, Peter; Page, Campbell T.; and Püntener, Alois, 5,486,213, Cl. 8-437.000.
Shum, Sai P.; and Pastor, Stephen D., 5,486,641, Cl. 558-78.000.

Circon Corporation: *See*—
Muller, Richard P.; and O'Hare, Richard J., 5,486,155, Cl. 600-137.000.

Citizen Watch Co., Ltd.: *See*—
Kashikie, Junsuke; and Taguchi, Hideo, 5,485,659, Cl. 24-71.00J.

Clairol, Inc.: *See*—
Chan, Alexander; and Pan, Yuh-Guo, 5,486,629, Cl. 552-236.000.
Wenke, Gottfried; Pan, Yuh-Guo; Lim, Mu-Ill; and Stasaitis, Linas, 5,486,619, Cl. 548-508.000.

Clanton, Christopher L.: *See*—
Smolinske, Jeffrey C.; Tran, Phieu M.; Clanton, Christopher L.; and Scheibel, Robert C., Jr., 5,487,068, Cl. 370-94.100.

Clariant Finance (BVI) Limited: *See*—
Casimir-Schenkel, Jutta; Fiechter, Armin; Gysin, Beat; and Zimmermann, Wolfgang, 5,486,468, Cl. 435-200.000.

Clark, Brian K.: *See*—
Miller, Roy R.; Clark, Brian K.; and Austin, Fred M., 5,485,925, Cl. 209-615.000.

Clark, James K.: *See*—
Wagg, Theadore J.; Clark, James K.; and Sporzynski, Robert S., 5,485,678, Cl. 33-610.000.

Clarke, John R.: *See*—
Joye, Donald D.; Mints, William H.; Clarke, John R.; and Wechgelaer, Peter, 5,485,834, Cl. 128-205.130.

Clementini, Luciano; Galambos, Adam F.; Lesca, Giuseppe; Spagnoli, Leonardo; Starsinic, Michael E.; and Ogale, Kumar, to Montell North America Inc. Resilient, high strinkage propylene polymer yarn and articles made therefrom. 5,486,419, Cl. 428-397.000.

Cleveland, Terry R.; Everhart, Cherie H.; Radwanski, Fred R.; and Skoog, Henry, to Kimberly-Clark Corporation. Liquid saturation process. 5,486,381, Cl. 427-294.000.

Clifton, Guy L., to University of Texas Health Science Center Houston. Method of treating a non-penetrating head wound with hypothermia. 5,486,204, Cl. 607-96.000.

Cline, Roger A.: *See*—
Andresen, Bernhard H.; and Cline, Roger A., 5,487,093, Cl. 375-376.000.

Clorox Company, The: *See*—
Feeney, Brian, 5,486,285, Cl. 210-85.000.
Mitchell, James D.; Alvarez, Vincent E.; Carty, Daniel T.; and Latham, James R., 5,486,212, Cl. 8-142.000.

Cobelo, Vincent, to ABC Packaging Machine Corporation. Apparatus and method for lifting and depositing bottles having handles. 5,486,030, Cl. 294-113.000.

Coburn Optical Industries, Inc.: *See*—
Brennan, William D.; Kulan, Stephen; Hyslop, Ronald T.; Ellis, Johnny; Gregory, Ray; Penner, Larry; and Hays, James K., 5,485,771, Cl. 82-1.110.

Coburn, Ronald, to Passive Bullet Traps Limited. Bullet trap. 5,486,008, Cl. 273-410.000.

Cody, Wayne L.: *See*—
Bowers, Cyril Y.; Cody, Wayne L.; Hubbs, John C.; Foster, Charles H.; and Momany, Frank A., 5,486,505, Cl. 514-16.000.

Coffey, John J.: *See*—
Baxter, Larry K.; and Coffey, John J., 5,486,853, Cl. 348-222.000.

Coffin, Louis F., Jr.: *See*—
Schwabe, Robert J.; Eggleston, Michael R.; and Coffin, Louis F., Jr., 5,486,767, Cl. 324-715.000.

Cohen, Robert C.; and Zubok, Rafial, to Implex Corporation. Acetabular cup, method and tool and installing the same. 5,486,181, Cl. 606-91.000.

Cohen, Ronny: *See*—
Greiss, Israel; Cohen, Ronny; and Viner, Omri, 5,487,173, Cl. 395-800.000.

Coin Acceptors, Inc.: *See*—
Wang, Chuanming; and Leibu, Mark H., 5,485,908, Cl. 194-317.000.

Cole, Paul D., to General DataComm, Inc. Convolutional encoders for modems which implement the "Cole code". 5,486,825, Cl. 341-50.000.

Coleman, Edward C.: *See*—
Mason, Charles R.; Nayyar, Dalip K.; and Coleman, Edward C., 5,486,369, Cl. 426-321.000.

Coleman, Patrick L.; Heilmann, Steven M.; Kangas, Steven L.; Rasmussen, Jerald K.; Rolando, Richard J.; and Stahl, Julie B., to Minnesota Mining and Manufacturing Company. Azlactone-functional polymer blends, articles produced therefrom and methods for preparing both. 5,486,358, Cl. 424-78.230.

Colgate-Palmolive Co.: *See*—
Misselyn, Anne-Marie; Mahieu, Marianne; and Erilli, Rita, 5,486,307, Cl. 252-174.240.
Norfleet, James; Carter, Willie J.; Frankel, Matthew J.; and Gaffar, Abdul, 5,486,350, Cl. 424-49.000.

Colleran, Stephen A.; Pawlicki, Jeffrey J.; and Higgins, John O., Jr., to Molex Incorporated. Electrical connector with terminal position assurance device and guide means for a mating connector. 5,486,118, Cl. 439-374.000.

Colley, James D.: *See*—
Moser, Robert E.; Owens, David R.; Wilhelm, James H.; Stohs, Miriam; Colley, James D.; and Hargrove, Oliver W., Jr., 5,486,342, Cl. 423-243.010.

Collier, John P.; Hogle, Richard; Marsh, James G.; and Thomas, Prakash, to BOC Group, Inc., The. Seamless cylinder shell construction. 5,485,736, Cl. 72-47.000.

Collier, William E. Bullet identification. 5,485,789, Cl. 102-501.000.

Collinge, Gary, to Flat Antenna Company Limited. Phase correcting zone plate. 5,486,950, Cl. 359-565.000.

Collins, Michael: *See*—
Drewry, John R.; Collins, Michael; and Korpal, Ashwani K., 5,487,155, Cl. 395-311.000.

Coloplast A/S: *See*—
Samuelsen, Peter B., 5,486,158, Cl. 602-46.000.

Comer, Keith; Elsasser, Gary; and Iwakiri, Takano, to Toshiba America Information Systems, Inc. Intelligent keypad overlay for portable personal computers. 5,486,846, Cl. 345-168.000.

Comins, Daniel L., to North Carolina State University. Method of making asymmetric DE ring intermediates for the synthesis of camptothecin analogs. 5,486,615, Cl. 546-301.000.

Commonwealth Scientific and Industrial Research Organisation: *See*—
O'Sullivan, John D.; Daniels, Graham R.; Percival, Terence M. P.; Ostry, Diethelm I.; and Deane, John F., 5,487,069, Cl. 370-94.300.

Compagnie Generale Des Etablissements Michelin - Michelin et Cie: *See*—
Garmy, Michel; and Ravel, Bernard, 5,486,260, Cl. 156-406.200.

Compani, Hossein: *See*—
Chan, John C.; and Compani, Hossein, 5,486,648, Cl. 174-23.00R.

Compton, Wayne W., to Kim Lighting, Inc. Luminaire with modular louver shields. 5,486,989, Cl. 362-291.000.

Comsat Corporation: *See*—
Bhaskar, B. R. Udaya, 5,487,086, Cl. 375-243.000.

Conair Corporation: *See*—
Santhouse, Daniel; and Taylor, H. Roy, 5,485,829, Cl. 126-409.000.

Conboy, Michael R.: *See*—
Goff, Gerald L.; Smith, Michael D.; and Conboy, Michael R., 5,485,759, Cl. 73-865.900.

Condenser Italiana S.R.L.: *See*—
Locatelli, Vincenzo, 5,485,732, Cl. 62-520.000.

Connell, Mark E.: *See*—
Peterson, Bruce A.; Connell, Mark E.; Bedient, Robert A.; Elsen, Raymond; Hogard, Michael E.; Johnson, Harley D.; Kelly, Thomas D.; Long, Jean M.; Presson, William G., Jr.; and Smejtek, Dalibor J., 5,486,286, Cl. 210-87.000.

Connell, Michael L.: *See*—
Rademaker, Robert A.; Griffon, John J.; Connell, Michael L.; and Olszewski, Walter K., 5,485,745, Cl. 73-151.000.

Consiglio Nazionale delle Ricerche: *See*—
Alfano, Bruno, 5,486,763, Cl. 324-309.000.

Constant, Jennifer: *See*—
Gray, George W.; Lacey, David; Toyne, Kenneth J.; Scrowston, Richard M.; Shenouda, Ibrahim G.; Chan, Lawrence K. M.; Bradshaw, Madeline J.; Brimmell, Victoria; Constant, Jennifer; Raynes, Edward P.; Jackson, Adam; and Samra, Amarjit K., 5,486,309, Cl. 252-299.600.

Contico International, Inc.: *See*—
Foster, Donald D., 5,485,942, Cl. 222-324.000.

Costolini, Robert J.; Mayer, Steven T.; and Tarte, Lisa A., to United States of America, Energy. Removal of field and embedded metal by spin spray etching. 5,486,234, Cl. 216-91.000.

Cook, Robert: *See*—
Olson, Todd; Meiser, Dan; Steed, Gary; Huffman, Eric; Otten, Matthew; VanOverloop, Ronald; Powell, Darrel; Knodell, Thomas; Rhad, Edward; Chen, Ralph; and Cook, Robert, 5,485,947, Cl. 227-176.100.

Cook, William H.: *See*—
Hshieh, Fwu-Iuan; Choi, Calvin K.; Cook, William H.; Ching, Lih-Ying; and Chang, Mike F., 5,486,772, Cl. 324-769.000.

Cooley, Stephen E.: *See*—
Abbott, Thomas A.; Cooley, Stephen E.; and MacDonald, Michael S., 5,486,140, Cl. 454-333.000.

Cooper, J. Carl. Synchronizing signal separating apparatus and method. 5,486,869, Cl. 348-525.000.

Corbeil, Benoit: *See*—
Dionne, Alain; and Corbeil, Benoit, 5,486,027, Cl. 294-51.000.

Cordi, Alex; Lacoste, Jean-Michel; Laubie, Michel; Verbeuren, Tony; Descombes, Jean-Jacques; and Millan, Mark, to Adir et Compagnie. Benzospiroalkenes. 5,486,532, Cl. 514-374.000.

Cordier, Maurice; and Veislinger, Bernard, to Sextant Avionique. Lighting module for instruments with a liquid-crystal matrix. 5,486,983, Cl. 362-29.000.

Cordis Corporation: *See*—
Narayanan, Pallassana V., 5,486,357, Cl. 424-78.170.

Cordova, Amado, to Litton Systems, Inc. Sensor coil with thermomechanically-matched spool for fiber optic gyroscope. 5,486,922, Cl. 356-350.000.

Cordsen, Andreas, to Geophysical Exploration & Development Corporation. Three dimensional seismic data acquistion using a repeating offset arrangement of source and receiver lines. 5,487,052, Cl. 367-56.000.

Cornell, Jeffrey L.; and Philpot, Thomas H., to Progressive Dynamics, Inc. Diffused air heating system. 5,486,205, Cl. 607-104.000.

Corney, Martin, to Hughes Missile Systems Company. Combination explosive primer and electro-explosive device. 5,485,788, Cl. 102-472.000.

Corso, Ronald, to Amax Coal West, Inc. Process stabilizing process controller. 5,486,998, Cl. 364-152.000.

Cossock, David, to Amdahl Corporation. Computer with two-dimensional merge tournament sort using offset-value coding. 5,487,166, Cl. 395-600.000.

Couch, Charlene R.: *See*—
Miller, Richard E.; Couch, Charlene R.; and Krieger, Cheryl D.., 5,486,228, Cl. 106-22.00B.

Coury, William S.: *See*—
Myers, Gene; and Coury, William S., 5,486,195, Cl. 606-213.000.

Cowley, Richard C., to Barwell International Limited. Hydraulic ram operated extruders. 5,486,104, Cl. 425-142.000.

Cox, Gregg T.: *See*—
Ray, Billy E.; Cox, Gregg T.; Bryant, Fred D.; Ray, Jimmie A.; Christopher, B. Joe; and Holcombe, Dan C., 5,485,967, Cl. 242-118.00A.

Cox, Verlon F.; and Chaney, Don. Charcoal burning cooking device. 5,485,816, Cl. 126-25.00R.

CPI Engineering Services, Inc.: *See*—
Short, Glenn D., 5,486,302, Cl. 252-56.00S.

Crabtree Electrical Industries Limited: *See*—
Bowen, Peter W.; and Shotter, Darren J., 5,486,979, Cl. 361-640.000.

Cradeur, Robert R., to Serv-Tech, Inc. Remotely controlled chopping machine for tank cleaning. 5,485,966, Cl. 241-39.000.

Craft, Charles W.: *See*—
Sharrah, Raymond L.; and Craft, Charles W., 5,486,432, Cl. 429-99.000.

Crammond, Patrick J., to CAE Machinery Ltd. Knife clamping system. 5,485,873, Cl. 144-162.00R.

Crane & Co., Inc.: *See*—
Crane, Timothy T., 5,486,022, Cl. 283-83.000.

Crane, Timothy T., to Crane & Co., Inc. Security threads having at least two security detection features and security papers employing same. 5,486,022, Cl. 283-83.000.

Crawford, Donald L.: *See*—
Paszczynski, Andrzej; Goszczynski, Stefan; Crawford, Ronald L.; Crawford, Donald L.; and Pasti, Maria B., 5,486,214, Cl. 8-524.000.

Crawford, Ronald L.: *See*—
Paszczynski, Andrzej; Goszczynski, Stefan; Crawford, Ronald L.; Crawford, Donald L.; and Pasti, Maria B., 5,486,214, Cl. 8-524.000.

Cray Research, Inc.: *See*—
Sullivan, Patrick, 5,487,074, Cl. 371-22.300.
Creative Integrated Systems, Inc.: *See*—
Komarek, James A.; Padgett, Clarence W.; Tanner, Scott B.; Kojima, Shin-ichi; Minney, Jack L.; Oishi, Motohiro; Fukumura, Keiji; and Nakanishi, H., 5,487,038, Cl. 365-191.000.
Creed, Kevin; and Gilbert, Klay, to Weber Aircraft, Inc. Plastic bottom diaphragm for aircraft seat. 5,485,976, Cl. 244-118.600.
Crepin, Christophe: *See*—
Romanek, Christian; and Crepin, Christophe, 5,485,871, Cl. 141-312.000.
Cringle, Robert J.: *See*—
McNamara, Robert P.; Saldinger, Alan; Cringle, Robert J.; Chu, Gigi C.; Sangameswara, Shanubhog G.; Vita, Peterpaul; Ouye, Michael M.; Stevens, David R. F.; Baranski, Celeste; Monsoon, Cai U.; Murphy, Timothy P.; Murphy, Kevin T.; Ellis, Gary M.; and Ghate, Ranjit, 5,487,066, Cl. 370-85.200.
Crivello, James V., to Rensselaer Polytechnic Institute. Process for making propenyl ethers and photopolymerizable compositions containing them. 5,486,545, Cl. 522-31.000.
Crooymans, Rene W. Shelving support system. 5,485,933, Cl. 211-90.000.
Cross, Peter E.: *See*—
Alker, David; and Cross, Peter E., 5,486,527, Cl. 514-321.000.
Croucher, Russell L.: *See*—
Dailey, Timothy E.; Dissosway, Marc A.; and Croucher, Russell L., 5,487,181, Cl. 455-89.000.
Crowell, Anthony D. Vehicle desk. 5,485,793, Cl. 108-44.000.
Cruden, Andrew J.; McDonald, James R.; Andonovic, Ivan; Allan, Kenneth; and Porrelli, Raymond A., to Instrument Transformers Limited. Electric current measurement. 5,486,754, Cl. 324-96.000.
Curatolo, Benedict S.; Li, George S.; and Giddings, Brandford E., to Standard Oil Company, The. Nonwoven fabrics from high nitrile copolymers. 5,486,409, Cl. 428-221.000.
Curran, Andy: *See*—
Bruno, Michael; and Curran, Andy, 5,486,006, Cl. 273-301.000.
Curran, Timothy T.: *See*—
Weintraub, Philip M.; Gates, Cynthia A.; Angelastro, Michael R.; Curran, Timothy T.; and Johnston, J. O'Neal, 5,486,511, Cl. 514-178.000.
Curtin, Michael L.: *See*—
Summers, James B., Jr.; Davidsen, Steven K.; Curtin, Michael L.; Heyman, H. Robin; Sheppard, George S.; Xu, Lianhong; Carrera, George M., Jr.; and Garland, Robert B., 5,486,525, Cl. 514-303.000.
Cydec S.A.: *See*—
Guyomard, Daniel; Anderson, James L., Jr.; Frank, Alfred; and Chavaillaz, Georges, 5,485,941, Cl. 222-1.000.
Cyrix Corporation: *See*—
Eitrheim, John D., 5,486,779, Cl. 327-51.000.
Daewoo Electronics Co., Ltd.: *See*—
Ahn, Seong-Ick, 5,486,966, Cl. 360-107.000.
Chung, Ui-Shik, 5,486,089, Cl. 415-146.000.
Hwang, Jin, 5,486,881, Cl. 353-34.000.
Dagnac, Pierre; Leviandier, Michel; and Tigneres, Jean-Philippe, to Thomson-CSF. Device for heating up electronic boards. 5,486,681, Cl. 219-400.000.
Dahl, Ernest A.: *See*—
Wehrle, John P.; Dahl, Ernest A.; and Lugar, James R., 5,486,811, Cl. 340-522.000.
Dahlberg, Sven G. B., to Aktiebolaget Electrolux. Arrangement in an internal combustion engine. 5,485,817, Cl. 123-198.00E.
Dailey, Timothy E.; Dissosway, Marc A.; and Croucher, Russell L., to Ericsson GE Mobile Communications Inc. Low power architecture for portable and mobile two-way radios. 5,487,181, Cl. 455-89.000.
Dainippon Screen Mfg. Co., Ltd.: *See*—
Shinbara, Kaoru; Kurata, Yasuhiro; and Sawamura, Masashi, 5,485,644, Cl. 15-21.100.
Daiwa Seiko, Inc.: *See*—
Saito, Masaji; and Yamaguchi, Akira, 5,485,903, Cl. 192-8.00R.
Yamaguchi, Nobuyuki, 5,485,969, Cl. 242-247.000.
Dalke, Donell R. Rocker apparatus. 5,486,034, Cl. 297-272.100.
Dalla Betta, Ralph A.; Reed, Daniel L.; and Schubert, Priscilla, to Catalytica, Inc. NOX sensor assembly. 5,486,336, Cl. 422-90.000.
Dallas Semiconductor Corporation: *See*—
Lee, Robert D., 5,487,037, Cl. 365-189.110.
Pearson, Ronald W.; Deierling, Kevin E.; and Williams, Clark R., 5,487,096, Cl. 377-15.000.
Dallman, Jimmie J. Flail cutter and method of providing a flail cutter for a brush cutting machine. 5,485,718, Cl. 56-294.000.
Dalrymple, Alan W.: *See*—
Brouwer, Walter G.; Dalrymple, Alan W.; Felauer, Ethel E.; and McDonald, Paul T., 5,486,521, Cl. 514-274.000.
Damewood, John R.: *See*—
Kerr, Richard C.; Damewood, John R.; Menzel, Jill; Thottathil, Paul; and Sanduja, Mohan L., 5,486,210, Cl. 8-115.660.
Damilo, Serge: *See*—
Hanak, Karl; Prudhon, Daniel; Damilo, Serge; and Rofidal, Patrick, 5,486,654, Cl. 174-113.00R.
Dan Science Co., Ltd.: *See*—
Hiratsuka, Yutaka; and Akiyama, Tadashi, 5,485,861, Cl. 134-182.000.
Dana Corporation: *See*—
Easley, Paul D., 5,486,757, Cl. 324-174.000.
Daniels, Graham R.: *See*—
O'Sullivan, John D.; Daniels, Graham R.; Percival, Terence M. P.; Ostry, Diethelm I.; and Deane, John F., 5,487,069, Cl. 370-94.300.
Danon, Joseph. Point of purchase dispenser. 5,485,929, Cl. 211-57.100.
Darke, Paul L.; Hall, Dawn L.; and Kuo, Lawrence C., to Merck & Co., Inc. Purified herpes simplex virus protease and methods of purification. 5,486,470, Cl. 435-219.000.
Darlington, William H.: *See*—
Lin, Chiu-Hong; Haadsma-Svensson, Susanne R.; McCall, Robert B.; Romero, Arthur G.; Darlington, William H.; and Ennis, Michael D., 5,486,611, Cl. 546-62.000.
Dasher, James F., to Whirlpool Corporation. Shelf ladder reinforcement member for a refrigeration appliance. 5,486,045, Cl. 312-406.000.
Datta, Madhav; and Shenoy, Ravindra, to IBM Corporation. Electroetching process for seed layer removal in electrochemical fabrication of wafers. 5,486,282, Cl. 205-123.000.
Dautremont-Smith, William C.; Graebner, John E.; Jin, Sungho; and Katz, Avishay, to AT&T Bell Laboratories. Etching a diamond body with a molten or partially molten metal. 5,486,263, Cl. 216-33.000.
Davenport, Roger A., to Motorola, Inc. Surface acoustic wave device. 5,486,800, Cl. 333-193.000.
Davidsen, Steven K.: *See*—
Summers, James B., Jr.; Davidsen, Steven K.; Curtin, Michael L.; Heyman, H. Robin; Sheppard, George S.; Xu, Lianhong; Carrera, George M., Jr.; and Garland, Robert B., 5,486,525, Cl. 514-303.000.
Davies, Jonathan M. R.: *See*—
Kalindjian, Sarkis B.; Broughton, Howard B.; Low, Caroline M. R.; McDonald, Iain M.; Hull, Robert A. D.; Shankley, Nigel P.; Buck, Ildiko M.; Steel, Katherine I. M.; and Davies, Jonathan M. R., 5,486,597, Cl. 530-331.000.
Davies, Mary E.; Whittle, Mavis E.; Jones, William; and Mokaya, Robert, to Laporte Industries Limited. Pillared clays. 5,486,499, Cl. 502-81.000.
Davis, James A.: *See*—
Valaitis, Joseph K.; Davis, James A.; and Lohr, Frederick, 5,486,249, Cl. 156-71.000.
Davis, Kirk E.: *See*—
Salomon, Mary F.; Davis, Kirk E.; Karn, Jack L.; and Cahoon, John M., 5,486,300, Cl. 252-18.000.
Davis, Randall W.: *See*—
Bourne, George; Davis, Randall W.; Duval, George; Goodine, Dennis; Lock, James E.; Ouellette, Gerry; Perry, Stanton B.; Wagner, Maria; and Whittaker, Gregory R., 5,486,193, Cl. 606-194.000.
Davis, Robert A.: *See*—
Mishra, Anupama; and Davis, Robert A., 5,486,533, Cl. 514-383.000.
Davis, William S., Jr.; and Morrow, Julia A., to Davoil, Inc. Ceiling fan blade mounting bracket and support arms providing two fan blade support points. 5,486,094, Cl. 416-210.00R.
Davoil, Inc.: *See*—
Davis, William S., Jr.; and Morrow, Julia A., 5,486,094, Cl. 416-210.00R.
Dawn Equipment Company: *See*—
Bassett, James H., 5,485,796, Cl. 111-33.000.
Bassett, James H., 5,485,886, Cl. 172-763.000.
Day, Michael J.: *See*—
Gardner, Frederick J.; Day, Michael J.; Brandon, Nigel P.; and Brownell, John B., 5,486,428, Cl. 429-19.000.
Dayco Products, Inc.: *See*—
Sanders, John D.; Holden, Homer N.; and Foster, Randy C., 5,486,023, Cl. 285-258.000.
Dayton Laboratories, Inc.: *See*—
Farinas, Reynaldo G., 5,486,537, Cl. 514-462.000.
Deak, Frederick R.: *See*—
Volz, Keith L.; Renn, Robert M.; Irlbeck, Robert D.; Deak, Frederick R.; and Johnson, David C., 5,486,771, Cl. 324-755.000.
Dean, Carl A. Collating structure. 5,485,916, Cl. 206-215.000.
Deane, John F.: *See*—
O'Sullivan, John D.; Daniels, Graham R.; Percival, Terence M. P.; Ostry, Diethelm I.; and Deane, John F., 5,487,069, Cl. 370-94.300.
Deaner, Michael J.; Puppin, Giuseppe; and Heikkila, Kurt E., to Andersen Corporation. Advanced polymer/wood composite structural member. 5,486,553, Cl. 524-13.000.
de Boer, Rudolf; Kramer, Roland K.; and McKernan, Ronald W., to DMV USA, Inc. Production of a cultured yeast product from whey permeate, yeast cream and yeast centrate. 5,486,368, Cl. 426-41.000.
Decker, Gary T.: *See*—
Bank, Howard M.; and Decker, Gary T., 5,486,637, Cl. 556-479.000.
Decreamer, Alain, to U.S. Philips Corporation. Apparatus for the display of pictures having an aspect ratio 4/3 on a display having an aspect ratio of 16/9. 5,486,870, Cl. 348-556.000.
Deere & Company: *See*—
Green, Lawrence D.; and Pratt, Ronald L., 5,485,797, Cl. 111-200.000.
Defossez, Béatrice; and Rossignol, Sylvie, to L'Oreal. Cosmetic make-up composition containing a transparent titanium oxide and silicon oxide pigment. 5,486,354, Cl. 424-63.000.
Degnan, Thomas F.; Helton, Terry E.; and Lissy, Daria N., to Mobil Oil Corporation. Catalytic cracking with MCM-49. 5,486,284, Cl. 208-120.000.
Deierling, Kevin E.: *See*—
Pearson, Ronald W.; Deierling, Kevin E.; and Williams, Clark R., 5,487,096, Cl. 377-15.000.
Deinhardt, Günther: *See*—

Meiler, Werner; and Deinhardt, Günther, 5,486,116, Cl. 439-347.000.
Deitz, Rolf; and Tzikas, Athanassios, to Ciba-Geigy Corporation. Fiber-reactive halotriaziayl or halopyrimidinyl disazo dyes. 5,486,600, Cl. 534-634.000.
De Jong, Krijn P.; Lednor, Peter W.; Oud, Anna E. M.; Schoonebeek, Ronald J.; Vonkeman, Koert A.; and Van Der Zwet, Gerardus P., to Shell Oil Company. Process for the preparation of carbon monoxide and/or hydrogen. 5,486,313, Cl. 252-373.000.
Delaunay, Christophe: *See*—
Naka, Shigehisa; Khan, Tasadduq; Walder, André; Marty, Michel; Delaunay, Christophe; and Thevenia, Pierre, 5,486,242, Cl. 148-422.000.
Delco Electronics Corporation: *See*—
Borrego, Diego A.; Greenland, Alan R.; Allison, Charles R.; Bordo, Robert A.; and Stringfellow, Steven A., 5,486,840, Cl. 345-7.000.
Fowble, Juliana V., 5,487,123, Cl. 385-70.000.
Lippmann, Raymond; Schnars, Michael J.; Nelson, James E.; Brouwer, Ivan R.; and Pachciarz, Mahlon R., 5,485,740, Cl. 73-1.00J.
Dell USA, L.P.: *See*—
Bell, James S.; Herman, Patricia L.; and Phillips, Richard L, 5,486,657, Cl. 174-261.000.
della-Cioppa, Guy R.; Garger, Stephen J., Jr.; Holtz, Richard B.; McCulloch, Michael J.; and Sverlow, Genadie G., to Biosource Technologies, Inc. Method for making stable, extracellular tyrosinase and synthesis of polyphenolic polymers therefrom. 5,486,351, Cl. 424-59.000.
Dellekoenig, Norbert: *See*—
Heisler, William A.; Shipman, David A.; Stachowiak, Anthony A.; Bodden, Kurt S.; Wurth, Michael E.; and Dellekoenig, Norbert, 5,486,042, Cl. 312-196.000.
De Lu, Janet A.: *See*—
Cain, Ronald A.; De Lu, Janet A.; and Lemke, Ralph E., 5,487,141, Cl. 395-135.000.
DeLuca, Hector F.; Schnoes, Heinrich K.; Perlman, Kato L.; and Swenson, Rolf E., to Wisconsin Alumni Research Foundation. Synthesis of 19-nor vitamin D compounds. 5,486,636, Cl. 556-443.000.
Demarest, David; Duncan, Robert B.; and Rattan, William, to Ethicon, Inc. Needle and suture swaging method. 5,485,668, Cl. 29-517.000.
Dempster Industries, Inc.: *See*—
Shirk, Thomas N., 5,485,865, Cl. 137-209.000.
Denison Hydraulics Inc.: *See*—
Schaffner, Larey D., 5,486,097, Cl. 417-222.100.
Denlinger, Edgar J.: *See*—
Rodeffer, Charles E.; Denlinger, Edgar J.; and Fathy, Aly E., 5,486,839, Cl. 343-786.000.
Denny, Martin L., to Dico, Inc. Brake lockout device. 5,485,900, Cl. 188-112.00R.
Denove, Thomas F.; and Blowers, William L., to GDB Enterprises, Inc. LCD bargraph motion picture light meter. 5,486,914, Cl. 356-221.000.
Derks, Irvin L., to Bard Manufacturing Company. Modular air conditioning system. 5,485,878, Cl. 165-16.000.
Descombes, Jean-Jacques: *See*—
Cordi, Alex; Lacoste, Jean-Michel; Laubie, Michel; Verbeuren, Tony; Descombes, Jean-Jacques; and Millan, Mark, 5,486,532, Cl. 514-374.000.
De Subijana, Joseba M.: *See*—
Byers, Larry L.; De Subijana, Joseba M.; and Michaelson, Wayne A., 5,487,159, Cl. 395-375.000.
Dettori, Mark D.: *See*—
Carangelo, Robert M.; Dettori, Mark D.; Grigely, Lawrence J.; Murray, Terence C.; Solomon, Peter R.; Van Dine, C. Peter; and Wright, David D., 5,486,917, Cl. 356-346.000.
De Vaan, Adrianus J. S. M., to U.S. Philips Corporation. Reflecting image projection screen and image projection system comprising such a screen. 5,486,884, Cl. 353-122.000.
Devitrysmith, Terry J. Guitar string installation and adjustment mechanism. 5,485,773, Cl. 84-267.000.
Devore, David D.; Timmers, Francis J.; Stevens, James C.; and Rosen, Robert K., to Dow Chemical Company, The. Group 4 metal diene complexes and addition polymerization catalysts therefrom. 5,486,632, Cl. 556-11.000.
DeWitt, Carl F.: *See*—
Wise, Frederick M.; and DeWitt, Carl F., 5,486,078, Cl. 410-155.000.
Dexide, Inc.: *See*—
Freitas, Michael W.; and Miller, Wayne D., 5,486,185, Cl. 606-142.000.
Dexter Shoe Company: *See*—
Beenfeldt, Eric; and Eason, Richard O., 5,485,643, Cl. 12-85.000.
Diamond, Jay M.: *See*—
Park, Chin S.; Holler, Mark A.; Diamond, Jay M.; The, Siang-Chun; Santoni, Umberto; and Buckmann, Kenneth R., 5,487,133, Cl. 395-27.000.
Diamond Semiconductor Group, Inc.: *See*—
Sieradzki, Manny, 5,486,080, Cl. 414-217.000.
DiBenedetto, Anthony. Dynamic multi-angular ankle and foot orthosis device. 5,486,157, Cl. 602-27.000.
Dickerson, Devere C., to Mascotech Tubular Products, Inc. Apparatus for hydroforming a vehicle manifold. 5,485,737, Cl. 72-57.000.
Dickinson, Norman L., to EnerTech Environmental, Inc. Efficient utilization of chlorine and moisture-containing fuels. 5,485,728, Cl. 60-648.000.
Dico, Inc.: *See*—
Denny, Martin L., 5,485,900, Cl. 188-112.00R.
Dienes, Geza, to Andrew Corporation. Broadband omnidirectional microwave antenna for minimizing radiation toward the upper hemisphere. 5,486,838, Cl. 343-781.00R.
Dierdorf, Hans-Rolf, to Henkel Kommanditgesellschaft auf Aktion. Socket for connecting pipe ends by injection of adhesive. 5,486,024, Cl. 285-294.000.
Dieterle, Gerhard, to Erwin Sick GmbH Optik–Eletronik. Monitoring apparatus in machines. 5,486,691, Cl. 250-221.000.
Dietl, Steven J.: *See*—
Carlotta, Michael; Dietl, Steven J.; and Morano, Richard A., 5,486,855, Cl. 347-87.000.
Dietz, Henry G. Breath exposure synchronizer. 5,485,833, Cl. 128-204.230.
Dietz, Henry G. Monitor of low pressure intervals with control capabilities. 5,485,850, Cl. 128-716.000.
Dietz, Terry L.; and Vanlaningham, Richard D., to Zimmer, Inc. Apparatus for milling bone. 5,486,180, Cl. 606-87.000.
Different Dimensions Inc.: *See*—
Zuckerman, Andrew M., 5,485,943, Cl. 223-85.000.
Digital Equipment Corporation: *See*—
Kassatly, Amal A.; Chaney, Taylor S.; and Floss, Peter, 5,487,131, Cl. 395-62.000.
Romm, Michael; Barker, Robert A.; and Morgan, Stuart K., 5,485,932, Cl. 211-87.000.
Diller, Robert W.; and Pavlat, Jeffrey W., to Amerigon, Inc. Energy management system for vehicles having limited energy storage. 5,487,002, Cl. 364-424.010.
Dillner, Joakim; Lerner, Richard A.; Smith, Richard; and Parks, D. Elliot, to Scripps Research Institute, The. Antibodies to human papillomavirus latest proteins, diagnostic systems and methods. 5,486,453, Cl. 435-5.000.
Dimock, Andrew G.: *See*—
Kundert, James W., 5,485,926, Cl. 211-40.000.
Dinallo, Chris A.; Koval, Michael J.; Lawton, William W.; Paulat, Martin J., Jr.; Tyler, John G.; Winters, Scott L.; and Allran, Gary G., to International Business Machines Corporation. Personal computer with generalized data streaming apparatus for multimedia devices. 5,487,167, Cl. 395-650.000.
Dinh, Khanh. Magnetless speaker. 5,487,114, Cl. 381-192.000.
Dinkel, Dieter: *See*—
Beck, Erhard; and Dinkel, Dieter, 5,486,040, Cl. 303-113.200.
Dionne, Alain; and Corbeil, Benoit. Combined traction mat, shovel and utility device. 5,486,027, Cl. 294-51.000.
Display Systems, Inc.: *See*—
Holztrager, William J., 5,485,934, Cl. 211-194.000.
Dissosway, Marc A.: *See*—
Dailey, Timothy E.; Dissosway, Marc A.; and Croucher, Russell L., 5,487,181, Cl. 455-89.000.
Distribution Control Systems, Inc.: *See*—
Mak, Sioe T., 5,486,805, Cl. 340-310.060.
DMV USA, Inc.: *See*—
de Boer, Rudolf; Kramer, Roland K.; and McKernan, Ronald W., 5,486,368, Cl. 426-41.000.
Doan, Trung T.: *See*—
Sandhu, Gurtej S.; and Doan, Trung T., 5,486,129, Cl. 451-5.000.
Dobbs, John; and Banks, David, to Analogic Corporation. Modular detector arrangement for X-ray tomographic system. 5,487,098, Cl. 378-19.000.
Dodds, W. Jean. Oven with food presence indicator. 5,486,685, Cl. 219-720.000.
Dodt, William C.; Gottehrer, Terry R.; and Milligan, Charles A., to Storage Technology Corporation. System for reading and stopping reading data from magnetic tape into memory in response to mount command and write command respectively from the system processor. 5,487,171, Cl. 395-840.000.
Doell, Andreas: *See*—
Thiel, Rudolf; Klimt, Ulrich; and Doell, Andreas, 5,485,899, Cl. 188-73.100.
Dohi, Hikoo, to Yazaki Corporation. Crimp-style terminal. 5,486,653, Cl. 174-84.00C.
Doleshal, David: *See*—
Mark, Steven D.; and Doleshal, David, 5,487,113, Cl. 381-17.000.
Domb, Abraham J.; and Nudelman, Raphael, to Hebrew University of Jerusalem, Yissum Research Development Co. of the. Biopolymers derived from hydrolyzable diacid fats. 5,486,591, Cl. 528-272.000.
Dombrowski, Adrian T.: *See*—
Drake, Charles S.; Williams, Bernhard O.; Dombrowski, Adrian T.; and Harth, Athur R., 5,487,010, Cl. 364-479.000.
Domenig, Georg, to Grass America, Inc. Hinge for mounting a door on a frame. 5,485,656, Cl. 16-387.000.
Domoras, Thomas: *See*—
Yoder, David; Chang, Shau-Gan; Xu, Ansui; and Domoras, Thomas, 5,486,375, Cl. 426-582.000.
Domtar Inc.: *See*—
Nguyen, Xuan T., 5,486,268, Cl. 162-13.000.
Dorset, Andrew; and Paquatte, Olivier, to Procter & Gamble Company, The. Process for making detergent granules by neutralization of sulphonic acids. 5,486,317, Cl. 252-549.000.
Dotzer, Peter: *See*—
Oestreich, Ulrich; Dotzer, Peter; and Unterberger, Siegfried, 5,486,378, Cl. 427-163.200.
Doublet, Pierre; Passebecq, Claude; and Bigot, Etienne, to Arjo Wiggins S.A. Method for manufacturing a stamp to emboss wire cloths in order to make watermarks and equipment to implement this method. 5,486,928, Cl. 358-299.000.

Doucet, Louis J.: *See*—
Albert, Kevin F.; Doucet, Louis J.; and McKrell, Richard L., 5,485,992, Cl. 271-299.000.
Douseki, Takakuni; Yamada, Junzo; Matsuya, Yasuyuki; and Mutou, Shin-ichirou, to Nippon Telegraph and Telephone Corporation. CMOS logic circuits having low and high-threshold voltage transistors. 5,486,774, Cl. 326-33.000.
Dovan, Hoai T.: *See*—
Sandiford, Burton B.; Dovan, Hoai T.; and Hutchins, Richard D., 5,486,312, Cl. 252-315.100.
Dow Benelux N.V.: *See*—
Krist, Johannes H. A.; Lapère, Martine R.; Wassink, Steven G.; and Koolen, Johannes L. A., 5,486,995, Cl. 364-149.000.
Dow Chemical Company, The: *See*—
Devore, David D.; Timmers, Francis J.; Stevens, James C.; and Rosen, Robert K., 5,486,632, Cl. 556-11.000.
Farah, Hani; and Bales, Stephen E., 5,486,577, Cl. 525-469.000.
Newsham, Mark D.; Earls, Jimmy D.; and Hefner, Robert E., Jr., 5,486,580, Cl. 525-504.000.
Quarderer, George J., Jr.; Swisher, Curtis N.; and Trent, David L., 5,486,627, Cl. 549-521.000.
Schrenk, Walter J.; Wheatley, John A.; and Chang, Victor S., 5,486,949, Cl. 359-498.000.
Westlake, Theodore N., III; and Wolcott, Duane K., 5,486,330, Cl. 264-291.000.
Dow Corning Asia, Ltd: *See*—
Fuwa, Yoshio; Saitou, Kouji; and Yamashita, Jiro, 5,486,299, Cl. 252-12.000.
Dow Corning Corporation: *See*—
Bank, Howard M.; and Decker, Gary T., 5,486,637, Cl. 556-479.000.
Boutevin, Bernard J. L.; Abdellah, Latifa; and Caporiccio, Gerardo, 5,486,422, Cl. 428-447.000.
Cabasso, Israel; and Graiver, Daniel, 5,486,590, Cl. 528-23.000.
Carpenter, Leslie E., II; and Ekeland, Robert A., 5,486,578, Cl. 525-478.000.
Gentle, Theresa E.; and Lutz, Michael A., 5,486,565, Cl. 524-730.000.
Katsoulis, Dimitris E., 5,486,566, Cl. 524-773.000.
Polmanteer, Keith E., 5,486,551, Cl. 523-212.000.
Dow Corning, S.A.: *See*—
L'Hostis, Jacqueline; Renauld, Franck A. D.; and Sawicki, George C., 5,486,306, Cl. 252-174.150.
Dow Corning Toray Silicone Company, Ltd.: *See*—
Aso, Takayuki; Ona, Isao; and Ozaki, Masaru, 5,486,298, Cl. 252-8.600.
Kobayashi, Hideki, 5,486,421, Cl. 428-421.000.
Mine, Katsutoshi; Nakamura, Takashi; and Sasaki, Motoshi, 5,486,564, Cl. 524-588.000.
Morita, Yoshitsugu, 5,486,588, Cl. 528-15.000.
Onishi, Masayuki, 5,486,257, Cl. 156-305.000.
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Dow Corning Toray Silicone Co., Ltd.: *See*—
Okawa, Tadashi, 5,486,635, Cl. 556-437.000.
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Edie, Ronnie G.; Hackler, Ronald E.; and Krumkalns, Eriks V., 5,486,516, Cl. 514-232.800.
Downing, Dennis M.; Glase, Shelly A.; Johnson, Stephen J.; Wise, Lawrence D.; and Wright, Jonathan L., to Warner-Lambert Company. Benzimidazoles and imidazopyridines as central nervous system agents. 5,486,517, Cl. 514-253.000.
Dr. Johannes Heidenhain GmbH: *See*—
Nelle, Günther, 5,485,680, Cl. 33-705.000.
Drab, John J.; and Ramer, O. Glenn, to Hughes Aircraft Company. Ferroelectric interruptible read memory. 5,487,030, Cl. 365-145.000.
Drach, William C.; Babbitt, Richard W.; and Koscica, Thomas E., to United States of America, Army. Low cost automated system for evaluating the electrical characteristics of ferroelectric materials. 5,487,014, Cl. 364-481.000.
Drach, William C.: *See*—
Koscica, Thomas E.; and Drach, William C., 5,486,992, Cl. 363-21.000.
Draghetti, Fiorenzo, to G.D Societa' Per Azioni. Device for feeding reels on to a user machine. 5,486,081, Cl. 414-225.000.
Dragoo, Jerry L.; Bogdanski, Michael S.; Ahr, Nicholas A.; and Noel, John R., to Procter & Gamble Company, The. Absorbent article having blended multi-layer absorbent structure with improved integrity. 5,486,167, Cl. 604-384.000.
Drake, Charles S.; Williams, Bernhard O.; Dombrowski, Adrian T.; and Harth, Athur R., to B.M.D., Inc. Bumper sticker printing machine. 5,487,010, Cl. 364-479.000.
Drangova, Maria: *See*—
Holdsworth, David W.; Drangova, Maria; and Fenster, Aaron, 5,485,831, Cl. 128-654.000.
Draper, Donald A.: *See*—
Partovi, Hamid; and Draper, Donald A., 5,487,025, Cl. 364-788.000.
Drenker, Alexander J.: *See*—
Maischner, Dora; Drenker, Alexander J.; Abels, Peter; and Beyer, Eckhard, 5,486,677, Cl. 219-121.830.
Drewry, John R.; Collins, Michael; and Korpal, Ashwani K., to International Computers Limited. Data switch with multiplexers for forming data connections and control unit for checking permissibility of connections. 5,487,155, Cl. 395-311.000.
Dri-Air Industries, Inc.: *See*—
Sears, Charles F., Jr., 5,485,686, Cl. 34-473.000.
Droho, Joseph S., to Philips Electronics North America Corporation. Method of making an electrical coil. 5,485,669, Cl. 29-605.000.
DSC Communications Corporation: *See*—
Bray, Paul M.; Cardy, Douglas R.; and Shelton, Charles P., 5,487,110, Cl. 379-220.000.
DSP Group, The: *See*—
Paiss, Omri; Shallom, Ilan D.; Flomen, Felix; and Haimi-Cohen, Raziel, 5,487,129, Cl. 395-2.420.
Du Pont de Nemours, E. I., and Company: *See*—
Bair, Thomas I.; and Camp, Carl E., 5,486,292, Cl. 210-616.000.
Ducklow, Diane K.: *See*—
Watson, Will; Miller, Alan L.; Sundquist, Drew A.; Simpson, Roger T.; Ducklow, Diane K.; Beckerman, Joseph W.; and Showalter, Dan J., 5,485,894, Cl. 180-248.000.
Dudley, Dana: *See*—
Hanson, Charles M.; Dudley, Dana; and Robinson, James E., 5,486,698, Cl. 250-332.000.
Duffield, David J.: *See*—
Fillhman, Paul D.; Ersoz, Nathaniel H.; Saeger, Timothy W.; Duffield, David J.; and Horlander, Karl F., 5,486,871, Cl. 348-558.000.
Duhl, Michael L.: *See*—
Ference, Joseph A.; Bullock, Ronald E.; Uhlir, Donald A.; Duhl, Michael L.; and Ropelato, Sam A., 5,486,382, Cl. 427-376.300.
Duke, Steven R.; Rossier, Glenn E.; and Saganich, Richard P., to United States of America, Air Force. Gun gas control system for multi-barrel weapons. 5,485,775, Cl. 89-14.300.
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Pirrung, Michael C.; and Lee, Yong Rok, 5,486,633, Cl. 556-410.000.
Xu, Feng J.; Yu, Yin H.; and Bast, Robert C., Jr., 5,486,456, Cl. 435-7.230.
Dulaney, Donald C. Water repellent solution for wood and method. 5,486,231, Cl. 106-243.000.
Duncan, Robert B.: *See*—
Demarest, David; Duncan, Robert B.; and Rattan, William, 5,485,668, Cl. 29-517.000.
Dunckley, James A.: *See*—
Morehouse, James H.; Furay, David M.; Volk, Steven B.; Utenick, Michael R.; Dunckley, James A.; Blagaila, John H.; Hopper, James F.; and Klein, Thomas A., 5,486,964, Cl. 360-105.000.
Dunn, Michael, to Meditech, Ltd. Method for treating cardiac inotropic irregularities. 5,486,506, Cl. 514-26.000.
Durant, Graham J.; Khan, Amin M.; and Tedford, Clark E., to University of Toledo, The; and Gliatech, Inc. Histamine H_3-receptor antagonists and therapeutic uses thereof. 5,486,526, Cl. 514-319.000.
Durgin, Christopher A.: *See*—
Carr, Arthur G.; Durgin, Christopher A.; Griffiths, William D.; and Hill, J. Alexander, 5,486,043, Cl. 312-235.100.
Dürkopp Adler Aktiengesellschaft: *See*—
Lubbecke, Udo; Schneuing, Ralf; and Schilling, Gerhard, 5,485,791, Cl. 104-172.400.
Durst, Larry. Sporting event scraper brush. 5,485,647, Cl. 15-111.000.
Duruz, Jean-Jacques: *See*—
Manganiello, Fausto; Duruz, Jean-Jacques; and Bello, Vittorio, 5,486,278, Cl. 204-243.00R.
Duval, George: *See*—
Bourne, George; Davis, Randall W.; Duval, George; Goodine, Deanis; Lock, James E.; Ouellette, Gerry; Perry, Stanton B.; Wagner, Maria; and Whittaker, Gregory R., 5,486,193, Cl. 606-194.000.
Duval, Michel: *See*—
Brochu, Fernand; and Duval, Michel, 5,486,435, Cl. 429-192.000.
Dvorkis, Paul: *See*—
Bard, Simon; Strat, Askold; and Dvorkis, Paul, 5,486,944, Cl. 359-198.000.
Dye, James L.; Ellaboudy, Ahmed S.; and Tsai, Kuo-Lih, to Board of Trustees operating Michigan State University. Process for producing an alloy. 5,486,225, Cl. 75-351.000.
Dyer, Lester W.: *See*—
Rowland, Landon L.; Lowder, Richard K.; Dyer, Lester W.; and Turner, Charles H., 5,486,831, Cl. 342-62.000.
DynaGen, Inc.: *See*—
Kitchell, Judith P.; Muni, Indu A.; and Boyer, Yvonne N., 5,486,362, Cl. 424-426.000.
Dynka, Danny: *See*—
Cathey, David A.; Hofmann, James J.; Dynka, Danny; and Stansbury, Darryl M., 5,486,126, Cl. 445-25.000.
Dziuk, Jerome J.: *See*—
Silvus, Howard S., Jr.; Mallow, William A.; Parr, Charles H.; and Dziuk, Jerome J., 5,486,768, Cl. 324-718.000.
E-Z Taping System, Inc.: *See*—
Stough, Ronald A., 5,486,394, Cl. 428-61.000.
E-Z Trail, Inc.: *See*—
Kuhns, Abe B., 5,486,020, Cl. 280-789.000.
Ealovega, George, to Bushman Limited. Mechanism for controlling the firing rate of an automatic weapon. 5,485,776, Cl. 89-130.000.
Earls, Jimmy D.: *See*—
Newsham, Mark D.; Earls, Jimmy D.; and Hefner, Robert E., Jr., 5,486,580, Cl. 525-504.000.
Early, Timothy J., to Ethicon-Endo-Surgery. Quick release package for surgical instrument. 5,485,917, Cl. 206-363.000.

Easley, Paul D., to Dana Corporation. Wheel-speed sensors for motor vehicle mounted in the spreader holes of a differential carrier housing. 5,486,757, Cl. 324-174.000.
Eason, Richard O.: *See*—
Beenfeldt, Eric; and Eason, Richard O., 5,485,643, Cl. 12-85.000.
Eastern Company, The: *See*—
Laabs, Timothy P.; Misner, Michael O.; Schulz, Richard H.; and Spencer, Elbert M., 5,485,735, Cl. 70-358.000.
Eastman Kodak Company: *See*—
Hamblen, David P., 5,486,951, Cl. 359-565.000.
Leidig, Carl F.; Estelle, Lee R.; and Moore, William E., II, 5,486,895, Cl. 355-30.000.
Vaynshteyn, Mikhail, 5,486,886, Cl. 354-149.100.
EasyMove, Inc.: *See*—
Stevens, Timothy J.; and Kruskopf, David J., 5,485,691, Cl. 37-302.000.
Eaton Corpoaration: *See*—
Amsallen, Marcel, 5,487,004, Cl. 364-424.100.
Eaton Corporation: *See*—
Elms, Robert T., 5,487,016, Cl. 364-484.000.
Fishovitz, Anthony J., 5,486,978, Cl. 361-617.000.
Fritsch, Ronald J.; and Holland, Richard J., 5,486,663, Cl. 200-50.00R.
Genise, Thomas A., 5,487,005, Cl. 364-424.100.
Jambor, George F.; and Place, David W., 5,486,661, Cl. 200-47.000.
Lamp, William G.; and Spitzer, Clarence J., 5,486,664, Cl. 200-297.000.
Organek, Gregory J.; Preston, David M.; and Janson, David A., 5,485,904, Cl. 192-35.000.
Oshgan, Thomas J., 5,486,669, Cl. 200-556.000.
Takiishi, Antonio L., 5,486,662, Cl. 200-50.0AA.
Taylor, Glen D., 5,486,972, Cl. 361-154.000.
Ebara Corporation: *See*—
Chino, Hiroyuki; Akasaka, Toshiya; and Iwata, Minoru, 5,486,742, Cl. 318-254.000.
Edie, Ronnie G.; Hackler, Ronald E.; and Krumkalns, Eriks V., to DowElanco. Furopyrimidine derivatives. 5,486,516, Cl. 514-232.800.
Edlund, Thomas: *See*—
Rutter, William J.; Wlaker, Michael D.; Edlund, Thomas; and Boulet, Anne M., 5,486,462, Cl. 435-69.100.
Edo, Yasuhiro, to NEC Corporation. Semiconductor integrated circuit device equipped with answer system for teaching optional functions to diagnostic system. 5,487,042, Cl. 365-201.000.
Edwards, Stuart D.: *See*—
Lax, Ronald G.; Edwards, Stuart D.; and Sharkey, Hugh R., 5,486,161, Cl. 604-22.000.
Eggleston, Michael R.: *See*—
Schwabe, Robert J.; Eggleston, Michael R.; and Coffin, Louis F., Jr., 5,486,767, Cl. 324-715.000.
Egis Gyogyszergyar Rt.: *See*—
Bajnógel, Judit; Blaskó, Gábor; Budai, Zoltán; Schmidt, Éva; Egyed, András; Fekete, Márton; Gacsályi, István; Gyertyán, István; Mezei, Tibor; Reiter née Esses, Kalára; Simig, Gyula; Szemerédi, Katalin; and Szirt née Kiszelly, Enikő, 5,486,528, Cl. 514-331.000.
Egyed, András: *See*—
Bajnógel, Judit; Blaskó, Gábor; Budai, Zoltán; Schmidt, Éva; Egyed, András; Fekete, Márton; Gacsályi, István; Gyertyán, István; Mezei, Tibor; Reiter née Esses, Kalára; Simig, Gyula; Szemerédi, Katalin; and Szirt née Kiszelly, Enikő, 5,486,528, Cl. 514-331.000.
Ehrhart, Peter: *See*—
Heidelberg, Götz; Ehrhart, Peter; Reiner, Gerhard; and Grändl, Andreas, 5,486,727, Cl. 310-12.000.
Eichenauer, Herbert; Piejko, Karl-Erwin; Bunte, Hans-Jürgen; and Thiem, Hans-Jürgen, to Bayer Aktiengesellschaft. Defoaming compositions for ABS latices. 5,486,583, Cl. 526-68.000.
Eichinger, Dieter: *See*—
Kalt, Wolfram; Männer, Johann; Eichinger, Dieter; and Schrempf, Christoph, 5,486,230, Cl. 106-165.000.
Eitrheim, John D., to Cyrix Corporation. Sense amplifier. 5,486,779, Cl. 327-51.000.
Eiwa Co., Ltd.: *See*—
Hashimoto, Yotaro, 5,485,685, Cl. 34-348.000.
Eka Nobel Inc.: *See*—
Winters, John R.; Gray, John M.; and Tenney, Joel D., 5,486,344, Cl. 423-477.000.
Ekeland, Robert A.: *See*—
Carpenter, Leslie E., II; and Ekeland, Robert A., 5,486,578, Cl. 525-478.000.
Electra Form, Inc.: *See*—
Meiring, David P.; and Maggert, Lyan R., 5,486,103, Cl. 425-541.000.
Electric Power Research Institute: *See*—
Moser, Robert E.; Owens, David R.; Wilhelm, James H.; Stoha, Miriam; Colley, James D.; and Hargrove, Oliver W., Jr., 5,486,342, Cl. 423-243.010.
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Pouliquen, Hervé; and Elloumi, Khaled, 5,486,994, Cl. 363-98.000.
Elektro-Thermit GmbH: *See*—
Mulder, Gerhardus J.; and Kuster, Frank, 5,486,245, Cl. 148-582.000.
Elf Atochem S.A.: *See*—
Arsac, Jean-Francois; Bonabal, Catherine; and Laurent, Betty, 5,486,571, Cl. 525-227.000.
Brifaud, Thierry; and Sage, Jean-Marc, 5,486,592, Cl. 528-363.000.
Eli Lilly and Company: *See*—
Barnett, Charles J.; and Wilson, Thomas M., 5,486,614, Cl. 546-207.000.
Mona, James A., 5,486,620, Cl. 548-515.000.
Sawyer, J. Scott, 5,486,612, Cl. 546-176.000.
Elizabeth Arden Company: *See*—
Guerrero, Angel A., 5,486,352, Cl. 424-59.000.
Elkay Manufacturing Company: *See*—
Stanford, Ralph F.; and Getz, Stephen E., 5,486,288, Cl. 210-235.000.
Ellaboudy, Ahmed S.: *See*—
Dye, James L.; Ellaboudy, Ahmed S.; and Tsai, Kuo-Lih, 5,486,225, Cl. 75-351.000.
Ellis, Clifford J.: *See*—
Bishop, David F.; and Ellis, Clifford J., 5,486,166, Cl. 604-366.000.
Ellis, Gary M.: *See*—
McNamara, Robert P.; Saldinger, Alan; Cringle, Robert J.; Chu, Gigi C.; Sangameswara, Shanubhog G.; Vita, Peterpaul; Ouye, Michael M.; Stevens, David R. F.; Baranski, Celeste; Monsson, Cai U.; Murphy, Timothy P.; Murphy, Kevin T.; Ellis, Gary M.; and Ghate, Ranjit, 5,487,066, Cl. 370-85.200.
Ellis, Glynn A. Saw blade machining system. 5,485,767, Cl. 76-40.000.
Ellis, Johnny: *See*—
Brennan, William D.; Kulan, Stephen; Hyslop, Ronald T.; Ellis, Johnny; Gregory, Ray; Penner, Larry; and Hays, James K., 5,485,771, Cl. 82-1.110.
Elloumi, Khaled: *See*—
Pouliquen, Hervé; and Elloumi, Khaled, 5,486,994, Cl. 363-98.000.
Elmore, David D.: *See*—
Horan, Patrick J.; Balch, Richard A.; Elmore, David D.; and Legere, Joseph R., 5,486,755, Cl. 324-110.000.
Elms, Robert T., to Eaton Corporation. Apparatus for generating a signal representative of total harmonic distortion in waveforms of an A/C electrical system. 5,487,016, Cl. 364-484.000.
Elsasser, Gary: *See*—
Comer, Keith; Elsasser, Gary; and Iwakiri, Takano, 5,486,846, Cl. 345-160.000.
Elscint Ltd.: *See*—
Silberklang, Alex; and Ohana, Israel, 5,486,700, Cl. 250-363.040.
Elsen, Raymond: *See*—
Peterson, Bruce A.; Connell, Mark E.; Bedient, Robert A.; Elsen, Raymond; Hogard, Michael E.; Johnson, Harley D.; Kelly, Thomas D.; Long, Jean M.; Preston, William G., Jr.; and Smejtek, Dalibor J., 5,486,286, Cl. 210-87.000.
Eltron International, Inc.: *See*—
Skinner, Donald K.; Yagi, Yoshi; and Zogg, Wilfried, 5,486,057, Cl. 400-120.020.
Emerald Hydraulics, Inc.: *See*—
Litten, Glen L., 5,485,742, Cl. 73-11.060.
Emhart Glass Machinery Investments Inc.: *See*—
Baldwin, Leo B., 5,486,692, Cl. 250-223.00B.
Grant, Marty J.; and Pinkerton, Steven J., 5,486,221, Cl. 65-163.000.
Emhart Inc.: *See*—
Hofmann, Jörg; Knetsch, Harald; Liebich, Kurt; Opper, Reinhold; Wiessler, Hans; and Bauer, Alois, 5,486,678, Cl. 219-127.000.
Emi, Shingo; Suzuki, Kyoji; and Ikada, Yoshito, to Teijin Limited. Cellulosic polymer, blood-treating device, and process for producing the same. 5,486,606, Cl. 536-84.000.
Enbee Plastics, Inc.: *See*—
Candido, Thomas A., 5,486,883, Cl. 353-120.000.
Endo, Toyokazu: *See*—
Ueki, Katsuji; and Endo, Toyokazu, 5,486,329, Cl. 264-273.000.
Endoh, Shuichi: *See*—
Takenaka, Eiji; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Sugiyama, Toshihiro; Yamanaka, Tetsuo; Murakami, Eisaku; and Komatsubara, Satoru, 5,486,909, Cl. 355-259.000.
EnerTech Environmental, Inc.: *See*—
Dickinson, Norman L., 5,485,728, Cl. 60-648.000.
Engbersen, Johannes F. J.; Kelderman, Erik; Reinhoudt, David N.; and Verboom, Willem, to Akzo Nobel NV. Optically non-linear active waveguiding material comprising donor and acceptor groups-containing triphenylcarbinols. 5,486,559, Cl. 524-299.000.
Engel, Wolf-Deiter: *See*—
Burns, Geoffrey; Engel, Wolf-Deiter; and Seidel, Christoph, 5,486,476, Cl. 436-15.000.
Engels, Hans-Werner: *See*—
Schmidt, Günther; Randel, Peter; Engels, Hans-Werner; and Geick, Bernd, 5,485,986, Cl. 266-280.000.
England, J. Richard, to R. H. Woods, Ltd. Spherical reaming bit. 5,485,888, Cl. 175-53.000.
Engsbråten, Björn. Explosive composition, manufacture and use thereof. 5,486,247, Cl. 149-46.000.
Enhsen, Alfons; Glombik, Heiner; Kramer, Werner; and Wess, Günther, to Hoechst Aktiengesellschaft. Process for the preparation of 3β-aminocholanic acid derivatives. 5,486,626, Cl. 552-521.000.
Ennis, Michael D.: *See*—
Lin, Chiu-Hong; Haadsma-Svensson, Susanne R.; McCall, Robert B.; Romero, Arthur G.; Darlington, William H.; and Ennis, Michael D., 5,486,611, Cl. 546-62.000.
Ennis, Dan O.; and Simpson, Matthew, to Saint-Gobain/Norton Industrial Ceramics Corporation. Apparatus and method for depositing a substance on a rotating surface. 5,486,380, Cl. 427-248.100.
Enthone-Omi Inc.: *See*—

Hemsley, John D. C.; Gale, Albert W.; and Schwalb, Adrian, 5,486,272, Cl. 204-105.00R.

Boga, Anthony B.; and Moran, Richard G., to Warner-Lambert Company. Fragrant denture cleanser composition. 5,486,304, Cl. 252-99.000.

BP Technologies, Inc.: *See*—
Panescu, Dorin; and Swanson, David K., 5,485,849, Cl. 128-699.000.

EPP, Inc.: *See*—
Carroll, Francis C., 5,485,809, Cl. 119-710.000.

Eppeland, John R.; and Mannerud, Jack E., to BGK Finishing Systems, Inc. Method and apparatus for heat treating. 5,485,985, Cl. 266-87.000.

Epstein, Arnold L.: *See*—
Fischer, Craig D., deceased; Breitbart, Dennis J.; Epstein, Arnold L.; and Zabel, Dale D., 5,486,374, Cl. 426-574.000.

Ergenics, Inc.: *See*—
Hanley, David J.; Huston, E. Lee; and Golben, P. Mark, 5,485,884, Cl. 169-19.000.

Erickson, Donald J., to Medtronic, Inc. Method and apparatus for arousal detection. 5,485,851, Cl. 128-716.000.

Erickson, James A., to Boltswitch, Inc. Operating mechanism for a manually operated load break switch. 5,486,668, Cl. 200-400.000.

Ericsson GE Mobile Communications Inc.: *See*—
Dailey, Timothy E.; Dissosway, Marc A.; and Croucher, Russell L., 5,487,181, Cl. 455-89.000.
Larsson, Jan A., 5,487,179, Cl. 455-69.000.

Eriksson, Karl Ö., to Telefonaktiebolaget LM Ericsson. Method and device for generation of clock signals. 5,486,784, Cl. 327-165.000.

Erilli, Rita: *See*—
Misselyn, Anne-Marie; Mahieu, Marianne; and Erilli, Rita, 5,486,307, Cl. 252-174.240.

Erkoboni, David F.: *See*—
King, Victor L.; Wheatley, Thomas A.; and Erkoboni, David F., 5,486,364, Cl. 424-488.000.

ERNO Raumfahrttechnik GmbH: *See*—
Steenborg, Manfred, 5,485,721, Cl. 60-203.100.

Ernst, Lauren A.: *See*—
Waggoner, Alan S.; Ernst, Lauren A.; and Mujumdar, Ratnakar B., 5,486,616, Cl. 548-217.000.

Ersoz, Nathaniel H.: *See*—
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Eruzzi, Silvio: *See*—
Rossi, Cino; Eruzzi, Silvio; Stephen, Robert L.; and Lugnani, Franco, 5,486,160, Cl. 604-21.000.

Erwin Sick GmbH Optik–Elektronik: *See*—
Dieterle, Gerhard, 5,486,691, Cl. 250-221.000.

Eschauzier, Rudolphe G. H.: *See*—
Huijsing, Johan H.; and Eschauzier, Rudolphe G. H., 5,486,790, Cl. 330-260.000.

Estelle, Lee R.: *See*—
Leidig, Carl F.; Estelle, Lee R.; and Moore, William E., II, 5,486,895, Cl. 355-50.000.

Esterowitz, Leon; and Pinto, Joseph F., to United States of America, Navy. Continuously tunable UV Ce:LiSAF solid state laser. 5,487,079, Cl. 372-20.000.

Ethicon-Endo-Surgery: *See*—
Early, Timothy J., 5,485,917, Cl. 206-363.000.

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Demarest, David; Duncan, Robert B.; and Rattan, William, 5,485,668, Cl. 29-517.000.
Le, Thu A.; Bruker, Izi; Luscombe, Brian H.; and Jamiolkowski, Dennis D., 5,486,197, Cl. 606-232.000.
Olson, Todd; Meiser, Dan; Steed, Gary; Huffman, Eric; Otten, Matthew; VanOverloop, Ronald; Powell, Darrel; Knodell, Thomas; Rhad, Edward; Chen, Ralph; and Cook, Robert, 5,485,947, Cl. 227-176.100.

Etsheidt, Ronald J.: *See*—
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Ettie, Gordon E.; and Wilhelm, Donald M., to California Pellet Mill Company. High intensity pellet machine. 5,486,102, Cl. 425-202.000.

Evans, James W.: *See*—
Shigeno, Yoshihito; and Evans, James W., 5,486,216, Cl. 44-591.000.

Evans, John P.; and Evans, Robert H. Device for selectively pressurizing or evacuating a chamber with an oscillating air source by metering air through a valve system and a device for drawing into, retaining and evacuating material from a chamber. 5,485,779, Cl. 99-345.000.

Evans, Robert H.: *See*—
Evans, John P.; and Evans, Robert H., 5,485,779, Cl. 99-345.000.

Everhart, Cherie H.: *See*—
Cleveland, Terry R.; Everhart, Cherie H.; Radwanski, Fred R.; and Skoog, Henry, 5,486,381, Cl. 427-294.000.

Exxon Chemical Patents Inc.: *See*—
Arjunan, Palanisamy, 5,486,326, Cl. 264-176.100.
Murata, Masahide; and Burkhardt, Terry J., 5,486,585, Cl. 526-130.000.

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Bailey, James R.; and Harrison, Larry E., 5,485,882, Cl. 166-284.000.
Thompson, Arthur H.; and Gist, Grant A., 5,486,764, Cl. 324-323.000.

Exxon Research & Engineering (ER&E): *See*—
Verduijn, Johannes P.; and Gellings, Pieter E., 5,486,348, Cl. 423-700.000.

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Verduijn, Johannes P., 5,486,498, Cl. 502-66.000.

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Smith, Fred T.; and Smith, Fred P., 5,486,149, Cl. 482-120.000.

Fabinski, Walter; Wiegleb, Gerhard; Hering, Peter; Fuss, Werner; and Haisch, Michael, to Mannesmann Aktiengesellschaft. Non-dispersive infrared spectrometer. 5,486,699, Cl. 250-345.000.

Failli, Amedeo A.; Bleyman, Oleg I.; Kao, Wenling; and Abou-Gharbia, Magid A., to American Home Products Corporation. Carbamates of rapamycin. 5,486,522, Cl. 514-291.000.

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Hamura, Masayuki; Okuda, Mitsuhiro; and Makihata, Yuuki, 5,486,679, Cl. 219-130.500.
Izumiya, Shunzo; Sakurai, Akihiro; and Kawahara, Akiyoshi, 5,486,765, Cl. 324-537.000.

Farah, Hani; and Bales, Stephen E., to Dow Chemical Company, The. Blends of diaryl fluorene carbonate polymers with bisphenol A carbonate polymers. 5,486,577, Cl. 525-469.000.

Farah, John M., Jr.: *See*—
Liang, Chi-Dean; McKeara, John P.; Farah, John M., Jr.; and Mueller, Richard A., 5,486,539, Cl. 514-521.000.

Farinas, Reynaldo G., to Dayton Laboratories, Inc. Topical anti-fungal composition for skin and keratinous tissue. 5,486,537, Cl. 514-462.000.

Farnsworth, John T.: *See*—
Boatman, Jack K.; Farnsworth, John T.; Johnson, Roger D.; and Young, Linda A., 5,486,049, Cl. 366-175.200.

Faryniarz, Joseph R.; and Miner, Philip E., to Chesebrough-Pond's USA Co. Nail polish remover. 5,486,305, Cl. 252-162.000.

Fasano, Michael, to Carlingswitch, Inc. Reset only rocker guard for split case circuit breaker. 5,486,660, Cl. 200-43.160.

Fathy, Aly E.: *See*—
Rodeffer, Charles E.; Denlinger, Edgar J.; and Fathy, Aly E., 5,486,839, Cl. 343-786.000.

Federal-Mogul Corporation: *See*—
Bodem, Jack D., Jr., 5,486,991, Cl. 312-369.000.

Feeney, Brian, to Clorox Company, The. Air inlet valve for water cooler. 5,486,285, Cl. 210-85.000.

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Bajnógel, Judit; Blaskó, Gábor; Budai, Zoltán; Schmidt, Éva; Egyed, András; Fekete, Márton; Gacsályi, István; Gyertyán, István; Mezei, Tibor; Reiter née Esses, Kalára; Simig, Gyula; Szemerédi, Katalin; and Szirt née Kiszelly, Enikő, 5,486,528, Cl. 514-331.000.

Felauer, Ethel E.: *See*—
Brouwer, Walter G.; Dalrymple, Alan W.; Felauer, Ethel E.; and McDonald, Paul T., 5,486,521, Cl. 514-274.000.

Feldman, Yakov Z.: *See*—
Feldman, Zeiylik Y.; and Feldman, Yakov Z., 5,486,082, Cl. 414-542.000.

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Felton, Clinton D.: *See*—
Groeger, H. Gunter; Serad, George A.; and Felton, Clinton D., 5,486,410, Cl. 428-283.000.

Felton, J. Reed, to T. J. Hale Company. Merchandise display rack. 5,485,928, Cl. 211-52.000.

Fenster, Aaron: *See*—
Holdsworth, David W.; Drangova, Maria; and Fenster, Aaron, 5,485,831, Cl. 128-654.000.

Ference, Joseph A.; Bullock, Ronald E.; Uhlir, Donald A.; Duhl, Michael L.; and Ropelato, Sam A., to Hughes Missile Systems Company. Method for preparing a cermet-coated article. 5,486,382, Cl. 427-376.300.

Fergason, James L.; Berman, Arthur L.; and Jacobs, Stephen D., to Optical Shields, Inc. Liquid crystal light polarizer and method. 5,486,940, Cl. 359-74.000.

Ferraiolo, Frank D.: *See*—
Jordan, Richard C.; Capowski, Robert S.; Casper, Daniel F.; Ferraiolo, Frank D.; Laviola, William C.; and Tomaszewski, Peter R., 5,487,095, Cl. 376-371.000.

Festo KG: *See*—
Stoll, Kurt, 5,485,867, Cl. 137-599.000.

Few, Jimmy D.; and Lewis, James W. L., to University of Tennessee Research Corporation. Laser initiated non-linear fuel droplet ignition. 5,485,720, Cl. 60-39.821.

Fey, George T., to Industrial Technology Research Institute. Synthesis of cathode material such as $LiNiVO_4$ and $LiCoVO_4$ for lithium secondary batteries. 5,486,346, Cl. 423-594.000.

FibreSonics, Inc.: *See*—
Brumbach, Joseph F., 5,486,162, Cl. 604-22.000.

Fiechter, Armin: *See*—
Casimir-Schenkel, Jutta; Fiechter, Armin; Gysin, Beat; and Zimmermann, Wolfgang, 5,486,468, Cl. 435-200.000.

Figueroa, Francisco R.: *See*—
Marin-Carrillo, Edgar M.; Amestica, Luis A.; Figueroa, Francisco R.; and Ramirez-Semeco, Ana M., 5,486,297, Cl. 252-8.600.

Fildan, Gerhard. Garment closure. 5,485,658, Cl. 24-614.000.

Filliman, Paul D.; Ersoz, Nathaniel H.; Saeger, Timothy W.; Duffield, David J.; and Horlander, Karl F., to Thomson Consumer Electronics, Inc. Automatic letterbox detection. 5,486,871, Cl. 348-558.000.

Filotex: *See*—
Hanak, Karl; Prudhon, Daniel; Damilo, Serge; and Rofidal, Patrick, 5,486,654, Cl. 174-113.00R.

Finberg, John: *See*—
Sterling, Jeff; Levy, Ruth; Veinberg, Alex; Goldenberg, Willy; Finberg, John; Youdim, Musa; and Gutman, Arieh, 5,486,541, Cl. 514-657.000.

Fink, Steven J.: *See*—
Nanni, Peter; Fink, Steven J.; and Vanderspool, Jan P., II, 5,487,183, Cl. 455-113.000.

Finney, Damon W.; and Rayfield, Michael J., to International Business Machines Corporation. System for high-speed synchronization across clock domains. 5,487,092, Cl. 375-354.000.

Firari, Harold A.; and Werner, John A. Anti-hijacking and theft prevention device for motor vehicles. 5,486,806, Cl. 340-426.000.

Firey, Joseph C. Multiple sources refuel mechanism. 5,485,812, Cl. 123-21.000.

Firma Kraudkrämer GmbH & Co.: *See*—
Karbach, Bernhard; and Patzke, Ottokar, 5,485,751, Cl. 73-618.000.

First Pacific Networks, Inc.: *See*—
McNamara, Robert P.; Saldinger, Alan; Cringle, Robert J.; Chu, Gigi C.; Sangameswara, Shanubhog G.; Vita, Peterpaul; Ouye, Michael M.; Stevens, David R. F.; Baranski, Celeste; Monsson, Cai U.; Murphy, Timothy P.; Murphy, Kevin T.; Ellis, Gary M.; and Ghate, Ranjit, 5,487,066, Cl. 370-85.200.

Fischer, Craig D., deceased (by Kathy S. Fischer, executrix); Breitbart, Dennis J.; Epstein, Arnold L.; and Zabel, Dale D., to Thomas J. Lipton Co., Division of Conopco, Inc. Meat emulson product. 5,486,374, Cl. 426-574.000.

Fischer, Kathy S., executrix: *See*—
Fischer, Craig D., deceased; Breitbart, Dennis J.; Epstein, Arnold L.; and Zabel, Dale D., 5,486,374, Cl. 426-574.000.

Fishel, James D. Christmas tree ornament protector. 5,486,400, Cl. 428-116.000.

Fisher, Kevin D.: *See*—
Wong-Lam, Ho W.; Bergmans, Johannes W.; and Fisher, Kevin D., 5,487,085, Cl. 375-230.000.

Fishovitz, Anthony J., to Eaton Corporation. Draw-out circuit breaker unit with coordinated cable interlock and shutter. 5,486,978, Cl. 361-617.000.

Flachsel, Martin: *See*—
Altekrüger, Burkhard; Gesche, Roland; Flachsel, Martin; and Aufreiter, Joachim, 5,485,802, Cl. 117-14.000.

Flat Antenna Company Limited: *See*—
Collinge, Gary, 5,486,950, Cl. 359-565.000.

Fletcher, Anthony G., to Celcore, Inc. Off-load cellular system for off-loading cellular service from a main cellular system to increase cellular service capacity. 5,487,101, Cl. 379-60.000.

Fletcher, Horace, III: *See*—
Yardley, John P.; Fletcher, Horace, III; Kelly, Michael G.; and White, Alan C., 5,486,518, Cl. 514-254.000.

Flint, W. Toriran; and Byers, Joseph L., to Reeves Brothers, Inc. Printing blanket having printing face surface profile within specified roughness range. 5,486,402, Cl. 428-141.000.

Flomen, Felix: *See*—
Paiss, Omri; Shalom, Ilan D.; Flomen, Felix; and Haimi-Cohen, Raziel, 5,487,129, Cl. 395-2.420.

Flood, Gary M.; Johnson, David M.; and Marek, Henry S., to General Electric Company. Abrasive tool insert. 5,486,137, Cl. 451-540.000.

Flood, John E.: *See*—
Gingrich, Randall P.; Londa, Michelle; and Flood, John E., 5,486,594, Cl. 528-392.000.

Floss, Peter: *See*—
Kassatly, Amal A.; Chaney, Taylor S.; and Floss, Peter, 5,487,131, Cl. 705-62.000.

Flynn, Gary A.: *See*—
Warshawsky, Alan M.; and Flynn, Gary A., 5,486,513, Cl. 514-214.000.

FMC Corporation: *See*—
King, Victor L.; Wheatley, Thomas A.; and Erkoboni, David F., 5,486,364, Cl. 424-488.000.
Schwindeman, James A.; and Morrison, Robert C., 5,486,343, Cl. 423-413.000.

Fogarty, Charles P. Relevant chess pieces. 5,486,004, Cl. 273-260.000.

Folsom, Lawrence R., to Martin Marietta Corporation. Hydrostatic transmission including a simplified ratio controller. 5,486,142, Cl. 474-69.000.

Foltz, Robert S.; and Gaither, Ronald A., to Xerox Corporation. Capture system employing diverter fluid nozzle. 5,485,935, Cl. 216-65.000.

Fontayne, Diego, to United States Surgical Corporation. Apparatus for applying surgical fasteners. 5,485,952, Cl. 227-178.100.

Food Automation Service Techniques, Inc.: *See*—
Koether, Bernard; Koether, George F., II; and Ubert, Harald, 5,485,780, Cl. 99-419.000.

Ford, Jeffrey E.; Chu, Ellen Y.; and Rude, Harold E., to Minnesota Mining and Manufacturing Company. Coatable urea-aldehyde solutions containing a cocatalyst, coated abrasives made using said solutions, and method of making coated abrasives. 5,486,219, Cl. 51-298.000.

Förderer, Heinz: *See*—
Herklotz, Günter; Förderer, Heinz; and Frey, Thomas, 5,486,721, Cl. 257-666.000.

Foster, Charles H.: *See*—
Bowers, Cyril Y.; Cody, Wayne L.; Hubbs, John C.; Foster, Charles H.; and Momany, Frank A., 5,486,505, Cl. 514-16.000.

Foster, Donald D., to Costco International, Inc. Liquid dispenser assembly with container having a sloped handle. 5,485,942, Cl. 222-324.000.

Foster, Randy C.: *See*—
Sanders, John D.; Holden, Homer N.; and Foster, Randy C., 5,486,023, Cl. 285-258.000.

Foster Wheeler Energy Corporation: *See*—
Van Rhyn, Lucas H., 5,486,670, Cl. 219-60.200.

Fournet-Fayard, Jacques; Galland, Olivier; Garin, Christophe; and Lucet, Alain, to Soprane S.A. Fastener for the osteosynthesis of the spinal column. 5,486,174, Cl. 606-61.000.

Fowble, Juliana V., to Delco Electronics Corporation. Connectors for optical fibers including resilient/expandable members. 5,487,123, Cl. 385-70.000.

Fox, Carol A.: *See*—
Bayley, Robert D.; Fox, Carol A.; Hoffend, Thomas R.; Paxson, James R.; and Grushkin, Bernard, 5,486,444, Cl. 430-109.000.

Fox, Duane M.; and Schoen, Joel A., to Intermec Incorporated. Method and apparatus for sensing the length of label or tag media by detecting changes in relative thickness. 5,486,063, Cl. 400-708.000.

Foxwell, W. John. Engine torque sensing arrangement. 5,485,757, Cl. 73-862.321.

Frank, Alfred: *See*—
Guyonard, Daniel; Anderson, James L., Jr.; Frank, Alfred; and Chavaillaz, Georges, 5,485,941, Cl. 222-1.000.

Frankel, Matthew J.: *See*—
Norfleet, James; Carter, Willie J.; Frankel, Matthew J.; and Gaffar, Abdul, 5,486,350, Cl. 424-49.000.

Frauenfelder, Martin: *See*—
Bergmann, Klaus; Schwab, Jacques; and Frauenfelder, Martin, 5,486,151, Cl. 483-1.000.

Fraunhofer-Gesellschaft zur Forderung der Angewandten Forschung E.V.: *See*—
Gehner, Andreas; Hess, Günther; Kück, Heinz; and Vogt, Holger, 5,486,851, Cl. 347-258.000.
Maischner, Dora; Drenker, Alexander J.; Abels, Peter; and Beyer, Eckhard, 5,486,677, Cl. 219-121.830.

Fredberg, Jeffrey J.: *See*—
Butler, James P.; Fredberg, Jeffrey J.; Ingber, Donald E.; and Wang, Ning, 5,486,457, Cl. 435-7.200.

Freedman, Robert; and Morriss, Christopher E., to Schlumberger Technology Corp. Apparatus including multi-wait time pulsed NMR logging method for determining accurate T2-distributions and accurate T1/T2 ratios and generating a more accurate output record using the updated T2-distributions and T1/T2 ratios. 5,486,762, Cl. 324-303.000.

Freeman, Paul R. W., to Hewlett-Packard Company. Rule acquisition in knowledge based systems. 5,487,135, Cl. 395-75.000.

Freilinger, Patrick L.: *See*—
Wong, Tak M.; Etsheidt, Ronald J.; and Freilinger, Patrick L., 5,486,666, Cl. 200-304.000.

Freitas, Michael W.; and Miller, Wayne D., to Dexide, Inc. Surgical apparatus. 5,486,185, Cl. 606-142.000.

Fremgen, Dieter: *See*—
McMills, Corey; Mattia, John; and Fremgen, Dieter, 5,486,120, Cl. 439-521.000.

Frenken, Egbert; and Schöning, Michael, to M & V Reklametechnik Schoning-Krieg. Hinged support panel display prism. 5,485,693, Cl. 40-505.000.

Frey, Thomas: *See*—
Herklotz, Günter; Förderer, Heinz; and Frey, Thomas, 5,486,721, Cl. 257-666.000.

Friberg, Nathan J.: *See*—
Waito, Joseph J.; Friberg, Nathan J.; and Niskanen, Floyd D., 5,485,963, Cl. 239-663.000.

Friese, Karl-Hermann; Weyl, Helmut; and Wiedenmann, Hans-Martin, to Robert Bosch GmbH. Electrochemical measuring probe. 5,486,279, Cl. 204-429.000.

Fritsch, Ronald J.; and Holland, Richard J., to Eaton Corporation. Motor control center removable control unit interlock. 5,486,663, Cl. 200-50.00R.

Fritz, Jack D., Jr. Boat utility light. 5,486,987, Cl. 362-226.000.

Fritz, Lawrence E. Stackable space saving container. 5,485,920, Cl. 206-509.000.

Fritze, Keith R.: *See*—
Killpatrick, Joseph E.; Berndt, Dale F.; Fritze, Keith R.; and Cary, Gregory E., 5,486,920, Cl. 356-350.000.

Frostell, Claes: *See*—
Zapol, Warren M.; and Frostell, Claes, 5,485,827, Cl. 128-200.140.

Fuchs, Ingbert E., to Board of Regents, The University of Texas System. Production of multilayer productive coverings on conventional dip molding lines. 5,486,322, Cl. 264-46.500.

Fuisz Technologies Ltd.: *See*—
Whistler, Roy L., 5,486,507, Cl. 514-54.000.

Fuji Chemical Industry Co., Ltd.: *See*—
Takado, Kanemasa; and Murakami, Tatsuo, 5,486,365, Cl. 424-602.000.

Fuji Electric Co., Ltd.: *See*—
Saito, Shigemasa, 5,486,960, Cl. 360-99.080.

Fuji Jukogyo Kabushiki Kaisha: *See*—
Sakakiyama, Ryuzo; Shirakawa, Kiminaga; and Tezuka, Kazunari, 5,486,147, Cl. 477-125.000.

Fuji Oozx Inc.: *See*—
Shida, Toshimitsu, 5,485,815, Cl. 123-188.300.

Fuji Photo Film Co., Ltd.: *See*—
Katsuma, Nobuo; Ueda, Satoshi; and Matsukawa, Hiroyuki, 5,486,856, Cl. 347-175.000.
Matushita, Tetunori; Kamikawa, Hiroshi; Satoh, Hiroshi; Nomura, Kimiatsu; and Tsurumi, Mitsuyuki, 5,486,446, Cl. 430-156.000.
Mogi, Fumio, 5,486,890, Cl. 354-299.000.
Yim, Seung-jae, 5,486,356, Cl. 424-76.100.

Fuji Photo Optical Co., Ltd.: *See*—
Omiya, Akio, 5,486,887, Cl. 354-149.110.
Shiina, Michihiro; Iwamoto, Jun'ichi; and Iwai, Fumio, 5,486,888, Cl. 354-187.000.

Fuji Xerox Co., Ltd.: *See*—
Kimura, Shunichi; Koshi, Yutaka; and Kamizawa, Koh, 5,487,119, Cl. 382-239.000.
Ota, Takeshi, 5,487,122, Cl. 385-46.000.

Fujibayashi, Kazuo, to Canon Kabushiki Kaisha. Camera with exposure control interlocked with lens movement. 5,486,894, Cl. 354-446.000.

Fujii, Yozo; Moriguchi, Hiroyuki; Ikunami, Yoshikazu; Matsunawa, Masahiko; Tamura, Akihiko; Yasuda, Kazuo; Miwa, Tadashi; Horiuchi, Tatsumi; Kishimoto, Tadao; Fujimaki, Yoshihide; Takagiwa, Hiroyuki; and Tamura, Takashi, to Konica Corporation. Color image forming apparatus with photoreceptor protector. 5,486,898, Cl. 355-200.000.

Fujikake, Hideo; Takizawa, Kumiharu; Hirose, Juichi; and Kobayashi, Tatsushi, to Tomoegawa Paper Co., Ltd.; and Nippon Hoso Kyokai. Optically addressed spatial light modulator. 5,486,936, Cl. 359-51.000.

Fujimaki, Yoshihide: *See*—
Fujii, Yozo; Moriguchi, Hiroyuki; Ikunami, Yoshikazu; Matsunawa, Masahiko; Tamura, Akihiko; Yasuda, Kazuo; Miwa, Tadashi; Horiuchi, Tatsumi; Kishimoto, Tadao; Fujimaki, Yoshihide; Takagiwa, Hiroyuki; and Tamura, Takashi, 5,486,898, Cl. 355-200.000.

Fujimoto, Katsuhiko: *See*—
Aida, Satoshi; Shibata, Mariko; Fujimoto, Katsuhiko; Ishibashi, Yoshiharu; Suzuki, Takuji; Sato, Kozo; and Itoh, Ayao, 5,485,839, Cl. 128-653.100.

Fujimura, Shigeru: *See*—
Takahashi, Kimikazu; Mitake, Haruko; and Fujimura, Shigeru, 5,487,144, Cl. 395-161.000.

Fujioka, Kaoru, to Bridgestone Metalpha Co., Ltd. Take-up reel for metallic filament. 5,485,968, Cl. 242-125.200.

Fujisaki, Takahiko: *See*—
Miyamoto, Tetsuya; Takahashi, Miyao; Fujisaki, Takahiko; Harada, Naoki; Kayane, Yutaka; and Omura, Takashi, 5,486,607, Cl. 544-76.000.

Fujita, Hiroyuki; Yoshida, Iwao; Takagi, Mitsuo; Manabe, Sadao; and Fukai, Konosuke, to Research Foundation for Microbial Diseases of Osaka University, The. A DNA coding for a Flavivirus antigen. 5,486,473, Cl. 435-240.200.

Fujita, Kenji, to Mazda Motor Corporation. Drive control system for automobile. 5,485,892, Cl. 180-167.000.

Fujita, Shigehisa; and Sato, Kenji, to Honda Giken Kogyo Kabushiki Kaisha. Computer-sided design system. 5,487,021, Cl. 364-578.000.

Fujita, Takashi; and Sugano, Toshihiko, to Mitsubishi Chemical Corporation. Process for preparing propylene block copolymers. 5,486,572, Cl. 525-247.000.

Fujita, Yasushi: *See*—
Soda, Chiharu; Fujita, Yasushi; Fukuda, Yoshihiko; and Ichihashi, Kaoru, 5,486,125, Cl. 440-75.000.

Fujitec Co., Ltd.: *See*—
Matsumoto, Kimio; Sawaike, Ichihiro; Nishigakik, Atsuo; Yamashita, Akitoshi; and Tsumura, Tomohiko, 5,485,897, Cl. 187-399.000.

Fujitsu Limited: *See*—
Akaogi, Takao; Yoshida, Masanobu; Ogawa, Yasushige; Kasa, Yasushi; and Kawamura, Shouichi, 5,487,036, Cl. 365-189.090.
Akima, Hideo; Ishikura, Yoshikiyo; and Kishi, Takaaki, 5,485,901, Cl. 188-164.000.
Furukawa, Yukio, 5,487,070, Cl. 370-108.000.
Iwasa, Seiichi; Motoyama, Hideyuki; and Yoshioka, Makoto, 5,486,059, Cl. 400-488.000.
Kakuguchi, Kazuhiro, 5,486,061, Cl. 400-605.000.
Kakuma, Satoshi; Uriu, Shiro; Yoshimura, Shuji; Aso, Yasuhiro; and Murayama, Masami, 5,487,063, Cl. 370-56.000.
Kitamoto, Yoshito; Takagi, Masahiro; Akiba, Hiroshi; and Seki, Kazuyuki, 5,486,276, Cl. 204-192.200.
Nakayama, Noriko; and Nakayama, Hiroshi, 5,487,142, Cl. 395-143.000.
Ohtake, Koji, 5,487,180, Cl. 455-54.100.
Tsurumaru, Shinichiro, 5,486,062, Cl. 400-618.000.

Fujitsu Personal Systems, Inc.: *See*—
Ichikawa, Shinpei; Hamerton-Kelly, Paul R.; and Anglin, Noah L., 5,486,942, Cl. 359-83.000.

Fujiwara, Shigeru: *See*—
Watanabe, Takeshi; Yoshida, Minoru; Fujiwara, Shigeru; and Takahashi, Masashi, 5,486,907, Cl. 355-219.000.

Fukahori, Hidehiko: *See*—
Suzuki, Kenji; Ishizaki, Akira; Ohtaka, Keiji; Suda, Yasuo; Fukahori, Hidehiko; Nagano, Akihiko; Konishi, Kazuki; and Tsunekawa, Tokuichi, 5,486,892, Cl. 354-402.000.

Fukai, Konosuke: *See*—
Fujita, Hiroyuki; Yoshida, Iwao; Takagi, Mitsuo; Manabe, Sadao; and Fukai, Konosuke, 5,486,473, Cl. 435-240.200.

Fukaya, Haruhiko; Abe, Takashi; Hayashi, Eiji; Hayakawa, Yoshio; and Baba, Hajime, to Agency of Industrial Science & Technology, Ministry of International Trade & Industry. Nitrogen-containing perfluoroalkyl bromide and method for production thereof. 5,486,275, Cl. 204-157.600.

Fukuchi, Masakazu; Morita, Shizuo; Kayano, Shizuo; and Yoshino, Kunihisa, to Konica Corporation. Color image recording apparatus with a detector to detect a superimposed toner image density and correcting its color balance. 5,486,901, Cl. 355-208.000.

Fukuda, Yoshihiko: *See*—
Soda, Chiharu; Fujita, Yasushi; Fukuda, Yoshihiko; and Ichihashi, Kaoru, 5,486,125, Cl. 440-75.000.

Fukumura, Kagenori: *See*—
Asahara, Norimi; Fukumura, Kagenori; Hojo, Yasuo; and Ozaki, Kazuhisa, 5,486,146, Cl. 477-65.000.

Fukumura, Keiji: *See*—
Komarek, James A.; Padgett, Clareace W.; Tanner, Scott B.; Kojima, Shin-ichi; Minney, Jack L.; Oishi, Motohiro; Fukumura, Keiji; and Nakanishi, H., 5,487,038, Cl. 365-191.000.

Fukushima, Michiyuki: *See*—
Nakajima, Shin; Fukushima, Michiyuki; and Hirao, Noriyoshi, 5,486,404, Cl. 428-172.000.

Fukushima, Yasuo: *See*—
Matsushita, Osami; Yoneyama, Mitsuho; Takahashi, Naohiko; Fukushima, Yasuo; Hiroshima, Minoru; Kaneki, Tadashi; Abe, Yoshiaki; and Sakanashi, Naofumi, 5,486,729, Cl. 310-90.500.

Fukuzawa, Yoshinao: *See*—
Masaki, Koichi; Fukuzawa, Yoshinao; Kitazawa, Kanji; Azuma, Takanobu; Nagasuma, Naohiro; and Hosoda, Tetsuo, 5,486,731, Cl. 310-180.000.

Fulks, Ronald T., to Xerox Corporation. Thin-film structure with insulating and smoothing layers between crossing conductive lines. 5,486,939, Cl. 359-74.000.

Fuller, Timothy J.: *See*—
Van Dusen, John G.; Fuller, Timothy J.; and Hudson, Deborah M., 5,486,445, Cl. 430-110.000.

Funabashi, Motohisa: *See*—
Ichimori, Toshihide; Maeda, Akira; Funabashi, Motohisa; and Nakano, Toshihiko, 5,487,130, Cl. 395-3.000.

Funakoshi, Wataru: *See*—
Hirata, Masumi; Funakoshi, Wataru; and Sasaki, Katsuhi, 5,486,555, Cl. 524-83.000.

Fung, Daniel Y. C., to Kansas State University Research Foundation. Eazymatic method for accelerating fermentation of comestible products. 5,486,367, Cl. 426-7.000.

Furay, David M.: *See*—
Morehouse, James H.; Furay, David M.; Volk, Steven B.; Utenick, Michael R.; Dunckley, James A.; Blagaila, John H.; Hopper, James F.; and Klein, Thomas A., 5,486,964, Cl. 360-105.000.

Furukawa Electric Co., Ltd., The: *See*—
Hashiguchi, Koichi; Matsumoto, Yoshihiro; Imanaka, Makoto; Hira, Takaaki; Ikeda, Rinsei; Nishiyama, Naoki; Totsuka, Nobuo; Bekki, Yoichiro; and Nabae, Motohiro, 5,486,243, Cl. 148-552.000.

Furukawa, Yukio, to Fujitsu Limited. Apparatus for reproducing received data. 5,487,070, Cl. 370-108.000.

Furutani, Kiyohiro; Yamauchi, Tadaaki; and Aoki, Makiko, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device having equalization signal generating circuit. 5,487,043, Cl. 365-203.000.

Fusbo, Yuichi; and Yajima, Yoshihiro, to Showa Denko Kabushiki Kaisha. Catalase from *Bacillus Subtilis* IAM 1026 (Ferm BP-4844). 5,486,467, Cl. 435-192.000.

Fuss, Werner: *See*—
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G. D. Searle & Co.: *See*—
Lee, Len F.; Penning, Thomas D.; and Kramer, Steven W., 5,486,534, Cl. 514-406.000.
Liang, Chi-Dean; McKearn, John P.; Farah, John M., Jr.; and Mueller, Richard A., 5,486,539, Cl. 514-521.000.

G.D Societa' Per Azioni: *See*—
Draghetti, Fiorenzo, 5,486,081, Cl. 414-225.000.

Gabhart, Thomas S., to Product Strategies, Inc. Hospital bed guard. 5,485,699, Cl. 49-394.000.

Gacsályi, István: *See*—
Bajnógel, Judit; Blaskó, Gábor; Budai, Zoltán; Schmidt, Éva; Egyed, András; Fekete, Márton; Gacsályi, István; Gyertyán, István; Mezei, Tibor; Reiter née Esses, Kalára; Simig, Gyula; Szemerédi, Katalin; and Szirt née Kiszelly, Enikő, 5,486,528, Cl. 514-331.000.

Gaetani, Joseph D.: *See*—
Loew, Ellen G.; and Gaetani, Joseph D., 5,486,003, Cl. 273-187.00R.

Gaffar, Abdul: *See*—
Norfleet, James; Carter, Willie J.; Frankel, Matthew J.; and Gaffar, Abdul, 5,486,350, Cl. 424-49.000.

Gaggar, Satish: *See*—
Noell, John L. W.; Gaggar, Satish; McCarty, George P.; and Miller, Kenneth, 5,486,407, Cl. 428-215.000.

Gagne, Daniel C.; and Pronk, Arie A. Bladed vehicle with load gripping arms. 5,486,085, Cl. 414-724.000.

Gaither, Ronald A.: *See*—

Foltz, Robert S.; and Gaither, Ronald A., 5,485,935, Cl. 216-65.000.

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Clementini, Luciano; Galambos, Adam F.; Lesca, Giuseppe; Spagnoli, Leonardo; Starrinic, Michael E.; and Ogale, Kumar, 5,486,419, Cl. 428-397.000.

Galand, Claude; and Lebizzay, Gerald, to International Business Machines Corporation. Network layer packet structure. 5,487,064, Cl. 370-60.000.

Gale, Albert W.: *See*—
Hemsley, John D. C.; Gale, Albert W.; and Schwalb, Adrian, 5,486,272, Cl. 204-105.00R.

Gallagher, John E.; and Gallagher, Terence J., to Total Register, Inc. Dual drive registration system. 5,486,254, Cl. 156-229.000.

Gallagher, Terence J.: *See*—
Gallagher, John E.; and Gallagher, Terence J., 5,486,254, Cl. 156-229.000.

Galland, Olivier: *See*—
Fournet-Fayard, Jacques; Galland, Olivier; Garin, Christophe; and Lucet, Alain, 5,486,174, Cl. 606-61.000.

Gallina, Luca: *See*—
Gorza, Roberto; Gallina, Luca; and Tessari, Pino, 5,485,688, Cl. 36-117.000.

Gamemax Corporation: *See*—
Chang, Yuan F., 5,485,907, Cl. 194-203.000.

Gananholm, Martin R.: *See*—
Capps, Stephen P.; and Gananholm, Martin R., 5,487,054, Cl. 368-115.000.

Gao, Fuquan: *See*—
Achter, Eugene K.; Klotzsch, Helmut W.; Thompson, Craig D.; Gao, Fuquan; and Bosworth, Jonathan E., 5,486,693, Cl. 250-223.00B.

Gardner, Frederick J.; Day, Michael J.; Brandon, Nigel P.; and Brownell, John B., to Rolls-Royce plc. Solid oxide fuel cell stack. 5,486,428, Cl. 429-19.000.

Gareis, Galen M., to Belden Wire & Cable Company. Shielded cable. 5,486,649, Cl. 174-36.000.

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Della-Cioppa, Guy R.; Garger, Stephen J., Jr.; Holtz, Richard B.; McCulloch, Michael J.; and Sverlow, Genadie G., 5,486,351, Cl. 424-59.000.

Garin, Christophe: *See*—
Fournet-Fayard, Jacques; Galland, Olivier; Garin, Christophe; and Lucet, Alain, 5,486,174, Cl. 606-61.000.

Garland, Robert B.: *See*—
Summers, James B., Jr.; Davidsen, Steven K.; Curtis, Michael L.; Heyman, H. Robin; Sheppard, George S.; Xu, Lisahong; Carrera, George M., Jr.; and Garland, Robert B., 5,486,525, Cl. 514-303.000.

Garmy, Michel; and Ravel, Bernard, to Compagnie Generale Des Etablissements Michelin - Michelin et Cie. Device for assembly of a tire casing and an annular tread member extended by centrifugation. 5,486,260, Cl. 156-406.200.

Gas Research Institute: *See*—
Bassett, William W.; Russ, Robert M.; and Webster, Thomas L., 5,485,953, Cl. 236-49.300.

Gates, Cynthia A.: *See*—
Weintraub, Philip M.; Gates, Cynthia A.; Angelastro, Michael R.; Curran, Timothy T.; and Johnston, J. O'Neal, 5,486,511, Cl. 514-178.000.

Gatlin, Larry W. Hydrogen sulfide converter. 5,486,605, Cl. 536-55.200.

Gatz, Stephen E.: *See*—
Stanford, Ralph F.; and Gatz, Stephen E., 5,486,288, Cl. 210-235.000.

Gavin, David F.: *See*—
Schmidt, Eckart W.; and Gavin, David F., 5,485,722, Cl. 60-219.000.

GBP Corporation: *See*—
Godfrey, Bruce T., 5,485,727, Cl. 60-572.000.

GDB Enterprises, Inc.: *See*—
Denove, Thomas F.; and Blowers, William L., 5,486,914, Cl. 356-221.000.

Gebr. Happich GmbH: *See*—
Lecorvaisier, René; and Buchheit, Christian, 5,486,033, Cl. 296-97.130.

Gehner, Andreas; Hess, Günther; Kück, Heinz; and Vogt, Holger, to Fraunhofer-Gesellschaft zur Forderung der Angewandten Forschung E.V. Illumination device using a pulsed laser source a Schlieren optical system and a matrix addressable surface light modulator for producing images with undifracted light. 5,486,851, Cl. 347-258.000.

Geick, Bernd: *See*—
Schmidt, Günther; Randel, Peter; Engels, Hans-Werner; and Geick, Bernd, 5,485,986, Cl. 266-280.000.

Geiner, Robert V.; and Jensen, David L., to International Business Machines Corporation. Method and system for global optimization of device allocation. 5,487,168, Cl. 395-650.000.

Gellings, Pieter E.: *See*—
Verduijn, Johannes P.; and Gellings, Pieter E., 5,486,348, Cl. 423-700.000.

Gemplus Card International: *See*—
Le Roux, Jean-Yves, 5,486,687, Cl. 235-382.000.

General Atomics: *See*—
Ohkawa, Tihiro, 5,486,337, Cl. 422-100.000.

General DataComm, Inc.: *See*—
Cole, Paul D., 5,486,825, Cl. 341-50.000.

General Electric Company: *See*—
Aleshin, Stephen, 5,486,676, Cl. 219-121.630.
Bella, Donald L.; Glynn, Christopher C.; and Humke, Brian J., 5,486,086, Cl. 415-9.000.
Borman, Willem F. H.; and Lin, Nan-I, 5,486,562, Cl. 524-451.000.
Castonguay, Roger N.; Rosen, James L.; and Zaffetti, Mark A., 5,486,667, Cl. 200-400.000.
Flood, Gary M.; Johnson, David M.; and Marek, Henry S., 5,486,137, Cl. 451-540.000.
Herd, Kenneth G., 5,485,730, Cl. 62-51.100.
Horas, Patrick J.; Balch, Richard A.; Elmore, David D.; and Legere, Joseph R., 5,486,755, Cl. 324-110.000.
Jernstrom, Nasa B.; and Wilson, Jeffrey N., 5,486,046, Cl. 312-408.000.
Konrad, Charles E.; and Boothe, Richard W., 5,486,748, Cl. 318-811.000.
Noell, John L. W.; Gaggar, Satish; McCarty, George P.; and Miller, Kenneth, 5,486,407, Cl. 428-215.000.
Reissmiller, Paul R.; and Branemann, George A., Jr., 5,486,997, Cl. 364-165.000.
Rhoda, James E.; Bradley, Thomas A.; and Mielke, Mark J., 5,486,095, Cl. 416-214.00A.
Schwabe, Robert J.; Eggleston, Michael R.; and Coffin, Louis F., Jr., 5,486,767, Cl. 324-715.000.
Wood, Jonathan M.; Hauer, Thomas A.; and Lippmeier, William C., 5,485,959, Cl. 239-265.410.

General Hospital Corporation, The: *See*—
Zapol, Warren M.; and Frostell, Claes, 5,485,827, Cl. 128-200.140.

General Motors Corporation: *See*—
Wong, Daniel K. C., 5,486,252, Cl. 156-212.000.

Genise, Thomas A., to Eaton Corporation. Method/system for determination of gross combined weight of vehicles equipped with electronic data links. 5,487,005, Cl. 364-424.100.

Genova, John R., to Springs Window Fashions Division, Inc. Window shade with break-away attachment of lift cords to bottom rail. 5,485,875, Cl. 160-168.100.

GenRad, Inc.: *See*—
Khazam, Moses; and Mastrocola, Aldo, 5,486,753, Cl. 324-72.500.

Gentle, Theresa E.; and Lutz, Michael A., to Dow Corning Corporation. Organosilicon compounds and low temperature curing organosiloxane compositions containing same. 5,486,565, Cl. 524-730.000.

Genus, Inc.: *See*—
O'Connor, John P.; and Smith, John W., 5,486,702, Cl. 250-492.210.

Geophysical Exploration & Development Corporation: *See*—
Cordsen, Andreas, 5,487,052, Cl. 367-56.000.

George, John B., to Thomson Consumer Electronics, Inc. Waveform correction circuit for dynamic focus amplifier. 5,486,741, Cl. 315-382.000.

Gerber Garmest Technology, Inc.: *See*—
Chaiken, Craig L., 5,487,011, Cl. 364-470.000.
Gerber, Heinz J., 5,486,389, Cl. 428-40.000.

Gerber, Heinz J., to Gerber Garmest Technology, Inc. Roll of tape with doubly adhesively faced pads. 5,486,389, Cl. 428-40.000.

Gerstenberg & Agger A/S: *See*—
Zeuthen, Klas, 5,485,880, Cl. 165-94.000.

Gesche, Roland: *See*—
Altekrüger, Burkhard; Gesche, Roland; Flachsel, Martin; and Aufreiter, Joachim, 5,485,802, Cl. 117-14.000.

Getting, Maryjane H.: *See*—
Sambrook, Joseph F.; Madison, Edwin L.; Goldsmith, Elizabeth J.; and Getting, Maryjane H., 5,486,602, Cl. 536-23.200.

Ghandour, Osman A., to Trustees of Columbia University, The. Laser etching of semiconductors. 5,486,264, Cl. 156-635.100.

Ghate, Ranjit: *See*—
McNamara, Robert P.; Saldinger, Alan; Cringle, Robert J.; Chu, Gigi C.; Sangameswara, Shanubhog G.; Vita, Peterpaul; Ouye, Michael M.; Stevens, David R. F.; Baranski, Celeste; Monsson, Cai U.; Murphy, Timothy P.; Murphy, Kevin T.; Ellis, Gary M.; and Ghate, Ranjit, 5,487,066, Cl. 370-85.200.

Ghezzi, Paolo; and Maurelli, Alfonso, to SGS-Thomson Microelectronics, S.r.l. Process for the manufacture of an integrated voltage limiter and stabilizer in flash EEPROM memory devices. 5,486,486, Cl. 437-43.000.

Giantonio, Anacleto; and Panzone, Gianbattista, to Gruppo Lepetit S.p.A. Teicoplanin recovery process. 5,486,465, Cl. 435-70.100.

Gibbons, James F.: *See*—
Gronet, Christian M.; and Gibbons, James F., 5,487,127, Cl. 392-416.000.

Gibbs, Ronnie D. Apparatus and methods for shielding the keel and/or bow of a watercraft. 5,485,801, Cl. 114-219.000.

Gibson, Gary A.: *See*—
Popescu, Valeri; Schultz, Merle A.; Gibson, Gary A.; Spracklen, John E.; and Lightner, Bruce D., 5,487,156, Cl. 395-375.000.

Gibson, Tommy W.: *See*—
Atkins, Richard S.; Gibson, Tommy W.; and Ransome, Philip P., 5,487,108, Cl. 379-355.000.

Giddings, Brandford E.: *See*—
Curatolo, Benedict S.; Li, George S.; and Giddings, Brandford E., 5,486,409, Cl. 428-221.000.

Gierulski, Alfred: *See*—
Horn, Dieter; Lueddecke, Erik; Gierulski, Alfred; Kroehl, Thomas; and Lorencak, Primoz, 5,486,904, Cl. 356-73.000.

Gilat, Alexander R.: *See*—
Hirshowitz, Bernard; Levy, Amnon; Gilat, Alexander R.; Rogel, Eitan; Stein, Jeffrey; and Borgia, Julian, 5,486,196, Cl. 606-218.000.

Gilbert, Douglas J.: *See*—
Randall, Martin; Campbell, Paul; and Gilbert, Douglas J., 5,486,844, Cl. 345-113.000.

Gilbert, Klay: *See*—
Creed, Kevin; and Gilbert, Klay, 5,485,976, Cl. 244-118.600.
Gilead Sciences, Inc.: *See*—
Buhr, Chris A., 5,486,603, Cl. 536-24.300.
Gilissen, Hermann P. J.: *See*—
Soes, Lucas; and Gilissen, Hermann P. J., 5,486,114, Cl. 439-62.000.
Gillette Company, The: *See*—
Callaghan, David T.; Phipps, Alan M.; and Provancal, Stephen J., 5,486,347, Cl. 423-623.000.
Gillette, Stephen J.: *See*—
McCay, Steve W.; Harshman, Keith A.; Gillette, Stephen J.; and Wentzel, Dale A., 5,485,989, Cl. 271-2.000.
Ginami, Giancarlo; Laurin, Enrico; Lucherini, Silvia; and Vajana, Bruno, to SGS-Thomson Microelectronics S.r.l. Method for adjusting the threshold of a read-only memory to achieve low capacitance and high breakdown voltage. 5,486,487, Cl. 437-45.000.
Gingras, Earl, to Gingras Separators Inc. Externally adjustable liquid interface for a centrifugal separator. 5,486,153, Cl. 494-57.000.
Gingras Separators Inc.: *See*—
Gingras, Earl, 5,486,153, Cl. 494-57.000.
Gingrich, Randall P.; Londa, Michelle; and Flood, John E., to Shell Oil Company. Polyketone polymers as nylon toughners. 5,486,594, Cl. 528-392.000.
Ginsburg, Robert. Method and apparatus for controlling a patient's body temperature by in situ blood temperature modification. 5,486,208, Cl. 607-106.000.
Giraldi, Roberto: *See*—
Balducci, Sergio; and Giraldi, Roberto, 5,485,648, Cl. 15-175.000.
Girardeau, James W., Jr., to Motorola, Inc. Method and apparatus for calculating a divider in a digital phase lock loop. 5,486,792, Cl. 331-10.000.
Girardeau, James W., Jr., to Motorola, Inc. Data processing system for hardware implementation of square operations and method therefor. 5,487,024, Cl. 364-753.000.
Girot, Pierre: *See*—
Boschetti, Egisto; Girot, Pierre; and Guerrier, Luc P., 5,486,293, Cl. 210-635.000.
Gist, Grant A.: *See*—
Thompson, Arthur H.; and Gist, Grant A., 5,486,764, Cl. 324-323.000.
Glacken, Michael W.: *See*—
Zygourakis, Kyriacos; Bednarczyk, John L.; McIntyre, Bradley W.; and Glacken, Michael W., 5,487,112, Cl. 382-6.000.
Glase, Shelly A.: *See*—
Downing, Dennis M.; Glase, Shelly A.; Johnson, Stephen J.; Wise, Lawrence D.; and Wright, Jonathan L., 5,486,517, Cl. 514-253.000.
Glaser, Helmut F., to Varta Batterie Aktiengesellschaft. Button cell. 5,486,433, Cl. 429-164.000.
Glaxo SpA: *See*—
Trist, David; Pentassuglia, Giorgio; Tranquillini, Maria E.; and Ursini, Antonella, 5,486,514, Cl. 514-221.000.
Glenn, Max C.: *See*—
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Glinatech, Inc.: *See*—
Durant, Graham J.; Khan, Amin M.; and Tedford, Clark E., 5,486,526, Cl. 514-319.000.
Glidden, John L., Sr. Wool purification. 5,486,211, Cl. 8-142.000.
Glock, Gaston. Laser aiming device. 5,485,695, Cl. 42-103.000.
Glombik, Heiner: *See*—
Enhsen, Alfons; Glombik, Heiner; Kramer, Werner; and Wess, Günther, 5,486,626, Cl. 552-521.000.
Glynn, Christopher C.: *See*—
Bella, Donald L.; Glynn, Christopher C.; and Humke, Brian J., 5,486,086, Cl. 415-9.000.
Gnade, Bruce E.; Pinizzotto, Russell F.; and Littler, Christopher L., to Texas Instruments Incorporated. Three-dimensional ferroelectric integrated circuit having insulation layer between memory layers. 5,487,031, Cl. 365-145.000.
Go, Shintetsu: *See*—
Kashizaki, Yoshio; Miyazaki, Hajime; Suzuki, Koichi; Go, Shintetsu; and Sato, Kazuma, 5,486,440, Cl. 430-62.000.
Goad, Sharon E. Door-mounted poster support. 5,485,694, Cl. 40-661.000.
Goddard, Franklin S. Pneumatic suspension system dampener. 5,486,017, Cl. 280-711.000.
Godfrey, Bruce T., to GBP Corporation. Fastener installation tool. 5,485,727, Cl. 60-572.000.
Godin, Gary; and Lambert, Philip, to Godin, Gary. Wheel assembly for a wheelchair, incorporating a change speed hub. 5,486,016, Cl. 280-250.100.
Goetz, Raymond: *See*—
Hesse, Philip W.; Goetz, Raymond; and Lenko, Daniel, 5,485,786, Cl. 102-202.500.
Goff, Gerald L.; Smith, Michael D.; and Conboy, Michael R., to Advanced Micro Devices, Inc. Boat test apparatus. 5,485,759, Cl. 73-865.900.
Goiffon, John J.: *See*—
Rademaker, Robert A.; Goiffon, John J.; Connell, Michael L.; and Olszewski, Walter K., 5,485,745, Cl. 73-151.000.
Golben, P. Mark: *See*—
Hanley, David J.; Huston, E. Lee; and Golben, P. Mark, 5,485,884, Cl. 169-19.000.
Gold, Philip: *See*—
Mumme, Charles W.; and Gold, Philip, 5,486,177, Cl. 606-79.000.
Goldcrown Machinery, Inc.: *See*—
Kilmer, Mark C., Sr., 5,486,130, Cl. 451-11.000.
Goldenberg, Willy: *See*—
Sterling, Jeff; Levy, Ruth; Veinberg, Alex; Goldenberg, Willy; Finberg, John; Youdim, Musa; and Gutman, Arieh, 5,486,541, Cl. 514-657.000.
Goldsmith, Elizabeth J.: *See*—
Sambrook, Joseph F.; Madison, Edwin L.; Goldsmith, Elizabeth J.; and Gething, Maryjane H., 5,486,602, Cl. 536-23.200.
Goldstar Co., Ltd.: *See*—
Choi, Jeong D.; Cheon, In K.; Song, Geun H.; and Park, Hee Y., 5,486,958, Cl. 360-85.000.
Kim, Dong-Hyeon, 5,485,777, Cl. 92-84.000.
Goldstar Electron Co., Ltd.: *See*—
Kim, Ho H., 5,486,842, Cl. 345-26.000.
Goldstein, Léou; and Bonnevie, Dominique, to Alcatel N.V. Method of manufacturing a semiconductor component, in particular a buried ridge laser. 5,486,489, Cl. 437-129.000.
Gonczy, Stephen T.: *See*—
Leung, Roger Y.-K.; and Gonczy, Stephen T., 5,486,250, Cl. 156-89.000.
Good Humor Corporation: *See*—
Holt, Christopher B.; and Telford, Julia H., 5,486,373, Cl. 426-565.000.
Goodine, Dennis: *See*—
Bourne, George; Davis, Randall W.; Duval, George; Goodine, Dennis; Lock, James E.; Ouellette, Gerry; Perry, Stanton B.; Wagner, Maria; and Whittaker, Gregory R., 5,486,193, Cl. 606-194.000.
Goodwin, Brent E.; Keller, Thomas P.; Makley, James A.; and Moore, Mark W., to Monarch Marking Systems, Inc. Labeler with adjustable roll mounting means. 5,486,259, Cl. 156-384.000.
Gorbell, Brian N.; Wozniczka, Beguslav M.; and Chow, Clarence Y., to Ballard Power Systems Inc. Internal fluid manifold assembly for an electrochemical fuel cell stack array. 5,486,430, Cl. 429-35.000.
Gordon, James N.; and Teng, Ganghui, to Polaroid Corporation. Protected reflection image. 5,486,397, Cl. 428-76.000.
Gordon, Julian; Hawkes, Richard; Niday, Evelyn; and Towbin, Harry, to Ciba-Geigy Corporation. Devices and kits for immunological analysis. 5,486,452, Cl. 435-5.000.
Gorza, Roberto; Gallina, Luca; and Tessari, Pino, to Nordica S.p.A. Lever, particularly for ski boots. 5,485,688, Cl. 36-117.000.
Gosteli, Jacques: *See*—
Griffiths, Gareth; Imwinkelried, René; and Gosteli, Jacques, 5,486,617, Cl. 548-333.500.
Goszczynski, Stefan: *See*—
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Goto, Hideji: *See*—
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Götschi, Erwin: *See*—
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Gottehrer, Terry R.: *See*—
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Gove, Robert J.: *See*—
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Graber, Wendy K. F.: *See*—
Samad, Tariq; Graber, Wendy K. F.; and Konar, Ahmet F., 5,486,996, Cl. 364-152.000.
Graebner, John E.: *See*—
Dautremont-Smith, William C.; Graebner, John E.; Jin, Sungho; and Katz, Avishay, 5,486,263, Cl. 216-33.000.
Graiver, Daniel: *See*—
Cabasso, Israel; and Graiver, Daniel, 5,486,590, Cl. 528-23.000.
Gralnick, Harvey R., to United States of America, Health and Human Services. Hybridomas and monoclonal antibodies that speifically bind to GPIB on platelets and inhibit the binding of thrombin to platelets. 5,486,361, Cl. 424-144.100.
Grande, Michael L.; Grushkin, Bernard; Young, Eugene F.; Lundy, Douglas A.; and Matalevich, Joseph R. E., to Xerox Corporation. Magnetic toner compositions with silica, strontium titanate and polyvinylidene fluoride. 5,486,443, Cl. 430-106.000.
Grant, Larry J.; Monnin, Raymond V.; and Scott, James W., to Owens-Corning Fiberglas Technology, Inc. Insulation assembly and method of making. 5,486,401, Cl. 428-125.000.
Grant, Marty J.; and Pinkerton, Steven J., to Emhart Glass Machinery Investments Inc. Shear mechanism for glass forming machine. 5,486,221, Cl. 65-163.000.
Grass America, Inc.: *See*—
Domenig, Georg, 5,485,656, Cl. 16-387.000.
Gray, Benjamin, to Sidekick Tools Inc. Steering drill bit while drilling a bore hole. 5,485,889, Cl. 175-61.000.
Gray, George W.; Lacey, David; Toyne, Kenneth J.; Scrowston, Richard M.; Shenouda, Ibrahim G.; Chan, Lawrence K. M.; Bradshaw, Madeline J.; Brimmell, Victoria; Constant, Jennifer; Raynes, Edward P.; Jackson, Adam; and Samra, Amarjit K., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Majesty's Government of the. Chiral liquid crystal compounds. 5,486,309, Cl. 252-299.600.
Gray, John M.: *See*—
Winters, John R.; Gray, John M.; and Tenney, Joel D., 5,486,344, Cl. 423-477.000.

Great Lakes Chemical Italia S.r.l.: *See*—
Broussard, Fabio; Adovasio, Mauro; Callierotti, Corrado; Taroni, Gianbattista; and Roncalli, José, 5,486,613, Cl. 546-181.000.
Green, David T., to United States Surgical Corporation. Safety trocar. 5,486,190, Cl. 606-184.000.
Green, Edward J., to Reese Enterprises, Inc. Roll-up floor mat. 5,486,392, Cl. 428-54.000.
Green, Geoffrey C., to British Aerospace PLC. Cutting tools of composite construction. 5,486,072, Cl. 407-32.000.
Green, John A. Holding tank for waste. 5,485,637, Cl. 4-483.000.
Green, Lawrence D.; and Pratt, Ronald L., to Deere & Company. Trailing cart for agricultural toolbar. 5,485,797, Cl. 111-200.000.
Green, Paul E., Jr.: *See*—
Choy, Michael M.; Green, Paul E., Jr.; Hall, William E.; Janniello, Frank J.; Kravitz, Jeff K.; Liu, Karen; Ramaswami, Rajiv; and Tong, Franklin F., 5,487,120, Cl. 385-24.000.
Greenland, Alan R.: *See*—
Borrego, Diego A.; Greenland, Alan R.; Allison, Charles R.; Bordo, Robert A.; and Stringfellow, Steven A., 5,486,840, Cl. 345-7.000.
Greenstein, Michael; Melton, Hewlett B., Jr.; and Yeung, King-Wah W., to Hewlett Packard Company. Acoustic arrays and methods for sensing fluid flow. 5,485,843, Cl. 128-661.090.
Greenstein, Michael: *See*—
Verdonk, Edward; Greenstein, Michael; Melton, Hewlett E., Jr.; and Seyed-Bolorforosh, Mir S., 5,485,845, Cl. 128-662.060.
Greenwald, James E. Method for treatment of acute renal failure. 5,486,519, Cl. 514-258.000.
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Hanson, Charles M.; Dudley, Dana; and Robinson, James E., to Texas Instruments Incorporated. Thermal imaging system with integrated thermal chopper. 5,486,698, Cl. 250-332.000.
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Harris, Randall L., to Riverwood International Corporation. Wrap-around carrier with article heel lock. 5,485,915, Cl. 206-147.000.
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Hay, Andrew G., to Stamet, Inc. Apparatus with improved inlet and method for transporting and metering particulate material. 5,485,909, Cl. 198-642.000.
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Haynes, Don A., to Haynes-Miller, Inc. Protective shield for hypodermic syringe. 5,486,163, Cl. 604-192.000.
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Haynes, Ronald L., to Vickers, Incorporated. Hydraulic dual solenoid directional control valve with manual override lock-out linkage. 5,485,869, Cl. 137-625.650.
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He, Thomas: *See—*
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Imai, Hitoshi; Sugiura, Muneharu; and Hoashi, Katsutoshi, 5,486,948, Cl. 359-462.000.

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Takeuchi, Masamitsu; Ishihama, Kazuyoshi; and Ikei, Kazunori, 5,485,864, Cl. 137-118.000.

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Iketani, Naoyasu: *See—*
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Imai, Hitoshi; Sugiura, Muneharu; and Hoashi, Katsutoshi, to Canon Hanbai Kabushiki Kaisha; Canon Kabushiki Kaisha; and Ikegami Tsushinki Co., Ltd. Stereo image forming apparatus having a light deflection member in each optical path. 5,486,948, Cl. 359-462.000.

Imai, Tadashi: *See—*
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Adachi, Masakazu; and Imao, Kouichi, 5,486,331, Cl. 264-344.000.

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Mandanis, Georges, 5,485,887, Cl. 173-17.000.

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Fey, George T., 5,486,346, Cl. 423-594.000.

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Morehouse, James H.; Furay, David M.; Volk, Steven B.; Utenick, Michael R.; Dunckley, James A.; Blagaila, John H.; Hopper, James F.; and Klein, Thomas A., 5,486,964, Cl. 360-105.000.

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Keeney, Stephen N.; and Atwood, Gregory E., 5,487,033, Cl. 365-185.190.
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Partovi, Hamid; and Draper, Donald A., 5,487,025, Cl. 364-788.000.

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Ackley, H. Sprague, 5,486,689, Cl. 235-463.000.

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Amelina, Ian R.; Mooney, David M.; and Stoodley, Kevin A., 5,487,158, Cl. 395-375.000.
Bass, Brian M.; Ku, Edward H.; Lin, Bou-Chung; and Sanaye, Simin H., 5,487,170, Cl. 395-732.000.
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Choy, Michael M.; Green, Paul E., Jr.; Hall, William E.; Janniello, Frank J.; Kravitz, Jeff K.; Liu, Karen; Ramaswami, Rajiv; and Tong, Franklin F., 5,487,120, Cl. 385-24.000.

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Finney, Damon W.; and Rayfield, Michael J., 5,487,092, Cl. 375-354.000.
Galand, Claude; and Lebizay, Gerald, 5,487,064, Cl. 370-60.000.
Geiner, Robert V.; and Jensen, David L., 5,487,168, Cl. 395-650.000.
Hassner, Martin A.; Lang, Luke C. K.; Ouchi, Norman K.; and Schwiegelshohn, Uwe, 5,487,077, Cl. 371-40.100.
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Kirchhofer, Richard; and Wagar, Bruce A., 5,487,164, Cl. 395-600.000.
Knight, Stephen E.; Luce, Stephen E.; and McDevitt, Thomas L., 5,486,267, Cl. 156-659.110.
Lee, Hin P. E.; and Werner, Douglas J., 5,486,968, Cl. 360-126.000.
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Irlbeck, Robert D.: *See—*
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ISCAR Ltd.: *See—*
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Ishibashi, Yoshiharu: *See—*
Aida, Satoshi; Shibata, Mariko; Fujimoto, Katsuhiko; Ishibashi, Yoshiharu; Suzuki, Takuji; Sato, Kozo; and Itoh, Ayao, 5,485,839, Cl. 128-653.100.

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Ishikura, Yoshikiyo: *See—*
Akima, Hideo; Ishikura, Yoshikiyo; and Kishi, Takaaki, 5,485,901, Cl. 188-164.000.

Ishill, Yoshinari: *See—*
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Ishitaka, Yoshihiko; Sato, Yumiko; Abe, Munemitsu; Sasaki, Yorihiko; Kano, Mitsuru; Sato, Arao; and Sugawara, Kiyomi, to Alps Electric Co., Ltd. Alignment layer for liquid crystal element and method of producing same. 5,486,403, Cl. 428-167.000.

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Ishizaki, Akira: *See—*
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Gnade, Bruce E.; Pinizzotto, Russell F.; and Littler, Christopher L., 5,487,031, Cl. 365-145.000.

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Thorn, Richard P., 5,486,056, Cl. 403-322.000.

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McGinness, Edward A.; and McHone, Gary, to Harvard Corporation. Fluid filter collector with opposed ribs. 5,486,290, Cl. 210-323.200.

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McKearn, John P.: *See*—
Liang, Chi-Dean; McKearn, John P.; Farah, John M., Jr.; and Mueller, Richard A., 5,486,539, Cl. 514-521.000.

McKeigue, Kevin; and Krishnamurthy, Ramachandran, to BOC Group, Inc., The. Liquid-vapor contact columns. 5,486,318, Cl. 261-112.200.

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de Boer, Rudolf; Kramer, Roland K.; and McKernan, Ronald W., 5,486,368, Cl. 426-41.000.

McKrell, Richard L.: *See*—
Albert, Kevin F.; Doucet, Louis J.; and McKrell, Richard L., 5,485,992, Cl. 271-299.000.

McMillan, Larry D.: *See*—
Mihara, Takashi; Watanabe, Hitoshi; Yoshimori, Hiroyuki; Paz de Araujo, Carlos A.; and McMillan, Larry D., 5,487,032, Cl. 365-145.000.

McMills, Corey; Mattis, John; and Fremgen, Dieter, to Raychem Corporation. Coaxial cable connection protection system with multiple chambered, flexible-webbed shroud. 5,486,120, Cl. 439-521.000.

McNamara, Robert P.; Saldinger, Alan; Cringle, Robert J.; Cau, Gigi C.; Sangameswara, Shanubhog G.; Vita, Peterpaul; Onye, Michael M.; Stevens, David R. F.; Baranski, Celeste; Monsson, Cai U.; Murphy, Timothy P.; Murphy, Kevin T.; Ellis, Gary M.; and Ghate, Ranjit, to First Pacific Networks, Inc. Distributed intelligence network using time and frequency multiplexing. 5,487,066, Cl. 370-85.200.

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Madison, Dennis S., 5,485,741, Cl. 73-4.00R.

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Hirshowitz, Bernard; Levy, Amnon; Gilat, Alexander R.; Rogel, Eitan; Stein, Jeffrey; and Borgia, Julian, 5,486,196, Cl. 606-218.000.

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Burnham, Jeffrey C.; Hageage, George J.; Jamburd-Sweet, Douglas; and Hendricks, Judy, 5,486,459, Cl. 435-31.000.

Meditech, Ltd.: *See*—
Dunn, Michael, 5,486,506, Cl. 514-26.000.

Medtronic, Inc.: *See*—
Erickson, Donald J., 5,485,851, Cl. 128-716.000.
Kelm, Roger W.; and Herting, Vernon L., 5,486,215, Cl. 29-623.100.
Lindemans, Fredric W., 5,486,200, Cl. 607-5.000.

Meiler, Werner; and Deinhardt, Günther, to Siemens Aktiengeiselllschaft. Plug and socket connection system for an electronic unit. 5,486,116, Cl. 439-347.000.

Meiring, David P.; and Maggert, Lynn R., to Electra Form, Inc. Blow mold clamp assembly. 5,486,103, Cl. 425-541.000.

Meise, William H.: *See*—
Walinsky, Paul; and Meise, William H., 5,486,192, Cl. 606-194.000.

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Olson, Todd; Meiser, Dan; Steed, Gary; Huffman, Eric; Otten, Matthew; VanOverloop, Ronald; Powell, Darrel; Knodell, Thomas; Rhad, Edward; Chen, Ralph; and Cook, Robert, 5,485,947, Cl. 227-176.100.

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Melen, Roger D., to Canon Inc. Sequential extraction of strokes from a stroke based symbol apparatus and method. 5,487,118, Cl. 382-202.000.

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Greenstein, Michael; Melton, Hewlett E., Jr.; and Yeung, King-Wah W., 5,485,843, Cl. 128-661.090.
Verdonk, Edward; Greenstein, Michael; Melton, Hewlett E., Jr.; and Seyed-Bolorforosh, Mir S., 5,485,845, Cl. 128-662.060.

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Menzel, Jill: *See*—
Kerr, Richard C.; Damewood, John R.; Menzel, Jill; Thottathil, Paul; and Sanduja, Mohan L., 5,486,210, Cl. 8-115.660.

Merck & Co., Inc.: *See*—
Darke, Paul L.; Hall, Dawn L.; and Kuo, Lawrence C., 5,486,470, Cl. 435-219.000.

Merger, Roland: *See*—
Reinhardt, Robert; Reichelt, Helmut; and Merger, Roland, 5,486,609, Cl. 544-173.000.

Merrell Dow Pharmaceuticals Inc.: *See*—
Warshawsky, Alan M.; and Flynn, Gary A., 5,486,513, Cl. 514-214.000.
Weintraub, Philip M.; Gates, Cynthia A.; Angelastro, Michael R.; Curran, Timothy T.; and Johnston, J. O'Neal, 5,486,511, Cl. 514-178.000.

Merritt, Robert L. Hairbrush with electronic stroke counter. 5,485,646, Cl. 15-105.000.

Merving, Hans A. K. Tree treatment capsule with radially expanding shank portion. 5,485,698, Cl. 47-57.500.

Message, Olivier: *See*—
Beagley, Thomas; Kapaan, Hendrikus J.; Berryman, Leslie; and Message, Olivier, 5,486,053, Cl. 384-513.000.

Methode Electronics, Inc.: *See*—
Wandler, David, 5,486,124, Cl. 439-843.000.

Mettler-Toledo AG: *See*—
Philipp, Florian; Hautle, Alfred; Nuesch, Reto; and Straub, Beat, 5,485,684, Cl. 34-226.000.

Meur, Jean-Pierre, to Neopost Industrie. Postage meter including a safety locking circuit. 5,486,973, Cl. 361-170.000.

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Mezei, Tibor: *See*—
Bajnógel, Judit; Blaskó, Gábor; Budai, Zoltán; Schmidt, Éva; Egyed, András; Fekete, Márton; Gacsályi, István; Gyertyán, István; Mezei, Tibor; Reiter née Esses, Kalára; Simig, Gyula; Szemerédi, Katalin; and Szirt née Kiszelly, Enikő, 5,486,528, Cl. 514-331.000.

Miceli, Gary L. Beach brush. 5,485,649, Cl. 15-184.000.

Michaelson, Wayne A.: *See*—
Byers, Larry L.; De Subijana, Joseba M.; and Michaelson, Wayne A., 5,487,159, Cl. 395-375.000.

Michal, Ronald J.; Steele, James R.; and Jones, Mark E., to Litton Systems, Inc. Fiber depolarizer using heated fiber coil and fusion splicer and two polarization preserving fibers and method. 5,486,916, Cl. 356-345.000.

Michigan Critical Care Consultants, Inc.: *See*—
Montoya, Jean P., 5,486,099, Cl. 417-477.130.

MicroE: *See*—
Mitchell, Donald K.; and Thorburn, William G., 5,486,923, Cl. 356-356.000.

Micron Communications, Inc.: *See*—
Tuttle, John R.; and Tuttle, Mark E., 5,486,431, Cl. 429-66.000.

Micron Display Technology, Inc.: *See*—
Cathey, David A.; Hofmann, James J.; Dynka, Danny; and Stansbury, Darryl M., 5,486,126, Cl. 445-25.000.

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Sandhu, Gurtej S.; and Doan, Trung T., 5,486,129, Cl. 451-5.000.

Middleman, Lee M.; Pyka, Walter R.; Buhler, Michael; Poncet, Philippe; Van Dyk, Karl; and Jervis, James E., to Raychem Corporation. Device or apparatus for manipulating matter. 5,486,183, Cl. 606-127.000.

Mielke, Mark J.: *See*—
Rhoda, James E.; Bradley, Thomas A.; and Mielke, Mark J., 5,486,095, Cl. 416-214.00A.

Miesak, Edward J., to University of Central Florida. Optical signal coupling apparatus. 5,487,121, Cl. 385-39.000.

Mihara, Takashi; Watanabe, Hitoshi; Yoshimori, Hiroyuki; Paz de Araujo, Carlos A.; and McMillan, Larry D., to Symetrix Corporation; and Olympus Optical Co., Ltd. Method and apparatus for reduced fatigue in ferroelectric memory elements. 5,487,032, Cl. 365-145.000.

Mikami, Fumiyuki, to Canon Kabushiki Kaisha. Coding/decoding method and apparatus therefor. 5,486,828, Cl. 341-59.000.

Mikron S. A. Agno: *See*—
Bergmann, Klaus; Schwab, Jacques; and Frauenfelder, Martin, 5,486,151, Cl. 483-1.000.

Miles Inc.: *See*—
Hanseler, Ralph S.; and Healy, Michael D., 5,486,745, Cl. 318-561.000.

Milius, David J.: *See*—
Weltz, Richard; and Milius, David J., 5,487,088, Cl. 315-276.000.

Millan, Mark: *See*—
Cordi, Alex; Lacoste, Jean-Michel; Laubie, Michel; Verbeuren, Tony; Descombes, Jean-Jacques; and Millan, Mark, 5,486,532, Cl. 514-374.000.

Miller, Alan L.: *See*—
Watson, Will; Miller, Alan L.; Sundquist, Drew A.; Simpson, Roger T.; Ducklow, Diane K.; Beckerman, Joseph W.; and Showalter, Dan J., 5,485,894, Cl. 180-248.000.

Miller, Jack V. Parabolic fiber optic luminaire. 5,486,984, Cl. 362-32.000.

Miller, Kenneth: *See*—
Noell, John L. W.; Gaggar, Satish; McCarty, George P.; and Miller, Kenneth, 5,486,407, Cl. 428-215.000.

Miller, Lee S. Compact microwave antenna suitable for printed-circuit fabrication. 5,486,837, Cl. 343-780.000.

Miller, Mark S.: *See*—
Martin, Robert W.; Miller, Mark S.; and Surber, Kevin J., 5,486,372, Cl. 426-565.000.

Miller, Richard E.; Couch, Charlene R.; and Krieger, Cheryl D.., to Binney & Smith Inc. Washable color changing compositions. 5,486,228, Cl. 106-22.00B.

Miller, Roy R.; Clark, Brian K.; and Austin, Fred M., to Bulk Handling Systems, Inc. System and method for separating recycled debris. 5,485,925, Cl. 209-615.000.

Miller, Vernon R., to Whitaker Corporation, The. Electrical connector assembly. 5,486,121, Cl. 439-652.000.

Miller, Wayne D.: *See*—
Freitas, Michael W.; and Miller, Wayne D., 5,486,185, Cl. 606-142.000.

Milligan, Charles A.: *See*—
Dodt, William C.; Gottehrer, Terry R.; and Milligan, Charles A., 5,487,171, Cl. 395-840.000.

Milliken Research Corporation: *See*—
Bylund, Don M.; Willauer, Howard C., Jr.; and Reynolds, James R., 5,486,385, Cl. 428-17.000.

Min, Kyungseol: *See*—
Kim, Heejo; Leem, Jongyong; Choi, Bongrak; Lee, Kyungsang; and Min, Kyungseol, 5,486,726, Cl. 307-120.000.

Mine, Katsutoshi; Nakamura, Takashi; and Sasaki, Motoshi, to Dow Corning Toray Silicone Company, Ltd. High purity polyhydrogen silseaquioxane resin for electronic coatings. 5,486,564, Cl. 524-588.000.

Minebea Co., Ltd.: *See*—
Nagata, Toshihiko; Sano, Hiroshi; Yamawaki, Takayuki; and Matsushita, Kunitake, 5,486,054, Cl. 384-610.000.

Miner, Philip E.: *See*—
Faryniarz, Joseph R.; and Miner, Philip E., 5,486,305, Cl. 252-162.000.

Ministry of International Trade & Industry: *See*—
Hayashi, Yutaka; Sato, Masaaki; and Maeyashiki, Yoshiki, 5,486,709, Cl. 257-110.000.

Minnesota Mining and Manufacturing Company: *See*—
Coleman, Patrick L.; Heilmann, Steven M.; Kangas, Steven L.; Rasmussen, Jerald K.; Rolando, Richard J.; and Stahl, Julie B., 5,486,358, Cl. 424-78.230.
Ford, Jeffrey E.; Chu, Ellen Y.; and Rude, Harold E., 5,486,219, Cl. 51-298.000.
Hansen, John C.; and Vogel, Herward A., 5,486,271, Cl. 204-59.00F.
Koskenmaki, David C.; and Calhoun, Clyde D., 5,486,427, Cl. 428-546.000.
Lasenby, Kyle D.; and Peecher, Barry S., 5,485,918, Cl. 206-372.000.
Smith, David P. H.; Leonard, Mark T.; and Swan, David W., 5,486,857, Cl. 347-224.000.
Vacca, Alberto; and Barletta, Paolo, 5,486,451, Cl. 430-569.000.

Minney, Jack L.: *See*—
Komarek, James A.; Padgett, Clarence W.; Tanner, Scott B.; Kojima, Shin-ichi; Minney, Jack L.; Oishi, Motohiro; Fukumura, Keiji; and Nakanishi, H., 5,487,038, Cl. 365-191.000.

Minolta Camera Kabushiki Kaisha: *See*—
Shintani, Dai, 5,486,889, Cl. 354-202.000.

Minolta Co., Ltd.: *See*—
Kato, Takeshi, 5,485,990, Cl. 271-9.080.
Niikawa, Tetsuji; Nakamura, Hironu; Naiki, Toshio; and Kohsaka, Jun, 5,486,954, Cl. 359-818.000.

Mints, William H.: *See*—
Joye, Donald D.; Mints, William H.; Clarke, John R.; and Wechgelaer, Peter, 5,485,834, Cl. 128-205.130.

Misaizu, Kouei; Honda, Shoichiro; and Ohnishi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Nyquist filter for digital modulation. 5,487,089, Cl. 375-296.000.

Mishra, Anupama; and Davis, Robert A., to Uniroyal Chemical Company, Inc.; and Uniroyal Chemical Ltd./Ltee. Fungicidal substituted azole derivatives. 5,486,533, Cl. 514-383.000.

Misner, Michael O.: *See*—
Laabs, Timothy P.; Misner, Michael O.; Schutz, Richard H.; and Spencer, Elbert M., 5,485,735, Cl. 70-358.000.

Misselyn, Anne-Marie; Mahieu, Marianne; and Erilli, Rita, to Colgate-Palmolive Co. Liquid cleaning compositions with grease release agent. 5,486,307, Cl. 252-174.240.

Misumi, Masaki: *See*—
Shinada, Tsunetoshi; Wada, Katsuo; Inoue, Haruo; Misumi, Masaki; and Saito, Akira, 5,486,543, Cl. 521-149.000.

Mitake, Haruko: *See*—
Takahashi, Kimikazu; Mitake, Haruko; and Fujimura, Shigeru, 5,487,144, Cl. 395-161.000.

Mitchell, Donald K.; and Thorburn, William G., to MicroE. Apparatus for detecting relative movement wherein a detecting means is positioned in the region of natural interference. 5,486,923, Cl. 356-356.000.

Mitchell, James D.; Alvarez, Vincent E.; Carty, Daniel T.; and Latham, James R., to Clorox Company, The. Cleaning through perhydrolysis conducted in dense fluid medium. 5,486,212, Cl. 8-142.000.

Mitchell, Lance S.; Nordhauser, Mary Ann; and Willis, Justin M., to Western Mining Corporation Limited. Pigment extenders. 5,486,233, Cl. 106-416.000.

Mitchnick, Mark; and O'Lenick, Anthony J., Jr., to Siltech Inc.; and Sunsmart Inc. Silicone polymers for the modification of zinc oxide. 5,486,631, Cl. 556-10.000.

Mitsubishi Chemical Corporation: *See*—
Fujita, Takashi; and Sugano, Toshihiko, 5,486,572, Cl. 525-247.000.
Ito, Michio; Sugawa, Satoshi; and Yanagida, Atsushi, 5,486,479, Cl. 436-533.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Arima, Hideaki, 5,486,712, Cl. 257-296.000.
Furutani, Kiyohiro; Yamauchi, Tadaaki; and Aoki, Makiko, 5,487,043, Cl. 365-203.000.
Hatakenaka, Makoto; Sakurai, Haruo; and Nagano, Hideo, 5,487,097, Cl. 377-20.000.
Igarashi, Osamu; Naitou, Akira; Tougane, Hikohiro; Tsutsumi, Hironobu; and Kudou, Tosihisa, 5,486,803, Cl. 336-92.000.
Kakimoto, Syoichi, 5,486,490, Cl. 437-129.000.
Kitano, Toshiaki, 5,486,710, Cl. 257-192.000.
Kodama, Masafumi, 5,486,955, Cl. 360-10.300.
Kokubo, Nobuyuki; and Ikeda, Kazuya, 5,486,717, Cl. 257-385.000.
Kondou, Katsuhiko, 5,485,824, Cl. 123-520.000.
Maekawa, Hitoshi, 5,487,099, Cl. 379-59.000.
Mizugaki, Shigeo, 5,487,157, Cl. 395-375.000.

Shimizu, Takeshi; Taruya, Masaaki; Murata, Shigemi; Koiwa, Mitsuru; and Maekawa, Toshio, 5,485,825, Cl. 123-634.000.
Wada, Tomohisa, 5,487,041, Cl. 365-200.000.

Mitsubishi Electric Industrial Co., Ltd.: *See*—
Takahashi, Masanori; Nagano, Tadashi; Mori, Hideko; and Kiyono, Masaki, 5,487,000, Cl. 364-419.080.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Suzuki, Hidekazu; Harara, Mitsuhiko; and Tanaka, Tadao, 5,487,007, Cl. 364-424.050.

Mitsubishi Materials Corporation: *See*—
Miyata, Hiroshi; Chiba, Yoshio; and Noguchi, Osami, 5,486,671, Cl. 219-76.140.
Nakamura, Shinichi; and Kubota, Takashi, 5,486,075, Cl. 408-230.000.
Nakayama, Ryoji; Takeshita, Takuo; and Ishill, Yoshinari, 5,486,239, Cl. 148-101.000.
Nishihara, Akira; Nakamura, Akihiro; and Arakawa, Shigehiro, 5,486,420, Cl. 428-405.000.

Mitsubishi Semiconductor America, Inc.: *See*—
Blankenship, Dennis R., 5,486,785, Cl. 327-306.000.

Mitsui Toatsu Chemicals, Incorporated: *See*—
Mizukuki, Tadahiko; Yabuuchi, Kouichi; Murakami, Shinichi; Sasakawa, Tomoyoshi; Shizuka, Kouhei; Kitagawa, Nobuhisa; and Hirose, Sumio, 5,486,396, Cl. 428-64.200.
Shinada, Tsunetoshi; Wada, Katsuo; Inoue, Haruo; Misumi, Masaki; and Saito, Akira, 5,486,543, Cl. 521-149.000.

Mitzlaff, James E.: *See*—
Palandech, Robert L.; Bradley, Wayne H.; Opas, George F.; and Mitzlaff, James E., 5,486,789, Cl. 330-149.000.

Miura, Yasushi; Moriguchi, Haruhiko; Murayama, Yasushi; and Tanaami, Hideyuki, to Canon Kabushiki Kaisha. Thermal recording device with heat exchange. 5,486,849, Cl. 347-18.000.

Miwa, Tadashi: *See*—
Fujii, Yozo; Moriguchi, Hiroyuki; Ikunami, Yoshikazu; Matsunawa, Masahiko; Tamura, Akihiko; Yasuda, Kazuo; Miwa, Tadashi; Horiuchi, Tatsumi; Kishimoto, Tadao; Fujimaki, Yoshihide; Takagiwa, Hiroyuki; and Tamura, Takashi, 5,486,898, Cl. 355-200.000.

Miyamoto, Masahiro: *See*—
Shibata, Kenichiro; Hatta, Toshiyuki; Matsuyama, Fumio; Miyamoto, Masahiro; Okui, Manabu; and Nishi, Masaya, 5,485,950, Cl. 228-104.000.

Miyamoto, Ryosuke; Sekita, Makoto; and Takeda, Shohei, to Canon Kabushiki Kaisha. Electronic camera with dual exposure and selective recording. 5,486,861, Cl. 348-362.000.

Miyamoto, Takeshi; Okumura, Kouji; and Suzaki, Motohiro, to Sanyo Electric Co., Ltd. Fixing unit having heating roller and pressure roller. 5,486,908, Cl. 355-290.000.

Miyamoto, Tetsuya; Takahashi, Miyao; Fujisaki, Takahiko; Harada, Naoki; Kayane, Yutaka; and Omura, Takashi, to Sumitomo Chemical Company, Limited. Dioxazine blue dye compound having vinylsulfone type fiber reactive groups. 5,486,607, Cl. 544-76.000.

Miyasaka, Masayuka: *See*—
Ward, Peter A.; Miyasaka, Masayuka; and Suzuki, Yasuo, 5,486,536, Cl. 514-460.000.

Miyata, Hiroshi; Chiba, Yoshio; and Noguchi, Osami, to Mitsubishi Materials Corporation. Hard facing apparatus for applying hard facing to valves. 5,486,671, Cl. 219-76.140.

Miyazaki, Hajime: *See*—
Kashizaki, Yoshio; Miyazaki, Hajime; Suzuki, Koichi; Go, Shinnetsu; and Sato, Kazuma, 5,486,440, Cl. 430-62.000.

Miyazaki, Kyoichi: *See*—
Tsuji, Toshihiko; Takeuchi, Seiji; Miyazaki, Kyoichi; Yoshii, Minoru; Nose, Noriyuki; and Mori, Tetsuzo, 5,486,919, Cl. 356-349.000.

Miyazaki, Sho, to Sumitomo Wiring Systems, Ltd. Connector terminal. 5,486,123, Cl. 439-825.000.

Mizugaki, Shigeo, to Mitsubishi Denki Kabushiki Kaisha. Microprogrammed microcomputer with high-speed interrupt for DRAM refresh. 5,487,157, Cl. 395-375.000.

Mizukami, Shigeto: *See*—
Kawaguchi, Takayuki; Mizukami, Shigeto; Nozawa, Yasumitsu; and Nakao, Kouji, 5,487,044, Cl. 365-203.000.

Mizukuki, Tadahiko; Yabuuchi, Kouichi; Murakami, Shinichi; Sasakawa, Tomoyoshi; Shizuka, Kouhei; Kitagawa, Nobuhisa; and Hirose, Sumio, to Mitsui Toatsu Chemicals, Incorporated. Optical recording medium and production thereof. 5,486,396, Cl. 428-64.200.

Mizutani, Hideki: *See*—
Kimura, Kazuya; Ito, Masafumi; Mizutani, Hideki; Makino, Yoshihiro; Hirota, Suguru; Ozeki, Taro; Kato, Keiichi; and Kayukawa, Hiroaki, 5,486,098, Cl. 417-222.200.

Mizutani, Hidemasa: *See*—
Saika, Toshihiro; Mizutani, Hidemasa; Kaifu, Noriyuki; and Kameshima, Toshio, 5,486,738, Cl. 315-169.300.

Mnich, Jason G., to Rohr, Inc. Method for anodizing aluminum and product produced. 5,486,283, Cl. 205-174.000.

Moake, Gordon L.: *See*—
Schultz, Ward E.; and Moake, Gordon L., 5,486,695, Cl. 250-261.000.

Mobil Oil Corporation: *See*—
Abramo, Guy P.; Blain, David A.; and Cardis, Angeline B., 5,486,301, Cl. 252-51.50A.
Burns, Donald J.; and Nahmias, A. Michael, 5,486,390, Cl. 428-40.000.
Degnan, Thomas F.; Helton, Terry E.; and Lissy, Daria N., 5,486,284, Cl. 208-120.000.

McGee, Dennis E.; and Touhsaent, Robert E., 5,486,426, Cl. 428-116.000.
Peterson, Brian K.; and Jackson, Andrew, 5,485,895, Cl. 184-6.220.

Mochel, Virgil D.: *See*—
Stone, W. Ross; Palmer, Robert L.; Mochel, Virgil D.; and Karpinski, Robert P., 5,486,319, Cl. 264-406.000.

Moeller Products, Inc.: *See*—
Hitchcock, Robert S., 5,485,681, Cl. 33-722.000.

Mogi, Fumio, to Fuji Photo Film Co., Ltd. System for controlling the temperatures of processing solutions in photosensitive material processors. 5,486,890, Cl. 354-299.000.

Mohmand, Shakar Z. Decorative cards. 5,486,897, Cl. 355-132.000.

Moireau, Patrick: *See*—
Johnson, Timothy; and Moireau, Patrick, 5,486,416, Cl. 428-357.000.

Mokaya, Robert: *See*—
Davies, Mary E.; Whittle, Mavis E.; Jones, William; and Mokaya, Robert, 5,486,499, Cl. 502-81.000.

Molex Incorporated: *See*—
Chang, Wei-Sun, 5,486,117, Cl. 439-357.000.
Colleran, Stephen A.; Pawlicki, Jeffrey J.; and Higgins, John O., Jr., 5,486,118, Cl. 439-374.000.

Molitor, Mark R.; and Robnett, James T., to Siemens Automotive Corporation. Lost motion actuator with damping transition. 5,485,813, Cl. 123-90.120.

Molnlycke AB: *See*—
Runeman, Bo; and Rönnberg, Peter, 5,486,168, Cl. 604-385.100.
Widlund, Urban; and Haansson, Roy, 5,486,273, Cl. 264-154.000.

Moltech Invent S.A.: *See*—
Manganiello, Fausto; Duruz, Jean-Jacques; and Bello, Vittorio, 5,486,278, Cl. 204-243.00R.

Momany, Frank A.: *See*—
Bowers, Cyril Y.; Cody, Wayne L.; Hubbs, John C.; Foster, Charles H.; and Momany, Frank A., 5,486,505, Cl. 514-16.000.

Monarch Marking Systems, Inc.: *See*—
Goodwin, Brent E.; Keller, Thomas P.; Makley, James A.; and Moore, Mark W., 5,486,259, Cl. 156-384.000.

Moncrief, Frank, to Riverwood International Corporation. Method and apparatus for inserting partitions into article groups. 5,485,713, Cl. 53-445.000.

Monn, James A., to Eli Lilly and Company. Intermediates for the synthesis of kainic acid. 5,486,620, Cl. 548-515.000.

Monnin, Raymond V.: *See*—
Grant, Larry J.; Mounin, Raymond V.; and Scott, James W., 5,486,401, Cl. 428-125.000.

Monsanto Company: *See*—
Griffith, Edward J.; and Ngo, Toan M., 5,486,232, Cl. 106-286.500.
Phillion, Dennis; Wong, Sai C.; and Shortt, Barry, 5,486,621, Cl. 549-4.000.

Monsson, Cai U.: *See*—
McNamara, Robert P.; Saldinger, Alan; Cringle, Robert J.; Chu, Gigi C.; Sangameswara, Shanubhog G.; Vita, Peterpaul; Ouye, Michael M.; Stevens, David R. F.; Baranski, Celeste; Monsson, Cai U.; Murphy, Timothy P.; Murphy, Kevin T.; Ellis, Gary M.; and Ghate, Ranjit, 5,487,066, Cl. 370-85.200.

Montalvo, Samuel A. Disk loader having a side air blast for proper bag presentation. 5,485,714, Cl. 53-459.000.

Montell North America Inc.: *See*—
Clementini, Luciano; Galambos, Adam F.; Lesca, Giuseppe; Spagnoli, Leonardo; Starsinic, Michael E.; and Ogale, Kumar, 5,486,419, Cl. 428-397.000.

Montoya, Jean P., to Michigan Critical Care Consultants, Inc. Peristaltic pump with occlusive inlet. 5,486,099, Cl. 417-477.130.

Moon, Kwang-ho: *See*—
Kim, Jong-kuk; and Moon, Kwang-ho, 5,486,931, Cl. 358-335.000.

Moon, Si Young, to Samsung Electronics Co., Ltd. Method and apparatus for covering and revealing the display of captions. 5,486,872, Cl. 348-564.000.

Mooney, David M.: *See*—
Amelina, Iam R.; Mooney, David M.; and Stoodley, Kevin A., 5,487,158, Cl. 395-375.000.

Moore, Mark W.: *See*—
Goodwin, Brent E.; Keller, Thomas P.; Makley, James A.; and Moore, Mark W., 5,486,259, Cl. 156-384.000.

Moore, Samuel R.: *See*—
Brydon, Louis B.; Moore, Samuel R.; and Lord, Peter W., 5,486,399, Cl. 428-99.000.

Moore, William E., II: *See*—
Leidig, Carl F.; Estelle, Lee R.; and Moore, William E., II, 5,486,895, Cl. 355-50.000.

Moran, Richard G.: *See*—
Boga, Anthony B.; and Moran, Richard G., 5,486,304, Cl. 252-99.000.

Morano, Richard A.: *See*—
Carlotta, Michael; Dietl, Steven J.; and Morano, Richard A., 5,486,855, Cl. 347-87.000.

Morehouse, James H.; Furay, David M.; Volk, Steven B.; Utenick, Michael R.; Dunckley, James A.; Blagaila, John H.; Hopper, James F.; and Klein, Thomas A., to Integral Peripherals, Inc. Miniature disk drive with dynamic head loading with skewed lifting tab. 5,486,964, Cl. 360-105.000.

Morgan, Glenn D., to Neal, Charles M. Centrifuse extractor. 5,485,683, Cl. 34-58.000.

Morgan, Robert W., to Siemens Energy & Automation, Inc. Multi-neural electrical busway. 5,486,651, Cl. 174-68.200.

Morgan, Stuart K.: *See*—

Romm, Michael; Barker, Robert A.; and Morgan, Stuart K., 5,485,932, Cl. 211-87.000.
Morgen, Helmut: *See—*
Jobelius, Klaus-Dieter; Morgen, Helmut; Spurzem, Heinrich; and Völpel, Stefan, 5,485,987, Cl. 267-64.280.
Mori, Atsushi: *See—*
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Sugimoto, Akinori; Mori, Atsushi; and Nanno, Kunio, 5,485,764, Cl. 74-535.000.
Mori, Hideko: *See—*
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Mori, Kenji: *See—*
Yoshida, Takeshi; Amano, Hideaki; Kohno, Takashi; Mori, Kenji; Yoshida, Takashi; and Hirai, Hiromu, 5,486,965, Cl. 360-106.000.
Mori, Tetsuzo: *See—*
Tsuji, Toshihiko; Takeuchi, Seiji; Miyazaki, Kyoichi; Yoshii, Minoru; Nose, Noriyuki; and Mori, Tetsuzo, 5,486,919, Cl. 356-349.000.
Mori, Yukio; Kihara, Noriyasu; and Suzuki, Takamitu, to Nippondenso Co., Ltd. Hot-wire type airflow meter having a flow smoothing care. 5,485,746, Cl. 73-202.000.
Moriguchi, Haruhiko: *See—*
Miura, Yasushi; Moriguchi, Haruhiko; Murayama, Yasushi; and Tanaami, Hideyuki, 5,486,849, Cl. 347-18.000.
Moriguchi, Hiroyuki: *See—*
Fujii, Yozo; Moriguchi, Hiroyuki; Ikunami, Yoshikazu; Matsunawa, Masahiko; Tamura, Akihiko; Yasuda, Kazuo; Miwa, Tadashi; Horiuchi, Tatsumi; Kishimoto, Tadao; Fujimaki, Yoshihide; Takagiwa, Hiroyuki; and Tamura, Takashi, 5,486,898, Cl. 355-200.000.
Morihara, Kazushige: *See—*
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Morimoto, Kiyoshi: *See—*
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Morishita, Masakazu, to Canon Kabushiki Kaisha. Semiconductor device and electronic device by use of the semiconductor. 5,486,704, Cl. 257-9.000.
Morita, Akio: *See—*
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Morita, Yoshitsugu, to Dow Corning Toray Silicone Company, Ltd. Epoxy-functional organopolysiloxane from SiH polysiloxane, unsaturated epoxy compound and alkene. 5,486,588, Cl. 528-15.000.
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Hildebrand, Bryan D.; Small, Laura C.; Yuan, Hansen A.; Barker, B. Thomas; Morrison, Matthew M.; Salehi, Abraham; and Smith, Forrest C., 5,486,176, Cl. 606-71.000.
Morrison, Robert C.: *See—*
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Morrow, Julia A.: *See—*
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Morton International, Inc.: *See—*
Taylor, Robert D.; and Andros, Marc R., 5,486,248, Cl. 149-109.600.
Moser, Franklin G.: *See—*
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Moser, Keith W.: *See—*
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Moser, Larry D.: *See—*
Bouman, David G.; Moser, Larry D.; and Moser, Keith W., 5,485,670, Cl. 29-732.000.
Moser, Peter; Page, Campbell T.; and Püntener, Alois, to Ciba-Geigy Corporation. Process for the dyeing of leather with dye mixtures. 5,486,213, Cl. 8-437.000.
Moser, Robert E.; Owens, David R.; Wilhelm, James H.; Stohs, Miriam; Colley, James D.; and Hargrove, Oliver W., Jr., to Electric Power Research Institute. Clear liquor scrubbing of sulfur dioxide with forced oxidation in flue gas desulfurization system. 5,486,342, Cl. 423-243.010.
Moss, Robert W., to Moss Sales & Service. Pneumatic applicator for agricultural particulates. 5,485,962, Cl. 239-655.000.
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Moss, Robert W., 5,485,962, Cl. 239-655.000.
Motorola: *See—*
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Motorola, Inc.: *See—*
Auyeung, Cheung; O'Connell, Kevin J.; and Levine, Stephen N., 5,486,863, Cl. 348-420.000.
Davenport, Roger A., 5,486,800, Cl. 333-193.000.
Girardeau, James W., Jr., 5,486,792, Cl. 331-10.000.
Girardeau, James W., Jr., 5,487,024, Cl. 364-753.000.
Jasper, Steven C.; and Birchler, Mark A., 5,487,091, Cl. 375-347.000.
Johnson, Scott V., 5,486,770, Cl. 324-754.000.
Kane, John R., 5,487,100, Cl. 379-57.000.
Kinerk, Keith E.; Quan, Hoang K.; and Magliocco, Joseph P., 5,486,824, Cl. 341-26.000.
Kuffner, Stephen L.; Carney, Scott N.; and Krenz, Eric L., 5,486,836, Cl. 343-700.MS.
Nagode, Thomas D., 5,487,184, Cl. 455-126.000.
Otting, Marcia J.; and Kramer, John P., 5,486,843, Cl. 345-35.000.
Palandech, Robert L.; Bradley, Wayne H.; Opas, George F.; and Mitzlaff, James E., 5,486,789, Cl. 330-149.000.
Robb, Stephen; and Groenig, Paul, 5,486,718, Cl. 257-630.000.
Smolinske, Jeffrey C.; Tran, Phieu M.; Clanton, Christopher L.; and Scheibel, Robert C., Jr., 5,487,068, Cl. 370-94.100.
Sundaram, Lalgudi M. G., 5,486,481, Cl. 437-31.000.
Vraney, Lawrence E.; Protofanousis, Michael S.; Loew, Dean R.; and van Daal, Robert W., 5,487,169, Cl. 395-700.000.
Motoyama, Hideyuki: *See—*
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Mudry, Matthew; Aranyi, Ernie; and Nicholas, David A., to United States Surgical Corporation. Endoscopic surgical instrument. 5,486,189, Cl. 606-171.000.
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Mueller, Richard A.: *See—*
Liang, Chi-Dean; McKearn, John P.; Farah, John M., Jr.; and Mueller, Richard A., 5,486,539, Cl. 514-521.000.
Mueller, Walter B., to W. R. Grace & Co.-Conn. Impact modified medical film. 5,486,387, Cl. 428-34.700.
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Mukherjee, Anadi, to University of New Mexico. Principle and applications of multiphoton pumped upconverted lasers. 5,487,080, Cl. 372-69.000.
Mukherjee, Satyendranath: *See—*
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Mulder, Gerhardus J.; and Kuster, Frank, to Elektro-Thermit GmbH. Method for raising welded rail connections lying below the traveling surface on railroad tracks. 5,486,245, Cl. 148-582.000.
Muller, Karl-Heinz; and Oechsner, Hans, to SPECS Gesellschaft fur Oberflachenanalytik and Computertechnologie mbH. Procedure and apparatus for the analysis of surface and/or depth profiles. 5,486,696, Cl. 250-289.000.
Müller, Karl-Heinz: *See—*
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Müller, Michael: *See—*
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Muller, Richard P.; and O'Hare, Richard J., to Circon Corporation. Rotatable endoscope sheath. 5,486,155, Cl. 600-137.000.
Mulvihill, Eileen R.; Yoshitake, Shinji; Ikeda, Yasunori; Suzuki, Suguru; Hashimoto, Akira; Yazuriha, Teruaki; and Nexo, Bjorn A., to ZymoGenetica, Inc. Tissue plasminogen activator analogs having modified growth factor domains. 5,486,471, Cl. 435-226.000.
Mumme, Charles W.; and Gold, Philip, to Intermedics Orthopedics, Inc. Patella planer with adjustable stop. 5,486,177, Cl. 606-79.000.
Mummery, Herbert L., deceased (by Lois A. Mummery, executor); Koyamatsu, Anthony H.; and Young, Michael B., to United States of America, Navy. Cable recovery winder. 5,485,972, Cl. 242-386.000.
Mummery, Lois A., executor: *See—*
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Muni, Indu A.: *See—*
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Murakami, Kanji: *See—*
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Murakami, Shinichi: *See—*
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Murakami, Yoshiteru; Iketani, Naoyasu; Takahashi, Akira; and Obta, Kenji, to Sharp Kabushiki Kaisha. Magneto-optical disk. 5,486,395, Cl. 428-64.300.
Murata Manufacturing Co., Ltd.: *See—*
Hamuro, Mitsuro; Matsuda, Shigeyoshi; and Kawabata, Shoichi, 5,486,377, Cl. 427-79.000.
Murata, Masahide; and Burkhardt, Terry J., to Exxon Chemical Patents Inc. Amidosilyldiyl bridged catalysts and method of polymerization using said catalysts.. 5,486,585, Cl. 526-130.000.
Murata, Shigemi: *See—*
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Murayama, Keijiro: *See—*
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Murphy, Gary; and Matthias, Raymond, to Murphy Marketing, Inc. Wastewater straining device. 5,486,287, Cl. 210-164.000.
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Muylwyk, Robert K.: *See—*
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Mycotech Corporation: *See—*
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Myers, Gene; and Coury, William S. Method and apparatus for arteriotomy closure. 5,486,195, Cl. 606-213.000.
Nabae, Motohiro: *See—*
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Nabeshima, Akira; Watanabe, Kaoru; and Saba, Toshikazu, to Sumitomo Wiring Systems, Ltd. Matable connector. 5,486,119, Cl. 439-489.000.
Nagai, Kazunobu, to Kabushiki Kaisha Toshiba. Inverter and air conditioner controlled by the same. 5,486,743, Cl. 318-439.000.
Nagano, Akihiko: *See—*
Suzuki, Kenji; Ishizaki, Akira; Ohtaka, Keiji; Suda, Yasuo; Fukahori, Hidehiko; Nagano, Akihiko; Konishi, Kazuki; and Tsunekawa, Tokuichi, 5,486,892, Cl. 354-402.000.
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Nagao, Mitsuyoshi; Sato, Hidenori; and Hattori, Michiaki, to Murakami Kaimeido Co., Ltd. Device for driving an EC antiglare mirror. 5,486,952, Cl. 359-603.000.
Nagasawa, Takeshi: *See—*
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Nagashima, Shinya, to Ando Electric Co., Ltd. Optical wavelength meter with an up-down counter which measures the amounts of the overshoot and the back-shift of the moving mirror. 5,486,918, Cl. 356-346.000.
Nagata, Toshihiko; Sano, Hiroshi; Yamawaki, Takayuki; and Matsushita, Kunitake, to Minebea Co., Ltd. Bearing system in a motor for a floppy disk drive apparatus. 5,486,054, Cl. 384-610.000.
Naghshineh, Mahmoud: *See—*
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Nahmias, A. Michael: *See—*
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Naiki, Toshio: *See—*
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Naka, Shigehisa; Khan, Tasadduq; Walder, André; Marty, Michel; Delannay, Christophe; and Thevenin, Pierre, to Office National d'Etudes et de Recherches Aerospatiales. Niobium or tantalum based high specific strength inter metallic compounds and alloys. 5,486,242, Cl. 148-422.000.
Nakagawa, Katsumi; and Toyama, Noboru, to Canon Kabushiki Kaisha. Photovoltaic device. 5,486,238, Cl. 136-259.000.
Nakajima, Nobuo; and Imamura, Keuji, to NTT Mobile Communications Network Inc. Hand-off method and mobile station for spread spectrum mobile communication. 5,487,083, Cl. 375-200.000.
Nakajima, Shin; Fukushima, Michiyuki; and Hirao, Noriyoshi, to Hitachi Metals, Ltd. Nano-crystalline soft magnetic alloy ribbon with insulation coating and magnetic core made therefrom and pulse generator, laser unit and accelerator therewith. 5,486,404, Cl. 428-172.000.
Nakamura, Akihiro: *See—*
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Nakamura, Fumiharu, to Canon Kabushiki Kaisha. Ink jet recording apparatus for cleaning the recording head in accordance with the recording color. 5,486,850, Cl. 347-24.000.
Nakamura, Hiromu: *See—*
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Nakamura, Shinichi; and Kubota, Takashi, to Mitsubishi Materials Corporation. Boring tool. 5,486,075, Cl. 408-230.000.
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Nakano, Nobuyuki; and Yasui, Nobuhiko, to Matsushita Electric Industrial Co., Ltd. Vehicle recognition apparatus. 5,487,116, Cl. 382-104.000.
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Nakashima, Yuzi: *See—*
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Nakato, Tatsuo; and Vidusek, David A., to Sharp Kabushiki Kaisha. Silylated photoresist layer and planarizing method. 5,486,424, Cl. 428-451.000.
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Samberg, Steve; and Berger, Barry, 5,485,919, Cl. 206-461.000.
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Sudo, Shigeru, 5,487,094, Cl. 376-100.000.
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Huang, Yang-Tung, 5,486,934, Cl. 359-15.000.
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Chim, Wai K.; Phang, Jacob C. H.; and Chan, Daniel S. H., 5,486,769, Cl. 324-751.000.
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Iwaszkiewicz, Titus, 5,485,820, Cl. 123-458.000.
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Ito, Sadao; and Nawa, Hiroshi, 5,486,036, Cl. 297-339.000.
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Mason, Charles R.; Nayyar, Dalip K.; and Coleman, Edward C., 5,486,369, Cl. 426-321.000.
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Morgan, Glenn D., 5,485,683, Cl. 34-58.000.
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Baker, Clark R., Jr., 5,485,847, Cl. 128-666.000.
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Nellessen, Peter, Jr., to Benthos, Inc. Storage of cable. 5,485,973, Cl. 242-386.000.
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Lippmann, Raymond; Schnars, Michael J.; Nelson, James E.; Brouwer, Ivan R.; and Pachciarz, Mahlon R., 5,485,740, Cl. 73-1.00J.
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Meur, Jean-Pierre, 5,486,973, Cl. 361-170.000.
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Boatman, Jack K.; Parnsworth, John T.; Johnson, Roger D.; and Young, Linda A., 5,486,049, Cl. 366-175.200.
Network Computing Devices, Inc.: *See*—
Providenza, John R.; and Boekelheide, Lee, 5,487,051, Cl. 365-233.000.
Newcor, Inc.: *See*—
Kettelson, Russell W.; and Spurr, Dion, 5,485,911, Cl. 198-791.000.
Newgarden, Joseph E., Jr. Robot table tennis ball server assembly. 5,485,995, Cl. 273-30.000.
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Newton, John H. Self locking futon frame. 5,485,638, Cl. 5-37.100.
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Mulvihill, Eileen R.; Yoshitake, Shinji; Ikeda, Yasunori; Suzuki, Suguru; Hashimoto, Akira; Yuzuriha, Teruaki; and Nexo, Bjorn A., 5,486,471, Cl. 435-226.000.
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Schlager, Karl M.; and Ng, Solomon K., 5,486,788, Cl. 330-9.000.
NGK Insulators, Ltd.: *See*—
Adachi, Masakazu; and Imao, Kouichi, 5,486,331, Cl. 264-344.000.
Takeya, Fuminori; and Suzuki, Tomio, 5,486,969, Cl. 360-127.000.
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Sengupta, Louise; Ngo, Eric; Stowell, Steven; O'Day, Michelina; and Lancto, Robert, 5,486,491, Cl. 501-137.000.
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Griffith, Edward J.; and Ngo, Toan M., 5,486,232, Cl. 106-286.500.
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Belleau, Bernard, deceased; and Nguyen-Ba, Nghe, 5,486,520, Cl. 514-274.000.
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Saylor, Charles H. M.; Cavo, Vincent N.; Riccardi, James A., Jr.; and Piszcz, Alan T., 5,487,139, Cl. 395-135.000.
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Niday, Evelyn: *See*—
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Toon, Donald A.; Nielsen, Per H.; and Skov, Bent, 5,485,881, Cl. 166-165.000.
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Ohtsuki, Shigeru, 5,485,645, Cl. 15-103.000.
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Ukawa, Teiji; and Yoshida, Tatsuo, 5,485,838, Cl. 128-633.000.
Niikawa, Tetsuji; Nakamura, Hiromu; Naiki, Toshio; and Kohsaka, Jun, to Minolta Co., Ltd. Optical device having an optical lens and a mounting assembly. 5,486,954, Cl. 359-818.000.
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Koizumi, Noboru; Haneda, Satoshi; Ichihara, Yoshiyuki; Hasebe, Takashi; and Niitsuma, Tetsuya, 5,486,927, Cl. 358-298.000.
Nikko Kogyo Kabushiki Kaisha: *See*—
Igarashi, Osamu; Naitou, Akira; Tougane, Hikohiro; Tsutsumi, Hironobu; and Kudou, Tosihisa, 5,486,803, Cl. 336-92.000.
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Hazama, Junji; Yanagihara, Masamitsu; Goto, Hideji; and Murakami, Masaichi, 5,486,896, Cl. 355-71.000.
Ishida, Tomohisa, 5,486,711, Cl. 257-258.000.
Saito, Jun; and Kurita, Shinichi, 5,487,059, Cl. 369-116.000.
Takagi, Tadao, 5,486,893, Cl. 354-410.000.
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Buchecker, Richard; Chernova, Nina I.; Ivaschenko, Alexander V.; Loseva, Marina V.; Petrashevich, Olga S.; Pozhidaev, Evgeniy P.; Rabinovich, Arnold Z.; and Schadt, Martin, 5,486,310, Cl. 252-299.610.
Nippon Hoso Kyokai: *See*—
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Nippon Petrochemicals Company, Limited: *See*—
Shimizu, Tetsuo; and Wakita, Naoki, 5,486,683, Cl. 219-622.000.
Nippon Sheet Glass Co., Ltd.: *See*—
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Nippon Steel Corporation: *See*—
Habu, Ryuichi, 5,485,803, Cl. 117-14.000.
Ota, Hitoshi; Yashiro, Masao; Yotsuya, Koki; Kako, Takuzo; and Nakashima, Yuzi, 5,486,338, Cl. 422-179.000.
Ushioda, Kohsaku; Yoshinaga, Naoki; Matsumura, Yoshikazu; Akisue, Osamu; Nishimura, Kunio; and Murakami, Hidekuni, 5,486,241, Cl. 148-330.000.
Nippon Tansan Gas Company Limited: *See*—
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Douseki, Takakuni; Yamada, Junzo; Matsuya, Yasuyuki; and Mutou, Shinichirou, 5,486,774, Cl. 326-33.000.
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Nippondenso Co., Ltd.: *See*—
Ina, Katsuhiro, 5,486,817, Cl. 340-825.160.
Mori, Yukio; Kihara, Noriyasu; and Suzuki, Takamitu, 5,485,746, Cl. 73-202.000.
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Shibata, Kenichiro; Hatta, Toshiyuki; Matsuyama, Fumio; Miyamoto, Masahiro; Okui, Manabu; and Nishi, Masaya, 5,485,950, Cl. 228-194.000.
Nishida, Yoko: *See*—
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Nishida, Yoshiki: *See*—
Ohishi, Yasutake; Kanamori, Terutoshi; Nishida, Yoshiki; Mori, Atsushi; and Sudo, Shoichi, 5,486,947, Cl. 359-341.000.
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Nishita, Satoru: *See*—
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Nishiyama, Naoki: *See*—
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Niskanen, Floyd D.: *See*—
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Nissan Motor Co., Ltd.: *See*—
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Kojima, Ryo; Sato, Yoshiro; and Nagasawa, Takeshi, 5,486,458, Cl. 435-14.000.
Niwa, Hitoshi: *See*—
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Niwa, Masaaki: *See*—
Yuki, Koichiro; Hirai, Yoshihiko; Morimoto, Kiyoshi; Niwa, Masaaki; Yasui, Juro; Okada, Kenji; and Udagawa, Masaharu, 5,486,706, Cl. 257-25.000.
Nobilec, Leslaw. Clamping means for ski, or the like. 5,485,988, Cl. 269-21.000.
Noda, Hirotoshi, to Kabushiki Kaisha Yamazaki Haguruma Seisakusho. Cutting machine for railroad rail. 5,486,136, Cl. 451-347.000.
Noel, John R.: *See*—
Dragoo, Jerry L.; Bogdanski, Michael S.; Ahr, Nicholas A.; and Noel, John R., 5,486,167, Cl. 604-384.000.
Noell, John L. W.; Gaggar, Satish; McCarty, George P.; and Miller, Kenneth, to General Electric Co. High rubber backing multi-layer ABS system which exhibits improved chemical resistance to HCFC blowing agents. 5,486,407, Cl. 428-215.000.
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Noguchi, Osami: *See*—
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Nohara, Kazuya; and Taniguchi, Naohiro, to Matsushita Electric Works, Ltd. Acceleration detector. 5,485,749, Cl. 73-517.340.
Nohmi Bosai Ltd.: *See*—
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Nokia Mobile Phones Ltd.: *See*—
Lindholm, Rune, 5,487,084, Cl. 375-215.000.
Nokia Telecommunications Oy: *See*—
Hänninen, Jouni, 5,487,178, Cl. 455-67.400.
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Nomadic Structures, Inc.: *See*—
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Nomura, Kimiatsu: *See*—
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Norand Corp.: *See*—
Koenck, Steven E.; Austin, Rickey G.; and Boatwright, Darrell L., 5,487,161, Cl. 395-442.000.
Nordahl, Willy. Construction assembly including a rectangular block for dry walling or the permanent construction of a wall or partition. 5,485,703, Cl. 52-362.000.
Nordhauser, Mary Ann: *See*—
Mitchell, Lance S.; Nordhauser, Mary Ann; and Willis, Justin M., 5,486,233, Cl. 106-416.000.
Nordica S.p.A.: *See*—
Gorza, Roberto; Gallina, Luca; and Tessari, Pino, 5,485,688, Cl. 36-117.000.
Nordstrand, Ingrid V.; and Bodin, Stig R., to Telefonaktiebolaget LM Ericsson. Radio link failure. 5,487,071, Cl. 370-110.100.
Norfleet, James; Carter, Willie J.; Frankel, Matthew J.; and Gaffar, Abdul, to Colgate Palmolive Company. Desensitizing anti-tartar dentifrice. 5,486,350, Cl. 424-49.000.
North American Philips Corporation: *See*—
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North Carolina State University: *See*—
Comins, Daniel L., 5,486,615, Cl. 546-301.000.
Northey, William A.; and Koser, James R., to Berg Technologies, Inc. Connector assembly. 5,486,115, Cl. 439-108.000.
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Norton, Adam E.; and Pham, Hung V., to Prometrix Corporation. Method and apparatus for measuring reflectance in two wavelength bands to enable determination of thin film thickness. 5,486,701, Cl. 250-372.000.
Norton, William E.: *See*—
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Nowotarski, Mark S.; Lemen, Don J.; Snyder, William J.; and Leturno, David B., to Praxair Technology, Inc. Laminar flow shielding of fluid jet. 5,486,383, Cl. 427-446.000.
Nozawa, Yasumitsu: *See*—
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Nozawa, Yusaku; Ohtsu, Wataru; Ichiki, Nobuhiko; Ino, Kazuyuki; Matsuzaki, Hiroshi; and Takahashi, Kinya, to Hitachi Construction Machinery Co., Ltd. Hydraulic drive system. 5,485,724, Cl. 60-421.000.
NTT Mobile Communications Network Inc.: *See*—
Nakajima, Nobuo; and Imamura, Kenji, 5,487,083, Cl. 375-200.000.
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Nutting, Harold E., to Boeing Company, The. Cargo handling system rollout stop assembly. 5,486,077, Cl. 410-69.000.
O. K. Wack Chemie GmbH: *See*—
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O'Brien, Dennis W.: *See*—
Barbee, Troy W., Jr.; Johnson, Gary W.; and O'Brien, Dennis W., 5,486,277, Cl. 204-192.150.
Obshestvo S Organichennoi Otvetstvennostju "Nauchino-Proizvodstvennaya Firma Spetsstroyservis" : *See*—
Vladimirovich, Brazhentsev A.; and Pavlovich, Brazhentsev V., 5,485,891, Cl. 175-372.000.
Ocean Arks International, Inc.: *See*—
Todd, John H.; and Shaw, James M., 5,486,291, Cl. 210-602.000.
Ochiai, Kuniaki; and Komakine, Shigeo, to Kabushiki Kaisha Tec. Method of fabricating an ink jet print head. 5,485,663, Cl. 29-25.350.
O'Connell, Kevin J.: *See*—

Auyeung, Cheung; O'Connell, Kevin J.; and Levine, Stephen N., 5,486,863, Cl. 348-420.000.
O'Connor, John P.; and Smith, John W., to Genus, Inc. Scan technique to reduce transient wafer temperatures during ion implantation. 5,486,702, Cl. 250-492.210.
Oda, Kenzo; and Amemiya, Shinji, to Whitaker Corporation, The. Bolt-tightened connector. 5,486,122, Cl. 439-752.000.
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O'Day, Michelina: *See*—
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Oestreich, Ulrich; Dotzer, Peter; and Unterberger, Siegfried, to Siemens Aktiengesellschaft. Method and apparatus for manufacturing an optical ribbon conductor. 5,486,378, Cl. 427-163.200.
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Ogale, Kumar: *See*—
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Ogasawara, Masato: *See*—
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Ogawa, Hisahito: *See*—
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Ohana, Israel: *See*—
Silberklang, Alex; and Ohana, Israel, 5,486,700, Cl. 250-363.040.
O'Hara, Robert J.: *See*—
Knowlton, Christopher M.; O'Hara, Robert J.; and Strickland, Timothy A., 5,485,653, Cl. 15-340.400.
O'Hare, Richard J.: *See*—
Muller, Richard P.; and O'Hare, Richard J., 5,486,155, Cl. 600-137.000.
Ohashi, Hiroshi: *See*—
Tanaka, Yoichiro; Tanimoto, Kazushi; Ohashi, Hiroshi; Hikosaka, Takashi; Ohtsubo, Yasuo; and Hoshina, Shigeru, 5,486,967, Cl. 360-113.000.
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Ohga, Norio; and Takeuchi, Koichi, to Sony Corporation. Amusement machine and recording medium for use in the same. 5,486,141, Cl. 472-60.000.
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Ohhashi, Shuzo: *See*—
Takenouchi, Tomoo; Ichinomiya, Yoshiaki; Ishizaka, Junji; Itagaki, Junji; Ohhashi, Shuzo; Azuma, Tsukasa; and Tanaka, Yasuhiko, 5,487,082, Cl. 373-42.000.
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Ohkawa, Tihiro, to General Atomics. Device for electrostatic manipulation of droplets. 5,486,337, Cl. 422-100.000.
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Ohkita, Masakazu: *See*—
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Ohmory, Akio; Sano, Tomoyuki; Satoh, Masahiro; Naramura, Syunpei; Kobayashi, Satoru; and Sekiya, Yosuke, to Kuraray Co., Ltd. Water-soluble heat-press-bonding polyvinyl alcohol binder fiber of a sea-islands structure. 5,486,418, Cl. 428-397.000.
Ohnishi, Hiroshi: *See*—
Misaizu, Kouei; Honda, Shoichiro; and Ohnishi, Hiroshi, 5,487,089, Cl. 375-296.000.
Ohno, Kyoko: *See*—
Kudo, Masaki; and Ohno, Kyoko, 5,486,644, Cl. 811-604.000.
Ohsaka, Ichiro: *See*—
Shiokawa, Junji; Chiba, Hiroshi; Murakami, Toshio; Todaka, Yoshihiro; Ohsaka, Ichiro; and Azumi, Takashi, 5,486,860, Cl. 348-354.000.
Ohta, Kenji: *See*—
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Ohta, Tomohiro: *See*—
Yamamoto, Hiroshi; Takeyasu, Nobuyuki; and Ohta, Tomohiro, 5,486,492, Cl. 437-192.000.
Ohtaka, Keiji: *See*—
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Ohtake, Koji, to Fujitsu Limited. Method of determining initial transmission power. 5,487,180, Cl. 455-54.100.
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Nozawa, Yusaku; Ohtsu, Wataru; Ichiki, Nobuhiko; Ino, Kazuyuki; Matsuzaki, Hiroshi; and Takahashi, Kinya, 5,485,724, Cl. 60-421.000.
Ohtsubo, Yasuo: *See*—
Tanaka, Yoichiro; Tanimoto, Kazushi; Ohashi, Hiroshi; Hikosaka, Takashi; Ohtsubo, Yasuo; and Hoshina, Shigeru, 5,486,967, Cl. 360-113.000.
Ohtsuki, Shigeru, to Nihon Biso Co., Ltd. Outer wall cleaning robot. 5,485,645, Cl. 15-103.000.
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Komarek, James A.; Padgett, Clarence W.; Tanner, Scott B.; Kojima, Shin-ichi; Minney, Jack L.; Oishi, Motohiro; Fukumura, Keiji; and Nakanishi, H., 5,487,038, Cl. 365-191.000.
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Okada, Kenji: *See*—
Yuki, Koichiro; Hirai, Yoshihiko; Morimoto, Kiyoshi; Niwa, Masaaki; Yasui, Juro; Okada, Kenji; and Udagawa, Masaharu, 5,486,706, Cl. 257-25.000.
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Okawa, Tadashi, to Dow Corning Toray Silicone Co., Ltd. Method for preparing diorganopolysiloxane having a functional group at only one end of the molecular chain. 5,486,635, Cl. 556-437.000.
Oki Electric Industry Co., Ltd.: *See*—
Komazaki, Tomokazu; Gunji, Katsuhiko; Noguchi, Kazushige; and Tanoie, Kunihiro, 5,486,799, Cl. 333-134.000.
Okuda, Mitsuhiro: *See*—
Hamura, Masayuki; Okuda, Mitsuhiro; and Makihata, Yuuki, 5,486,679, Cl. 219-130.500.
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Okumura, Kouji: *See*—
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O'Lenick, Anthony J., Jr.: *See*—
Mitchnick, Mark; and O'Lenick, Anthony J., Jr., 5,486,631, Cl. 556-10.000.
Olin Corporation: *See*—
Caron, Ronald N.; and Breedis, John F., 5,486,244, Cl. 148-554.000.
Schmidt, Eckart W.; and Gavin, David F., 5,485,722, Cl. 60-219.000.
Oliver Design, Inc.: *See*—
Jones, Oliver D.; and Stephens, Donald E., 5,486,134, Cl. 451-209.000.
Olivieri, Icaro, to Canstar Sports Group Inc. Braking system for in-line skates. 5,486,012, Cl. 280-11.200.
Olson, Gene E.; and Wridt, Gerald A., to Snap-on Incorporated. Square drive adapter. 5,485,769, Cl. 81-177.850.
Olson, Todd; Meiser, Dan; Steed, Gary; Huffman, Eric; Otten, Matthew; VanOverloop, Ronald; Powell, Darrel; Knodell, Thomas; Rhad, Edward; Chen, Ralph; and Cook, Robert, to Ethicon, Inc. Linear stapling mechanism with cutting means. 5,485,947, Cl. 227-176.100.
Olszewski, Walter K.: *See*—
Rademaker, Robert A.; Goiffon, John J.; Connell, Michael L.; and Olszewski, Walter K., 5,485,745, Cl. 73-151.000.
Olympus Optical Co., Ltd.: *See*—
Mihara, Takashi; Watanabe, Hitoshi; Yoshimori, Hiroyuki; Paz de Araujo, Carlos A.; and McMillan, Larry D., 5,487,032, Cl. 365-145.000.
Omiya, Akio, to Fuji Photo Optical Co., Ltd. Photographic camera with strobe. 5,486,887, Cl. 354-149.110.
Omura, Ikuo: *See*—
Kawashima, Mitsunobu; and Omura, Ikuo, 5,486,544, Cl. 522-17.000.
Omura, Takashi: *See*—
Miyamoto, Tetsuya; Takahashi, Miyao; Fujisaki, Takahiko; Harada, Naoki; Kayane, Yutaka; and Omura, Takashi, 5,486,607, Cl. 544-76.000.
On-Line Technologies Inc: *See*—

Carangelo, Robert M.; Dettori, Mark D.; Grigely, Lawrence J.; Murray, Terence C.; Solomon, Peter R.; Van Dine, C. Peter; and Wright, David D., 5,486,917, Cl. 356-346.000.
Ono, Isao: *See*—
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Koenig, David J., 5,486,751, Cl. 322-86.000.
Onishi, Masayuki, to Dow Corning Toray Silicone Company, Ltd. Method for bonding substrates with silicone rubber comprising both a thermal and moisture crosslinking component. 5,486,257, Cl. 156-305.000.
Onishi, Masayuki, to Dow Corning Toray Silicone Company, Ltd. Method for bonding substrates with silicone rubber comprising both a thermal and moisture crosslinking component. 5,486,258, Cl. 156-307.500.
Ono, Takashi: *See*—
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Ookochi, Katsuaki: *See*—
Kikuchi, Nobuyuki; Ookochi, Katsuaki; Onuki, Masatsugu; and Yarimizu, Kazuaki, 5,486,261, Cl. 156-422.000.
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Hofmann, Jörg; Knetsch, Harald; Liebich, Kurt; Opper, Reinhold; Wiessler, Hans; and Bauer, Alois, 5,486,678, Cl. 219-127.000.
Optical Shields, Inc.: *See*—
Fergason, James L.; Berman, Arthur L.; and Jacobs, Stephen D., 5,486,940, Cl. 359-74.000.
Optotechno Co., Ltd.: *See*—
Hayashi, Yutaka; Sato, Masaaki; and Maeyashiki, Yoshiki, 5,486,709, Cl. 257-110.000.
Organek, Gregory J.; Preston, David M.; and Janson, David A., to Eaton Corporation. Clutch ball ramp actuator with drive and coast apply. 5,485,904, Cl. 192-35.000.
Orient Chemical Industries, Ltd.: *See*—
Yagyu, Tatsuya; and Ono, Takashi, 5,486,601, Cl. 534-666.000.
Orth, Jeffrey L.: *See*—
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Ortho Diagnostic Systems, Inc.: *See*—
Madonna, M. Jane; and Woods, Derek, 5,486,454, Cl. 435-6.000.
Osanai, Jun: *See*—
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Osawa, Hisayu: *See*—
Toda, Toshimasa; Naito, Satoru; Osawa, Hisayu; and Yamazaki, Takaaki, 5,486,556, Cl. 524-100.000.
Osborn, James W.: *See*—
Capeci, Scott W.; Osborn, James W.; Angell, Adrian J. W.; and van Dijk, Paul, 5,486,303, Cl. 252-89.100.
Osborne, Robert, to Phillips Cables Limited. Textile braids for cables, flexible tubes and the like. 5,485,774, Cl. 87-6.000.
Osbgan, Thomas J., to Eaton Corporation. Detented paddle blade switch assembly. 5,486,669, Cl. 200-556.000.
Osiris Therapeutics, Inc.: *See*—
Caplan, Arnold I.; and Haynesworth, Stephen E., 5,486,359, Cl. 424-93.700.
Osram Sylvania Inc.: *See*—
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Ostry, Diethelm I.: *See*—
O'Sullivan, John D.; Daniels, Graham R.; Percival, Terence M. P.; Ostry, Diethelm I.; and Deane, John F., 5,487,069, Cl. 370-94.300.
O'Sullivan, John D.; Daniels, Graham R.; Percival, Terence M. P.; Ostry, Diethelm I.; and Deane, John F., to Commonwealth Scientific and Industrial Research Organisation. Wireless LAN. 5,487,069, Cl. 370-94.300.
Ota, Hitoshi; Yashiro, Masao; Yotsuya, Koki; Kako, Takuzo; and Nakashima, Yuzi, to Nippon Steel Corporation; and Toyota Jidosha Kabushiki Kaisha. Metal catalyst carrier for exhaust gas purification. 5,486,338, Cl. 422-179.000.
Ota, Takeshi, to Fuji Xerox Co., Ltd. Star coupler including waveguides having different radius of curvatures. 5,487,122, Cl. 385-46.000.
Otis Elevator Company: *See*—
Kowalczyk, Thomas M.; McHugh, Thomas M.; Ahigian, Edward E.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kulak, Richard E.; and Barrett, David W., 5,485,896, Cl. 187-330.000.
Otruba, Svatoboj, to B&H Manufacturing Company. Method of labeling containers. 5,486,253, Cl. 156-215.000.
Otten, Matthew: *See*—
Olson, Todd; Meiser, Dan; Steed, Gary; Huffman, Eric; Otten, Matthew; VanOverloop, Ronald; Powell, Darrel; Knodell, Thomas; Rhad, Edward; Chen, Ralph; and Cook, Robert, 5,485,947, Cl. 227-176.100.
Otting, Marcia J.; and Kramer, John P., to Motorola, Inc. Signal level indicator and associated method. 5,486,843, Cl. 345-35.000.
Ouchi, Norman K.: *See*—
Hassner, Martin A.; Lang, Luke C. K.; Ouchi, Norman K.; and Schwiegelshohn, Uwe, 5,487,077, Cl. 371-40.100.
Oud, Anna E. M.: *See*—
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Bourne, George; Davis, Randall W.; Duval, George; Goodine, Dennis; Lock, James E.; Ouellette, Gerry; Perry, Stanton B.; Wagner, Maria; and Whittaker, Gregory R., 5,486,193, Cl. 606-194.000.
Ouye, Michael M.: *See*—
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Grant, Larry J.; Monnin, Raymond V.; and Scott, James W., 5,486,401, Cl. 428-125.000.
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Owens, Stephen G.: *See*—
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Ozai, Toshiyuki: *See*—
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Ozaki, Kazuhisa: *See*—
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Ozaki, Masaru: *See*—
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Ozawa, Kazunori, to NEC Corporation. Speech parameter coding method and appparatus. 5,487,128, Cl. 395-2.310.
Ozeki, Taro: *See*—
Kimura, Kazuya; Ito, Masafumi; Mizutani, Hideki; Makino, Yoshihiro; Hirota, Suguru; Ozeki, Taro; Kato, Keiichi; and Kayukawa, Hiroaki, 5,486,098, Cl. 417-222.200.
P.I., Inc.: *See*—
Avery, John R., 5,486,206, Cl. 607-104.000.
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Pachciarz, Mahlon R.: *See*—
Lippmann, Raymond; Schnars, Michael J.; Nelson, James E.; Brouwer, Ivan R.; and Pachciarz, Mahlon R., 5,485,740, Cl. 73-1.000.
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Yang, Chang M.; Hong, Jong Y.; Lee, Ki W.; Lee, Byeong G.; and Chang, Dong L., 5,486,624, Cl. 549-418.000.
Padgett, Clarence W.: *See*—
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Paiss, Omri; Shallom, Ilan D.; Flomen, Felix; and Haimi-Cohen, Raziel, to DSP Group, The. Speech pattern matching in non-white noise. 5,487,129, Cl. 395-2.420.
Palaudech, Robert L.; Bradley, Wayne H.; Opas, George F.; and Mitzlaff, James E., to Motorola, Inc. Apparatus and method for providing a baseband digital error signal in an adaptive predistorter. 5,486,789, Cl. 330-149.000.
Palmer, Robert L.: *See*—
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Pan, Yuh-Guo: *See*—
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Wenke, Gottfried; Pan, Yuh-Guo; Lim, Mu-Ill; and Stasaitis, Linas, 5,486,619, Cl. 548-508.000.
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Panzone, Gianbattista: *See*—
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Papp, George W. Exterior windshield surface blower. 5,486,139, Cl. 454-123.000.
Paquatte, Olivier: *See*—
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Pardijs, Hendrik J.: *See*—
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Park, Chin S.; Holler, Mark A.; Diamond, Jay M.; The, Siang-Chun; Santoni, Umberto; and Buckmann, Kenneth R., to Intel Corporation. Distance calculating neural network classifier chip and system. 5,487,133, Cl. 395-27.000.

Park, Hee Y.: *See—*
Choi, Jeong D.; Cheon, In K.; Song, Geun H.; and Park, Hee Y., 5,486,958, Cl. 360-85.000.
Park, Hee-Choul: *See—*
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Parr, Charles H.: *See—*
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Partovi, Hamid; and Draper, Donald A., to Intergraph Corporation. Carry chain adder using regenerative push-pull differential logic. 5,487,025, Cl. 364-788.000.
Pasricha, Pankaj J.; and Kalloo, Anthony N., to John Hopkins University. Winged biliary stent. 5,486,191, Cl. 606-191.000.
Passebecq, Claude: *See—*
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Patel, Kundanbhai M.: *See—*
Tang, Regianld T.; Mares, Frank; Boyle, William J., Jr.; Chiu, Tin-Ho; and Patel, Kundanbhai M., 5,486,593, Cl. 528-370.000.
Patko, Joseph M., to AlliedSignal Inc. Spacer member for aircraft brakes. 5,485,898, Cl. 188-71.500.
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Paukkunen, Ari: *See—*
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Pavlat, Jeffrey W.: *See—*
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Payeur, Daniel R. Vacuum cleaning and shampooing system having high-pressure air means. 5,485,651, Cl. 15-321.000.
Paz de Araujo, Carlos A.: *See—*
Mihara, Takashi; Watanabe, Hitoshi; Yoshimori, Hiroyuki; Paz de Araujo, Carlos A.; and McMillan, Larry D., 5,487,032, Cl. 365-145.000.
Pearson, Ronald W.; Deierling, Kevin E.; and Williams, Clark R., to Dallas Semiconductor Corporation. Integrated circuit with real time, elapsed time, and cycle counter clocks. 5,487,096, Cl. 377-15.000.
Pederson, Jan O.: *See—*
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Penda, Allan R.: *See—*
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Penning, Thomas D.: *See—*
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Robinson, Michael G., 5,487,026, Cl. 364-841.000.
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Ash, Carlton E., 5,486,581, Cl. 525-539.000.
Bening, Robert C.; and St. Clair, David J., 5,486,568, Cl. 525-102.000.
De Jong, Krija P.; Lednor, Peter W.; Oud, Anna E. M.; Schoonebeek, Ronald J.; Vonkeman, Koert A.; and Van Der Zwet, Gerardus P., 5,486,313, Cl. 252-373.000.
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Huete, David A., 5,486,070, Cl. 405-202.000.
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Arisawa, Mikio; Götschi, Erwin; Hebeisen, Paul; Kamiyama, Tsutomu; Link, Helmut; Masciadri, Raffaello; Shimada, Hisao; and Watanabe, Junko, 5,486,466, Cl. 435-106.000.

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Inoue, Yoshio, 5,486,589, Cl. 528-17.000.
Itagaki, Akinari; Azechi, Syuuichi; Kuwata, Satoshi; Tsutsumi, Yousuke; and Kodaiku, Masanori, 5,486,549, Cl. 523-161.000.
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Shinbara, Kaoru; Kurata, Yasuhiro; and Sawamura, Masashi, to Dainippon Screen Mfg. Co., Ltd. Substrate treating apparatus. 5,485,644, Cl. 15-21.100.

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Ayata, Naoki; Shirato, Yoshiaki; Takatori, Yasushi; and Seki, Mitsuaki, 5,486,848, Cl. 347-15.000.

Shirk, Thomas N., to Dempster Industries, Inc. Air volume control valve for water system pressure tank. 5,485,865, Cl. 137-209.000.

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Short, Glenn D., to CPI Engineering Services, Inc. Lubricant composition for fluorinated refrigerants used in compression refrigeration systems. 5,486,302, Cl. 252-56.00S.

Shortland, Harry: *See—*
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Phillion, Dennis; Wong, Sai C.; and Shortt, Barry, 5,486,621, Cl. 549-4.000.

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Shu, Kee-Li, to Hughes Aircraft Company. Hyperhemispherical field of view optical sensor head. 5,486,953, Cl. 359-725.000.

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Sidekick Tools Inc.: *See—*
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Sieben, Daniel D.: *See—*
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Meyer, Heinrich, 5,487,076, Cl. 371-40.100.
Oestreich, Ulrich; Dotzer, Peter; and Unterberger, Siegfried, 5,486,378, Cl. 427-163.200.
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Siemens Energy & Automation, Inc.: *See—*
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Sieradzki, Manny, to Diamond Semiconductor Group, Inc. High speed movement of workpieces in vacuum processing. 5,486,080, Cl. 414-217.000.

Siladji, Sigrun: *See—*
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Silberklang, Alex; and Ohana, Israel, to Elscint Ltd. Proximity controls for gamma camera. 5,486,700, Cl. 250-363.040.

Siliconix incorporation: *See—*
Hshieh, Fwu-Iuan; Choi, Calvin K.; Cook, William H.; Ching, Lih-Ying; and Chang, Mike F., 5,486,772, Cl. 324-769.000.

Siltech Inc.: *See—*
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Silvus, Howard S., Jr.; Mallow, William A.; Parr, Charles H.; and Dziuk, Jerome J., to Southwest Research Institute. Surface resistivity meter for determining surface degradation of high resistivity materials. 5,486,768, Cl. 324-718.000.

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Simpson, Matthew: *See—*
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Simpson, Richard; Oakland, Erick D.; and Barr, Graham M., to Texas Instruments Incorporated. Normalization method for floating point numbers. 5,487,022, Cl. 364-715.040.

Simpson, Roger T.: *See—*

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Sing, Peter. Structure for pallets, flooring, panelling and fencing. 5,485,794, Cl. 108-51.100.

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SKF Industrial Trading & Development Company B.V.: *See—*
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Skinner, Donald K.; Yagi, Yoshi; and Zogg, Wilfried, to Eltron International, Inc. Multicolor printer system having multiple print heads. 5,486,057, Cl. 400-120.020.

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Slusky, Ronald D., to AT&T IPM Corp. Telecommunications system sequence calling. 5,487,111, Cl. 379-211.000.

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SMH Management Services AG: *See—*
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Smith, Alan D. Keratoscopic surgical instrument for making radial and arcuate corneal incisions. 5,486,188, Cl. 606-166.000.

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Smith, Richard: *See—*
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Smith, Robert E.: *See—*
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Smith, Z. E., III: *See—*
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Smolinske, Jeffrey C.; Tran, Phieu M.; Clanton, Christopher L.; and Scheibel, Robert C., Jr., to Motorola, Inc. Method for providing error correction using selective automatic repeat requests in a packet-switched communication system. 5,487,068, Cl. 370-94.100.

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Choi, Jeong D.; Cheon, In K.; Song, Geun H.; and Park, Hee Y., 5,486,958, Cl. 360-85.000.

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Songer, Jimmie D., to Magma, Inc. Method and apparatus for improving transmitted video signal structure. 5,486,874, Cl. 348-600.000.

Sony Corporation: *See—*
Hara, Nobuyuki; Kawamura, Akira; and Matsui, Takeshi, 5,486,841, Cl. 345-8.000.
Ishikawa, Nobuyuki; and Imai, Tadashi, 5,486,796, Cl. 331-117.00R.
Iwamura, Takashi; Matsuzawa, Yoko; and Tamura, Shin-Ichiro, 5,486,437, Cl. 369-288.000.
Maekawa, Itaru; Ohgihara, Takahiro; and Tanaka, Kuninobu, 5,486,787, Cl. 327-560.000.
Matsushige, Takashi, 5,487,067, Cl. 370-85.700.
Ohga, Norio; and Takeuchi, Koichi, 5,486,141, Cl. 472-60.000.
Oka, Nobuyuki, 5,487,047, Cl. 369-32.000.
Shimizume, Kazutoshi; and Nakamura, Shinobu, 5,486,827, Cl. 341-50.000.
Tanaka, Shigeo, 5,486,877, Cl. 348-722.000.
Tsuchiya, Takashi; and Ishii, Osamu, 5,486,128, Cl. 451-2.000.
Ueta, Motomu; and Harada, Tetsuya, 5,487,019, Cl. 364-514.00R.
Urata, Kaoru, 5,486,956, Cl. 360-65.000.
Wachi, Shigeaki, 5,487,056, Cl. 369-44.340.
Yagasaki, Yoichi, 5,486,862, Cl. 348-399.000.

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Fournet-Fayard, Jacques; Galland, Olivier; Garin, Christophe; and Lucet, Alain, 5,486,174, Cl. 606-61.000.

Sorensen, Jens O. Air-pollution reduction method and system for the interior of an automobile. 5,486,138, Cl. 454-75.000.

Soundtech, Inc.: *See—*
Watson, Teddie G.; and Orth, Jeffrey L., 5,485,697, Cl. 43-42.310.

Southgate, Timothy J., to Altera Corporation. Computer user interface having tiled and overlapped window areas. 5,487,143, Cl. 395-157.000.

Southward, Steve C.: *See—*
Heath, Michael C.; and Southward, Steve C., 5,487,027, Cl. 364-551.000.

Southwest Research Institute: *See—*
Silvus, Howard S., Jr.; Mallow, William A.; Parr, Charles H.; and Dziuk, Jerome J., 5,486,768, Cl. 324-718.000.

Space Systems/Loral, Inc.: *See—*
Brydon, Louis B.; Moore, Samuel R.; and Lord, Peter W., 5,486,399, Cl. 428-99.000.

Spaeth, Horst: *See—*
Venetucci, Jim M.; and Spaeth, Horst, 5,485,731, Cl. 62-56.000.

Spagnoli, Leonardo: *See—*

Clementini, Luciano; Galambos, Adam F.; Lesca, Giuseppe; Spagnoli, Leonardo; Starsinic, Michael E.; and Ogale, Kumar, 5,486,419, Cl. 428-397.000.

Spalding, Richard E.: *See*—
Axline, Robert M., Jr.; Sloan, George R.; and Spalding, Richard E., 5,486,830, Cl. 342-43.000.

Sparks, Wanda F.: *See*—
Hamilton, Elizabeth M.; Lalli, Eric W.; Lubin, Cindy B.; Sparks, Wanda F.; and Waterland, Alfred F., III, 5,486,010, Cl. 277-1.000.

Spatenka, Gary W. Method for auto body repair. 5,486,321, Cl. 264-36.000.

SPECS Gesellschaft fur Oberflachenanalytik and Computertechnologie mbH: *See*—
Muller, Karl-Heinz; and Oechsner, Hans, 5,486,696, Cl. 250-288.000.

Spector, George: *See*—
Wiggleton, Patsy A.; and Spector, George, 5,485,642, Cl. 7-151.000.

Speedfam Corporation: *See*—
Cesna, Joseph V.; and Van Woerkom, Anthony G., 5,486,131, Cl. 451-56.000.

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Himes, Glenn R.; Spence, Bridget A.; Hoxmeier, Ronald J.; and Chin, Steven S., 5,486,574, Cl. 525-314.000.

Spence, John R.; Gupta, Rajiv; and Zhang, Mingming, to Rockwell International Corporation. Low power crystal oscillator. 5,486,795, Cl. 331-116.0FE.

Spencer, Elbert M.: *See*—
Laabs, Timothy P.; Misner, Michael O.; Schulz, Richard H.; and Spencer, Elbert M., 5,485,735, Cl. 70-358.000.

Spheric Audio Laboratories, Inc.: *See*—
Mark, Steven D.; and Doleshal, David, 5,487,113, Cl. 381-17.000.

Spike, Douglas L.: *See*—
Witler, James L.; Spike, Douglas L.; and Talbot, Douglas C., 5,486,002, Cl. 273-184.00R.

Spitalny, Paul; and Mallinson, Martin, to Analog Devices, Inc. Programmable gain amplifier. 5,486,791, Cl. 330-282.000.

Spitzer, Clarence J.: *See*—
Lamp, William G.; and Spitzer, Clarence J., 5,486,664, Cl. 200-297.000.

Spora, Joseph S. Leash-controllable dog harness having protective sleeves. 5,485,810, Cl. 119-792.000.

Sporzynski, Robert S.: *See*—
Wagg, Theadore J.; Clark, James K.; and Sporzynski, Robert S., 5,485,678, Cl. 33-610.000.

Spracklen, John E.: *See*—
Popescu, Valeri; Schultz, Merle A.; Gibson, Gary A.; Spracklen, John E.; and Lightner, Bruce D., 5,487,156, Cl. 395-375.000.

Sprecker, Mark A.; Weiss, Richard A.; and Hanna, Marie R., to International Flavors & Fragrances Inc. 2-methoxy-4-formyl phenyl ester of propionic acid and use in augmenting or enhancing the aroma of perfume compositions, colognes and perfumed articles. 5,486,502, Cl. 512-21.000.

Springs Window Fashions Division, Inc.: *See*—
Genova, John R., 5,485,875, Cl. 160-168.100.

Spurr, Dion: *See*—
Kettelson, Russell W.; and Spurr, Dion, 5,485,911, Cl. 198-791.000.

Spurzem, Heinrich: *See*—
Jobelius, Klaus-Dieter; Morgen, Helmut; Spurzem, Heinrich; and Völpel, Stefan, 5,485,987, Cl. 267-64.280.

Square D Company: *See*—
Wong, Tak M.; Etsheidt, Ronald J.; and Freilinger, Patrick L., 5,486,666, Cl. 200-304.000.

St. Joseph Health Centre: *See*—
Ballagh, Robert H.; and Jones, Jeff B., 5,486,360, Cl. 424-94.400.

Stabilus GmbH: *See*—
Jobelius, Klaus-Dieter; Morgen, Helmut; Spurzem, Heinrich; and Völpel, Stefan, 5,485,987, Cl. 267-64.280.

Stachowiak, Anthony A.: *See*—
Heisler, William A.; Shipman, David A.; Stachowiak, Anthony A.; Bodden, Kurt S.; Wurth, Michael E.; and Dellekoenig, Norbert, 5,486,042, Cl. 312-196.000.

Stahl, Julie B.: *See*—
Coleman, Patrick L.; Heilmann, Steven M.; Kangas, Steven L.; Rasmussen, Jerald K.; Rolando, Richard J.; and Stahl, Julie B., 5,486,358, Cl. 424-78.230.

Stalder, Roland E.; Van Zandt, Thomas R.; Hecht, Michael H.; and Grunthaner, Frank J., to California Institute of Technology. Array of micro-machined mass energy micro-filters for charged particles. 5,486,697, Cl. 250-305.000.

Stallbaumer, Richard J.: *See*—
Pitman, Raymond F.; Stallbaumer, Richard J.; and Rusk, James A., 5,486,084, Cl. 414-694.000.

Stamet, Inc.: *See*—
Hay, Andrew G., 5,485,909, Cl. 198-642.000.

Standard Oil Company, The: *See*—
Curatolo, Benedict S.; Li, George S.; and Giddings, Brandford E., 5,486,409, Cl. 428-221.000.

Standard Register Company, The: *See*—
Lakes, A. Dale, 5,486,436, Cl. 430-11.000.
Laurash, David F., 5,486,021, Cl. 283-81.000.

Stanford, Ralph F.; and Gatz, Stephen E., to Elkay Manufacturing Company. Mounting head with safety shut-off valve for replaceable filter cartridge. 5,486,288, Cl. 210-235.000.

Stansbury, Darryl M.: *See*—
Cathey, David A.; Hofmann, James J.; Dynka, Danny; and Stansbury, Darryl M., 5,486,126, Cl. 445-25.000.

Starsinic, Michael E.: *See*—
Clementini, Luciano; Galambos, Adam F.; Lesca, Giuseppe; Spagnoli, Leonardo; Starsinic, Michael E.; and Ogale, Kumar, 5,486,419, Cl. 428-397.000.

Stasaitis, Linas: *See*—
Wenke, Gottfried; Pan, Yuh-Guo; Lim, Mu-Ill; and Stasaitis, Linas, 5,486,619, Cl. 548-508.000.

St. Clair, David J., to Shell Oil Company. Polyurethane sealants and adhesives containing saturated hydrocarbon polyols. 5,486,570, Cl. 525-123.000.

St. Clair, David J.: *See*—
Bening, Robert C.; and St. Clair, David J., 5,486,568, Cl. 525-102.000.

Steagall, Paul H., III: *See*—
Booth, Hubert J.; Steagall, Paul H., III; and Wright, Michael W., 5,485,964, Cl. 241-27.000.

Steed, Gary: *See*—
Olson, Todd; Meiser, Dan; Steed, Gary; Huffman, Eric; Otten, Matthew; VanOverloop, Ronald; Powell, Darrel; Knodell, Thomas; Rhad, Edward; Chen, Ralph; and Cook, Robert, 5,485,947, Cl. 227-176.100.

Steel, Katherine I. M.: *See*—
Kalindjian, Sarkis B.; Broughton, Howard B.; Low, Caroline M. R.; McDonald, Iain M.; Hull, Robert A. D.; Shankley, Nigel P.; Buck, Ildiko M.; Steel, Katherine I. M.; and Davies, Jonathan M. R., 5,486,597, Cl. 530-331.000.

Steelcase, Inc.: *See*—
Heisler, William A.; Shipman, David A.; Stachowiak, Anthony A.; Bodden, Kurt S.; Wurth, Michael E.; and Dellekoenig, Norbert, 5,486,042, Cl. 312-196.000.

Steele, James R.: *See*—
Michal, Ronald J.; Steele, James R.; and Jones, Mark E., 5,486,916, Cl. 356-345.000.

Steenborg, Manfred, to ERNO Raumfahrttechnik GmbH. Arcjet for a space flying body. 5,485,721, Cl. 60-203.100.

Steffens, Charles E., Jr., to TRW Vehicle Safety Systems Inc. Seat belt pretensioner. 5,485,970, Cl. 242-374.000.

Steffens, Charles E., Jr.: *See*—
Brown, Louis R.; Steffens, Charles E., Jr.; Kroetsch, Charles E.; and Robbins, Delmar H., 5,485,758, Cl. 73-865.800.

Stegmann, Robert. Method and appliance for maintaining the natural intraocular pressure. 5,486,165, Cl. 609-294.000.

Stein, Jeffrey: *See*—
Hirshowitz, Bernard; Levy, Amnon; Gilat, Alexander R.; Rogel, Eitan; Stein, Jeffrey; and Borgia, Julian, 5,486,196, Cl. 606-218.000.

Stein, Manfred: *See*—
Bastian, Udo; and Stein, Manfred, 5,486,384, Cl. 427-493.000.

Steinfels, Victor E., III. Product accessible display container. 5,485,913, Cl. 206-45.190.

Steinke, David M.: *See*—
Romesberg, Floyd E.; and Steinke, David M., 5,486,256, Cl. 156-251.000.

Stephen, Robert L.: *See*—
Rossi, Cino; Eruzzi, Silvio; Stephen, Robert L.; and Lugnani, Franco, 5,486,160, Cl. 604-21.000.

Stephens, Donald E.: *See*—
Jones, Oliver D.; and Stephens, Donald E., 5,486,134, Cl. 451-209.000.

Stephens, Joseph C.: *See*—
Helfrich, Kenneth J.; Stephens, Joseph C.; McClain, Kevin E.; and Lee, Brian, 5,486,866, Cl. 348-500.000.

Sterling, Jeff; Levy, Ruth; Veinberg, Alex; Goldenberg, Willy; Finberg, John; Youdim, Musa; and Gutman, Arieh, to Teva Pharmaceutical Industries, Ltd. Monofluorinated derivatives of N-propargyl-1-aminoindan and their use as inhibitors of monoamine oxidase. 5,486,541, Cl. 514-657.000.

Stevens, David E.; and Temme, Leonard A., to United States of America, Navy. Artificial horizon altitude warning system. 5,486,821, Cl. 340-970.000.

Stevens, David R. F.: *See*—
McNamara, Robert P.; Saldinger, Alan; Cringle, Robert J.; Chu, Gigi C.; Sangameswara, Shanubhog G.; Vita, Peterpaul; Ouye, Michael M.; Stevens, David R. F.; Baranski, Celeste; Monsson, Cai U.; Murphy, Timothy P.; Murphy, Kevin T.; Ellis, Gary M.; and Ghate, Ranjit, 5,487,066, Cl. 370-85.200.

Stevens, James C.: *See*—
Devore, David D.; Timmers, Francis J.; Stevens, James C.; and Rosen, Robert K., 5,486,632, Cl. 556-11.000.

Stevens, Timothy J.; and Kruskopf, David J., to EasyMove, Inc. Apparatus for excavating and transplanting trees and the like and method of use. 5,485,691, Cl. 37-302.000.

Stewart, Mark F.; Bonetta, Angelo A.; and Phull, Majinder S., to High Flyte International Ltd. Automated dart board. 5,486,007, Cl. 273-374.000.

Stiles, Parks W.: *See*—
Welborn, Lynn C.; Stiles, Parks W.; and Venegas, José I., 5,485,666, Cl. 29-436.000.

Stohs, Miriam: *See*—
Moser, Robert E.; Owens, David R.; Wilhelm, James H.; Stohs, Miriam; Colley, James D.; and Hargrove, Oliver W., Jr., 5,486,342, Cl. 423-243.010.

Stoll, Kurt, to Festo KG. Choke valve. 5,485,867, Cl. 137-599.000.

Stone, W. Ross; Palmer, Robert L.; Mochel, Virgil D.; and Karpinski, Robert P., to Bridgestone/Firestone, Inc. Tire cure control system and method. 5,486,319, Cl. 264-406.000.

Stoodley, Kevin A.: *See*—
Amelina, Iam R.; Mooney, David M.; and Stoodley, Kevin A., 5,487,158, Cl. 395-375.000.

Storage Technology Corporation: *See*—
Dodt, William C.; Gottehrer, Terry R.; and Milligan, Charles A., 5,487,171, Cl. 395-840.000.

Stork RMS B.V.: *See*—
Bernardus, Wilhelmus A.; and Pardijs, Hendrik J., 5,486,145, Cl. 452-58.000.

Stormbom, Lars: *See*—
Antikainen, Veijo; Paukkunen, Ari; Stormbom, Lars; Jauhiainen, Hannu; and Ponkala, Jorma, 5,485,747, Cl. 73-335.030.

Stough, Ronald A., to E-Z Taping System, Inc. Self-release self-adhesive drywall tape. 5,486,394, Cl. 428-61.000.

Stowell, Steven: *See*—
Sengupta, Louise; Ngo, Eric; Stowell, Steven; O'Day, Michelina; and Lancto, Robert, 5,486,491, Cl. 501-137.000.

Strand, Timothy C.: *See*—
Rosen, Hal J.; Rubin, Kurt A.; and Strand, Timothy C., 5,487,060, Cl. 369-118.000.

Strat, Askold: *See*—
Bard, Simon; Strat, Askold; and Dvorkis, Paul, 5,486,944, Cl. 359-199.000.

Straub, Beat: *See*—
Philipp, Florian; Hautle, Alfred; Nuesch, Reto; and Straub, Beat, 5,485,684, Cl. 34-226.000.

Streamlight, Inc.: *See*—
Sharrah, Raymond L.; and Craft, Charles W., 5,486,432, Cl. 429-99.000.

Streck, Donald A., to Showa Hatsumei Kaisha, Ltd. Passive protector for hypodermic needles. 5,486,164, Cl. 604-198.000.

Strickland, Timothy A.: *See*—
Knowlton, Christopher M.; O'Hara, Robert J.; and Strickland, Timothy A., 5,485,653, Cl. 15-340.400.

Stringfellow, Steven A.: *See*—
Borrego, Diego A.; Greenland, Alan R.; Allison, Charles R.; Bordo, Robert A.; and Stringfellow, Steven A., 5,486,840, Cl. 345-7.000.

Strinning, Per E.: *See*—
Borg, Torolf; and Strinning, Per E., 5,486,092, Cl. 415-225.000.

Strohl, Willi: *See*—
Treiber, Juergen; Kuehn, Michael; Rollwage, Mathias; Trachte, Dietrich; and Strohl, Willi, 5,486,087, Cl. 415-55.100.

Strott, Douglas B.: *See*—
Charboneau, Thomas J.; Strott, Douglas B ; Sogge, Dale R.; and Maher, Thomas R., 5,486,976, Cl. 361-283.400.

Strunk, Richard J.; and Bell, Allyn R., to Uniroyal Chemical Company, Inc. Pyrimidylbensulfonyl chloride compounds. 5,486,610, Cl. 544-311.000.

Stubbs, George. Apparatus for withdrawing fluid or tissue from a patient's body. 5,485,853, Cl. 128-752.000.

Stüber, Dietrich: *See*—
Lesslauer, Werner; Lötscher, Hansruedi; and Stüber, Dietrich, 5,486,463, Cl. 435-69.500.

Stults, Nancy L., to SeaLite Sciences, Inc. Photoprotein conjugates and methods of use thereof. 5,486,455, Cl. 435-6.000.

Sturman, Oded E. Fuel injector with an internal pump. 5,485,957, Cl. 239-88.000.

Suda, Yasuo: *See*—
Suzuki, Kenji; Ishizuki, Akira; Obtaka, Keiji; Suda, Yasuo; Fukahori, Hidehiko; Nagano, Akihiko; Konishi, Kazuki; and Tsunekawa, Tokuichi, 5,486,892, Cl. 354-402.000.

Sudo, Shigeru, to National Institute for Fusion Science, The Director-General of the. Double-layer pellet, method of manufacturing the same, and apparatus for manufacturing the same. 5,487,094, Cl. 376-100.000.

Sudo, Shoichi: *See*—
Ohishi, Yasutake; Kanamori, Terutoshi; Nishida, Yoshiki; Mori, Atsushi; and Sudo, Shoichi, 5,486,947, Cl. 359-341.000.

Sugano, Toshihiko: *See*—
Fujita, Takashi; and Sugano, Toshihiko, 5,486,572, Cl. 525-247.000.

Sugawa, Satoshi: *See*—
Ito, Michio; Sugawa, Satoshi; and Yanagida, Atsushi, 5,486,479, Cl. 436-533.000.

Sugawara, Kiyomi: *See*—
Ishitaka, Yoshihiko; Sato, Yumiko; Abe, Munemitsu; Sasaki, Yorihiko; Kano, Mitsuru; Sato, Arao; and Sugawara, Kiyomi, 5,486,403, Cl. 428-167.000.

Sugawara, Shigeru: *See*—
Kamohara, Eiji; Sugawara, Shigeru; and Kimiya, Junichi, 5,486,735, Cl. 313-414.000.

Sugimoto, Akinori; Mori, Atsushi; and Nanno, Kunio, to Honda Giken Kogyo Kabushiki Kaisha. Parking brake system. 5,485,764, Cl. 74-535.000.

Sugiura, Hirotaka: *See*—
Asano, Hiroaki; Kobayashi, Yasuhiro; Hotta, Shigeo; Yamakawa, Yoichi; Ito, Akira; and Sugiura, Hirotaka, 5,485,752, Cl. 73-660.000.

Sugiura, Muneharu: *See*—
Imai, Hitoshi; Sugiura, Muneharu; and Hoashi, Katsutoshi, 5,486,948, Cl. 359-462.000.

Sugiura, Souichi; Watanabe, Hidehiro; and Yoshida, Seiko, to Kabushiki Kaisha Toshiba. Semiconductor device including insulating film arrangement having low reflectance. 5,486,719, Cl. 257-641.000.

Sugiyama, Kazuhide: *See*—
Yamaguchi, Yukuo; Onuki, Kazuhiko; and Sugiyama, Kazuhide, 5,486,882, Cl. 353-77.000.

Sugiyama, Toshihiro: *See*—
Takenaka, Eiji; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijirou; Saitoh, Hiroshi; Sugiyama, Toshihiro; Yamanaka, Tetsuo; Murakami, Eisaku; and Komatsubara, Satoru, 5,486,909, Cl. 355-259.000.

Suh, Jung S.; and Lee, Sang S., to Samsung Electronics Co., Ltd. Musical medley function controlling method in a television with a video/accompaniment-music player. 5,486,645, Cl. 84-610.000.

Suh, Jung W.: *See*—
Lee, Yong W.; Lee, Yeong S.; Yon, Chang S.; Suh, Jung W.; Lee, Chul H.; Lim, Yoong H.; and Yoo, Ick D., 5,486,630, Cl. 554-1.000.

Sukegawa, Shunichi, to Texas Instruments Incorporated. Semiconductor memory device. 5,487,039, Cl. 365-200.000.

Sukegawa, Shunichi; and Saeki, Tetsuya, to Texas Instruments Incorporated; and Hitachi Ltd. Semiconductor memory device and defective memory cell repair circuit. 5,487,040, Cl. 365-200.000.

Sulfstede, Louis E.: *See*—
Guy, Stephen E.; Sulfstede, Louis E.; and Hillmer, Eric, 5,485,954, Cl. 236-78.00R.

Sullivan, Patrick, to Cray Research, Inc. Boundary scan testing using clocked signal. 5,487,074, Cl. 371-22.300.

Sumitomo Chemical Company, Limited: *See*—
Miyamoto, Tetsuya; Takahashi, Miyao; Fujisaki, Takahiko; Harada, Naoki; Kayane, Yutaka; and Omura, Takashi, 5,486,607, Cl. 544-76.000.

Sumitomo Chemical Co., Ltd.: *See*—
Kimura, Junichi; Wakamatsu, Kazuki; Usui, Masahito; and Satoh, Makoto, 5,486,415, Cl. 428-349.000.

Sumitomo Electric Industries, Ltd.: *See*—
Honda, Masaaki; and Ihara, Tomohiko, 5,486,220, Cl. 55-487.000.
Shibata, Kenichiro; Hatta, Toshiyuki; Matsuyama, Fumio; Miyamoto, Masahiro; Okui, Masabu; and Nishi, Masaya, 5,485,950, Cl. 228-194.000.
Tennsoku, Kenji; Inoue, Takuya; and Hashimoto, Takeo, 5,486,822, Cl. 340-995.000.

Sumitomo Metal Industries, Ltd.: *See*—
Kishimoto, Yoshihisa; Hiraishi, Nobushige; Takahashi, Wataru; Obkita, Masakazu; Ishigaki, Naoyuki; and Matsuura, Yutaka, 5,486,224, Cl. 75-254.000.

Sumitomo Metal Mining Company, Limited: *See*—
Sato, Naobumi; and Yanagisawa, Yasuhiro, 5,486,722, Cl. 257-666.000.

Sumitomo Rubber Industries, Ltd.: *See*—
Kawasaki, Atsuko; Nakashita, Takefumi; Inui, Yoshiharu; and Shirouzu, Toshimichi, 5,486,194, Cl. 606-203.000.
Kikuchi, Nobuyuki; Ookochi, Katsuaki; Onuki, Masatsugu; and Yarimizu, Kazuaki, 5,486,261, Cl. 156-422.000.

Sumitomo Special Metals Co., Ltd.: *See*—
Kawakami, Makoto; and Yamaguchi, Shigeru, 5,486,756, Cl. 324-127.000.
Kishimoto, Yoshihisa; Hiraishi, Nobushige; Takahashi, Wataru; Obkita, Masakazu; Ishigaki, Naoyuki; and Matsuura, Yutaka, 5,486,224, Cl. 75-254.000.

Sumitomo Wiring Systems, Ltd.: *See*—
Aoyama, Masahiko, 5,486,434, Cl. 429-178.000.
Miyazaki, Sho, 5,486,123, Cl. 439-825.000.
Nabeshima, Akira; Watanabe, Kaoru; and Saba, Toshikazu, 5,486,119, Cl. 439-489.000.

Summers, James B., Jr.; Davidsen, Steven K.; Curtin, Michael L.; Heyman, H. Robin; Sheppard, George S.; Xu, Lianbong; Carrera, George M., Jr.; and Garland, Robert B., to Abbott Laboratories. Platelet activating factor antagonists: imidazopyridine indoles. 5,486,525, Cl. 514-303.000.

Summers, Thomas W. Vehicle. 5,485,893, Cl. 180-219.000.

Sundaram, Lalgudi M. G., to Motorola, Inc. Method for forming a lateral bipolar transistor. 5,486,481, Cl. 437-31.000.

Sundquist, Drew A.: *See*—
Watson, Will; Miller, Alan L.; Sundquist, Drew A.; Simpson, Roger T.; Ducklow, Diane K.; Beckerman, Joseph W.; and Showalter, Dan J., 5,485,894, Cl. 180-248.000.

Sung, Ki Y., to Hyundai Electronics Industries Co., Inc. Common control redundancy switchi method for switching a faulty active common control unit with an inactive spare common control unit. 5,487,149, Cl. 395-182.080.

Sunsmart Inc.: *See*—
Mitchnick, Mark; and O'Lenick, Anthony J., Jr., 5,486,631, Cl. 556-10.000.

Surber, Kevin J.: *See*—
Martin, Robert W.; Miller, Mark S.; and Surber, Kevin J., 5,486,372, Cl. 426-565.000.

Surka, Stefan, to United Parcel Service. Method and apparatus for determining the fine angular orientation of bar code symbols in two-dimensional CCD images. 5,487,115, Cl. 382-296.000.

Sutherland, Robert J., to Shell Oil Company. Process for making dispersant viscosity index improvers. 5,486,563, Cl. 524-534.000.

Sutton, Robert A., to BellSouth Corporation. End office of a telephone system with a zero loss plan. 5,487,109, Cl. 379-410.000.

Suzaki, Motohiro: *See*—
Miyamoto, Takeshi; Okumura, Kouji; and Suzaki, Motohiro, 5,486,908, Cl. 355-290.000.

Suzuki, Haruyuki, to Ricoh Company, Ltd. Information recorder with tracking and seeking operations using low frequency tracking and lens position signals. 5,487,055, Cl. 369-44.280.

Suzuki, Hideharu: *See*—
Nishimura, Kazutoshi; Sakamoto, Hideki; and Suzuki, Hideharu, 5,487,035, Cl. 365-189.020.
Suzuki, Hidekazu; Harara, Mitsuhiko; and Tanaka, Tadao, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Control system and control method for controlling power steering apparatus. 5,487,007, Cl. 364-424.050.
Suzuki, Katsuaki: *See*—
Komori, Naoki; Morita, Akio; and Suzuki, Katsuaki, 5,487,148, Cl. 395-182.020.
Suzuki, Kenji; Ishizaki, Akira; Ohtaka, Keiji; Suda, Yasuo; Fukahori, Hidehiko; Nagano, Akihiko; Konishi, Kazuki; and Tsunekawa, Tokuichi, to Canon Kabushiki Kaisha. Camera with visual axis detecting device. 5,486,892, Cl. 354-402.000.
Suzuki, Koichi: *See*—
Kashizaki, Yoshio; Miyazaki, Hajime; Suzuki, Koichi; Go, Shintetsu; and Sato, Kazuma, 5,486,440, Cl. 430-62.000.
Suzuki, Kyoji: *See*—
Emi, Shingo; Suzuki, Kyoji; and Ikada, Yoshito, 5,486,606, Cl. 536-84.000.
Suzuki, Nobuhiro; Kitada, Chieko; and Tsuda, Masao, to Takeda Chemical Industries, Ltd. Monoclonal antibodies to PACAP. 5,486,472, Cl. 435-240.270.
Suzuki, Nobuyoshi, to Heian Corporation. Positioning rule stopper apparatus in a numerical control router. 5,486,746, Cl. 318-569.000.
Suzuki, Seiichi; and Murayama, Keijiro, to Max Co., Ltd. Binding machine. 5,485,711, Cl. 53-138.400.
Suzuki, Suguru: *See*—
Mulvihill, Eileen R.; Yoshitake, Shinji; Ikeda, Yasunori; Suzuki, Suguru; Hashimoto, Akira; Yuzuriha, Teruaki; and Nexo, Bjorn A., 5,486,471, Cl. 435-226.000.
Suzuki, Takamitu: *See*—
Mori, Yukio; Kihara, Noriyasu; and Suzuki, Takamitu, 5,485,746, Cl. 73-202.000.
Suzuki, Takuji: *See*—
Aida, Satoshi; Shibata, Mariko; Fujimoto, Katsuhiko; Ishibashi, Yoshiharu; Suzuki, Takuji; Sato, Kozo; and Itoh, Ayao, 5,485,839, Cl. 128-653.100.
Suzuki, Tetsuji: *See*—
Negishi, Ichiro; Suzuki, Tetsuji; Koyama, Fujiko; Uchiyama, Yuji; Bonde, Hiroyuki; Konno, Toshio; Takahashi, Ryusaku; and Shou, Toshiaki, 5,486,878, Cl. 348-757.000.
Suzuki, Tetsuro: *See*—
Shoshi, Masayuki; Shimoda, Masakatsu; Konishi, Akiko; Kawahara, Megumi; Kojima, Akio; Suzuki, Tetsuro; and Yoshikawa, Masao, 5,486,438, Cl. 430-58.000.
Suzuki, Tomio: *See*—
Takeya, Fuminori; and Suzuki, Tomio, 5,486,969, Cl. 360-127.000.
Suzuki, Tomohiro, to Uniden Corporation. Integrated port selection circuit for high frequency signal. 5,486,797, Cl. 333-104.000.
Suzuki, Yasuo: *See*—
Ward, Peter A.; Miyasaka, Masayuka; and Suzuki, Yasuo, 5,486,536, Cl. 514-460.000.
Sverlow, Genadie G.: *See*—
della-Cioppa, Guy R.; Garger, Stephen J., Jr.; Holtz, Richard B.; McCulloch, Michael J.; and Sverlow, Genadie G., 5,486,351, Cl. 424-59.000.
Swain, Eugene A., to Xerox Corporation. Substrate holding apparatus. 5,486,028, Cl. 294-93.000.
Swan, David W.: *See*—
Smith, David P. H.; Leonard, Mark T.; and Swan, David W., 5,486,857, Cl. 347-224.000.
Swanepoel, Adriaan R., to Adriaan Retief Swanepoel. Windscreen wiper with elongated, curved backbone. 5,485,650, Cl. 15-250.430.
Swanson, David K.: *See*—
Panescu, Dorin; and Swanson, David K., 5,485,849, Cl. 128-699.000.
Sweco, Incorporated: *See*—
Zaun, Jochim M., 5,485,924, Cl. 209-300.000.
Swenson, Rolf E.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Perlman, Kato L.; and Swenson, Rolf E., 5,486,636, Cl. 556-443.000.
Swisher, Curtis N.: *See*—
Quarderer, George J., Jr.; Swisher, Curtis N.; and Trent, David L., 5,486,627, Cl. 549-521.000.
Switchcraft Inc.: *See*—
Lau, Frederick L., 5,485,673, Cl. 29-883.000.
Sykes, Christopher C., to International Fuel Cells Corporation. Cabinet structures coupled to adjacent cabinet structures and to rectangular frame elements, and equipped with anti-tilt mechanisms and rolling and sliding bases. 5,486,041, Cl. 312-111.000.
Symbios Logic Inc.: *See*—
Bemis, Edward D., 5,487,160, Cl. 395-441.000.
Symbol Technologies, Inc.: *See*—
Bard, Simon; Strat, Askold; and Dvorkis, Paul, 5,486,944, Cl. 359-198.000.
Symetrix Corporation: *See*—
Mihara, Takashi; Watanabe, Hitoshi; Yoshimori, Hiroyuki; Paz de Araujo, Carlos A.; and McMillan, Larry D., 5,487,032, Cl. 365-145.000.
Szemerédi, Katalin: *See*—
Bajnógel, Judit; Blaskó, Gábor; Budai, Zoltán; Schmidt, Éva; Egyed, András; Fekete, Márton; Gacsályi, István; Gyertyán, István; Mezei, Tibor; Reiter née Esses, Kalára; Simig, Gyula; Szemerédi, Katalin; and Szirt née Kiszelly, Enikő, 5,486,528, Cl. 514-331.000.
Szirt née Kiszelly, Enikő: *See*—
Bajnógel, Judit; Blaskó, Gábor; Budai, Zoltán; Schmidt, Éva; Egyed, András; Fekete, Márton; Gacsályi, István; Gyertyán, István; Mezei, Tibor; Reiter née Esses, Kalára; Simig, Gyula; Szemerédi, Katalin; and Szirt née Kiszelly, Enikő, 5,486,528, Cl. 514-331.000.
T. J. Hale Company: *See*—
Felton, J. Reed, 5,485,928, Cl. 211-52.000.
T&N Technology Limited: *See*—
Marks, Kevin T.; Salter, Nigel D.; Remedios, Rosario; and Waddington, Peter, 5,485,665, Cl. 29-407.000.
Tada, Yoshiaki: *See*—
Shindo, Naoaki; Kita, Takehide; Matsudaira, Nagahisa; Kobayashi, Akihiko; Tada, Yoshiaki; Sato, Takashi; and Sato, Atsushi, 5,486,933, Cl. 359-2.000.
Taguchi, Hideo: *See*—
Kashikie, Junsuke; and Taguchi, Hideo, 5,485,659, Cl. 24-71.00J.
Taherian, M. Reza; and Habashy, Tarek M., to Schlumberger Technology Corporation. Microwave device and method for measuring multiphase flows. 5,485,743, Cl. 73-61.440.
Tai, David. Adapter mechanism for extracting and retracting video tape from miniature cassettes. 5,486,959, Cl. 360-94.000.
Taimei Kagaku Kogyo Kabushiki Kaisha: *See*—
Katsuoka, Kyuji; Harumiya, Noriho; Hashizume, Tadahiro; and Kitahara, Tadashi, 5,486,497, Cl. 501-95.000.
Taiwan Semiconductor Manuf. Company: *See*—
Tsai, Chia S.; and Chang, Tien C., 5,486,266, Cl. 156-657.100.
Takach, Stephen J. Head vibrator. 5,486,156, Cl. 601-70.000.
Takado, Kanemasa; and Murakami, Tatsuo, to Fuji Chemical Industry Co., Ltd. Calcium hydrogen phosphate, a method for preparing it, and an excipient utilizing it. 5,486,365, Cl. 424-602.000.
Takagi, Masahiro: *See*—
Kitamoto, Yoshito; Takagi, Masahiro; Akiba, Hiroshi; and Seki, Kazuyuki, 5,486,276, Cl. 204-192.200.
Takagi, Mitsuo: *See*—
Fujita, Hiroyuki; Yoshida, Iwao; Takagi, Mitsuo; Manabe, Sadao; and Fukai, Konosuke, 5,486,473, Cl. 435-240.200.
Takagi, Tadao, to Nikon Corporation. Camera having a display for predicted images. 5,486,893, Cl. 354-410.000.
Takagiwa, Hiroyuki: *See*—
Fujii, Yozo; Moriguchi, Hiroyuki; Ikunami, Yoshikazu; Matsunawa, Masahiko; Tamura, Akihiko; Yasuda, Kazuo; Miwa, Tadashi; Horiuchi, Tatsumi; Kishimoto, Tadao; Fujimaki, Yoshihide; Takagiwa, Hiroyuki; and Tamura, Takashi, 5,486,898, Cl. 355-200.000.
Takahashi, Akira: *See*—
Murakami, Yoshiteru; Iketani, Naoyasu; Takahashi, Akira; and Ohta, Kenji, 5,486,395, Cl. 428-64.300.
Takahashi, Kimikazu; Mitake, Haruko; and Fujimura, Shigeru, to Yokogawa Electric Corporation. Scheduling system. 5,487,144, Cl. 395-161.000.
Takahashi, Kinya: *See*—
Nozawa, Yusaku; Ohtsu, Wataru; Ichiki, Nobuhiko; Ino, Kazuyuki; Matsuzaki, Hiroshi; and Takahashi, Kinya, 5,485,724, Cl. 60-421.000.
Takahashi, Kunihiro; Kojima, Yoshikazu; Takasu, Hiroaki; Matsuyama, Nobuyoshi; Niwa, Hitoshi; Yoshino, Tomoyuki; and Yamazaki, Tsuneo, to Seiko Instruments Inc. Light valve device using semiconductive composite substrate. 5,486,708, Cl. 257-59.000.
Takahashi, Masanori; Nagano, Tadashi; Mori, Hideko; and Kiyono, Masaki, to Mitsubishi Electric Industrial Co., Ltd. Syntactic analysis apparatus. 5,487,000, Cl. 364-419.080.
Takahashi, Masashi: *See*—
Watanabe, Takeshi; Yoshida, Minoru; Fujiwara, Shigeru; and Takahashi, Masashi, 5,486,907, Cl. 355-219.000.
Takahashi, Miyao: *See*—
Miyamoto, Tetsuya; Takahashi, Miyao; Fujisaki, Takahiko; Harada, Naoki; Kayane, Yutaka; and Omura, Takashi, 5,486,607, Cl. 544-76.000.
Takahashi, Naohiko: *See*—
Matsushita, Osami; Yoneyama, Mitsuho; Takahashi, Naohiko; Fukushima, Yasuo; Hiroshima, Minoru; Kaneki, Tadashi; Abe, Yoshiaki; and Sakanashi, Naofumi, 5,486,729, Cl. 310-90.500.
Takahashi, Ryusaku: *See*—
Negishi, Ichiro; Suzuki, Tetsuji; Koyama, Fujiko; Uchiyama, Yuji; Bonde, Hiroyuki; Konno, Toshio; Takahashi, Ryusaku; and Shou, Toshiaki, 5,486,878, Cl. 348-757.000.
Takahashi, Setsuo: *See*—
Yanagi, Junichirou; Takase, Akihiko; and Takahashi, Setsuo, 5,487,062, Cl. 370-16.100.
Takahashi, Wataru: *See*—
Kishimoto, Yoshihisa; Hiraishi, Nobushige; Takahashi, Wataru; Ohkita, Masakazu; Ishigaki, Naoyuki; and Matsuura, Yutaka, 5,486,224, Cl. 75-254.000.
Takasago International Corporation: *See*—
Matsushima, Yoshimasa; and Hagiwara, Toshimitsu, 5,486,441, Cl. 430-74.000.
Takase, Akihiko: *See*—
Yanagi, Junichirou; Takase, Akihiko; and Takahashi, Setsuo, 5,487,062, Cl. 370-16.100.
Takasu, Hiroaki: *See*—

Takahashi, Kunihiro; Kojima, Yoshikazu; Takasu, Hiroaki; Matsuyama, Nobuyoshi; Niwa, Hitoshi; Yoshino, Tomoyuki; and Yamazaki, Tsuneo, 5,486,708, Cl. 257-59.000.
Takasugi, Satoru: *See*—
Hosono, Hitoshi; and Takasugi, Satoru, 5,486,449, Cl. 430-328.000.
Takatori, Yasushi: *See*—
Ayata, Naoki; Shirato, Yoshiaki; Takatori, Yasushi; and Seki, Mitsuaki, 5,486,848, Cl. 347-15.000.
Takeda, Atsushi; Koike, Michiro; Saito, Hironobu; and Katsumi, Toru, to Canon Kabushiki Kaisha. Developing agent recovery apparatus and image forming apparatus using such recovery apparatus. 5,486,905, Cl. 355-215.000.
Takeda Chemical Industries, Ltd.: *See*—
Suzuki, Nobuhiro; Kitada, Chieko; and Tsuda, Masao, 5,486,472, Cl. 435-240.270.
Uda, Yoshiaki; Nishida, Yoko; and Ogawa, Yasuaki, 5,486,508, Cl. 514-58.000.
Takeda, Shohei: *See*—
Miyamoto, Ryosuke; Sekita, Makoto; and Takeda, Shohei, 5,486,861, Cl. 348-362.000.
Takenaka, Eiji; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Sugiyama, Toshihiro; Yamanaka, Tetsuo, Murakami, Eisaku; and Komatsubara, Satoru, to Ricoh Company, Ltd. Developing device for an image forming apparatus. 5,486,909, Cl. 355-259.000.
Takenouchi, Tomoo; Ichinomiya, Yoshiaki; Ishizaka, Junji; Itagaki, Junji; Ohhashi, Sbuzo; Azuma, Tsukasa; and Tanaka, Yasuhiko, to Japan Steel Works, Ltd., The. Electrode for electroslag remelting and process of producing alloy using the same. 5,487,082, Cl. 373-42.000.
Takeshita, Takuo: *See*—
Nakayama, Ryoji; Takeshita, Takuo; and Ishill, Yoshinari, 5,486,239, Cl. 148-101.000.
Takeuchi, Ikuo: *See*—
Kanno, Satoru; Katsumi, Toru; and Takeuchi, Ikuo, 5,486,903, Cl. 355-208.000.
Takeuchi, Koichi: *See*—
Ohga, Norio; and Takeuchi, Koichi, 5,486,141, Cl. 472-60.000.
Takeuchi, Masamitsu; Ishihama, Kazuyoshi; and Ikei, Kazunori, to Kabushiki Kaisha Komatsu Siesakusho. Pressure compensation valve. 5,485,864, Cl. 137-118.000.
Takeuchi, Seiji: *See*—
Tsuji, Toshihiko; Takeuchi, Seiji; Miyazaki, Kyoichi; Yoshii, Minoru; Nose, Noriyuki; and Mori, Tetsuzo, 5,486,919, Cl. 356-349.000.
Takeya, Fuminori; and Suzuki, Tomio, to NGK Insulators, Ltd. Magnetic head core having ferrite member reinforced by non-magnetic material. 5,486,969, Cl. 360-127.000.
Takeyasu, Nobuyuki: *See*—
Yamamoto, Hiroshi; Takeyasu, Nobuyuki; and Ohta, Tomohiro, 5,486,492, Cl. 437-192.000.
Takigawa, Akio: *See*—
Yano, Yuichi; Kinugasa, Naoki; and Takigawa, Akio, 5,486,937, Cl. 359-51.000.
Takiishi, Antonio L., to Eaton Corporation. Flexible connector for a circuit interrupter. 5,486,662, Cl. 200-50.0AA.
Takimoto, Akio; Wakemoto, Hirofumi; Tanaka, Eiichiro; Watanabe, Masanori; Asayama, Junko; Ogawa, Hisahito; Sato, Shigehiro; and Yokotani, Fumiko, to Matsushita Electric Industrial Co., Ltd. Organic polymer and preparation and use in crystal spatial light modulator. 5,486,442, Cl. 430-78.000.
Takizawa, Kuniharu: *See*—
Fujikake, Hideo; Takizawa, Kuniharu; Hirose, Juichi; and Kobayashi, Tatsushi, 5,486,936, Cl. 359-51.000.
Talbert, Lloyd G.; and Brazil, Stephen M., to Alumina Ceramics Co. (ACI). Graphite-loaded silicon carbide. 5,486,496, Cl. 501-90.000.
Talbot, Douglas C.: *See*—
Witler, James L.; Spike, Douglas L.; and Talbot, Douglas C., 5,486,002, Cl. 273-184.00R.
Taligent, Inc.: *See*—
Marsh, Donald M.; and Zias, Jeff, 5,487,145, Cl. 395-162.000.
Tamagawa Seiki Kabushiki Kaisha: *See*—
Masaki, Koichi; Fukuzawa, Yoshinao; Kitazawa, Kanji; Azuma, Takanobu; Naganuma, Naohiro; and Hosoda, Tetsuo, 5,486,731, Cl. 310-180.000.
Tamura, Akihiko: *See*—
Fujii, Yozo; Moriguchi, Hiroyuki; Ikunami, Yoshikazu; Matsunawa, Masahiko; Tamura, Akihiko; Yasuda, Kazuo; Miwa, Tadashi; Horiuchi, Tatsumi; Kishimoto, Tadao; Fujimaki, Yoshihide; Takagiwa, Hiroyuki; and Tamura, Takashi, 5,486,898, Cl. 355-200.000.
Tamura, Shin-Ichiro: *See*—
Iwamura, Takashi; Matsuzawa, Yoko; and Tamura, Shin-Ichiro, 5,486,437, Cl. 369-288.000.
Tamura, Takashi: *See*—
Fujii, Yozo; Moriguchi, Hiroyuki; Ikunami, Yoshikazu; Matsunawa, Masahiko; Tamura, Akihiko; Yasuda, Kazuo; Miwa, Tadashi; Horiuchi, Tatsumi; Kishimoto, Tadao; Fujimaki, Yoshihide; Takagiwa, Hiroyuki; and Tamura, Takashi, 5,486,898, Cl. 355-200.000.
Tanaami, Hideyuki: *See*—
Miura, Yasushi; Moriguchi, Haruhiko; Murayama, Yasuhi; and Tanaami, Hideyuki, 5,486,849, Cl. 347-18.000.
Tanaka, Eiichiro: *See*—
Takimoto, Akio; Wakemoto, Hirofumi; Tanaka, Eiichiro; Watanabe, Masanori; Asayama, Junko; Sato, Shigehiro; and Yokotani, Fumiko, 5,486,442, Cl. 430-78.000.
Tanaka, Kuninobu: *See*—
Maekawa, Itaru; Ohgihara, Takahiro; and Tanaka, Kuninobu, 5,486,787, Cl. 327-560.000.
Tanaka, Motoharu: *See*—
Watada, Atsuyuki; Tokita, Toshiaki; and Tanaka, Motoharu, 5,487,046, Cl. 369-13.000.
Tanaka, Shigeo, to Sony Corporation. Audio visual system with automatic closing of a bus circuit when an AV unit is disconnected. 5,486,877, Cl. 348-722.000.
Tanaka, Tadao: *See*—
Suzuki, Hidekazu; Harara, Mitsuhiko; and Tanaka, Tadao, 5,487,007, Cl. 364-424.050.
Tanaka, Tetsuya; and Taniguchi, Takashi, to Matsushita Electric Industrial Co., Ltd. Cache lock information feeding system using an address translator. 5,487,162. Cl. 395-472.000.
Tanaka, Yasuhiko: *See*—
Takenouchi, Tomoo; Ichinomiya, Yoshiaki; Ishizaka, Junji; Itagaki, Junji; Ohhashi, Sbuzo; Azuma, Tsukasa; and Tanaka, Yasuhiko, 5,487,082, Cl. 373-42.000.
Tanaka, Yoichiro; Tanimoto, Kazushi; Ohashi, Hiroshi; Hikosaka, Takashi; Ohtsubo, Yasuo; and Hoshina, Shigeru, to Kabushiki Kaisha Toshiba. Magnetic disk memory system. 5,486,967, Cl. 360-113.000.
Tanaka, Yoshiaki: *See*—
Takenaka, Eiji; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Sugiyama, Toshihiro; Yamanaka, Tetsuo; Murakami, Eisaku; and Komatsubara, Satoru, 5,486,909, Cl. 355-259.000.
Tanase, Yoshi: *See*—
Shamouilian, Shamouil; and Tanase, Yoshi, 5,486,975, Cl. 361-234.000.
Tang, Regiaald T.; Mares, Frank; Boyle, William J., Jr.; Chiu, Tia-Ho; and Patel, Kundanbhai M., to United States Surgical Corporation. Medical devices fabricated from copolymers having recurring carbonate units. 5,486,593, Cl. 528-370.000.
Tani, Tohru: *See*—
Matsuda, Takehisa; Itoh, Tetsuo; and Tani, Tohru, 5,486,547, Cl. 523-111.000.
Taniguchi, Keiji: *See*—
Wada, Takasumi; Taniguchi, Keiji; and Yamamoto, Yoichi, 5,486,900, Cl. 355-203.000.
Taniguchi, Minoru: *See*—
Kakizaki, Shinobu; Taniguchi, Minoru; and Kanai, Fukashi, 5,487,006, Cl. 364-424.050.
Taniguchi, Naohiro: *See*—
Nohara, Kazuya; and Taniguchi, Naohiro, 5,485,749, Cl. 73-517.340.
Taniguchi, Takashi: *See*—
Tanaka, Tetsuya; and Taniguchi, Takashi, 5,487,162, Cl. 395-472.000.
Tanimoto, Kazushi: *See*—
Tanaka, Yoichiro; Tanimoto, Kazushi; Ohashi, Hiroshi; Hikosaka, Takashi; Ohtsubo, Yasuo; and Hoshina, Shigeru, 5,486,967, Cl. 360-113.000.
Tanner, Scott B.: *See*—
Komarek, James A.; Padgett, Clarence W.; Tanner, Scott B.; Kojima, Shin-ichi; Minney, Jack L.; Oishi, Motohiro; Fukumura, Keiji; and Nakanishi, H., 5,487,038, Cl. 365-191.000.
Tanoie, Kunihiro: *See*—
Komazaki, Tomokazu; Guuji, Katsuhiko; Noguchi, Kazushige; and Tanoie, Kunihiro, 5,486,799, Cl. 333-134.000.
Taroni, Gianbattista: *See*—
Broussard, Fabio; Adovasio, Mauro; Callierotti, Corrado; Taroni, Gianbattista; and Roncalli, José, 5,486,613, Cl. 546-181.000.
Tarte, Lisa A.: *See*—
Contolini, Robert J.; Mayer, Steven T.; and Tarte, Lisa A., 5,486,234, Cl. 216-91.000.
Taruya, Masaaki: *See*—
Shimizu, Takeshi; Taruya, Masaaki; Murata, Shigemi; Koiwa, Mitsuru; and Maekawa, Toshio, 5,485,825, Cl. 123-634.000.
Tate, Takao: *See*—
Hirose, Katsuhiko; Tate, Takao; Nakamura, Norihiko; Sato, Takeshi; Iwahashi, Kazuhiro; Kamoshita, Shinji; and Yamanaka, Akihiro, 5,485,822, Cl. 123-501.000.
Taylor, Glen D., to Eaton Corporation. AC powered electrical control device with logic level control. 5,486,972, Cl. 361-154.000.
Taylor, H. Roy: *See*—
Santhouse, Daniel; and Taylor, H. Roy, 5,485,829, Cl. 126-409.000.
Taylor, Patrick R.; and Pirzada, Shahid A., to Idaho Research Foundation. Plasma production of ultra-fine ceramic carbides. 5,486,675, Cl. 217-121.590.
Taylor, Robert D.; and Andros, Marc R., to Morton International, Inc. Extrudable gas generant for hybrid air bag inflation system. 5,486,248, Cl. 149-109.600.
Technomarket, L.P.: *See*—
Beiswenger, John L.; and Schwimmer, Robert L, 5,487,053, Cl. 368-69.000.
Tedford, Clark E.: *See*—
Durant, Graham J.; Khan, Amin M.; and Tedford, Clark E., 5,486,526, Cl. 514-319.000.
Teijin Limited: *See*—

Emi, Shingo; Suzuki, Kyoji; and Ikada, Yoshito, 5,486,606, Cl. 536-84.000.
Hirata, Masumi; Funakoshi, Wataru; and Sasaki, Katsushi, 5,486,555, Cl. 524-83.000.

Tektronix, Inc.: *See*—
Seckora, Michael C., 5,487,023, Cl. 364-724.130.

Telefonaktiebolaget LM Ericsson: *See*—
Eriksson, Karl Ö., 5,486,784, Cl. 327-165.000.
Hansson, Hans M., 5,487,182, Cl. 455-90.000.
Lundh, Peter C. B., 5,486,113, Cl. 439-61.000.
Nordstrand, Ingrid V.; and Bodin, Stig R., 5,487,071, Cl. 370-110.100.
Persson, Bengt Y., 5,487,174, Cl. 455-33.200.

Telford, Julia H.: *See*—
Holt, Christopher B.; and Telford, Julia H., 5,486,373, Cl. 426-565.000.

Telschow, Jeffrey E., to Akzo Nobel NV. Process for preparing bis(pentaerythritol phosphate alcohol) alkylphosphonate. 5,486,639, Cl. 558-74.000.

Telschow, Jeffrey E., to Akzo Nobel NV. Process for preparing bis(pentaerythritol phosphate alcohol) alkylphosphonate. 5,486,640, Cl. 558-74.000.

Temme, Leonard A.: *See*—
Stevens, David E.; and Temme, Leonard A., 5,486,821, Cl. 340-970.000.

Teng, Ganghui: *See*—
Gordon, James N.; and Teng, Ganghui, 5,486,397, Cl. 428-76.000.

Tenmoku, Kenji; Inoue, Takuya; and Hashimoto, Takeo, to Sumitomo Electric Industries, Ltd. Optimum route determination. 5,486,822, Cl. 340-995.000.

Tenney, Joel D.: *See*—
Winters, John R.; Gray, John M.; and Tenney, Joel D., 5,486,344, Cl. 423-477.000.

Teraji, David G.: *See*—
Ludwig, George A.; and Teraji, David G., 5,486,730, Cl. 310-156.000.

Teraoka, Masao, to Tochigi Fugi Sangyo Kabushiki Kaisha. Continuously variable transmission. 5,485,725, Cl. 60-491.000.

Terhorst, Mark A. Carpet cutting knife guide. 5,485,676, Cl. 30-294.000.

Ternes-Burton Company: *See*—
Ternes, Gretchen, 5,485,679, Cl. 33-623.000.

Ternes, Gretchen, to Ternes-Burton Company. Image registration board and compressible pin assembly. 5,485,679, Cl. 33-623.000.

Tessari, Pino: *See*—
Gorza, Roberto; Gallina, Luca; and Tessari, Pino, 5,485,688, Cl. 36-117.000.

Teva Pharmaceutical Industries, Ltd.: *See*—
Sterling, Jeff; Levy, Ruth; Veinberg, Alex; Goldenberg, Willy; Finberg, John; Youdim, Musa; and Gutman, Arieh, 5,486,541, Cl. 514-657.000.

Texas Instruments Incorporated: *See*—
Andresen, Bernhard H.; and Cline, Roger A., 5,487,093, Cl. 375-376.000.
Carpenter, Alton D.; and Segler, Howard W., 5,485,672, Cl. 29-841.000.
Charboneau, Thomas J.; Strott, Douglas B.; Sogge, Dale R.; and Maher, Thomas R., 5,486,976, Cl. 361-283.400.
Gnade, Bruce E.; Pinizzotto, Russell F.; and Littler, Christopher L., 5,487,031, Cl. 365-145.000.
Guttag, Karl M.; Poland, Sydney W.; Balmer, Keith; Gove, Robert J.; and Read, Christopher J., 5,487,146, Cl. 395-166.000.
Hanson, Charles M.; Dudley, Dana; and Robinson, James E., 5,486,698, Cl. 250-332.000.
Hotchkiss, Gregory; and Levine, Jules D., 5,486,494, Cl. 437-209.000.
Lu, Hsindao, 5,486,780, Cl. 327-53.000.
Malhi, Satwinder, 5,486,484, Cl. 437-41.000.
McCree, Alan V.; and Viswanathan, Vishu R., 5,487,087, Cl. 375-245.000.
Prasad, Sharat; and Roy, Kaushik, 5,487,017, Cl. 364-488.000.
Simpson, Richard; Oakland, Erick D.; and Barr, Graham M., 5,487,022, Cl. 364-715.040.
Sukegawa, Shunichi, 5,487,039, Cl. 365-200.000.
Sukegawa, Shunichi; and Saeki, Tetsuya, 5,487,040, Cl. 365-200.000.

Tezuka, Kazunari: *See*—
Sakakiyama, Ryuzo; Shirakawa, Kiminaga; and Tezuka, Kazunari, 5,486,147, Cl. 477-125.000.

Th. Goldschmidt AG: *See*—
Hahn, Günter; Klein, Klaus-Dieter; and Schäfer, Dietmar, 5,486,634, Cl. 556-425.000.

The, Siang-Chun: *See*—
Park, Chin S.; Holler, Mark A.; Diamond, Jay M.; The, Siang-Chun; Santoni, Umberto; and Buckmann, Kenneth R., 5,487,133, Cl. 395-27.000.

Thermalloy, Inc.: *See*—
Jordan, William D.; and Hinshaw, Howard G., 5,486,980, Cl. 361-697.000.

Thermedics Detection Inc.: *See*—
Achter, Eugene K.; Klotzsch, Helmut W.; Thompson, Craig D.; Gao, Fuquan; and Bosworth, Jonathan E., 5,486,693, Cl. 250-223.00B.

Thetford, Dean; and Gregory, Peter, to Zeneca, Limited. Poly-substituted phthalocyanines. 5,486,274, Cl. 204-157.500.

Thevenin, Pierre: *See*—
Naka, Shigehisa; Khan, Tasadduq; Wakler, André; Marty, Michel; Delaunay, Christophe; and Thevenin, Pierre, 5,486,242, Cl. 148-422.000.

Thibault, William C., to AER Energy Resources, Inc. Diffusion vent for a rechargeable metal-air cell. 5,486,429, Cl. 429-27.000.

Thiel, Rudolf; Klimt, Ulrich; and Doell, Andreas, to ITT Automotive Europe GmbH. Floating-frame spot-type disc brake for high-torque automotive vehicles. 5,485,899, Cl. 188-73.100.

Thiem, Hans-Jürgen: *See*—
Eichenauer, Herbert; Piejko, Karl-Erwin; Bunte, Hans-Jürgen; and Thiem, Hans-Jürgen, 5,486,583, Cl. 526-68.000.

Thomas J. Lipton Co., Division of Conopco, Inc.: *See*—
Fischer, Craig D., deceased; Breitbart, Dennis J.; Epstein, Arnold I.; and Zabel, Dale D., 5,486,374, Cl. 426-574.000.

Thomas, Prakash: *See*—
Collier, John P.; Hogle, Richard; Marsh, James G.; and Thomas, Prakash, 5,485,736, Cl. 72-47.000.

Thomas, Royston M.: *See*—
Bernstein, Peter R.; Shaw, Andrew; Thomas, Royston M.; Veale, Chris A.; Warner, Peter; and Wolanin, Donald J., 5,486,529, Cl. 514-335.000.

Thompson, Arthur H.; and Gist, Grant A., to Exxon Production Research Company. Method for determining subsurface electrical resistance using electroseismic measurements. 5,486,764, Cl. 324-323.000.

Thompson, Craig D.: *See*—
Achter, Eugene K.; Klotzsch, Helmut W.; Thompson, Craig D.; Gao, Fuquan; and Bosworth, Jonathan E., 5,486,693, Cl. 250-223.00B.

Thompson, Mitchell: *See*—
Chatigny, Joseph V.; Thompson, Mitchell; Radice, Peter F.; and Halvorsen, Donald L., 5,486,820, Cl. 340-933.000.

Thompson, Ralph J.; and Kane, Daniel E., to United Technologies Corporation. Turbine shroud segment with serpentine cooling channels. 5,486,090, Cl. 415-173.100.

Thompson, Terry L., to J Star Consolidated. Process and apparatus for handling a vehicle frame. 5,486,083, Cl. 414-607.000.

Thomson Consumer Electronics, Inc.: *See*—
Filliman, Paul D.; Ersoz, Nathaniel H.; Saeger, Timothy W.; Duffield, David J.; and Horlander, Karl F., 5,486,871, Cl. 348-558.000.
George, John B., 5,486,741, Cl. 315-382.000.
Helfrich, Kenneth J.; Stephens, Joseph C.; McClain, Kevin E.; and Lee, Brian, 5,486,866, Cl. 348-500.000.

Thomson-CSF: *See*—
Aigrain, Pierre, 5,486,938, Cl. 359-72.000.
Dagnac, Pierre; Leviandier, Michel; and Tigneres, Jean-Philippe, 5,486,681, Cl. 219-400.000.
Potier, Eric; and Wybierala, Michel, 5,486,829, Cl. 342-40.000.

Thomson Saginaw Ball Screw Company, Inc.: *See*—
Lange, David A., 5,485,760, Cl. 74-459.000.

Thorburn, William G.: *See*—
Mitchell, Donald K.; and Thorburn, William G., 5,486,923, Cl. 356-356.000.

Thorn, Richard P., to Lord Corporation. Adjustable, lockable damper. 5,486,056, Cl. 403-322.000.

Thottathil, Paul: *See*—
Kerr, Richard C.; Damewood, John R.; Menzel, Jill; Thottathil, Paul; and Sanduja, Mohan L., 5,486,210, Cl. 8-115.660.

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Dagnac, Pierre; Leviandier, Michel; and Tigneres, Jean-Philippe, 5,486,681, Cl. 219-400.000.

Timmers, Francis J.: *See*—
Devore, David D.; Timmers, Francis J.; Stevens, James C.; and Rosen, Robert K., 5,486,632, Cl. 556-11.000.

Timms, Colin T.: *See*—
Linnott, Edward R.; and Timms, Colin T., 5,485,823, Cl. 123-506.000.

Timms, Peter L.: *See*—
Smith, James R.; and Timms, Peter L., 5,486,340, Cl. 423-240.00S.

Tindell, Runyon H., to Northrop Grumman Corporation. Slotted cowl inlet lip for introducing high pressure air. 5,485,975, Cl. 244-53.00B.

Tochigi Fugi Sangyo Kabushiki Kaisha: *See*—
Teraoka, Masao, 5,485,725, Cl. 60-491.000.

Toda, Atsushi: *See*—
Yamashita, Masayasu; and Toda, Atsushi, 5,486,740, Cl. 315-308.000.

Toda, Toshimasa; Naito, Satoru; Osawa, Hisayu; and Yamazaki, Takaaki, to Sankyo Company, Limited. Polymer composition containing a piperidyltriazine compound. 5,486,556, Cl. 524-100.000.

Todaka, Yoshihiro: *See*—
Shiokawa, Junji; Chiba, Hiroshi; Murakami, Toshio; Todaka, Yoshihiro; Ohsaka, Ichiro; and Azumi, Takashi, 5,486,860, Cl. 348-354.000.

Todd, John H.; and Shaw, James M., to Ocean Arks International, Inc. Ecological fluidized bed method for the treatment of polluted water. 5,486,291, Cl. 210-602.000.

Todd, Robert E., to Cedardell Limited. Security arrangement. 5,486,812, Cl. 340-539.000.

Tokai Kogyo Co., Ltd.: *See*—
Arima, Hidetoshi, 5,486,325, Cl. 264-167.000.

Tokita, Toshiaki: *See*—
Watada, Atsuyuki; Tokita, Toshiaki; and Tanaka, Motoharu, 5,487,046, Cl. 369-13.000.

Tokyo Buhin Kogiyo Co., Ltd.: *See*—
Akima, Hideo; Ishikura, Yoshikiyo; and Kishi, Takaaki, 5,485,901, Cl. 188-164.000.

Tolendano, Jacob M., to Aristo International Corporation. Lunch box. 5,485,921, Cl. 206-545.000.

Tomaszewski, Peter R.: *See*—
Jordan, Richard C.; Capowski, Robert S.; Casper, Daniel F.; Ferraiolo, Frank D.; Laviola, William C.; and Tomaszewski, Peter R., 5,487,095, Cl. 376-371.000.

Tomlin, Anthony S.: *See*—

Henderson, John A.; Tomlin, Anthony S.; and Lucas, David M., 5,486,569, Cl. 525-116.000.

Tomoegawa Paper Co., Ltd.: *See*—
Fujikake, Hideo; Takizawa, Kuniharu; Hirose, Juichi; and Kobayashi, Tatsushi, 5,486,936, Cl. 359-51.000.

Tomura, Yoshihiro; and Bessho, Yoshihiro, to Matsushita Electric Industrial Co., Ltd. Capillary for a wire bonding apparatus and a method for forming an electric connection bump using the capillary. 5,485,949, Cl. 228-180.500.

Tong, Franklin F.: *See*—
Choy, Michael M.; Green, Paul E., Jr.; Hall, William E.; Jannello, Frank J.; Kravitz, Jeff K.; Liu, Karen; Ramaswami, Rajiv; and Tong, Franklin F., 5,487,120, Cl. 385-24.000.

Toon, Donald A.; Nielsen, Per H.; and Skov, Bent, to Solinst Canada Limited. Groundwater sampler. 5,485,881, Cl. 166-165.000.

Topholm & Westermann APS: *See*—
Topholm, Jan; Andersen, Svend V.; and Westermann, Soren E., 5,487,012, Cl. 364-474.050.

Topholm, Jan; Andersen, Svend V.; and Westermann, Soren E., to Topholm & Westermann APS. Method of preparing an otoplasty or adaptive earpiece individually matched to the shape of an auditory canal. 5,487,012, Cl. 364-474.050.

Toppan Printing Co., Ltd.: *See*—
Shindo, Naoaki; Kita, Takehide; Matsudaira, Nagahisa; Kobayashi, Akihiko; Tada, Yoshiaki; Sato, Takashi; and Sato, Atsushi, 5,486,933, Cl. 359-2.000.

Toro Company, The: *See*—
Walto, Joseph J.; Friberg, Nathan J.; and Niskanen, Floyd D., 5,485,963, Cl. 239-663.000.

Tosaka, Yasuo; and Sasagawa, Masayuki, to Konica Corporation. Silver halide color photographic light sensitive material and the image-forming process thereof. 5,486,450, Cl. 430-538.000.

Toshiba America Information Systems, Inc.: *See*—
Comer, Keith; Elsasser, Gary; and Iwakiri, Takano, 5,486,846, Cl. 345-168.000.

Toshiba Kikai Kabushiki Kaisha: *See*—
Katsumata, Hirofumi, 5,486,105, Cl. 425-143.000.

Total Register, Inc.: *See*—
Gallagher, John E.; and Gallagher, Terence J., 5,486,254, Cl. 156-229.000.

Totsuka, Nobuo: *See*—
Hashiguchi, Koichi; Matsumoto, Yoshihiro; Imanaka, Makoto; Hira, Takaaki; Ikeda, Rinsei; Nishiyama, Naoki; Totsuka, Nobuo; Bekki, Yoichiro; and Nabae, Motohiro, 5,486,243, Cl. 148-552.000.

Tougane, Hikohiro: *See*—
Igarashi, Osamu; Naitou, Akira; Tougane, Hikohiro; Tsutsumi, Hironobu; and Kudou, Tosihisa, 5,486,803, Cl. 336-92.000.

Touhsaent, Robert E.: *See*—
McGee, Dennis E.; and Touhsaent, Robert E., 5,486,426, Cl. 428-516.000.

Towbin, Harry: *See*—
Gordon, Julian; Hawkes, Richard; Niday, Evelyn; and Towbin, Harry, 5,486,452, Cl. 435-5.000.

Townsend, Carl W.; and Purer, Edna M., to Hughes Aircraft Company. Accelerated extraction of rolled materials. 5,486,236, Cl. 134-13.000.

Townsend, Donald J.: *See*—
Song, Joo H.; and Townsend, Donald J., 5,486,366, Cl. 426-5.000.

Townsend, Laurace E., to Wayne State University. Method and test kits for identifying Alzheimer's disease by testing cerebrospinal fluid. 5,486,460, Cl. 435-40.510.

Toya, Masumi, to Casio Computer Co., Ltd. Data processing apparatus for obtaining pattern-image data. 5,487,140, Cl. 395-135.000.

Toyama, Noboru: *See*—
Nakagawa, Katsumi; and Toyama, Noboru, 5,486,238, Cl. 136-259.000.

Toyne, Kenneth J.: *See*—
Gray, George W.; Lacey, David; Toyne, Kenneth J.; Scrowston, Richard M.; Shenouda, Ibrahim G.; Chan, Lawrence K. M.; Bradshaw, Madeline J.; Brimmell, Victoria; Constant, Jennifer; Raynes, Edward P.; Jackson, Adam; and Samra, Amarjit K., 5,486,309, Cl. 252-299.600.

Toyoda Koki Kabushiki Kaisha: *See*—
Asano, Hiroaki; Kobayashi, Yasuhiro; Hotta, Shigeo; Yamakawa, Yoichi; Ito, Akira; and Sugiura, Hirotaka, 5,485,752, Cl. 73-660.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Hamajima, Kaneo, 5,486,573, Cl. 525-274.000.
Hirose, Katsuhiko; Tate, Takao; Nakamura, Norihiko; Sato, Takeshi; Iwahashi, Kazuhiro; Kamoshita, Shinji; and Yamanaka, Akihiro, 5,485,822, Cl. 123-501.000.
Ohata, Akira; and Sawada, Hiroshi, 5,485,826, Cl. 123-679.000.
Ota, Hitoshi; Yashiro, Masao; Yotsuya, Koki; Kako, Takuzo; and Nakashima, Yuzi, 5,486,338, Cl. 422-179.000.

Toyota, Katsuhiro: *See*—
Yamashita, Yuji; and Toyota, Katsuhiro, 5,486,646, Cl. 84-635.000.

Toyota Motor Company: *See*—
Fuwa, Yoshio; Saitou, Kouji; and Yamashita, Jiro, 5,486,299, Cl. 252-12.000.

Trachte, Dietrich: *See*—
Treiber, Juergen; Kuehn, Michael; Rollwage, Mathias; Trachte, Dietrich; and Strohl, Willi, 5,486,087, Cl. 415-55.100.

Tran, Phieu M.: *See*—
Smolinske, Jeffrey C.; Tran, Phieu M.; Clanton, Christopher L.; and Scheibel, Robert C., Jr., 5,487,068, Cl. 370-94.100.

Tranquillini, Maria E.: *See*—
Trist, David; Pentassuglia, Giorgio; Tranquillini, Maria E.; and Ursini, Antonella, 5,486,514, Cl. 514-221.000.

Treiber, Juergen; Kuehn, Michael; Rollwage, Mathias; Trachte, Dietrich; and Strobl, Willi, to Robert Bosch GmbH. Unit for delivering fuel from a supply tank to an internal combustion engine. 5,486,087, Cl. 415-55.100.

Trent, David L.: *See*—
Quarderer, George J., Jr.; Swisher, Curtis N.; and Trent, David L., 5,486,627, Cl. 549-521.000.

Tribology Systems, Inc.: *See*—
Sibley, Lewis B.; and Kelly, C. Brian, 5,486,052, Cl. 384-463.000.

Trimble Navigation Limited: *See*—
Lennen, Gary R., 5,486,834, Cl. 342-357.000.

Trist, David; Pentassuglia, Giorgio; Tranquillini, Maria E.; and Ursini, Antonella, to Glaxo SpA. Carbamate derivatives. 5,486,514, Cl. 514-221.000.

Trodden, Thomas J., to Philips Electroics North America Corporation. Sense amplifier having variable sensing load for non-volatile memory. 5,487,045, Cl. 365-205.000.

Troudet, Farideh; and Troudet, Terry. Autonomous wearable computing device and method of artistic expression using same. 5,486,112, Cl. 434-250.000.

Troudet, Terry: *See*—
Troudet, Farideh; and Troudet, Terry, 5,486,112, Cl. 434-250.000.

Troudt, Kevin J. Universal paint sprayer extender. 5,485,960, Cl. 239-112.000.

Truax, Daniel A., to Ultra-Technologies, Inc. Method and apparatus for treatment of asphalt and synthetic resins. 5,486,554, Cl. 524-71.000.

Trustees of Boston University, The: *See*—
Oppenheim, Frank G.; and Xu, Tao, 5,486,503, Cl. 514-2.000.

Trustees of Columbia University, The: *See*—
Ghandour, Osman A., 5,486,264, Cl. 156-635.100.

Trustees of Columbia University in the City of New York, The: *See*—
Acampora, Anthony S.; and Naghshineh, Mahmoud, 5,487,065, Cl. 370-60.100.

TRW Inc.: *See*—
Lammert, Michael D., 5,486,483, Cl. 437-39.000.

TRW Vehicle Safety Systems Inc.: *See*—
Brown, Louis R.; Steffens, Charles E., Jr.; Kroetsch, Charles E.; and Robbins, Delmar H., 5,485,758, Cl. 73-865.800.
Steffens, Charles E., Jr., 5,485,970, Cl. 242-374.000.

Tsai, Chia S.; and Chang, Tien C., to Taiwan Semiconductor Manuf. Company. Method for improving the adhesion of a deposited metal layer. 5,486,266, Cl. 156-657.100.

Tsai, Kuo-Lih: *See*—
Dye, James L.; Ellaboudy, Ahmed S.; and Tsai, Kuo-Lih, 5,486,225, Cl. 75-351.000.

Tsai, Margaret C.: *See*—
Rubacha, Robert F.; and Tsai, Margaret C., 5,486,911, Cl. 355-329.000.

Tsai, Wen-Hung, to Kabushiki Kaisha Toshiba. Keyboard system capable of allowing single-hand input operation. 5,486,823, Cl. 341-22.000.

Tsay, Donny; and Motoyama, Tetsuro, to Ricoh Company, Ltd.; and Ricoh Corporation. Standard page description language cleartext structure generator. 5,487,165, Cl. 395-600.000.

Tseng, Cheng-Tzu. Sanitary chopping plate structure. 5,485,937, Cl. 220-571.000.

Tseng, Chuen-Ing J., to Lonza Inc. Low foam branched alkyldimethylamine oxides. 5,486,315, Cl. 252-547.000.

Tsuchiya, Takashi; and Ishii, Osamu, to Sony Corporation. Powder beam etching machine. 5,486,128, Cl. 451-2.000.

Tsuda, Masao: *See*—
Suzuki, Nobuhiro; Kitada, Chieko; and Tsuda, Masao, 5,486,472, Cl. 435-240.270.

Tsuji, Toshihiko; Takeuchi, Seiji; Miyazaki, Kyoichi; Yoshii, Minoru; Nose, Noriyuki; and Mori, Tetsuzo, to Canon Kabushiki Kaisha. Inspection method and apparatus for inspecting a particle, if any, on a substrate having a pattern. 5,486,919, Cl. 356-349.000.

Tsumura, Tomohiko: *See*—
Matsumoto, Kimio; Sawaike, Ichihiro; Nishigakik, Atsuo; Yamashita, Akitoshi; and Tsumura, Tomohiko, 5,485,897, Cl. 187-399.000.

Tsuneeda, Kenichi; Yoshida, Sachiko; and Ogasawara, Masato, to Kabushiki Kaisha Toshiba. Contact charger and image forming apparatus comprising the same. 5,486,906, Cl. 355-219.000.

Tsunekawa, Tokuichi: *See*—
Suzuki, Kenji; Ishizaki, Akira; Ohtaka, Keiji; Suda, Yasuo; Fukahori, Hidehiko; Nagano, Akihiko; Konishi, Kazuki; and Tsunekawa, Tokuichi, 5,486,892, Cl. 354-402.000.

Tsurumaru, Shinichiro, to Fujitsu Limited. Printer-containing apparatus. 5,486,062, Cl. 400-618.000.

Tsurumi, Mitsuyuki: *See*—
Matushita, Tetunori; Kamikawa, Hiroshi; Satoh, Hiroshi; Nomura, Kimiatus; and Tsurumi, Mitsuyuki, 5,486,446, Cl. 430-156.000.

Tsutsumi, Hironobu: *See*—
Igarashi, Osamu; Naitou, Akira; Tougane, Hikohiro; Tsutsumi, Hironobu; and Kudou, Tosihisa, 5,486,803, Cl. 336-92.000.

Tsutsumi, Yousuke: *See*—
Itagaki, Akinari; Azechi, Syuuichi; Kuwata, Satoshi; Tsutsumi, Yousuke; and Kodaiku, Masanori, 5,486,549, Cl. 523-161.000.

Tucker, Gary D. Lollipop dispenser apparatus. 5,485,939, Cl. 221-86.000.

Tuggle, Lloyd H.; and Warfel, Paul A., to WCI Outdoor Products, Inc. Resetting ignition switch for a gasoline powered chain saw. 5,485,814, Cl. 123-179.500.
Turner, Charles H.: *See*—
Rowland, Landon L.; Lowder, Richard K.; Dyer, Lester W.; and Turner, Charles H., 5,486,831, Cl. 342-62.000.
Tuttle, John R.; and Tuttle, Mark E., to Micron Communications, Inc. Method of producing button-type batteries and spring-biased concave button-type battery. 5,486,431, Cl. 429-66.000.
Tuttle, Mark E.: *See*—
Tuttle, John R.; and Tuttle, Mark E., 5,486,431, Cl. 429-66.000.
Tweedle, Michael F.: *See*—
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Tyler, John G.: *See*—
Dinallo, Chris A.; Koval, Michael J.; Lawton, William W.; Paulat, Martin J., Jr.; Tyler, John G.; Winters, Scott L.; and Allran, Gary G., 5,487,167, Cl. 395-650.000.
Tyner, Jeffrey D. Portable fabric covered divider panels. 5,486,391, Cl. 428-44.000.
Tyson, Glenn M., to GTY Industries. Lighting system. 5,486,988, Cl. 362-267.000.
Tzikas, Athanassios: *See*—
Deitz, Rolf; and Tzikas, Athanassios, 5,486,600, Cl. 534-634.000.
Ubert, Harald: *See*—
Koether, Bernard; Koether, George F., II; and Ubert, Harald, 5,485,780, Cl. 99-419.000.
Uchibori, Takanobu, to Kabushiki Kaisha Toshiba. Doppler-type ultrasonic diagnostic apparatus. 5,485,844, Cl. 128-661.090.
Uchida, Haruo, to Canon Kabushiki Kaisha. Ink jet recording apparatus. 5,486,854, Cl. 347-30.000.
Uchiyama, Yuji: *See*—
Negishi, Ichiro; Suzuki, Tetsuji; Koyama, Fujiko; Uchiyama, Yuji; Bonde, Hiroyuki; Konno, Toshio; Takahashi, Ryusaku; and Shou, Toshiaki, 5,486,878, Cl. 348-757.000.
Uda, Yoshiaki; Nishida, Yoko; and Ogawa, Yasuaki, to TAKEDA Chemical Industries Ltd. Cyclodextrin composition. 5,486,508, Cl. 514-58.000.
Udagawa, Masaharu: *See*—
Yuki, Koichiro; Hirai, Yoshihiko; Morimoto, Kiyoshi; Niwa, Masaaki; Yasui, Juro; Okada, Kenji; and Udagawa, Masaharu, 5,486,706, Cl. 257-25.000.
Ueda, Satoshi: *See*—
Katsuma, Nobuo; Ueda, Satoshi; and Matsukawa, Hiroyuki, 5,486,856, Cl. 347-175.000.
Ueda, Takehiko: *See*—
Sakurai, Yukihira; and Ueda, Takehiko, 5,486,993, Cl. 363-98.000.
Ueki, Katsuji; and Endo, Toyokazu, to Kasai Kogyo Co., Ltd. Automotive door trim and method for fabricating the same. 5,486,329, Cl. 264-273.000.
Ueta, Motomu; and Harada, Tetsuya, to Sony Corporation. Digital data transfer method. 5,487,019, Cl. 364-514.00R.
Uhlir, Donald A.: *See*—
Ference, Joseph A.; Bullock, Ronald E.; Uhlir, Donald A.; Duhl, Michael L.; and Ropelato, Sam A., 5,486,382, Cl. 427-376.300.
Ukawa, Teiji; and Yoshida, Tatsuo, to Nihon Kohden Corporation. Non-invasive blood pressure measurement device. 5,485,838, Cl. 128-633.000.
Ullmann, Roland, to Braun Aktiengesellschaft. Beverage brewing apparatus. 5,485,778, Cl. 99-295.000.
Ultra-Technologies, Inc.: *See*—
Truax, Daniel A., 5,486,554, Cl. 524-71.000.
Ultrasonic Sensing and Monitoring Systems: *See*—
Winston, Thomas R.; and Neet, John M., 5,486,170, Cl. 606-16.000.
Underwood, Alfred E.; and Underwood, Dolores M. Baseball tossup device. 5,485,994, Cl. 273-26.00R.
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Underwood, Alfred E.; and Underwood, Dolores M., 5,485,994, Cl. 273-26.00R.
Uniden Corporation: *See*—
Suzuki, Tomohiro, 5,486,797, Cl. 333-104.000.
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Shay, Gregory D.; Jenkins, Richard D.; and Bassett, David R., 5,486,587, Cl. 526-333.000.
Union Oil Company of California: *See*—
Sandiford, Burton B.; Dovan, Hoai T.; and Hutchins, Richard D., 5,486,312, Cl. 252-315.100.
Union Switch & Signal Inc.: *See*—
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Uniroyal Chemical Company, Inc.: *See*—
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Mishra, Anupama; and Davis, Robert A., 5,486,533, Cl. 514-383.000.
Strunk, Richard J.; and Bell, Allyn R., 5,486,610, Cl. 544-311.000.
Uniroyal Chemical Ltd.: *See*—
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Unisys Corporation: *See*—
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United Bakery Equipment Company: *See*—
Bastasch, Paul M.; Hanson, Randyl C.; Hill, Laclede L.; Norton, William E.; and Schoenbuchner, Hans W., 5,485,772, Cl. 83-873.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Majesty'3 s Government of the: *See*—
Gray, George W.; Lacey, David; Toyne, Kenneth J.; Scrowston, Richard M.; Shenouda, Ibrahim G.; Chan, Lawrence K. M.; Bradshaw, Madeline J.; Brimmell, Victoria; Constant, Jennifer; Raynes, Edward P.; Jackson, Adam; and Samra, Amarjit K., 5,486,309, Cl. 252-299.600.
United Microelectronics Corporation: *See*—
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Yang, Sheng-Hsing, 5,486,482, Cl. 437-34.000.
United Parcel Service: *See*—
Surka, Stefan, 5,487,115, Cl. 382-296.000.
United States Advanced Network, Inc.: *See*—
Richardson, Charles T., Jr.; and Austin, Kevin L., 5,487,103, Cl. 379-88.000.
United States of America
Air Force: *See*—
Duke, Steven R.; Rossier, Glenn E.; and Saganich, Richard P., 5,485,775, Cl. 89-14.300.
Army: *See*—
Drach, William C.; Babbitt, Richard W.; and Koscica, Thomas E., 5,487,014, Cl. 364-481.000.
Koscica, Thomas E.; and Drach, William C., 5,486,992, Cl. 363-21.000.
Leupold, Herbert A., 5,486,801, Cl. 335-306.000.
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Sengupta, Louise; Ngo, Eric; Stowell, Steven; O'Day, Michelina; and Lancto, Robert, 5,486,491, Cl. 501-137.000.
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Axline, Robert M., Jr.; Sloan, George R.; and Spalding, Richard E., 5,486,830, Cl. 342-43.000.
Contolini, Robert J.; Mayer, Steven T.; and Tarte, Lisa A., 5,486,234, Cl. 216-91.000.
Health and Human Services: *See*—
Gralnick, Harvey R., 5,486,361, Cl. 424-144.100.
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Esterowitz, Leon; and Pinto, Joseph F., 5,487,079, Cl. 372-20.000.
Hesse, Philip W.; Goetz, Raymond; and Lenko, Daniel, 5,485,786, Cl. 102-202.500.
Jewell, John M.; Harbison, Barry B.; Aggarwal, Ishwar D.; and Bayya, Shyam S., 5,486,495, Cl. 501-10.000.
Joye, Donald D.; Mints, William H.; Clarke, John R.; and Wechgelaer, Peter, 5,485,834, Cl. 128-205.130.
Mummery, Herbert L., deceased; Koyamatsu, Anthony H.; and Young, Michael B., 5,485,972, Cl. 242-386.000.
Stevens, David E.; and Temme, Leonard A., 5,486,821, Cl. 340-970.000.
Wehrle, John P.; Dahl, Ernest A.; and Lugar, James R., 5,486,811, Cl. 340-522.000.
U.S. Philips Corporation: *See*—
De Vaan, Adrianus J. S. M., 5,486,884, Cl. 353-122.000.
Decreamer, Alain, 5,486,870, Cl. 348-556.000.
James, Shirley J., 5,486,865, Cl. 348-465.000.
Lünter, Heinz, 5,487,177, Cl. 455-67.300.
Lenting, Gerard J., 5,486,050, Cl. 366-314.000.
Wong-Lam, Ho W.; Bergmans, Johannes W.; and Fisher, Kevin D., 5,487,085, Cl. 375-230.000.
United States Surgical Corporation: *See*—
Fontayne, Diego, 5,485,952, Cl. 227-178.100.
Green, David T., 5,486,190, Cl. 606-184.000.
Mudry, Matthew; Aranyi, Ernie; and Nicholas, David A., 5,486,189, Cl. 606-171.000.
Tang, Regianld T.; Mares, Frank; Boyle, William J., Jr.; Chiu, Tin-Ho; and Patel, Kundanbhai M., 5,486,593, Cl. 528-370.000.
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Hill, John P., 5,486,793, Cl. 331-56.000.
United Technologies Corporation: *See*—
Gruver, Gary A.; Parkos, Joseph J., Jr.; and Adinolfi, Robert G., 5,486,281, Cl. 205-110.000.
Hertel, Christopher J.; and Watson, Charles R., 5,486,096, Cl. 416-224.000.
McCoy, Jeffrey P.; and Penda, Allan R., 5,485,723, Cl. 60-226.100.
Sharma, Om P., 5,486,091, Cl. 415-194.000.
Thompson, Ralph J.; and Kane, Daniel E., 5,486,090, Cl. 415-173.100.
United Technologies Corportion: *See*—
Auxier, Thomas A.; and Hall, Kenneth B., 5,486,093, Cl. 416-97.00R.
United Technologies Motor Systems: *See*—
Welch, David W., 5,486,747, Cl. 318-811.000.
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Rippetoe, William W.; and Shroff, David N., 5,485,883, Cl. 166-369.000.
University Corporation For Atmospheric Research: *See*—
Hock, Terrence F., 5,486,835, Cl. 342-359.000.
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Holdsworth, David W.; Drangova, Maria; and Fenster, Aaron, 5,485,831, Cl. 128-654.000.
University of California, Regents of the: *See*—
Barbee, Troy W., Jr.; Johnson, Gary W.; and O'Brien, Dennis W., 5,486,277, Cl. 204-192.150.
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Rutter, William J.; Wlaker, Michael D.; Edlund, Thomas; and Boulet, Anne M., 5,486,462, Cl. 435-69.100.
Shigeno, Yoshihito; and Evans, James W., 5,486,216, Cl. 44-591.000.
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Miesak, Edward J., 5,487,121, Cl. 385-39.000.
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Adair, James J.; and Singh, Rajiv K., 5,485,804, Cl. 117-90.000.
West, Jon K.; and Hench, Larry L., 5,486,598, Cl. 530-338.000.
University of Illinois, Board of Trustees of the: *See*—
Rhodes, Charles K.; and Boyer, Keith, 5,487,078, Cl. 372-5.000.
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University of Michigan, The Regents of the: *See*—
Ribbens, William B.; and Park, Jaehong, 5,487,008, Cl. 364-431.040.
Ward, Peter A.; Miyasaka, Masayuki; and Suzuki, Yasuo, 5,486,536, Cl. 514-460.000.
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Walseth, Timothy F.; Lee, Hon-Cheung; and Aarhus, Robert A., 5,486,604, Cl. 536-26.130.
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Mukherjee, Anadi, 5,487,080, Cl. 372-69.000.
University of Pennsylvania, Trustees of the: *See*—
Wilding, Peter; and Kricka, Larry J., 5,486,335, Cl. 422-55.000.
University of Tennessee Research Corporation: *See*—
Few, Jimmy D.; and Lewis, James W. L., 5,485,720, Cl. 60-39.821.
Hassenboehler, Charles B., Jr.; and Wadsworth, Larry B., 5,486,411, Cl. 428-286.000.
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Clifton, Guy L., 5,486,204, Cl. 607-96.000.
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Sambrook, Joseph F.; Madison, Edwin L.; Goldsmith, Elizabeth J.; and Gething, Maryjane H., 5,486,602, Cl. 536-23.200.
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Uno, Mugijiroh: *See*—
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Schrepfer, M. W., 5,485,923, Cl. 209-235.000.
Upjohn Company, The: *See*—
Lin, Chiu-Hong; Haadsma-Svensson, Susanne R.; McCall, Robert B.; Romero, Arthur G.; Darlington, William H.; and Ennis, Michael D., 5,486,611, Cl. 546-62.000.
Urata, Kaoru, to Sony Corporation. Digital signal reprodocing circuit which counts the increasing amount of branch metric to control an equalizer. 5,486,956, Cl. 360-65.000.
Urien, Pascal, to Bull S.A. Test system for a very high-speed ring network and an operating procedure for the system. 5,487,073, Cl. 371-20.600.
Uriu, Shiro: *See*—
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Ushioda, Kohsaku; Yoshinaga, Naoki; Matsumura, Yoshikazu; Akisue, Osamu; Nishimura, Kunio; and Murakami, Hidekuni, to Nippon Steel Corporation. Non-aging at room temperature ferritic single-phase cold-rolled steel sheet and hot-dip galvanized steel sheet for deep drawing having excellent fabrication embrittlement resistance and paint-bake hardenability and process for producing the same. 5,486,241, Cl. 148-330.000.
Usui, Masahito: *See*—
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Utenick, Michael R.: *See*—
Morehouse, James H.; Furay, David M.; Volk, Steven B.; Utenick, Michael R.; Dunckley, James A.; Blagaila, John H.; Hopper, James F.; and Klein, Thomas A., 5,486,964, Cl. 360-105.000.
Vacca, Alberto; and Barletta, Paolo, to Minnesota Mining and Manufacturing Company. Method of preparing silver halide photographic emulsions. 5,486,451, Cl. 430-569.000.
Vaisala Oy: *See*—
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Vajana, Bruno: *See*—
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Valaitis, Joseph K.; Davis, James A.; and Lohr, Frederick, to Bridgestone Corporation. Thermoplastic films for heat seaming roof sheeting and method for covering roofs. 5,486,249, Cl. 156-71.000.
Valeo Equipements Electriques Moteur: *See*—
Rondier, Patrick, 5,486,732, Cl. 310-232.000.
Valint, Paul L., Jr.: *See*—
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Portas, Francesco; and Vallauri, Ubaldo, 5,486,388, Cl. 428-34.900.
Vancaillie, Thierry G. Self-guiding electrode and cutting tip for tissue resection. 5,486,173, Cl. 606-45.000.
van Daal, Robert W.: *See*—
Vraney, Lawrence E.; Protofanousis, Michael S.; Loew, Dean R.; and van Daal, Robert W., 5,487,169, Cl. 395-700.000.
Van Der Horst, Hans, to AV Flexologic B.V. Apparatus for printing proofs. 5,485,782, Cl. 101-216.000.
Vanderspool, Jan P., II: *See*—
Nanni, Peter; Fink, Steven J.; and Vanderspool, Jan P., II, 5,487,183, Cl. 455-113.000.
Van Der Zwet, Gerardus P.: *See*—
De Jong, Krijn P.; Lednor, Peter W.; Oud, Anna E. M.; Schoonebeek, Ronald J.; Vonkeman, Koert A.; and Van Der Zwet, Gerardus P., 5,486,313, Cl. 252-373.000.
Vande Streek, Penny R.; Young, Tyrone; Weiland, Frederick L.; and Borchert, Ronald. Ventilation system for diagnostic imaging. 5,485,835, Cl. 128-205.130.
van Dijk, Paul: *See*—
Capeci, Scott W.; Osborn, James W.; Angell, Adrian J. W.; and van Dijk, Paul, 5,486,303, Cl. 252-89.100.
Van Dine, C. Peter: *See*—
Carangelo, Robert M.; Dettori, Mark D.; Grigely, Lawrence J.; Murray, Terence C.; Solomon, Peter R.; Van Dine, C. Peter; and Wright, David D., 5,486,917, Cl. 356-346.000.
Van Dusen, John G.; Fuller, Timothy J.; and Hudson, Deborah M., to Xerox Corporation. Toner and developer compositions with diblock compatibilizers. 5,486,445, Cl. 430-110.000.
Van Dyk, Karl: *See*—
Middleman, Lee M.; Pyka, Walter R.; Buhler, Michael; Poncet, Philippe; Van Dyk, Karl; and Jervis, James E., 5,486,183, Cl. 606-127.000.
Vanlaningham, Richard D.: *See*—
Dietz, Terry L.; and Vanlaningham, Richard D., 5,486,180, Cl. 606-87.000.
VanOverloop, Ronald: *See*—
Olson, Todd; Meiser, Dan; Steed, Gary; Huffman, Eric; Otten, Matthew; VanOverloop, Ronald; Powell, Darrel; Knodell, Thomas; Rhad, Edward; Chen, Ralph; and Cook, Robert, 5,485,947, Cl. 227-176.100.
Van Rhyn, Lucas H., to Foster Wheeler Energy Corporation. Pilot probe for orbital welding apparatus. 5,486,670, Cl. 219-60.200.
Van Vranken, Brian M. Telescopic flag and cone device. 5,485,700, Cl. 52-40.000.
Van Woerkom, Anthony G.: *See*—
Cesna, Joseph V.; and Van Woerkom, Anthony G., 5,486,131, Cl. 451-56.000.
Van Zandt, Thomas R.: *See*—
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Glaser, Helmut F., 5,486,433, Cl. 429-164.000.
Vasconcellos, Stephen R.: *See*—
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VAX Appliances Ltd.: *See*—
Holland, John A., 5,485,652, Cl. 15-322.000.
Vaynshteyn, Mikhail, to Eastman Kodak Company. Variable angle flash with linear motor drive. 5,486,886, Cl. 354-149.100.
Veale, Chris A.: *See*—
Bernstein, Peter R.; Shaw, Andrew; Thomas, Royston M.; Veale, Chris A.; Warner, Peter; and Wolanin, Donald J., 5,486,529, Cl. 514-335.000.
Veenstra, Kerry, to Altera Corporation. Multiplexer structures for use in making controllable interconnections in integrated circuits.. 5,486,775, Cl. 326.34.000.
Veinberg, Alex: *See*—
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Veislinger, Bernard: *See*—
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Veitschegger, William K., to AT&T IPM Corp. Multiplanar hybrid coupler. 5,486,798, Cl. 333-116.000.
Velek, Jiří: *See*—
Procházka, Zdenko; Bláha, Ivo; Žertová, Miroslava; Slaninová, Jiřina; Velek, Jiří; Škopková, Jana; Lebl, Michal; Barth, Tomislav; Maletínská, Lenka; and Vilhardt, Hans, 5,486,596, Cl. 530-329.000.
Venegas, José I.: *See*—
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Venetucci, Jim M.; and Spaeth, Horst, to Liquid Carbonic Corporation. Protection for motors in refrigerated environments. 5,485,731, Cl. 62-56.000.
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Venturedyne, Ltd.: *See*—
Abbott, Thomas A.; Cooley, Stephen E.; and MacDonald, Michael S., 5,486,140, Cl. 454-333.000.
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Cordi, Alex; Lacoste, Jean-Michel; Laubie, Michel; Verbeuren, Tony; Descombes, Jean-Jacques; and Millan, Mark, 5,486,532, Cl. 514-374.000.
Verboom, Willem: *See*—
Engbersen, Johannes F. J.; Kelderman, Erik; Reinhoudt, David N.; and Verboom, Willem, 5,486,559, Cl. 524-299.000.
Verdonk, Edward; Greenstein, Michael; Melton, Hewlett E., Jr.; and Seyed-Bolorforosh, Mir S., to Hewlett Packard Company. Rotary encoder for intravascular ultrasound catheter. 5,485,845, Cl. 128-662.060.
Verduijn, Johannes P.; and Gellings, Pieter E., to Exxon Research & Engineering (ER&E). Zeolite L preparation. 5,486,348, Cl. 423-700.000.
Verduijn, Johannes P., to Exxon Research & Engineering Company. Zeolite L. 5,486,498, Cl. 502-66.000.
Vermillion, James H. Ski sharpening guide. 5,485,768, Cl. 76-83.000.
Vetrotex France: *See*—
Johnson, Timothy; and Moireau, Patrick, 5,486,416, Cl. 428-357.000.
Vickers, Incorporated: *See*—
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Victor Company of Japan, Ltd.: *See*—
Negishi, Ichiro; Suzuki, Tetsuji; Koyama, Fujiko; Uchiyama, Yuji; Bonde, Hiroyuki; Konno, Toshio; Takahashi, Ryusaku; and Shou, Toshiaki, 5,486,878, Cl. 348-757.000.
Vidusek, David A.: *See*—
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Viner, Omri: *See*—
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Viswanathan, Vishu R.: *See*—
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Vita, Peterpaul: *See*—
McNamara, Robert P.; Saldinger, Alan; Cringle, Robert J.; Chu, Gigi C.; Sangameswara, Shanubhog G.; Vita, Peterpaul; Ouye, Michael M.; Stevens, David R. F.; Baranski, Celeste; Monsson, Cai U.; Murphy, Timothy P.; Murphy, Kevin T.; Ellis, Gary M.; and Ghate, Ranjit, 5,487,066, Cl. 370-85.200.
Vladimirovich, Brazhentsev A.; and Pavlovich, Brazhentsev V., to Obshestvo S Organichennoi Otvetstvennostju "Nauchino-Proizvodstvennaya Firma Spettsstroyservis" . Cone drill bit. 5,485,891, Cl. 175-372.000.
VLSI Technology, Inc.: *See*—
Loos, Joann; Wang, Chao-Yuan; and Mahmood, Mossaddeg, 5,487,018, Cl. 364-489.000.
Vodiunig, Robert: *See*—
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Voege, James A.; Voege, Richard B.; and Voege, John S., to AMP Corporation. Seal apparatus for a flow control valve. 5,485,983, Cl. 251-206.000.
Voege, John S.: *See*—
Voege, James A.; Voege, Richard B.; and Voege, John S., 5,485,983, Cl. 251-206.000.
Voege, Richard B.: *See*—
Voege, James A.; Voege, Richard B.; and Voege, John S., 5,485,983, Cl. 251-206.000.
Vogel, Herward A.: *See*—
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Vogt, Holger: *See*—
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Völpel, Stefan: *See*—
Jobelius, Klaus-Dieter; Morgen, Helmut; Spurzem, Heinrich; and Völpel, Stefan, 5,485,987, Cl. 267-64.280.
Volt Information Sciences, Inc.: *See*—
Rothschild, Ralph F.; Kontopidis, George D.; and Linton, Charles C., 5,487,102, Cl. 379-67.000.
Volz, Keith L.; Renn, Robert M.; Irlbeck, Robert D.; Deak, Frederick R.; and Johnson, David C., to Whitaker Corporation. Burn-in socket testing apparatus. 5,486,771, Cl. 324-755.000.
Vonkeman, Koert A.: *See*—
De Jong, Krijn P.; Lednor, Peter W.; Oud, Anna E. M.; Schoonebeek, Ronald J.; Vonkeman, Koert A.; and Van Der Zwet, Gerardus P., 5,486,313, Cl. 252-373.000.
Vraney, Lawrence E.; Protofanousis, Michael S.; Loew, Dean R.; and van Daal, Robert W., to Motorola, Inc. Method for translating a test plan source file containing multiple programming languages. 5,487,169, Cl. 395-700.000.
W.C. Heraeus GmbH: *See*—
Herklotz, Günter; Förderer, Heinz; and Frey, Thomas, 5,486,721, Cl. 257-666.000.
W. L. Gore & Associates, Inc.: *See*—
Hamilton, Elizabeth M.; Lalli, Eric W.; Lubin, Cindy B.; Sparks, Wanda F.; and Waterland, Alfred F., III, 5,486,010, Cl. 277-1.000.
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Lovin, Joseph R.; and Shevick, David S., 5,486,703, Cl. 250-492.300.
Mueller, Walter B., 5,486,387, Cl. 428-34.700.
Wachi, Shigeaki, to Sony Corporation. Optical recording medium and recording and/or reproducing apparatus using such optical recording medium. 5,487,056, Cl. 369-44.340.
Wack, Oskar K.; and Hanek, Martin, to O. K. Wack Chemie GmbH. Cleaning agent containing glycol ethers. 5,486,314, Cl. 252-542.000.
Wacoal Corp.: *See*—
Shiraiwa, Norinobu; and Kusakabe, Tatsuya, 5,485,855, Cl. 128-774.000.
Wada, Katsuo: *See*—
Shinada, Tsunetoshi; Wada, Katsuo; Inoue, Haruo; Misumi, Masaki; and Saito, Akira, 5,486,543, Cl. 521-149.000.
Wada, Takasumi; Taniguchi, Keiji; and Yamamoto, Yoichi, to Sharp Kabushiki Kaisha. Measuring device for amount of charge of toner and image forming apparatus having the measuring device. 5,486,900, Cl. 355-203.000.
Wada, Tomohisa, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device which can be programmed to indicate defective memory cell. 5,487,041, Cl. 365-200.000.
Waddington, Peter: *See*—
Marks, Kevin T.; Salter, Nigel D.; Remedios, Rosario; and Waddington, Peter, 5,485,665, Cl. 29-407.000.
Wadlington, Ben, Jr. Lever-tap-activated timed turn signaling. 5,486,809, Cl. 340-477.000.
Wadsworth, Larry B.: *See*—
Hassenboehler, Charles B., Jr.; and Wadsworth, Larry B., 5,486,411, Cl. 428-286.000.
Wagar, Bruce A.: *See*—
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Wagg, Theadore J.; Clark, James K.; and Sporzynski, Robert S., to Kelsey-Hayes Company. Apparatus and method for measuring the circularity and eccentricity of a brake drum while mounted upon a vehicle. 5,485,678, Cl. 33-610.000.
Waggoner, Alan S.; Ernst, Lauren A.; and Mujumdar, Ratnakar B., to Carnegie Mellon University. Method for labeling and detecting materials employing arylsulfonate cyanine dyes. 5,486,616, Cl. 548-217.000.
Wagner, Edward D., to Wagner Electronic Products, Inc. Moisture detection circuit. 5,486,815, Cl. 340-602.000.
Wagner Electronic Products, Inc.: *See*—
Wagner, Edward D., 5,486,815, Cl. 340-602.000.
Wagner, Maria: *See*—
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Wakamatsu, Kazuki: *See*—
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Wakemoto, Hirofumi: *See*—
Takimoto, Akio; Wakemoto, Hirofumi; Tanaka, Eiichiro; Watanabe, Masanori; Asayama, Junko; Ogawa, Hisahito; Sato, Shigehiro; and Yokotani, Fumiko, 5,486,442, Cl. 430-78.000.
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Walborn, Laverne A.; and Wong, Brian W. H. Battery charger with polarity sensing and timer. 5,486,750, Cl. 320-25.000.
Walder, André: *See*—
Naka, Shigehisa; Khan, Tasadduq; Walder, André; Marty, Michel; Delaunay, Christophe; and Thevenin, Pierre, 5,486,242, Cl. 148-422.000.
Walinsky, Paul; and Meise, William H. Cyclic coronary angioplasty system. 5,486,192, Cl. 606-194.000.
Walker, Michael A.: *See*—
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Walschlaeger, Alan R., Sr. Printing plate cylinder with universal lockup apparatus. 5,485,784, Cl. 101-415.100.
Walseth, Timothy F.; Lee, Hon-Cheung; and Aarbus, Robert A., to University of Minnesota, Regents of the. Cyclic ADP ribose antagonists. 5,486,604, Cl. 536-26.130.
Walter, Helmut: *See*—
Hagen, Helmut; Nilz, Gerhard; Walter, Helmut; and Landes, Andreas, 5,486,618, Cl. 548-362.100.
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Douseki, Takakuni; Yamada, Junzo; Matsuya, Yasuyuki; and Mutou, Shinichirou, 5,486,774, Cl. 326-33.000.
Yamada, Kunikazu: *See—*
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Yamaguchi, Akira: *See—*
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Yamaguchi, Nobuyuki, to Daiwa Seiko, Inc. Reverse rotation preventive mechanism for fishing reel. 5,485,969, Cl. 242-247.000.
Yamaguchi, Shigeru: *See—*
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Yamaguchi, Susumu: *See—*
Iketani, Akira; Ikeda, Susumu; Yamaguchi, Susumu; Matsumi, Chiyoko; and Yoshida, Takayasu, 5,486,930, Cl. 358-335.000.
Yamaguchi, Yukuo; Onuki, Kazuhiko; and Sugiyama, Kazuhide, to Canon Kabushiki Kaisha. Image projecting apparatus. 5,486,882, Cl. 353-77.000.
Yamaha Corporation: *See—*
Kudo, Masaki; and Ohno, Kyoko, 5,486,644, Cl. 811-604.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Sakai, Koji, 5,486,018, Cl. 280-714.000.
Yamaji, Michio: *See—*
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Yamakawa, Yoichi: *See—*
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Yamamoto, Hiroshi; Takeyasu, Nobuyuki; and Ohta, Tomohiro, to Kawasaki Steel Corporation. Method of forming multilayered wiring structure in semiconductor device. 5,486,492, Cl. 437-192.000.
Yamamoto, Shigeru: *See—*
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Yamanaka, Akihiro: *See—*
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Yamanaka, Tetsuo: *See—*
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Yamasaki, Hiroyuki: *See—*
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Yamashita, Masayasu; and Toda, Atsushi, to Koito Manufacturing Co., Ltd. Lighting circuit for vehicular discharge lamp having DC/AC converter. 5,486,740, Cl. 315-308.000.
Yamashita, Yuji; and Toyota, Katsuhiro, to Roland Corporation. Rhythm creating system for creating a rhythm pattern from specifying input data. 5,486,646, Cl. 84-635.000.
Yamauchi, Tadaaki: *See—*
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Yamazaki, Noburo; and Kyomasu, Ryuichi, to Kabushiki Kaisha Shinkawa. Bonding apparatus. 5,486,733, Cl. 310-323.000.
Yamazaki, Takaaki: *See—*
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Yamazaki, Tsuneo: *See—*
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Yanagi, Junichirou; Takase, Akihiko; and Takahashi, Setsuo, to Hitachi, Ltd. Looped bus system for connecting plural nodes or plural circuit cards. 5,487,062, Cl. 370-16.100.
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Yandell, Clifford N. Rape protective device. 5,485,636, Cl. 2-406.000.
Yang, Chang M.; Hong, Jong Y.; Lee, Ki W.; Lee, Byeong G.; and Chang, Dong I., to Pacific Corporation. Kojic acid derivative. 5,486,624, Cl. 549-418.000.
Yang, Huai-Tung: *See—*
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Yang, Kuo-Tsung. Combination lock. 5,485,734, Cl. 70-285.000.
Yang, Seung-Kweon: *See—*
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Yang, Sheng-Hsing, to United Microelectronics Corporation. Process for fabricating metal-gate CMOS transistor. 5,486,482, Cl. 437-34.000.
Yano, Yuichi; Kinugasa, Naoki; and Takigawa, Akio, to Nippon Sheet Glass Co., Ltd. Latex containment means for a liquid crystal window. 5,486,937, Cl. 359-51.000.
Yardley, John P.; Fletcher, Horace, III; Kelly, Michael G.; and White, Alan C., to American Home Products Corporation. 4-indolylpiperazinyl derivatives. 5,486,518, Cl. 514-254.000.
Yarimizu, Kazuaki: *See—*
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Yazaki Corporation: *See—*
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Ye, Yan; Rhoades, Charles S.; and Yin, Gerald Z., to Applied Materials, Inc. Plasma dry cleaning of semiconductor processing chambers. 5,486,235, Cl. 134-1.100.
Yetter, Karl, to Hubbell Incorporated. Partition for dividing a device box. 5,486,650, Cl. 174-53.000.

Yeung, King-Wah W.: *See*—
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Yim, Seung-jae, to Fuji Photo Film Co., Ltd. Deodorant composition combining transition metal oxide or alloy with catalytic metal on carrier. 5,486,356, Cl. 424-76.100.

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Yoder, David; Chang, Shau-Gan; Xu, Ansui; and Domoras, Thomas, to American Maize Technology, Inc. Caseinate replacement composition for imitation cheese and process for making imitation cheese. 5,486,375, Cl. 426-582.000.

Yokogawa Electric Corporation: *See*—
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Yon, Chang S.: *See*—
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Yoneyama, Mitsuho: *See*—
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Yoneyama, Yuzo, to NEC Corporation. Reception amplifier failure detection device and method for radio transceiver apparatus. 5,487,176, Cl. 455-67.100.

Yoo, Ick D.: *See*—
Lee, Yong W.; Lee, Yeong S.; Yon, Chang S.; Suh, Jung W.; Lee, Chul H.; Lim, Yoong H.; and Yoo, Ick D., 5,486,630, Cl. 554-1.000.

Yoon, In J.: *See*—
Lee, Gi W.; Lim, Sung Y.; and Yoon, In J., 5,486,736, Cl. 313-440.000.

Yoon, InBae. Ligating instrument and methods of ligating tissue in endoscopic operative procedures. 5,486,186, Cl. 606-148.000.

Yoon, Sei S., to Samsung Electronics Co., Ltd. Method for arranging column decoders in a video RAM. 5,487,028, Cl. 365-51.000.

Yoshida, Iwao: *See*—
Fujita, Hiroyuki; Yoshida, Iwao; Takagi, Mitsuo; Manabe, Sadao; and Fukai, Konosuke, 5,486,473, Cl. 435-240.200.

Yoshida, Masanobu: *See*—
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Ukawa, Teiji; and Yoshida, Tatsuo, 5,485,838, Cl. 128-633.000.

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Yoshizawa, Kodai, to Nissan Motor Co., Ltd. Engine fuel injection controller. 5,485,821, Cl. 123-478.000.

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Young, Desmond W., to National Semiconductor Corporation. Method and apparatus for frame header splitting in a media access control/host system interface unit. 5,487,152, Cl. 395-200.010.

Young, Eugene P.: *See*—
Grande, Michael L.; Grushkin, Bernard; Young, Eugene P.; Lundy, Douglas A.; and Matalevich, Joseph R. E., 5,486,443, Cl. 430-100.000.

Young, Linda A.: *See*—
Boatman, Jack K.; Farnsworth, John T.; Johnson, Roger D.; and Young, Linda A., 5,486,049, Cl. 366-175.200.

Young, Michael B.: *See*—
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Young, Paul R., to Nalco Chemical Company. Method for treating polymer-containing waters to allow use as cooling tower makeup. 5,486,295, Cl. 210-701.000.

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Yuasa, Kazuhiro: *See*—
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Yuki, Koichiro; Hirai, Yoshihiko; Morimoto, Kiyoshi; Niwa, Masaaki; Yasui, Juro; Okada, Kenji; and Udagawa, Masaharu, to Matsushita Electric Industrial Co., Ltd. Quantization functional device utilizing a resonance tunneling effect and method for producing the same. 5,486,706, Cl. 257-25.000.

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Zabel, Dale D.: *See*—
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Zapol, Warren M.; and Frostell, Claes, to General Hospital Corporation, The. Methods and devices for treating plumonary vasoconstriction and asthma. 5,485,827, Cl. 128-200.140.

Zaun, Jochim M., to Sweco, Incorporated. Centrifugal sifter and elements thereof. 5,485,924, Cl. 209-300.000.

Zdepski, Joel W., to RCA Thomson Licensing Corporation. Differential time code method and apparatus as for a compressed video signal. 5,486,864, Cl. 348-423.000.

Zdybel, Frank, Jr.; Sang, Henry W., Jr.; Pederson, Jan O.; Smith, Z. E., III; Henderson, D. A., Jr.; Hecht, David L.; and Bloomberg, Dan S., to Xerox Corporation. Hardcopy lossless data storage and communications for electronic document processing systems. 5,486,686, Cl. 235-375.000.

Zeamer, Geoffrey H. Magnetically levitated force/weight measurement system. 5,485,748, Cl. 73-862.610.

Zeneca Limited: *See*—
Bernstein, Peter R.; Shaw, Andrew; Thomas, Royston M.; Veale, Chris A.; Warner, Peter; and Wolanin, Donald J., 5,486,529, Cl. 514-335.000.
Brown, Frederick J.; Russell, Keith; and Warwick, Paul J., Jr., 5,486,515, Cl. 514-229.800.

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Žertová, Miroslava: *See*—
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Zeuthen, Klas, to Gerstenberg & Agger A/S. Blade system for a scraped surface heat exchanger. 5,485,880, Cl. 165-94.000.

Zhang, Mingming: *See*—
Spence, John R.; Gupta, Rajiv; and Zhang, Mingming, 5,486,795, Cl. 331-116.0FE.

Zhang, Shu H.: *See*—
Matsushita, Shigenori; Zhang, Shu H.; Yamamoto, Shigeru; Nishita, Satoru; and Nakata, Kazushi, 5,485,885, Cl. 172-7.000.

Zias, Jeff: *See*—
Marsh, Donald M.; and Zias, Jeff, 5,487,145, Cl. 395-162.000.

Ziegler, Gerd: *See*—
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Zimmer, Inc.: *See*—
Dietz, Terry L.; and Vanlaninghan, Richard D., 5,486,180, Cl. 606-87.000.

Zimmerman, Harold M. Mixing auger for concrete trucks. 5,486,047, Cl. 366-50.000.

Zimmerman, Mary P.; and Smith, Robert E., to Prototek, Inc. Cysteine protease inhibitors containing heterocyclic leaving groups. 5,486,623, Cl. 549-417.000.

Zimmermann, Wolfgang: *See*—
Casimir-Schenkel, Jutta; Fiechter, Armin; Gysin, Beat; and Zimmermann, Wolfgang, 5,486,468, Cl. 435-200.000.

Zogg, Wilfried: *See*—
Skinner, Donald K.; Yagi, Yoshi; and Zogg, Wilfried, 5,486,057, Cl. 400-120.020.

ZoMed International: *See*—
Lax, Ronald G.; Edwards, Stuart D.; and Sharkey, Hugh R., 5,486,161, Cl. 604-22.000.

Zommer, Nathan, to IXYS Corporation. High frequency MOS device. 5,486,715, Cl. 257-341.000.

Zubok, Rafial: *See*—
Cohen, Robert C.; and Zubok, Rafial, 5,486,181, Cl. 606-91.000.

Zuckerman, Andrew M., to Different Dimensions Inc. Hanger with irremovable information tab. 5,485,943, Cl. 223-85.000.

Zumtobel Licht GmbH: *See*—
Sejkora, Günther, 5,486,990, Cl. 362-309.000.

Zurbuchen, Gregory A.: *See*—
Machmeier, Paul M.; Zurbuchen, Gregory A.; and Lemens, Paul B., 5,485,641, Cl. 7-134.000.

Zygourakis, Kyriacos; Bednarczyk, John L.; McIntyre, Bradley W.; and Glacken, Michael W., to Board of Regents, The University of Texas System. Method and apparatus for time-resolved measurements of lymphocyte function and aggregate structure using computer-automated microscopy. 5,487,112, Cl. 382-6.000.

ZymoGenetics, Inc.: *See*—
Mulvihill, Eileen R.; Yoshitake, Shinji; Ikeda, Yasunori; Suzuki, Suguru; Hashimoto, Akira; Yuzuriha, Teruaki; and Nexo, Bjorn A., 5,486,471, Cl. 435-226.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23rd DAY OF JANUARY, 1996

NOTE— Arranged in accordance with the first significant character or word if the name (in accordance with city and telephone directory practice).

Apap, Marc F. C.; Thorin, Cedric L. M. C.; Rosenstatter, Otto; and Malata, Peter, to Dentalwerk Bürmoos Gesellschaft m.b.H. Dental tool holder. Re. 35,147, Cl. 433-102.000.

Dentalwerk Bürmoos Gesellschaft m.b.H.: *See*—
Apap, Marc F. C.; Thorin, Cedric L. M. C.; Rosenstatter, Otto; and Malata, Peter, Re. 35,147, Cl. 433-102.000.

Elbaum, Marek: *See*—
Lizzi, Frederic L.; Elbaum, Marek; and Feleppa, Ernest J., Re. 35,148, Cl. 348-163.000.

Feleppa, Ernest J.: *See*—
Lizzi, Frederic L.; Elbaum, Marek; and Feleppa, Ernest J., Re. 35,148, Cl. 348-163.000.

Lizzi, Frederic L.; Elbaum, Marek; and Feleppa, Ernest J., to Riverside Research Institute. Frequency diversity for image enhancement. Re. 35,148, Cl. 348-163.000.

Malata, Peter: *See*—
Apap, Marc F. C.; Thorin, Cedric L. M. C.; Rosenstatter, Otto; and Malata, Peter, Re. 35,147, Cl. 433-102.000.

Riverside Research Institute: *See*—
Lizzi, Frederic L.; Elbaum, Marek; and Feleppa, Ernest J., Re. 35,148, Cl. 348-163.000.

Rosenstatter, Otto: *See*—
Apap, Marc F. C.; Thorin, Cedric L. M. C.; Rosenstatter, Otto; and Malata, Peter, Re. 35,147, Cl. 433-102.000.

Thorin, Cedric L. M. C.: *See*—
Apap, Marc F. C.; Thorin, Cedric L. M. C.; Rosenstatter, Otto; and Malata, Peter, Re. 35,147, Cl. 433-102.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Akey, Ronald R.: *See*—
Van Gompel, James J.; and Akey, Ronald R., B1 4,756,651, Cl. 410-46.000.

American Medical Systems, Inc.: *See*—
Burton, John H.; and Levius, Dezso K., B1 5,141,509, Cl. 623-11.000.

Averill, Robert G.; and Cohen, Robert C., to Osteonics Corp. Femoral prosthesis with uncoupled distal tip. B1 4,888,023, Cl. 623-22.000.

Bose, Amar G., to Bose Corporation. Sound reproducing with remote amplifying transducer. B1 4,282,605, Cl. 359-157.000.

Bose Corporation: *See*—
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265 5,485,955

CLASS 239

1 5,485,956
88 5,485,957
265.19 5,485,958
265.41 5,485,959
532 5,485,960
558 5,485,961
655 5,485,962
663 5,485,963

CLASS 241

27 5,485,964
29 5,485,965
39 5,485,966

CLASS 242

18 A 5,485,967
125.2 5,485,968
247 5,485,969
374 5,485,970
381.1 5,485,971
386 5,485,972
5,485,973
525.6 5,485,974

CLASS 244

53 B 5,485,975
118.6 5,485,976

CLASS 246

167 R 5,485,977

CLASS 248

165 5,485,978
188.2 5,485,979
445 5,485,980
641 5,485,981

CLASS 250

206.1 5,486,690
221 5,486,691
223 B 5,486,692
5,486,693
236 5,486,694
261 5,486,695
288 5,486,696
305 5,486,697
332 5,486,698
345 5,486,699
363.04 5,486,700
372 5,486,701
492.21 5,486,702
492.3 5,486,703

CLASS 251

149.6 5,485,982
206 5,485,983
331 5,485,984

CLASS 252

8.6 5,486,297
5,486,298
12 5,486,299
18 5,486,300
51.5 A 5,486,301
56 S 5,486,302
89.1 5,486,303
99 5,486,304
162 5,486,305
174.15 5,486,306
174.24 5,486,307
194 5,486,308
299.60 5,486,309
299.61 5,486,310
299.66 5,486,311
315.1 5,486,312
373 5,486,313
542 5,486,314
547 5,486,315
5,486,316
549 5,486,317

CLASS 257

9 5,486,704
24 5,486,705
25 5,486,706
52 5,486,707
59 5,486,708
110 5,486,709
192 5,486,710
258 5,486,711
296 5,486,712
310 5,486,713
321 5,486,714
341 5,486,715
360 5,486,716
385 5,486,717
630 5,486,718
641 5,486,719
659 5,486,720
666 5,486,721
5,486,722
707 5,486,723

CLASS 261

112.2 5,486,318

CLASS 264

36 5,486,321
46.5 5,486,322
112 5,486,323
138 5,486,324
154 5,486,273
167 5,486,325
176.1 5,486,326
211.21 5,486,327
211.23 5,486,328
273 5,486,329
291 5,486,330
344 5,486,331
406 5,486,319
408 5,486,320
516 5,486,332
541 5,486,333

CLASS 266

87 5,485,985
280 5,485,986

CLASS 267

64.28 5,485,987

CLASS 269

21 5,485,988

CLASS 271

2 5,485,989
9.08 5,485,990
121 5,485,991
299 5,485,992

CLASS 273

1.5 A 5,485,993
26 R 5,485,994
30 5,485,995
75 5,485,996
78 5,485,997
80.2 5,485,998
162 E 5,485,999
169 5,486,000
183.1 5,486,001
184 R 5,486,002
187 R 5,486,003
260 5,486,004
292 5,486,005
301 5,486,006
374 5,486,007
410 5,486,008
424 5,486,009

CLASS 277

1 5,486,010

CLASS 280

11.2 5,486,011
5,486,012
18.1 5,486,013
79.11 5,486,014
236 5,486,015
250.1 5,486,016
711 5,486,017
714 5,486,018
730.1 5,486,019
789 5,486,020

CLASS 283

81 5,486,021
83 5,486,022

CLASS 285

258 5,486,023
294 5,486,024
319 5,486,025

CLASS 291

71 5,486,026

CLASS 294

51 5,486,027
93 5,486,028
99.2 5,486,029
113 5,486,030

CLASS 296

10 5,486,031
50 5,486,032
97.13 5,486,033

CLASS 297

272.1 5,486,034
320 5,486,035
339 5,486,036
397 5,486,037

CLASS 303

22.6 5,486,039
113.2 5,486,040

CLASS 307

10.1 5,486,724
116 5,486,725
120 5,486,726

CLASS 310

12 5,486,727
40 MM 5,486,728
90.5 5,486,729
156 5,486,730
180 5,486,731
232 5,486,732
323 5,486,733
327 5,486,734

CLASS 312

111 5,486,041
196 5,486,042
235.1 5,486,043
321.5 5,486,044
369 5,486,991
406 5,486,045
408 5,486,046

CLASS 313

414 5,486,735
440 5,486,736
634 5,486,737

CLASS 315

169.3 5,486,738
276 5,487,088
277 5,486,739
308 5,486,740
382 5,486,741

CLASS 318

254 5,486,742
439 5,486,743
560 5,486,744
561 5,486,745
569 5,486,746
811 5,486,747
5,486,748

CLASS 320

9 5,486,749
25 5,486,750

CLASS 322

86 5,486,751

CLASS 323

222 5,486,752

CLASS 324

72.5 5,486,753
96 5,486,754
110 5,486,755
127 5,486,756
174 5,486,757
5,486,758
207.2 5,486,759
262 5,486,760
303 5,486,761
5,486,762
309 5,486,763
323 5,486,764
537 5,486,765
5,486,766
715 5,486,767
718 5,486,768
751 5,486,769
754 5,486,770
755 5,486,771
769 5,486,772

CLASS 326

33 5,486,774
41 5,486,776
68 5,486,777
71 5,486,778

CLASS 327

51 5,486,779
53 5,486,780
108 5,486,781
112 5,486,782
147 5,486,783
165 5,486,784
306 5,486,785
378 5,486,786
560 5,486,787

CLASS 330

9 5,486,788
149 5,486,789
260 5,486,790
282 5,486,791

CLASS 331

10 5,486,792
56 5,486,793
115 5,486,794
116 FE 5,486,795
117 R 5,486,796

CLASS 333

104 5,486,797
116 5,486,798
134 5,486,799
193 5,486,800

CLASS 335

306 5,486,801
5,486,802

CLASS 336

92 5,486,803

CLASS 338

32 R 5,486,804

CLASS 340

310.06 5,486,805
426 5,486,806
443 5,486,807
464 5,486,808
477 5,486,809
521 5,486,810
522 5,486,811
539 5,486,812
573 5,486,814
602 5,486,815
630 5,486,816
825.16 5,486,817
870.31 5,486,818
905 5,486,819
933 5,486,820
970 5,486,821
995 5,486,822

CLASS 341

22 5,486,823
26 5,486,824
50 5,486,825
51 5,486,826
58 5,486,827
59 5,486,828

CLASS 342

40 5,486,829
43 5,486,830
62 5,486,831
70 5,486,832
204 5,486,833
357 5,486,834
359 5,486,835

CLASS 343

700 MS 5,486,836
780 5,486,837
781 R 5,486,838
785 5,486,839

CLASS 345

7 5,486,840
8 5,486,841
26 5,486,842
35 5,486,843
113 5,486,844
163 5,486,845
168 5,486,846
173 5,486,847

CLASS 347

15 5,486,848
18 5,486,849
24 5,486,850
30 5,486,854
87 5,486,855
175 5,486,856
224 5,486,857
258 5,486,851

CLASS 348

163 Re.35,148
211 5,486,852
222 5,486,853
303 5,486,858
311 5,486,859
354 5,486,860
362 5,486,861
399 5,486,862
420 5,486,863
423 5,486,864
465 5,486,865
500 5,486,866
516 5,486,867
524 5,486,868
525 5,486,869
556 5,486,870
558 5,486,871
564 5,486,872
578 5,486,873
600 5,486,874
642 5,486,875
719 5,486,876
722 5,486,877
757 5,486,878

CLASS 351

158 5,486,880
223 5,486,879

CLASS 353

34 5,486,881
77 5,486,882
120 5,486,883
122 5,486,884

CLASS 354

106 5,486,885
149.1 5,486,886
149.11 5,486,887
187 5,486,888
202 5,486,889
299 5,486,890
301 5,486,891
402 5,486,892
410 5,486,893
446 5,486,894

CLASS 355

50 5,486,895
71 5,486,896
132 5,486,897
200 5,486,898
203 5,486,899
5,486,900
208 5,486,901
5,486,902
5,486,903
215 5,486,905
219 5,486,906
5,486,907
259 5,486,909
290 5,486,908
309 5,486,910
329 5,486,911

CLASS 356

73 5,486,904
153 5,486,913
221 5,486,914
318 5,486,915
346 5,486,917
5,486,918
349 5,486,919
350 5,486,920
5,486,921
5,486,922
356 5,486,923
357 5,486,924
373 5,486,925
375 5,486,926

CLASS 358

298 5,486,927
299 5,486,928
320 5,486,929
335 5,486,930
5,486,931
498 5,486,932

CLASS 359

2 5,486,933
15 5,486,934
37 5,486,935
51 5,486,936
5,486,937
72 5,486,938
74 5,486,939
5,486,940
81 5,486,941
83 5,486,942
123 5,486,943
157 B1 4,282,605
198 5,486,944
216 5,486,945
263 5,486,946
341 5,486,947
462 5,486,948
498 5,486,949
565 5,486,950
5,486,951
603 5,486,952
725 5,486,953
818 5,486,954

CLASS 360

10.3 5,486,955
65 5,486,956
75 5,486,957
85 5,486,958
94 5,486,959
99.08 5,486,960
99.12 5,486,961
5,486,962
104 5,486,963
105 5,486,964
106 5,486,965
107 5,486,966
113 5,486,967
126 5,486,968
127 5,486,969
128 5,486,970
133 5,486,971

CLASS 361

154 5,486,972
170 5,486,973
234 5,486,974
5,486,975
283.4 5,486,976
529 5,486,977
617 5,486,978
640 5,486,979
697 5,486,980
704 5,486,981
728 5,486,982

CLASS 362

29 5,486,983
32 5,486,984
69 5,486,985
85 5,486,986
226 5,486,987
267 5,486,988
291 5,486,989
309 5,486,990

CLASS 363

21 5,486,992
98 5,486,993
5,486,994

CLASS 364

149 5,486,995
152 5,486,996
5,486,998
165 5,486,997
401 5,486,999
419.08 5,487,000
421 5,487,001
424.01 5,487,002
424.05 5,487,006
5,487,007
424.1 5,487,003
5,487,004
5,487,005
431.04 5,487,008
449 5,487,009
470 5,487,011
474.05 5,487,012
479 5,487,010
480 5,487,013
481 5,487,014
484 5,487,015
5,487,016
488 5,487,017
489 5,487,018
514 R 5,487,019
571.01 5,487,020
578 5,487,021
715.04 5,487,022
724.13 5,487,023
753 5,487,024
768 5,487,025
841 5,487,026
851 5,487,027

CLASS 365

51 5,487,028
145 5,487,029
5,487,030
5,487,031
5,487,032
185.18 5,487,034
185.19 5,487,033
189.02 5,487,035
189.09 5,487,036
189.11 5,487,037
191 5,487,038
200 5,487,039
5,487,040
5,487,041
201 5,487,042
205 5,487,043
5,487,044
5,487,045
207 5,487,048
221 5,487,049
230.06 5,487,050
233 5,487,051

CLASS 366

50 5,486,047
76.8 5,486,048
175.2 5,486,049
314 5,486,050

CLASS 367

56 5,487,052

CLASS 368

69 5,487,053
185 5,487,054

CLASS 369

13 5,487,046
32 5,487,047
44.28 5,487,055
44.34 5,487,056
107 5,487,057
112 5,487,058
116 5,487,059
118 5,487,060
288 5,486,437

CLASS 370

13 5,487,061
16.1 5,487,062
56 5,487,063
60 5,487,064
60.1 5,487,065
85.2 5,487,066
85.7 5,487,067
94.1 5,487,068
94.3 5,487,069
108 5,487,070
110.1 5,487,071

CLASS 371

20.6 5,487,073
22.3 5,487,074
32 5,487,072
37.1 5,487,075
40.1 5,487,076
5,487,077

CLASS 372

5 5,487,078
20 5,487,079
69 5,487,080

CLASS 373

9 5,487,081
42 5,487,082

CLASS 375

200 5,487,083
215 5,487,084
230 5,487,085
243 5,487,086
245 5,487,087
296 5,487,088
318 5,487,090
347 5,487,091
354 5,487,092
378 5,487,093

CLASS 376

100 5,487,094
371 5,487,095

CLASS 377

15 5,487,096
20 5,487,097

CLASS 378

19 5,487,098
57 B1 4,366,382

CLASS 379

57 5,487,100
59 5,487,099
60 5,487,101
67 5,487,102
88 5,487,103
96 5,487,104
100 5,487,105
5,487,106
144 5,487,107
211 5,487,111
220 5,487,110
355 5,487,108
410 5,487,109

CLASS 381

17 5,487,113
192 5,487,114

CLASS 382

6 5,487,112
104 5,487,116
173 5,487,117
202 5,487,118
239 5,487,119
296 5,487,115

CLASS 383

200 5,486,051

CLASS 384

463 5,486,052
513 5,486,053
610 5,486,054

CLASS 385

24 5,487,120
39 5,487,121
46 5,487,122
70 5,487,123
93 5,487,124
96 5,487,125
105 5,487,126

CLASS 392

416 5,487,127

CLASS 395

2.31 5,487,128
2.42 5,487,129
3 5,487,130
27 5,487,133
51 5,487,134
62 5,487,131
63 5,487,132
75 5,487,135
100 5,487,136
115 5,487,137
5,487,138
135 5,487,139
5,487,140
5,487,141
140 B1 5,146,550
143 5,487,142
157 5,487,143
161 5,487,144
162 5,487,145
166 5,487,146
180 5,487,147
182.02 5,487,148
182.08 5,487,149
185.02 5,487,151
200.01 5,487,152
250 5,487,153
311 5,487,155
375 5,487,156
5,487,157
5,487,158
5,487,159
441 5,487,160
442 5,487,161
472 5,487,162
623 5,487,163
600 5,487,164
5,487,165
5,487,166
650 5,487,167
5,487,168
700 5,487,169
733 5,487,170
800 5,487,172
5,487,173
840 5,487,171
842 5,487,154

CLASS 400

61 5,486,055
120.02 5,486,057
485 5,486,058
488 5,486,059
605 5,486,061
618 5,486,062
708 5,486,063

CLASS 401

201 5,486,064

CLASS 403

322 5,486,056

CLASS 404

15 5,486,065
45 5,486,066
84.05 5,486,067

CLASS 405

52 B1 5,263,794
129 5,486,068
198 5,486,069
202 5,486,070
229 5,486,071

CLASS 407

32 5,486,072
113 5,486,073

CLASS 408

77 5,486,074
230 5,486,075

CLASS 409

179 5,486,076

CLASS 410

46 B1 4,756,651
69 5,486,077
155 5,486,078

CLASS 411

392 5,486,079

CLASS 414

217 5,486,080
225 5,486,081
542 5,486,082
607 5,486,083
694 5,486,084
724 5,486,085

CLASS 415

9 5,486,086
55.1 5,486,087
121.2 5,486,088
146 5,486,089
173.1 5,486,090
194 5,486,091
225 5,486,092

CLASS 416

97 R 5,486,093
210.R 5,486,094
214 A 5,486,095
224 5,486,096

CLASS 417

222.1 5,486,097
222.2 5,486,098
477.13 5,486,099

CLASS 422

16 5,486,334
55 5,486,335
90 5,486,336
100 5,486,337
179 5,486,338
193 5,486,339

CLASS 423

240 S 5,486,340
243.01 5,486,341
5,486,342
413 5,486,343
477 5,486,344
573.1 5,486,345
594 5,486,346
623 5,486,347
700 5,486,348

CLASS 434

9.363 5,486,349
49 5,486,350
59 5,486,351
5,486,352
5,486,353
63 5,486,354
65 5,486,355
76.1 5,486,356
78.17 5,486,357
78.23 5,486,358
93.7 5,486,359
94.4 5,486,360
144.1 5,486,361
426 5,486,362
442 5,486,363
488 5,486,364
602 5,486,365

CLASS 425

142 5,486,104
143 5,486,105
145 5,486,106
190 5,486,100
192 R 5,486,101
202 5,486,102
541 5,486,103

CLASS 426

5 5,486,366
7 5,486,367
41 5,486,368
321 5,486,369
417 5,486,370
510 5,486,371
565 5,486,372
5,486,373
574 5,486,374
582 5,486,375
660 5,486,376

CLASS 427

79 5,486,377
163.2 5,486,378
212 5,486,379
248.1 5,486,380
294 5,486,381
376.3 5,486,382
446 5,486,383
493 5,486,384

CLASS 428

17 5,486,385
18 5,486,386
34.7 5,486,387
34.9 5,486,388
40 5,486,389
5,486,390
44 5,486,391
54 5,486,392
58 5,486,393
61 5,486,394
64.2 5,486,396
64.3 5,486,395
76 5,486,397
95 5,486,398
99 5,486,399
116 5,486,400
125 5,486,401
181 5,486,402
167 5,486,403
172 5,486,404
182 5,486,405
209 5,486,406
215 5,486,407
220 5,486,408
221 5,486,409
283 5,486,410
286 5,486,411
288 5,486,412
317.9 B1 4,784,904
323 5,486,413
334 5,486,414
349 5,486,415
357 5,486,416
5,486,417
397 5,486,418
5,486,419
403 5,486,420
421 5,486,421
447 5,486,422
450 5,486,423
451 5,486,424
500 5,486,425
516 5,486,426
546 5,486,427

CLASS 429

19 5,486,428
27 5,486,429
35 5,486,430
66 5,486,431
99 5,486,432
164 5,486,433
178 5,486,434
192 5,486,435

CLASS 430

11 5,486,436
58 5,486,438
59 5,486,439
62 5,486,440
74 5,486,441
78 5,486,442
106 5,486,443
109 5,486,444
110 5,486,445
156 5,486,446
197 5,486,447
328 5,486,449
538 5,486,450
569 5,486,451

CLASS 431

12 5,486,107
181 5,486,108

CLASS 433

72 5,486,109
102 Re.35,147
177 5,486,110

CLASS 434

157 5,486,111
250 5,486,112

CLASS 435

5 5,486,452
5,486,453
6 5,486,454
5,486,455
7.2 5,486,457
7.23 5,486,456
14 5,486,458
31 5,486,459
40.31 5,486,460
68.1 5,486,461
89.1 5,486,462
89.5 5,486,463
70.1 5,486,465
106 5,486,466
192 5,486,467
201 5,486,468
210 5,486,469
219 5,486,470
226 5,486,471
240.2 5,486,473
240.27 5,486,472
262 5,486,474
266 5,486,475

CLASS 436

15 5,486,476
17 5,486,477
52 5,486,478
533 5,486,479

CLASS 437

29 5,486,480
31 5,486,481
34 5,486,482
39 5,486,483
41 5,486,484
5,486,485
43 5,486,486
45 5,486,487
60 5,486,488
129 5,486,489
5,486,490
192 5,486,492
195 5,486,493
209 5,486,494

CLASS 439

61 5,486,113
62 5,486,114
108 5,486,115
347 5,486,116
357 5,486,117
374 5,486,118
489 5,486,119
521 5,486,120
652 5,486,121
732 5,486,122
825 5,486,123
843 5,486,124

CLASS 440

75 5,486,125

CLASS 445

25 5,486,126

CLASS 446

120 5,486,127

CLASS 451

2 5,486,128
5 5,486,129
11 5,486,130
56 5,486,131
75 5,486,132
150 5,486,133
209 5,486,134
326 5,486,135
347 5,486,136
540 5,486,137

CLASS 452

58 5,486,145

CLASS 454

75 5,486,138
123 5,486,139
333 5,486,140

CLASS 455

33.2 5,487,174
54.1 5,487,180
54.2 5,487,175
67.1 5,487,176
67.3 5,487,177
67.4 5,487,178
69 5,487,179
89 5,487,181
90 5,487,182
113 5,487,183
126 5,487,184
127 5,487,185
192.2 5,487,186

CLASS 472

60 5,486,141

CLASS 474

69 5,486,142
148 5,486,143

CLASS 475

179 5,486,144

CLASS 477

63 5,486,146
125 5,486,147

CLASS 482

57 5,486,148
120 5,486,149
133 5,486,150

CLASS 483

1 5,486,151

CLASS 493

468 5,486,152

CLASS 494

57 5,486,153

CLASS 501

10 5,486,495
90 5,486,496
95 5,486,497
137 5,486,491

CLASS 502

68 5,486,498
81 5,486,499

CLASS 503

227 5,486,500

CLASS 505

510 5,486,501

CLASS 512

21 5,486,502

CLASS 514

2 5,486,503
16 5,486,505
26 5,486,506
34 5,486,507
58 5,486,508
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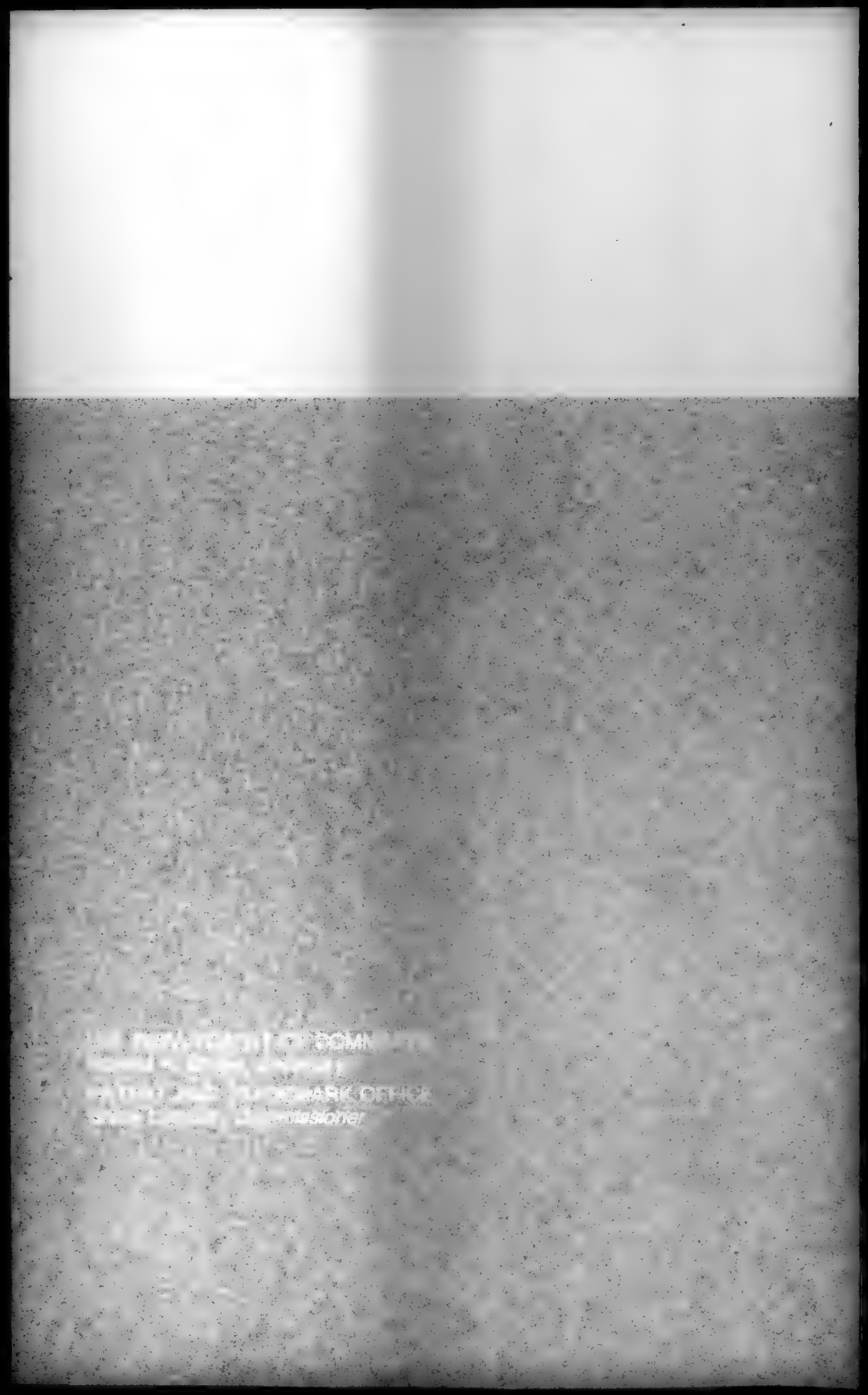
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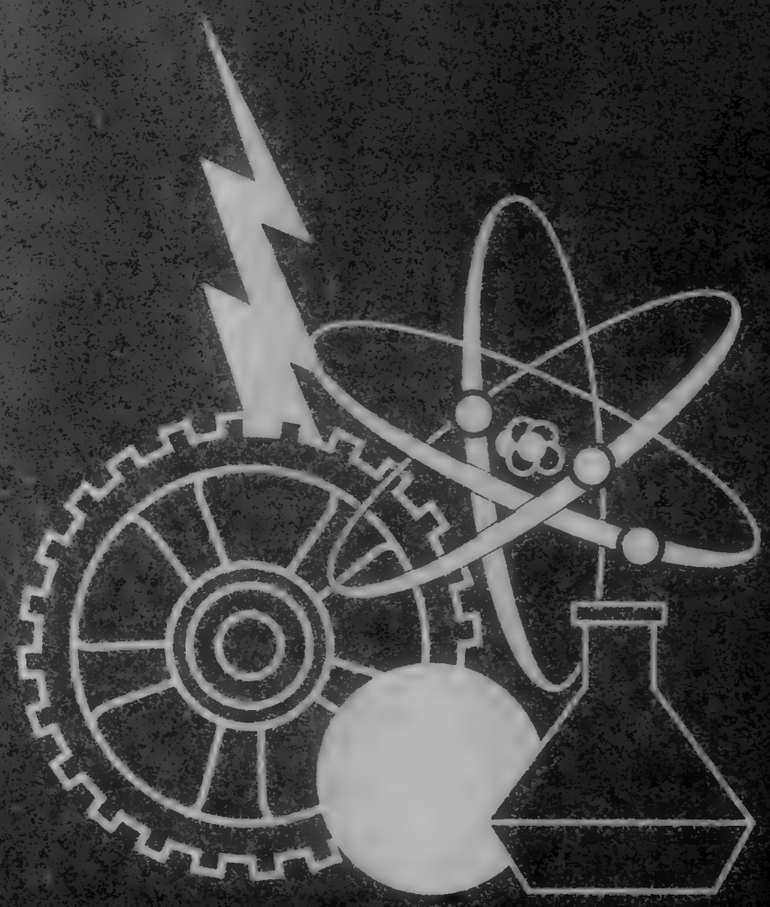
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PATENTS

January 30, 1996



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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1181 O.G. 50, on December 19, 1995.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective June 20, 1995, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1181 O.G. 49, on December 19, 1995.

International fees were changed, effective on January 1, 1996, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1181 O.G. 49, on December 19, 1995.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1995, and were announced in the *Official Gazette* at 1177 O.G. 171, on August 29, 1995.

The schedule of PCT fees (in U.S. dollars), effective January 1, 1996, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	220.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	660.00
—Corresponding prior U.S. national application filed	430.00
—Supplemental search fee, per additional invention (payable only upon invitation)	190.00
European Patent Office as ISA	1700.00
International fees	
Basic fee	677.00
Basic Supplemental fee (for each page over 30)	13.00
Designation fee per country or region	
—For the first 11 national or regional offices designated	164.00
—For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee	164.00
—Confirmation fee	82.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	207.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	470.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	710.00
—Additional examination fee, per additional invention (payable only upon invitation)	250.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4)	47.00	94.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	340.00	680.00
USPTO was ISA but not IPEA	375.00	750.00
USPTO was neither ISA nor IPEA		
—Search report has not been prepared by the European Patent Office or the Japanese Patent Office	505.00	1010.00
—Search report has been prepared by the European Patent Office or the Japanese Patent Office	440.00	880.00
Other National fees		
—For each independent claim in excess of 3	39.00	78.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	125.00	250.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

Nov. 27, 1995

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on January 26, 1993 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,181,273 through 5,181,274
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 24, 1989 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,799,272 through 4,800,591
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 22, 1985 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,494,245 through 4,495,656
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $495.00
By other than a small entity $990.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $995.00
By other than a small entity $1,990.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,495.00
By other than a small entity $2,990.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $660.00
(2) unintentional $1,550.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED November 22, 1995
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,469	06/724,471	08/11/87
(4,416,330)	(06/350,283)	(11/22/83)
Re. 33,091	06/800,584	10/17/89
(4,416,248)	(06/282,261)	(11/22/83)
Re. 33,412	07/446,501	10/30/90
(4,706,712)	(06/845,142)	(11/17/87)
Re. 34,509	07/913,441	01/18/94
(5,065,512)	(07/432,844)	(11/19/91)
4,416,028	06/230,942	11/22/83
4,416,029	06/262,635	11/22/83
4,416,030	06/431,297	11/22/83
4,416,044	06/246,214	11/22/83
4,416,047	06/308,552	11/22/83
4,416,048	06/326,019	11/22/83
4,416,049	06/223,446	11/22/83
4,416,052	06/363,195	11/22/83
4,416,058	06/231,848	11/22/83
4,416,059	06/332,179	11/22/83
4,416,060	06/265,784	11/22/83
4,416,065	06/343,825	11/22/83
4,416,089	06/252,516	11/22/83
4,416,106	06/366,478	11/22/83
4,416,107	06/369,121	11/22/83
4,416,113	06/216,436	11/22/83
4,416,115	06/267,857	11/22/83
4,416,119	06/338,581	11/22/83
4,416,121	06/324,353	11/22/83
4,416,132	06/479,017	11/22/83
4,416,135	06/300,758	11/22/83
4,416,154	06/291,906	11/22/83
4,416,155	06/349,622	11/22/83
4,416,159	06/312,494	11/22/83
4,416,164	06/235,054	11/22/83
4,416,170	06/479,106	11/22/83
4,416,175	06/344,479	11/22/83
4,416,182	06/305,051	11/22/83
4,416,184	06/266,087	11/22/83
4,416,193	06/346,014	11/22/83
4,416,197	06/311,346	11/22/83
4,416,198	06/370,622	11/22/83
4,416,199	06/413,705	11/22/83
4,416,207	06/357,557	11/22/83
4,416,208	06/268,138	11/22/83
4,416,209	06/256,429	11/22/83
4,416,213	06/347,220	11/22/83
4,416,224	06/340,256	11/22/83
4,416,228	06/337,855	11/22/83
4,416,229	06/278,653	11/22/83
4,416,235	06/301,748	11/22/83
4,416,241	06/287,002	11/22/83
4,416,243	06/370,069	11/22/83
4,416,257	06/269,038	11/22/83

Patent Number	Serial Number	Issue Date
4,416,261	06/320,248	11/22/83
4,416,267	06/329,182	11/22/83
4,416,272	06/257,236	11/22/83
4,416,273	06/273,662	11/22/83
4,416,275	06/332,938	11/22/83
4,416,278	06/265,075	11/22/83
4,416,298	06/356,566	11/22/83
4,416,299	06/292,653	11/22/83
4,416,300	06/305,620	11/22/83
4,416,307	06/320,469	11/22/83
4,416,311	06/285,117	11/22/83
4,416,317	06/326,401	11/22/83
4,416,318	06/358,451	11/22/83
4,416,319	06/401,339	11/22/83
4,416,320	06/398,387	11/22/83
4,416,321	06/280,213	11/22/83
4,416,328	06/317,452	11/22/83
4,416,333	06/370,017	11/22/83
4,416,335	06/328,309	11/22/83
4,416,345	06/315,048	11/22/83
4,416,349	06/306,951	11/22/83
4,416,351	06/254,215	11/22/83
4,416,352	06/349,485	11/22/83
4,416,355	06/477,284	11/22/83
4,416,367	06/297,099	11/22/83
4,416,372	06/427,390	11/22/83
4,416,374	06/368,917	11/22/83
4,416,382	06/360,378	11/22/83
4,416,383	06/316,239	11/22/83
4,416,385	06/333,626	11/22/83
4,416,386	06/358,066	11/22/83
4,416,395	06/305,922	11/22/83
4,416,398	06/347,887	11/22/83
4,416,399	06/272,908	11/22/83
4,416,406	06/329,289	11/22/83
4,416,410	06/384,474	11/22/83
4,416,412	06/397,660	11/22/83
4,416,414	06/400,898	11/22/83
4,416,420	06/353,370	11/22/83
4,416,425	06/370,086	11/22/83
4,416,437	06/364,588	11/22/83
4,416,441	06/423,561	11/22/83
4,416,446	06/281,363	11/22/83
4,416,447	06/299,179	11/22/83
4,416,456	06/258,053	11/22/83
4,416,460	06/256,249	11/22/83
4,416,466	06/260,754	11/22/83
4,416,468	06/256,477	11/22/83
4,416,469	06/256,530	11/22/83
4,416,472	06/219,323	11/22/83
4,416,474	06/224,060	11/22/83
4,416,475	06/448,242	11/22/83
4,416,480	06/299,810	11/22/83
4,416,482	06/222,247	11/22/83
4,416,486	06/253,744	11/22/83
4,416,490	06/317,718	11/22/83
4,416,495	06/270,736	11/22/83
4,416,497	06/286,746	11/22/83
4,416,500	06/318,904	11/22/83
4,416,507	06/261,178	11/22/83
4,416,517	06/350,122	11/22/83
4,416,521	06/267,749	11/22/83
4,416,531	06/364,653	11/22/83
4,416,535	06/382,354	11/22/83
4,416,537	06/266,396	11/22/83
4,416,540	06/323,953	11/22/83
4,416,543	06/298,366	11/22/83
4,416,544	06/323,176	11/22/83
4,416,554	06/396,938	11/22/83
4,416,559	06/269,007	11/22/83
4,416,565	06/280,005	11/22/83
4,416,569	06/253,048	11/22/83
4,416,571	06/234,647	11/22/83
4,416,572	06/264,436	11/22/83
4,416,573	06/291,709	11/22/83
4,416,581	06/349,402	11/22/83
4,416,590	06/223,436	11/22/83
4,416,596	06/252,706	11/22/83
4,416,598	06/258,413	11/22/83
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4,416,603	06/309,238	11/22/83
4,416,604	06/269,425	11/22/83
4,416,609	06/243,919	11/22/83
4,416,622	06/323,368	11/22/83
4,416,640	06/244,269	11/22/83
4,416,645	06/339,024	11/22/83
4,416,657	06/407,744	11/22/83
4,416,662	06/271,271	11/22/83
4,416,666	06/288,737	11/22/83
4,416,669	06/350,668	11/22/83
4,416,671	06/355,038	11/22/83
4,416,673	06/350,253	11/22/83
4,416,677	06/381,844	11/22/83
4,416,679	06/362,129	11/22/83
4,416,683	06/302,323	11/22/83
4,416,685	06/335,789	11/22/83
4,416,688	06/343,554	11/22/83
4,416,700	06/285,131	11/22/83
4,416,701	06/355,087	11/22/83
4,416,703	06/323,170	11/22/83
4,416,705	06/352,925	11/22/83
4,416,706	06/403,129	11/22/83
4,416,711	06/450,647	11/22/83
4,416,717	06/384,310	11/22/83
4,416,722	06/378,608	11/22/83
4,416,723	06/337,739	11/22/83
4,416,724	06/329,205	11/22/83
4,416,725	06/454,922	11/22/83
4,416,726	06/359,534	11/22/83
4,416,729	06/336,538	11/22/83
4,416,730	06/396,424	11/22/83
4,416,731	06/376,537	11/22/83
4,416,734	06/262,078	11/22/83
4,416,742	06/304,939	11/22/83
4,416,743	06/456,315	11/22/83
4,416,746	06/338,654	11/22/83
4,416,748	06/300,377	11/22/83
4,416,750	06/311,057	11/22/83
4,416,755	06/254,341	11/22/83
4,416,758	06/275,906	11/22/83
4,416,761	06/402,353	11/22/83
4,416,762	06/360,765	11/22/83
4,416,763	06/467,879	11/22/83
4,416,765	06/408,109	11/22/83
4,416,767	06/322,018	11/22/83
4,416,779	06/425,779	11/22/83
4,416,797	06/235,817	11/22/83
4,416,798	06/357,566	11/22/83
4,416,801	06/409,716	11/22/83
4,416,803	06/382,181	11/22/83
4,416,804	06/385,589	11/22/83
4,416,809	06/373,714	11/22/83
4,416,811	06/288,921	11/22/83
4,416,818	06/309,958	11/22/83
4,416,820	06/339,054	11/22/83
4,416,829	06/433,009	11/22/83
4,416,830	06/243,949	11/22/83
4,416,833	06/444,775	11/22/83
4,416,842	06/239,330	11/22/83
4,416,846	06/284,188	11/22/83
4,416,855	06/232,821	11/22/83
4,416,857	06/408,226	11/22/83
4,416,858	06/406,448	11/22/83
4,416,859	06/235,146	11/22/83
4,416,861	06/373,250	11/22/83
4,416,871	06/338,527	11/22/83
4,416,872	06/359,012	11/22/83
4,416,874	06/354,998	11/22/83
4,416,881	06/245,464	11/22/83
4,416,887	06/495,559	11/22/83
4,416,892	06/368,079	11/22/83
4,416,893	06/246,954	11/22/83
4,416,895	06/250,454	11/22/83
4,416,914	06/220,341	11/22/83
4,416,916	06/354,831	11/22/83
4,416,917	06/230,297	11/22/83

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4,416,928	06/376,606	11/22/83
4,416,930	06/364,144	11/22/83
4,416,932	06/425,048	11/22/83
4,416,936	06/334,507	11/22/83
4,416,943	06/286,289	11/22/83
4,416,944	06/452,872	11/22/83
4,416,945	06/345,291	11/22/83
4,416,946	06/365,430	11/22/83
4,416,947	06/364,053	11/22/83
4,416,948	06/364,054	11/22/83
4,416,961	06/349,282	11/22/83
4,416,970	06/427,068	11/22/83
4,416,972	06/277,512	11/22/83
4,416,975	06/361,702	11/22/83
4,416,976	06/249,617	11/22/83
4,416,977	06/349,092	11/22/83
4,416,979	06/375,545	11/22/83
4,416,984	06/266,184	11/22/83
4,416,992	06/362,206	11/22/83
4,416,994	06/312,446	11/22/83
4,416,995	06/300,943	11/22/83
4,417,002	06/396,124	11/22/83
4,417,016	06/350,140	11/22/83
4,417,018	06/378,231	11/22/83
4,417,019	06/405,495	11/22/83
4,417,021	06/252,500	11/22/83
4,417,027	06/389,691	11/22/83
4,417,031	06/337,800	11/22/83
4,417,035	07/320,976	11/22/83
4,417,036	06/356,019	11/22/83
4,417,038	06/327,727	11/22/83
4,417,046	06/295,419	11/22/83
4,417,058	06/349,235	11/22/83
4,417,059	06/294,375	11/22/83
4,417,063	06/264,482	11/22/83
4,417,065	06/381,124	11/22/83
4,417,066	06/421,619	11/22/83
4,417,073	06/324,929	11/22/83
4,417,075	06/339,899	11/22/83
4,417,082	06/389,740	11/22/83
4,417,087	06/373,479	11/22/83
4,417,089	06/413,646	11/22/83
4,417,090	06/430,470	11/22/83
4,417,098	06/253,923	11/22/83
4,417,128	06/345,231	11/22/83
4,417,130	06/326,993	11/22/83
4,417,143	06/273,446	11/22/83
4,417,144	06/236,738	11/22/83
4,417,148	06/401,409	11/22/83
4,417,152	06/312,853	11/22/83
4,417,156	06/238,605	11/22/83
4,417,164	06/275,068	11/22/83
4,417,168	06/315,333	11/22/83
4,417,170	06/323,913	11/22/83
4,417,176	06/285,731	11/22/83
4,417,186	06/338,997	11/22/83
4,417,197	06/286,891	11/22/83
4,417,199	06/377,744	11/22/83
4,417,213	06/247,184	11/22/83
4,417,228	06/375,602	11/22/83
4,417,241	06/277,828	11/22/83
4,417,248	06/279,497	11/22/83
4,417,254	06/371,783	11/22/83
4,417,256	06/360,280	11/22/83
4,417,266	06/293,052	11/22/83
4,417,267	06/263,275	11/22/83
4,417,272	06/309,805	11/22/83
4,417,276	06/254,771	11/22/83
4,417,277	06/297,566	11/22/83
4,417,283	06/283,240	11/22/83
4,417,289	06/230,217	11/22/83
4,417,291	06/302,293	11/22/83
4,417,294	06/297,439	11/22/83
4,417,299	06/360,219	11/22/83
4,417,305	06/300,133	11/22/83
4,417,306	06/337,991	11/22/83
4,417,310	06/244,560	11/22/83
4,417,312	06/271,306	11/22/83
4,417,314	06/283,263	11/22/83
4,417,315	06/283,305	11/22/83
4,417,316	06/283,267	11/22/83
4,417,320	06/262,722	11/22/83
4,417,331	06/235,427	11/22/83
4,417,335	06/323,345	11/22/83
4,417,336	06/274,952	11/22/83
4,417,337	06/278,884	11/22/83
4,417,340	06/251,968	11/22/83
4,417,342	06/239,992	11/22/83
4,417,346	06/278,053	11/22/83
4,417,351	06/272,553	11/22/83
4,417,356	06/263,663	11/22/83
4,417,358	06/314,046	11/22/83
4,706,307	06/489,140	11/17/87
4,706,308	06/741,128	11/17/87
4,706,310	06/922,414	11/17/87
4,706,314	07/011,260	11/17/87
4,706,317	06/917,784	11/17/87
4,706,321	06/915,625	11/17/87
4,706,328	06/856,024	11/17/87
4,706,329	06/773,382	11/17/87
4,706,331	06/906,423	11/17/87
4,706,334	06/922,248	11/17/87
4,706,337	06/856,072	11/17/87
4,706,345	06/911,963	11/17/87
4,706,348	06/840,005	11/17/87
4,706,352	07/029,126	11/17/87
4,706,355	06/898,414	11/17/87
4,706,360	06/862,859	11/17/87
4,706,362	06/909,660	11/17/87
4,706,367	06/809,205	11/17/87
4,706,370	06/871,418	11/17/87
4,706,375	06/896,686	11/17/87
4,706,376	06/932,082	11/17/87
4,706,380	06/916,643	11/17/87
4,706,387	07/010,950	11/17/87
4,706,390	06/851,171	11/17/87
4,706,395	06/736,771	11/17/87
4,706,396	06/798,250	11/17/87
4,706,397	06/793,104	11/17/87
4,706,399	06/822,208	11/17/87
4,706,400	06/865,461	11/17/87
4,706,401	06/870,292	11/17/87
4,706,410	06/937,458	11/17/87
4,706,411	06/833,506	11/17/87
4,706,416	07/002,443	11/17/87
4,706,418	06/900,321	11/17/87
4,706,422	06/845,697	11/17/87
4,706,426	06/935,797	11/17/87
4,706,428	06/920,523	11/17/87
4,706,435	06/938,722	11/17/87
4,706,438	07/041,439	11/17/87
4,706,439	06/903,738	11/17/87
4,706,444	06/914,635	11/17/87
4,706,445	06/855,126	11/17/87
4,706,447	06/907,459	11/17/87
4,706,450	07/029,672	11/17/87
4,706,453	06/929,480	11/17/87
4,706,456	06/647,158	11/17/87
4,706,459	06/658,035	11/17/87
4,706,460	06/827,130	11/17/87
4,706,461	06/830,381	11/17/87
4,706,468	07/036,539	11/17/87
4,706,469	07/016,404	11/17/87
4,706,472	07/012,342	11/17/87
4,706,473	07/017,269	11/17/87
4,706,475	06/943,674	11/17/87
4,706,476	06/910,809	11/17/87
4,706,477	07/020,305	11/17/87
4,706,484	06/889,741	11/17/87
4,706,486	06/825,332	11/17/87
4,706,489	06/805,953	11/17/87
4,706,493	06/808,546	11/17/87
4,706,495	06/793,565	11/17/87
4,706,497	06/846,703	11/17/87
4,706,501	06/319,674	11/17/87
4,706,503	07/008,977	11/17/87

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4,706,504	06/881,025	11/17/87
4,706,513	06/775,444	11/17/87
4,706,516	06/885,812	11/17/87
4,706,520	06/810,321	11/17/87
4,706,521	06/892,536	11/17/87
4,706,528	06/920,912	11/17/87
4,706,535	07/015,948	11/17/87
4,706,541	07/016,912	11/17/87
4,706,542	06/762,649	11/17/87
4,706,550	06/817,302	11/17/87
4,706,552	06/725,586	11/17/87
4,706,554	06/897,394	11/17/87
4,706,562	06/820,552	11/17/87
4,706,564	06/833,060	11/17/87
4,706,567	06/876,446	11/17/87
4,706,568	06/874,311	11/17/87
4,706,570	06/756,388	11/17/87
4,706,573	06/781,482	11/17/87
4,706,581	06/925,598	11/17/87
4,706,582	06/820,321	11/17/87
4,706,583	06/891,448	11/17/87
4,706,584	06/877,834	11/17/87
4,706,586	06/834,952	11/17/87
4,706,590	06/924,332	11/17/87
4,706,596	06/811,005	11/17/87
4,706,597	06/816,224	11/17/87
4,706,600	06/928,966	11/17/87
4,706,603	06/847,432	11/17/87
4,706,605	06/861,322	11/17/87
4,706,606	06/924,568	11/17/87
4,706,609	06/872,917	11/17/87
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4,706,620	06/829,648	11/17/87
4,706,621	06/914,158	11/17/87
4,706,623	06/736,372	11/17/87
4,706,626	06/768,775	11/17/87
4,706,640	07/885,408	11/17/87
4,706,642	06/865,868	11/17/87
4,706,644	06/797,392	11/17/87
4,706,649	06/776,606	11/17/87
4,706,651	06/832,617	11/17/87
4,706,665	06/682,618	11/17/87
4,706,669	06/783,934	11/17/87
4,706,675	06/845,643	11/17/87
4,706,685	06/907,318	11/17/87
4,706,700	06/907,932	11/17/87
4,706,702	06/943,312	11/17/87
4,706,707	06/906,049	11/17/87
4,706,708	06/877,201	11/17/87
4,706,714	06/937,213	11/17/87
4,706,722	06/883,174	11/17/87
4,706,723	06/851,096	11/17/87
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5,065,890	07/636,622	11/19/91
5,065,894	07/495,598	11/19/91
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5,065,898	07/594,339	11/19/91
5,065,902	07/528,424	11/19/91
5,065,903	07/639,749	11/19/91
5,065,904	07/410,715	11/19/91
5,065,906	07/421,169	11/19/91
5,065,910	07/476,319	11/19/91
5,065,912	07/549,284	11/19/91
5,065,914	07/545,828	11/19/91
5,065,927	07/328,903	11/19/91
5,065,935	07/538,679	11/19/91
5,065,936	07/360,022	11/19/91
5,065,937	07/645,704	11/19/91
5,065,940	07/695,388	11/19/91
5,065,942	07/487,927	11/19/91
5,065,947	07/530,114	11/19/91
5,065,948	07/599,670	11/19/91
5,065,949	07/431,466	11/19/91
5,065,954	07/183,651	11/19/91
5,065,956	07/389,475	11/19/91
5,065,957	07/516,516	11/19/91
5,065,961	07/657,520	11/19/91
5,065,969	07/349,484	11/19/91
5,065,970	07/637,402	11/19/91
5,065,974	07/509,383	11/19/91
5,065,975	07/610,164	11/19/91
5,065,977	07/557,659	11/19/91
5,065,978	07/584,762	11/19/91
5,065,981	07/594,693	11/19/91
5,065,982	07/603,073	11/19/91
5,065,983	07/504,552	11/19/91
5,065,988	07/460,199	11/19/91
5,066,000	07/600,449	11/19/91
5,066,008	07/504,834	11/19/91
5,066,009	07/565,027	11/19/91
5,066,011	07/680,854	11/19/91
5,066,012	07/653,696	11/19/91
5,066,013	07/536,969	11/19/91
5,066,016	07/622,974	11/19/91
5,066,019	07/543,811	11/19/91
5,066,020	07/597,552	11/19/91
5,066,022	07/485,110	11/19/91
5,066,031	07/528,398	11/19/91
5,066,032	07/578,685	11/19/91
5,066,034	07/495,086	11/19/91
5,066,036	07/496,436	11/19/91
5,066,041	07/642,553	11/19/91
5,066,053	07/585,299	11/19/91
5,066,058	07/460,140	11/19/91
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5,066,062	07/581,895	11/19/91
5,066,064	07/607,166	11/19/91
5,066,065	07/596,891	11/19/91
5,066,070	07/543,732	11/19/91
5,066,078	07/626,786	11/19/91
5,066,079	07/529,563	11/19/91
5,066,085	07/594,634	11/19/91
5,066,086	07/558,116	11/19/91
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5,066,091	07/493,102	11/19/91
5,066,092	07/578,418	11/19/91
5,066,093	07/490,448	11/19/91
5,066,096	07/654,520	11/19/91
5,066,097	07/566,767	11/19/91
5,066,101	07/422,712	11/19/91
5,066,105	07/599,114	11/19/91
5,066,114	07/514,606	11/19/91
5,066,124	07/513,395	11/19/91
5,066,128	07/499,798	11/19/91
5,066,135	07/230,208	11/19/91
5,066,136	07/608,023	11/19/91
5,066,145	07/374,167	11/19/91
5,066,147	07/687,849	11/19/91
5,066,158	07/647,125	11/19/91
5,066,163	07/632,952	11/19/91
5,066,166	07/599,404	11/19/91
5,066,168	07/664,944	11/19/91
5,066,170	07/684,432	11/19/91
5,066,172	07/560,364	11/19/91
5,066,181	07/274,058	11/19/91
5,066,186	07/578,918	11/19/91
5,066,188	07/525,978	11/19/91
5,066,189	07/562,196	11/19/91
5,066,191	07/392,938	11/19/91
5,066,193	07/514,680	11/19/91
5,066,195	07/550,379	11/19/91
5,066,197	07/550,506	11/19/91
5,066,198	07/533,019	11/19/91
5,066,204	07/546,315	11/19/91
5,066,205	07/507,813	11/19/91
5,066,206	07/494,344	11/19/91
5,066,207	07/520,796	11/19/91
5,066,209	07/516,075	11/19/91
5,066,220	07/519,737	11/19/91
5,066,230	07/273,299	11/19/91
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5,066,233	07/532,441	11/19/91
5,066,234	07/537,823	11/19/91
5,066,237	07/600,654	11/19/91
5,066,238	07/706,297	11/19/91
5,066,239	07/634,244	11/19/91
5,066,247	07/483,878	11/19/91
5,066,251	07/544,889	11/19/91
5,066,256	07/593,466	11/19/91
5,066,257	07/477,714	11/19/91
5,066,260	07/160,816	11/19/91
5,066,264	07/616,967	11/19/91
5,066,267	07/596,717	11/19/91
5,066,272	07/545,801	11/19/91
5,066,277	07/652,521	11/19/91
5,066,278	07/562,696	11/19/91
5,066,281	07/498,957	11/19/91
5,066,292	07/494,743	11/19/91
5,066,295	06/862,683	11/19/91
5,066,299	07/545,845	11/19/91
5,066,300	07/188,906	11/19/91
5,066,301	07/594,086	11/19/91
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5,066,306	07/564,750	11/19/91
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5,066,318	07/508,560	11/19/91
5,066,323	07/363,848	11/19/91
5,066,325	07/314,988	11/19/91
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5,066,329	07/590,920	11/19/91
5,066,333	07/436,302	11/19/91
5,066,337	07/568,130	11/19/91
5,066,341	07/471,140	11/19/91
5,066,348	07/445,028	11/19/91
5,066,350	07/349,735	11/19/91
5,066,351	07/531,998	11/19/91
5,066,353	07/586,244	11/19/91
5,066,363	07/562,677	11/19/91
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5,066,384	07/162,248	11/19/91
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5,066,386	07/537,877	11/19/91
5,066,387	07/506,937	11/19/91
5,066,388	07/485,462	11/19/91
5,066,396	07/127,194	11/19/91
5,066,399	06/838,284	11/19/91
5,066,417	07/382,355	11/19/91
5,066,422	07/535,054	11/19/91
5,066,432	07/554,277	11/19/91
5,066,436	07/457,257	11/19/91
5,066,437	07/495,620	11/19/91
5,066,440	07/605,576	11/19/91
5,066,445	07/508,862	11/19/91
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5,066,451	07/567,465	11/19/91
5,066,453	07/389,298	11/19/91
5,066,461	07/559,472	11/19/91
5,066,462	07/401,494	11/19/91
5,066,468	07/386,267	11/19/91
5,066,469	07/491,048	11/19/91
5,066,472	07/313,318	11/19/91
5,066,481	07/608,949	11/19/91
5,066,488	07/533,749	11/19/91
5,066,502	07/521,320	11/19/91
5,066,516	07/324,387	11/19/91
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5,066,536	07/280,355	11/19/91
5,066,540	07/402,796	11/19/91
5,066,544	07/573,440	11/19/91
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5,066,556	07/497,883	11/19/91
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5,066,624	07/041,032	11/19/91
5,066,632	07/492,210	11/19/91
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5,066,678	07/512,874	11/19/91
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5,066,781	07/552,808	11/19/91
5,066,785	07/311,966	11/19/91
5,066,786	07/220,312	11/19/91
5,066,792	07/279,451	11/19/91
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5,066,810	07/432,874	11/19/91
5,066,811	07/508,316	11/19/91
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5,066,816	07/486,100	11/19/91
5,066,825	07/437,065	11/19/91
5,066,830	07/142,961	11/19/91
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5,066,881	07/555,621	11/19/91
5,066,882	07/637,721	11/19/91
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5,066,954	07/504,473	11/19/91
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5,066,959	07/443,955	11/19/91
5,066,966	07/497,351	11/19/91
5,066,972	07/630,509	11/19/91
5,066,973	07/614,235	11/19/91
5,066,974	07/615,804	11/19/91
5,066,977	07/567,078	11/19/91
5,066,980	07/478,007	11/19/91
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5,067,003	07/584,910	11/19/91
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5,067,018	07/531,745	11/19/91
5,067,035	07/314,063	11/19/91
5,067,038	07/548,628	11/19/91
5,067,044	07/483,137	11/19/91
5,067,046	07/351,235	11/19/91
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5,067,055	07/538,824	11/19/91
5,067,058	07/501,280	11/19/91
5,067,060	07/334,098	11/19/91
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5,067,065	07/607,420	11/19/91
5,067,086	07/397,460	11/19/91
5,067,087	07/415,235	11/19/91
5,067,094	07/552,330	11/19/91
5,067,120	07/334,562	11/19/91
5,067,135	07/519,130	11/19/91
5,067,142	07/641,787	11/19/91
5,067,145	07/494,478	11/19/91
5,067,152	07/494,658	11/19/91
5,067,167	07/595,233	11/19/91

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

D. 340,589, Re. S.N. 08/548,218, Oct. 25, 1995, Cl. D06/366, TASK CHAIR, Zooey C. Chu, Owner of Record: *Steel-*

case, Inc., Grand Rapids, Mich., Attorney or Agent: Daniel L. Girdwood, Ex. Gp.: 2903

4,376,038, Re. S.N. 08/547,136, Oct. 24, 1995, Cl. 208/113, USE OF NAPHITA AS RISER DILUEN IN CARBO-METALLIC OIL CONVERSION, George D. Myers, Owner of Record: *Ashland Oil, Inc., Ashland, N.Y.,* Attorney or Agent: Louis Gubinsky, Ex. Gp.: 1106

4,834,750, Re. S.N. 08/538,757, Oct. 3, 1995, Cl. 623/6, DEFORMABLE-ELASTIC INTROCULAR LENS, Amitava Gupta, Owner of Record: *Amo Puerto Rico, Inc., Anasco, Puerto Rico,* Attorney or Agent: Frank J. Uxa, Ex. Gp.: 3308

4,956,302, Re. S.N. 08/561,215, Nov. 21, 1995, Cl. 435, LATERAL FLOW CHROMATOGRAPHIC BINDING ASSAY DEVICE, Julian Gordon, et. al., Owner of Record: *Abbott Laboratories, Chicago, Ill.,* Attorney or Agent: Gregory W. Steele, Ex. Gp.: 1802

5,167,721, Re. S.N. 08/558,342, Nov. 11, 1995, Cl. 134, LIQUID JET REMOVAL OF PLASMA SPRAYED AND SINTERED, Charles C. McComas, Owner of Record: *Waterjet Systems, Inc., Huntsville, Ala.,* Attorney or Agent: Jodi-Ann Mclane, Ex. Gp.: 1313

5,169,037, Re. S.N. 08/552,816, Nov. 3, 1995, Cl. 222/402.1, PRODUCT BAG FOR DISPENSING AND METHOD FOR PRODUCING THE SAME, Robert J. Davies, Owner of Record: *CCL Industries, Inc., Markham, Canada,* Attorney or Agent: Frank Pietrantonio, Ex. Gp.: 3104

5,189,049, Re. S.N. 08/526,079, Sept. 11, 1995, Cl. 514/371, HETEROCYCLIC SUBSTITUTED ACYLAMINOTHIAZOLES, THEIR PREPARATION, Daniel Frehel, et. al., Owner of Record: *Elf Sanofi, Paris, France,* Attorney or Agent: William E. Player, Ex. Gp.: 1205

5,255,890, Re. S.N. 08/548,201, Oct. 25, 1995, Cl. 251/1.3, RAM TYPE BLOWOUT PREVENTER, Charles D. Morrill, Owner of Record: *Hydril Co., Houston, Tex.,* Attorney or Agent: Frank S. Vaden III, Ex. Gp.: 3407

5,268,613, Re. S.N. 08/545,934, Oct. 20, 1995, Cl. 313/113, INCANDESCENT ILLUMINATION SYSTEM, David W. Cunningham, Owner of Record: *Gregory Esakoff, Huntington Beach, Calif.,* Attorney or Agent: Jame R. Brueggemann, Ex. Gp.: 2215

5,282,003, Re. S.N. 08/560,475, Nov. 17, 1995, Cl. 355/260, COPIER AND PRINTER TONER HOPPER SEALING DEVICE, Steven B. Michlin, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 2105

5,293,229, Re. S.N. 08/538,101, Oct. 2, 1995, Cl. 358/136, APPARATUS AND METHOD FOR PROCESSING GROUPS OF FIELDS IN A VIDEO DATA COMPRESSION SYSTEM, Siu-Leong Iu, Owner of Record: *Matsushita Electric Corp. of America, Secqucus, N.J.,* Attorney or Agent: Kenneth N. Nixon, Ex. Gp.: 2615

5,370,429, Re. S.N. 08/547,946, Oct. 25, 1995, Cl. 128/839, IUD INSERTING APPARATUS, Juan Diaz, et. al., Owner of Record: *DB Inserters, Inc., North Tonawanda, N.Y.,* Attorney or Agent: Gregory S. Gewirtz, Ex. Gp.: 3301

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

5,138,028, Reexam. No. 90/004,069, Nov. 3, 1995, Cl. 528/353, POLYMIDES END-CAPPED WITH DIARYL SUBSTITUTED ACETYLENE, Charles W. Paul, et. al., Owner of Record: *National Starch and Chemical Investment Holding Corp., Wilmington, Del.,* Attorney or Agent: Edwin M. Szala, National Starch and Chemical Corp., Bridgewater, N.J., Ex. Gp.: 1207, Requester: NASA Langley Research Center, c/o George F. Helfrich, Hampton, Va.

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Robert L. Boggio dba Predator Manic Systems, Newport Beach, Calif., Reg. No. 1,674,965, for the mark "PREDATOR (STYLIZED)", Can. No. 23,962.

International Set Inc., Los Angeles, Calif., Reg. No. 1,151,768 for the mark "COLLEGE", Canc. No. 23,516.

Len Poliandro International, Inc., New York, N.Y., Reg. No. 1,114,147 for the mark "VIVACE", Canc. No. 23,642.

Amcrest Corporation, New York, N.Y., Reg. No. 646,548 for the mark "CRANBROOK", Canc. No. 24,074.

Good Furniture Company Store No. 3, Inc., aka Good Furniture Company, Chicago, Ill., Reg. No. 1,223,745 for the mark "GOOD FURNITURE COMPANY AND DESIGN", Canc. No. 23,974.

JEAN BROWN
Technical Support Manager,
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Registration To Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office who have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before March 15, 1996.

Griffin, Ronald W., 6314 Farmdale Ln., Austin, Tex. 78749
Huntley, David M., 9678 Poindexter Ct., Burke, Va. 22015

January 2, 1996 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration To Practice

The following person successfully passed the registration examination that was held November 2, 1994, and has been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until applicant's registration certificate is mailed to applicant. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of the following applicant on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before March 15, 1996.

Ferri, Yildiz R., 29 Garden St., #409, Cambridge, Mass. 02138

January 2, 1996 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Patent Term Extended Under 35 U.S.C. § 156

An interim extension of the term of U.S. Patent No. 4,048,306 has been granted under 35 UC. § 156(e)(2) for a period of one year from the first extended expiration date of the patent. The patent was previously extended for one year under 35 U.S.C. §156(d)(5). See 1167 OG 14, October 4, 1994. An application for patent term extension was filed by Eli Lilly and Company, on behalf of the patent owner Boehringer Ingelheim GmbH, based on approval of the product "DYNABAC" by the Food and Drug Administration.

Errata

"All reference to Patent No. 4,792,701 to Peter J. Sacchetti of Framingham, Mass. for MOTION DETECTING LIGHT CONTROLLER SYSTEM appearing in the *Official Gazette* of February 12, 1991 should be deleted since no patent was granted."

Certificate of Correction
For Week of January 30, 1996

P. 09,323	5,341,092	5,405,580	5,435,455	Re. 34,706	5,344,687	5,410,623	5,435,960		
Re. 34,651	5,342,243	5,409,896	5,435,680	Re. 34,870	5,351,669	5,411,636	5,436,501		
				4,776,633	5,352,857	5,411,810	5,437,519		
				5,108,989	5,359,819	5,412,108	5,437,631		
				5,116,878	5,360,529	5,413,004	5,438,027		
				5,125,904	5,364,979	5,413,767	5,438,442		
				5,176,267	5,371,228	5,414,702	5,438,747		
				5,205,872	5,372,410	5,415,770	5,439,412		
				5,209,924	5,372,797	5,416,097	5,439,669		
				5,252,601	5,374,548	5,419,240	5,440,011		
				5,254,719	5,377,463	5,420,026	5,440,492		
				5,262,401	5,378,280	5,420,814	5,440,756		
				5,263,708	5,378,541	5,423,408	5,440,842		
				5,270,068	5,378,716	5,424,425	5,442,104		
				5,281,816	5,378,747	5,424,810	5,442,476		
				5,290,583	5,380,331	5,425,603	5,442,569		
				5,291,342	5,380,489	5,425,844	5,442,609		
				5,291,520	5,380,740	5,426,088	5,443,093		
				5,292,754	5,384,203	5,427,159	5,443,558		
				5,296,766	5,385,285	5,429,248	5,443,778		
				5,299,181	5,386,917	5,429,345	5,444,468		
				5,308,652	5,387,606	5,429,513	5,444,506		
				5,311,768	5,393,672	5,431,196	5,444,667		
				5,314,503	5,393,746	5,432,203	5,444,738		
				5,320,100	5,395,591	5,432,316	5,444,753		
				5,328,959	5,399,586	5,434,227	5,444,805		
				5,331,082	5,399,751	5,434,412	5,445,147		
				5,332,623	5,402,321	5,434,886	5,445,563		
				5,338,514	5,405,218	5,435,374	5,445,876		
				5,445,978	5,451,431	5,455,162	5,460,535		
				5,446,082	5,451,438	5,455,219	5,460,828		
				5,446,435	5,451,472	5,456,516	5,461,069		
				5,447,106	5,451,626	5,456,787	5,461,108		
				5,447,203	5,451,850	5,456,883	5,461,776		
				5,447,206	5,452,056	5,457,141	5,462,050		
				5,447,733	5,452,277	5,457,402	5,462,234		
				5,447,870	5,452,372	5,457,641	5,462,668		
				5,448,054	5,452,471	5,457,982	5,462,737		
				5,448,933	5,452,605	5,457,999	5,462,823		
				5,449,421	5,452,611	5,458,322	5,463,079		
				5,449,729	5,452,986	5,459,049	5,463,447		
				5,449,853	5,453,136	5,459,138	5,463,478		
				5,450,121	5,453,273	5,459,249	5,463,610		
				5,450,180	5,453,563	5,459,718	5,463,856		
				5,450,482	5,453,678	5,459,720	5,464,134		
				5,450,491	5,454,432	5,459,972	5,464,599		
				5,450,568	5,454,549	5,459,981	5,465,122		
				5,450,803	5,454,967	5,460,274	5,466,717		
				5,451,251	5,455,083	5,460,504	5,472,310		
				5,451,331					

Extension of Time for filing Notices of Opposition to Marks Published in the Official Gazette Dated January 9, 1996

Since copies of the Trademark Official Gazette dated January 9, 1996, were not mailed until January 16, 1996, the thirty-day opposition period for marks published in the Trademark Official Gazette dated January 9, 1996, is extended from February 8, 1996, until February 15, 1996.

Jan. 22, 1996
Date

Robert M. Anderson
Deputy Assistant Commissioner
for Trademarks

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
October 23-27, 1995

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
10-25	EX	74/275,685	John W. Kline and Timothy J. Brody	2(e)(4) [surname]	Refusal Affirmed		"HORLACHER" [beer and ale]		No
10-26	OPP	83,056	Kallista, Inc. v. Niagara Conservation Corp.	2(d); whether matter asserted for registration has been used only as a trade name	Opposition Dismissed	"NIAGARA" [bath and basin spouts]	"NIAGARA PRODUCTS" [showerheads, toilet dams and sink aerators]		No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (R) = REQ. FOR RECONSIDERATION

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Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Washington, D.C. 20231

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Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box M Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filings of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

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Box ITU FEE	Statements of Use (SOU's), and extension requests.
Box TTAB FEE	Oppositions, Cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections, and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

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SPECIAL BOXES APPLICABLE TO *BOTH* PATENT AND TRADEMARK MAIL

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Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation*; papers relating to pending litigation shall be mailed only to the Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box OED	Mail for the Office of Enrollment and Discipline.

Extension of Time for filing Notices of Opposition to Marks Published in the Official Gazette Dated January 16, 1996

Since copies of the Trademark Official Gazette dated January 16, 1996, were not mailed until January 19, 1996, the thirty-day opposition period for marks published in the Trademark Official Gazette dated January 16, 1996, is extended from February 15, 1996, until February 20, 1996.

Jan. 22, 1996
Date

Robert M. Anderson
Deputy Assistant Commissioner
for Trademarks

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
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	Birmingham Public Library	(205) 226-3620
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Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4488
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
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	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Library, University of Michigan	(313) 764-5298
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries—(continued)

State	*Name of Library*	*Telephone Contact*
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North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron: Summit County Public Library	Not Yet Operational
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	Not Yet Operational
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	Not Yet Operational
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy
J.O. THOMAS, JR., Deputy Assistant Commissioner for Patent Process Services

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—JOHN E. KITTLE, Director	308-0661	06/30/94
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200—RICHARD V. FISHER, Director	508-1235	06/30/94
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—BARRY S. RICHMAN, Director	308-0651	08/28/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	09/29/94
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	04/15/94
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	02/14/94
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	06/28/94
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—BOBBY R. GRAY, Director	305-9600	07/07/93
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3800	04/02/94
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	06/21/94
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—NICHOLAS P. GODICI, Director	305-4700	05/17/94
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	06/27/94
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	05/14/94
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—CARLTON R. CROYLE, Director	308-1148	08/09/94
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	10/24/94
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	09/22/94
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	07/05/94

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

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TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of November 1, 1995

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Sussman, Acting Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/06/95	09/11/95
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/30/95	07/28/95
Law Office 103—Kathryn Erskine, Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/05/95	09/25/95
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/04/95	07/25/95
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/01/95	06/01/95
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/02/95	06/30/95
Law Office 107—Thomas Lamoue, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/16/95	08/08/95
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions–Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/16/95	08/02/95
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/30/95	09/05/95
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—John Walker, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	03/06/95	—0—
Renewals (All Classes)	08/18/95	—0—
Section 12(c) Publications (All Classes)	04/19/95	—0—

1. ** Assigned to all Law Office

2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 305–8747 through (703) 305-9752 from 6:30 a.m. to Midnight EST, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

JANUARY 30, 1996

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,522,807 (2787th)
SUBSTANTIVE TOPICAL COMPOSITIONS

Carl Kaplan, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.

Reexamination Request No. 90/003,824, May 9, 1995.
Reexamination Certificate for Patent 4,522,807, issued Jun. 11, 1985, Ser. No. 496,032, May 19, 1983.
Continuation-in-part of Ser. No. 342,304, Jan. 25, 1982, abandoned.
Int. Cl.[6] A61K *7/42; 7/44*
U.S. Cl. 424—59

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

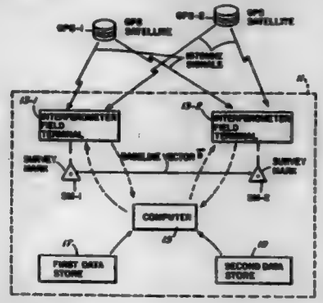
The patentability of claims 1–14 is confirmed.

1. A dermatologically compatible, highly substantive sunscreening oil-in-water emulsion composition comprising 0.1 to 5% octadecene-1/maleic anhydride copolymer having a molecular weight of 4,000 to 100,000, an effective sunscreening amount of a sunscreening agent, an oil, from 40 to 95% water and having a pH of 6 to 10.

B1 5,014,066 (2788th)
SYSTEM FOR SIMULTANEOUSLY DERIVING POSITION INFORMATION FROM A PLURALITY OF SATELLITE TRANSMISSIONS

Charles C. Counselman, III, Belmont, Mass., assignor to Western Atlas International, Inc., Houston, Tex.

Reexamination Request No. 90/003,781, Apr. 6, 1995.
Reexamination Certificate for Patent 5,014,066, issued May 7, 1991, Ser. No. 382,291, Jul. 20, 1989.
Continuation of Ser. No. 895,148, Aug. 11, 1986, Pat. No. 4,870,422, which is a continuation of Ser. No. 353,331, Mar. 1, 1982, Pat. No. 4,667,203.
The portion of the term of this patent subsequent to Feb. 28, 2006, has been disclaimed.
Int. Cl.[6] G01S *5/04;* **H04B** *7/185*
U.S. Cl. 342—352



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–12 is confirmed.

1. A method of determining position information from a composite of spread spectrum, suppressed carrier signals transmitted simultaneously at the same frequencies by a plurality of orbiting satellites and received simultaneously from different directions by an antenna, comprising:

(a) forming a digital representation of said composite;

(b) applying said digital representation to a plurality of logic circuits, each said logic circuit being responsive to the signal transmitted by a different selected satellite and operating synchronously in response to a common clock;

(c) deriving simultaneously, in each said logic circuit, data representing the signal transmitted by the satellite to which each said logic circuit is responsive; and

(d) combining the simultaneously derived data from a plurality of said logic circuits to determined position information.

B1 5,137,877 (2789th)
BIFUNCTIONAL LINKING COMPOUNDS, CONJUGATES AND METHODS FOR THEIR PRODUCTION

Takeshi Kaneko, Guilford; David Willner, Hamden; Ivo Monkovic, Durham; Robert S. Greenfield, Wallingford, and Gary R. Braslawsky, Glastonbury, all of Conn., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Reexamination Request No. 90/003,521, Aug. 5, 1994.
Reexamination Certificate for Patent 5,137,877, issued Aug. 11, 1992, Ser. No. 522,996, May 14, 1990.
Int. Cl.[6] A61K *39/395; 47/00;* **C07H** *15/252;* **C07C** *281/06*
U.S. Cl. 514—25

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 13–21 is confirmed.

Claims 2 and 10 are cancelled.

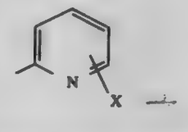
Claims 1, 3 and 9 are determined to be patentable as amended.

Claims 4–8, 11 and 12, dependent on an amended claim, are determined to be patentable.

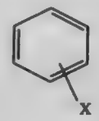
1. A bifunctional N-substituted hydrazine compound having the formula:

$$H_2NNHCONH(CH_2)_nSSR^6$$

wherein n is an integer from 1 to 10; and R^6 is



wherein X is NO_2, or halogen or



wherein X is H, NO_2 or Halogen.

B1 5,141,486 (2790th)
WASHING CELLS

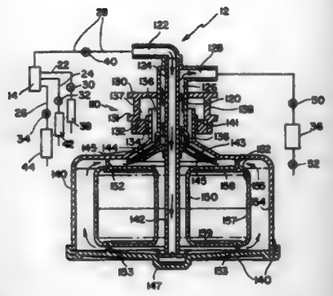
Glen D. Antwiler, Lakewood, Colo., assignor to Cobe Laboratories, Inc., Lakewood, Colo.

Reexamination Request No. 90/003,656, Dec. 7, 1994.
Reexamination Certificate for Patent 5,141,486, issued Aug. 25, 1992, Ser. No. 609,748, Nov. 5, 1990.
Int. Cl.[6] B01D *43/00*
U.S. Cl. 494—37

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1, 2, 4, 5, 6 and 9 are determined to be patentable as amended.

Claims 3, 7 and 8, dependent on an amended claim, are determined to be patentable.



New claims **10–27** are added and determined to be patentable.

1. The method of removing impurities from red blood cells which comprises:

providing a batch of blood containing said impurities to a centrifuge,

centrifuging *said batch of* blood containing said impurities *within said centrifuge* to form a red blood cell layer also containing said impurities, *wherein said centrifuging step comprises exposing said blood to centrifugal forces,*

stopping said centrifuging *step, wherein said red blood cell layer is free from exposure to centrifugal forces,*

mixing red blood cells from said *red blood cell* layer with a wash solution during said stopping *step to form a resultant mixture, said wash solution being for removing at least a portion of said impurities from said red blood cells,* and

centrifuging **[**the**]** *said* resultant mixture to remove said wash solution *from said red blood cell layer.*

B1 5,297,896 (2791th)

ENVIRONMENTALLY SAFE UNDERGROUND PIPING SYSTEM

Michael C. Webb, Chester Springs, Pa., assignor to Environ Products, Inc., Lionville, Pa.

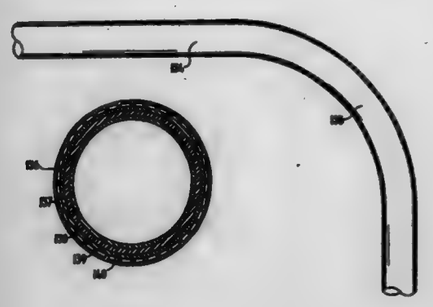
Reexamination Request No. 90/003,767, Mar. 24, 1995.

Reexamination Certificate for Patent 5,297,896, issued Mar. 29, 1994, Ser. No. 857,361, Mar. 25, 1992.

Continuation-in-part of Ser. No. 838,615, Feb. 19, 1992, abandoned.

Int. Cl.[6] **F16L** *1/00*

U.S. Cl. 405—52



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–29**, and **31** is confirmed.

Claims **30** and **32** are cancelled.

New claims **33–47** are added and determined to be patentable.

33. A secondarily contained underground piping system for connecting the elements of the system including a dispensing pipe of an underground storage tank to an above ground dispensing unit, comprising:

at least one chamber installed around at least one of the elements of the system; and

flexible coaxial piping connecting the elements, said flexible coaxial piping consisting of an inner flexible primary pipe and a separate flexible damage protection and standoff pipe for secondary containment, each of said primary pipe and standoff pipe having an inner and an outer surface respectively, and

a multitude of separator legs extending radially inward from the inner surface of said standoff pipe and contacting the outer surface of the primary pipe, said separator legs creating an interstitial space for fluid migration in all directions between the primary and standoff pipes;

said primary pipe comprising a plurality of layers including an inner barrier layer and an outer protection layer.

REISSUES

JANUARY 30, 1996

Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,149

RAILLESS REFRIGERATOR DISPLAY DOOR

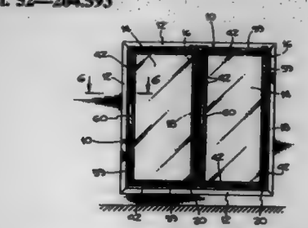
Richard J. Richardson, Simi Valley, and Bennie R. Downing, Thousand Oaks, both of Calif., assignors to Anthony's Manufacturing Company, Inc., San Fernando, Calif.

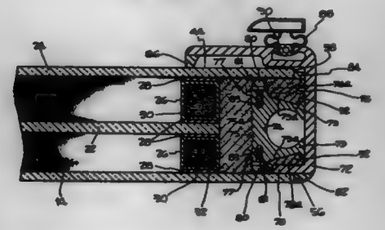
Original No. 5,113,628, dated May 19, 1992, Ser. No. 644,072, Jan. 18, 1991. Continuation-in-part of Ser. No. 585,602, Sep. 20, 1990, Pat. No. 5,097,642. Application for reissue May 19, 1994, Ser. No. 246,356

The portion of the term of this patent subsequent to Mar. 24, 2009, has been disclaimed.

Int. Cl.[6] **E04B** *1/74*

U.S. Cl. 52—204.593 **64 Claims**





20. A swing door assembly, comprising:

first and second door panels spaced apart to provide a space therebetween, said panels have panel edges;

a structural member positioned between said panels proximate said edges;

pads between the structural member and the panels such that the structural member extends less than the entire thickness of the space between the panels;

swinging means for mounting said panels for swinging movement;

wherein said structural member in transverse cross-section has a maximum dimension, the maximum dimension being less than the distance between said panels.

Re. 35,150

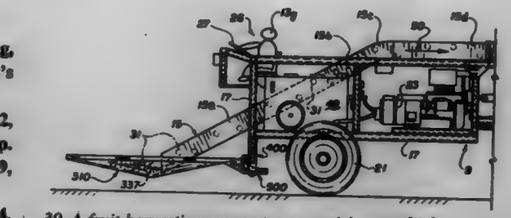
TRAY FOR FRUIT HARVESTING SYSTEM

Frank J. McKenna, Jr., Shaked Hts.; Richard K. Horst; James F. Horst, both of Orrville, all of Ohio; Charles S. Wright, Leesberg, and John D. Matthews, Melbourne, both of Fla., assignors to Kathleen McKenna, Shaker Heights, Ohio

Original No. 5,228,279, dated Jul. 20, 1993, Ser. No. 910,841, Jul. 6, 1992. Continuation-in-part of Ser. No. 802,362, Dec. 4, 1991, Pat. No. 5,152,129, which is a continuation-in-part of Ser. No. 572,152, Aug. 23, 1990, Pat. No. 5,136,635. Application for reissue Dec. 9, 1994, Ser. No. 353,520

Int. Cl.[6] **A01D** *46/00*

U.S. Cl. 56—328.1 **43 Claims**



30. A fruit harvesting apparatus comprising a vehicle, means to move that vehicle along the ground, a tray which is mounted to the vehicle adjacent the ground to receive picked fruit, said tray having a bottom wall which conveys the received fruit to a first end of a transfer system, means to convey the fruit from said first end of said transfer system to a second end of said transfer system, said second end of said transfer system depositing the fruit to said hopper carried by said vehicle;

wherein the hopper is connected to the vehicle adjacent the back end thereof and may be selectively elevated to facilitate removal of the fruit temporarily stored therein;

wherein the tray connects with a frame assembly to allow the tray to be selectively elevated.

Re. 35,151

MODIFIED CELLULOSE REGENERATED FIBER COMPRISING CHITOSAN PARTICLES

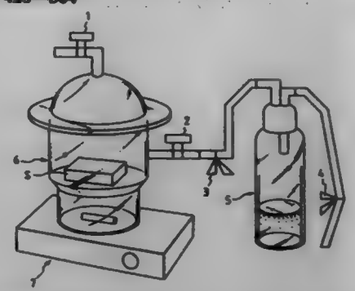
Tsuguhisa Hirukawa; Hiroaki Tanibe, both of Shizuoka, and Tuguo Miyaji, Tokyo, all of, Japan, assignors to Fuji Spinning Company, Limited, Tokyo, Japan

Original No. 5,320,903, dated Jun. 14, 1994, Ser. No. 834,160, Feb. 12, 1992. Application for reissue Feb. 1, 1995, Ser. No. 382,153

Claims priority, application Japan, Feb. 20, 1991, 3-047777

Int. Cl.[6] **B32B** *5/16*

U.S. Cl. 428—364 **6 Claims**



1. Modified cellulose regenerated fiber containing fine particles *having a diameter less than 10 μm of a material* selected from the group consisting of particles **[**having a diameter less than 10 μm of a material**]** *of* regenerated chitosan and particles of regenerated acetylated chitosan wherein the mixing amount of said fine particles to the cellulose element of said modified cellulose regenerated fiber is at least 0.5% by weight.

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PLANT PATENTS

GRANTED JANUARY 30, 1996

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,443

HYBRID TEA ROSE PLANT NAMED TWOHONOR

Jerry Twomey, Leucadia, Calif., assignor to DeVor Nurseries, Inc., Freedom, Calif.

Filed Nov. 15, 1993, Ser. No. 153,454
Int. Cl.[6] A01H 5/00
U.S. Cl. Plt.—18 1 Claim

1. A new and distinct variety of rose plant of the Hybrid Tea rose class, substantially as shown and described.

9,444

CHRYSANTHEMUM PLANT NAMED 'PINK BLUSH'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers Inc., Barberton, Ohio

Filed Nov. 1, 1994, Ser. No. 331,863
Int. Cl.[6] A01H 5/00
U.S. Cl. Plt.—74.1 1 Claim

1. A new and distinct Chrysanthemum plant named Pink Blush, as described and illustrated.

9,445

CHRYSANTHEMUM PLANT NAMED 'STEPHANIE'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Dec. 30, 1994, Ser. No. 367,571
Int. Cl.[6] A01H 5/00
U.S. Cl. Plt.—82.1 1 Claim

1. A new and distinct Chrysanthemum plant named Stephanie, as described and illustrated.

9,446

ALSTROEMERIA VARIETY NAMED 'STABOPINK'

Jacob van Andel, Aalsmer, Netherlands, assignor to Van Staaveren B.V., Aalsmeer, Netherlands

Filed Jan. 11, 1995, Ser. No. 372,435
Int. Cl.[6] A01H 5/00
U.S. Cl. Plt.—87.1 1 Claim

1. The new variety of Alstroemeria plant substantially as herein shown and described.

9,447

ELATIOR BEGONIA PLANT NAMED TINA

Jens N. Poulsen, Gartneriet J.N.P. Larsmindevej 1, Lisbjerg, DK-8200 Aarhus N., Denmark

Filed Feb. 9, 1995, Ser. No. 388,582
Int. Cl.[6] A01H 5/00
U.S. Cl. Plt.—87.18 1 Claim

1. A new and distinct Elatior Begonia plant named Tina, as illustrated and described.

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PATENTS

GRANTED JAN. 30, 1996

ERRATA

For CLASS	See PATENT NO.
062–006	5,487,272
600–121	5,487,376
600–204	5,487,377
238–002	5,487,501
239–069	5,487,502
439–164	5,487,667
044–328	5,487,770
216–067	5,487,810
205–347	5,487,819
205–716	5,487,820
588–212	5,487,873
424–673	5,487,906
528–005	5,487,924
507–211	5,488,083
534–605	5,488,098
424–009	5,488,133
235–375	5,488,223
250–231	5,488,240
376–313	5,488,634
385–129	5,488,696

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PATENTS

GRANTED JANUARY 30, 1996

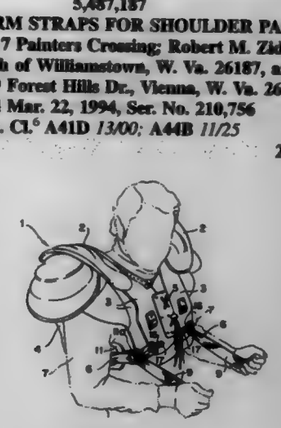
GENERAL AND MECHANICAL

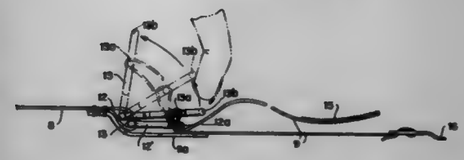
5,487,187

UNDERARM STRAPS FOR SHOULDER PADS

Rodney M. Zide, 7 Painters Crossing; Robert M. Zide, 300 W. Fourth St., both of Williamstown, W. Va. 26187, and James L. Rector, 1709 Forest Hills Dr., Vienna, W. Va. 26105

Filed Mar. 22, 1994, Ser. No. 210,756
Int. Cl.[6] A41D *13/00*; A44B *11/25*
U.S. Cl. 2—2 25 Claims





14. A tightening strap assembly comprising, a pair of first and second strap segments of non-elastic strap material, said first strap segment having one end adapted to be connected to a first member, said first strap segment having an other end, a pair of superimposed inner and outer clamping rings having rims being connected to said other end of said first strap segment, the second strap segment extending upwardly through both of said inner and outer clamping rings and then downwardly over the rim of said outer clamping ring and under the rim of said inner clamping ring, whereby the second strap segment is gripped between the rims of the clamping rings, one end portion of the second strap segment adapted to be connected to a second member, an other end portion of said second strap segment positioned to be grasped and moved forwardly by the user to shorten the length of and to thereby tighten the strap assembly, a first component of a fastener provided on said first strap segment substantially intermediate the ends thereof, and a second component of a fastener provided on said other end portion of said second strap segment adapted to cooperate with said first fastener component, to thereby detachably interconnect said first and second strap segments, whereby after the strap assembly is tightened said other end portion of the second strap is folded backward to cover the clamping rings and the first and second strap segments are interconnected.

5,487,188

GLOVE WITH MEANS FOR PROTECTING THE LICAMENTS AND ARTICULATIONS OF THE HAND

Walter Micheloni, Via Piavanini 30; Fabrizio Giugi, Via Caselle 13, both of 23100 Albosaggia (Sondrio), Italy, and Georg Ahlbaumer, Via Arona 34, 7500 St. Moritz, Switzerland

Filed Jun. 22, 1994, Ser. No. 263,512
Claims priority, application Italy, Aug. 24, 1993, MI93A1846
Int. Cl.[6] A41D *13/08*
U.S. Cl. 2—16 10 Claims

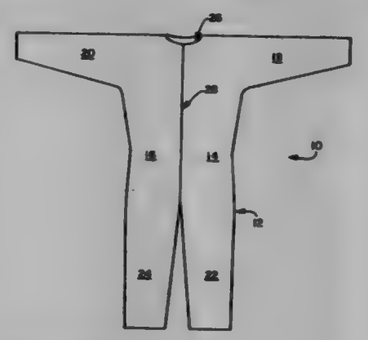
1. A glove with means for protecting the ligaments, articulations and bones of an user hand, said glove having glove thumb, forefinger, middle ring and small fingers and comprising a glove body, a plate for protecting the palm of the hand connected to said glove body, said plate being provided, at one end portion thereof, with an annular element encompassing a bottom region of the hand thumb, to said plate being moreover pivotally connected a forearm engaging shield, tie-straps being moreover provided for connecting said fingers of said glove with said plate, said tie-straps having each a hole through a free end portion thereof.

5,487,189

COVERALLS HAVING REDUCED SEAMS AND SEAMLESS SHOULDER CONSTRUCTION AND METHOD OF MANUFACTURE

Richard H. Bell, Tucson, Ariz., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 16, 1994, Ser. No. 214,871
Int. Cl.[6] A41D *1/06*
U.S. Cl. 2—79 20 Claims



1. Protective coveralls comprising:
a first body half and a second body half, each composed of a seamless sheet of material, said second body half being substantially a mirror image of said first body half, and each body half including:
a body portion having a first and second edge and a top edge extending approximately half-way across the body portion from the second edge;
a sleeve portion having a top and bottom sleeve edge, a top edge, and a segment of the second edge of the body portion; and
a leg portion having a front and a rear leg edge;
closure means joining the first edges of each body portion on each body half;

a seam joining the second edges of the body portion, including the segment of the second edges in the sleeve portions, on each body half;
sleeve seams joining the top sleeve edges to the bottom sleeve edges on each body half;
inseams joining the front leg edges to the back leg edges on each body half; and
back seams joining each top edge of a sleeve portion with the top edge of its respective body portion on each body half.

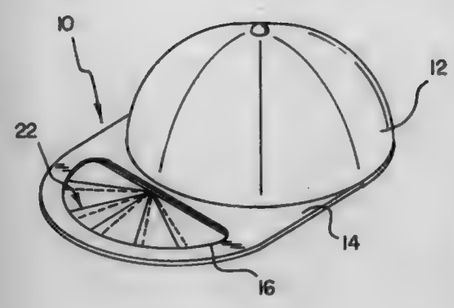
5,487,190
WORKMAN'S MATERIAL SUPPORT VEST FOR SUPPORTING CYLINDERS
Todd G. Thompson, 2923 North Pl., Oklahoma City, Okla. 73107
Filed Jun. 3, 1994, Ser. No. 253,997
Int. Cl.[6] A41D *1/04*
U.S. Cl. 2—102 **1 Claim**



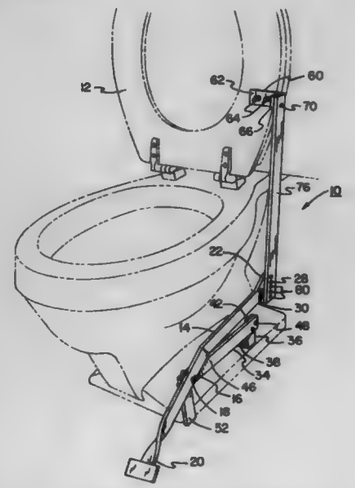
1. A caulking tube supporting vest, comprising:
an elongated length of non-stretchable fabric having end edges and parallel sides edges and having a substantially rectangular user's head receiving opening medially the fabric length and width for forming parallel shoulder straps and front and back panels each having an outer surface and partially covering a user's torso when placed over the shoulders of a user;
releasable strap means joining the end edges of the front and back panels to each other at respective sides of a user; and,
a selected width and length of elastic fabric secured to the outer surface of each said front and back panel medially the width of the respective panel and between the respective said end edge and the head opening to form, in combination with the respective panel, a series of horizontally disposed juxtaposed open end caulking tube receiving sleeves.

5,487,191
VENTED VISOR CAP
Robert L. Ridley, 3304 Country Club La., Altoona, Wis. 54720
Filed Aug. 18, 1994, Ser. No. 292,384
Int. Cl.[6] A42B *1/04*
U.S. Cl. 2—195.1 **1 Claim**

1. A vented visor cap comprising:
an article of headwear;
a visor attached to said article of headwear and extending therefrom, said visor having a visor aperture extending therethrough; and,
venting means for reducing a passage of light through said visor aperture and permitting a passage of wind currents through said visor aperture, wherein said venting means comprises a plurality of inner vent webs, a plurality of medial vent webs, and a plurality of outer vent webs, each of said webs being joined to a portion of said visor proximal to said visor aperture and joined together at a center point of a trailing edge of said venting means.

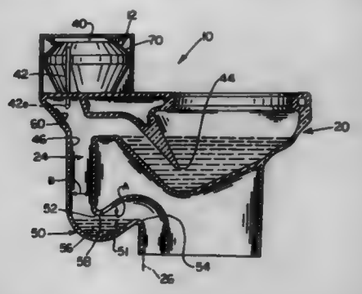


5,487,192
APPARATUS FOR THE RAISING AND SELF-LOWERING OF A TOILET SEAT
Glenn D. Hodges, Rte. 1, Box 800, Blowing Rock, N.C. 28605
Filed Nov. 23, 1994, Ser. No. 344,214
Int. Cl.[6] A47K *13/10*
U.S. Cl. 4—246.3 **3 Claims**



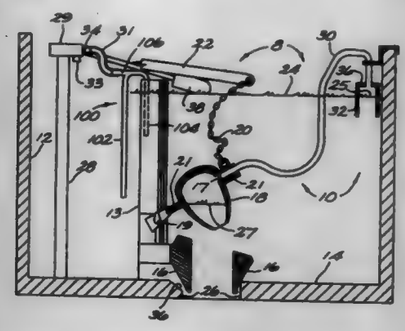
1. An apparatus for the raising and self-lowering of a toilet seat comprising:
a lever, the lever being disposed in an essentially vertical plane having a central aperture thereon and extending therethrough for the receipt of a bolt and an associated nut for constituting a pivot point, the lever having an outboard end with a pedal secured thereto for being depressed by the foot of a user, the lever having an inboard end with an aperture therethrough for receipt of a bolt with an associated nut for transferring motion from the pedal to a toilet seat to be lifted upon the depression of the pedal; and
a support assembly for attachment to a support bolt of a toilet bowl and for supporting the lever at its pivot point, the support assembly including an L-shaped bracket with a horizontal leg formed with an aperture for being received by and secured to the support bolt of the toilet bowl and with the L-shaped bracket having an upstanding leg with an aperture, the support assembly also having a horizontal bracket having an inboard end and an outboard end with a pair of apertures at each end, one of the pair of apertures at the inboard end being coupled to the apertures of the L-shaped bracket, the support assembly also including a vertical bracket having an upper end with two apertures adapted to be received in the outboard apertures of the horizontal bracket and with a lower end positionable in contact with the toilet for maintaining a proper orientation of the support assembly.

5,487,193
ENHANCED OPERATION TOILET
Arnold Hennessy, Wellington, Canada, assignor to Fluidmaster, Inc., Anaheim, Calif.
Continuation-in-part of Ser. No. 870,569, Apr. 17, 1992, abandoned. This application Aug. 27, 1993, Ser. No. 113,387
Int. Cl.[6] E03D *3/10*
U.S. Cl. 4—328 **3 Claims**



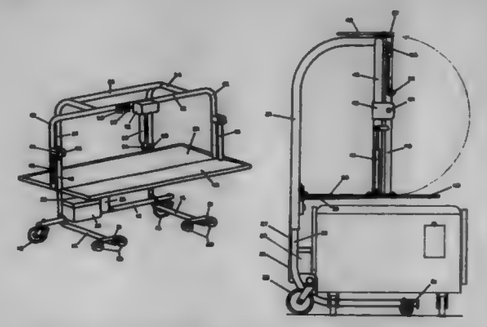
1. A vacuum assisted toilet which includes a toilet bowl, a flush conduit for passing water to said bowl, a bowl outlet which is coupled to a drain, a source of flush water and vacuum, and a flush valve, wherein said source of flush water and vacuum includes walls forming a container and a dividing device within said container which divides it into a water chamber and a vacuum chamber, said flush valve being operable to flow water from said water chamber to said toilet bowl at the beginning of a flushing, said vacuum chamber being coupled to said bowl outlet to apply a vacuum thereto, said dividing device being movable to expand and contract said water chamber and respectively contract and expand said vacuum chamber, characterized by:
a spring coupled to said container and to said dividing device and urging said dividing device to contract said water chamber and expand said vacuum chamber, to cause water in said water chamber to flow rapidly into said toilet bowl and to produce a large vacuum in said vacuum chamber and therefore in said bowl outlet.

5,487,194
DEVICE TO RESTORE WATER LEVEL IN TOILET BOWL
Paul E. Kightlinger, 8410 E. Rolling Ridge, Tucson, Ariz. 85710
Filed Feb. 28, 1994, Ser. No. 203,227
Int. Cl.[6] E03D *1/00*
U.S. Cl. 4—415 **2 Claims**



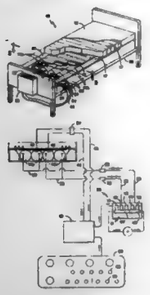
1. In a toilet assembly having a water holding toilet tank and a waste collecting toilet bowl operably connected to the toilet tank to receive water from the toilet tank so that when the toilet is flushed the wastes are carried away by the water, after which the connection is closed until the next flush, an overflow pipe and a float actuated valve located interiorly to the toilet tank, the overflow pipe also operably connected to the toilet bowl to convey water to the toilet bowl and the float actuated valve operating to supply water to the toilet when water beings draining from the toilet tank, the float actuated valve also having a bleed water outlet operably connected to the overflow pipe to convey bleed water to the toilet bowl during toilet tank refilling, an improvement to restore water in the toilet bowl to an optimum pre-flush standing level, said improvement comprising:
means to convey water from the toilet tank to the toilet bowl during refilling of the toilet tank in addition to that water supplied the toilet bowl by the bleed water outlet to bring the toilet bowl water level up to the optimum pre-flush standing level, said means including an elongated hollow "U" shaped syphon tube having a first leg and a second leg with interposed rounded portion, said first leg residing in the water in the toilet tank and said second leg residing interiorly to the overflow pipe, and further including an initiator tube of two ends, one end attached to said syphon tube rounded portion and the other end connected to the float actuated valve bleed water outlet, said initiator tube having an air vent opeaing therein, said air vent opening oriented upwards to minimize water leakage therefrom, the bleed water passing through said initiator tube, sealing said air vent opening, and entering said syphon tube rounded portion to cause water to be syphoned from the toilet tank into the overflow tube to increase the flow of water into the toilet bowl in order to reach the optimum pre-flush standing level prior to termination of the flush and when water ceases issuing from the bleed water outlet, air enters said air vent opening into said initiator tube and into said syphon tube to terminate operation of the syphon.

5,487,195
PATIENT LIFTING AND TRANSPORTING APPARATUS
Donald A. Ray, 396 Ranger La., S. Charleston, W. Va. 25309
Filed Feb. 22, 1993, Ser. No. 20,977
Int. Cl.[6] A61G *7/10*
U.S. Cl. 5—83.1 **4 Claims**



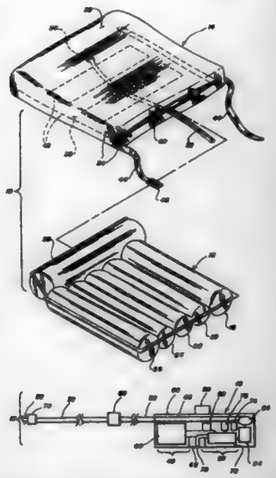
1. Apparatus for lifting and transporting a patient comprising
a base frame adapted to extend under a bed, said base frame having wheels for mobility,
a vertical support structure mounted along one side of said base frame, said vertical support structure including a pair of fixed support posts attached to said base frame and further including a sliding support frame having telescoping support members around said posts,
a pair of first and second patient supporting plates connected to said support structure,
adjustment means to adjust said supporting plates vertically upon said support structure,
said first supporting plate being positioned in a generally horizontal orientation and being adapted to be lowered onto the bed and slid partially under a prone patient, and
pivot means to pivot said second supporting plate between an upper inoperative position and a lower operative position contiguous to said first supporting plate.

5,487,196
AUTOMATED PRESSURE RELIEF MATTRESS SUPPORT SYSTEM
John W. Wilkinson, Bennington, Vt., and Richard W. Raburn, Simpsonville, S.C., assignors to Span America Medical Systems, Inc., Greenville, S.C.
Filed Jan. 10, 1994, Ser. No. 179,604
Int. Cl.[6] A47C 27/10
U.S. Cl. 5—453 18 Claims



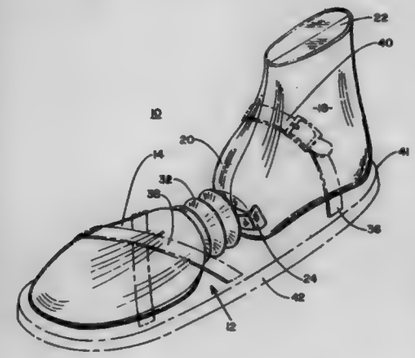
1. A method of supporting a bed patient on a mattress comprising the steps of:
(a) providing a mattress having a plurality of elongated flexible substantially air-impervious compartments extending longitudinally of the mattress in side-by-side relation, said compartments including right and left side elongated tube means;
(b) determining an air pressure in said compartments of the mattress which minimizes patient-to-mattress interface pressure;
(c) supporting a bed patient on the mattress in a given geographic location of use; and
(d) uniformly pressurizing the compartments with air to said pressure which minimizes patient-to-mattress interface pressure.

5,487,197
PNEUMATIC WHEELCHAIR CUSHION
Joseph W. Iskra, Jr., 519 Dornoch, and John A. Havener, 1200 Astoria, both of St. Louis, Mo. 63137
Filed Aug. 5, 1994, Ser. No. 286,742
Int. Cl.[6] A47C 27/08;7/02; A61G 7/057
U.S. Cl. 5—654 6 Claims



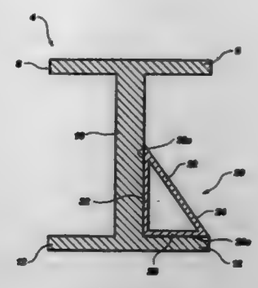
1. A generally rectangular pneumatic wheelchair cushion system comprising an air cushion with five adjoining lateral tubes, said lateral tubes comprising a right greater trochanter tube, a right ischial tuberosity tube, a coccyx tube, a left ischial tuberosity tube and a left greater trochanter tube, and one adjoining transverse tube for cushioning the user's thighs, said transverse tube comprising a femur tube, said tubes pneumatically interconnected with restricted passageways, one of which passageways interconnects the coccyx tube and the femur tube, such that pressure on one or more of the tubes is transmitted between the coccyx tube and femur tube and to the other tubes, and a control module with means for controlling an inflation pressure in the air cushion within an upper and a lower set point, said control module pneumatically connected to the air cushion, said right and left greater trochanter tubes being larger in cross-section than the right and left ischial tuberosity and coccyx tubes so that the air cushion is concave when viewed from above.

5,487,198
TWO-PIECE HIGH TOP SHOE TREE
Roger P. Mueller, Jamesville; Roy P. Mueller, Baldwinsville, both of N.Y.; Joe Nemeth, Chomedey, and Robert Schoning, Montreal, both of, Canada, assignors to RPM Industries, Inc., Auburn, N.Y.
Filed Aug. 26, 1994, Ser. No. 296,651
Int. Cl.[6] A43D 5/00
U.S. Cl. 12—117.4 16 Claims



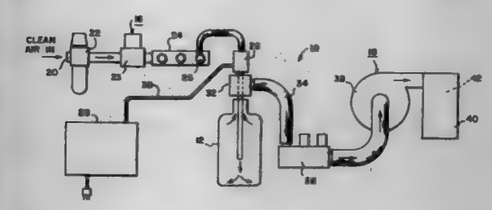
1. A high top shoe tree for use with foot wear, said shoe tree comprising:
a toe member, having approximately the shape of the front half of a human foot, having a distal tip end and a proximal end, said toe member being insertable into a toe portion of a respective piece of footwear and formed to support the toe portion of the footwear;
an L-shaped heel member having approximately the shape of the back half of a human foot, being insertable into a heel portion of the respective piece of footwear and formed to support the heel portion thereof, said heel member having a forward end and a top end and extending from said midpoint of the footwear to a back thereof when inserted therein;
quick release means for securing said toe member to said heel member whereby said toe member and said heel member may be assembled together and inserted into the respective piece of footwear to give support thereto said quick release means including a dovetail tenon formed on said proximal end of said toe member; and a mortise slot formed in said forward end of said heel member, said mortise slot being shaped to correspond to said dovetail tenon so that it is snugly slidable into said mortise slot whereby said toe member is secured to said heel member at a midpoint of the respective piece of footwear when the two members are inserted therein.

5,487,199
VANDALISM PREVENTION DEVICE FOR HIGHWAY BRIDGES
John Nelson, 1811 Tramway Dr., Sandy, Utah 84092
Filed Apr. 4, 1994, Ser. No. 222,718
Int. Cl.[5] E01D 1/00
U.S. Cl. 14—74.5 16 Claims



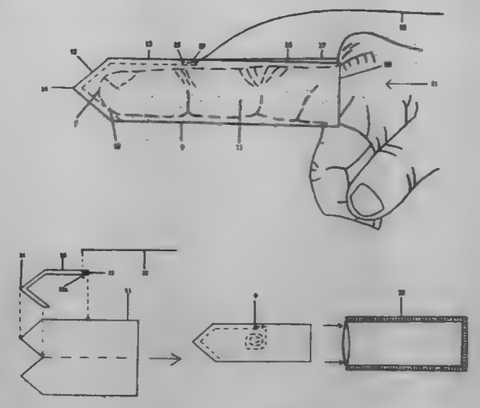
1. A method for inhibiting vandalism to bridges and the like which are supported by I-beams and similar structures, the method including:
(a) positioning an elongate plate adjacent to an I-beam so that the plate slopes downwardly and outwardly from a position adjacent a central, vertical wall of the I-beam to a position adjacent a lateral extreme of a flange comprising a lower portion of the I-beam at an angle sufficiently steep to inhibit a person from standing on the elongate plate;
(b) attaching the elongate plate to the I-beam so that the elongate plate is held in position adjacent the I-beam;
wherein step (b) comprises, more specifically, attaching the elongate plate to the I-beam; and
further comprising providing a generally vertical support wall extending from an upper end of the elongate plate and extending generally parallel to the central, vertical wall of the I-beam.

5,487,200
BOTTLE CLEANER
Kenneth J. Herzog, 200 Mill Rd., Riverhead, N.Y. 11901
Filed Jan. 24, 1994, Ser. No. 185,142
Int. Cl.[6] A47L 5/38
U.S. Cl. 15—1.51 3 Claims



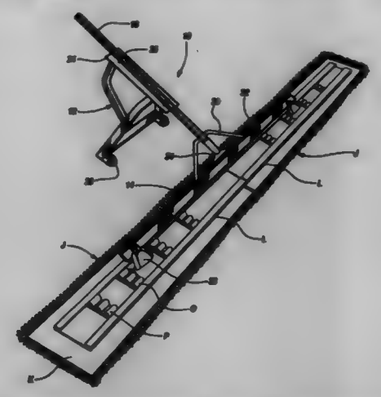
1. A container cleaner apparatus wherein containers are conveyed to stations for cleaning comprising:
a) a first means for supplying ionized air to the interior of the containers at the stations to neutralize static electricity therein;
b) a second means for vacuuming the interior of the containers at the stations, wherein dust, dirt, carton lint and other foreign matter is removed from the interior of the containers and
c) a third means for moving said first and second means into and out of said containers; wherein said first and second means are mounted together and function simultaneously; including a fourth means for stopping flow of ionized air when said first means is out of said container.

5,487,201
DISPOSABLE TOOTH AND GUM CLEANING DEVICE
Bryan C. Hansen, and Sharon A. Hansen, both of 198 Driftwood Trail, McHenry, Ill. 60050
Filed Aug. 13, 1993, Ser. No. 106,135
Int. Cl.[6] A46B 5/04; B65D 81/20
U.S. Cl. 15—104.94 19 Claims



1. An oral wipe comprising an elongated sleeve, the sleeve being formed of an interwoven material, the sleeve having a closed end defining at least one corner, the sleeve having an open end to enable a finger to be readily inserted in the sleeve, the sleeve having at least one edge therealong, a pick element formed of a heat sealable material different from said interwoven material the sleeve being heat sealed to the pick element along said at least one edge of the sleeve and at said closed end, a piece of dental floss, the piece of dental floss having one floss end embedded and retainingly secured in said heat sealable material.

5,487,202
FLOOR MOPPING DEVICE WITH WHEELED SUPPORT FRAME
Gloria L. Cowan, 2720 Wilkinson Rd., Sarasota, Fla. 34231
Filed Jan. 9, 1995, Ser. No. 370,376
Int. Cl.[6] A47L 13/258; B62B 1/14;1/00
U.S. Cl. 15—228 2 Claims



1. A floor mopping device for cleaning a floor, said device comprising:
a rigid main frame including:
a generally U-shaped elongated member having first and second ends with a central portion therebetween and a transverse elongated cross member extending between and

connected to said first and second ends, said members together defining a plane;

a floor engaging wheel connected at each end of said cross member and held for rotation about an axis generally parallel to said cross member by mounting forks;

an elongated diagonal member having first and second ends and connected at one end thereof to a central portion of said cross member, said diagonal member extending away from said plane;

an elongated generally flat diagonal plate connected to and extending between another end of said diagonal member and said central portion of said U-shaped member;

an elongated push handle connected to, and extending longitudinally in first and second directions from, said diagonal plate and adapted to be oriented by said diagonal plate at an acute angle to the floor;

an elongated flat support plate receiving a removable cleaning pad which is generally coextensive with a bottom surface of said support plate;

means for pivotally connecting said support plate to a lower end of said push handle;

said wheels and said support plate movably supporting said device in an upright position for use atop the floor.

5,487,203

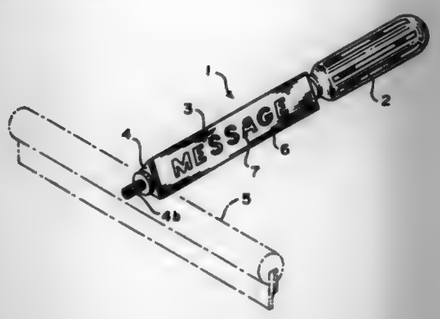
SQUEEGEE HAVING AN ADVERTISING DISPLAY AREA

Philip L. Brach, Jr., 655 Sixth St., Hermosa Beach, Calif. 90254; Charles Khalil, 26722 Rolling Hills Rd., Rolling Hill Estates, Calif. 90274, and Robert W. Mead, 655 Sixth St., Hermosa Beach, Calif. 90254

Filed Jan. 11, 1994, Ser. No. 179,701

Int. Cl.[6] A47L *13/11*

U.S. Cl. 15—245 **14 Claims**



1. In combination, a handle having an advertising display area and a squeegee, said handle comprising an elongate member having an exterior surface, a gripping end portion at one end of said member, means for detachably connecting the squeegee to the opposite end portion of said member, the portion of the elongate member between the end portions thereof having a polygonal transverse cross-sectional configuration providing a plurality of flat faces on the exterior surface of said elongate member, and distinct advertising indicia connected to and displayed on each said flat face of the polygonal portion of the elongate member, whereby an increased advertising viewing area is provided for catching the eye of a potential customer.

5,487,204

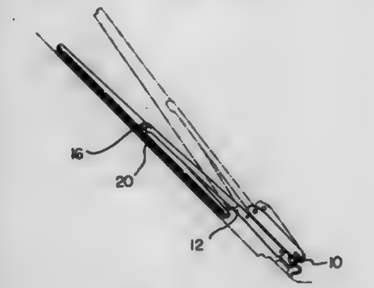
WINDSHIELD WIPER WITH DEICER

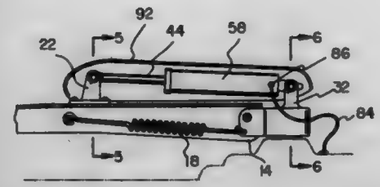
Steven M. Nelson, 717 2nd St., NW., Pipestone, Minn. 56164

Filed Nov. 28, 1994, Ser. No. 345,605

Int. Cl.[6] B60S *1/32;1/04*

U.S. Cl. 15—250.19 **2 Claims**





1. A windshield wiper assembly including a wiper deicer for eliminating build-up of snow and ice on a thereon said assembly comprising:

an elongated wiper bracket having a first end, a second end, and an intermediate extent therebetween, the first end rotatably mounted on a second support bracket, a retention spring connected to the second support bracket and the intermediate extent, of the wiper bracket a wiper blade attachment secured to the second end of the wiper bracket;

a first support bracket having an upper portion and a lower portion, the lower portion secured to the intermediate extent of the wiper bracket, the upper portion comprising a first support and a second support, the first support and the second support having aligning apertures therethrough;

said second support bracket having an upper portion and a lower portion, the lower portion of the second support bracket having a U-shaped spline thereon, the upper portion of the second support bracket having a first support and a second support, the first support and the second support of the second support bracket having aligning apertures therethrough, the second support bracket adapted to be mounted for rotation on a vehicle.;

a support rod having a first end and a second end, the first end of the support rod having an aperture formed therethrough, the first end of the support rod secured between the first support and the second support of the upper portion of the first support bracket by a first fastening means extending through the aperture of the support rod and the aligning apertures of the first support and the second support of the first support bracket;

a hollow electrical solenoid casing having an open first end and a closed second end, the open first end receiving the second end of the support rod, a wiper seal and scraper secured within the open first end adjacent the second end of the support rod, a pivot rod having a first end and a second end, the first end of the pivot rod secured to the closed second end, the second end of the pivot rod pivotally secured to the first support and the second support of the upper portion of the second support bracket by a second fastening means extending through the aligning apertures thereof and the second end of the pivot rod;

an electrical solenoid secured within the hollow electrical solenoid casing, the electrical solenoid comprising a hollow shaft, a movable core situated within the shaft, the movable core having a first end, a second end, and an intermediate extent therebetween, the first end of the core secured to the second end of the support rod, a coil electrically secured to the shaft, a wire having a first end and a second end, the first end of the wire electrically secured to the charged coil, the second end of the wire extending outwardly of the solenoid casing;

a push button mechanism adapted to be secured on an inside portion of the vehicle thereby being accessible to a driver, the push button mechanism electrically secured to the second end of the wire of the electrical solenoid;

a protective cover removably secured to the first support bracket and the second support bracket, the protective cover functioning to protect the electrical solenoid.

5,487,205

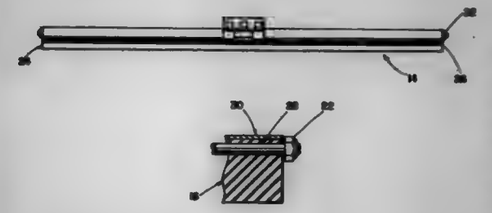
WINDSHIELD WIPER BLADE WITH SECURING ROD

Richard P. Scherch, and Robert E. Neer, both of Urbana, Ohio, assignors to Grimes Aerospace Company, Columbus, Ohio

Continuation of Ser. No. 992,588, Dec. 18, 1992, abandoned. This application May 4, 1994, Ser. No. 238,146

Int. Cl.[6] B60S *1/38*

U.S. Cl. 15—250.31 **1 Claim**



1. A wiper assembly, comprising:

an elongated one-piece rubber wiping element having an insert portion defining a first longitudinal edge of said wiping element, and a windshield contact portion defining a second longitudinal edge of said wiping element, said insert portion of a substantially higher durometer rubber than said windshield contact portion thereby enabling said windshield contact portion to remain flexible to adapt to the contour of a windshield surface while said insert portion is relatively rigid, said wiping element having first and second ends;

an elongated metal rod forming a spine, said rod residing within a hollow portion of said insert portion that rims longitudinally and entirely through said insert portion of said wiping element, said rod having first and second threaded ends extending respectively from said first and second ends of said wiping element;

an elongated holder, said holder forming a longitudinal channel therein which slidably receives, in a longitudinal manner, and encloses the entire length of said insert portion having said rod therein;

a first threaded fastener engaging said first end of said rod; and

a second threaded fastener engaging said second end of said rod, wherein said first and second fasteners secure and insert portion within said holder to prevent said wiping element from being detached longitudinally from said holder.

5,487,206

DOOR CONTROL DEVICE

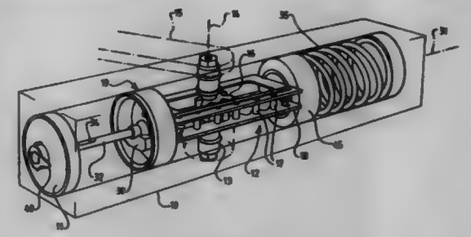
Peter E. Brown, and Stephen J. Harrison, both of Bridgnorth, England, assignors to Jerbron Limited, Wes Midlands, United Kingdom

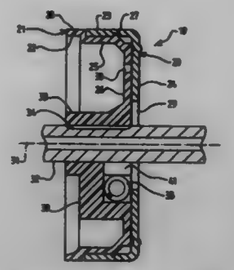
Filed Jan. 16, 1994, Ser. No. 177,917

Claims priority, application United Kingdom, Jan. 8, 1993, 9300288

Int. Cl.[6] E05F *3/10*

U.S. Cl. 16—52 **10 Claims**





1. A door control device comprising a hollow housing defining a chamber and a piston disposed in the chamber and capable of reciprocal movement relative to the housing along a rectilinear path, the door control device further comprising an elongate flow control element which extends into the piston, the piston having a face which is transverse to said path, said face having an aperture spaced from the housing, the piston comprising a seal with a radially outer portion which engages the housing in sliding contact therewith to seal the interface between the piston and the housing and a radially inner portion which slidably engages the elongated flow control element and wherein the seal also includes a relatively flexible intermediate portion overlapping said face of the piston, which intermediate portion seals the aperture in the piston when the piston is subjected to hydraulic pressure acting in a first direction along the path of travel of the piston and wherein the face of the piston provides a seat for said flexible portion of the seal and said flexible portion can flex away from the seat when subjected to hydraulic pressure acting in a second direction along said path.

5,487,207

HINGE ELEMENT FOR A FOLDING SUPPORT

Henri Rey, 8 rue des Augustins, Colmar, France

PCT No. PCT/FR87/00304, § 371 Date Mar. 6, 1989, § 102(e) Date Mar. 6, 1989, PCT Pub. No. WO88/01676, PCT Pub. Date Mar. 10, 1988

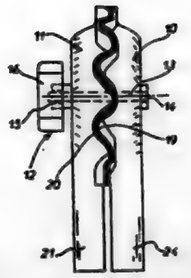
PCT Filed Aug. 4, 1987, Ser. No. 348,670

Claims priority, application France, Sep. 5, 1986, 86 12584

Int. Cl.[6] E05D *11/10*

U.S. Cl. 16—330 **9 Claims**

1. A hinge element for a folding support provided with longitudinal uprights and cross pieces, comprising two identical metallic shells each having a shaped tip adapted to be fixed at one end of an upright of the support, a circular part made of a dished metal plate provided with a bottom positioned transversely with respect to the axis of the hinge, a wall extending generally transversely from said bottom, and a peripheral flange having an anchoring member for interengaging with the anchoring member of the other shell to



render the two shells fixed with respect to rotation around said axis, the hinge element comprising in addition locking members arranged to press the two shells axially against one another in a manner so as to maintain their anchoring members in mutual engagement, wherein each of said flanges extends substantially radially with respect to the hinge axis, each said flange extends from said wall of said dished metal plate, the metal plate of each said flange has a corrugated profile in the circumferential direction, and the corrugated profile comprises rounded crests and rounded hollows, the crests having substantially the same profile as the hollows.

5,487,206

DEVICE FOR THE DETECTION OF BREAKAGE OF TEXTILE FIBER SLIVERS BEFORE A DRAW FRAME

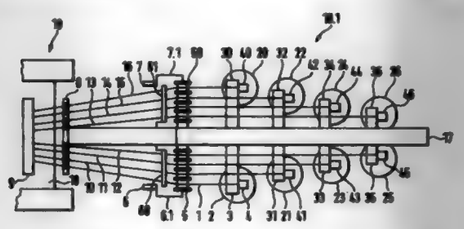
Friedrich Hauner, Ingolstadt, Germany, assignor to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany

Filed Dec. 9, 1993, Ser. No. 164,348

Claims priority, application Germany, Dec. 23, 1992, 42 43 847.0

Int. Cl.[6] D01G *31/00*

U.S. Cl. 19—0.25 20 Claims



1. A device for detecting breakage of fiber slivers delivered to a draw frame in a running direction along a running path by a feeding device, said device comprising a monitoring device defining a monitoring section defined below the running path of fiber slivers to said draw frame, said device further comprising a deflection device disposed so as to contact and deflect the fiber slivers from a straight path in their running path to said draw frame towards said monitoring section, said deflection device imparting a pre-stress to said fiber slivers so that when any individual fiber sliver breaks said pre-stress condition ensures that said broken sliver falls through said monitoring section.

5,487,209

SELF-TIGHTENING CLAMP STRUCTURE

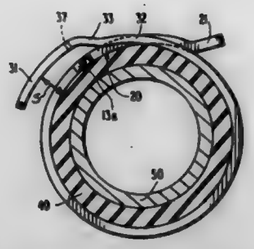
Hans Oetiker, Horgen, Switzerland, assignor to Hans Oetiker AG Maschinen- und Apparatefabrik, Horgen, Switzerland

Filed Dec. 9, 1993, Ser. No. 163,546

Int. Cl.[6] F16L *33/02*

U.S. Cl. 24—20 R 30 Claims

1. A self-tightening clamp structure having a first released position in which the clamp structure exerts a clamping action and a second position in which the clamp structure is adapted to be latchingly held against the inherent tightening forces, comprising clamping band means including a tongue-like extension at one end thereof having a bent-up end portion, a first slot-like opening in said clamping band means through which said tongue-like extension is adapted to slide, latching means in the other end area of said clamping band means for holding said clamp structure in the second position, and further means in the end areas of the clamping band means to enable release of said tongue-like extension from said second position into said first clamping position with positive tool guidance of the tongue-like extension in the circumferential direction to prevent sparking during release of the clamp structure from said second position, said further means including tool-engaging surface means extending in a plane transverse to the plane of the clamping band means.



5,487,210

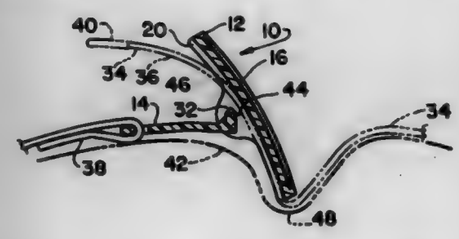
BUCKLE FACEPLATE BELT CLAMP

Howard Silagy, 100A Tec St., Hicksville, N.Y. 11801

Filed Oct. 13, 1994, Ser. No. 322,286

Int. Cl.[6] A44B *11/00*

U.S. Cl. 24—170 1 Claim



1. A method of fitting a belt in encircling relation about a user's waist with a buckle of a type having an external and underside surfaced faceplate and a pivotally traversable clamp having opposite proximal and distal ends, said method comprising the steps of fabricating said faceplate with spaced apart pivot trunnions at a medial location thereon and in depending relation to said underside surface, fabricating said clamp in a planar configuration at said proximal end and with a belt-engaging laterally extending projection at said distal end, mounting said clamp in spanning relation between said pivot trunnions to partake of pivotal movement beneath said faceplate underside surface, attaching a first of opposite ends of a belt to said clamp proximal end, positioning said clamp with said attached belt in an interposed condition with said planar proximal end flat on one side against said overlying faceplate and flat on an opposite side against said user's waist such that said contact with said user's waist holds said clamp stationary, extending from said clamp-attached belt a remaining belt length portion in encircling relation in a counterclockwise direction about said user's waist, urging in opening movement said faceplate from an adjacent-clamp position into a clearance position therefrom to form a nip between said faceplate underside surface and said beltengaging projection of said clamp, said nip having a size corresponding to the extent of pivotal movement permitted by the projection of an opposite portion of said faceplate into said user's waist, inserting an unattached said second belt end in said nip between said clamp belt-engaging projection and said faceplate underside surface, pulling in a counterclockwise direction said belt so as to form a closed loop thereof sized to preliminarily fit about said user's waist, and conjointly urging in closing movement said faceplate from said clearance position back to said adjacent-clamp position so as to simultaneously urge said belt in said nip in additive counterclockwise movement to thereby form a tighter closed loop about said user's waist, whereby said belt is held against clockwise movement in said nip between said stationary clamp and said overlying faceplate closed upon said belt.

5,487,211

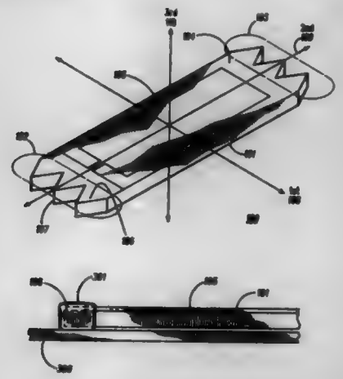
METHOD FOR FABRICATING A SURFACE-MOUNTABLE CRYSTAL RESONATOR

Kevin L. Haas, Hoffman Estates; Ken A. Haas, Hanover Park, and Kimber J. Vought, Wauconda, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 19, 1993, Ser. No. 109,222

Int. Cl.[6] H01L *41/04;* H03H *3/02;* H04R *17/10*

U.S. Cl. 29—25.35 4 Claims



1. A method for fabricating a surface-mountable crystal resonator, the method comprising the steps of:

a) forming a piezoelectric crystal substrate to have a first major surface, a second major surface, and a first attachment area, wherein the first major surface and second major surface are substantially co-planar separated by thickness of the piezoelectric crystal substrate and are parallel to a first major axis and a second major axis and perpendicular to a third major axis, wherein the first major axis, the second major axis, and the third major axis are substantially perpendicular to each other, and wherein the first attachment area is substantially parallel to the first major axis and includes at least two extensions, each of the at least two extensions comprising a first extension surface and a second extension surface, wherein the first extension surface is planar and substantially at 45 degree angles with respect to the first major axis and the second major axis and substantially parallel with respect to the third major axis, and wherein the second extension surface is planar and substantially at 45 degree angles with respect to the first major axis and the second major axis and substantially parallel with respect to the third major axis, and wherein the first extension surface and the second extension surface are substantially perpendicular;

b) forming, on the first major surface, a first predetermined electrode pattern;

c) forming, on the second major surface, a second predetermined electrode pattern, wherein the first predetermined electrode pattern and the second predetermined electrode pattern form an active area of resonance; and

d) forming, on the first attachment area, a first predetermined attachment electrode pattern, wherein the first predetermined attachment electrode pattern is electrically coupled to the second predetermined electrode pattern.

5,487,212

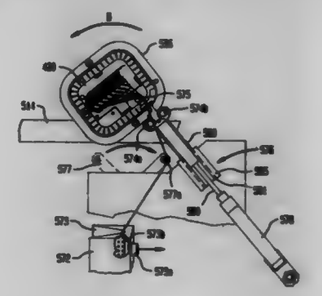
ASSEMBLY AND PACKAGING METHOD FOR NEEDLE AND SUTURE ASSEMBLIES

David Demarest, Parsippany; Robert B. Duncan, Bridgewater; Martin Sobel, Flemington, all of N.J.; Timothy P. Lenihan, Morrisville, Pa.; William Rattan, Cerritos, Calif.; John F. Bianch, Tinton Falls; Michael G. Hodnik, Dunellen, both of N.J., and Dennis P. Yost, Wayne, Pa., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 181,606, Jan. 13, 1994. This application Mar. 22, 1995, Ser. No. 408,727

Int. Cl.[6] B23Q *17/00*

U.S. Cl. 29—407 24 Claims



1. An automated process for attaching a suture strand to a surgical needle having a suture receiving opening formed therein, and for packaging a needle-suture assembly in a package tray, said process comprising the steps of:

(a) sorting a plurality of needles and orienting each needle for automatic sequential feeding thereof to a first indexing means for transfer to a subsequent swaging workstation;

(b) sequentially swaging each of said fed needles to close said suture receiving opening of each respective needle about a free end of a corresponding suture strand to secure said suture strand thereto and form a needle-suture assembly at said swaging workstation for automatic sequential feeding thereof to a needle packaging station by said first indexing means; and,

(c) sequentially depositing each formed needle-suture assembly in a package tray at said needle packaging station, one needle-suture assembly being deposited in said package tray at the same time said swaging of a subsequent needle about a subsequent corresponding suture strand occurs at said swaging workstation, and, at the same time said sorting of said plurality of needles takes place.

5,487,213

METHOD OF ASSEMBLING AN ELECTRIC MOTOR

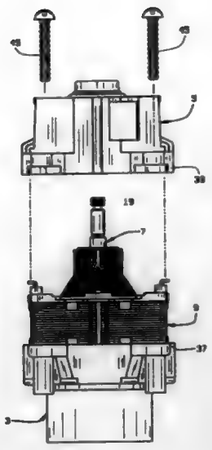
David R. Hult; Jeffery L. Young, both of St. Peters, and Stuart V. Holsten, O'Fallon, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed May 2, 1994, Ser. No. 236,198

Int. Cl.[6] H02K *15/14*

U.S. Cl. 29—596 6 Claims

1. The method of assembling an electric motor having lower and upper end frames each having peripherally extending stacking/alignment flanges at one end and bearings at an opposite end, an armature assembly rotatably mounted in the bearings of the lower and upper end frames, and a winding field assembly supported between the lower and upper end frames and surrounding the armature assembly, comprising the steps of:



inserting one end of the armature assembly into the bearing of the lower end frame;

positioning the winding field assembly over the armature assembly while also stacking and aligning the winding field assembly on the peripherally extending stacking aligning flange of the lower end frame;

stacking and aligning the upper end frame on the winding field assembly through the positionment of the peripherally extending stacking/alignment flange of the upper end frame on the winding field assembly while also positioning an opposite end of the armature assembly into the bearing of the upper end frame; and

securing the lower end frame, winding field assembly and upper end frame to each other.

5,487,214

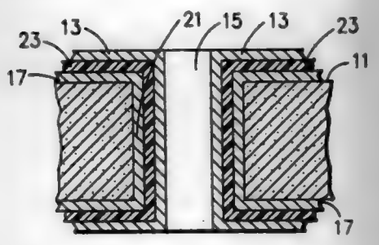
METHOD OF MAKING A MONOLITHIC MAGNETIC DEVICE WITH PRINTED CIRCUIT INTERCONNECTIONS

Michael M. Walters, Endwell, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Division of Ser. No. 727,675, Jul. 10, 1991, abandoned. This application Oct. 9, 1992, Ser. No. 958,878

Int. Cl.[6] H01F *41/06*

U.S. Cl. 29—602.1 **7 Claims**



1. A method of making a magnetic device for surface mounting on a circuit board comprising the steps of:

forming a plurality of holes through a plate of flux permeable material;

plating a first layer of current conductive material in the holes to form a plurality of first windings passing therethrough, such that each of the holes is disposed about only a single one of the plurality of first windings passing therethrough;

plating on both sides of the plate to interconnect at least a portion of the plurality of first windings;

plating regions on the plate, each of the regions connected to at least a portion of the first windings, for use in surface mounting of the magnetic device;

covering the first layer of current conductive material with an insulating layer; and

plating a second layer of current conductive material in the holes on the insulating layer to form a plurality of second windings passing therethrough, such that each of the holes is disposed about only a single one of the plurality of second windings passing therethrough;

plating on both sides of the plate to interconnect at least a portion of the plurality of second windings; and

plating regions on the plate, each of the regions connected to at least a portion of the second windings, for use in surface mounting the magnetic device.

5,487,215

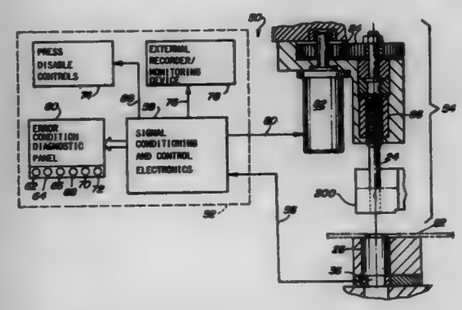
SELF-ADJUSTING HEAD

Harold A. Ladouceur, Livonia, Mich., assignor to Multifastener Corporation, Detroit, Mich.

Filed Feb. 18, 1994, Ser. No. 198,367

Int. Cl.[6] B23P *21/00*

U.S. Cl. 29—702 **26 Claims**



1. A fastener installation apparatus having a plunger with a free end and a die button spaced from said free end, said plunger free end facing said die button, said installation apparatus being adapted to be mounted between the platens of a press for installing a fastener into a panel by impacting said fastener and panel with said fastener installation apparatus during the stroke of one of said platens toward the other of said platens;

said press having a shut height defined as the distance between the platens when said one platen is at the bottom of its stroke;

said fastener installation apparatus being adapted to be operatively mounted between the platens of said press within said shut height and having an operative length defined as the distance between the free end of said plunger and said die button when said one platen is at the top of its stroke;

control means operatively coupled to said fastener installation apparatus for periodically adjusting the operative length of said installation apparatus and for controlling said press to ensure proper installation of said fastener into said panel.

5,487,216

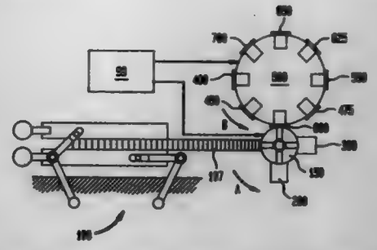
CONTROL SYSTEM FOR AN AUTOMATIC NEEDLE-SUTURE ASSEMBLY AND PACKAGING MACHINE

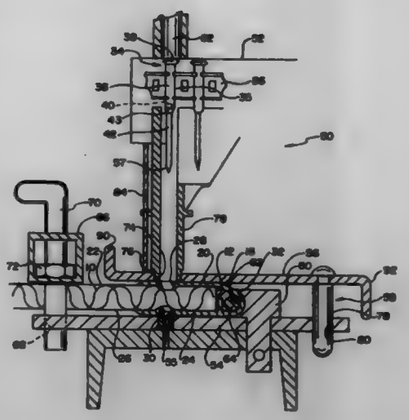
David Demarest, Parsippany, and Michael G. Hodulik, Dunellen, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jan. 13, 1994, Ser. No. 181,607

Int. Cl.[6] B23Q *15/00*

U.S. Cl. 29—705 **57 Claims**





1. An automated system for attaching suture material to a suture receiving opening formed in a surgical needle, and for packaging the suture material and surgical needle attached thereto, said system comprising:

(a) a first means located at a first location for sorting a plurality of randomly oriented needles and orienting each needle of said plurality of needles for automatic handling at a first predetermined location;

(b) a second means located at a second predetermined location for automatically drawing and cutting an indefinite length strand of said suture material and automatically inserting a free end thereof into the suture receiving opening of a needle and swaging the needle about the suture material to form a needle-suture assembly;

(c) a first indexing means for sequentially receiving individual oriented needles at said first location and sequentially transporting said oriented needles from said first location to said second location;

(d) second indexing means for registering a package tray at a third location for sequentially receiving a plurality of needle-suture assemblies from said first indexing means; and

(e) a control means for enabling said first indexing means to sequentially transport a plurality of needle-suture assemblies from said second location to said third location, and enabling the sequential insertion of said needle-suture assemblies into said package tray while registered at said third location,

whereby unsorted needles and an indefinite length of suture material are automatically formed into a plurality of needle-suture assemblies, and then positioned within said package tray at said third location.

5,487,217

APPARATUS AND SYSTEM FOR INSTALLING RIVETS IN BELT FASTENERS

Thomas W. Richardson, and Mary Jane Richardson, both of 934 Cleveland Rd., Hinsdale, Ill. 60521

Filed Sep. 22, 1993, Ser. No. 125,418

Int. Cl.[6] B23P *19/00*

U.S. Cl. 29—816 **18 Claims**

1. An apparatus for facilitating the attachment of a belt fastener assembly to an end of a belt with rivets and by a non-manually powered rivet assembly drive tool having a rivet assembly dispensing barrel, the belt fastener assembly including an upper plate for overlying one side of the belt end and a lower plate for underlying the other side of the belt end, the upper and lower plates having a plurality of aligned rivet receiving apertures, and each rivet assembly including a rivet having a domed head at one end and a counter sink at an opposite end and a pilot nail extending from the rivet and having a die forming head carried by the rivet counter sink, said apparatus comprising:

an anvil die plate including a plurality of anvil die apertures alignable with the rivet receiving apertures of the upper and lower plates of the belt fastener assembly, each anvil die aperture for receiving a pilot nail and fixing the pilot nail relative to its corresponding rivet to cause the die forming head to deform the counter sink of the rivet and clinching the opposite end of the rivet to the lower plate when the rivet opposite end is power driven against the die forming head;

a guide template for overlying the upper plate of the belt fastener assembly and including a plurality of guide apertures alignable with the anvil die apertures of the anvil die plate and the rivet receiving apertures of the upper and lower plates of the belt fastener assembly when brought into registration therewith, each guide aperture being slightly larger than the rivet assembly dispensing barrel of the non-manually powered rivet assembly drive tool for receiving the rivet assembly dispensing barrel of the non-manually powered rivet assembly drive tool and alligning the rivet assembly dispensing barrel of the rivet assembly drive tool with its respective aligned anvil die aperture and rivet receiving apertures; and

an alignment system for maintaining the alignment of the guide apertures of the guide template with the anvil die apertures of the anvil die plate and the rivet receiving apertures of the upper and lower plates of the belt fastener assembly, said alignment system comprising at least one guide pin carried by said guide template, and at least one guide through bore in the anvil die plate positioned for slidingly receiving said guide pin.

5,487,218

METHOD FOR MAKING PRINTED CIRCUIT BOARDS WITH SELECTIVITY FILLED PLATED THROUGH HOLES

Anilkumar C. Bhatt, Johnson City; Roy H. Magnuson, Endicott; Voya R. Markovich, Endwell; Konstantinos I. Papathomas, and Douglas O. Powell, both of Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 21, 1994, Ser. No. 342,533

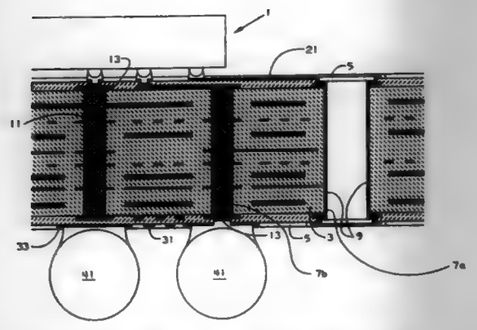
Int. Cl.[6] H01K *3/10*

U.S. Cl. 29—852 **2 Claims**

1. A method of preparing a printed circuit board having a film redistribution layer and selective filled plated through holes comprising the steps of:

a. drilling a pattern of holes through a subcomposite for plated through holes, and drilling a sheet of polyimide with the same plated through hole pattern;

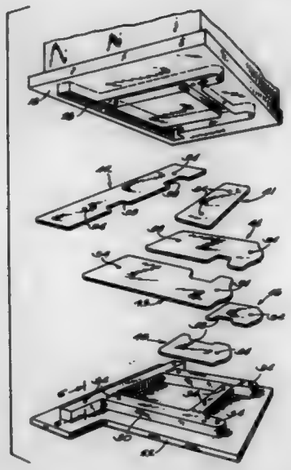
b. be seeding the drilled subcomposite with a palladium/tin colloidal suspension whereby to make the exposed surfaces catalytic for electroless Cu plating;



c. electrolesaly plating copper over the exposed surfaces of the subcomposite and in the plated through hole barrels to a thickness of about 0.001 to 0.0012 inch;
d. placing a sheet of foil coated with plated through hole filler composition atop the sub-composite to form a stack;
e. laminating the stack to cause the coating composition to soften and flow into the plated through holes and thereafter cure;
f. drilling the subcomposite with the pattern of plated through holes that are to remain unfilled, deburring, and chemical hole cleaning the unfilled plated through hole barrels for plating;
g. seeding the subcomposite with a palladium/tin colloidal suspension, and electrolessly copper plating the seeded subcomposite with an additional 0.0002 to 0.0003 inch of copper;
h. applying a layer of photoresist to the subcomposite, and exposing and developing the layer of photoresist to define a desired pattern of surface circuitization;
i. etching the exposed surface of the subcomposite to form a desired circuit pattern;
j. stripping the photoresist;
k. applying a dry film photoimagable, dielectric polymer, to one or both surfaces of the subcomposite;
l. exposing the photoimagable dielectric with the pattern of the desired vias between the subcomposite circuitry and the circuitry to be formed on the top surface of the dielectric;
m. developing the pattern of via openings, and thereafter processing the dielectric to further cure the dielectric;
n. seeding the dielectric is seeded with colloidal palladium/tin;
o. laminating a subsequent dry film photoresist layer thereto, over the palladium/tin seed layer; imaging the photoresist with the image of the circuitization to be formed, and developing the imaged photoresist;
p. plating the subcomposite with copper to form a film redistribution layer thereon;
q. stripping the photomask from the circuitized composite.

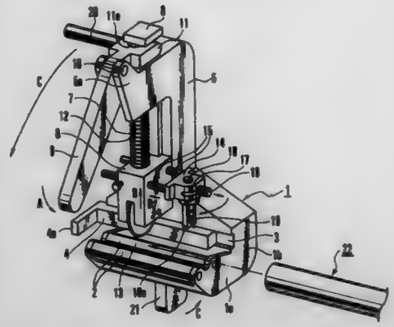
5,487,219
METHOD OF MANUFACTURING ENGINE CRADLES
Phillip C. Ruehl, Elm Grove; Stephen L. Kretschmer, Mequon, and Richard J. Behrmann, Colgate, all of Wis., assignors to A. O. Smith Corporation, Milwaukee, Wis.
Filed Aug. 20, 1993, Ser. No. 110,031
Int. Cl.[6] B23P *11/00*; B21D *39/00*
U.S. Cl. 29—897 **38 Claims**

1. A method for forming a structural member, said method comprising the steps of:
placing a first sheet member having a length dimension greater than a width dimension in a die in a press,
placing a second sheet member having a length dimension greater than a width dimension in said press, said second member only partially overlapping said first member, said first member only partially overlapping snid second member, and the direction of the length dimension of said second mender being angled relative to the direction of the length dimension of said first member, and



closing said press, thereby attaching said first member to said second member and shaping each of said first member and said second member into a non-planar shape along substantially the entire length thereof.

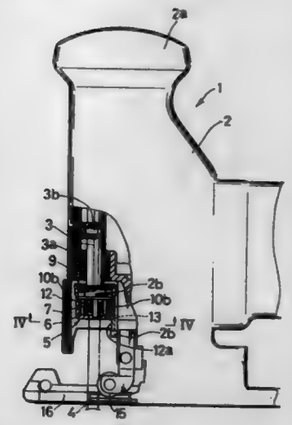
5,487,220
COAXIAL CABLE TERMINAL PROCESSING TOOL AND PROCESSING METHOD OF THE SAME
Tosiaki Saitou, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Nov. 28, 1994, Ser. No. 345,928
Claims priority, application Japan, Dec. 3, 1993, 5-339026
Int. Cl.[6] H02G *1/00*
U.S. Cl. 30—90.6 **7 Claims**



1. A coaxial cable terminal processing tool comprising:
a processing tool main body having an arm member;
a pair of rollers pivotally supported by said processing tool main body and opposing each other;
an L-shaped cable stopper, disposed in said processing tool main body to be movable in an axial direction of said rollers, for determining a cut position of the coaxial cable, said cable stopper holding the coaxial cable together with said rollers;
a first blade held by said arm member to be movable in a direction perpendicular to a plane defined by said rollers, said first blade being fixedly set in a radial direction of said rollers;
a second blade held by said arm member to be movable in the direction perpendicular to the plane defined by said rollers, and in the axial direction of said rollers, said second blade being variably set at the radial and axial directions of said rollers;

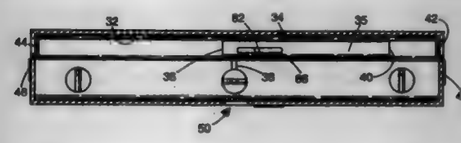
a first moving mechanism for moving said first and second blades to come close to and separate from the plane defined by said rollers; and
a second moving mechanism for moving said second blade in the axial direction of said rollers.

5,487,221
JIG SAW
Zenichi Oda, and Toshiyuki Kani, both of Anjo, Japan, assignors to Makita Corporation, Anjo, Japan
Filed Feb. 9, 1995, Ser. No. 385,836
Claims priority, application Japan, Feb. 10, 1994, 6-016677
Int. Cl.[6] B23D *51/10*; B27B *19/09*
U.S. Cl. 30—392 **10 Claims**



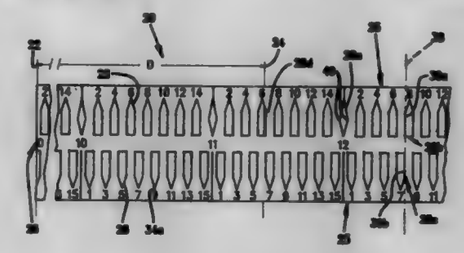
1. A jig saw comprising:
a housing;
a drive shaft disposed within said housing and driven to perform a predetermined motion;
a holder mounted on said drive shaft and having an operation member operable between a fixing position and a releasing position for fixing and releasing a saw blade, respectively;
a cover mounted on said housing and movable between an open position and a closed position for uncovering and covering said holder, respectively; and
interlocking means for interlocking between said operation member and said cover such that said operation member is moved from said fixing position to said releasing position when said cover is moved from said closed position to said open position.

5,487,222
COMBINATION LEVEL
Gary Fairchild, 1129 Dunbarton La., Lexington, Ky. 40502
Continuation-in-part of Ser. No. 106,367, Aug. 13, 1993, abandoned. This application Sep. 19, 1994, Ser. No. 308,147
Int. Cl.[6] G01C *9/28*
U.S. Cl. 33—273 **21 Claims**



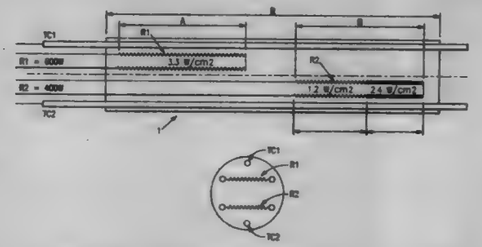
1. A combination level without a companion support device, comprising:
a housing having a bottom surface;
a level indicating assembly incorporated within said housing for directly ascertaining horizontal level at a local location;
a remote location viewing assembly cooperating with said level indicating assembly for directly ascertaining horizontal level at a remote location; and
a shallow recess in said bottom surface and having bearings therein for receiving and supporting a tip of a makeshift and discrete stand to assist in ascertaining horizontal level at said remote location.

5,487,223
LINEAR SCALE
Anthony E. Krause, 4070 Meadowbrook Blvd., University Heights, Ohio 44118
Filed Oct. 12, 1994, Ser. No. 321,743
Int. Cl.[6] G01B *3/02*
U.S. Cl. 33—494 **11 Claims**



1. A scale, comprising:
an elongated body having opposed scale edges; and
a plurality of slots through the body, each of said slots being located a specified sequential distance from a reference point, each of said slots having opposed slot edges, and said slots being alternatingly located along said opposed scale edges such that one of the slot edges of each of the slots is collinear with one of the slot edges of an opposite one of the slots and the other of the slot edges of each of the slots is collinear with one of the slot edges of another opposite one of the slots.

5,487,224
DEVICE FOR THE HEAT TREATMENT OF MOVING YARNS
Carlos M. Gabalda, Granges les Valence, and Pierre Mirabel, Roanne, both of, France, assignors to ICBT Roanne, France
Filed Jul. 11, 1994, Ser. No. 273,111
Claims priority, application France, Jul. 20, 1993, 93 09147
Int. Cl.[6] F26B *3/34*
U.S. Cl. 34—266 **6 Claims**



1. A device for heat treating a moving yarn comprising an insulating chamber, guide means and a cylindrical heating unit, said heating unit being surrounded by said insulating chamber and comprising two heating zones obtained by embedding two resistance elements inside said heating unit, parallel, but offset with respect to each other; with each heating zone including an associ-

ated thermocouple element associated with a respective one of said two resistance elements;

said insulating chamber defining a channel through which said yarn passes and said guide means positioning said yarn within said channel, wherein said guide means are provided on either side of each heating zone; and

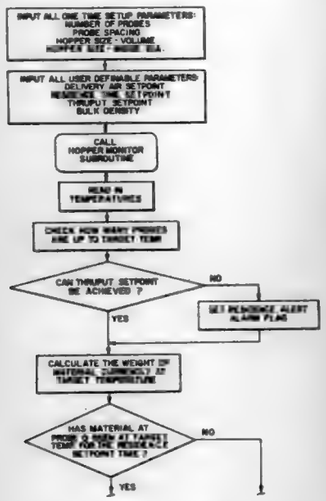
wherein said yarn first enters a first of said heating zones, which is set to a temperature greater than a normal temperature to which said yarn is to be heated, for a length of time such that said yarn is not damaged, and said yarn subsequently enters a second of said heating zones set at said normal temperature.

5,487,225

APPARATUS AND METHOD FOR CONTROLLED DRYING OF PLASTIC PELLETS

John P. Downie, Titusville, Pa., assignor to The Conair Group, Inc., Pittsburgh, Pa.

Filed Nov. 14, 1994, Ser. No. 338,418
Int. Cl.[6] F26B *3/14;7/00*
U.S. Cl. 34—473 **20 Claims**



1. In a dryer hopper for drying plastic pellets having heated air passing upwardly through said hopper with an air outlet at the top of said hopper the improvement comprising:

a plurality of temperature sensors positioned at vertical incremental distances from the bottom of said hopper to the top of said hopper whereby the temperature of pellets at the vertical level of each of said plurality of temperature sensors may be measured to provide an indication of the dryness of said pellets at the vertical level of each of said plurality of temperature sensors;

said plurality of temperature sensors being connected to recording means to record the temperature of said pellets at the vertical level of each of said sensors through a specified time period; and

each of said plurality of temperature sensors having a target temperature to be maintained for a specified residence time to provide dry pellets at the vertical level of each of said sensors.

17. The method of determining when a preselected amount of plastic pellets that are being dried by passing heated air upwardly through them within a dryer hopper are properly dry for use in a manufacturing process comprising the steps of:

placing a plurality of temperature sensors within said hopper in contact with said pellets at varying vertical distances from the bottom to the top of said hopper;

determining when each of said temperature sensors reaches a specified target temperature;

measuring the residence time at which the pellets in contact with each of said temperature sensors remains at said target temperature; and

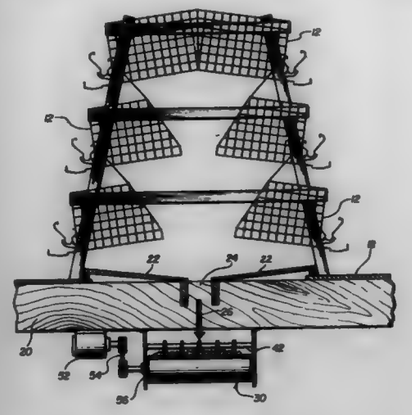
calculating the amount of pellets in said hopper below the vertically highest positioned temperature sensor that has been maintained at said target temperature for said residence time to determine if said amount is equal to or greater than said preselected amount.

5,487,226

MANURE DRYING SYSTEM AND RELATED METHOD

Don R. Hoover, Milford, Ind., assignor to CTB, Inc., Milford, Ind.

Filed Aug. 26, 1994, Ser. No. 296,693
Int. Cl.[6] F26B *3/00*
U.S. Cl. 34—503 **20 Claims**



10. A method for reducing the moisture content in animal manure comprising the steps of:

a. providing an animal confinement facility for housing animals;

b. supplying a ventilating air flow within said animal confinement facility;

c. providing accumulating apparatus for collecting and holding manure deposited within the confinement facility by the animals, and;

d. concentrating and channeling a portion of the ventilating air flow over the accumulating apparatus to cause a significant reduction in the moisture content of the manure collected and held by the accumulating apparatus.

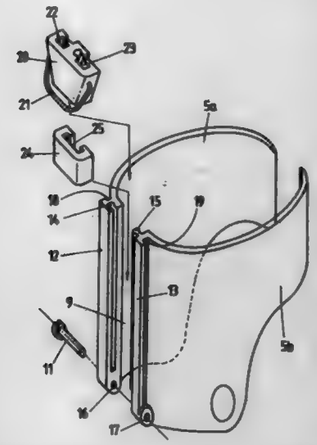
5,487,227

SKI BOOT WITH A COLLAR HAVING A CLOSURE SLIDE

Gilles Marmonier, Saint Etienne de Crossey, France, assignor to Skis Rossignol S.A., Voiron, France

Filed Feb. 16, 1994, Ser. No. 197,163
Claims priority, application France, Mar. 12, 1993, 93 02899
Int. Cl.[6] A43B *5/04;* **A43C** *11/00*
U.S. Cl. 36—117 **8 Claims**

1. A ski boot with a shell for a skier's foot comprising a lower shell having a front and a heel (1) intended to surround the foot and a boot leg (5) having a rear and an upper edge being in the form of a collar which is articulated on the lower shell and fitted, at the front, with at least one closure and tightening device (6, 7), wherein the boot leg has, at the rear, at least one slot (9) having edges and extending, from the upper edge of the boot leg, over most of the height of the boot leg, toward the heel, the edges of the slot having an overthickness (12, 13), the overthickness (13) of one of the edges having a male profile (15) and the overthickness (12)



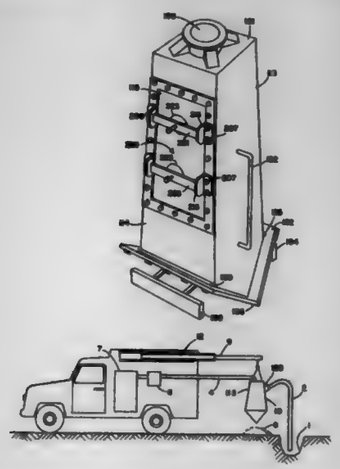
of the other edge having a matching female profile (14), so as to ensure mutual fastening of its edges by forcible engagement of the male profile into the female profile, and wherein the boot leg includes a closure slide (20) slidingly mounted astride the said edges, the displacement of the slide along said slot closes and opens the slot in the manner of a zipper, a device (26) at the rear for locking the boot leg on the shell, in a forward inclined position, wherein this device (26) being connected to the closure slide (20) by a linkage member (30) such that the device is unlocked when the slide occupies it's topmost position on the boot leg.

5,487,228

MATERIAL TRANSFER APPARATUS AND METHOD

Joseph Marazzo, Scotch Plains, N.J.; Frank Russo, Swiftwater, Pa.; Michael G. Palmer, Easton, Pa., and Gary L. Hartmann, East Stroudsburg, Pa., assignors to Brooklyn Union Gas, Brooklyn, N.Y.

Filed Mar. 16, 1994, Ser. No. 213,520
Int. Cl.[6] B65G *53/14;65/72*
U.S. Cl. 37—317 **21 Claims**



1. A material transfer device comprising:

a top section including a vacuum inlet for applying suction to the device;

a middle section including plurality of sides, each side extending downward and outward from the top section, a first of the plurality of sides including a material inlet and a second of the plurality of sides opposite the first side including a vibratory part vibrating in response to vacuum pressure in the middle section caused by the suction; and

an openable bottom section held in a closed position against the plurality of downward and outward extending sides of the middle section by suction applied to the vacuum inlet,

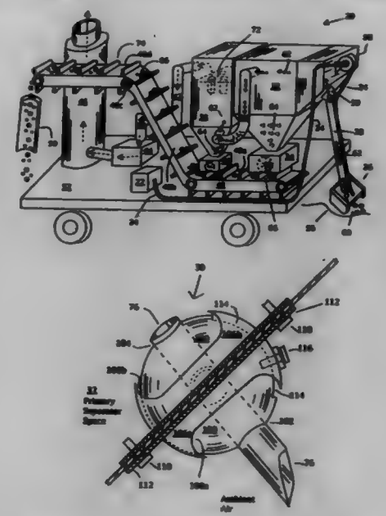
wherein material entering the middle section through the material inlet in response to the suction applied to the vacuum inlet is directed to contact the vibratory part of the second side and is redirected from the vibratory part to the openable bottom section.

5,487,229

APPARATUS FOR PNEUMATIC EXCAVATION

Richard D. Nathanson; Jerome Apt, Jr.; Martin J. Uram, all of Pittsburgh; Paul M. Brumbaugh, North Versailles, all of Pa.; Gary H. Brawley, Columbus, Ohio; Donald J. Heckman, Upper Arlington, Ohio, and Brian Christenson, Columbus, Ohio, assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

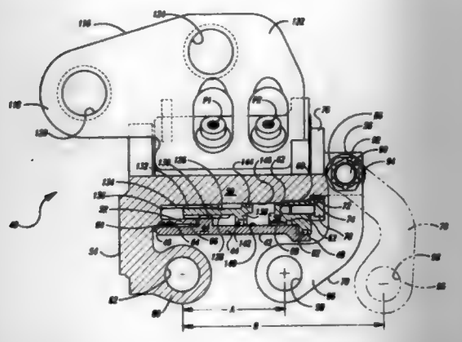
Filed May 28, 1993, Ser. No. 68,920
Int. Cl.[6] E02F *5/02*
U.S. Cl. 37—347 **23 Claims**



1. An apparatus for pneumatically excavating soil from an excavation face comprising a movable support structure, a vessel mounted on the support structure defining an internal chamber, a boom member carried by the support structure and having first and second end portions and a longitudinal axis and having a passageway extending between the first and second end portions, means for connecting the first end portion to the vessel so that the passageway in the boom member is in communication with the internal chamber of the vessel which includes a sphere secured to the first end portion of the boom member and a retainer carried by the vessel having a cavity for cooperatively receiving the sphere so that the first end portion of the boom member is pivotably connected to the vessel, the sphere being provided with a slot extending in a plane that contains the longitudinal axis of the boom member and a pin being carried by the retainer and having a portion which extends into the slot along a radius of the sphere for restricting rotation of the boom member about its longitudinal axis, means carried by the second end portion of the boom member for dislodging soil from the excavation face when the second end portion of the boom member is placed in the vicinity of the excavation face and means carried by the support structure and connected to the vessel for creating a negative pressure within the internal chamber of the vessel and the passageway of the boom member for lifting the dislodged soil from the excavation face into

the second end portion of the boom member and for carrying the dislodged soil through the passageway and into the internal chamber.

5,487,230
TOOL ACTUATOR WITH ADJUSTABLE ATTACHMENT MOUNT
Dean R. Weyer, 707 Victor, Enumclaw, Wash. 98022
Filed Dec. 14, 1994, Ser. No. 355,593
Int. Cl.[6] E02F 3/36
U.S. Cl. 37—468 16 Claims



9. A fluid-powered tool actuator, usable with a vehicle having an arm and a rotation link associated therewith for rotation of the tool actuator in a first plane defined by movement of the rotation link relative to the arm, each of the arm and rotation link having an attachment member located toward a free end thereof, and usable with a plurality of tools each having a first tool attachment member and a second tool attachment member located away from the first tool attachment member where the distance between the first and second tool attachment members varies from tool to tool within a range of tool attachment member distances, the tool actuator comprising:

a body having a longitudinal axis and first and second ends;

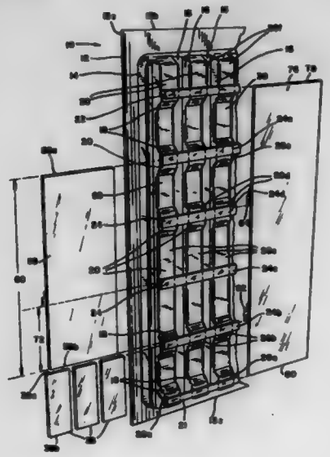
an attachment bracket rigidly attached to said body and having an external first bracket attachment member located generally along said body axis for pivotal attachment to the vehicle arm by the arm attachment member and an external second bracket attachment member located generally along said body axis away from said first bracket attachment member for pivotal attachment to the rotation link by the rotation link attachment member, said first and second bracket attachment members being selectively detachable from the arm and rotation link attachment members, wherein with said first and second bracket attachment members attached to the arm and rotation link attachment members, movement of the rotation link causes said body to rotate about the vehicle arm with movement of said longitudinal axis of said body in generally parallel alignment with the first plane, and wherein the tool actuator is selectively detachable from the vehicle arm and rotation link;

an output shaft rotatably disposed within said body in general coaxial arrangement with said body and having a first shaft end portion extending at least to said first body end and a second shaft end portion extending toward said second body end, said first shaft end portion having a first shaft attachment member attached thereto which is releasably attachable to the first tool attachment member;

a member pivotally attached to said second shaft end portion to pivot about an axis generally transverse to said second shaft end portion, said pivotable member having a second shaft attachment member attached therejo which is releasably attachable to the second tool attachment member, said pivotable member being selectively pivotable to move said second shaft attachment member within a range of distances corresponding to the range of tool attachment member distances and position said second shaft attachment member at a selected distance from said first shaft attachment member such that said first and second shaft attachment members are spaced apart by the same distance as the first and second tool attachment members for the tool being attached to said shaft, said first and second shaft attachment members releasably attaching the tool to said shaft for rotation with said shaft through a second plane extending laterally, generally transverse to the first plane; and

a linear-to-rotary torque transmitting member mounted for longitudinal movement within said body in response to selective application of pressurized fluid thereto, said torque-transmitting member engaging said body and said shaft to translate longitudinal movement of said torque-transmitting member into rotational movement of said shaft relative to said body, whereby the tool attached to said shaft is rotatable in the first plane and laterally tiltable in the second plane.

5,487,231
ATTRACTION BOARD FOR RETAINING AN ENLARGED FIGURE PANEL THEREON
Anton Grate, 405 Westridge, Joliet, Ill. 60435
Filed Dec. 20, 1993, Ser. No. 169,100
Int. Cl.[6] G09F 7/02
U.S. Cl. 40—618 5 Claims



1. The combination comprising;

a back,

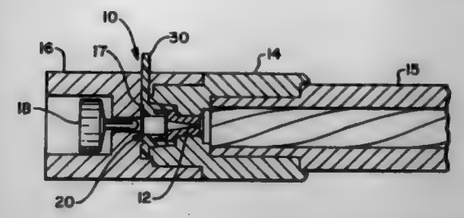
a plurality of parallel tracks on said back, each of said tracks having an upwardly extending lower lip immovably fixed said back and an opposing downwardly extending upper lip immovably fixed to said back,

said tracks including an upper track with an upper lip and a lower track with a lower lip, and an intermediate lip,

one of said upper lip of said upper track and said lower lip of said lower track being forwardly offset relative to said intermediate lip, and

a figure panel extending under said upper lip of said upper track and under said lower lip of said lower track, and across said intermediate lip.

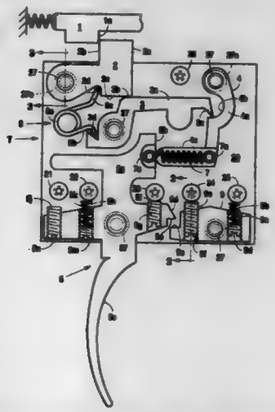
5,487,232
DETONATOR ASSEMBLY
William E. Osborne, Guilford; Harold J. Waterman, Jr., Wallingford, and David Findlay, Guildford, all of Conn., assignors to The Marlin Firearms Company, North Haven, Conn.
Filed Apr. 26, 1994, Ser. No. 233,134
Int. Cl.[6] F41C 9/08
U.S. Cl. 42—51 20 Claims



1. A detonator assembly for a black powder firearm having a nipple and a breech block having an axial bore for receiving said detonator assembly, said detonator assembly comprising:

primer means having a cylindrical first portion and a generally flattened end; and a primer carrier having a first end, a first portion dimensioned to receive said primer means, and a second portion dimensioned for partially receiving the firearm nipple, said primer carrier second portion comprising first and second coaxial sleeve means defining an interior circumferential annular recess, said second sleeve means defining a sealing surface for sealing with the nipple.

5,487,233
TRIGGER MECHANISM FOR FIREARMS
Jewell, Arnold W., 1490 White Water Rd., New Braunfels, Tex. 78132
Filed Feb. 13, 1995, Ser. No. 388,144
Int. Cl.[6] F41A 19/16
U.S. Cl. 42—69.01 8 Claims



1. A trigger mechanism for cocking and releasing a spring pressed firing pin of a firearm, comprising, in combination:

a trigger housing comprising two horizontally spaced vertical plate elements mountable below said firing pin;

a sear pivotally mounted between said plate elements and releasably engagable with the firing pin in a first pivotal position to secure the firing pin in its cocked position, and disengagable from the firing pin in a second pivotal position;

a sear release lever pivotally mounted between said plate elements and engagable with said sear in one pivotal position to hold said sear in its said first position, and pivotally movable to a second pivotal position permitting movement of said sear to its said second pivotal position;

a locking lever for said sear release lever pivotally mounted between said plate elements and movable between a first pivotal position engaging said sear release lever to hold said sear release lever in its said first position and a second pivotal position permitting movement of said sear release lever to its said second position;

a trigger element medially pivotally mounted between said plate elements below said sear and movable between an initial unpulled position to a pulled firing position;

said trigger element having a finger piece projecting downwardly out of said trigger housing and an upwardly projecting actuating portion;

means abuttingly interconnecting said trigger actuating portion and said locking lever, whereby pulling movement on said finger piece effects movement of said locking lever to its said second position, permitting movement of said sear release lever and said sear concurrently to their respective second positions to release the spring pressed firing pin to fire the firearm;

first resilient means operatively connected between said upwardly projecting actuating element of said trigger and said locking lever to return said locking lever to its said first position upon release of said finger piece of said trigger element; and

a second resilient means operable to return said sear and said locking lever to their respective first positions when the firing pin is retracted to its cocked position;

said trigger element having forwardly and rearwardly projecting medial portions;

a plurality of spacer elements securing said vertical plate elements in said horizontally spaced relation;

a spring operating between one of said spacers and said rearwardly projecting portions of said trigger element to urge said trigger to an initial, unpulled position;

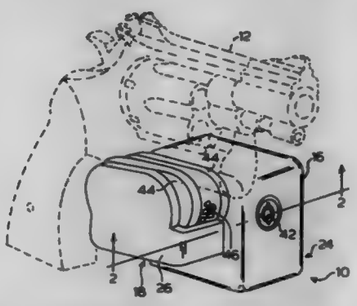
a vertically adjustable trigger positioning screw in said forward projecting portion of said trigger;

a second one of said spacer elements abuttingly engaged by said trigger positioning screw to determine said initial unpulled position of said trigger;

a second vertically adjustable screw in said rearwardly projecting portion of said trigger element; and

a third one of said spacer elements abuttable by said second vertically adjustable screw to determine the limiting pulled position of said trigger element.

5,487,234
FIREARM LOCKING DEVICE WITH MOTION SENSOR AND ALARM
Paul K. Dragon, 1366-B Jeffords St., Clearwater, Fla. 34616
Filed Nov. 29, 1993, Ser. No. 158,923
Int. Cl.[6] F41A 17/54
U.S. Cl. 42—70.07 23 Claims

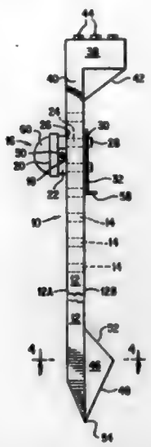


1. A firearm locking device and alarm to be detachably mounted on a trigger guard of a firearm to prevent operation and deter movement of the firearm, comprising:

(a) a first section being configured to fit over the trigger guard of the firearm;

(b) a second section being configured to fit over the trigger guard of the firearm in laterally opposed relationship to the first section to form a firearm locking device and alarm assembly;
(c) means for lockably connecting the first section and the second section against opposite faces of the trigger guard extending transversely through the trigger guard and in proximity to the trigger so as to engage therebetween, substantially enclosing and preventing access to, the trigger and trigger guard of the firearm;
(d) motion sensing means operatively associated with the firearm locking device and alarm assembly for sensing movement of the firearm; and
(e) an alarm means operatively associated with the firearm locking device and alarm assembly for providing an alert signal in response to the movement of the firearm.

5,487,235
SUPPORT APPARATUS FOR FENCING
Glenn D. Gober, 27 President Ave., Rutledge, Pa. 19070
Filed Aug. 26, 1993, Ser. No. 112,677
Int. Cl.[6] A01G *17/06*
U.S. Cl. 47—46 **5 Claims**



1. A support apparatus for garden fencing, comprising:
(a) an elongate shaft having a plurality of incrementally spaced apertures therethrough along the length of said shaft; said apertures being adjacent to one another;
(b) a U-shaped bridge member for securing a section of fence to said shaft; said bridge member having two cylindrical pins and a closed section therebetween; said pins of said bridge member being adapted to be slidably received within said apertures such that said section of fence is disposed between the closed section of said bridge member and said shaft; and
(c) a clip adapted to engage said pins of said bridge member for securing it to said shaft.

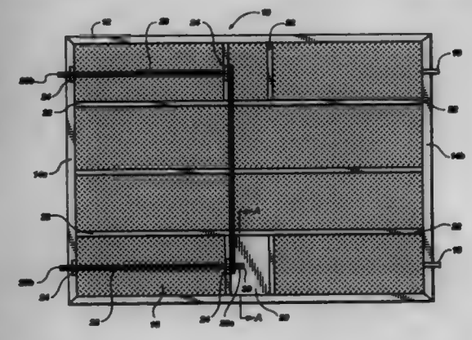
5,487,236
PLANT FOOD AND FERTILIZER APPLICATOR
Donald D. Moon, 40 Worcester Ave., Springfield, Mass. 01107
Filed Feb. 27, 1995, Ser. No. 394,503
Int. Cl.[6] A01G *29/00*
U.S. Cl. 47—48.5 **2 Claims**

1. Soil conditioning apparatus comprising:
a vertically disposed main body,
a manually engageable handle secured to an upper portion of the main body,



a fertilizer receiving chamber secured to the main body and having upper and lower open ends,
an open-ended hollow dispensing tube fixed to the main body below and in communication with the fertilizer receiving chamber,
an apertured lateral slide having an intercepting relationship with the tube interior and being shiftable between a communicating position with the slide aperture being aligned with the tube interior and a non-communicating position with the aperture of the slide being in non-alignment with the hollow of the hollow tube,
ground penetrating tine secured to and in vertical alignment with the main body for easy insertion into the ground,
and a lateral pedal fixed to the main body facilitating the penetration of the tine upon the exertion of foot pressure on the pedal.

5,487,237
SECURITY DEVICE FOR BUILDINGS
Bill Martin, Jr., 704 S. 400 West, Salt Lake City, Utah 84101
Filed Aug. 2, 1994, Ser. No. 284,390
Int. Cl.[6] E06B *3/68*
U.S. Cl. 49—57 **14 Claims**



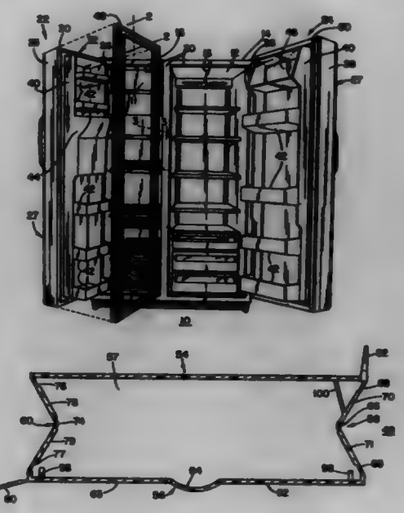
1. A security device for releasably blocking a doorway or window opening of a building structure, said device comprising:
a sturdy, continuous, metal frame configured to fit within an interior perimeter of the doorway or window opening, said frame defining an interior frame opening bounded on at least two opposing sides by first and second frame members which are substantially contiguous with sides of the doorway or window opening when in a secured position;
a security grid extending across and covering the interior frame opening and being anchored to the metal frame to form a single structure;
at least one positioning bar disposed on the second frame member and configured for placing into a receiving slot formed in the interior perimeter of the window or door opening; and
a locking bar slidably disposed on the first frame member and having at least one perimeter locking end configured for slidable entry into a receiving slot formed in the interior perimeter of the window or door opening, wherein the locking bar comprises an elongate locking rod having at least one interior locking end;
means for releasably restraining said locking bar from movement relative to the metal frame when said locking bar is seated within the receiving slot in the interior perimeter to retain said metal frame in a secure position;
at least one mounting plate coupled to the continuous metal frame and security grid and extending into the interior frame opening;
at least one first guide tab securely attached to the mounting plate and extending outward from the mounting plate, said at least one first guide tab including a guide track opening configured to slidably receive the locking rod;
at least one second guide tab securely attached to the first frame member and extending outward from the first frame member, said at least one second guide tab including a guide track opening configured to slidably receive the locking rod;
wherein the locking rod is slidably journalled within the at least one first and second guide tabs;
the means for releasably restraining comprising means for releasably interlocking the interior locking end of the locking rod with the at least one mounting plate when the locking rod is seated within the receiving slot in the interior perimeter to retain the metal frame in a secured position.

5,487,238
DEVICE FOR OPENING AND CLOSING A WINDOW, A DOOR, OR THE LIKE
Werner Elkmeier, Erkrath; Dietger Frick, and Werner Riedel, both of Velbert, all of, Germany, assignors to Wilhelm Weidtmann GmbH & Co. KG, Velbert, Germany
Filed Nov. 10, 1994, Ser. No. 337,680
Claims priority, application Germany, Apr. 2, 1994, 44 11 638.1
Int. Cl.[6] E05F *11/02*
U.S. Cl. 49—300 **19 Claims**



1. In a device for opening and closing a window, a door, or the like having a stationary frame and having a casement moveable between a closed position and an open position, which is connected to the frame by at least one hinge part, having a toothed rack, longitudinally displaceable by a rotary operated actuating means which is connected to the casement by a hinge rod and wherein the hinge rod transfers longitudinal displacement of the toothed rack into movement of the casement, and having at least one pair of closing elements between the casement and the frame which is composed of a moveable and a stationary closing element, and acts to ensure said closed position of the casement, the moveable closing element of which can be changed over, by a closing rod, between a latched position holding the casement against the frame and an unlatched position releasing the casement, the improvement comprising: that said toothed rack is a first toothed rack cooperating with the casement, and that a second toothed rack is arranged in the frame, which is connected to the closing rod for the moveable closing element located in the frame, both toothed racks being longitudinally capable of being displaceable by the same actuating means, only one of said two toothed racks being ordinarily coupled to the actuating means, while the other is uncoupled and stationary, and wherein the ordinarily coupled toothed rack uncouples itself automatically from the actuating means after a predetermined distance of travel and the final phase of its longitudinal displacement serves to couple the other toothed rack to the actuating means.

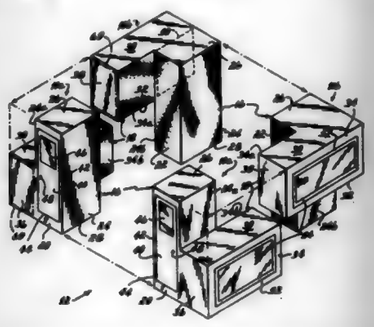
5,487,239
REFRIGERATOR GASKET ASSEMBLY
Thomas E. Jenkins; Charles R. Mulligan, and Duane Jubenville, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Filed Jan. 6, 1994, Ser. No. 254,396
Int. Cl.[6] E06B *7/22*
U.S. Cl. 49—498.1 **19 Claims**



1. A refrigerator comprising:
a cabinet having an outer case and an inner liner, a storage compartment formed by said liner and having an access opening surrounded by a cabinet face portion;
a door hingedly mounted along one of its edges for selectively closing said access opening, said door including a peripheral flange;
an elongated gasket mounted on said door peripheral flange for sealing engagement with said cabinet face portion when said door closes said access opening;
said gasket comprising an elongated body of co-extruded material including an elongated base wall mounted along said door flange, a contact wall overlying and spaced from said base wall for sealing engagement with said cabinet face portion, and a pair of spaced apart flexible side walls joining said base and contact walls and forming therewith a hollow interior containing compressible insulation material; and
said contact wall comprising a pair of longitudinally extending strips of more rigid material connected by an longitudinally

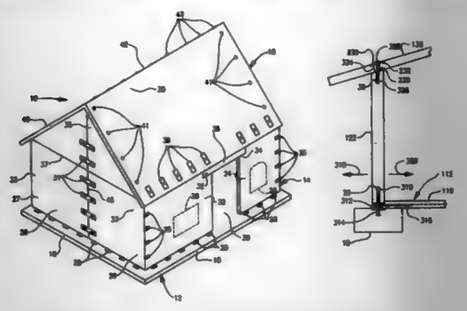
extending strip of less rigid material; said strip of less rigid material being formed with an elongated bow projecting away said base wall.

5,487,240
COMPACT SLEEPING UNIT
Frederick H. Miller, 3627 Hillside Ave., Cincinnati, Ohio 45204
Continuation-in-part of Ser. No. 134,007, Oct. 12, 1993. This application Nov. 18, 1994, Ser. No. 342,354
Int. Cl.[6] E04H *3/04*
U.S. Cl. 52—33 **29 Claims**



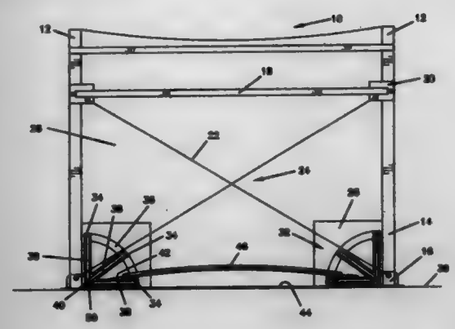
1. A structure suitable for human habitation comprising:
a generally rectangular, vertically oriented cell, said vertical cell having a back wall spaced from a front wall and a pair of spaced side walls, said vertical cell having an internal volume of sufficient size for a person to stand upright therein;
a generally rectangular, horizontally oriented cell, said horizontal cell having a ceiling spaced from a floor and a pair of spaced side walls, said horizontal cell having an internal volume of sufficient size for the person to recline therein;
a platform in said horizontal cell upon which the person can recline;
said horizontal and vertical cells being connected to form a unit so that a portion of one of said horizontal cell side walls is juxtaposed to a portion of one of said vertical cell side walls; and
a passage between said cells through which the person can move to and between said cells.

5,487,241
WIND RESISTANT BUILDING SYSTEM
James E. Gorrell, and David G. Gorrell, both of P.O. Box 60174, Fort Myers, Fla. 33906
Filed Feb. 14, 1994, Ser. No. 194,827
Int. Cl.[6] E04H *1/00*; E04B *1/00*
U.S. Cl. 52—79.1 **15 Claims**



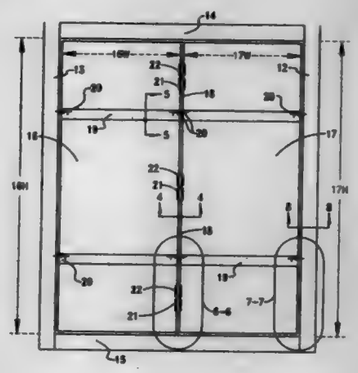
1. A wind resistant concrete building comprising:
a concrete base section;
a wall section including a plurality of discrete concrete wall panels, each said wall panel interengaging and extending substantially perpendicularly from at least one other said wall panel to reinforce said wall section;
means for fastening together each said pair of interengaging wall panels;
means for securing said wall section to said base section;
a concrete roof section including at least one precast roof panel that is mounted to said wall section; and
means for attaching said roof section to each of said wall panels;
said base section including a poured concrete floor in which said wall panels are set and a concrete footer portion formed at least partly beneath said floor;
said means for securing including a threaded receptacle that is cast in a said wall panel proximate a lower edge thereof and a threaded element that is engaged with said receptacle and has a head that engages said footer portion and a shaft that extends through said floor, said threaded element being longitudinally adjusted in said receptacle before said floor is poured to adjust the height of said wall structure relative to said footer portion;
said means for securing further including a weld plate cast into said footer, said head of said threaded element engaging and being welded to said weld plate before said floor portion is poured.

5,487,242
METHOD AND APPARATUS FOR UNIFORMLY TENSIONING FABRIC PANELS OF PORTABLE BUILDINGS
Robert M. Stafford, 4838 Solus Pl., Weed, Calif. 96094
Filed Apr. 26, 1994, Ser. No. 233,122
Int. Cl.[6] E04B *1/32*
U.S. Cl. 52—86 **16 Claims**



6. A portable building structure, comprising:
a plurality of arches, each arch spanning a transverse distance and being longitudinally spaced apart from adjacent arches, each arch having lower ends attached to base plates, the base plates having at least one J-bracket with a flat center and a curled end located near each respective arch, the base plates securing the lower ends of the arches in the longitudinally spaced, transversely extending, vertical positions;
a plurality of horizontally extending purlins rigidly connected between the adjacent arches at opposite ends of the purlins;
a plurality of lines connected to base plates and opposite ends of the purlins to form cross-braces between the adjacent arches; and
one or more panels attached to the adjacent arches, each panel having a width corresponding to the longitudinal distance between adjacent arches, a length corresponding to the transverse distance spanned by the arches, means for connecting the panels to corresponding arches, and reinforced lower corners located near the lower ends of the arches, wherein each panel has a first line secured to longitudinally opposite reinforced corners and extending generally arcuately therebetween and a second line secured by the J-bracket to longitudinally opposite reinforced corners and extending generally linearly therebetween, both first and second lines being spaced a predetermined distance apart in the transverse direction to thereby longitudinally and transversely tension each respective panel.

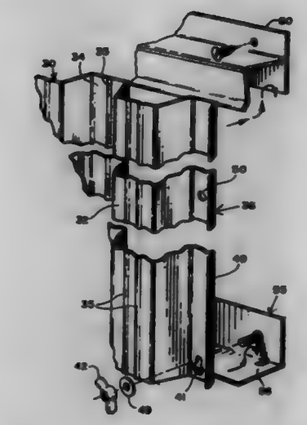
5,487,243
STORM SHUTTER SYSTEM
Joseph F. Hale, Dublin, Va., and Jeffrey Burgardt, Indianapolis, Ind., assignors to Lin El, Inc., Mooresville, Ind.
Filed Nov. 4, 1993, Ser. No. 147,748
Int. Cl.[6] E06B *3/26*
U.S. Cl. 52—202 **20 Claims**



1. A storm shutter system, comprising:
a window mounted within a window frame and separating a building exterior from a building interior;
a plurality of shutter panels substantially flush against and covering an interior surface of said window, said panels having perimeter edges and compressible members attached about said perimeter edges for creating seals between the shutter panels and the window frame and between perimeter edges of the shutter panels which abut one another;
said panels together further being slightly oversided relative to said window frame such that when said panels are positioned flush against said window, said compressible members are compressed against said window frame thereby creating a seal between said panel members and said window frame and also creating a seal between perimeter edges of said panel members which abut one another;and
one or more cross bar members mounted interiorly of said panels so as to support said panels against positive pressure.

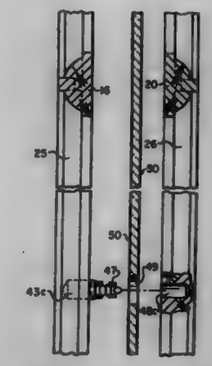
5,487,244
SHUTTER SYSTEM AND METHOD
George A. Hill, 8561 NW. 52nd St., Lauderhill, Fla. 33351
Filed Nov. 23, 1994, Ser. No. 344,222
Int. Cl.[6] E06B *3/26*
U.S. Cl. 52—202 **7 Claims**

1. A shutter panel for use in a shutter system having a header and a footer for receiving a plurality of such shutters, said shutter comprising, in combination:
a corrugated body having a central groove and parallel flanking ridges, said groove and ridges comprising an isosceles trapezoidal cross-section;
a plurality of ribs longitudinal along said ridges and grooves, extending outwardly therefrom;
said panel having lateral edges terminating in a pair of parallel lips;



each such lip having a lip bottom and an edge lock angled upwardly from the lip bottom, such that each panel can be overlapped with a like panel along their lips;
vertically spaced releasably securable means along the lip bottoms for securing said panel to a like panel that has been placed adjacent thereto and overlapped along the lip; and
a laterally spaced releasably securable means for securing said panel to the footer,
whereby like panels, when placed adjacent said panel and overlapped along the lips, can be secured both to the footer and to each other to form an interlocked panel system that inhibits wind from getting between the adjacent, overlapped panels.

5,487,245
PANELLED LIGHT TRANSMISSIVE MEMBER
Jeanette Dazo, Greenville; Herman G. Reiber, Commerce; Richard Knighton, Carrollton, and Spurgeon T. Peaden, Rockwall, all of Tex., assignors to Wing Industries, Inc., Dallas, Tex.
Filed Feb. 18, 1994, Ser. No. 198,865
Int. Cl.[6] E06B *3/68*
U.S. Cl. 52—204.61 **24 Claims**



1. A multi-panelled light transmissive member comprising:
(a) a sheet of light transmissive material having a plurality of holes therethrough;
(b) a peripheral wood frame;
(c) mounting means for mounting said sheet of light transmissive material within said peripheral wood frame;
(d) a plurality of wood muntins mounted on opposite sides of said sheet of light transmissive material in complementary disposition to seemingly segment said sheet of light transmissive material into apparent sub-panels; and

(e) a plurality of Christmas-tree fasteners positioned within said holes and engaging said wood muntins thereby to lock said wood muntins to said light transmissive material.

5,487,246

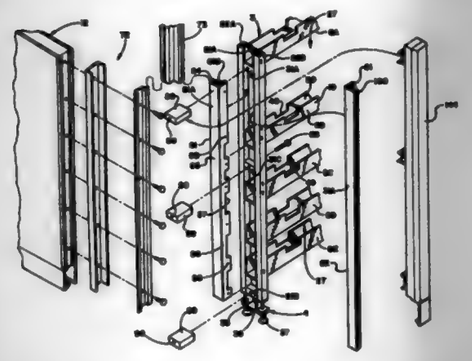
UTILITY PANEL SYSTEM

Ronald R. Hodges, Grandville, and George V. Weller, Grand Rapids, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Continuation of Ser. No. 36,067, Mar. 23, 1993, Pat. No. 5,341,615, which is a continuation of Ser. No. 639,513, Jan. 10, 1991, Pat. No. 5,209,035. This application Jul. 6, 1994, Ser. No. 271,376

Int. Cl.[6] E04B *5/48*

U.S. Cl. 52—220.7 **17 Claims**



1. A freestanding, portable utility panel for open office spaces and the like, comprising:

a relatively thick, skeleton-like frame having:

first and second oppositely oriented faces; a foot portion shaped to abuttingly support said utility panel on a floor surface;

first and second oppositely positioned side portions shaped for operable connection with opposite sides of adjacent, like frames to create a substantially freestanding utility panel system;

a first pair of rigid uprights positioned adjacent the first side portion of said frame along the opposite faces thereof;

a second pair of rigid uprights positioned adjacent the second side portion of said frame along the opposite faces thereof; each of said uprights being tubular, with a rear face thereof connected adjacent the associated side portion of said frame, and a front face thereof extending outwardly of said rear face;

each of said first and second pairs of uprights having at least two elongated connectors having opposite end portions thereof attached to and extending generally horizontally between said upright pair at vertically spaced apart locations thereon to rigidly interconnect the same in a mutually parallel, laterally spaced relationship to define an open interior portion of said utility panel through which utilities can be routed; and

at least one cover panel shaped to cover at least a portion of one of the faces of said frame and being detachably connected therewith to provide ready access to said interior portion of said utility panel.

5,487,247

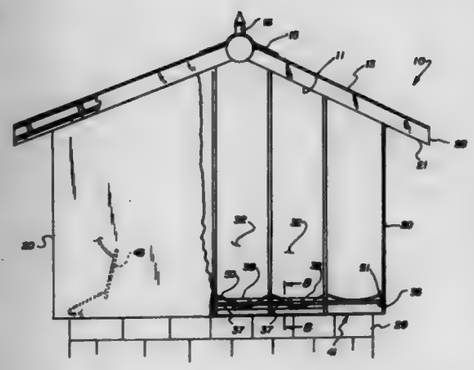
VENTILATED ROOF AND WALL STRUCTURE

Willard L. Pigg, 1080 N. Brace Rd., Summertown, Tenn. 38483

Filed Jun. 11, 1994, Ser. No. 273,487

Int. Cl.[6] E04F *17/04*; **F24F** *7/00*

U.S. Cl. 52—302.3 **2 Claims**



1. A ventilated roof structure comprising:

a dwelling having at least one exterior side wall and at least one interior side wall and a plurality of wall studs extending between the exterior side wall and the interior side wall, the stud each having a cable aperture directed therethrough;

a base roof plate extending over the exterior side wall and the interior side wall, the base roof plate having a base roof peak ridge;

a top roof plate fixedly secured in a spaced relationship relative to the base roof plate to define a roof air gap extending between the base roof plate and the top roof plate, the top roof plate having a top roof plate peak ridge;

an air tube mounted and fixedly secured coextensively relative to the base roof plate peak ridge and the top roof plate peak ridge, the air tube having at least one vent pipe projecting exteriorly of the dwelling and the top roof plate, the vent pipe being in pneumatic communication with the air tube, and the air tube being in pneumatic communication with the roof air gap;

an attic space within the dwelling positioned in adjacency to the base roof plate, with a plurality of attic vents extending between the attic space and the air tube;

a foundation wall, the exterior side wall being secured to the foundation wall, the foundation wall including at least one vent conduit, and the exterior side wall and the interior side wall being spaced apart to define a wall air gap, the vent conduit extending into the wall air gap and terminating in an outlet opening, the vent conduit directed through the foundation wall terminating in an inlet opening;

an axle rotatably mounted between the exterior side wall and the interior side wall;

at least one closure plate positioned within the exterior side wall and the interior side wall, the closure plate being mounted to the axle;

a cable extending through the cable apertures in the wall studs, the cable being coupled to the closure plate in an offset position relative to the axle, with a first end of the cable being secured to a portion of the dwelling, whereby a tensioning of the cable will effect rotation of the closure plates to regulate a flow of air between the exterior side wall and the interior side wall.

5,487,248

STRUCTURAL PANEL

Richard F. Artzer, 27261 Via Capri, San Juan Capistrano, Calif. 92675

Filed Nov. 22, 1993, Ser. No. 155,526

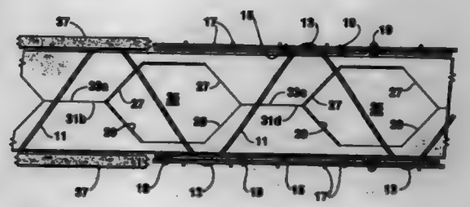
Int. Cl.[6] E04C *2/26*

U.S. Cl. 52—309.12 **7 Claims**

1. A structural panel comprising:

a plurality of contiguous elongated filled members;

each of said filler members formed of a foamed, resinous material;



each of said filler members having a top surface, a bottom surface, a pair of end surfaces, an outer surface and an inner surface;

said inner surface having slanted portions thereof intermediate flat portions thereof which flat portions are parallel to said outer surface;

mutually contiguous filler members having adjacent top and bottom surfaces and said flat portions of said inner surfaces thereof pressed against one another in vapor tight face-to-face contact whereby said slanted portions of the inner surfaces of adjacent filler members are spaced apart thereby to form chambers in said structural panel;

lattice structures interposed between and pressed into said adjacent top and bottom surfaces of said mutually contiguous filler members;

each of said lattice structures including an elongated filament wire having a zigzag configuration and a pair of substantially parallel end rods;

said elongated filament wire including a plurality of apices formed by said zigzag configuration;

said plurality of apices projecting slightly beyond each of said side surfaces of said filler members;

said end rods joined to said elongated filament wire between said apices and close to said outer surfaces of said filler member;

a wire mesh comprising lateral and longitudinal wires attached together at the intersections thereof; and

a plurality of C-clips connected to said end rods and to said wire mesh thereby to hold said wire mesh close to said lattice structures and maintain said filler members pressed together in a unitary panel.

5,487,249

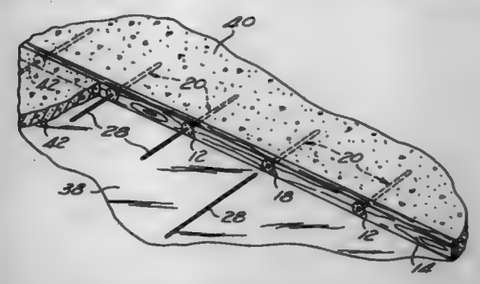
DOWEL PLACEMENT APPARATUS FOR MONOLITHIC CONCRETE POUR AND METHOD OF USE

Ronald D. Shaw, 1988 Pelican, Costa Mesa, Calif. 92626, and Lee A. Shaw, 1924 Irvine Ave., Newport Beach, Calif. 92660

Filed Mar. 28, 1994, Ser. No. 219,137

Int. Cl.[6] E04B *1/62*

U.S. Cl. 52—396.02 **12 Claims**



1. A concrete dowel placement apparatus attached to a concrete form which has an aperture therethrough, comprising:

a base member rigidly attachable to the concrete form, said base member comprising:

(a) an elongate, tubular sleeve portion for insertion through the aperture of the concrete form having opposed first and second ends, an outer surface and an inner surface defining a bore extending longitudinally through the sleeve portion; and

(b) a flange portion formed about and extending outwardly from the first end of the sleeve portion and being engaged to the concrete form after the insertion of said sleeve portion through the aperture of the concrete form;

an elongate, tubular dowel receiving sheath attached to said base member and defining an open proximal end, a closed distal end, and a longitudinally extending interior compartment;

the attachment of the sheath to the base member being facilitated by the slidable insertion of the sheath into the bore in a manner wherein the distal end of the sheath. protrudes from the second end of the sleeve portion and the proximal end of the sheath is substantially flush with the flange portion.

5,487,250

PREDECORATED WALLBOARD JOINT AND METHOD OF JOINING PREDECORATED WALLBOARDS TO FORM A CONCEALED JOINT

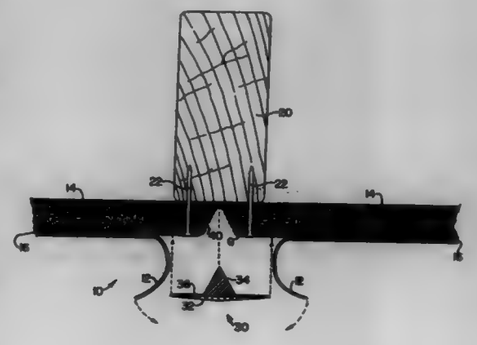
Patty L. Yount, Lexington, and Jacob E. Fisher, Jr., Granite Quarry, both of N.C., assignors to J. P. Walls, Inc., Lexington, N.C.

Continuation of Ser. No. 859,472, Jun. 12, 1992, Pat. No. 5,311,717, which is a continuation-in-part of Ser. No. 452,763, Dec. 14, 1989. This application Feb. 22, 1994, Ser. No. 199,565

The portion of the term of this patent subsequent to May 17, 2011, has been disclaimed.

Int. Cl.[6] E04B *2/10*

U.S. Cl. 52—417 **12 Claims**



1. A predecorated wall comprising:

adjacent predecorated wallboards having preformed edge portions forming a joint (J) therebetween, said wallboards of the type each having a predecorated sheet adhered to the major central portion of the outward face of the undecorated wallboard wherein the predecorated sheet is not adhered adjacent to the preformed side edges of said wallboard and extends beyond the preformed side edges thereof to form edge flaps;

said joint (J) forming a groove (G) provided within the preformed edges of said adjacent wallboards along at least a substantial portion of the length of the joint formed therebetween;

a joint strip comprising a support strip which extends laterally over at least a portion of the undecorated wallboard adjacent to the preformed side edge of each of said adjacent wallboards and a rib along the length thereof adapted to matingly fit within said groove and said support strip and said rib being adhesively secured thereto; and

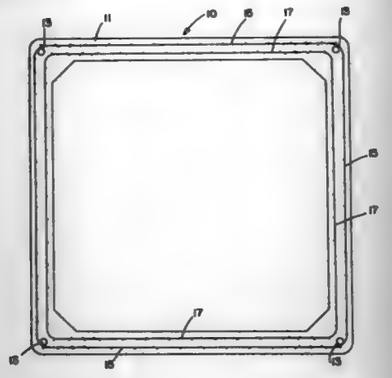
a smooth seam formed over said joint strip by said flaps having been suitably double-cut and adhesively secured thereto.

5,487,251

APPARATUS AND METHOD FOR REINFORCING CAST STRUCTURES

Wilbur E. Tolliver, Rockford, and Larry R. Magnuson, Muskegon, both of Mich., assignors to Independent Concrete Pipe, Mishiwaka, Ind.

Filed May 6, 1994, Ser. No. 238,952
Int. Cl.[6] E21D 11/10
U.S. Cl. 52—600 44 Claims



27. A reinforced concrete structure comprising:

a reinforcing cage including:

a plurality of longitudinal registration tubes at predetermined locations around said reinforcing cage;

an outer reinforcing cage surrounding each of said registration tubes;

an inner reinforcing cage substantially coaxially positioned relative to said outer reinforcing cage;

at least one separator fastened between said outer and said inner reinforcing cages for controllably separating said cages; and

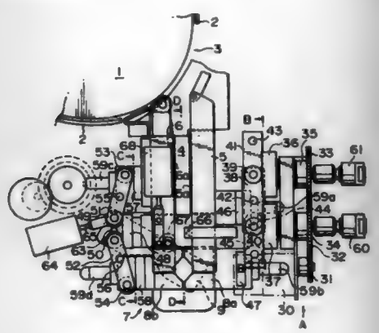
a cast concrete tube encapsulating said reinforcing cages in the walls thereof, said concrete tube having end surfaces substantially flush with the ends of said registration tubes exposing the ends of said registration tubes.

5,487,252

COIN WRAPPING MACHINE

Masamichi Ozeki, Ashikaga; Mamoru Takasaki, Kazo; Katsuyuki Miyamoto, Kawaguchi, and Mitsumasa Tsuruda, Oomiya, all of, Japan, assignors to Laurel Bank Machines Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1994, Ser. No. 218,930
Claims priority, application Japan, Apr. 15, 1993, 5-088699
Int. Cl.[6] B65B 11/04
U.S. Cl. 53—212 23 Claims



1. A coin wrapping machine for wrapping a stack of a first predetermined number of coins comprising:

a rotatable disk for receiving deposited coins and feeding out said received coins to a coin sorting passage by a centrifugal force produced by rotation thereof, said coin sorting passage passing coins of a predetermined denomination only therethrough;

sensor means provided in said coin sorting passage for detecting coins;

coin stacking means having a height for stacking at most a second predetermined number of coins smaller than said first predetermined number of coins corresponding to a total number of coins to be wrapped in a wrapped coin roll;

coin support post means for receiving and supporting on an upper surface of said coin support post means coins stacked in said coin stacking means when at a post waiting position immediately below said coin stacking means;

coin wrapping means including a plurality of wrapping rollers, said coin wrapping means for winding a wrapping film around said stacked coins supported by said coin support post means, thereby wrapping said stacked coins and producing said wrapped coin roll;

support post moving means for moving said coin support post means between said post waiting position immediately below said coin stacking means, a post wrapping position where said stacked coins supported by said coin support post means can be wrapped by said coin wrapping means and a post retracted position where said coin support post means is retracted from said plurality of wrapping rollers;

first wrapping roller moving means for moving said plurality of wrapping rollers between respective wrapping roller wrapping positions where coins are wrapped and respective wrapping roller waiting positions where said plurality of wrapping rollers are slightly more apart from each other than when said plurality of wrapping rollers are in said respective wrapping roller wrapping positions; and

mode selecting means for selecting a counting mode which causes said coin wrapping machine to operate in one of a counting mode wherein said coin wrapping machine only counts coins and a wrapping mode wherein said coin wrapping machine counts and wraps coins;

wherein when said wrapping mode is selected using said mode selecting means, said support post moving means lowers said coin support post means by a distance corresponding substantially to a thickness of one coin of said predetermined denomination each time said coin support post means receives a coin during a time period between a first time when said coin stacking means has stacked said second predetermined number of coins smaller than said first predetermined number of coins corresponding to said total number of coins to be wrapped in each said wrapped coin roll, and a second time when said coin support post means supports said stacked coins in said first predetermined number corresponding to said total number of coins to be wrapped.

5,487,253

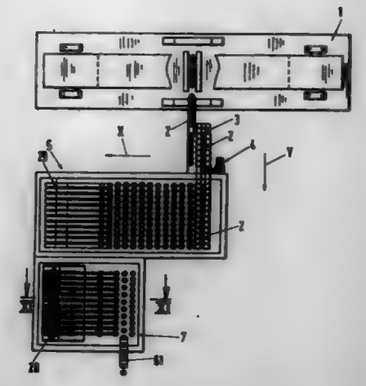
DEVICE FOR CONVEYING AND PROCESSING PACKS FOR LIQUIDS

Uwe Hieltscher, Bensheim; Udo Liebram, Pfungstadt; Wilhelm Reil, Bensheim, and Peter Sattler, Zwingenberg, all of, Germany, assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Filed Apr. 25, 1994, Ser. No. 231,688
Claims priority, application Germany, Apr. 23, 1993, 43 13 325.8
Int. Cl.[6] B65B 3/00;43/00; B67B 3/20
U.S. Cl. 53—281 11 Claims

1. A device for conveying and processing packs for liquids, comprising:

a feed conveyer;



a plurality of processing stations, including processing stations for filling and closing of the packs, arranged sequentially, the feed conveyor being arranged for feeding packs to the processing stations;

a removal conveyer being arranged for removing processed packs from the device;

a first main conveyer device, the first main conveyer device being a one-step vertical conveyer device and having at least one vertically movable bridge with at least one horizontally arranged support rod for transporting a plurality of packs simultaneously; and

a second main conveyer device, the second main conveyer device being a one-step horizontal displacement device,

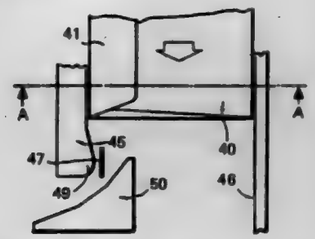
the first and the second main conveyer devices have a common conveyance position at a bottom one of two conveyance positions of the first main conveyer device, the processing stations for filling and closing of the packs are arranged vertically above the first and the second main conveyer devices (6, 9), and the support rod is of sufficient length to transport a plurality of packs arranged in a row relative to one another.

5,487,254

APPARATUS FOR INSERTING MATERIAL INTO ENVELOPES

David M. Dronsfield, Loughton, Great Britain, assignor to Printed forms Equipment Limited, Loughton, Great Britain

Division of Ser. No. 915,694, Jul. 24, 1992, Pat. No. 5,327,701.
This application Jan. 7, 1994, Ser. No. 178,987
Claims priority, application United Kingdom, Jan. 25, 1990, 9001758
Int. Cl.[6] B65B 43/38
U.S. Cl. 53—381.7 7 Claims



1. An apparatus for opening envelopes, each envelope having a flap portion folded on a fold line to overlie a main portion of said envelope, said apparatus comprising:

a conveyor adapted to convey said envelopes along a conveyor path with said fold lines parallel to the direction of movement of said conveyor,

means on said conveyor path adapted to distort each envelope so that said flap portion thereof is hinged upwardly from said main portion thereof, said distortion means comprising a projection extending adjacent said fold lines of said envelopes, a first guide member restraining upward movement of said envelopes at said fold line, and a second guide member restraining lateral movement of said envelopes away from said first guide member, and

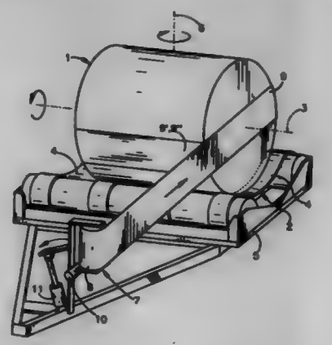
means downstream of said distorting means on said conveyor path and adapted to enter between said flap portion and said main portion of each envelope to bring said flap portion and said main portion substantially into co-planar alignment.

5,487,255

BALE, AN APPARATUS AND A METHOD FOR THE WRAPPING OF A BALE IN TWO CROSSING WRAPPING LAYERS APPLIED IN OVERLAPPING HELICAL TURNS

Staffan Söderberg, Hilleby Gård, Hills S-150 16, Sweden

Division of Ser. No. 129,114, Oct. 25, 1993. This application Feb. 24, 1995, Ser. No. 394,386
Claims priority, application Sweden, Apr. 8, 1991, 9101032
Int. Cl.[6] B65B 13/02
U.S. Cl. 53—399 20 Claims



1. A method for wrapping a bale of organic material, such as animal-feed for ensiling, straw or hay, in bands of plastic packaging film, said bale having a first axis and a second axis, said first axis being generally longitudinally directed and said second axis being generally transverse to said first axis, comprising the steps of:

dispensing plastic packaging film from a packaging film supply roll spaced from the bale while maintaining the plastic film under tension,

wrapping the packaging film around the bale in successive turns with the packaging film supply roll being in an orientation generally transverse to said first axis, the film in each turn around the bale having first turn parts which extend generally parallel with said first axis and second turn parts which extend transversely to said first axis,

dispensing further film material from a film material supply roll spaced from the bale while maintaining the further film material under tension,

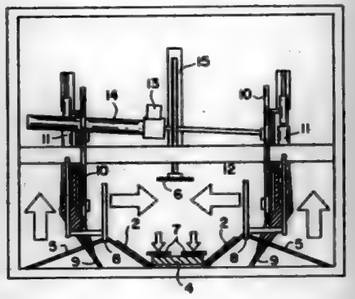
wrapping the bale (1) with further film material (9) with the film material supply roll being in an orientation generally parallel to said first axis, while maintaining the further film material under tension, such that successive film turns (9") of said further film material will cross-over the first turn parts (9') of the packaging film which extend generally parallel to said first axis (3) in an elastically tensioned and wrapper retaining fashion.

5,487,256

PACKAGING METHOD FOR WRAPPING BOOKS OR THE LIKE

Veikko Janhonen, Helsinki, Finland, assignor to Pussikeskus Oy, Helsinki, Finland

Continuation of Ser. No. 253,957, Jun. 3, 1994, Pat. No. 5,410,862. This application Jan. 12, 1995, Ser. No. 372,059
Claims priority, application Finland, Jun. 14, 1993, 932730
Int. Cl.[6] B65B *11/00*
U.S. Cl. 53—461 **16 Claims**



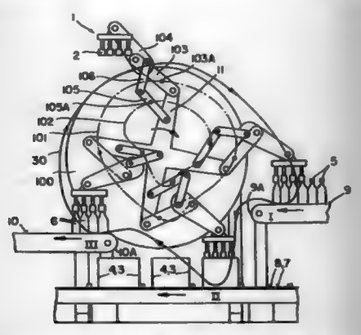
1. A method for wrapping an object comprising:
supporting a cardboard piece having opposite sides on a conveyor having a wrapping station, at least one pair of elongated belts extending transverse to the conveyor, one belt on either side of the conveyor, and a pair of guides, one guide on each side of the conveyor, each guide movably supporting one of the belts;
engaging a press element with an object on the cardboard piece to hold the object and cardboard piece against the conveyor;
folding the cardboard piece at the wrapping station by moving the guides upwardly, then toward one another, then alternately downwardly such that the belts fold sections of the cardboard piece first upwardly then alternately on top of one another in overlapping fashion; and
disengaging the press element from the object during said folding.

5,487,257

PACKING AND UNPACKING MACHINE

Bernhard Domeier, Pentling, and Dieter Rumm, Schwandorf, both of, Germany, assignors to Krones AG, Neutraubling, Germany

Filed Dec. 14, 1993, Ser. No. 166,689
Claims priority, application Germany, Dec. 19, 1992, 42 43 008.9
Int. Cl.[6] B65B *35/30*
U.S. Cl. 53—539 **10 Claims**



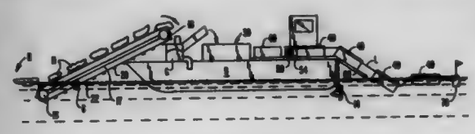
1. Apparatus for removing first articles from boxes and for inserting second articles into boxes continuously, comprising:
A box conveyor for conveying a first stream of boxes containing first articles and a second, parallel stream of boxes which are empty,
a machine arranged proximate to the box conveyor and comprised of plural article handling heads connected to the machine and transported continuously in a closed loop path through working stations with the heads extending laterally over said box conveyor, said heads having gripping elements individually controllable to grip and release articles,
an article infeed conveyor providing second articles to a first working station along the path of the continuously moving heads where gripping elements of a head are controlled to grip the second articles and hold the second articles while the head is continuously moved to a second working station where said gripping elements are controlled to release the second articles into an empty box in the second stream of boxes and other of the gripping elements on the head are controlled to concurrently grip and withdraw first articles from a box in the first stream of boxes while the head is continuously moved to a third working station to carry said first articles above the box conveyor and allow the resulting empty box in the first stream and the box in which the second articles were inserted in the second stream to be conveyed together on the box conveyor, and
an outfeed conveyor at said third working station to which the first articles that are withdrawn from a box at the second working station are carried by the gripping elements of the head and are released onto the outfeed conveyor for being conveyed, away from the machine.

5,487,258

WATER HYACINTH REMOVAL APPARATUS AND METHOD

Thomas J. McNabb, 1115 Silverhill Ct., Lafayette, Calif. 94549

Continuation-in-part of Ser. No. 238,103, May 4, 1994, abandoned. This application Nov. 30, 1994, Ser. No. 347,766
Int. Cl.[6] A61D *45/08*
U.S. Cl. 56—9 **14 Claims**



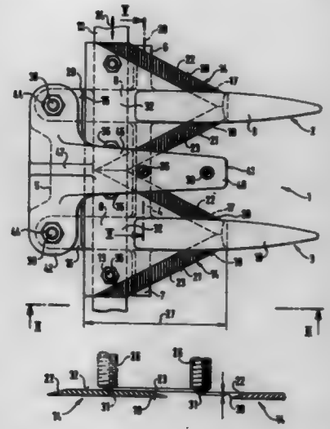
1. Apparatus for the removal of water hyacinths growing from a floating disposition on water comprising:
a hull for water borne support of said apparatus;
a conveyor support on said hull having a first end submerged, a second end elevated to level of said barge, and a discharge adjacent said second end;
means for moving said conveyor to convey water hyacinths from said submerged end to said discharge end;
a grinder supported on said hull and positioned at said discharge end of said conveyor, said grinder for receiving whole water hyacinth and causing severance of said water hyacinth from a unitary plant to a fibrous state wherein said plant constitute a fibrous mass with leaf and stalk matter shredded; and,
a baler supported on said hull for receiving and baling said fibrous mass with said leaf and stalk and compacting said fibrous leaf and stalk mass into bales.

5,487,259

CUTTER ASSEMBLY FOR MOWING APPARATUS

Robert L. Powers, Easton, Ill., and Adolf Ibach, Remscheid, Germany, assignors to Carl Sulberg GmbH & Co., Remscheid, Germany

Filed Nov. 30, 1994, Ser. No. 347,039
Int. Cl.[6] A01D *34/17*
U.S. Cl. 56—298 **16 Claims**



1. A cutter assembly for mowing apparatus comprising:
a plurality of sickle guards arranged side by side;
each sickle guard having at least one guard;
each guard having a guard body and being releasably fixed at least with its guard body to a cutter bar;
a ledger surface on each guard body having lateral guard body cutting edges;
knife sections secured to a reciprocable knife back, each knife section having a bottom face, facing said ledger surface, and lateral facets terminating in knife section cutting edges;
rigid hold-down arms fixedly mounted to said cutter bar spaced from each other in the longitudinal direction of said cutter bar;
each hold-down arm having a front part extending above upper faces of said knife sections;
said front part having at least one hold-down element for holding down said knife sections in the direction towards the ledger surface of said guard body, said hold-down element being movable into contact with said knife section upper faces; and
said knife section cutting edges lying in said knife section bottom faces.

5,487,260

LAWN RAKE

Mark Proffitt, Greeneville, Tenn., assignor to DeJay Corporation, Palm Beach Gardens, Fla.

Filed Sep. 26, 1994, Ser. No. 317,616
Int. Cl.[6] A01D *7/06*
U.S. Cl. 56—400.04 **19 Claims**



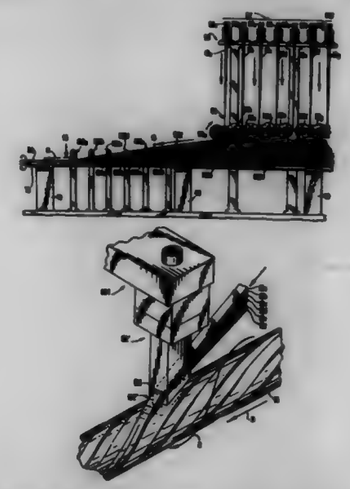
3. A rake head, comprising:
a socket portion having a recess adapted for receiving a rake handle;
a hub portion having a first end attached to said socket portion, a second end, an upper surface, and a lower surface, with a clip member extending from said upper surface, intermediate said hub portion first end and said hub portion second end, and with an opening through said hub portion beneath said clip member, said clip member and the opening cooperating with said upper surface to permit clipping of items onto said rake head to retain the items with said rake head; and
a plurality of tines extending from said second end of said hub portion.

5,487,261

METHOD AND APPARATUS FOR APPLYING FLAT RIBBONS ABOUT A CYLINDRICAL CORE

Andre Varga, Willowdale, Canada, assignor to Ceeco Machinery Manufacturing Ltd., Ontario, Canada

Continuation-in-part of Ser. No. 946,270, Sep. 16, 1992, Pat. No. 5,331,796. This application Jan. 28, 1994, Ser. No. 188,087
Int. Cl.[6] D01H *13/04*
U.S. Cl. 57—9 **44 Claims**



1. Apparatus for helically winding a plurality of flat filaments about a cylindrical core comprising first supply means for supplying a rotating central core having a cylindrical surface for longitudinal movement substantially along a machine axis of the apparatus; second supply means substantially fixed relative to the direction of said machine axis for supplying a plurality of flat filaments to be helically wound about the cylindrical surface of the core; at least one winding station downstream of said first supply means and arranged substantially along said machine axis; and guide means for guiding each of a plurality of filaments along a feed direction that defines an acute angle with said machine axis which substantially corresponds to a desired lay angle of the filaments about the core, each of said filaments being drawn along said feed direction by the rotating core for substantially tangential application of the filaments about the core at said winding station.

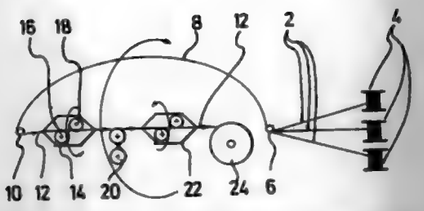
5,487,262

METHOD AND DEVICE FOR OVERTWISTING AND UNDERTWISTING A STEEL CORD

Johan De Waegenaere, Zwevegem; Luc Sebbe, Deerlijk, and Frans Van Giel, Wevelgem, all of, Belgium, assignors to N.V. Bekaert S.A., Zwevegem, Belgium

Filed Apr. 7, 1994, Ser. No. 224,555
Claims priority, application European Pat. Off., Apr. 20, 1993, 93201130
Int. Cl.[6] D01H *7/86;13/26*
U.S. Cl. 57—58.65 **17 Claims**

1. A process of treatment of a steel cord adapted for the reinforcement of rubber products, said steel cord comprising steel



filaments which have been twisted to a final twist pitch, said process comprising the steps of:

(i) plastically deforming the steel filaments by overtwisting the steel cord to a twist pitch which is smaller than the final twist pitch;

(ii) untwisting the steel cord to the final twist pitch;

(iii) further untwisting the steel cord to a twist pitch which is greater than the final twist pitch; and

(iv) twisting the steel cord again to the final twist pitch,

wherein steps (i) and (ii) are done under a first tension and steps (iii) and (iv) are done under a second tension, the second tension being lower than half of the first tension.

5,487,263

DEVICE FOR ADJUSTING CAPSULE THREAD BRAKES IN TWISTING MACHINES, IN PARTICULAR TWO-FOR-ONE TWISTERS

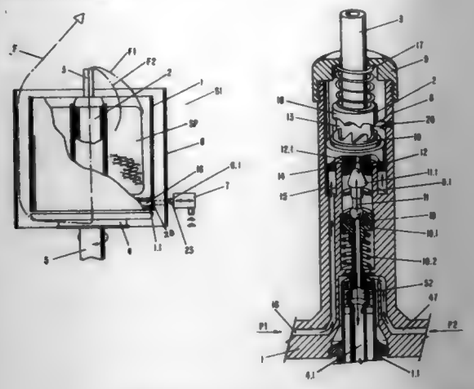
Heinz Scheufeld, Korschenbroich; Ulrich Lossa, Krefeld, and Heinz Stenmans, Grefrath, all of, Germany, assignors to Palitex Project-Company GmbH, Krefeld, Germany

Filed Apr. 13, 1994, Ser. No. 226,959

Claims priority, application Germany, Apr. 13, 1994, 43 11 999.9

Int. Cl.[6] D01H *1/10;7/86*

U.S. Cl. 57—58.86 **16 Claims**



1. A device for adjusting the braking power of capsule thread brakes of spindles of at least one twisting machine, said device comprising:

a plurality of twisting spindles each having a bobbin carrier with a hub and a capsule thread brake with a step-wise adjustable braking power positioned in said hub, said capsule thread brake having a longitudinal center axis defining an axial direction of said capsule thread brake and comprising:

a) two brake rings arranged axially spaced from one another,

b) a brake cartridge supported between said two brake rings, wherein the braking power is adjusted by axially displacing and rotating one of said brake rings, thereby changing a distance between said brake rings and thus a force of said brake rings acting on said brake cartridge, and

c) a pressure cylinder acting on one of said brake rings;

a common compressed air supply line for supplying compressed air, said compressed air supply line having a control device; a connector connected to each said spindle, wherein said compressed air supply line communicates via said connectors with said pressure cylinders, wherein said control device supplies compressed air pulses through said common compressed air supply line and said connectors to said pressure cylinders to affect simultaneously an axial displacement by a predetermined distance of one of said brake rings of all said capsule thread brakes.

5,487,264

HOLLOW DIAMOND CUT ROPE CHAIN

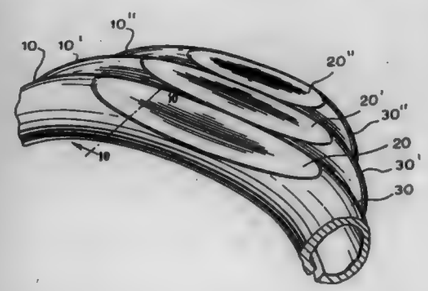
Kalman Strobel, New York, N.Y., assignor to OroAmerica, Inc., Burbank, Calif.

Continuation of Ser. No. 792,291, Nov. 14, 1991, Pat. No. 5,129,220. This application Jun. 24, 1992, Ser. No. 905,073

The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.

Int. Cl.[6] B21L *5/02*

U.S. Cl. 59—80 **11 Claims**



1. A jewelry rope chain made of a number of intertwined links resembling a rope, comprising:

a plurality of segmented hollow links, said links having a annular configuration interrupted by an inner gap extending along an inner circumference of said hollow links,

said hollow links having an outside exterior circumferential surface and an inside interior circumferential surface,

each of said hollow links having an outer surface wall portion generally curved in cross section which is spaced apart from, and has a center opposite, said inner gap, and,

each of said hollow links having further at least one flattened portion on said outside exterior circumferential surface of said curved outer wall portion, said at least one flattened portion on said outside exterior circumferential surface of said curved outer wall portion extending inwardly toward said inner gap with respect to said outer surface wall portion.

5,487,265

GAS TURBINE COORDINATED FUEL-AIR CONTROL METHOD AND APPARATUS THEREFOR

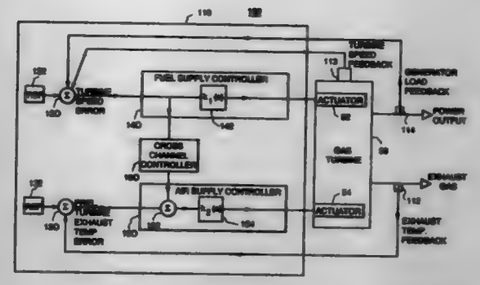
Ravi Rajamani, Schenectady; Karl D. Minto, Ballston Lake, both of N.Y.; Benjamin E. Bulkley, Erie, Pa., and Bruce G. Norman, Charlton, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 2, 1994, Ser. No. 236,972

Int. Cl.[6] F02C *9/50*

U.S. Cl. 60—39.03 **16 Claims**

1. A method for operating a gas turbine so as to reduce undesirable emissions and acoustic pressure oscillations, the method comprising the step of coordinating the modulation of respective turbine fuel supply and air supply signals so as to maintain the fuel-air ratio of the fuel air combustible mixture supplied to the turbine substantially constant over loaded operating conditions of said gas turbine in which both fuel and air supply to said turbine is



modulated, coordinating the modulation of turbine fuel supply and air supply further comprising the steps of:

generating a turbine speed error signal by comparing actual turbine speed with a selected turbine reference speed;

generating a preliminary turbine exhaust temperature error signal by comparing actual turbine exhaust temperature with a selected turbine exhaust reference temperature;

producing a turbine fuel supply control signal in correspondence with said speed error signal;

generating a coordinated turbine exhaust temperature error signal by modifying said preliminary turbine exhaust temperature error signal in correspondence with a temperature error modification signal, said temperature error modification signal being processed from said turbine speed error signal with a time delay transfer function; and

producing a turbine air supply signal from said coordinated turbine exhaust temperature error signal;

said coordinated turbine exhaust temperature error signal providing coordination between said turbine fuel supply signal and said turbine air supply signal so as to maintain the fuel-air mixture in said gas turbine substantially constant.

5,487,266

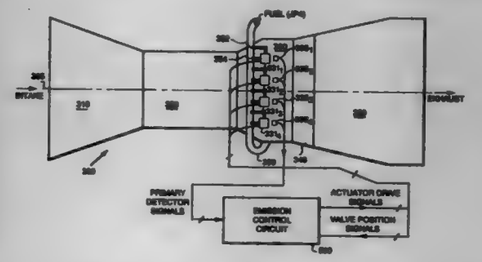
COMBUSTION CONTROL FOR PRODUCING LOW NO_x EMISSIONS THROUGH USE OF FLAME SPECTROSCOPY

Dale M. Brown, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 47,936, Apr. 19, 1993, Pat. No. 5,303,684, which is a division of Ser. No. 878,933, May 5, 1992, Pat. No. 5,257,496. This application Apr. 12, 1994, Ser. No. 226,528

Int. Cl.[6] F02C *9/28*

U.S. Cl. 60—39.06 **22 Claims**



1. Apparatus for detecting combustion flames and reducing nitrogen oxide (NO_x) exhaust emissions resulting from combustion of a mixture of hydrocarbon fuel and air within a gas turbine without undue risk of flame-out comprising:

means for detecting and measuring intensity of a band of ultraviolet spectral lines emanating from a combustion flame in said turbine;

means for converting the measured intensity value of said predetermined band of ultraviolet spectral lines into a corresponding value of a turbine operating parameter, said parameter being either temperature of said flame or NO_x concentration in said exhaust emissions; and

means for dynamically adjusting the fuel/air mixture for said turbine such that the value of said turbine operating parameter remains below a predetermined limit.

5,487,267

SUPPRESSION OF INFRARED RADIATION EMISSIONS FROM JET ENGINES

Henry E. Alquist, and Robert M. Schirmer, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 7, 1972, Ser. No. 216,024

Int. Cl.[6] C06D *5/06*

U.S. Cl. 60—206 **8 Claims**

1. In the operation of a turbojet engine, a method of suppressing infrared radiation comprising introducing into said engine a fuel mixture of a low molecular weight monohydric alcohol and conventional hydrocarbon fuel in proportion so the luminometer number of the blend is in the range of about 200 to about 600.

5,487,268

CATALYST FOR PURIFYING EXHAUST GAS AND METHOD OF PURIFYING EXHAUST GAS

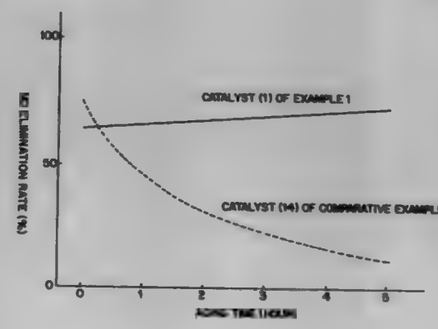
Takashi Itoh, and Yukio Kozaki, both of Ichikawa, Japan, assignors to N.E. Chemcat Corporation, Tokyo, Japan

Division of Ser. No. 953,879, Sep. 30, 1992, Pat. No. 5,326,735. This application Mar. 28, 1994, Ser. No. 218,238

Claims priority, application Japan, Jul. 10, 1992, 4-207582

Int. Cl.[6] F01N *3/20*

U.S. Cl. 60—274 **2 Claims**



1. A method of purifying exhaust gas from a lean burn gasoline engine or diesel engine having an air/fuel ratio of 17 or over, comprising the step of bringing the catalyst comprising an iridium supported on one carrier selected from the group consisting of metal carbides and metal nitrides, into contact with said exhaust gas at a temperature of 250° C. to 850° C.

5,487,269

METHOD FOR MONITORING THE EFFICIENCY OF A CATALYTIC CONVERTER FOR TREATING EXHAUST GASES FROM AN INTERNAL COMBUSTION ENGINE

Alain A. Atanasyan, Tournefeuille, and Francis Tarroux, Portet S/Garonne, both of, France, assignors to Siemens Automotive S.A., Toulouse Cedex, France

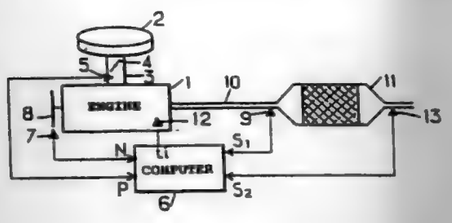
PCT No. PCT/EP92/02303, § 371 Date Jun. 22, 1994, § 102(e) Date Jun. 22, 1994, PCT Pub. No. WO93/09335, PCT Pub. Date May 13, 1993

PCT Filed Oct. 6, 1992, Ser. No. 232,228

Claims priority, application France, Jan. 28, 1991, 91 13237

Int. Cl.[6] F01N 3/20

U.S. Cl. 60—274 6 Claims



1. A method for monitoring the efficiency of a catalytic converter for treating exhaust gases from an internal combustion engine, wherein the engine is equipped with at least one fuel injector and a device for regulating an engine inlet air/fuel mixture and an opening time of the fuel injector, the method which comprises:

a) disposing an oxygen probe in a gas flow leaving a catalytic converter, wherein the oxygen probe provides an output signal which switches between two levels;

b) measuring an injector opening time suitable for ensuring stoichiometry of an air/fuel mixture during regulation and at substantially stabilised speed, and choosing a base injection time from the measured injector opening time;

c) subsequently, during a predetermined time interval, imposing on the opening time a time variation of symmetric deviation having a predetermined amplitude and shape about the base injection time;

d) progressively and monotonically modifying the base opening time during successive time intervals, so as to pass through a centering of the deviation of the opening time on that of an oxygen storage capacity of the catalytic converter; and

e) evaluating an efficiency of the catalytic converter by determining the resulting oscillation of the output signal.

5,487,270

AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Yukihiro Yamashita, Kariya, Japan; Kenji Ikuta, Rolling Hills Estates, Calif., and Shigenori Isomura, Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 2, 1993, Ser. No. 85,378

Claims priority, application Japan, Jul. 3, 1992, 4-177227; Jul. 3, 1992, 4-177228; Jan. 30, 1992, 4-292503; Jan. 14, 1993, 5-005290

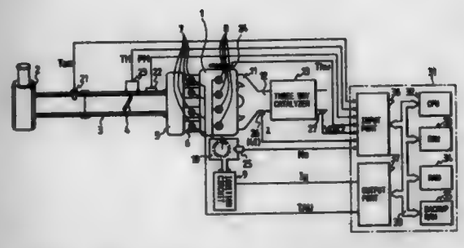
Int. Cl.[6] F01N 3/20

U.S. Cl. 60—276 24 Claims

1. An air-fuel ratio control system for an internal combustion engine, comprising:

upstream air-fuel ratio detecting means, provided upstream of a catalytic converter in an exhaust passage of the engine, for detecting a first air-fuel ratio of an air-fuel mixture based on exhaust gas upstream of the catalytic converter;

downstream air-fuel ratio detecting means, provided downstream of the catalytic converter, for detecting a second air-fuel ratio of the air-fuel mixture based on the exhaust gas having passed through the catalytic converter;



inversion direction determining means for determining a direction of inversion of said second air-fuel ratio when said second air-fuel ratio has been inverted between rich and lean with respect to a given air-fuel ratio;

target air-fuel ratio setting means for correcting a target air-fuel ratio in a direction opposite to said direction of the inversion when determined by said inversion direction determining means, said target air-fuel ratio setting means correcting said target air-fuel ratio by a given skip amount in a skipped manner; and

fuel injection amount deriving means for deriving a fuel injection amount of a fuel injection valve at a given updating speed based on a differential between said first air-fuel ratio and said target air-fuel ratio.

5,487,271

BRAKE-BOOSTER WITH HYDRAULIC REACTION AND ADJUSTABLE KICK

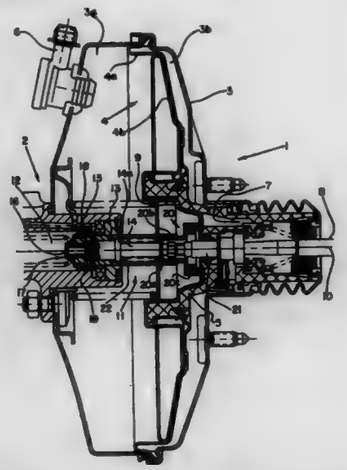
Jean Pierre Gautier; Ulysse Verbo, both of Aulnay-sous-Bois, and Miguel Perez Revilla, Argenteuil, all of, France, assignors to AlliedSignal Europe Services Techniques, Drancy, France

Filed Sep. 13, 1993, Ser. No. 117,148

Claims priority, application France, Sep. 30, 1992, 92 11624

Int. Cl.[6] B60T 13/20; F15B 9/10

U.S. Cl. 60—554 4 Claims



1. A brake-booster device for a motor vehicle, comprising a master cylinder having with a main hydraulic piston designed to receive an actuation force composed of an input force and of a boost force both acting in an axial direction, and a pneumatic booster controllable by application of said input force on a control rod controlling the opening of a valve, so as to exert said actuation force on the main hydraulic piston, the booster comprising a rigid casing separated in leaktight manner into two chambers by means at least of a movable partition capable of being acted upon by a pressure differential between the two chambers resulting from the opening of the valve and of driving a pneumatic piston, movable with respect to the casing, bearing said valve and contributing at least to transmission of said boost force, characterized in that the main hydraulic piston of the master cylinder comprises a hollow, movable cylinder communicating with the master cylinder, receiving at least part of the boost force, and inside which slides, in leaktight manner and in the axial direction, a secondary hydraulic piston capable of receiving at least said input force, and in that resilient means, exerting an adjustable resilient force between said secondary hydraulic piston and said movable cylinder, is disposed inside the movable cylinder and pushes said secondary hydraulic piston in the direction of the master cylinder, the adjustment of said resilient force enabling adjustment of a non-zero minimal value of the actuation force.

5,487,272

CRYOGENIC REFRIGERATOR

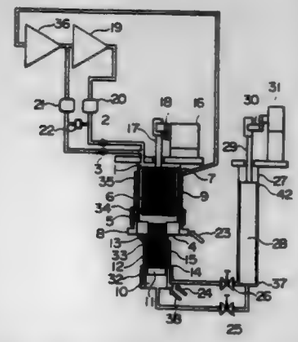
Masashi Nagao, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 39,816, Mar. 30, 1993. This application Oct. 21, 1994, Ser. No. 326,960

Claims priority, application Japan, Mar. 31, 1992, 4-76864; Mar. 17, 1993, 5-56817

Int. Cl.[6] F25B 9/00

U.S. Cl. 62—6 12 Claims



1. A cryogenic refrigerator comprising: a first compressor; a first expander having at least one accumulator using an accumulating material comprising a rare earth alloy or compound which has a large specific heat at 10 K. or below or an accumulating material comprising helium; a second expander which effects further expansion of a working fluid partially and directly introduced thereto from an expansion space of the first expander; at least one heat exchanger which performs heat exchange between the working fluid expanded at said second expander and said first expander; and a second compressor which compresses the working fluid.

5,487,273

TURBOCHARGER HAVING PNEUMATIC ACTUATOR WITH PILOT VALVE

David G. Elpern, Los Angeles, and James E. T. Blake, Rancho Palos Verdes, both of Calif., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Sep. 13, 1993, Ser. No. 120,610

Int. Cl.[6] F02D 23/00; F16K 31/126

U.S. Cl. 60—602 20 Claims

1. Exhaust gas driven turbocharger comprising a compressor housing, a turbine housing, and a center housing supporting the turbine housing on one end thereof and the compressor housing on the other end thereof, a shaft supported for rotation within said center housing, one end of the shaft extending into said compressor housing and supporting a compressor wheel for rotation relative to the compressor housing, the other end of said shaft extending into said turbine housing and supporting a turbine wheel for rotation relative to said turbine housing, said turbine housing including means for directing engine exhaust gases through the turbine wheel to effect rotation of the shaft, said compressor housing including means for directing air through a compressor inlet and then to said compressor wheel for compression thereby to generate boost air and for directing boost air out of said compressor housing through an outlet, said turbine housing including a mechanically actuated device operable to limit the pressure of the boost air, and a pressure operated actuator responsive to the pressure level of the boost air for operating said mechanically actuated device, said actuator including a housing having an axis, a circumferentially extending wall circumscribing the axis, and an actuator inlet communicated with said boost air, an actuator piston responsive to the pressure level communicated into said housing through the actuator inlet, linkage means connecting the actuator piston with said mechanically actuated device, and a pilot piston slidably mounted within said housing for closing said actuator inlet until the pressure level of the boost air attains a predetermined level wherein each of said pistons includes a fluid pressure responsive surface, and a diaphragm having a peripheral portion secured to said circumferentially extending wall of the actuator housing and extending across the fluid pressure responsive surfaces of both pistons, and means securing the diaphragm to said pilot position.

5,487,274

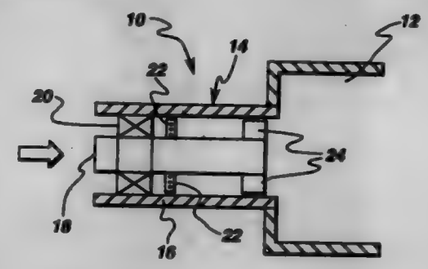
SCREECH SUPPRESSOR FOR ADVANCED LOW EMISSIONS GAS TURBINE COMBUSTOR

Anil Gulati, Albany; Richard E. Warren, Jr., Schenectady, and Eayre B. Veorhees, Sloansville, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 555,583, May 3, 1993, abandoned. This application Apr. 8, 1994, Ser. No. 225,489

Int. Cl.[6] F02C 7/24

U.S. Cl. 60—725 14 Claims



1. A combustor comprising:

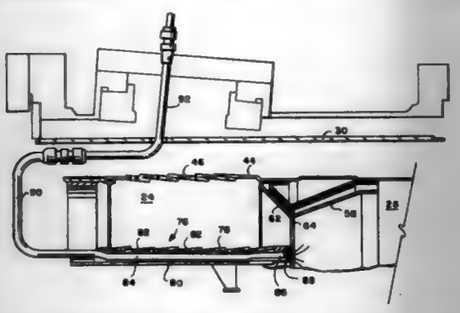
a main combustion chamber;

at least one premixer section attached to said main combustion chamber, said premixer section including:

a cylindrical premixer tube joined in flow communication with said chamber;

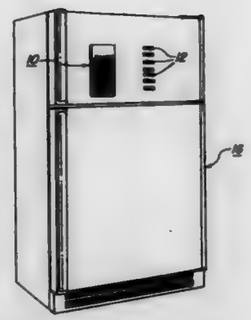
a cylindrical centerbody disposed concentrically in said tube to define an annular flow channel therebetween having an inlet at one end and an exit at an opposite end thereof adjoining said chamber;
a swirler disposed in said channel inlet for receiving and swirling compressed air; and
fuel spokes disposed in said channel and downstream of said swirler for injecting fuel into said swirled air to form a fuel and air premix flowable through said channel to said exit and into said chamber; and
means for suppressing screech disposed in said premixer section, said means for suppressing screech comprising a plurality of separate, solid body screech suppression members, said screech suppression members being uniformly circumferentially spaced apart from each other at said channel exit, and extending radially between said centerbody and said tube for substantially an entire radial distance therebetween except for a gap formed at one radial end of each of said members for accommodating thermal expansion.

5,487,275
TERTIARY FUEL INJECTION SYSTEM FOR USE IN A DRY LOW NOX COMBUSTION SYSTEM
Richard J. Borkowicz, Westminster, Md.; L. Berkley Davis, Jr., Schenectady, and Masayoshi Kuwata, Ballston Lake, both of N.Y., assignors to General Electric Co., Schenectady, N.Y.
Filed Dec. 11, 1992, Ser. No. 987,957
Int. Cl.[6] F02C *3/14*
U.S. Cl. 60—747 **10 Claims**



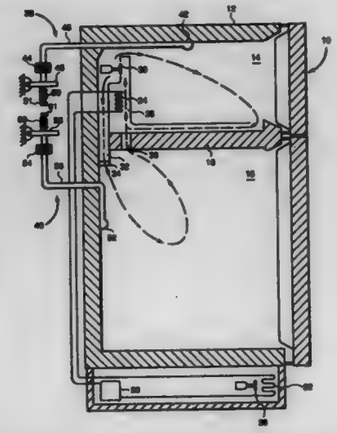
1. An improved gas turbine combustor of the type including primary and secondary combustion chambers with a venturi including a throat portion located therebetween; a plurality of primary fuel injection nozzles secured to a combustor cap in an annular array upstream of the primary combustion chamber; and a centerbody including a secondary fuel nozzle, said centerbody extending from said combustor cap to said secondary combustion chamber; the improvement comprising a plurality of tertiary fuel injection nozzles arranged in a circular array about a longitudinal axis of the combustor, at a location downstream of said venturi throat portion, for injecting fuel into the secondary combustion chamber.

5,487,276
FOOD INVENTORY SYSTEM
Dianna Namisniak, and Lee Namisniak, both of 22592 Le Dana, Mission Viejo, Calif. 92691
Continuation-in-part of Ser. No. 98,521, Jul. 28, 1993, Pat. No. 5,335,509. This application May 5, 1994, Ser. No. 239,981
The portion of the term of this patent subsequent to Aug. 9, 2011, has been disclaimed.
Int. Cl.[6] G09F *9/00*
U.S. Cl. 62—125 **24 Claims**



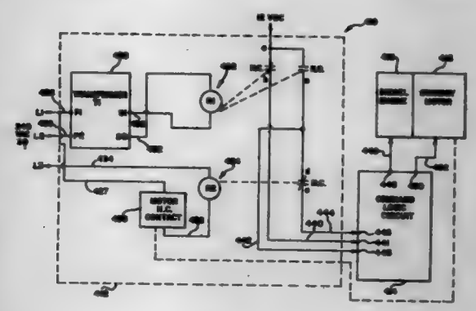
1. A device to ensure the consumption of an item of perishable food before the item has been held in a storage location beyond its useful storage lifetime, the device comprising:
a base unit, located near the storage location;
at least one numeric display on the base unit to display elapsed time;
cataloging means on the base unit for recording the name and storage lifetime of the item of food; and
means for activating the numerical display,
whereby the stored food item listed on the base unit may be safely consumed until the numeric display shows that the item has been stored beyond its useful lifetime.

5,487,277
INDEPENDENT COMPARTMENT TEMPERATURE CONTROL IN A HOUSEHOLD REFRIGERATOR USING INTERLINKED THERMOSTATS
Warren F. Bessler, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Nov. 18, 1994, Ser. No. 342,291
Int. Cl.[6] F25D *17/08*
U.S. Cl. 62—187 **22 Claims**



1. A control for a refrigeration apparatus having first and second cooled compartments, a compressor and an evaporator fan, said control comprising:
a first thermostat having first and second states, said first thermostat changing from its first state to its second state when the temperature in said first compartment exceeds a predetermined level;
a second thermostat having first and second states, said second thermostat changing from its first state to its second state when the temperature in said second compartment exceeds a predetermined level; and
a locking mechanism situated between said first and second thermostats so that said first thermostat is prevented from changing from its second state to its first state whenever said second thermostat is in its second state.

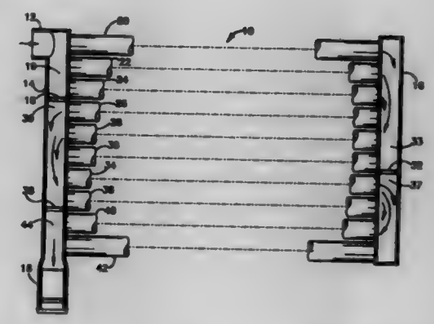
5,487,278
BACK-UP SWITCHING SYSTEM FOR REFRIGERATOR TRUCKS
Jerry Hilleveld; William A. Martherus, both of Garden Grove, Calif., and Kenneth J. Hartman, Crystal Lake, Ill., assignors to Kenneth J. Hartman, Crystal Lake, Ill.
Filed May 6, 1994, Ser. No. 239,299
Int. Cl.[6] F25B *27/00*
U.S. Cl. 62—236 **6 Claims**



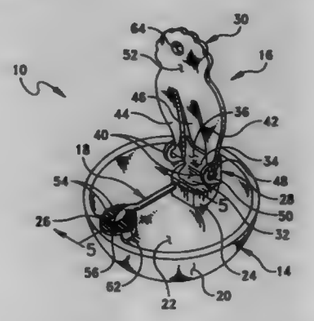
1. A back-up system for a refrigeration unit in a trailer and the like, said back-up system comprising in combination:
a compressor located in the trailer for operating the refrigeration unit;
a diesel engine operatively connected to said compressor;
a stand-by electric motor also operatively connected to said compressor for normally running said compressor when said trailer is parked;
first relay means operatively connected to a source of A/C voltage for generating a first signal when there is a power failure condition and for generating a second signal when there is no power failure;
second relay means also operatively connected to the source of A/C voltage and to normally-closed contact means of said standby motor and being responsive to said second signal for generating a third signal when there is a malfunction in said standby motor and there is no power failure;
command logic circuit means being responsive to either the first signal from said first relay means or the third signal from said second relay means for generating a diesel start signal;
said command logic circuit means being responsive to said second signal from said first relay means for generating a standby start signal;
said standby motor being responsive to said standby start signal for turning on the same in order to operate said compressor; and
said diesel engine being normally turned off when said trailer is parked and being responsive to said diesel start signal for turning on the same in order to operate said compressor.

5,487,279
HEAT EXCHANGER WITH INTEGRAL FILTER/DRIER CARTRIDGE
William N. Eybergen, Dutton, and Wayne K. Hutchison, Ingersoll, both of, Canada, assignors to Eaton Corporation, Cleveland, Ohio
Filed Sep. 29, 1994, Ser. No. 315,044
Int. Cl.[6] F25B *43/00*
U.S. Cl. 62—474 **12 Claims**

1. An exothermic heat exchanger for a refrigeration system comprising:
(a) a plurality of conduits disposed in spaced generally parallel arrangement;
(b) a first and second manifold, each disposed for interconnecting common ends of said conduits for permitting flow therebetween;
(c) a tubular outlet formed in one of said first and second manifolds;
(d) one of said first and second manifolds defining integrally therewith a cartridge receiving cavity therein; and,
(e) a cartridge assembly received in said outlet, said cartridge assembly having:
(i) a header with an outlet port adapted for external conduit connection and a basket having the rim thereof attached to said header with the remote end thereof perforated;
(ii) desiccant material disposed within said basket;
(iii) sealing means operative to seal said header in said outlet.



5,487,280
CONVERTIBLE EARRING
William D'Amore, Jr., West Warwick, R.I., assignor to Cotfllion, Inc., West Warwick, R.I.
Filed Oct. 4, 1994, Ser. No. 318,907
Int. Cl.[6] A44C *7/00*
U.S. Cl. 63—12 **1 Claims**



1. An earring capable of being converted from a clip-on earring to a pierced earring and vice versa, said earring comprising:
an ornament having an outer periphery defining an inwardly facing surface which is adjacent an earlobe of a wearer when the earring is worn, said inwardly facing surface being concave so as to define a cavity;
a clamping assembly for clamping the earring on the earlobe of the wearer, said clamping assembly being pivotally attached to the inwardly facing concave surface of the ornament at a first point adjacent the periphery thereof, and comprising a clip portion pivotally movable between an open position and an earlobe clamping position in which the earlobe of the wearer is positioned between the clip portion and the inwardly facing surface of the ornament, and spring means for biasing the clip portion toward the ornament when the clip portion is in its earlobe clamping position for providing a clamping force so that the earring remains attached to the earlobe when worn;
an earlobe engaging member mounted on said inwardly facing concave surface at a second point adjacent the periphery of

said ornament generally diametrically opposed to said first point, with the major portion of said engaging member located within said cavity; and

a post pivotally mounted on said engaging member, said post being pivotally movable between a stowed position in which the post lies flat adjacent to and generally parallel to said ornament and extends toward said first point but terminates short thereof so that said post is located within said ornament periphery, and a use position in which the post extends generally perpendicularly from said ornament for insertion through a pierced opening in the wearer's earlobe, the clip portion being movable toward its earlobe clamping position for engaging the free end of the post.

5,487,281

METHOD AND APPARATUS FOR JOINING TWO EDGES OF A KNITTED TUBULAR ARTICLE

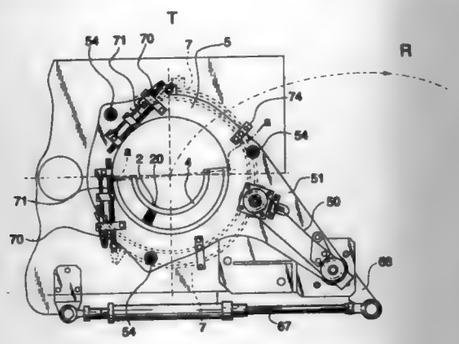
Alberto Frullini, and Paolo Frullini, both of Florence, Italy, assignors to Fabritex S.R.L., and Conti Firenza S.R.L., both of Firenza, Italy

Filed Jul. 8, 1994, Ser. No. 273,023

Claims priority, application Italy, Jul. 12, 1993, FI93A0128

Int. Cl.[5] D04B *9/56;9/18;35/00*

U.S. Cl. 66—13 **33 Claims**



1. A method for closing an end of a tubular knitted article, the method comprising the steps of:

knitting the tubular article in a circular knitting machine with a plurality of needles, said plurality of needles being divided into a first set and a second set, said first set of needles being positioned on one side of the tubular article and forming a first partial course of the tubular knitted article, said second set of tubular articles being positioned on another side of the tubular article and forming a second partial course of the tubular knitted article;

stopping said knitting when the tubular article is a desired length;

transferring the first partial course from said first set of needles to a transfer device in a first position adjacent said first set of needles;

rotating said transfer device about a diametrical axis of the tubular article to a second position to place the first partial course adjacent the second partial course;

transferring stitches from the first partial course on said transfer device to said second set of needles when said transfer device is in said second position;

rotating said transfer device back to said first position from said second position after said transferring of stitches from the first partial course to said second set of needles;

rotating said transfer device about a longitudinal axis of the tubular article from said first position to a third position adjacent said second set of needles after said rotating back to said first position;

transferring stitches of both the first and second partial courses from said second set of needles onto said transfer device;

moving said transferring device from said knitting machine to a linking station;

linking together said stitches of both the first and second partial courses on said transfer device at said linking station with a linking thread to close the tubular article.

5,487,282

PROCESS FOR KNITTING TUBULAR FABRIC ON A FLAT BED KNITTING MACHINE

Gottfried Külmert, Aalen, Germany, assignor to Universal Maschinenfabrik, Westhausen, Germany

PCT No. PCT/EP92/00212, § 371 Date Nov. 1, 1993, § 102(e) Date Nov. 1, 1993, PCT Pub. No. WO92/15739, PCT Pub. Date Jul. 17, 1992

PCT Filed Jan. 31, 1992, Ser. No. 108,747

Claims priority, application Germany, Mar. 7, 1991, 41 07 316.9

Int. Cl.[5] D04B *1/22*

U.S. Cl. 66—69 **10 Claims**

1. A process for knitting a tubular fabric on a flat bed knitting machine having two main needle beds, two auxiliary needle beds each corresponding to a respective main needle bed, and a racking device, comprising the steps of:

transferring an edge stitch from a first needle on a first main needle bed to a first needle on a first auxiliary needle bed;

racking the first auxiliary needle bed with respect to its corresponding main needle bed;

transferring the stitch from the first needle on the first auxiliary needle bed to a second needle on the first main needle bed; and

knitting the second needle on the first main needle bed.

5,487,283

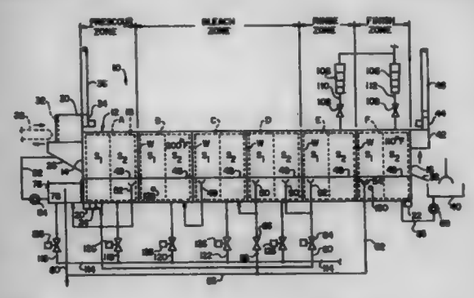
PRESCOUR BLEACHING TUNNEL

Sherman H. Sheppard, Pinnacle, N.C., assignor to Surry Chemicals, Inc., Mount Airy, N.C.

Continuation-in-part of Ser. No. 282,209, Jul. 28, 1994, Pat. No. 5,426,958, which is a continuation-in-part of Ser. No. 67,516, May 24, 1993, Pat. No. 5,333,475. This application Jun. 1, 1995, Ser. No. 456,528

Int. Cl.[6] D06F *23/02*

U.S. Cl. 68—27 **20 Claims**



16. Commercial bleaching apparatus comprising:

a horizontally disposed drum structure having an open inlet end into which textile goods to be bleached may be inserted, and an open outlet end through which bleached textile goods may be discharged,

said drum structure having stationary hollow cylindrical outer wall means, and perforated hollow cylindrical inner wall means concentrically disposed within said outer wall means and being operatively drivable relative thereto in a manner alternatively oscillating said inner wall means through a rotational arc of approximately 240° and then rotating said inner wall means through a full 360° arc, the interior of said outer wall means being axially divided into a prescour zone positioned at said inlet end and bleach rinse zones positioned downstream of said prescour zone, and the interior of said inner wall means being divided into axial sections received in said prescour, bleach and rinse zones,

said inner wall means, in response to successive rotations thereof through full 360° arcs, being operative to axially shift textile goods from section to section thereof, toward said open outlet end, and then outwardly through said open outlet end;

drive means for operatively driving said inner wall means relative to said outer wall means at a rotational speed of approximately 5 RPM;

makeup means for continuously flowing water through said prescour and rinse zone and then to waste in a manner maintaining essentially constant, equal heights of water in lower side portions of said prescour and rinse zones and in the sections of said inner wall means disposed therein;

recirculating means for maintaining an essentially constant height of water in said bleach zone essentially equal to the water heights in said prescour and rinse zone,

said makeup means and said recirculating means being operative to maintain volumes of water in said prescour, bleach and rinse zones equal to from about 25% to about 30% of the total volumes of said prescour, bleach and rinse zones,

said recirculating means including means for periodically transferring water from said rinse zone back into said bleach zone;

heating means for heating water disposed in said prescour, bleach and rinse zones, said heating means being operative to maintain water temperatures within said drum structure that progressively decrease from said bleach zone to said rinse zone; and

means for selectively adding a bleaching agent to said bleach zone.

5,487,284

WASHING MACHINE HAVING PUNCH-WASHING FUNCTION

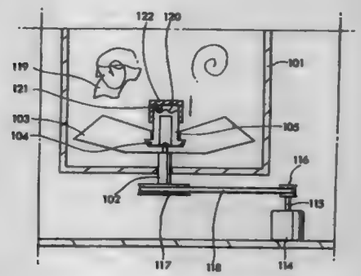
Jung H. Kim; Hae Y. Chung; Hyung S. Kim; Byeong H. Lee, and Young H. Roh, all of Seoul, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Apr. 29, 1994, Ser. No. 235,513

Claims priority, application Rep. of Korea, Apr. 29, 1993, 1993-6986; Jul. 26, 1993, 1993-13986; Jul. 26, 1993, 1993-13987; Jul. 28, 1993, 1993-14446; Jan. 26, 1994, 1994-1387; Feb. 18, 1994, 1994-2955

Int. Cl.[6] D06F *37/30*

U.S. Cl. 68—3 SS **5 Claims**



1. A washing machine having a punch-washing function comprising:

a rotating member formed in one piece at a central surface of a pulsator; and

an elevating member oscillating vertically in conjunction with said rotating member of said pulsator, said elevating member having an inner portion partially surrounding the outer surface of the rotating member, a hollow interior portion adapted to receive said rotating member, and a sliding protrusion adapted to be inserted in grooves of the rotating member, the sliding protrusion projected inwardly from an inner peripheral surface of said elevating member.

5,487,285

LOCK WITH ROD-SHAPED ELEMENTS

René Leichel, Bovenkarspel, and Johannes E. Leichel, Parmerend, both of, Netherlands, assignors to Rene Leichel, Bovenkarspel, and Pieter Kwakernaat, Enkhuizen, both of, Netherlands

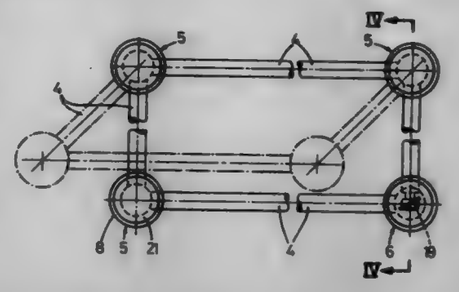
PCT No. PCT/NL93/00105, § 371 Date Nov. 22, 1994, § 102(e) Date Nov. 22, 1994, PCT Pub. No. WO93/24724, PCT Pub. Date Dec. 9, 1993

PCT Filed May 25, 1993, Ser. No. 338,637

Claims priority, application Netherlands, May 26, 1992, 9200925; Jan. 22, 1993, 9300129

Int. Cl.[6] E05B *71/00*

U.S. Cl. 70—18 **6 Claims**



1. Lock (1) for securing objects, in particular cycles, against theft, comprising a plurality of rod-shaped elements (4) connected with their ends by means of pivot means (5) to form a chain which is closable into a loop by means of a security lock (6), the pivot means (5) having movable parts (9, 10, 11; 25, 27) each housed within a protective casing (8; 24, 26), the ends of each rod-shaped element (4) being constructed as a bearing for permitting a rotation of each rod-shaped element (4) about its longitudinal axis relative to the casings (8), characterized in that the rod-shaped elements (4) project out of the casings (8; 24, 26) along the main portion of their length and are housed with their ends within said casings, the casings (8; 24, 26) allowing a relative pivoting movement of all adjacent rods (4) of at least substantially 180°, when the lock is (1) in closed condition.

5,487,286

LOCK ASSEMBLY FOR ANTI-THEFT DEVICE FOR VEHICLE

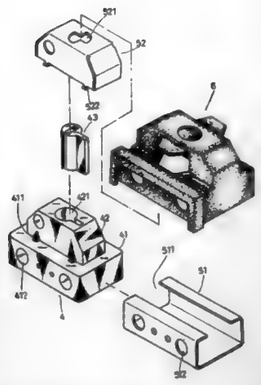
Ping-Hua Wu, No. 55, Cai Shen 2Rd, Kaohsiung, Taiwan, Prov. of China

Filed Feb. 2, 1994, Ser. No. 190,418

Int. Cl.[6] B60R *25/06*

U.S. Cl. 70—52 **1 Claim**

1. A lock assembly for an anti-theft device for a vehicle comprising a lock body including a base for engaging with a pair of shanks, said base having four planar side surfaces and a flat planar upper surface thereby forming a rectangular-shaped solid, at least two depressions formed on top of said base, a box secured on top of said lock body and including an orifice formed therein for receiving a core, said box comprising a substantially rectangular-shaped solid, smaller than said base, and having four side surfaces perpendicular to the upper surface of the base and a flat upper surface that is parallel to the upper surface of the base, the box being secured to the upper surface of the base leaving portions of the upper surface of the base exposed on either side of the box, said orifice having a substantially cylindrical shape, its axis being perpendicular to the upper surface of the box, said base having a



depression on the exposed portion of the upper surface of the base on either side of the box, a casing engaged on said box and including at least two ears engaged in said depressions of said base, said casing having four sides and an upper surface perpendicular to the sides thereby forming a generally rectangular-shaped solid that is open on the bottom, defining an inner hollow portion, configured to closely enclose the exposed surfaces of said box in a nesting relation when placed over the box, said ears being on opposite sides of the casing and extending perpendicularly outward from the sides and parallel to the upper surface of the base, a housing including two flanges having a slot formed therebetween for engaging with said casing, said flanges engaging with said ears so as to retain said ears within said depressions, said housing comprising a substantially rectangular prism open on both ends and having a slot on the upper surface connecting the open ends to allow the housing, to be slid over the assembled base, the slot being substantially the same width as the casing but not as wide as the base thereby defining flanges parallel and on either side of the slot, thereby allowing the box, and casing to protrude through the slot with said flanges covering the exposed portions of the upper surface of the base on either side of the box and retaining the ears in the depressions, thereby encasing and retaining the base, box, and casing in a nesting relationship, and a covering engaged on said casing and said housing for retaining said lock body in said housing.

5,487,287

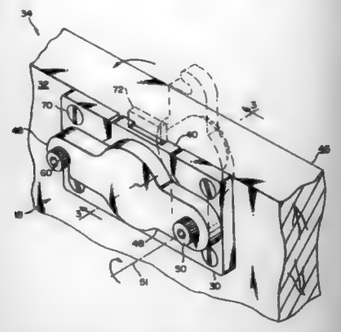
QUICK-RELEASE LOCK RETAINING BRACKET METHOD AND APPARATUS

Mark S. Viggiano, 5225 Fidge Pl. NE., Tacoma, Wash. 98422

Filed Sep. 2, 1993, Ser. No. 116,005

Int. Cl.[6] E05B *9/08;65/46*

U.S. Cl. 70—86 **5 Claims**



1. In a restricted access chamber having an access panel and a lock mountable on the access panel, the lock having a front key face, a rear flange portion having a rear face and a cylinder extending from the rear flange portion to the front key face, the cylinder being of smaller cross section than the rear flange portion such that the rear flange portion projects outward beyond the periphery of the cylinder, the access panel having an interior surface, an exterior surface, and a recess between the interior and exterior surfaces for closely receiving the lock cylinder, the lock cylinder being insertable into the recess by linear translation from the interior surface toward the exterior surface but insertion of the lock cylinder into the recess being limited by the rear flange portion of the lock, the improvement comprising a retaining bracket member mounted on the access panel adjacent to the interior surface thereof, said bracket member having a receiving channel aligned with the access panel recess and sized to receive the lock rear flange portion, a latch member movable manually relative to said bracket member between an open position out of registration with the access panel recess to allow insertion of the lock cylinder into the recess and a closed position registered with the access panel recess to form an abutment behind the rear face of the rear flange portion of the lock to block retraction thereof away from the interior surface of the access panel, and retaining means for normally maintaining the latch member in its closed position.

5,487,288

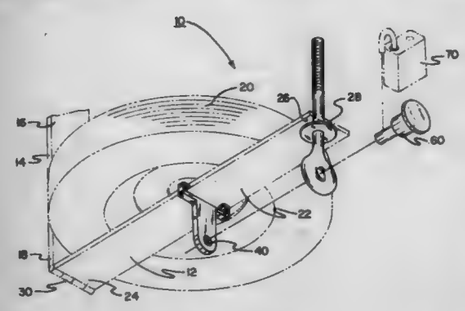
ANTI-THEFT DEVICE FOR A SPARE TIRE ON A PICK-UP TRUCK

Horst A. Frantz, 905 Fairoaks, Garland, Tex. 75040

Filed Jan. 19, 1995, Ser. No. 374,896

Int. Cl.[6] B62D *43/04;* **E05B** *65/12*

U.S. Cl. 70—259 **5 Claims**



1. An anti-theft device for a spare tire on a pick-up truck comprising, in combination:

a rigid spare tire locking tongue formed of a planar upper rail having an upper end, a lower end, and a length greater than a thickness of a spare tire of a pickup truck and with the upper end securable to a frame of a pick-up truck, a rigid planar lower rail having an inboard end and an outboard end and a length greater than a diameter of a spare tire of a pickup truck and with the outboard end having a bore disposed thereon and the inboard end coupled to the lower end of the upper rail with a hinge, the hinge allowing the lower rail to be placed in facing contact with a side of a spare tire of a pick-up truck positioned thereabove;

a rigid locking plate having an upper extent with a pair of opposed C-shaped locking arms slidably secured to the lower rail and a lower extent with an eyelet formed thereon;

a rigid locking screw disposed within the bore of the lower rail of the locking tongue, the locking screw having a threaded upper end threadably securable to a frame of a pick-up truck, a lower end with a ring which is fixedly attached thereto and alignable with the eyelet of the locking plate, and a flange formed thereon intermediate the upper and lower ends and positionable in contact with the lower rail of the locking tongue;

a rigid locking pin having a cylindrical tip end with a bore disposed therethrough, a circular planar head end having a diameter greater than the tip end, and an intermediate cylindrical portion therebetween having a diameter greater than the tip end and less than the head end and with the intermediate portion slidably positioned within the ring of the locking screw and the tip end slidably positioned within the eyelet of the locking plate to thereby define a coupled configuration and with a lock insertable within the bore of the locking pin when placed in the coupled configuration for locking the spare tire to a pick-up truck.

5,487,289

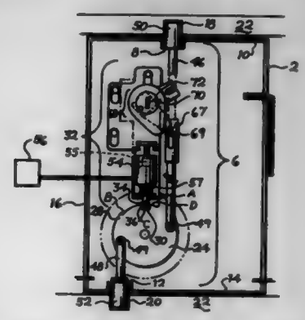
LOCK ASSEMBLY

John G. Otto, III, Grandville; Ronald W. Vanderwall, Hudsonville; Eugene R. Hamilton, Walker, and Kevin O. Osborn, Mattawan, all of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Filed Jun. 23, 1993, Ser. No. 82,588

Int. Cl.[6] E05B *47/06*

U.S. Cl. 70—279 **27 Claims**



1. A lock assembly for locking a door to a frame element, comprising:

a rotatable locking element;

a locking rod connected to said rotatable locking element, wherein rotation of said locking element in one sense results in said locking rod moving toward a first side of said frame element and rotation in the other sense results in said locking rod moving away from said first side of said frame element;

a pin having a first end and a second end, wherein said first end selectively engages said rotatable locking element at an engaged position so that said locking element is prevented from rotating;

a pin actuating mechanism for moving said pin from said engaged position to a disengaged position wherein said pin does not engage said locking element; and

a rotatable cam having a striking surface to strike said second end of said pin when said pin is at said disengaged position causing said first end of said pin to contact and ride along a surface of said rotatable locking element as it rotates.

5,487,290

HIGH SECURITY LOCK MECHANISM

J. Clayton Miller, Nicholasville, Ky.; Michael Harvey, Newport Beach, Calif.; James L. Taylor, Lexington, Ky.; Thomas Clark, Lexington, Ky., and Gerry Dawson, Lexington, Ky., assignors to C & M Technology, Inc., Nicholasville, Ky.

Continuation of Ser. No. 819,216, Jan. 13, 1992, abandoned.

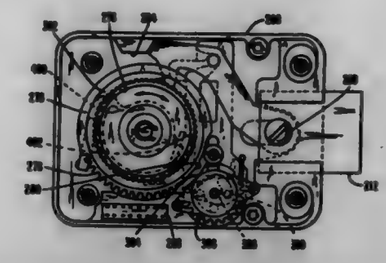
This application Jan. 11, 1995, Ser. No. 371,319

Int. Cl.[6] E05B *49/02*

U.S. Cl. 70—303 A **17 Claims**

1. A locking mechanism having a lock-bolt to be put in locking and unlocking positions thereof, comprising:

a first engagement element, having disengaged and engageable positions;



means actuable by electrical power for driving the first engagement element to the engageable position thereof;

a manually operated second engagement element which can be engaged with said first engagement element in said engageable position thereof;

a lock-bolt drive cooperating with the lock-bolt; and

means for moving said lock-bolt drive to a position directly engaged to the manually operated second engagement element so that the lock-bolt is moved from the locking position to unlocking position thereof in accordance with a manual movement of the manually operated second engagement element; wherein

said driving means comprises an electrical motor having a rotor rotatable about a rotation axis, said rotor having first and second stable positions respectively corresponding to said engageable and disengaged positions of said first engagement element, wherein said first and second stable positions are separated by a predetermined angle about the rotation axis; and

said first and second stable positions of said rotor are respectively determined by first and second magnetic detents.

5,487,291

KEY HOLDER CASE WITH EASY ACCESS FEATURE

Bernard Voigt, 15 High St., Hicksville, N.Y. 11801

Filed May 23, 1994, Ser. No. 247,807

Int. Cl.[6] A47G *29/10*

U.S. Cl. 70—456 R **5 Claims**



1. An improved key holder case with easy access feature which comprises:

a) a housing for carrying at least one key therein;

b) means for easy accessing at least one key from said housing, so that at least one key will extend out from said housing, to allow a person to utilize at least one key in a lock, circular shaped member, having a large circular top opening therein and a side exit port, a large circular cover which fits into said large circular top opening, to pivot thereabout and having at least one elongated slide track radially placed therein, at least one slide button to ride within said at least one elongated slide track, and at least one clamp assembly for connecting said at least one slide button to at least one key, so that when said large circular cover is pivoted to align said at least one elongated slide track to said side exit port, said at least one slide button can go from a retracted position, in which at least

one key is withdrawn into said at least one elongated slide track in said housing to an extended position, in which at least one key will extend out from said side exit port in said housing;

c) at least one illuminating device built therein, so that said at least one illuminating device when activated will illuminate at least one key when extending out from said housing, allowing at least one key to be used at night and in dimly lit areas;

d) a clip mounted thereto, so that said clip is in a first instance attached to a belt and in a second instance worn on a garment.

5,487,292

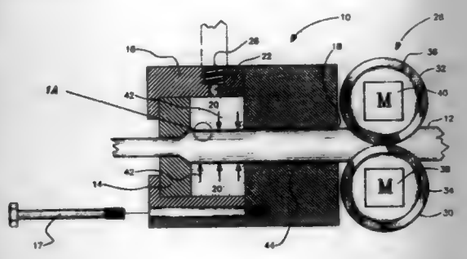
METHOD AND APPARATUS FOR ADVANCING TUBING INTO A DRAW DIE

Francis J. Fox, 2145 Corporation Blvd., Naples, Fla. 33942

Continuation-in-part of Ser. No. 815,031, Dec. 31, 1991, Pat. No. 5,327,756. This application Jun. 20, 1994, Ser. No. 262,689

Int. Cl.[6] B21C *9/00*

U.S. Cl. 72—43 **15 Claims**



1. An apparatus for advancing and reducing the diameter of tensile stressed tubing being drawn through a draw die wherein the tubing is reduced in diameter comprising in combination,

opposing rotatable roll means mounted on the front of the apparatus, the roll means providing a cushioned exterior for compressingly engaging and moving the tubing horizontally under axial compressive stress in the forward direction,

a sealing means providing an elongated circular bushing extending horizontally in the forward direction from the roll means towards the draw die for conveying the moving tubing in the forward direction, the inside diameter of said bushing means having zero clearance with the outside diameter of said tubing forming a non-diameter reducing seal therebetween,

an enclosed draw die providing a cylindrical socket opening sealed approach zone encircling the conveying tubing prior to entering the draw die,

the socket opening approach zone providing means for applying high pressure lubricant created hydraulic pressure to the tubing preventing the tubing from bulging outwardly,

the draw die creating tensile stress by pulling therethrough wherein the tubing is reduced in diameter.

5,487,293

HIGH INTENSITY PEENING FLAPS WITH FASTENER, AND WHEELS INCORPORATING SAME

Michael W. Lovejoy, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Oct. 18, 1994, Ser. No. 324,746

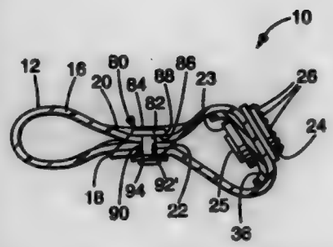
Int. Cl.[6] B21J *5/00*

U.S. Cl. 72—53 **42 Claims**

1. A peening flap, comprising:

a strap including a first strap portion, a second strap portion, a first aperture formed in said first portion and a second aperture formed in said second portion;

peening means mounted on said strap; and



a fastener affixed to said strap for securing said first and second strap portions together, said fastener including:

a shaft extending through said apertures, said shaft having a first end and a second end; and

a first head adjoining said first end and a second head adjoining said second end; wherein said first and second strap portions have a combined thickness and are secured between said first and second heads; and

wherein said second head includes elastic compression means for maintaining compression on said strap portions, said elastic compression means having sufficient elasticity to maintain compression on said strap portions with reducing combined thickness.

5,487,294

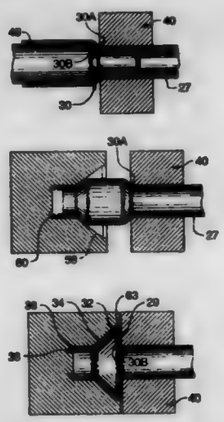
SYSTEM FOR FORMING END FLANGES ON PIPES

Horst U. Petersen, Kitchener, Canada, assignor to Bend All Manufacturing Inc., Ayr, Canada

Filed Jun. 24, 1994, Ser. No. 265,119

Int. Cl.[6] B21D *19/08*

U.S. Cl. 72—370 **8 Claims**



1. Procedure for producing an enlarged end-flange on a pipe, being an end-flange which includes front and back radially-extending walls formed in the material of the pipe, the walls being opposed in that the front wall faces towards the end of the pipe and the back wall faces away from the end of the pipe, and which includes an endmost-portion of the end-flange, the endmost-portion being cylindrical and of approximately the same diameter as the nominal diameter of the pipe, wherein:

the end-flange of the pipe is of the type in which, inside the end-flange, the front wall is axially spaced from, and out of contact with, the back wall;

the procedure includes the steps of clamping the pipe in a female die, leaving an end-portion of the pipe protruding from the die, the die having an inner surface complementary to the pipe, having a surface facing the end of the pipe, and having a transition corner therebetween;

belling-out the protruding end-portion of the pipe, creating a transition between the belled end-portion and the portion of the pipe gripped in the female die;

providing a male punch, having a nose, a shoulder of greater diameter than the nominal inside diameter of the pipe, and having a transition corner between the shoulder and the nose;

with the male punch inside the belled end-portion, pushing the male punch far enough axially, that the wall material of the pipe, at the said transition, is coined between the transition corner of the die and the transition corner of the punch;

withdrawing the male punch, leaving the pipe with the whole length of the end-portion belled;

reducing the diameter of a endmost-portion of the belled end-portion, being less than the whole length of the end-portion, leaving an inner-length-portion of the belled end-portion not reduced;

while constraining the length of the endmost-portion against diametral expansion and with the interior of both the endmost-portion and inner-length-portion being unsupported, pushing axially on the pipe to the extent that the inner-length-portion of the end-portion buckles or collapses, and increases in diameter, thereby creating the said front and back walls;

ceasing pushing axially on the pipe before the front wall touches the back wall internally, and while the front and back walls are still internally spaced apart in the axial sense.

5,487,295

METHOD OF FORMING A METAL CONTAINER BODY

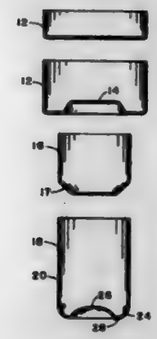
Hans H. Dickhoff, Avonmore, and George L. Smith, Jr., New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 108,898, Aug. 18, 1993, Pat. No. 5,394,727. This application Mar. 3, 1995, Ser. No. 397,815

The portion of the term of this patent subsequent to Aug. 18, 2013, has been disclaimed.

Int. Cl.[6] B21D *22/28*

U.S. Cl. 72—379.4 **7 Claims**



1. A method of forming a metal container body which comprises;

providing a metal cup having a sidewall and a base wall which includes a central transverse wall portion; a generally cylindrical annular wall portion around said central wall portion and connected to an outer peripheral wall portion which is offset with respect to said transverse wall portion; and

reducing the diameter of said cylindrical annular wall of said metal cup and reforming said annular wall portion into a generally frusto conical wall portion between said central wall portion and the sidewall of the cup.

5,487,296

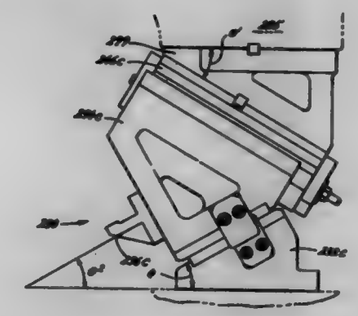
UNIVERS CAM UNIT

Roland T. Gerhart, Milford, and Erich D. Fidakiewicz, Canton, both of Mich., assignors to Connell Limited Partnership, Boston, Mass.

Continuation-in-part of Ser. No. 819,347, Jan. 9, 1992, Pat. No. 5,269,167. This application Nov. 29, 1993, Ser. No. 158,613

Int. Cl.[6] B21D *5/04*

U.S. Cl. 72—381 **30 Claims**



1. For use in a power press having a die set, a pressure pad unit which is movable relative to the die set to hold a workpiece therebetween, and a ram, a universal cam assembly having means for receiving a working tool for performing an operation on the workpiece, comprising, in combination:

a mounting bracket having a mounting structure and a gib, the mounting structure being fixedly attached to the power press, the gib being disposed beneath the mounting structure;

a slide block having an inclined cam bearing surface, a working surface and a slide block bracket, the slide block bracket slidably coupling the slide block to the gib of the mounting bracket to move between a retracted position and an extended position;

a driver assembly fixedly attached to the power press opposite the slide block, the driver assembly having an inclined driver bearing surface disposed substantially parallel to the inclined cam bearing surface such that when the cam bearing surface abuts the driver bearing surface, the cam bearing surface slides along the driver bearing surface and the slide block moves between the retracted and the extended positions; and,

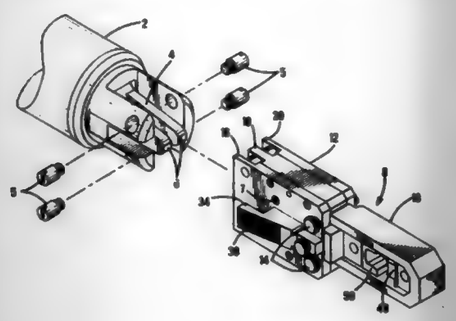
a spring assembly disposed within the gib for returning the slide block as the slide block moves between the retracted and extended positions, the spring assembly including a first stop block disposed at a first end of the gib; a second stop block disposed at a second end of the gib opposite the first stop block; a return spring disposed adjacent the first stop block; a damping spring disposed adjacent the second stop block; and a compression arm disposed between the return spring and the damping spring, the compression arm being attached to the slide block for movement therewith such that the compression arm compresses the return spring against the first stop block as the slide block moves from the retracted position to the extended position and the compression arm compresses the damping spring against the second stop block as the slide block moves from the extended position to the retracted position.

5,487,297

CRIMPING TOOL HAVING MECHANISM FOR SELECTIVELY BIASING CRIMPING DIES TO OPEN OR CLOSED POSITION

Dale Ryan, and Eric Kootte, both of Harrisburg, Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jan. 17, 1995, Ser. No. 373,349
Int. Cl.[6] B21J *9/18*
U.S. Cl. 72—450 11 Claims



1. A tool for crimping a workpiece, comprising:

a frame;

a mating pair of crimping dies, one of which is attached to said frame, the other of which is attached to a slide member coupled to said frame and arranged to reciprocate for effecting movement of said other die along a die axis toward and away from said one die;

a pair of links each having one end pivotally attached to said slide member;

a pair of link rollers each journaled for rotation at an end of a respective one of said links opposite to said pivotal attachment thereof, said link rollers having mutually parallel axes of rotation;

a pair of ramps attached to said frame on respective opposite sides of said link rollers and arranged for rolling engagement by respective ones of said link rollers;

an actuator attached to said frame and operable to move a wedge between said link rollers along a wedge axis parallel to said die axis, said wedge being arranged to engage said link rollers during movement of said wedge in one direction such that said link rollers roll on opposite sides of said wedge and are urged into rolling engagement with said ramps, thereby moving said slide member such that said other die is moved toward said one die for effecting said crimping;

resilient means for biasing apart said links with a relatively small force such that said link rollers are urged into rolling engagement with respective ones of said ramps when said wedge is in a disengaged position from said link rollers; and,

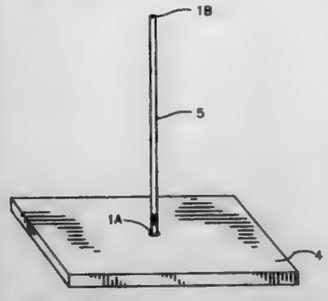
means for retracting said slide member such that said other die is selectively movable away from said one die when said wedge is in said disengaged position, wherein said other die is separable from said one die against the biasing force of the resilient means to permit said workpiece to be introduced between said dies, and upon release of said means for selectively retracting, said resilient means urges said other die toward said one die to secure said workpiece therebetween.

5,487,298

INERTIAL HOPKINSON BAR SHOCK SENSOR

William R. Davis, Darlington, and Willard S. Walton, Churchville, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 22, 1994, Ser. No. 215,878
Int. Cl.[6] G02M *7/00*
U.S. Cl. 73—12.05 15 Claims



14. A method for measuring the intensity of high amplitude strain waves upon impact of a projectile or detonation of an explosive on a test specimen comprising:

(1) welding a first end portion of a bar to said test specimen;

(2) attaching first and second strain gages onto said bar at a first and a second position, respectively;

(3) orienting said first and second strain gages onto said first and second positions so that said gages are positioned opposite to each other;

(4) connecting said first and second strain gages in a measurement circuit so as to negate any bending effect on said bar,

(5) impacting a surface of the test specimen with shock waves;

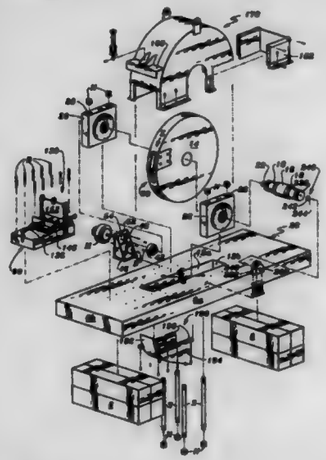
(6) measuring longitudinal strain only.

5,487,299

APPARATUS AND METHOD FOR DESTRUCTIVE TESTING OF COUPONS FORMED FROM METAL

Calvin C. Williamson, and Jeffrey S. Salsman, both of Napa, Calif., assignors to Napa Pipe Corporation, Napa, Calif.

Filed Nov. 4, 1994, Ser. No. 334,819
Int. Cl.[6] G01P *15/00*
U.S. Cl. 73—12.09 24 Claims



1. An apparatus for destructive testing of a coupon formed from metal, comprising, in combination:

a flywheel having an outer periphery,

a hammer fixed to said flywheel and oriented to extend beyond said outer periphery thereby providing a hammer striking surface nose which orbits with said flywheel and said striking surface nose remains exposed beyond said flywheel,

a carriage means,

means for moving said carriage means from a first retracted position clear of said hammer striking surface to a second deployed position in a path of said hammer striking surface,

coupon supporting means disposed on said carriage means, and

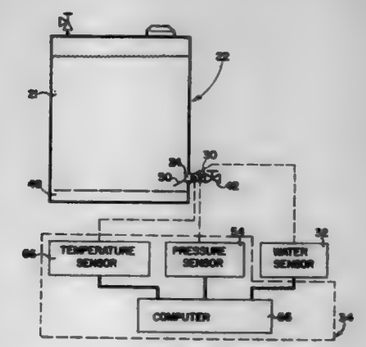
sensing means allowing said coupon to be moved to said second deployed position, whereby in said second deployed position, said coupon is placed in the path of said hammer.

5,487,300

TANK GAUGING APPARATUS AND METHOD

Anne W. Brackett; Marcus O. Durham, both of Tulsa; Lynn K. Perkins, Skiatook, and Gregory E. Thoman, Tulsa, all of Okla., assignors to W. L. Walker Co., Inc., Tulsa, Okla.

Division of Ser. No. 901,563, Jun. 19, 1992, Pat. No. 5,333,498. This application May 12, 1994, Ser. No. 241,965
Int. Cl.[6] G01F *23/00*
U.S. Cl. 73—61.59 28 Claims



1. Apparatus for measuring physical characteristics of a liquid to be transferred to or from a storage tank with all measurements being taken through an opening near the bottom of the tank, comprising:

a conduit having a first open end connected to the opening in the tank, a second open end, and at least one connection for accessing the interior of the conduit between each end;

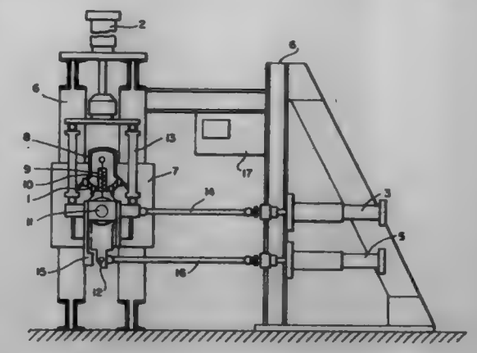
means insertable from outside the conduit for making a releasable and sealable connection with the at least one connection of the conduit for detecting one or more physical characteristics of the liquid and generating a readable signal representative of the one or more physical characteristics.

5,487,301

TEST RIG AND PROCESS FOR TESTING MOTOR VEHICLE ASSEMBLIES, IN PARTICULAR INDEPENDENT WHEEL SUSPENSION

Andreas Müller, Darmstadt; Vatroslav Grubisic, Reinheim, and Gerhard Fischer, Darmstadt, all of, Germany, assignors to Fraunhofer-Gesellschaft zur Foerderung der Angewandten Forschung, Munich, Germany

Filed Feb. 3, 1993, Ser. No. 13,099
Claims priority, application Germany, Feb. 5, 1992, 42 03 262.8
Int. Cl.[6] G01M *19/00*; G01N *3/00*
U.S. Cl. 73—118.1 6 Claims



1. Test rig for testing motor-vehicle assemblies of the type including spring means under operational loading conditions comprising:

a frame for rigidly supporting the motor-vehicle assembly;

modifying means for modifying the spring means of the motor-vehicle assembly for linearising a spring characteristic of said spring means;

loading means for inducing vertical forces F_Z, lateral forces F_Y, longitudinal forces F_X and braking or driving forces F_{XB} in the motor-vehicle assembly; and

control means for controlling the loading means in such a way that the vertical forces F_Z, lateral forces F_Y, longitudinal forces F_X and braking or driving forces F_{XB} are induced, in accordance with a predetermined control loading program, by means of which different loading cases which are realistic in relation to actual motoring physics and combined to form loading blocks are repeatedly and in temporary consecutive sequence simulated in the motor vehicle assembly, wherein said control loading program comprises as loading cases driving straight ahead, cornering, braking and accelerating and according to which actual forces in accordance with the formula

$$F_{Bi}(t_j)=B_{Bi}(t_j)\cdot a_{Bi}\cdot P_r$$

are applied during a corresponding time t_j to the motor vehicle assembly; wherein i denotes the loading case with i=1 for driving straight ahead, i=2 when cornering, i=3 for braking and i=4 for accelerating; wherein further R denotes the load direction with R=z for the vertical force, R=x for the longitudinal force, R=xB for the braking and driving force and R=y for the lateral force; so that the forces to be applied are as follows:

Forces to be applied in the different loading cases:

Type of force	Straight ahead	Cornering	Braking	Accelerating
F_Z (vertical force)	$F_{Z1}(t_j)$	$F_{Z2}(t_j)$	$F_{Z3(4)}$	$F_{Z4}(t_j)$
F_X	$F_{X1}(t_j)$	$F_{X2}(t_j)$	$F_{X3(4)}$	$F_{X4}(t_j)$

-continued

Forces to be applied in the different loading cases:

Type of force	Straight ahead	Cornering	Braking	Accelerating
(longitudinal force)				
F_{XB} (braking or driving force)	$F_{XB1}(t_j)$	$F_{XB2}(t_j)$	$F_{XB3(0)}$	$F_{XB4}(t_j)$
F_Y (lateral force)	$F_{Y1}(t_j)$	$F_{Y2}(t_j)$	$F_{Y3(0)}$	$F_{Y4}(t_j)$

with $B_{R1}(t_j)$ in the above formula being basic forces which are for the corresponding loading cases as follows:

Basic forces for the different loading cases:

Type of force	Straight ahead	Cornering	Braking	Accelerating
F_Z (vertical force)	$B_{Z1}(t_j)$	$B_{Z2}(t_j)$	$B_{Z3(0)}$	$B_{Z4}(t_j)$
F_X (longitudinal force)	$B_{X1}(t_j)$	$B_{X2}(t_j)$	$B_{X3(0)}$	$B_{X4}(t_j)$
F_{XB} (braking or driving force)	$B_{XB1}(t_j)$	$B_{XB2}(t_j)$	$B_{XB3(0)}$	$B_{XB4}(t_j)$
F_Y (lateral force)	$B_{Y1}(t_j)$	$B_{Y2}(t_j)$	$B_{Y3(0)}$	$B_{Y4}(t_j)$

and with a_{R1} being at least one of vehicle- and axle specific conversion factors and P_R being test-rig-specific conversion factors which are as follows for the different loading cases:

Type of force	Vehicle- and[/or] axle-specific conversion factors for the different loading cases: Straight ahead	Cornering	Braking	Accelerating	Test-rig-specific conversion factor
F_Z (vertical force)	a_{Z1}	a_{Z2}	a_{Z3}	a_{Z4}	P_Z
F_X (longitudinal force)	a_{X1}	a_{X2}	a_{X3}	a_{X4}	P_X
F_{XB} (braking or driving force)	a_{XB1}	a_{XB2}	a_{XB3}	a_{XB4}	P_{XB}
F_Y (lateral force)	a_{Y1}	a_{Y2}	a_{Y3}	a_{Y4}	P_Y

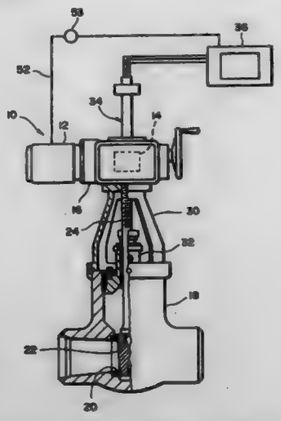
so that a given force $F_{R1}(t_j)$ according to the control loading program equals a basic force $B_{R1}(t_j)$ modified by multiplication with a vehicle-and/or axle-specific conversion factor a_{R1} and a test-rig-specific conversion factor P_r.

5,487,302

METHOD AND SYSTEM FOR MEASURING GATE VALVE CLEARANCES AND SEATING FORCE

Donald A. Casada; Howard D. Haynes, both of Knoxville; John C. Moyers, Oak Ridge, and Brian K. Stewart, Burns, all of Tenn., assignors to Lockheed Martin Energy Systems, Inc., Oak Ridge, Tenn.

Continuation of Ser. No. 24,143, Mar. 1, 1993, abandoned.
This application Feb. 28, 1995, Ser. No. 396,092
Int. Cl.[6] F16K *37/00*
U.S. Cl. 73—168 22 Claims



1. A system for determining operative conditions of a valve having a valve element connected to a threaded valve stem translatable by threaded engagement with a rotatable drive member to move the valve element between open and closed positions, said threaded valve stem being generally constrained from angular movement by engagement with guide means, the system comprising:

means for measuring absolute rotation of the valve stem during rotation of the rotatable drive member; and

means for correlating the measured absolute valve stem rotation to at least one operative condition of the valve.

5,487,303

SPEEDOMETER CAPABLE OF PROVIDING REAL-TIME SPEED PULSE SIGNALS

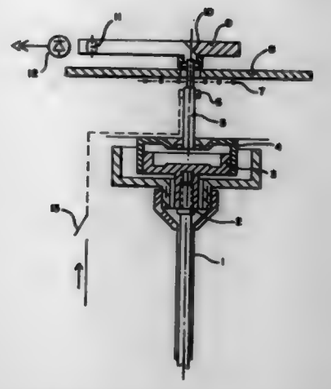
Yang R. Li, Room 302, No. 9, Building B, Shantou University, Shantou City, Guangdong, China

Filed Jul. 6, 1993, Ser. No. 87,652
Claims priority, application China, Jul. 8, 1992, 92105176.X
Int. Cl.[6] G01P *3/10*
U.S. Cl. 73—499 14 Claims

1. A speedometer providing real-time speed signals, comprising a magnet-type speed transmitting portion, a speed indicating portion, a photoelectric monitoring portion and a speed signal conversion portion;

said speed transmitting portion having a driving flexible shaft connected to a driving shaft, the driving shaft being fitted with a permanent magnet magnetically-coupled with an iron cup, the iron cup being fitted with a speed indicating needle shaft;

said speed indicating portion having a photoelectric speed indicating needle connected to said speed indicating needle shaft,



a speed indicating dial being positioned under the photoelectric speed indicating needle;

said photoelectric monitoring portion comprising:

a LED disposed on the speed indicating needle shaft, the light emitted from the LED travels through the photoelectric speed indicating needle, and transmitted out from the photoelectric speed indicating needle;

a plurality of photoelectric sensors positioned on the periphery of the indicating dial at locations corresponding to the speed marks, said plurality of photoelectric sensors functioning to receive the light from the speed indicating needle and provide electric signals;

said speed signal conversion portion comprising:

a multichannel photoelectric converter connected to said photoelectric sensors at their terminals;

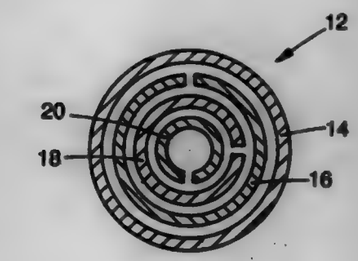
a coder including an interface, and a photoelectric amplifier including an interface, connected to the outputs of said multichannel photoelectric converter, respectively, to form sets of interfaces for providing real-time speed signals.

5,487,304

SUPERCONDUCTING DUAL JUNCTION GYROSCOPE APPARATUS

Martin A. Sanzari, Hamburg, N.J., assignor to Kearfott Guidance and Navigation Corporation, Wayne, N.J.

Filed Aug. 17, 1993, Ser. No. 108,125
Int. Cl.[6] G01P *3/44*
U.S. Cl. 73—504.07 19 Claims



1. A superconducting dual junction gyroscope apparatus having a superconducting shield for shielding external magnetic fields and preventing the generation of a London moment field when said superconducting shield is rotated, said apparatus comprising:

a closed housing having an outer layer of mu-metal material and a plurality of nested layers of superconducting material, said plurality of nested layers of superconducting material being divided so as to introduce discontinuities in the superconducting material of said plurality of nested layers and thereby disrupt superelectrons traveling within the superconducting material of said plurality of nested layers; and

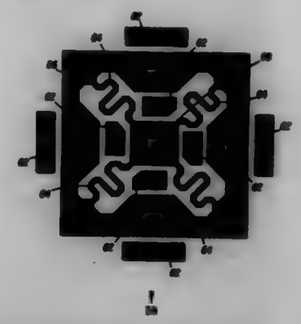
a gyroscope sensor securely mounted within said housing for detecting a rotation of said housing.

5,487,305

THREE AXES ACCELEROMETER

Ljubisa Ristic, Phoenix; Ronald J. Gutteridge, Paradise Valley; Wu Kuncheng; Michael F. Caloway, both of Phoenix, and William C. Dunn, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 810,863, Dec. 19, 1991, abandoned.
This application Jul. 12, 1994, Ser. No. 274,128
Int. Cl.[6] G01P *15/125*
U.S. Cl. 73—514.32 14 Claims



1. A three axis accelerometer comprising:

a semiconductor substrate;

a plurality of layers of conductive material formed on the substrate, each layer of conductive material generally defining a plane and each mounted so the defined planes are parallel with and in spaced relation to each other, a first of the layers being fixedly mounted and with a second layer being mounted by a plurality of flexible arms each having a first end attached to a center post supported on the substrate and a second end attached to support the second layer for limited movement of the second layer relative to the first layer;

the first and second layers forming a first capacitance varying in accordance with acceleration of the accelerometer along a first axis perpendicular to the first and second layers;

a plurality of first surfaces and a plurality of electrically isolated plates formed as a portion of the second and the first layers, respectively, and positioned in parallel juxtaposition, the plurality of first surfaces being moveable with the second layer and relative to the first layer, the plurality of first surfaces and the plurality of electrically isolated plates being further formed to define second and third axes mutually orthogonal with each other and the first axis; and

variable capacitances being formed between the plurality of first surfaces and the plurality of electrically isolated plates, which capacitances vary in accordance with acceleration in the second and third axes, respectively.

5,487,306

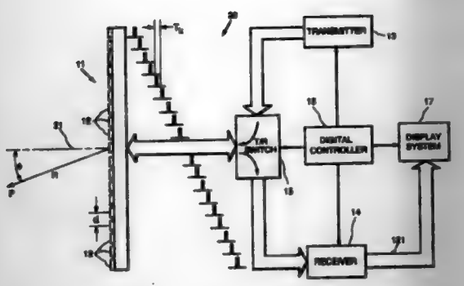
PHASE ABERRATION CORRECTION IN PHASED-ARRAY IMAGING SYSTEMS

Jose-Mauro P. Fortes, Gavea, Brazil, assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 26, 1994, Ser. No. 312,363
Int. Cl.[6] G01N *29/06;29/10;29/24*
U.S. Cl. 73—597 15 Claims

1. A sampled aperture imaging system comprising:

a plurality of transducers arranged in a sequence to form an array;



means for selectively operating said transducers in a transmission mode to produce propagating energy pulses from electrical driving signals;

means for selectively operating said transducers in a reception mode to produce analog electrical detection signals in respective ones of a plurality of receive channels in response to detection of reflected energy pulses, each receive channel being coupled to a corresponding one of said transducers;

means for sampling and demodulating said analog electrical detection signals into digital complex signal samples; and

Kalman filter means for recursively estimating phase differences associated with digital complex signal samples in pairs of adjacent receive channels.

5,487,307

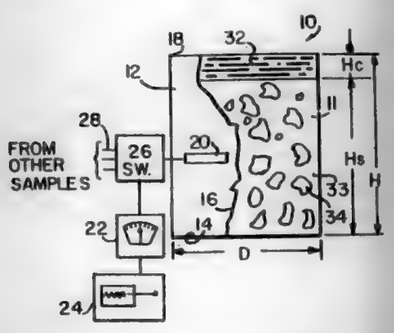
METHOD AND APPARATUS FOR TESTING CONCRETE EXPANSION

Robert Landgren, Cody, Wyo., and William F. Perenchio Northfield, Ill., assignors to Kalman Floor Company, Ir ., Evergreen, Colo.

Filed Feb. 10, 1994, Ser. No. 194,452

Int. Cl.[6] G01N *33/38*

U.S. Cl. 73—803 **17 Claims**



1. Apparatus for measuring volumetric changes in hardenable samples comprising:

a steel container having an open top and an uninterrupted upstanding sidewall for receiving and containing a hardenable sample therein in intimate and direct contact with an inner surface of said sidewall; and

strain gauge means secured to the sidewall of the container and being disposed for sensing expansive changes in said sidewall in response to volumetric changes in the sample upon hardening and being operable when energized to produce a signal indicative of such volumetric changes in the sample.

5,487,308

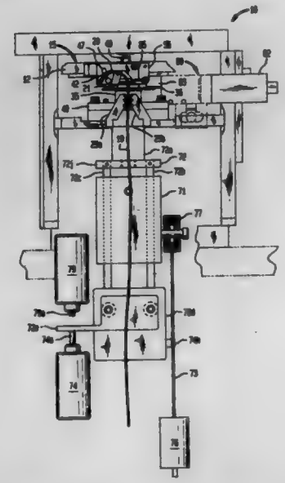
NEEDLE AND SUTURE AUTOMATIC PULL-TEST SYSTEM

David Demarest, 709 S. Beverwyck Rd., Parsippany, N.J. 07054; Timothy Lenihan, 213 Valerie Rd., Morrisville, Pa. 19067, and John F. Blanch, 141B Wayside Rd., Tinton Falls, N.J. 07724

Filed Jan. 13, 1994, Ser. No. 181,601

Int. Cl.[6] G01N *3/10*

U.S. Cl. 73—827 **21 Claims**



1. An apparatus for automatically testing the swage bond strength of an armed needle having a suture strand depending from a suture receiving end thereof, said apparatus comprising:

(a) blade means for supporting said suture receiving end of said armed needle when a positive downward gravitational force of predetermined controllable value is applied to said suture strand, said blade means having at least one suture receiving guide therein;

(b) indexing means for releasably engaging said armed needle and for positioning said armed needle at said blade means to enable said suture strand to be received within said suture receiving guide thereof; and

(c) gripping means for positively gripping said suture strand at a first position below said suture receiving opening of said blade means, said gripping means including a vertically suspended slide block means consisting of a mass of predetermined weight for applying said positive downward force of predetermined value to said gripped suture strand, said gripping means and said slide block means being vertically slidably mounted along a fixed mounting means, said fixed mounting means being positioned substantially parallel with a vertical axis defined by said suture strand.

5,487,309

DEVICE FOR TESTING MEDICAL INFUSION

Malcolm C. Brown, 23 Carpenters Lane, West Kirby, Wirral L48 7EX, and Paul E. Hammond, 18 Townfield Road, West Kirby, Wirral, both of, United Kingdom

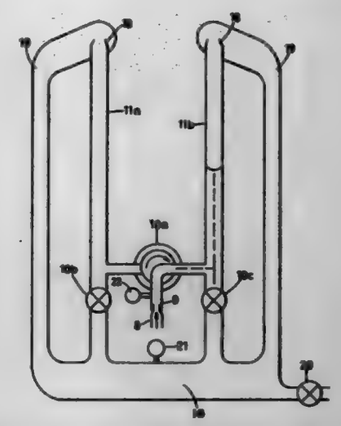
Continuation-in-part of Ser. No. 910,908, Jun. 8, 1992, abandoned. This application Mar. 9, 1994, Ser. No. 207,703

Claims priority, application United Kingdom, Jun. 8, 1991, 9112341

Int. Cl.[6] G01F *1/00*; A61M *31/00*

U.S. Cl. 73—861 **4 Claims**

1. A testing device for a medial infusion device, the testing device comprising:



optical means for sensing levels of a fluid in a tube and logic means for calculating a flow rate based upon the time taken for the fluid to pass between two levels,

a first and second tube, said tubes being substantially identical,

valve means for feeding the fluid to the first tube and draining the fluid from the second tube down to a predetermined level,

wherein the optical means comprises a charge coupled device for sensing the fluid level substantially continuously along the entire length of each of the first and second tubes and wherein the logic means calculates flow rates when the fluid is rising in one of said first and second tubes but inhibits a display of the flow rate if the calculation is based on too small a change of level,

the optical means sensing when the fluid level approaches the top of one of the first and second tubes and signaling the logic means so as to cause the valve means to direct the flow of the fluid to the other of said first and second tubes so that measurement continues smoothly, wherein the optical means and logic means are arranged to drain said one of said first and second tubes when full, down to near a bottom portion of said one tube and to then seal off said one tube and

a control module for displaying spot and average flow rate readings.

5,487,310

ELECTROMAGNETIC FLOWMETER

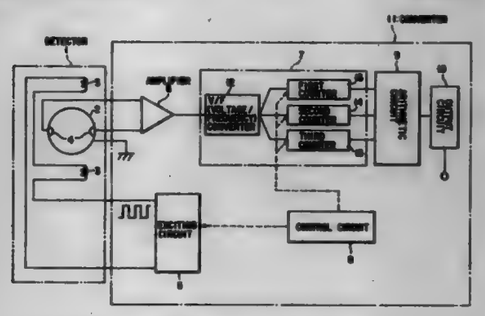
Takashi Higuchi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 8, 1994, Ser. No. 272,230

Claims priority, application Japan, Jul. 9, 1993, 5-170439

Int. Cl.[6] G01F *1/60*

U.S. Cl. 73—861.17 **21 Claims**



1. An electromagnetic flowmeter comprising:

a measurement tube for passing a fluid to be measured;

alternating magnetic field application means for applying alternating magnetic field and periodically switching magnetic fields applied in a first direction on a plane perpendicular to a direction in which the fluid flows and in a second direction opposite to the first direction;

sampling means for sampling electromotive force caused in the fluid by the magnetic fields in the first and second directions by plural times in the same direction in one period; and

arithmetic means for deriving the flow rate by the arithmetic process by excluding a sampling value which is contained in the sampling values obtained by the plurality of sampling operations and which exceeds a preset range or replacing the same by a simulated value.

5,487,311

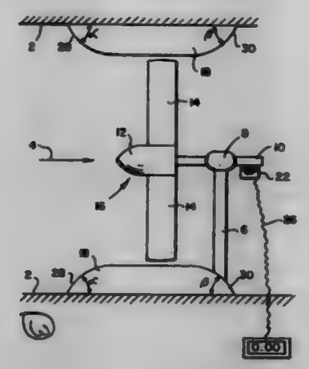
AIR VELOCITY AVERAGING ROTOR

Alfonso C. Gentiva, Champaign; David M. Schwenk, Urbana, both of Ill., and James P. Miller, Zama, Japan, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 4, 1995, Ser. No. 416,554

Int. Cl.[6] G01F *15/00*

U.S. Cl. 73—861.77 **13 Claims**



1. A device for measuring air flow velocity in a duct, comprising:

(a) flow directing means mounted within the duct, said flow directing means containing a circular opening;

(b) turbine means centrally positioned within said circular opening for responding to the air flow, said turbine means including

(1) a rotor shaft aligned substantially parallel to the direction of air flow;

(2) a rotor hub rigidly connected with said shaft; and

(3) a plurality of rotor blades extending radially outward from said rotor hub;

(c) mounting means connected within the duct for rotatably supporting said turbine means;

(d) means connected with said turbine means for sensing the rotation thereof; and

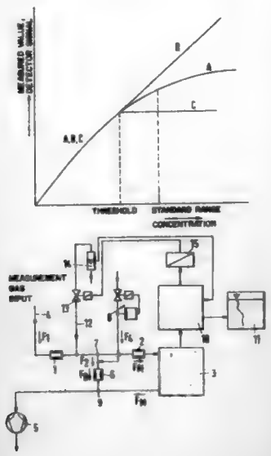
(e) means connected with said sensing means for indicating air flow velocity as a function of the rate of rotation of said turbine means and

wherein said flow directing means includes an outer peripheral surface contiguous with inner surface of the duct and an inner peripheral surface adjacent the outer edge of said rotor blades, whereby substantially all of the air flow through the duct is directed past said rotor blades.

5,487,312
GAS ANALYZER WITH REGULATED MEASUREMENT GAS FEED AND DYNAMIC DILUTION OF SAMPLES

Melchior Kahl, Bergisch-Gladbach, and Friedhelm Risse, Köln, both of, Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Germany

Filed Oct. 7, 1994, Ser. No. 320,051
Claims priority, application Germany, Jan. 8, 1993, 43 34 336.8
Int. Cl.[6] G01N 27/50
U.S. Cl. 73—863.01 6 Claims



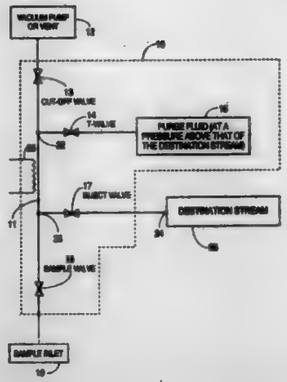
1. A continuously operating gas analyzer, comprising: a detector having an input and an output; a regulated measurement gas feed including a measurement gas pump (5, 21) at the detector input or detector output, a first choke (2) which is connected in a measurement gas line upstream of the detector (3), a second choke (6) which is connected in parallel with the series connection of the first choke (2) and the detector (3) as a bypass, a third choke (1) which is arranged in the measurement gas line and connected in series upstream of a junction (7) of the first choke (2) and the second choke (6), and a pressure regulator (8, 25) which maintains constant pressure at the junction (7) of the three chokes (1, 2, 6);
- a dilution gas line (12) with a control valve (13) for continuous dilution of the measurement gas with an inert gas, the dilution gas line being connected to the measurement gas line between the first choke (2) and third choke (1);
- a dilution regulator (15) connected to the output of the detector via a computer (10) which dilution regulator is operative to readjust the inert gas flow via the control valve (13) in such a way that an amplified detector output signal is maintained at a given reference value, wherein the dilution of the measurement gas flow increases as the measurement gas concentration increases; and
- a flow meter (14) arranged in the dilution gas line (12), the flow meter (14) having a measurement signal that is processed together with the detector signal in the computer (10) connected with the detector (3) and dilution regulator (15) to generate the analysis measurement.

5,487,313
FLUID-LOCK FIXED-VOLUME INJECTOR

Paul H. Johnson, Oakland, Calif., assignor to Microsensor Technology, Inc., Fremont, Calif.

Filed Nov. 30, 1993, Ser. No. 158,978
Int. Cl.[6] G01N 30/00; 1/00
U.S. Cl. 73—863.71 32 Claims

1. An injector assembly for injecting a fixed volume of a first fluid comprising:

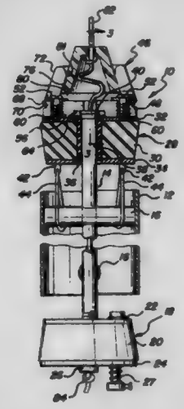


- a chamber for containing an amount of the first fluid, and having a first valve at one end to connect said chamber to a first fluid source, a portion of the chamber defining said fixed volume;
- a second valve connected to the chamber at one end of the fixed-volume portion, thereby causing a second fluid stream from a second fluid source to flow into the fixed-volume portion and forcing the first fluid in the fixed-volume portion into a destination passage;
- a third valve connected to the chamber at an end of the fixed-volume portion opposite said second valve, and communicating the fixed-volume portion to the destination passage; and
- a fourth valve connected to the chamber at an end opposite said first valve, thereby trapping the first fluid in the chamber.

5,487,314
WATER SAMPLING APPARATUS

William H. Phillips, Saginaw, Mich., assignor to Trippensee Corporation, Saginaw, Mich.

Filed May 2, 1994, Ser. No. 236,268
Int. Cl.[6] G01N 1/12
U.S. Cl. 73—864.66 11 Claims



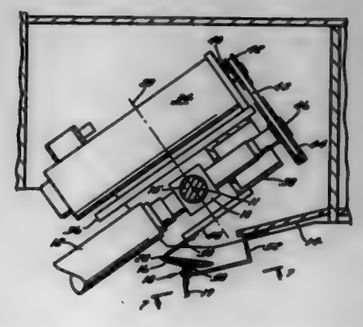
1. Water sampling apparatus comprising:
- a hollow body open at its opposite ends and adapted to be lowered to a predetermined depth in a body of water;
- a first closure member for one end of said body;
- a second closure member for the other end of said body;
- a connecting rod connecting said first and said second closure members for relative movements toward and away from one another and toward and away from sealing relation with the associated ends of said body;
- a latch carried by said connecting rod;

- a pair of clasp members mounted on one of said closure members and movable laterally of one another into and out of engagement with said latch for disabling and enabling said relative movements of said closure members;
- a pair of laterally opposed ears carried by said clasp members and extending therefrom to form a reentrant pocket between said ears; and
- a release line having a plug releasably captured within said pocket and of such relative size as to move said ears and said clasp members away from one another by an amount sufficient to effect disengagement of said latch by said clasp members in response to the application of a force on said line sufficient to withdraw said plug from said pocket, whereby said closure members are enabled to effect closure of said hollow body.

5,487,315
ROTATIONAL MOTION LIMIT DETECTOR SYSTEM AND METHOD

Philip J. Fiset, Milwaukee, and Edward Kirkham, Brookfield, both of Wis., assignors to Giddings & Lewis, Fond du Lac, Wis.

Filed Jul. 16, 1993, Ser. No. 93,232
Int. Cl.[6] B25G 3/00
U.S. Cl. 73—865.9 2 Claims

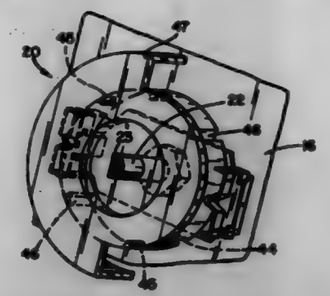


1. A method for preventing a joint that can rotate around a pivot point from rotating beyond a limit of acceptable rotation, the method comprising:
- supporting the joint so that the pivot point of the joint is stationary with respect to a support;
- mapping a range of acceptable rotation for the joint on a spherical surface where a boundary of the spherical surface corresponds to the limit of acceptable joint rotation;
- locating the spherical surface so that a center of a sphere defining the spherical surface substantially coincides with the pivot point of the joint;
- monitoring a relative location of the boundary as the joint rotates in one or more directions along a path; and
- if the relative location of the spherical surface is such that continued rotation of the joint along the path will cause the relative location of the spherical surface to be displaced beyond the boundary, then stopping rotation of the joint along the path before the joint rotates beyond the limit of acceptable rotation.

5,487,316
IMPROVED CONTROL SELECTOR MECHANISM

Richard E. Hornung, Fisherville, and Patrick C. Lukus, Simpsonville, both of Ky., assignors to General Electric Company, Louisville, Ky.

Continuation of Ser. No. 136,314, Oct. 13, 1993, abandoned.
This application May 11, 1995, Ser. No. 439,464
Int. Cl.[6] G05G 1/10; 5/06
U.S. Cl. 74—527 9 Claims



1. In a control having an elongated adjustment shaft rotatable between a multitude of positions, the combination comprising:
- a spring member including first and second flexible arms extending generally axially of said shaft on opposite sides of said shaft; each of said arms including a nose at a different position longitudinally of said shaft than the nose of said other arm engages said shaft;
- a cam mounted for rotation with said shaft and including a generally cylindrical outer surface positioned between and overlapping said noses so that said noses are spring biased into engagement with said outer surface of said cam; and
- a plurality of recesses angularly spaced apart about said outer surface of said cam; said plurality of recesses being arranged in pairs positioned on substantially opposite angular sides of said cam outer surface; one of each pair of recesses being longitudinally aligned with one of said noses and the other of each pair of recesses being longitudinally aligned with the other of said noses; and said cam outer surface having no recess angularly opposite and longitudinally aligned with each of said recesses;

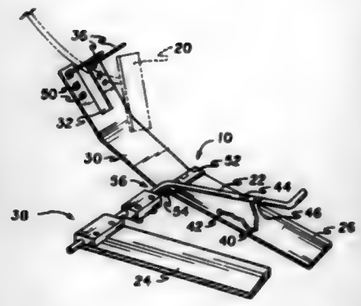
whereby a detent is provided at each angular position of said shaft in which each recess of a pair of recesses is angularly aligned with the nose with which that recess also is longitudinally aligned and no detent is provided at the angular position of said shaft substantially one hundred and eighty degrees removed therefrom.

5,487,317
VEHICLE PEDAL COVER FOR USE WITH AN AUXILIARY PEDAL DEVICE

Alvin D. Richhart, 805 Jackson St., Sterling, Colo. 80751

Filed Jan. 11, 1994, Ser. No. 180,075
Int. Cl.[6] G05G 1/16; 1/18
U.S. Cl. 74—562.5 8 Claims

5. An auxiliary pedal device for use with an accelerator pedal of a vehicle having a floor, said auxiliary pedal device comprising:
- a lower plate having a first end and a second end, said lower plate being adapted for positioning beneath the accelerator pedal;
- an upper plate having a first end and a second end, said first end of said upper plate being rotatably attached to said first end of said lower plate, said upper plate being selectively rotatable between a blocking position and an enabling position;
- a shaft extending from said second end of said lower plate and contacting said second end of said upper plate when said upper plate is in said blocking position, said shaft preventing rotation of said upper plate toward said lower plate, thereby preventing depression of the accelerator pedal when said



upper plate is in said blocking position, said upper plate rotating away from said lower plate and adapted to rest on the floor of the vehicle when in the enabling position, thereby allowing depression of the accelerator pedal;

said auxiliary pedal device further comprising an auxiliary pedal and an arm, said arm adapted to engage the accelerator pedal of the vehicle, said auxiliary pedal adapted to be pivotally attached to the floor of the vehicle and being selectively movable between a working position and a non-working position, whereby said arm is adapted to depress the accelerator pedal upon displacement of said auxiliary pedal when said auxiliary pedal is in the working position;

a chain connecting said upper plate to said arm of said auxiliary pedal device, said chain being positioned to rotate said upper plate into the blocking position when said auxiliary pedal is moved to the working position.

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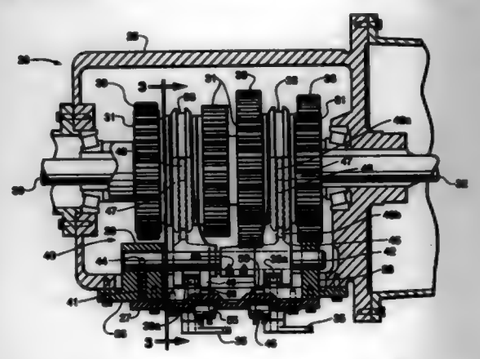
SHIFT FORK ACTUATED POSITION SENSOR

Allan N. Schott, Warren, Canada, assignor to New Holland North America, Inc., New Holland, Pa.

Filed Dec. 1, 1994, Ser. No. 353,222

Int. Cl.[6] F16H *57/02*

U.S. Cl. 74—606 R **6 Claims**



1. In a tractor transmission having a housing including a removable cover to provide access to the interior of said housing; an input shaft to provide a source of rotational power; an output shaft; a plurality of gears rotatably supported within said housing and operably connected to said input shaft and said output shaft for selectively varying a speed of operation of said output shaft for a given speed of operation of said input shaft; a shift fork assembly mounted within said housing and including at least one shift fork to effect a selectable shifting of said gears for interengagement therebetween in a predefined manner to provide said different speeds of operation of said output shaft, each said shift fork being selectively positionable in at least one engagement position in which said input and output shafts are operatively coupled and a neutral position in which said output shaft is disengaged from said input shaft; and a position sensor cooperatively associated with each said shift fork to sense the positioning of the corresponding said shift fork in the neutral position, the improvement comprising:

each said position sensor being mounted on a removable access cover to be located in direct contact with the corresponding said shift fork such that the movement of said corresponding shift fork into said neutral position effects a movement of a sensor switch to signal the status thereof.

5,487,319

SAW GUIDE APPARATUS

Delbert J. Cody, 501 6th St., Cody, Wyo. 82414

Filed Oct. 22, 1993, Ser. No. 139,761

Int. Cl.[6] B26B *29/06*

U.S. Cl. 83—745 **3 Claims**



1. A saw guide apparatus, comprising,

a first table plate and; an expandable fence mounted to the first table plate, with the expandable fence having a fence first end and a fence second end, the fence first end and the fence second end each receive telescopingly a telescoping flange, a second table plate parallel and reciprocatably mounted to the first table plate with the first table plate parallel to the expandable fence,

and

a first gauge sector of a pie-shaped configuration mounted about a first pivot axle within the first table plate, with the first gauge sector having a first sector abutment plate mounted to a surface of the first gauge sector, and a second gauge sector having a pie-shaped configuration and a second pivot axle pivotally mounting the second gauge sector to the second table plate, with the second gauge sector having a second sector abutment plate mounted thereon.

5,487,320

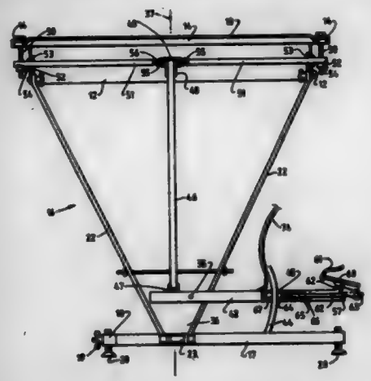
DRUM AND DRUM GAUGE

Marcus De Mowbray, 106 Douglas Flats, Marshalsea Road, London SE1 1JW, England

Filed Mar. 15, 1993, Ser. No. 31,759

Int. Cl.[6] G10D *13/02*

U.S. Cl. 84—413 **22 Claims**



1. A timpano type drum having a head, a cylindrical shell attached to and extending downwardly from the head, the shell having an open bottom, a plurality of tension bolts attached to the head, the drum head and shell being symmetrical about a drum axis, a stand which is movable between a folded relatively flat condition and an erect three dimensional support position in which it is adapted to be connected to and support the shell and head with the drum axis substantially vertical, fastening means for attaching and detaching the stand to and from the shell, foot operated tuning means having an upper part fixed to the shell and to the tension bolts, and a lower part fixed to the stand, and coupling means for detachably coupling the upper and lower parts together in the erect condition of the stand with the head and shell supported thereon, such that movement of the lower part of the tuning means will adjust the tuning of the head via the tension bolts.

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KEYBOARD LID, ITS OPEN-CLOSE STRUCTURE AND ARM MEMBERS FOR KEYED INSTRUMENT

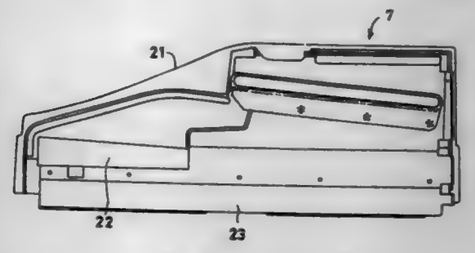
Masaji Kimura, and Yoshiaki Shimoda, both of Hamamatsu, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka, Japan

Continuation of Ser. No. 17,256, Feb. 12, 1993, Pat. No. 5,429,026. This application Dec. 9, 1994, Ser. No. 352,566

Claims priority, application Japan, Mar. 9, 1992, 4-021235 U; Mar. 9, 1992, 4-021236 U; Mar. 9, 1992, 4-021237 U

Int. Cl.[6] G01C *3/12;3/02;* A47B *51/00*

U.S. Cl. 84—423 R **2 Claims**



1. An apparatus for slidingly opening and closing a keyboard lid for covering a keyboard of a keyed instrument between an open position and a close position, said keyboard lid having a front end with a pair of opposite sides and a rear end with a pair of opposite sides, said apparatus comprising:

a pair of front guide projections projecting laterally from the opposite sides of the front end of the keyboard lid;

a pair of rear guide projections projecting laterally from the opposite sides of the rear end of the keyboard lid; and

a pair of side plates arranged on opposite sides of the keyboard, each one of said pair of side plates having a front guide groove engaging with a respective one of said pair of front guide projections and a rear guide groove engaging with a respective one of said pair of rear guide projections so as to slidably guide the keyboard lid between said open position and close position.

5,487,322

STORE EJECTOR

Glenn M. Rhodes, Bedfordshire, England, assignor to M L Aviation Limited, Berkshire, England

Filed Jun. 15, 1990, Ser. No. 563,915

Claims priority, application United Kingdom, Jul. 6, 1989, 8915503

Int. Cl.[6] B64D *1/02*

U.S. Cl. 89—1.56 **15 Claims**

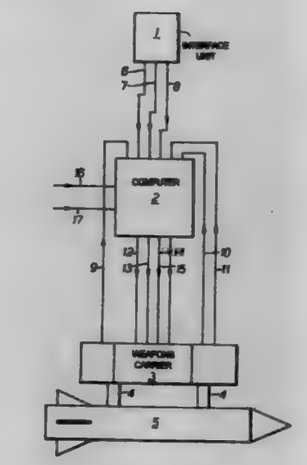
1. A store ejector comprising:

a fluid pressure operated ram for engaging and ejecting a store,

means for supplying fluid under pressure to said ram,

a throttle valve connected in series between said means for supplying and said ram,

programmable means for computing operatively connected to said throttle valve,



means operatively connected to said programmable means for monitoring a fluid pressure applied to said ram and inputting to said programmable means a signal representative of said fluid pressure, and

means operatively connected to said programmable means for monitoring extension of said ram and inputting to said programmable means a signal dependent on said extension,

said programmable means including means for outputting a control signal to said throttle valve for controlling said throttle valve in response to outputs of said means for monitoring a fluid pressure and said means for monitoring extension of said ram, thereby controlling said ram to apply a predetermined thrust profile to said store.

5,487,323

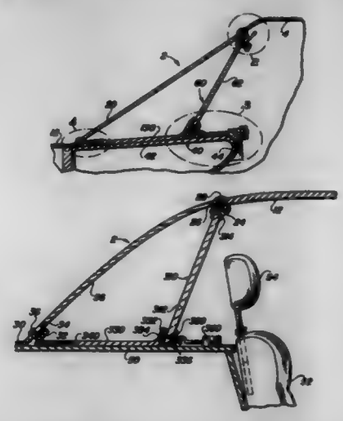
REMOVABLE BULLET RESISTANT APPARATUS FOR VEHICLES

James R. Madden, Jr., 4410 W. Acoma Dr., Glendale, Ariz. 85306-4506

Filed Jan. 20, 1995, Ser. No. 375,720

Int. Cl.[6] F41H *5/26*

U.S. Cl. 89—36.08 **24 Claims**



1. Bullet resistant apparatus for a vehicle having a top structure, a window cowling assembly, a front windshield disposed between the top structure and the window cowling assembly, and a dashboard assembly, comprising in combination;

a bullet resistant transparent panel secured to the vehicle between the top structure and the dashboard assembly; and

a plurality of layers of bullet resistant material secured to the transparent panel and disposed on the dashboard assembly between the transparent panel and the front windshield.

5,487,324

PNEUMATIC BOOSTER

Jean P. Gautier; Ulysse Verbo, both of Aulnay-Sous-Bois, and Miguel Perez, Argenteuil, all of, France, assignors to Allied Signal Europe Services Techniques, Drancy, France

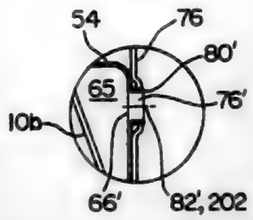
PCT No. PCT/FR93/00147, § 371 Date May 4, 1993, § 102(e) Date May 4, 1993, PCT Pub. No. WO93/19962, PCT Pub. Date Oct. 18, 1993

PCT Filed Feb. 12, 1993, Ser. No. 50,200

Claims priority, application France, Mar. 31, 1992, 92 03863

Int. Cl.[6] F15B 9/10

U.S. Cl. 91—369.1 8 Claims



1. A pneumatic brake-booster for a vehicle comprising an engine compartment and a passenger space which are separated by an apron, the booster comprising a casing formed of a front shell and of a back shell and inside which is located a piston comprising of a back tubular part and supporting a skirt which, with the aid of an unrolling membrane, defines a first chamber connected permanently to a source of partial vacuum and a second chamber connected selectively to a one of the front chamber and to atmosphere by valve means actuated by a control rod, and the casing comprising means for securing the booster to the apron of the vehicle, the booster comprising a third chamber connected permanently to atmosphere through a filter element and selectively to the second chamber by the valve means, the third chamber being partially delimited by a bellows secured in leaktight manner to the control rod, by a back face of the back shell and by a front face of a housing secured in leaktight manner to the casing of the booster and onto which the bellows is secured in leaktight manner, the third chamber being formed between the back shell of the booster and the apron of the vehicle, wherein the housing comprises a cylindrical peripheral part whose diameter is substantially equal to that of the casing of the booster, and formed with an aperture associated with the filter element disposed in the third chamber in the immediate vicinity of the aperture, the third chamber having a volume at least equal to a minimal volume of the second chamber, and the means for securing the booster to the apron of the vehicle passing in leaktight manner through the third chamber.

5,487,325

VEHICLE BRAKE SERVO BOOSTER WITH TRACTION CONTROL MODE

John P. Bayliss, Worcestershire, and Sean Byrnes, Birmingham, both of, England, assignors to Lucas Industries, England

PCT No. PCT/GB92/00685, § 371 Date Oct. 8, 1993, § 102(e) Date Oct. 8, 1993, PCT Pub. No. WO92/18366, PCT Pub. Date Oct. 29, 1992

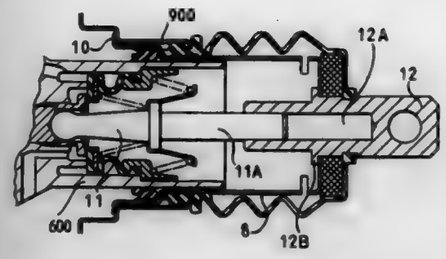
PCT Filed Apr. 14, 1992, Ser. No. 133,021

Claims priority, application United Kingdom, Apr. 15, 1991, 9107940

Int. Cl.[6] F15B 9/10

U.S. Cl. 91—376 R 5 Claims

1. A brake servo booster for use in a vehicle hydraulic braking system comprising a servo piston which is connected to an output



member and to which a supply of air is controlled by a valve mechanism which includes a reciprocable valve element connected to a force input member actuated by a driver-operated control device, the force input member including two parts of which a first one is connected, in use, to the driver-operated control device and the second one to the valve element, the arrangement being such that operating force applied to the control device is transmitted through both of said first and second parts of the input member by a direct mechanical connection therebetween to the valve element, whilst operation of the booster in the traction control mode is permitted by the second part of the force input member moving relative to the first part.

5,487,326

HYDRAULIC CYLINDER WITH END CLOSURE ASSEMBLY

Carl H. Owens, 4466 McGirts Blvd., Jacksonville, Fla. 32210

Continuation of Ser. No. 646,192, Jan. 28, 1991, abandoned.

This application Jul. 20, 1992, Ser. No. 917,784

Int. Cl.[6] F01B 29/00; F16J 15/18

U.S. Cl. 92—128 11 Claims



1. In a hydraulic cylinder having a cylindrical barrel with a closed end and an open end, said barrel having an interior bore uniform throughout the length thereof between said closed end and closely adjacent to said open end, a piston slidably disposed within said barrel, a rod gland disposed within and closing said open end of said barrel and having a small central passageway spaced from said barrel and aligned with a longitudinal axis of said barrel, an elongated piston rod spaced from said barrel and slidably disposed in said passageway and having one end attached to said piston and an exposed end external of said barrel, said rod gland carrying sealing means exposed in said small passageway and engaged with said piston rod against leakage for sealing therebetween, said rod gland carrying other sealing means exposed to and engaged with said barrel for scaling against leakage therebetween, said rod gland forming a directly engaged stop for said piston when said piston rod is fully extended, the improvement comprising a rod gland retainer assemble including a gland retainer welded outwardly of and to said barrel in the absence of any screw thread connection therebetween, said gland retainer having an internal circumferential ledge, and said assembly further including a split ring spring retainer removably inserted between said ledge and said rod gland for bearing against said rod gland and solely holding said rod gland in place.

5,487,327

BOOSTER HOUSING, ESPECIALLY FOR VEHICLE BRAKE SYSTEMS, AND METHOD OF ASSEMBLING SUCH AS BOOSTER HOUSING

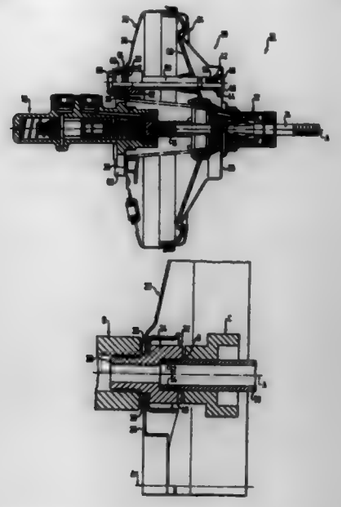
Peter Schlüter, Kammerforst, and Lothar Zenner, Steinenroth, both of, Germany, assignors to Lucas Industries Public Limited Company, Solihull, Great Britain

Filed Aug. 2, 1994, Ser. No. 284,123

Claims priority, application Germany, Sep. 24, 1993, 43 32 611.0

Int. Cl.[6] F01B 11/02; F16J 10/00

U.S. Cl. 92—128 5 Claims



1. A booster housing, especially for vehicle brake systems, comprising:

two housing bottoms which are disposed at either side of a movable partition and are provided with fastening holes,

connecting members which are mounted on at least one of the housing bottoms and are tightly crimped with the respective housing bottom around the fastening holes thereof, and

spacers which extend between the two housing bottoms as well as through the movable partition and are fixed to the connecting members, wherein each of the connecting members has a recess into which an end portion of the associated spacer is inserted, and the connecting member crimped.

4. A method of assembling a booster housing, for vehicle brake systems, said booster housing having two housing bottoms disposed at either side of a movable partition and provided with fastening holes, comprising the steps of:

inserting an end portion of a spacer into a recess of a connecting member,

passing the connecting member through one of the fastening holes in the housing bottoms in such a way that a collar formed on the connecting member extends through the fastening hole, and

simultaneous crimping the connecting member with the housing bottom and the spacer.

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TOASTER

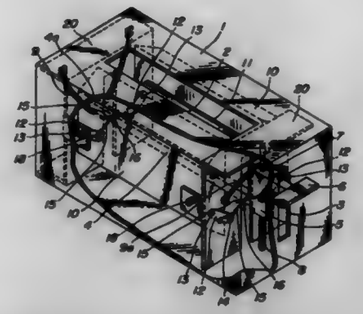
Tadao Fujii, Tokyo, Japan, assignor to Yamada Electric Ind. Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1995, Ser. No. 417,003

Int. Cl.[6] A47J 37/08

U.S. Cl. 99—390 6 Claims

1. A toaster having a toaster body, and a bread inlet port formed of a longitudinally extended opening opened at the top portion of said toaster body, comprising;



a pair of heating members respectively including heaters being parallely installed to a lower portion of said inlet port at adjacent a lengthwisely extended side wall of said toaster body horizontally movably toward and apart therefrom,

a carriage member downwardly movably installed to the bottom portion of said inlet port to receive the sliced bread inserted therefrom, and

a space regulating member including a link of which a first end being pivotably fixed to the widthwisely extended side surface of said heating member at adjacent gravity center thereof and a second end being pivotably supported by said toaster body, and a spring attached to the position where said second end of the link being supported and linearly extended toward the bottom of said carriage member to receive said carriage member moved toward said spring, said link being pivotably moved cooperating with the spring force of said spring with the reception of said carriage member to horizontally move said heating member toward and apart from the lengthwisely extended side wall of said toaster body.

5,487,329

COOKING OR BOILING POT

Harald Finster, Idar-Oberstein, Germany, assignor to Vesta AG & Co. OHG, Idar-Oberstein, Germany

Filed Apr. 12, 1995, Ser. No. 422,498

Claims priority, application Germany, Apr. 15, 1994, 44 12 944.0

Int. Cl.[6] A47J 27/00; B32B 15/00

U.S. Cl. 99—403 15 Claims



1. A bottom-heated utensil comprising:

a container having a container base of circular configuration composed of austenitic sheet steel and a container casing extending upwardly from said container base;

a thermal distribution plate coextensive with said container base and affixed to an external surface thereof continuously over all of said surface;

a metal plate cover member overlying said plate and bonded thereto, said cover member having a circular discoid cover base provided with a plurality of cover base recesses distributed over an entire surface of said cover base; and

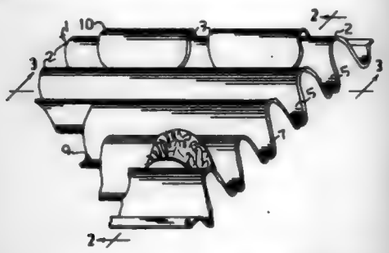
insets fitted into said recesses and bonded to said cover member, said insets collectively forming another member, one of said members being composed of austenitic sheet steel and the other of said members being composed of ferromagnetic sheet steel.

5,487,330

TACO BAKING AND SERVING PAN

Audrey J. Mooney, 2511 N. Riverside Dr., Pompano Beach, Fla. 33062

Filed Feb. 21, 1995, Ser. No. 391,214
Int. Cl.[6] A47J 37/01
U.S. Cl. 99—425 9 Claims



1. A taco pan for holding tacos open while baking and for supporting tacos from below while filling and serving, the pan comprising:

a single sheet formed into the following configuration;

a plurality of elongate parallel upstanding tapered ridges, each ridge arranged for supporting and holding open an inverted taco shell thereon while baking;

at least one trough defined by a pair of adjacent ridges, the trough having a length greater than the length of a taco shell and having a bottom with a rounded configuration to generally conform to the normal bending radius of a formed taco shell for supporting an upright shell therein during filling and serving; and

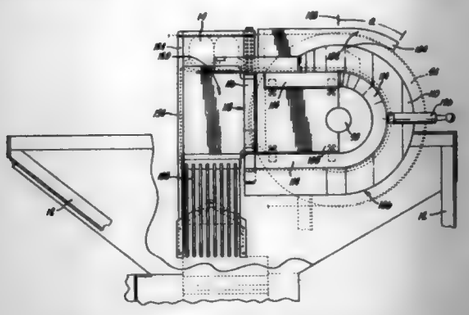
a sloping stop element rising from the bottom of the trough at each end thereof to be capable of containing within the trough the filled taco and any contents that might spill therefrom, the sloping stop element also being capable of gradually lifting the filled taco as it is moved to the end to thereby enable a person to lift the filled taco from underneath.

5,487,331

FRUIT JUICE EXTRACTING MACHINE

Ronald C. Bushman, Brea; William E. Harris, Jr., Fontana, both of Calif., and Roger N. Foch, Lake Alfred, Fla., assignors to Automatic Machinery and Electronics, Inc., Covina, Calif.

Division of Ser. No. 157,918, Nov. 24, 1993, Pat. No. 5,408,923. This application Apr. 10, 1995, Ser. No. 419,190
Int. Cl.[6] A23N 1/00
U.S. Cl. 99—504 11 Claims



1. In a fruit juice extracting machine of the type having a pair of opposing endless cup chains extending around a reamer wheel rotatable about a horizontal axis and having a plurality of spaced apart reamers for reaming fruit halves contained in cups on the cup chains, with a peel cnute positioned in between the cup chains and behind the reamer wheel, for collecting and channeling fruit peels ejected from the cups, the improvement comprising:

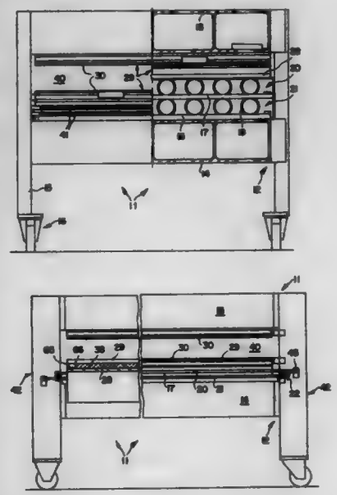
a bulkhead panel separating the peel chute from the reamer wheel.

5,487,332

PLATEN PRESS FOR WOODWORKING

Gerald Handke, Pfalzgrafenweiler, Germany, assignor to Gottfried Joos Maschinenfabrik GmbH & Co., Pfalzgrafenweiler, Germany

Filed May 2, 1994, Ser. No. 236,640
Claims priority, application Germany, May 19, 1993, 9307632 U
Int. Cl.[6] B30B 15/34
U.S. Cl. 100—93 P 11 Claims



1. A platen press, comprising:

(a) at least one vertically movable press plate;

(b) a press drive for moving said press plate, and comprising at least two overlying rows of laterally disposed, pneumatically inflatable hoses, the hoses of each row residing adjacent to each other; and

(c) at least one vertically movable, rigid intermediate plate interposed between the at least two hose rows, and extending over the full width of the hose rows in a direction transverse to the hoses.

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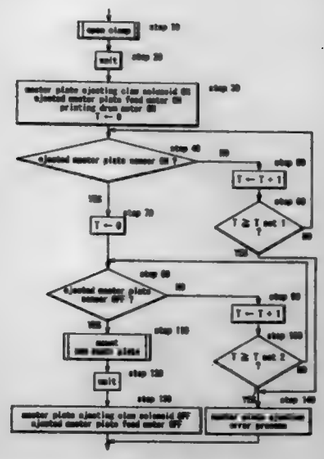
STENCIL PRINTING DEVICE EQUIPPED WITH A STENCIL MASTER PLATE EJECTING DEVICE

Susumu Oshio, and Tadayuki Igarashi, both of Tokyo, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Mar. 1, 1994, Ser. No. 203,577
Claims priority, application Japan, Mar. 5, 1993, 5-045418
Int. Cl.[6] B41L 13/06
U.S. Cl. 101—116 8 Claims

1. A stencil printing device equipped with a master plate ejecting device for removing a stencil master plate mounted around an outer circumferential surface of a printing drum and conveying it to an ejected master plate receiving unit, comprising:

a singular stencil master plate detecting sensor for detecting presence or absence of a stencil master plate in a path for conveying a stencil master plate to said stencil master plate receiving unit; and



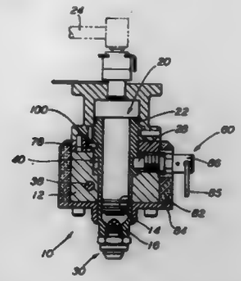
control means for monitoring if a first change of a state of said stencil master plate detecting sensor from a state indicating absence of a stencil master plate to a state indicating presence of a stencil master plate is followed within a preacribed time period by a second change of a state of said stencil master plate detecting sensor from a state indicating presence of a stencil master plate to a state indicating absence of a stencil master plate so that a start of a next operation is permitted when such a sequence of said first change and said second change of a state of said stencil master plate detecting sensor takes place, and a start of a next operation is otherwise prohibited as being a case of a failure to properly eject a stencil master plate.

5,487,334

APPARATUS FOR PRODUCING CHARACTERS ON A PRODUCT

Ralph M. Chew, New Kensington, and Robert W. Ekis, Pittsburgh, both of Pa., assignors to Matthews International Corporation, Pittsburgh, Pa.

Filed Feb. 25, 1993, Ser. No. 22,557
Int. Cl.[6] B05C 17/06
U.S. Cl. 101—126 14 Claims



1. A marking tip assembly for applying a predetermined character to a predetermined surface of a predetermined article, said marking tip assembly comprising:

(a) a body portion engageable with one end of an ink cartridge assembly, said body portion having an aperture formed therethrough substantially along a longitudinal axis thereof;

(b) a porous disk member disposed at one end of said body portion;

(c) a screen means disposed over said porous disk member for providing said predetermined character to be applied to said predetermined surface of said predetermined article;

(d) means engageable with said screen means for holding said screen means in proper orientation over said porous disk member;

(e) a plunger means mounted for reciprocal movement within said aperture for enabling a predetermined amount of melted ink to be forced through both said porous disk member and said screen means; and

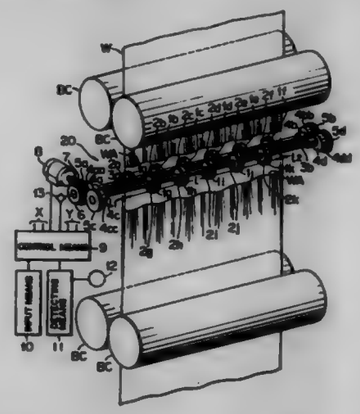
(f) a sealing means disposed adjacent one end of said plunger means for sealing an ink supply to said porous disk member.

5,487,335

WIDTH ADJUSTING DEVICE AND METHOD FOR A PAPER WEB, AND LITHOGRAPHIC ROTARY PRESS HAVING SAME

Takashi Iijima, Yokosuka, and Hideo Ohta, Tokyo, both of, Japan, assignors to Kabushikigaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Continuation of Ser. No. 889,906, May 29, 1992, abandoned. This application Aug. 17, 1994, Ser. No. 291,470
Claims priority, application Japan, Dec. 26, 1991, 3-357580
Int. Cl.[6] B41F 5/06
U.S. Cl. 101—181 3 Claims



1. A printing apparatus through which a dampened paper web travels, said printing apparatus comprising:

first and second printing sections which each print an image on said dampened paper web as said dampened paper web travels through said first and second printing sections;

means for variably changing a width of said dampened paper web so that said image formed on said dampened paper web at said first printing section and said image formed on said dampened paper web at said second printing section are properly aligned with each other, said changing means being disposed between said first and second printing sections;

wherein said changing means includes first and second contact devices disposed at opposite first and second surfaces of said dampened paper web such that said dampened paper web travels between said first and second contact devices, said first and second contact devices respectively having a plurality of first and second contact members disposed thereon along an axial direction such that said plurality of first contact members of said first contact device are staggered relative to said plurality of second contact members of said second contact device thereby producing an alternating sequence of individual first and second contact members as viewed along said axial direction;

further comprising a plurality of rotatable cylinders which drive said dampened paper web, said axis of rotation of each of said rotatable cylinders being approximately parallel to said axial direction;

wherein said changing means includes means for moving said first plurality of contact members into and out of contact with

said first surface and for moving said second plurality of contact members into and out of contact with said second surface, and when said first and second plurality of contact members are in contact with said dampened paper web, said width of said dampened paper web is reduced as compared to when said first and second plurality of contact members are not in contact with said dampened paper web;

further comprising means for controlling said moving means such that said width of said dampened paper web can be variably changed in response to an extent of movement of said first and second plurality of contact members into contact with said dampened paper web;

further comprising an input device through which information concerning the dampened paper web is provided to said controlling means, said information being used by said controlling means to determine said extent of movement;

wherein said first and second plurality of contact members each are a roller member having a circumferential contact surface in elastic contact with said dampened paper web;

wherein said first contact device includes a first shaft on which said first plurality of contact members are mounted, said second contact device includes a second shaft on which said second plurality of contact members are mounted and said changing means further includes first, second, third and fourth rotatable members each having a sleeve projecting from a surface thereof at an eccentric position relative to an axis of rotation of said rotatable member, first and second ends of said first shaft are respectively disposed in said sleeves of said first and second rotatable members and first and second ends of said second shaft are respectively disposed in said sleeves of said third and fourth rotatable members.

5,487,336

SUSPENSION FOR A DEVICE SERVING AS A GUARD IN FRONT OF THE PRINTING-UNIT CYLINDERS OF A PRINTING MACHINE

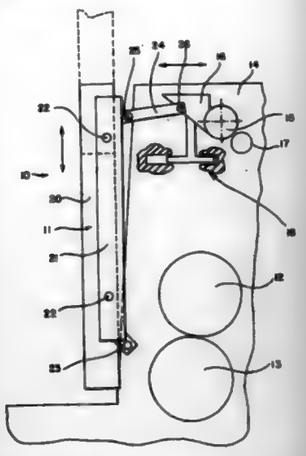
Claus Simeth, Geisenheim, Germany, assignor to MAN Roland Druckmaschinen AG, Germany

Filed Mar. 24, 1995, Ser. No. 410,347

Claims priority, application Germany, Mar. 25, 1994, 44 10 305.8

Int. Cl.[6] B41F *33/14*

U.S. Cl. 101—216 **11 Claims**



1. A printing machine comprising:

a frame; a plate cylinder supported within said frame; an ink fountain for storing printing ink; transfer rolls for transferring printing ink from said ink fountain to said plate cylinder, said transfer rolls including an ink fountain roller, said ink fountain being moveable between an operating position in which said ink fountain roller communicates with said ink fountain and a throw-off position in which said ink fountain roller does not communicate with said ink fountain; a guard mechanism for impeding access to said plate cylinder and ink fountain from outside of said printing machine, said guard mechanism including a guard plate, said guard plate being movable independently of said ink fountain between a first position which impedes access to the interior printing machine and the plate cylinder and ink fountain located therein and a second position which permits access to an interior of said printing machine and said plate cylinder and ink fountain, and said guard plate being connected to said ink fountain such that upon movement of said ink fountain to said throw-off position said guard plate is simultaneously moved to a position which prevents the possibility of said ink fountain from interfering with movement of said guard plate between its first and second positions and which prevents the possibility of said guard plate from interfering with movement of said ink fountain from said operating position to said throw-off position.

5,487,337

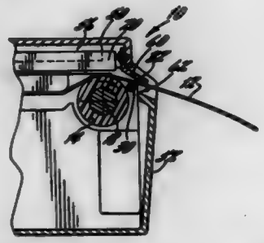
METHOD AND APPARATUS FOR PRINTING LINERLESS MEDIA HAVING AN ADHESIVE BACKING

David M. Uland, Mecklenburg County, N.C., assignor to Data-South Computer Corporation, Charlotte, N.C.

Continuation-in-part of Ser. No. 243,198, May 16, 1994. This application Aug. 11, 1994, Ser. No. 288,958

Int. Cl.[6] B41F *1/08*

U.S. Cl. 101—288 **21 Claims**



1. An apparatus for printing a linerless label strip backed with a tacky adhesive which is supplied in a wound roll, the printing apparatus comprising:

a support frame;

a holder mounted to said frame for rotatably supporting the wound roll of the label strip;

a platen roller rotatably mounted to said frame for supporting the label strip, said platen roller defining a platen roller axis;

means for printing indicia on one side of the label strip and including a print head positioned in alignment with said platen roller such that the label strip is adapted to extend between said platen roller and said print head;

means for rotating said platen roller such that the label strip is thereby advanced between said platen roller and said print head;

stripping means, mounted downstream of said print head and adjacent said platen roller, for directly contacting the tacky adhesive backing of a portion of the adhesive backed label strip and for providing a lifting force to the label strip to thereby strip a portion of the adhesive backed label strip from said rotating platen roller such that the label strip, having indicia imprinted on one side thereof, can be withdrawn from the printing apparatus, said stripping means comprising a stripping roller rotatably mounted to said support frame, said stripping roller defining a stripping roller axis extending in a parallel relationship to the platen roller axis defined by said platen roller,

wherein said print head is mounted vertically above said platen roller, and wherein the uppermost portion of the peripheral surface of said stripping roller is vertically positioned no higher than the uppermost portion of the peripheral surface of said platen roller; and

a tear bar for emitting at least one label to be separated from the label strip after indicia has been imprinted thereon, said tear bar being mounted downstream of said stripping roller such that a leasing edge portion of the label strip extends over said stripping roller after the label has been separated from the label strip.

5,487,338

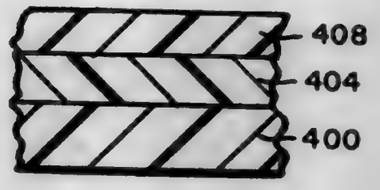
LITHOGRAPHIC PRINTING PLATES FOR USE WITH LASER-DISCHARGE IMAGING APPARATUS

Thomas E. Lewis, E. Hampstead; Michael T. Nowak, Leominster; Kenneth T. Robichaud, Fitchburg, all of Mass., and Kenneth R. Cassidy, Goffstown, N.H., assignors to Presstek, Inc., Hudson, N.H.

Division of Ser. No. 62,431, May 13, 1993, Pat. No. 5,339,737, which is a continuation-in-part of Ser. No. 917,481, Jul. 20, 1992, Pat. No. 5,385,092. This application Aug. 16, 1994, Ser. No. 291,410

Int. Cl.[6] B41N *1/08*

U.S. Cl. 101—454 **26 Claims**



1. A lithographic printing member directly imageable by laser discharge, the member comprising:

a. a first durable, solid organic polymer layer that is oleophobic or hydrophilic;

b. a solid oleophilic substrate underlying the first layer; and

c. an imaging-radiation-reflective layer disposed between the first layer and the substrate;

wherein

d. the first layer is characterized by ablative absorption of imaging radiation and the substrate is not.

5,487,339

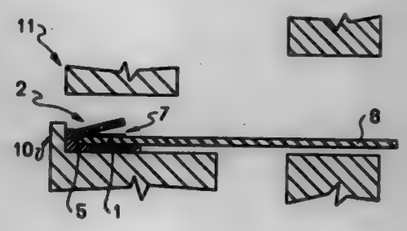
METHOD FOR FASTENING A HOLDING BAR TO A PRINTING BLANKET

Walter Breventani, S. Giuliano Milanese, and Natale Fossati, Cernusco sul Naviglio, both of, Italy, assignors to Reeves Brothers, Inc., Spartanburg, S.C.

Filed Feb. 2, 1994, Ser. No. 190,822

Int. Cl.[6] B41F *1/28*

U.S. Cl. 101—483 **20 Claims**



1. A method for securing a mounting bar to a printing blanket which comprises:

applying a strip of hot melt adhesive along and adjacent an edge of the blanket;

placing the mounting bar along the edge of the blanket upon the strip to form an assembly;

applying heat and pressure to the assembly for a sufficient time to melt the adhesive and provide a substantially uniform thickness of such adhesive between the bar and blanket; and

allowing the melted adhesive to solidify and

securely attach the mounting bar to the blanket.

5,487,340

CARD PRINTING METHOD, ORIGINAL POSITIONING HOLDER, AND CAR PRINTING PAPER

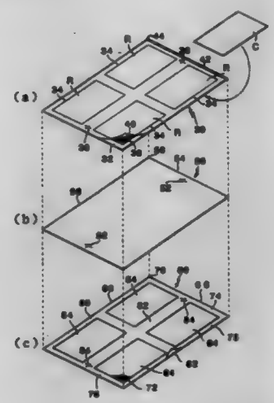
Hirokazu Kanai, Tokyo, Japan, assignor to Omron Corporation, Kyoto, Japan

Division of Ser. No. 59,671, May 12, 1993, Pat. No. 5,337,669. This application Jul. 5, 1994, Ser. No. 270,587

Claims priority, application Japan, May 18, 1992, 4-124827; Aug. 25, 1992, 4-059787 U

Int. Cl.[6] B41M *1/12*

U.S. Cl. 101—486 **11 Claims**



1. An original positioning holder for card printing, comprising:

a base sheet having a size suitable for feeding into a master plate making unit;

an original set up position designating mark provided on a surface of said base sheet for designating an original set up region for a card-like original; and

a registration mark provided outside said original set up region designated by said original set up position designating mark at a position having a prescribed positional relationship to said original set up position designating mark.

5,487,341

SPIKER WITH HOLE SENSING

G. Robert Newman, West Columbia, and Edwin H. Reeves, Columbia, both of S.C., assignors to Harsco Corporation, Wormleysburg, Pa.

Filed Jun. 27, 1994, Ser. No. 265,834

Int. Cl.[5] E01B *29/00*

U.S. Cl. 104—17.1 **25 Claims**

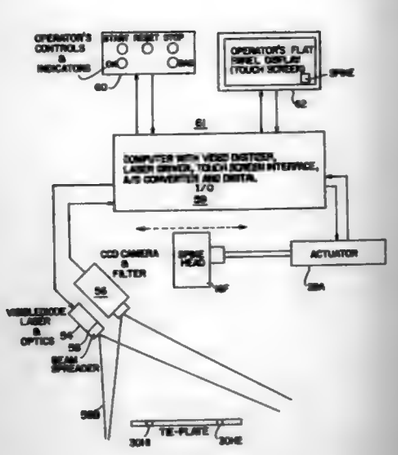
1. A spiker vehicle comprising:

a vehicle frame with four rail engagement wheels;

a first spiker supported by said vehicle frame;

an actuator operably connected to said first spiker to move said first spiker in a rail direction; and

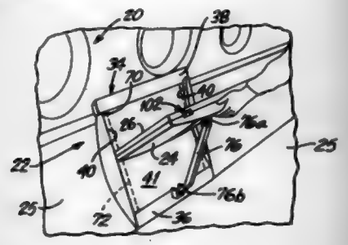
a hole sensing system supported by said vehicle frame and operably connected to control said actuator so as to automati-



cally move said first spiker into a spiking position above a spike hole in a tie plate on a tie of a railroad bed; and

wherein said hole sensing system includes a laser operable to generate a beam and a beam spreader operable to spread the beam so as to apply a line of light having a sufficient length in a rail direction as to simultaneously illuminate two spike holes both on a given side of an adjacent rail, the two spike holes being offset in the rail direction on a tie plate, a detector for detecting light from the laser as reflected by a tie plate, and a hole recognizer connected to said detector for processing signals from said detector and generating a FOUND signal upon determining the locations of said two spike holes.

5,487,342
STOWAWAY TABLE
Henry J. Mack, 82 Firtree Rd., Levittown, Pa. 19056
Filed Sep. 26, 1994, Ser. No. 312,474
Int. Cl.[6] A47B *23/00*
U.S. Cl. 108—42 **34 Claims**



1. A stowaway table for use such as in closely confined areas such as the interior of an airplane comprising

a support frame defining a table storage area,

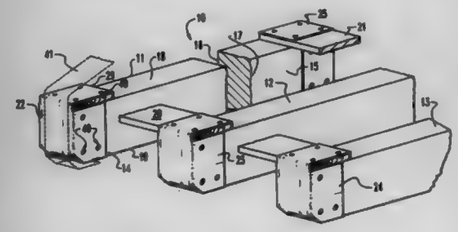
a guide mounted to the frame, having upper and lower ends,

a table leaf having upper and lower ends and dimensioned for being contained within said table storage area,

means mounting said table leaf at its lower end for movement along said guide, wherein said table leaf is positioned in a stowed position within said table storage area when the mounted end of the table leaf is at the lower guide end, and said table leaf is horizontally and outwardly extending from said support frame and in a raised position when the mounted end of the table leaf is at the upper end of the guide, and

a strut having opposing ends, and pivotally mounted at one end to said frame and mounted at the other end to said upper end of said table leaf, said strut including means mounted on the strut and interconnecting said leaf for biasing said upper end of said table leaf upward and outward from said frame and table storage area a sufficient distance when said table leaf is initially to be raised to allow movement of said table lower end upward along said guide and pivoting movement of said table leaf into a horizontal, raised position, wherein said strut aids in supporting the table leaf when it is positioned in its horizontally raised position.

5,487,343
PALLET/SKID SHIPPING PLATFORM
Stewart A. Phillips, 9677 Hillview Ct., Newburgh, Ind. 47630
Filed Jun. 20, 1994, Ser. No. 262,626
Int. Cl.[6] B65D *19/00*
U.S. Cl. 108—51.1 **7 Claims**



1. A storage platform comprising:

a plurality of parallel wooden elongated runners extending in a first direction, each of said runners including a pair of ends with said ends including one end and an opposite end and further with parallel opposite side surfaces extending therebetween and a top surface extending perpendicularly to and between said side surfaces;

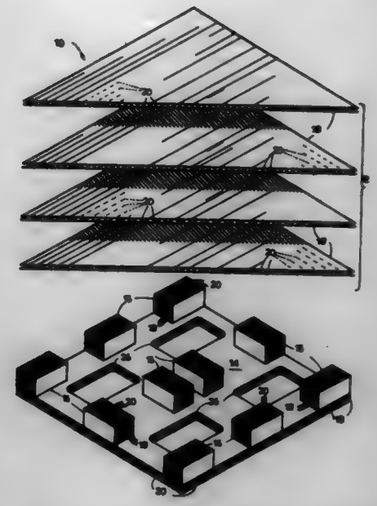
a plurality of top wooden elongated deck boards each mounted to and extending perpendicularly across said runners at said ends and resting atop said top surface; and,

a plurality of brackets mounted to said runners at said ends with each of said brackets separated apart from the remaining of said brackets and with each bracket mounted to a separate single end of a separate single runner, said brackets each including a pair of vertical side walls positioned adjacent and fixedly attached to said side surfaces and further including an end wall joined to and positioned perpendicularly to and between said side walls with said brackets further including a top wall spaced apart from but attached by said end wall to said vertical side walls forming a top slot into which a deck board extends being fixedly attached thereto, said top wall cantileveredly joined to said end wall and extending therefrom in the same direction as said first direction from said end wall and said one end toward said opposite end with said top wall attached directly to said deck boards directing any lifting force applied to said deck boards through said top wall directly to said end wall and said ends of said runners.

5,487,344
BLOCK PALLET CONSTRUCTION USING CORRUGATED SHEET MATERIALS
Joel P. Hutchison, San Antonio, Tex., assignor to Miriam M. Benson, San Antonio, Tex.
Continuation-in-part of Ser. No. 178,835, Jan. 7, 1994. This application Feb. 18, 1994, Ser. No. 198,635
Int. Cl.[6] B65D *19/00*
U.S. Cl. 108—51.3 **10 Claims**

1. A shipping pallet constructed of multiple laminates of corrugated sheet material and formed of components comprising:

a top sheet and a bottom sheet spaced apart from said top sheet, with said top sheet and said bottom sheet each comprising a plurality of corrugated sheets each having a first wall, a second wall, and a plurality of corrugation flutes disposed

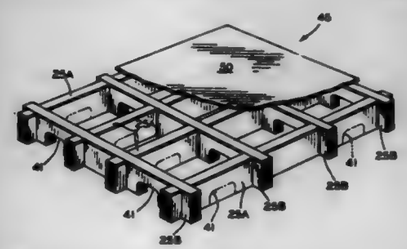


therebetween, said first wall of each of said corrugated sheets being of a heavier weight than said second wall; and

a plurality of blocks sandwiched between said first sheet and said second sheet, with at least said blocks being constructed of plural reverse laminations of corrugated sheets, said corrugated sheets each having a first wall, a second wall, and a plurality of corrugation flutes disposed therebetween said first wall of each of said corrugated sheets being of a heavier weight than said second wall, with said first wall of one of said corrugated sheets being adhesively attached to said first wall of another of said corrugated sheets to provide a reverse lamination, whereby;

at least said blocks of said shipping pallet are substantially free from warps or curvature by means of said reverse lamination of said corrugated sheets used in the construction of said shipping pallet.

5,487,345
PARAMETRICALLY WRAPPED PALLET MEMBER AND PALLET CONSTRUCTED THEREOF
Ken N. Winebarger, Lakeland, Fla., and Stanley M. Lee, Tomball, Tex., assignors to Unipal International Corporation, Lakeland, Fla.
Continuation-in-part of Ser. No. 40,338, Mar. 30, 1993, Pat. No. 5,357,875, which is a continuation of Ser. No. 792,182, Nov. 14, 1991, Pat. No. 5,218,913, which is a continuation-in-part of Ser. No. 631,714, Dec. 21, 1990, abandoned, which is a continuation of Ser. No. 321,022, Mar. 9, 1989, Pat. No. 4,979,446. This application Jul. 5, 1994, Ser. No. 256,223
The portion of the term of this patent subsequent to Dec. 25, 2007, has been disclaimed.
Int. Cl.[6] B65D *19/00*
U.S. Cl. 108—51.3 **30 Claims**



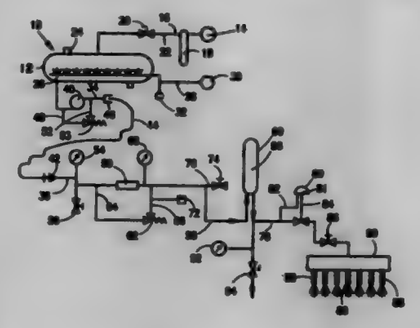
5. A pallet of corrugated material for the shipment and storage of a load of goods stacked therein, comprising:

(a) a plurality of elongated base members laid longitudinally in parallel, spaced positions; and

(b) a plurality of elongated deck members laid laterally in parallel, spaced positions and intersecting said base members at longitudinally, displaced positions thereon to interconnect the same to form a free-standing lattice structure; said base and deck members each having top surfaces located in a common upper horizontal plane to provide the level upper platform, and bottom surfaces located in a common lower horizontal plane to provide a stable, floor contacting base;

wherein each of said base and deck members is a parametrically wrapped pallet member consisting of a closely-packed core of adjacent vertically oriented panels surrounded by a wrapping means of parametric, horizontally and vertically running panels surrounding said closely-packed core on all four sides.

5,487,346
SOIL INJECTION SYSTEM
Donald K. Taylor, 1007 Tiki Dr., Galveston, Tex. 77554
Filed Jan. 10, 1994, Ser. No. 179,249
Int. Cl.[6] A01G *25/16*; **A01C** *23/04*
U.S. Cl. 111—127 **18 Claims**



1. A fluid injecting system for injecting fluid into soil, the system comprising

a tank for receiving and from which is discharged the fluid,

mixing means in the tank for mixing the fluid,

a transfer pump in fluid communication with the mixing tank,

a pressure pump, the transfer pump in fluid communication with the pressure pump for pumping fluid to sequencing pumping means,

sequencing pumping means for providing sequential pulses of fluid to a nozzle apparatus,

nozzle apparatus with at least one nozzle through which fluid is injected into the soil, the sequencing pumping means in fluid communication with the nozzle apparatus,

accumulator apparatus for accumulating a charge of fluid pumped thereto from the preasure pump, and

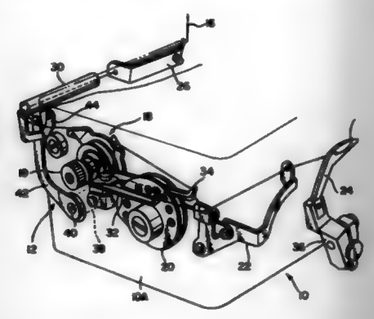
the sequencing pumping means having sensing apparatus to sense a pressure level of the charge of fluid in the accumulator apparatus, and the sequencing pumping means having opening apparatus which opens when a pre-set pressure level of the charge of fluid is sensed, permitting the charge of fluid to flow to the nozzle apparatus.

5,487,347

LOOPER THREAD PAYING-OUT APPARATUS FOR SEWING MACHINE

Satoshi Kegawara, Tokyo, Japan, assignor to Juki Corporation, Tokyo, Japan

Filed Nov. 16, 1994, Ser. No. 340,636
Claims priority, application Japan, Nov. 17, 1993, 5-288109
Int. Cl.[6] D05B 49/00;47/00
U.S. Cl. 112—242 6 Claims



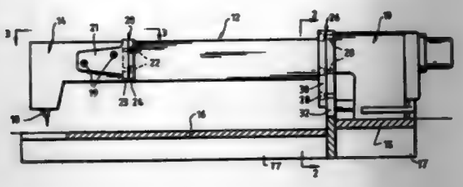
1. A looper thread paying-out apparatus of a sewing machine for feeding a thread from a bobbin through a thread tensioner and a thread take-up into a looper which is movable through a stitching stroke, said apparatus being characterized in that upstream of said thread tensioner an auxiliary paying-out apparatus is arranged for paying out a portion of thread for a length of one stitch just before each stitching stroke of the looper, said auxiliary paying-out apparatus includes an auxiliary thread take-up member pivotably mounted to a feed rock shaft for driving a horizontal cloth feed mechanism and a thread guide, said auxiliary thread take-up member and said thread guide cooperating to draw out and accumulate a portion of thread for a length of one stitch just before thread is drawn out through said thread tensioner into the looper.

5,487,348

SEWING MACHINE WITH ELONGATED ARM AND STRENGTHEING PLATE

John Cordes, Lot 7 Lindaway Place, Tullamarine, Victoria 3043, Australia

Filed Dec. 23, 1993, Ser. No. 173,365
Claims priority, application Australia, Dec. 23, 1992, PL6568
Int. Cl.[6] D05B 73/00
U.S. Cl. 112—259 7 Claims



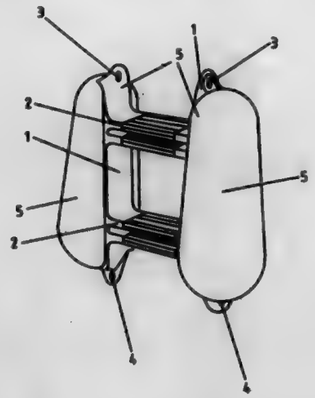
1. A sewing machine comprising: a sewing head; an elongated arm coupled to one end of said sewing head, said elongated arm having another end; a body associated with motor means for driving the sewing head, said body being coupled to the other end of said elongated arm; a pair of bed support rails securely attached to said body; and a strengthening plate clamped between said elongated arm and said body, said strengthening plate extending downwardly from between said elongated arm and body and being also clamped between said pair of bed support rails.

5,487,349

DEVICE FOR COMBINED USE AS A LADDER, FENDER AND LIFE-BUOY FOR BOATS

Leif Andreassen, Fagerliveien 3, N-9007 Tromsø, Norway

PCT No. PCT/NO92/00160, § 371 Date Mar. 30, 1994, § 102(e) Date Mar. 30, 1994, PCT Pub. No. WO93/07050, PCT Pub. Date Apr. 15, 1993
PCT Filed Sep. 24, 1992, Ser. No. 211,467
Claims priority, application Norway, Jan. 2, 1991, 913879
Int. Cl.[6] B63B 59/02
U.S. Cl. 114—219 18 Claims



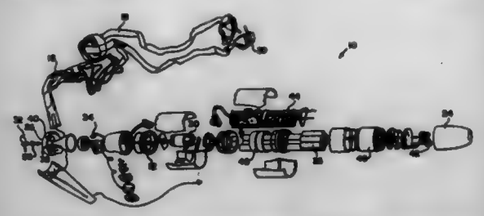
1. A device for use as a combined ladder and fender for boats comprising: two parallel side members, each side member including an inner surface and an outer surface, each side member also including an upper extremity and a lower extremity separated from each other by a fixed length, at least two rigid steps fixed between the inner surfaces of the side members in spaced parallel relation to each other, and fender elements fixed to the outer surface of each side member, each fender element having a cross-section which is generally rounded and bigger in dimension than the side members extending continuously from adjacent the upper extremity to adjacent the lower extremity.

5,487,350

EXPENDABLE UNDERWATER VEHICLE

Raymond A. Chace, Jr., East Freetown, Mass., and Mark C. Manning, Portsmouth, R.I., assignors to Sippican, Inc., Marion, Mass.

Division of Ser. No. 408,860, Mar. 21, 1995. This application Jun. 6, 1995, Ser. No. 469,437
Int. Cl.[6] B63G 8/14
U.S. Cl. 114—330 2 Claims



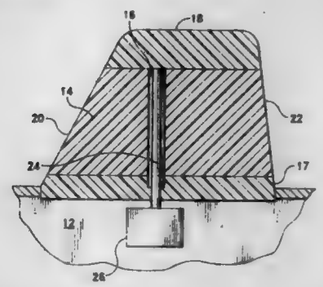
1. An expendable underwater vehicle for use in training naval forces in anti-submarine warfare in ocean water, comprising:
a body having a length along a longitudinal axis of about three to five feet and a diameter of about five inches, the body comprising
a shroud at a rear end of the body which includes a propeller, elevators, rudders, and static hydrodynamic fins;
actuators for controlling the elevators and the rudders;
a shaft coupled at one end to the propeller;
an internal motor, coupled to the other end of the shaft, for applying a torque to the propeller via the shaft;
an internal guidance and control subsystem for implementing a predetermined path and speed profile for the vehicle in the ocean water by controlling the motor and the actuators to cause the vehicle to conform to the path and speed profile, the guidance and control subsystem controlling the motor to increase or decrease the torque applied to the propeller to increase or decrease the speed of the vehicle in the ocean water from a first speed to a second speed thereby creating a moment which tends to cause the vehicle to roll about the longitudinal axis as a function of speed, the static hydrodynamic fins counterbalancing the increased or decreased torque as a function of speed to substantially prevent any roll of the vehicle;
an internal signal processing subsystem for simulating a submarine by generating signals representative of the submarine and causing corresponding acoustic signals to be transmitted into the ocean water; and
an internal power source for powering the signal processing subsystem, the guidance and control subsystem, the motor, and the actuators.

5,487,351

CONTROL SURFACE FOR UNDERWATER VEHICLE

William H. Nedderman, Jr, Middletown, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 13, 1995, Ser. No. 372,080
Int. Cl.[6] B63G 8/18
U.S. Cl. 114—332 10 Claims



1. A control surface system for a vehicle comprising:
a flexible elastomeric body having a distal end, a base end;
a channel therethrough extending from said base end to said distal end, said base end being joined to said vehicle;
a rigid tip bar joined to said distal end of said elastomeric body; and
a shaft having a base end and a distal end, said shaft extending from the interior of said vehicle at said body base end through said channel in said body to said body distal end, said shaft distal end being joined to said rigid tip bar to allow said shaft to rotate said tip bar.

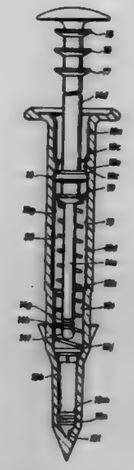
5,487,352

TEMPERATURE INDICATOR FOR COOKED MEATS

John R. Williams, 3301 Providence, Apt. 608, Bryan, Tex. 77803, and Melvin T. Jacobs, Fort Smith, Ark., assignors to John R. Williams, Bryan, Tex.

Filed Sep. 21, 1994, Ser. No. 309,941
Int. Cl.[6] G01K 1/02;11/00
U.S. Cl. 116—218 7 Claims

1. A temperature indicator for indicating the attainment of a particular temperature in an object in which the temperature indicator is inserted, comprising:
a barrel which is generally cylindrical in configuration having a first open end and a second closed end, said barrel having a bore therein which is open at said first open end of said barrel;
said bore of said barrel extending substantially the length of said barrel and terminating in a closed end at said second closed end of said barrel;
a movable stem which is generally cylindrical in configuration, said stem being mounted in said barrel bore for movement between a contracted position and an extended position;
resilient means mounted in engagement with said barrel bore and said stem for urging said stem to said extended position;
said movable stem having a first end located at said first open end of said barrel bore and a second end located at said closed end of said bore with said stem in said contracted position, said first end of said stem protruding from said barrel with said stem in said extended position, said second end of said stem and said closed end of said barrel bore having space therebetween which is filled with a fusible material which is solidified below a certain particular temperature and becomes softened or melted at said particular temperature;
said resilient means moving said stem to said extended position when said fusible material becomes softened or melted;
said first end of said movable stem having at least one annular seal which extends into sealing engagement with said first open end of said barrel bore with said stem in said contracted position; and
said stem having a multipurpose annular seal longitudinally spaced from said at least one annular seal sufficient distance to seal against said barrel bore when said stem is in the contracted position and when said stem is in the extended position.



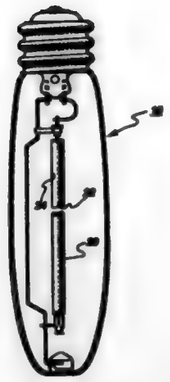
5,487,353

CONVERSION OF DOPED POLYCRYSTALLINE MATERIAL TO SINGLE CRYSTAL

Curtis E. Scott, Mentor; Mary Sue Kaliszewski, Cleveland Heights, both of Ohio, and Lionel M. Levinson, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 14, 1994, Ser. No. 195,187
Int. Cl.[6] C30B 21/04
U.S. Cl. 117—4 20 Claims

1. A solid state process for converting a ceramic polycrystalline alumina body to a sapphire body comprising the steps of:
doping at least a portion of the ceramic material comprising said polycrystalline alumina body with a conversion-enhancing dopant to a selected concentration; and
heating at least the portion of alumina body doped to said selected concentration to a selected temperature for a selected



time so as to convert the portion of the polycrystalline alumina body doped to the selected concentration to a sapphire body, said selected temperature being above one-half of the melting temperature of the doped alumina material but below the melting temperature of the doped alumina material.

5,487,354

METHOD FOR PULLING A SILICON SINGLE CRYSTAL

Wilfried von Ammon; Erich Dornberger, both of Burghausen; Hans Oelkrug, Haiming; Peter Gerlach, Burghausen, and Franz Segieth, Kirchham, all of, Germany, assignors to Wacker-Chemitronic Gesellschaft fuer Eletronik-Grundstoffe mbH, Burghausen, Germany

Filed Dec. 5, 1994, Ser. No. 349,397

Claims priority, application Germany, Dec. 16, 1993, 43 43 051.1; Apr. 28, 1994, 44 14 947.6

Int. Cl.[6] C30B *15/10*

U.S. Cl. 117—13 **6 Claims**

1. A method for pulling a single crystal in the vertical direction with respect to a silicon melt held in a crucible, which method comprises

pulling the single crystal having a solid/liquid phase boundary at a speed which is not higher than a maximum pulling speed (v_{crit}) which is calculated according to the empirical formula

$$v_{crit} = f * G$$

where f is a proportionality factor having the value $13*10^{-4}$ $cm^2/K*min$ and

G is an axial temperature gradient in the region of the solid/liquid phase boundary of the growing single crystal in the unit [K/cm] and the maximum pulling speed v_{crit} is obtained in the unit [cm/min].

5,487,355

SEMICONDUCTOR CRYSTAL GROWTH METHOD

Herng-Der Chiou, Tempe, and Tien-Yu T. Lee, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 3, 1995, Ser. No. 398,258

Int. Cl.[6] C30B *15/20*

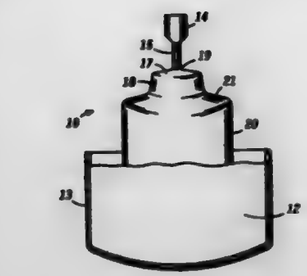
U.S. Cl. 117—13 **13 Claims**

1. A semiconductor crystal growth method comprising the steps of:

providing a melt of a semiconductor material;

inserting a single crystal seed of the semiconductor material into the melt of the semiconductor material;

forming a single crystal ingot of the semiconductor material having a first neck, a second neck, and an elongated body, the second neck having a diameter larger than the first neck and less than the elongated body.



5,487,356

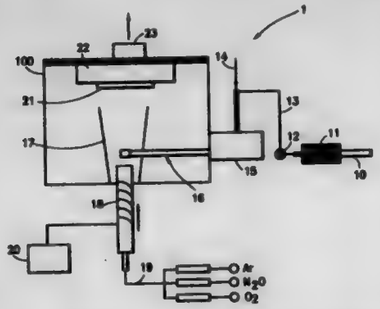
CHEMICAL VAPOR DEPOSITION METHOD OF GROWING OXIDE FILMS WITH GIANT MAGNETORESISTANCE

Yi-Qun Li, and Jiming Zhang, both of Danbury, Conn., assignors to Advanced Technology Materials, Inc., Danbury, Conn.

Continuation-in-part of Ser. No. 280,143, Jul. 25, 1994, which is a continuation of Ser. No. 927,134, Aug. 7, 1992, abandoned. This application Nov. 28, 1994, Ser. No. 345,317

Int. Cl.[6] C30B *23/08*

U.S. Cl. 117—99 **10 Claims**



1. A method of forming on a substrate a giant magnetoresistive (GMR) oxide material of the formula $La_xA_{1-x}MnO_3$

wherein:

A is selected from the group consisting of barium, calcium, and strontium; and

x is a number in the range of from 0.2 to 0.4,

said method comprising the steps of:

providing metalorganic compounds B, C and D in solution, as source reagent solution precursor for said GMR oxide material,

wherein:

B is a beta-diketonate or beta-ketoester adduct of lanthanum;

C is a beta-diketonate or beta-ketoester adduct of A; and

D is a beta-diketonate or beta-ketoester adduct of manganese;

wherein:

each of the B, C and D adducting ligands is the same as the others; and

the molar concentration of B in said source reagent solution is from 0.002 to 0.2 moles/liter of solution;

the molar concentration of C in said source reagent solution is from 0.002 to 0.2 moles/liter of solution; and

the molar concentration of D in said source reagent solution is from 0.01 to 0.5 moles/liter of solution;

vaporizing the source reagent solution precursor to form a multicomponent vapor comprising B, C, and D;

directing the multicomponent vapor into a chemical vapor deposition reactor having a substrate disposed therein, for deposition of lanthanum, A, and manganese from the multicomponent vapor onto the substrate;

maintaining a generally constant pressure in the chemical vapor deposition reactor of oxidizing gas therein, wherein the oxidizing gas is selected from the group consisting of oxygen and N_2O; and

maintaining the substrate at a temperature in the range of 600° C. to 700° C. during said deposition of lanthanum, A, and manganese from the multicomponent vapor onto the substrate.

5,487,357

BORON-CONTAINING ORGANIC GROUP-V COMPOUNDS USEFUL FOR GAS PHASE DEPOSITION OF THE GROUP-V ELEMENT ON SUBSTRATES

Ludwig Pohl, Darmstadt; Herbert Schumann, and Christian Marschall, both of Berlin, all of, Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

PCT No. PCT/EP93/01241, § 371 Date Jan. 28, 1994, § 102(e) Date Jan. 28, 1994, PCT Pub. No. WO93/24675, PCT Pub. Date Dec. 9, 1993

PCT Filed May 19, 1993, Ser. No. 190,028

Claims priority, application Germany, May 29, 1992, 42 17 735.9

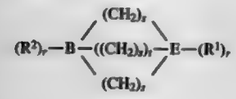
Int. Cl.[6] C23C *16/18;16/38*

U.S. Cl. 117—104 **9 Claims**

1. A method which comprises subjecting a boron-containing, Group VA element-containing organic compound to gas-phase deposition conditions in the presence of a substrate to deposit a Group VA element on the substrate wherein the boron-containing, Group VA element-containing organic compound is a compound of one of the following formulae:

$$(R^1)_{3-m}E(X\text{-}BR^2R^3)_m$$



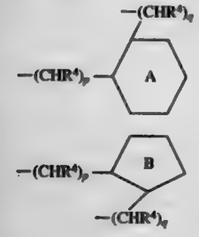


wherein

E is nitrogen, phosphorus, arsenic or antimony,

m is 1, 2 or 3,

X is $—(CHR^4)_n—$



A is a phenyl, cyclohexyl, cyclohexenyl or cyclohexadienyl ring,

B is a cyclopentyl, cyclopentenyl or cyclopentadienyl ring,

n is 1, 2, 3, 4, 5 or 6,

p and q are each, independently of one another, 0, 1, 2, 3, or 4,

Y is an alkylene or alkylidene group having 3–7 C atoms, in which one or more H atoms may be replaced by R^5, and, optionally, one or more non-adjacent double bonds are present in the alkylidene group,

s in each case is 1, 2, 3 or 4,

r and t are each 0 or 1, while

r+t is 1,

R^1, R^2 and R^3 are each, independently of one another, H, an alkyl group having 1 to 8 C atoms, which group may be partially or completely fluorinated, a cycloalkyl or cycloalkenyl group having 3–8 C atoms or an aryl group and

R^4 in each case is H or an alkyl group having 1–4 C atoms which may also be partially or completely fluorinated.

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APPARATUS FOR GROWING SILICON EPITAXIAL LAYER

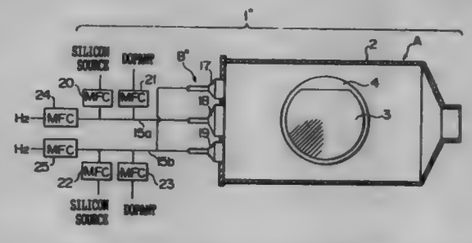
Yutaka Ohta, and Takatoshi Nagoya, both of Annaka, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Division of Ser. No. 163,708, Dec. 9, 1993, Pat. No. 5,421,288. This application Mar. 23, 1995, Ser. No. 408,980

Claims priority, application Japan, Dec. 9, 1992, 4-352940; Jul. 8, 1993, 5-193194

Int. Cl.[6] C30B *35/00*

U.S. Cl. 117—200 **4 Claims**



1. An apparatus for growing a silicon epitaxial layer on a main surface of a silicon substrate wafer, comprising:

a horizontal chamber;

a susceptor mounted within the chamber, the top surface of the susceptor holding the silicon substrate wafer in a horizontal position so that said main surface of the silicon substrate wafer is facing upward;

means for rotating said susceptor;

an exhaust gas outlet;

a series of injectors arranged; transversely to the horizontal axis of the chamber, the injectors comprising a central injector passing a flow of a reactive gas past a central part of the chamber and peripheral injectors passing flows of the reactive gas past a peripheral part of the chamber, the reactive gas consisting of a silicon source, a dopant and hydrogen;

a first gas feeder system connected to the central injector and feeding the reactive gas to the central injector;

a second gas feeder system connected to the peripheral injectors and feeding the reactive gas to said peripheral injectors;

a first controller provided in the first gas feeder system and controlling the mass flows of at least one of the silicon source and the dopant fed by the central injector; and

a second controller provided in the second gas feeder system and controlling the mass flows of at least one of the silicon source and the dopant fed by the peripheral injectors independently of the first controller. injector independently of the first controller.

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LOW AMPERAGE ELECTRONIC MILK LEVEL DETECTOR

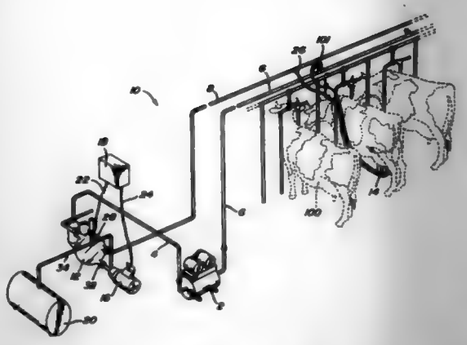
Michel Montreuil, 13, rue Marie-Claude, St-Charles-de-Bellechasse, Québec, Canada

Filed Mar. 9, 1994, Ser. No. 207,708

Int. Cl.[6] A01J *5/00*

U.S. Cl. 119—14.17 **8 Claims**

1. An electric device for detecting the level of milk in a receptacle in view of controlling said level of the milk, said receptacle being installed in a milking system for accumulating milk drawn



through piping of the milking system from at least one animal being milked, and said receptacle comprising at least two electrodes mounted therein to contact milk when a predetermined level of milk is reached in the receptacle, said milk level detecting device comprising:

an alternating current source for generating a detecting alternating current having a frequency situated with a frequency range comprised between 0.5 kHz and 1 MHz, said alternating current source being connected to the two electrodes whereby the detecting alternating current flows through said alternating current source and the two electrodes when said two electrodes contact milk; and

means for sensing the detecting alternating current to thereby detect reaching of said predetermined level of milk;

wherein the frequency of the detecting alternating current, situated within the frequency range comprised between 0.5 kHz and 1 MHz, reduce the sensitivity of the animal being milked to any stray current originating from said alternating current source and reaching the animal being milked.

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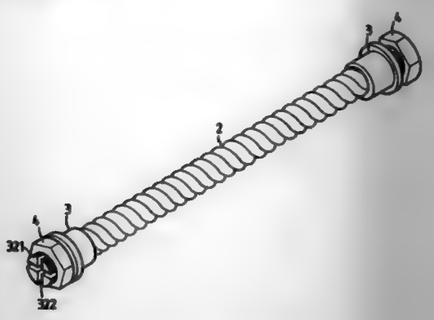
PERCHING ROD FOR BIRD CAGE

Yeong J. Yau, P.O. Box 1750, Taichung, Taiwan, Prov. of China

Filed Jun. 27, 1994, Ser. No. 266,475

Int. Cl.[6] A01K *31/12*

U.S. Cl. 119—26 **1 Claim**



1. A perching rod for a bird cage comprising:

a perching rod body for disposing in said bird cage, said perching rod including two ends;

two retaining members each including a first end fastened to said ends of said perching rod and including a second end having an outer thread formed thereon, said second ends of said retaining members each including a cruciform slot formed therein and having a predetermined depth for retaining therein an upright rod, a horizontal rod or a junction of said upright rod and said horizontal rod of said bird cage, said cruciform slots of said retaining members each including a bottom surface having an anti-skidding surface formed thereon for preventing sliding movement of said upright rod and said horizontal rod in said cruciform slots; and

two fastening nuts having an inner thread formed therein for engaging with said outer thread of said retaining member and for securing said perching rod body to said upright rod and said horizontal rod.

5,487,361

SUPPLEMENTAL AUTOMOBILE SEAT FOR USE BY DOGS

Deanna Dean, 312 Woodward Rd., Media, Pa. 19065

Filed Nov. 23, 1994, Ser. No. 344,012

Int. Cl.[6] A01J *1/00*

U.S. Cl. 119—28.5 **1 Claim**



1. A new and improved supplemental automobile seat for use by dogs traveling in an automobile comprising, in combination:

a horizontal seat component having parallel side edges, a rear edge positionable at a location adjacent to a rear edge of a rear car seat of the automobile, and a parallel forward edge positionable forwardly of a forward edge of the rear car seat, the horizontal seat component formed of a rigid component covered with a foam material, the horizontal seat component further having a width that is essentially equal to a width of the rear car seat upon which it is positioned;

a vertical seat component having parallel side edges, an upper edge positionable at a location adjacent to an upper edge of the rear car seat, and a parallel lower edge positionable at a location adjacent to the rear edge of the horizontal seat component, the vertical seat component formed of a foam material, the vertical seat component having a width that is essentially equal to the width of the rear car seat upon which it is positioned;

a cover secured over the horizontal seat component and the vertical seat component and with the cover having a living hinge integrally formed therealong at a region between the rear edge of the horizontal seat component and the lower edge of the vertical seat component to allow the seat components to be folded against each other to facilitate their storage, the cover further having a side edge with a slot formed therealong and with the seat components removable from the cover through the slot, the cover additionally including pile-type fasteners attached to areas of overlap adjacent to the slot and with the fasteners securable to prevent access to the seat components, the cover also including a pair of spaced slots formed through the living hinge and with each slot sized to receive a half of a seat belt of the rear car seat therethrough;

a pair of removable vertical legs positioned in contact with and extended downwardly from the horizontal seat component at a location adjacent to the forward edge thereof, the legs having lower ends positionable on a floor of the automobile at a location forwardly of the rear car seat; and

a slide loop of an essentially inextensive material securable round the seat belt when the halves thereof are coupled together and with the slide loop having a size that allows it to move along a longitudinal extent of the coupled seat belt, the slide loop further having a swivel component secured thereto and with the swivel component securable with an end of a dog leash.

5,487,362

COMBUSTION ENGINE OF THE PISTON ENGINE TYPE

Jens E. Wellev, Virum; Flemming Voergaard, Helsinge, and Holger S. Andersen, Skibby, all of, Denmark, assignors to Alex Jensen A/S, Skibby, Skibby, Denmark

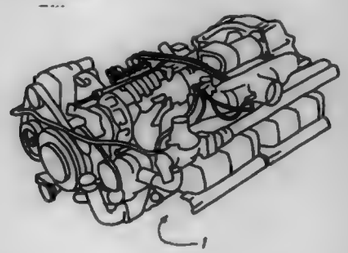
PCT No. PCT/DK91/00079, § 371 Date Sep. 15, 1992, § 102(e) Date Sep. 15, 1992, PCT Pub. No. WO91/14086, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 15, 1991, Ser. No. 924,072

Claims priority, application Denmark, Mar. 16, 1990, 693/90

Int. Cl.[6] F02M *21/02*

U.S. Cl. 123—27 GE **9 Claims**



1. A combustion engine of the piston engine type for running on a mixture of combustible gas and air comprising:

at least one combustion chamber comprising a piston and having a static compression ratio in the range of 15:1 to 20:1;

apparatus for producing a charge of the mixture of combustible gas and air in the combustion chamber; and

a spark generating device in the combustion chamber for igniting the mixture of combustible gas and air at an ignition point situated in the range of 0° to 20° after top dead center of the piston in the combustion chamber.

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INTERNAL-COMBUSTION ENGINE COMPRISING TWO CYLINDER BANKS

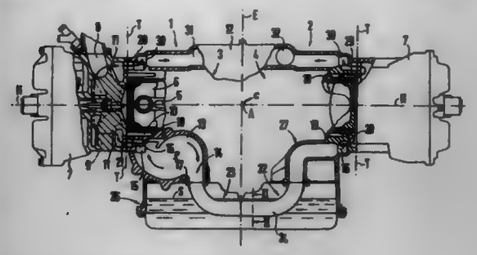
Manfred Batzill, Neuhausen; Hans-Joachim Esch, Helmsheim; Hans Mezger, Freiberg; Winfried Distelrath, Stuttgart, and Albrecht Reustle, Walheim, all of, Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany

Filed Jul. 5, 1994, Ser. No. 266,860

Claims priority, application Germany, Jul. 2, 1993, 43 22 030.4

Int. Cl.[6] F02B *75/18*

U.S. Cl. 123—41.74 **8 Claims**



1. An internal-combustion engine comprising:

an engine crankshaft having a crankshaft axis;

first and second cylinder banks with cylinder blocks for cylinders housing pistons drivingly connected to the crankshaft, said first and second cylinder banks being disposed at opposite lateral sides of the crankshaft axis;

a first cylinder head connected to the first cylinder block along a first separating plane;

a second cylinder head connected to the second cylinder block along a second separating plane;

a cooling water pump arranged on an end face of the first cylinder block;

a connecting duct extending between the pump and the second cylinder bank, said connecting duct extending underneath the crankshaft axis;

cooling water jackets in the cylinder blocks, and a cooling opening in the cylinder heads through which cooling water from the pump flows in a transverse manner;

a cooling water collector arranged above the crankshaft axis for collecting water flowing from the cylinder banks;

a feeding duct for cooling water arranged in each respective lower wall of the first and second cylinder banks adjacent the respective first and second separating planes and extending below and parallel to the crankshaft axis, said feeding ducts extending from respective lower walls of the cylinder banks through the associated separating plane into the associated cylinder head and then communicating with said cooling water jackets; and

a discharge duct for cooling water arranged in each respective upper wall of the first and second cylinder banks adjacent the respective first and second separating planes and extending parallel to the crankshaft axis.

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PISTON FOR AN INTERNAL COMBUSTION ENGINE

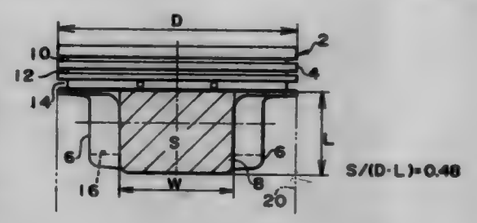
Masashi Takeda; Kazuyuki Fukuhara, both of Toyota, and Motoichi Murakami, Susono, all of, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 23, 1994, Ser. No. 216,981

Claims priority, application Japan, Jun. 10, 1993, 5-138244

Int. Cl.[6] F02F *3/00*

U.S. Cl. 123—193.6 **10 Claims**



1. A piston for an internal combustion engine comprising:

a top portion;

a pair of boss portions opposed to each other in a first diametrical direction of the piston, each of the boss portions being integrally connected to the top portion from a lower side of the top portion and having a piston-pin hole formed therein; and

a pair of skirt portions opposed to each other in a second diametrical direction of the piston perpendicular to the first diametrical direction of the piston, each of the skirt portions being integrally connected to the top portion from the lower side of the top portion, wherein each skirt portion is configured so as to satisfy the following dimensional relationship:

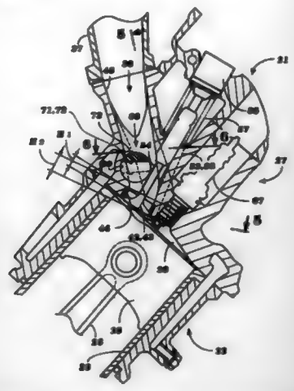
$$.4 \leq S/(D \cdot L) \leq .55$$

where, L is a length of said each skirt portion, D is a diameter of a cylinder bore into which said piston is inserted, and S is an area of an image which each skirt portion forms when projected onto a vertical plane parallel to the first diametrical direction of the piston and wherein each skirt portion has an upper portion and a lower portion, and wherein the lower portion has a greater width than the upper portion.

5,487,365
INDUCTION SYSTEM FOR ENGINE

Yoshiharu Isaka, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation-in-part of Ser. No. 834,604, Feb. 12, 1992, Pat. No. 5,359,972. This application Jan. 14, 1994, Ser. No. 182,274
Claims priority, application Japan, Feb. 21, 1991, 3-047436; Apr. 8, 1991, 3-101789; Apr. 15, 1991, 3-111182; Jun. 28, 1991, 3-185400; Aug. 5, 1991, 3-218015; Aug. 30, 1991, 3-247018; Jan. 14, 1993, 5-005199
Int. Cl.[6] F02B *31/00*
U.S. Cl. 123—306 33 Claims

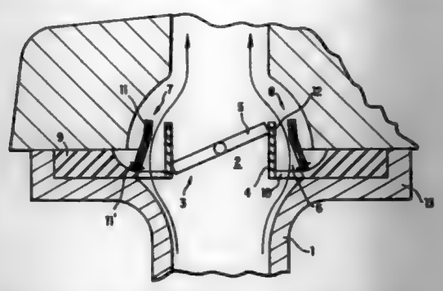


1. An induction system for an internal combustion engine having a cylinder bore defining in part a combustion chamber, induction passage means for delivering a charge to said combustion chamber, said induction passage means providing a generally axially unrestricted flow of the charge into said combustion chamber of said cylinder bore, and control valve means in said induction passage means and movable between a first position wherein the flow of the charge into the combustion chamber is generally unrestricted and in a generally axial direction and a second position to redirect the flow into the combustion chamber in a direction to generate a slant tumble flow with the charge flowing in a tumble motion around an axis transverse to the axis of the cylinder bore and at an angle to a plane containing the cylinder bore and tumble axis.

5,487,366
INTAKE MANIFOLD

Klaus Döhring, München, Germany, assignor to Firma Carl Freudenberg, Weinheim, Germany

Filed Apr. 8, 1994, Ser. No. 225,198
Claims priority, application Germany, Apr. 8, 1993, 43 11 744.9
Int. Cl.[6] F02B *27/02*; F02M *35/10*
U.S. Cl. 123—336 18 Claims



1. An intake manifold for use with a combustion engine, comprising:

a dimensionally stable induction pipe body having at least one first flow-through opening, the flow through opening defining a passage and further having a boundary wall;

at least one first adjusting element arranged in the first flow-through opening to vary the cross-sectional area of the passage of the first flow-through opening, the adjusting element comprising a throttle valve that is rotatably supported in the induction pipe body and which is capable of being urged to sealingly contact the boundary wall of the first flow-through opening;

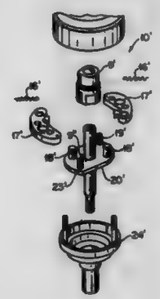
at least one second flow-through opening in the area immediately laterally adjacent the throttle valve within the induction pipe body, the second flow-through openings serving as a by-pass so as to be immediately laterally adjacent to the first flow-through opening in the area of the throttle valve; and

at least one adjusting element assigned to the second flow-through opening for sealing same, said adjusting element comprising a one-way valve that can be forced into an open position only by a fluid flow directed towards the associated combustion engine.

5,487,367
MOTORCYCLE CIRCUIT BREAKER IGNITION ADVANCE

Keith R. Lassiter, P.O. Box 432, Kearneysville, W. Va. 25430

Filed Apr. 3, 1995, Ser. No. 415,252
Int. Cl.[6] F02D *5/00*
U.S. Cl. 123—420 6 Claims



1. In combination with circuit breaker ignition apparatus of motorcycle engines, an ignition advance unit, comprising:

a) an advance unit assembly base plate 23' and centrally disposed breaker cam journal 24' thereon, said backing plate journal having connection to a driving gear cam 24'; opposed flyweight mounting pins 19' projecting from the backing plate 23' and opposed flyweight mounting pins 19' on the plate 23'; opposed flyweight roll pins 18' thereon; breaker cam spot pin 6' interposed on the plate 23' between the breaker cam 9' and flyweight roll pins 18';

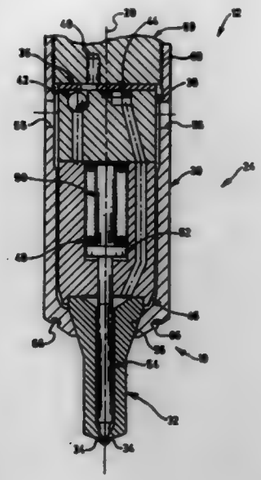
b) a breaker cam 9' mounted in extension of journal 24', centrally thereof;

c) centrifugally activated flyweights 17' slideably contacting contiguous portions of the baseplate 23, the flyweights being pivoted upon respective mounting pins 19' at opposed proximal breaker cam ends thereof, with tension springs 16' interconnecting distal ends of the flyweights 17' to the mounting pins 19', said flyweights having roll pins 18' which are press fit into the baseplate 23'.

5,487,368
COMBUSTION GAS SEAL ASSEMBLY ADAPTED FOR A FUEL INJECTOR

E. Eugene Bruning, Normal, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Jul. 29, 1994, Ser. No. 282,942
Int. Cl.[6] F02M *55/02*
U.S. Cl. 123—470 16 Claims



1. A combustion gas seal assembly adapted for a fuel injector installed in an engine, said combustion gas seal assembly comprising:

an engine member;

a fuel injector, said fuel injector including a nozzle case and a nozzle tip portion, said nozzle case including an axial aperture through which said nozzle tip extends; and

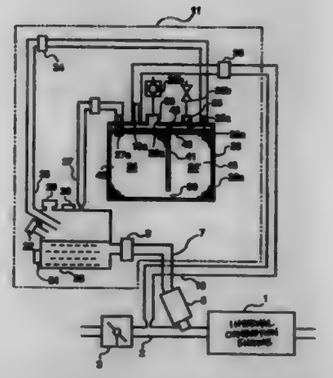
a flexible annular seal positioned between the nozzle case and the engine member, said nozzle case and engine member each defining opposed annular seat portions in contact with one another, at least one of the seat portions of the nozzle case and the engine member defining an annular groove, said flexible annular seal positioned in the annular groove and sealedly compressed by the opposed annular seat portions.

5,487,369
EVAPORATIVE EMISSION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Takeshi Hara; Kouichi Hidano; Teruo Wakashiro; Kazumi Yamazaki, all of Wako, and Tomoyuki Kawakami, Tochigi, all of, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1994, Ser. No. 338,218
Claims priority, application Japan, Nov. 9, 1993, 5-304667
Int. Cl.[6] F02M *33/02*
U.S. Cl. 123—520 7 Claims

1. In an evaporative emission control system for an internal combustion engine having an intake passage, and a fuel tank, including a canister for adsorbing evaporative fuel generated in said fuel tank, partition means partitioning an interior of said canister at least into a first adsorbent chamber and a second adsorbent chamber, a communication passage connecting between said first and second adsorbent chambers, a first introducing passage connected to said first adsorbent chamber, for introducing said evaporative fuel generated in said fuel tank into said first adsorbent chamber on an occasion other than at refueling, a purging passage connected to said first adsorbent chamber, for purging said evaporative fuel adsorbed in said canister into said intake passage of said engine, and an air-inlet passage connected to said second adsorbent chamber and communicating with the atmosphere, the improvement comprising:



a second introducing passage connected to said second adsorbent chamber, for introducing said evaporative fuel generated in said fuel tank at refueling into said second adsorbent chamber;

an additional passage connected to said first adsorbent chamber and communicating with the atmosphere, said additional passage having a cross sectional area larger than a cross sectional area of said air-inlet passage;

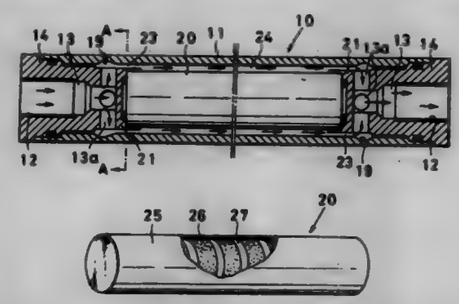
first valve means arranged across said air-inlet passage, for closing said air-inlet passage at refueling; and

second valve means arranged across said additional passage, for opening said additional passage at refueling.

5,487,370
FUEL OIL IMPROVEMENT APPARATUS

Minoru Miyazaki, Tosu, Japan, assignor to Atsushi Maki, Tokyo, Japan

Filed Jan. 25, 1995, Ser. No. 377,956
Claims priority, application Japan, Feb. 2, 1994, 6-030916
Int. Cl.[6] B01D *35/06*
U.S. Cl. 123—538 3 Claims



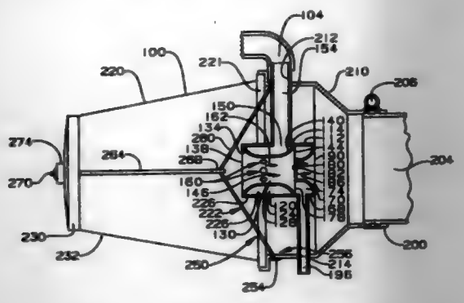
1. An improvement apparatus of fuel oil to be fed, comprising a multiplicity of annular or disk-like permanent magnets having one surface of N pole and the other surface of S pole and arranged in close contact with each other in mutually repulsive relation to be enclosed into a sealed case to form a repulsive magnetic field producing body adapted to produce repulsive magnetic fields produced by said permanent magnets disposed in the mutually repulsive relation in outer peripheral portions of said case, a cylindrical casing in which said repulsive magnetic field producing body is held loosely and having an inlet of fuel oil formed in one end and an outlet of fuel oil formed in the other end, and annular loose space formed between said repulsive magnetic field producing

body and said cylindrical casing to constitute an outer peripheral oil passage of fuel oil which communicates with an inlet and an outlet of fuel oil, whereby the repulsive magnetic fields produced by said repulsive magnetic field producing body are exerted on fuel oil passing through said outer peripheral oil passage to convert oil particles of fuel oil into minute particles.

5,487,371
AIR-OIL SEPARATOR UTILIZING CENTRIFUGAL SEPARATION

Kurt D. Beckman, Chillicothe, and Beth A. Hinchee, Murphysboro, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 27, 1994, Ser. No. 363,782
Int. Cl.[6] F02B *47/08*; F02M *25/06*
U.S. Cl. 123—572 **12 Claims**

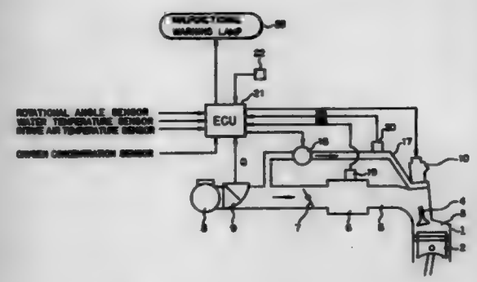


1. An air-oil separator, comprising:
a housing having an outer wall;
a first compartment located within the housing, the first compartment having an outer annular chamber, an inner chamber in communication with the outer chamber, an apertured central annular wall separating the outer chamber from the inner chamber with the central wall having a first end portion diverging toward the outer wall to define a first fluid inlet port adapted to admit fresh air into the inner chamber, and second fluid inlet port extending from the outer chamber through the outer wall of the housing adapted to admit blow-by gas into the outer chamber so that blow-by gas is allowed to flow through the apertured central wall an into the inner chamber for introduction to the fresh air;
the central wall having a second end portion opposite the first end portion and diverging toward the outer wall to define a fluid outlet port adapted to allow the fresh air and blow-by gas to exit the first compartment; and
a second compartment located within the housing adjacent the first compartment, the second compartment adapted to separate oil from the blow-by gas within the fresh air as the blow-by gas and fresh air pass therethrough.

5,487,372
MALFUNCTIONAL DETECTING APPARATUS FOR AN ASSIST AIR CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Hisashi Iida, Ama, and Keiji Honjoh, Anjo, both of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 7, 1994, Ser. No. 255,767
Claims priority, application Japan, Jun. 8, 1993, 5-137932
Int. Cl.[6] F02B *23/00*
U.S. Cl. 123—585 **11 Claims**

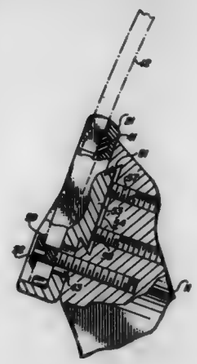


1. A malfunctional detecting apparatus for an assist air control system for internal combustion engines comprising:
a fuel injection valve for injecting fuel from an injection port thereof into an intake passage at downstream side of a throttle valve;
assist air passage means for defining an assist air passage having an opening toward said injection port of said fuel injection valve through which assist air passes;
an air control valve disposed in said assist air passage for being operated to open and close said assist air passage;
control means for controlling quantity of air to be introduced into said opening of said assist air passage by opening and closing said air control valve in synchronism with said fuel injection valve;
an assist air passage pressure sensor disposed in said assist air passage at downstream side of said air control valve for detecting air pressure in said assist air passage; and
malfunctional judging means for said air control valve based on air pressure detected by said assist air passage pressure sensor immediate after said air control valve is operated.

5,487,373
ARCHERY BOW WITH LATERALLY ADJUSTABLE LIMB POCKET

Allan F. Smith, Tucson, Ariz., assignor to Precision Shooting Equipment, Inc., Tucson, Ariz.

Filed Aug. 24, 1994, Ser. No. 294,927
Int. Cl.[6] F41B *5/00*
U.S. Cl. 124—23.1 **9 Claims**

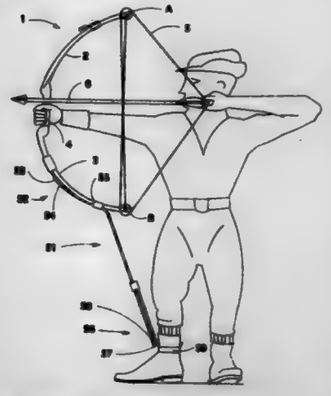


1. An archery bow comprising:
a handle having two ends;
a pair of limbs each having a butt end for attachment to said handle and a free end;
a bowstring interconnecting the free ends of said limbs;
a pair of limb pockets interconnecting the ends of the handle and the butt ends of said limbs;
a pair of limb bolts for attaching said limbs and said pockets to said handle;
wherein each limb pocket has an elongated feature extending across said pocket, said feature permitting at least a portion of said pocket to move from side to side on said handle whereby each limb can be positioned laterally on said handle.

5,487,374
BOW STABILIZER

Michael Herminath, 806 N. Water, New London, and Richard Wolfrath, Hwy. 45 S., both of New London, Wis. 54961

Filed Jul. 1, 1994, Ser. No. 269,776
Int. Cl.[6] F41B *5/14*
U.S. Cl. 124—86 **24 Claims**



1. A bow stabilizer and positioner comprising;
a) a tether having a length, a bow end, and a foot end,
b) said tether having said bow end provided with a means for connecting said tether to a lower limb of a bow,
c) said tether having said foot end provided with a means for connecting said foot end to a foot of a bowman, and
d) the length of said tether is such that said tether can be drawn taut by a bowman raising said bow to a firing position.

20. A method for stabilizing and positioning a bow having at least; a grip, an upper limb, a lower limb, and comprising the steps of,
1) attaching a first end of a tether to the lower limb of the bow,
2) attaching a second end of said tether to the foot of a bowman,
3) engaging the grip by a hand of the bowman,
4) raising the bow until a tension is established in the tether, thereby bringing the bow into a vertical plane,
5) maintaining the tension in the tether while drawing the bow and releasing an arrow, thereby providing a steady-rest for stabilizing the vertical plane of the bow during the drawing of the bow and the releasing of the arrow.

5,487,375
STABILIZERS ADAPTED TO BE CONNECTED TO A BOW

Norman J. McDonald, Jr., Rte. 1, Box 155, Hendrix, Okla. 74741

Division of Ser. No. 127,846, Sep. 28, 1993. This application May 9, 1994, Ser. No. 239,490
Int. Cl.[6] F41B *5/20*
U.S. Cl. 124—89 **4 Claims**

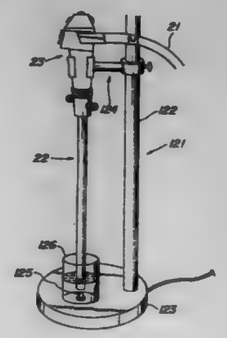


1. A stabilizer for use with a bow comprising:
a stabilizer tube having a first end and a second end, a stabilizer opening being formed through the stabilizer tube forming a stabilizer chamber, the stabilizer tube comprising:
a first tube segment having a first end forming the first end of the stabilizer tube and a second end, a first chamber being formed in the first tube segment forming a portion of the stabilizer chamber; and
a second tube segment having a first end forming the second end of the stabilizer tube and a second end, a second chamber being formed in the second tube segment forming a portion of the stabilizer chamber;
a divider ring, the second end of the first tube segment being connected to the divider ring and the second end of the second tube segment being connected to the divider ring, the divider ring having an opening formed therethrough providing fluidic communication between the first chamber and the second chamber;
a first piston disposed in the first chamber;
spring means disposed in the first chamber for resiliently positioning the first piston between the first end of the first tube segment and the divider ring;
a second piston disposed in the second chamber; and
spring means disposed in the second chamber for resiliently positioning the second piston between the second end of the second tube segment and the divider ring.

5,487,376
WASHING APPARATUS FOR A PROTECTION COVER FOR AN ENDOSCOPE

Hisao Yabe; Yoshihiro Iida; Akira Suzuki; Hideo Ito; Yoshio Tashiro; Minoru Yamazaki, and Osamu Tamada, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1993, Ser. No. 37,485
Claims priority, application Japan, Feb. 25, 1993, 5-007138 U; Mar. 1, 1993, 5-040014
Int. Cl.[6] A61B *1/00*
U.S. Cl. 600—121 **3 Claims**



1. An apparatus for washing a protection cover for use in an endoscope system including an endoscope having an insertion section insertable into a cavity under inspection and an operation section to which a proximal end of the insertion section is connected and a protection cover having an insertion section cover for covering said insertion section of the endoscope and an operation section cover for covering said operation section of the endoscope, said insertion section cover having an air supply conduit channel, a water supply conduit channel and a suction channel formed therein, said washing apparatus comprising:
means for supporting said protection cover in such a posture that the distal end of the insertion section cover is directed toward the ground;
means for containing a liquid into which said distal end of the insertion section cover is immersed; and
means for automatically starting a washing operation, said washing operation being performed by supplying air through said air supply conduit channel, thereafter supplying water through said water supply conduit channel and thereafter sucking liquid through said suction channel.

5,487,377
UTERINE MANIPULATOR AND MANIPULATOR TIP ASSEMBLY

Steven R. Smith, Draper; Christopher A. Cutler, Centerville, and William D. Wallace, Salt Lake City, all of Utah, assignors to Clinical Innovation Associates, Inc., Murray, Utah

Filed Nov. 5, 1993, Ser. No. 148,840
Int. Cl.[6] A61B *1/32*
U.S. Cl. 600—204 20 Claims

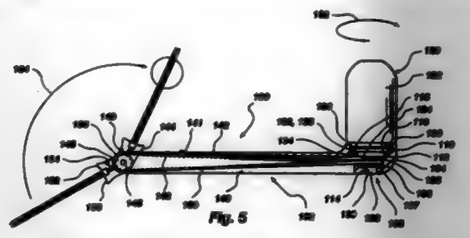


Fig. 5

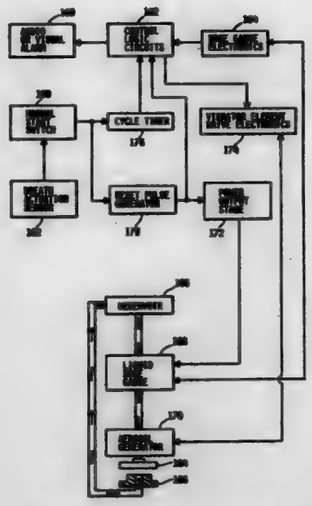
1. A uterine manipulator, comprising:
an elongated insertion rod defining a longitudinal axis and having a proximal end and a distal end;
tip support means pivotally mounted to said distal end of said insertion rod about an axis substantially perpendicular to said insertion rod axis and including means for carrying a manipulator tip assembly thereon;
tip drive means secured to said proximal end of said insertion rod for manual movement by a user of said uterine manipulator;
drive linkage means for transmitting said manual movement of said tip drive means to said tip support means to effect rotation of the latter about said pivot axis over a range of motion of at least about 90° anteverted and at least about 30° retroverted with respect to said insertion rod axis; and
a manipulator tip assembly secured to said tip support, extending therefrom and including a substantially rigid tubular element having an inflatable balloon proximate a free end thereof and lumen means for inflating said balloon.

5,487,378
INHALER

Paul A. Robertson, Chilshall; Peter J. Houzego, Oakington, both of, Great Britain; Borge R. Jensen, Brussels, Belgium; Murray A. Creeke, Saffron Walden, Great Britain; Neil Emerton, Riverside, Great Britain; Peter D. Hodson, Trowell, Great Britain, and Eric A. Baum, Loughborough, Great Britain, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

PCT No. PCT/GB91/02250, § 371 Date Oct. 4, 1993, § 102(e) Date Oct. 4, 1993, PCT Pub. No. WO92/11050, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 17, 1991, Ser. No. 78,151
Claims priority, application United Kingdom, Dec. 17, 1990, 9027257; Jan. 24, 1991, 9101527
Int. Cl.[6] A61M *11/00*
U.S. Cl. 128—200.16 24 Claims

1. An inhaler device for dispensing droplets of liquid medicament to a patient comprising a body having a mouthpiece or nasal adaptor, a reservoir of liquid medicament, and an aerosol generator in communication with said reservoir, the aerosol generator comprising a chamber for liquid medicament and a nozzle arrangement comprising a plurality of orifices in fluid flow relationship with liquid medicament in said chamber, the reservoir having walls which tend to spring to a state of maximum internal volume so as to create a slight negative head of pressure within said reservoir and said chamber, the aerosol generator further comprising means for cyclically pressurising the liquid medicament in said chamber such that liquid from said chamber is periodically expelled through the orifices as atomised droplets of liquid medicament so they may be inhaled via the mouthpiece or nasal adaptor, the inhaler device

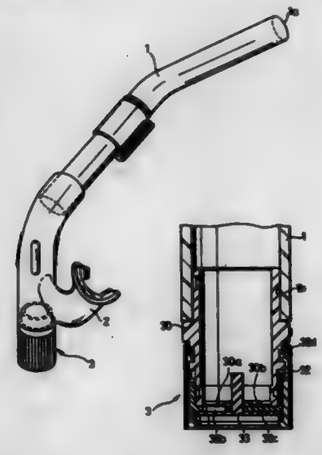


additionally comprising dosage control means for deactivating the aerosol generator after a predetermined time or after a predetermined volume of liquid medicament has been expelled from the chamber.

5,487,379
SNORKEL

Eiichi Koshiishi, Tokyo, Japan, assignor to Harisan Co., Ltd., Tokyo, Japan

Filed Nov. 1, 1994, Ser. No. 332,765
Claims priority, application Japan, Aug. 30, 1994, 6-204910
Int. Cl.[6] A62B *7/00*; B63C *11/00*
U.S. Cl. 128—201.11 2 Claims

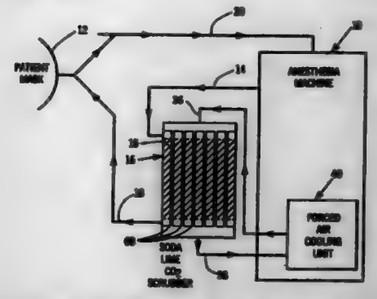


1. A snorkel comprising a tubular body (1) having a mouth piece (2) close to its lower end and a water-exhaust valve mechanism (3) fixed to its water-exhaust bottom opening (1*b*), said mouth piece communicating with said water-exhaust valve mechanism, characterized in that said water-exhaust valve mechanism (3) has a valve body (30) attached to the water-exhaust bottom opening (1*b*) of said tubular body (1) in a water-tight fashion, and having a predetermined shape of water-exhaust aperture (30*a*), and control means movably attached to said valve body (30) for nonstep varying of the opening area of the water-exhaust bottom opening of said tubular body.

5,487,380
EXHALED GAS FILTER AND COOLER

Richard W. Grabenkort, Barrington, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Oct. 19, 1993, Ser. No. 139,233
Int. Cl.[6] A61M *16/00*; A62B *7/10;23/02*; F24F *5/00*
U.S. Cl. 128—204.15 5 Claims



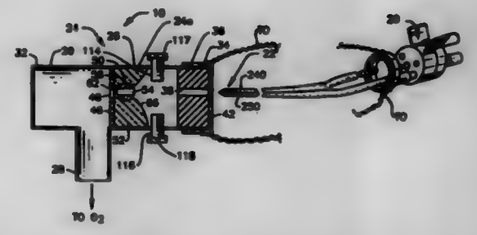
1. An apparatus for removing a selected constituent from a patient's exhaled breath, said apparatus comprising:
an enclosure defining a chamber containing a means for removing a selected constituent from exhaled breathing fluids passing through said chamber, said means for removing comprising a scrubbing substance; a means for admitting exhaled breathing fluids into said chamber comprising a first influent opening; a means for admitting a coolant fluid into said chamber comprising a second influent opening; a means for discharging scrubbed exhaled fluids from said chamber comprising a first effluent opening; a means for discharging used coolant fluid from said chamber comprising a second effluent opening; and a means for cooling said chamber of said enclosure, said means for cooling comprising a plurality of conduits extending through said chamber defined by said enclosure and through said scrubbing substance contained in said chamber, said plurality of conduits receiving and directing a coolant fluid therethrough, each of said plurality of conduits having a first end portion and a second end portion, said first end portion of each of said plurality of conduits being in fluid communication with said second influent opening defined by said enclosure, said second end portion of each of said plurality of conduits being in fluid communication with said second effluent opening defined by said enclosure, said plurality of conduits being arranged closer together in a central region of said chamber than in a peripheral region of said chamber, whereby coolant fluid admitted into said chamber through said second influent opening passes through said plurality of conduits and is discharged through said second effluent opening.

5,487,381
CLOSED SYSTEM FOR TREATING PULMONARY PATIENT

Walter J. Jinotti, 10 Scott St., New Brunswick, N.J. 08903

Filed Apr. 20, 1994, Ser. No. 230,507
Int. Cl.[6] A61M *16/20*
U.S. Cl. 128—207.14 10 Claims

1. Medical apparatus comprising a closed system for providing oxygen and suction to a patient including
a tubular member having a front patient portion and a rear portion, said rear portion having a front end and a rear end,
a first wall disposed between said front patient portion and said front end of said rear portion, said first wall having a front surface and a rear surface,
a hole in said first wall,
a second wall at said rear end of said rear portion closing off said rear portion of said tubular member, said second wall having means for permitting a catheter to enter and leave said tubular member,

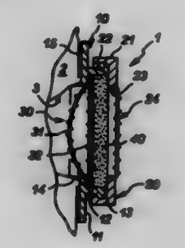


an auxiliary tubular member coupled to said front patient portion for providing treatment means to a patient,
a valve member comprising a rod having a through-hole rotatably mounted in said rear portion of said tubular member closely adjacent to said rear surface of said first wall and in fluid tight engagement therewith,
a through-hole in said valve member, said through-hole being aligned with said hole in said first wall in one position of said valve member to permit a catheter to pass through and said through-hole being out of alignment with said hole in said first wall in another position of said valve member, said valve member providing a leakproof block of said hole in said wall when said valve member is in said another position,
means coupled to said second wall of said rear portion of said tubular member for inserting a catheter therein and into said tubular member and for removing a catheter after it has been withdrawn from a patient through said front portion of said tubular member, and
means coupled to said rear portion of said tubular member for admitting a washing fluid into said rear portion and for washing a catheter after it has been withdrawn from a patient,
said first wall and said valve member and said second wall forming a relatively fluid tight washing chamber for said tubular member.

5,487,382
TRACHEOTOMY FILTER FOR TRACHEOTOMY PATIENTS

Robert Bezicot, 48 rue Joseph Fourlanx, 92160 Antony, France

PCT No. PCT/FR92/00999, § 371 Date Apr. 28, 1994, § 102(e) Date Apr. 28, 1994, PCT Pub. No. WO93/08860, PCT Pub. Date May 13, 1993
PCT Filed Oct. 26, 1992, Ser. No. 232,123
Claims priority, application France, Jan. 30, 1991, 91 13378
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—207.14 22 Claims



1. Tracheotomy filter for a tracheotomy patient having a surgical opening joining the trachea to the skin, said tracheotomy filter comprising an apertured casing having an annular flange for attaching the casing to a peripheral skin zone surrounding the surgical opening, the apertured casing housing a hydrophilic filter mass forming an exchanger for alternate exchange of heat and moisture between exhaled air and inhaled air and a grill disposed to one side of the filter mass facing the surgical opening, the grill comprising anterior and posterior grill components respectively facing the filter mass and the surgical opening, a space being

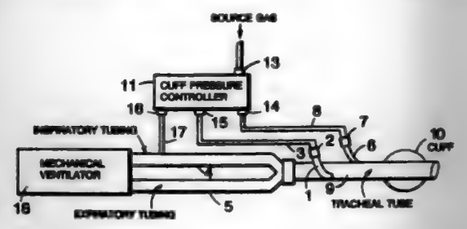
defined between operative central portions of said anterior and posterior components, said posterior component having openings defined for blocking penetration of mucus and said filter mass being sufficiently spaced from said posterior component whereby most mucus expelled from the trachea is prevented from reaching the filter mass.

5,487,383

TRACHEAL TUBE CUFF INFLATION CONTROL AND MONITORING SYSTEM

Gary Levinson, Zoar Rd., Rowe, Mass. 01367

Division of Ser. No. 701,450, May 15, 1991, Pat. No. 5,235,973. This application Apr. 20, 1993, Ser. No. 48,911
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—207.15 **18 Claims**



1. An inflation control system comprising:
a cuff inflation line configured for sealed, fluidic interconnection with an inflatable cuff of a tracheal tube;
an inspiratory tubing monitoring line configured for sealed, fluidic interconnection with inspiratory tubing of a tracheal tube;
an adjustable high pressure relief valve and an adjustable low pressure relief valve, both of which have inlet and outlet ports configured for sealed, fluidic interconnection in series with a source of pressurized gas and said cuff inflation line, both of which also have valved exhaust ports urged toward the closed condition,
a solenoid mounted in series with the exhaust port of the low pressure relief valve, said solenoid arranged to block the exhaust port when said solenoid is activated;
a pressure transducer in sealed, fluidic communication with said inspiratory tubing monitoring line to monitor pressure within said inspiratory tubing monitoring line, said pressure transducer generating an electrical output responsive to pressure within said inspiratory tubing monitoring line; and
a threshold control circuit responsive to said electrical output of said pressure transducer for activating said solenoid.

5,487,384

KINEMATIC ASSAY OF PLASMA GLUCOSE CONCENTRATION WITHOUT BLOOD SAMPLING

Jung J. Lee, Albany, N.Y., assignor to Blue Marble Research, Inc., Albany, N.Y.

Continuation of Ser. No. 22,974, Feb. 25, 1993, abandoned. This application Jul. 8, 1994, Ser. No. 272,317
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—633 **13 Claims**

1. A method for the determination of an in vivo glucose concentration without blood sampling comprising the steps of:
(a) directing a beam of light to a body part of a patient;
(b) administering a hypoglycemic drug to the patient to impose a kinematic perturbation in the in vivo glucose concentration;
(c) identifying an optical absorption band of in vivo glucose measuring an intensity of a glucose signal;
(d) measuring a rate of decrease of the intensity of the glucose signal with time;
(e) determining an original glucose signal from the rate of decrease measured and
(f) converting the original signal into an original in glucose concentration.

5,487,385

ATRIAL MAPPING AND ABLATION CATHETER SYSTEM

Boaz Avitall, 4868 N. Ardmore Ave., Milwaukee, Wis. 53217

Filed Dec. 3, 1993, Ser. No. 161,920
Int. Cl.[6] A61B *5/04*
U.S. Cl. 128—642 **24 Claims**



3. A recording and ablation catheter system for creating linear lesions in a heart chamber comprising:
(a) a hollow vascular catheter or sheath;
(b) a guide member for aiding the navigation of said catheter or sheath in the vascular system of a patient;
(c) a guide-mounted flexible inner catheter carried by and deployable from a lumen of said vascular catheter or sheath, said inner catheter having a working catheter section having spaced distal and proximal catheter riders having bores adapted to slidably thread over said guide member and being relatively adjustable to each other such that the working catheter section intermediate said distal and said proximal catheter riders is unattached and can be adjustably arcuately flexed according to the relative separation of said rider bores on said guide member to assume a desired shape to address an inner surface of a chamber; and
(d) a plurality of serial electrodes carried by said working catheter section.

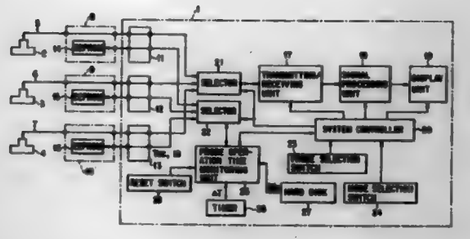
5,487,386

ULTRASONIC DIAGNOSTIC APPARATUS

Naoto Wakabayashi; Masayoshi Tsuchiko; Terufumi Akama, all of Tochigi; Hiromi Maekawa, Ootawara; Hiroyuki Shikata, Tochigi; Nobuo Yamazaki, and Tomio Kawaguchi, both of Ootawara, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 21, 1994, Ser. No. 230,697
Claims priority, application Japan, Apr. 22, 1993, 5-095847
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—660.01 **15 Claims**

1. An ultrasonic diagnostic apparatus for transmitting an ultrasonic wave to an object to be examined and causing an apparatus main body to form an image of tomographic information in the



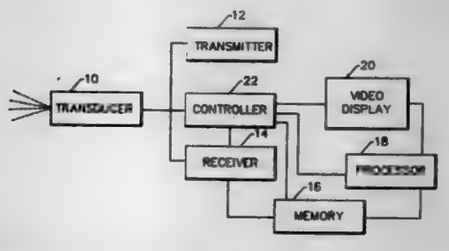
object obtained through an ultrasonic probe for receiving a wave reflected by the body, comprising:
storage means for storing a cumulative operation time of said ultrasonic probe;
probe operation time monitoring means for measuring a continuous operation time of said ultrasonic probe, and adding the measured continuous operation time to the cumulative operation time stored in said storage means to update the cumulative operation time stored in said storage means; and
output means for outputting the cumulative operation time updated by said probe operation time monitoring means.

5,487,387

METHOD AND APPARATUS FOR DISTINGUISHING BETWEEN SOLID MASSES AND FLUID-FILLED CYSTS

Gregg E. Trahey, Hillsborough; Phyllis Kornguth, Durham; Kathryn Nightingale, Durham, and William F. Walker, Durham, all of N.C., assignors to Duke University, Durham, N.C.

Filed Jun. 3, 1994, Ser. No. 254,278
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—660.02 **57 Claims**



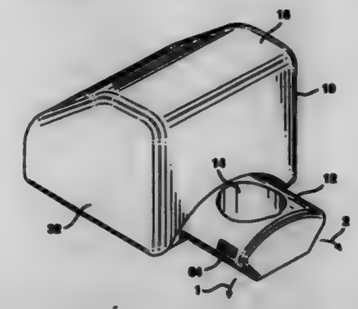
1. A method of ultrasonically distinguishing between solid masses and fluid-filled cysts, said method comprising:
transmitting a plurality of ultrasonic transmitting signals into a target lesion located within a human body, wherein at least one of said plurality of transmitting signals is of sufficient intensity to initiate movement of any fluid located within the target lesion;
receiving a plurality of reflected ultrasonic signals from the target lesion;
comparing differences between individual ones of said plurality of reflected signals to detect the presence or absence of fluid movement within the target lesion; and
determining whether the target lesion is a fluid-filled cyst or a solid mass based upon the presence or absence of fluid movement within the target lesion.

5,487,388

THREE DIMENSIONAL ULTRASONIC SCANNING DEVICES AND TECHNIQUES

Michael J. Rello, Harleysville, and Richard M. Dermun, Newtown, both of Pa., assignors to Interspec. Inc., Ambler, Pa.

Filed Nov. 1, 1994, Ser. No. 333,096
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—660.09 **15 Claims**



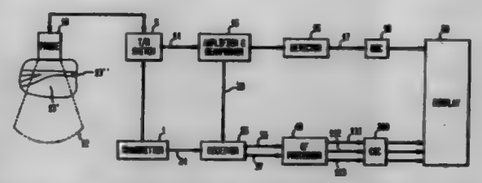
1. A method for ultrasonically scanning a volumetric region within the body of a patient by means of an ultrasonic probe controlled to scan a scan plane through an acoustic cap and a device which moves said probe through an arc of travel, comprising the steps of:
locating said probe and device so that the acoustic cap of said probe is in acoustical contact with the body of the patient;
controlling said device to move said probe through an arc of travel while acquiring ultrasonic information from a plurality of scan planes occupying a wedge shaped volume having an apex which is below the surface of said device which opposes the patient;
recording the positions of said scan planes; and
processing the ultrasonic information of said scan planes three dimensionally.

5,487,389

ULTRASONIC DOPPLER IMAGER HAVING AN ADAPTIVE TISSUE REJECTION FILTER WITH ENHANCED TISSUE MOTION SENSITIVITY

Zoran B. Banjanin, Renton, and Jin Kim, Issaquah, both of Wash., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Dec. 29, 1994, Ser. No. 366,867
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—661.09 **15 Claims**



1. In an ultrasonic flow imaging and/or measuring system of the type including: a transmitter/receiver arrangement for transmitting a plurality of three or more ultrasonic pulses, for each of a plurality of differently directed beamlines, into an area to be scanned and developing a corresponding plurality of acoustic line signals for each beamline in response to processing of received reflections of said transmitted ultrasonic pulses; a flow processor for processing said acoustic line signals and developing therefrom estimate signals representative of movement in said scanned area; and, a tissue (non-flow) motion rejection arrangement responsive to a control signal representative of tissue movement in said scanned area for preprocessing said acoustic signals provided to said flow processor

so as to suppress tissue movement contributions to said estimate signals, an improvement comprising:

a corner turning memory for receiving and storing said acoustic line signals as a plurality of sequential samples for each acoustic line of each beamline; and

a tissue velocity estimator, coupled to be responsive to samples of said acoustic line signals as provided by said corner turning memory for developing therefrom said control signal, wherein said corner turning memory is caused to provide said acoustic line samples to said tissue velocity estimator in a manner so that all the sequential samples of one or more of said acoustic lines received by said memory are periodically skipped as said memory provides said samples to said tissue velocity estimator.

5,487,390

GAS-FILLED POLYMERIC MICROBUBBLES FOR ULTRASOUND IMAGING

Smadar Cohen, Petach-Tickva, Israel; Alexander K. Andrianov, Belmont, Mass.; Margaret Wheatley, Media; Harry R. Allcock, State College, both of Pa., and Robert S. Langer, Newton, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass., and The Penn State Research Foundation, University Park, Pa.

Continuation-in-part of Ser. No. 880,248, May 8, 1992, Pat. No. 5,308,701, which is a division of Ser. No. 593,684, Oct. 5, 1990, Pat. No. 5,149,543. This application Jan. 14, 1994, Ser. No. 182,216

Int. Cl.[6] A61B *8/14*; A61K *9/50*

U.S. Cl. 128—662.02 **20 Claims**

1. A microcapsule having a diameter of 700 microns or less formed of biocompatible hydrogel formed by crosslinking with a multivalent ion of a polymer selected from the group consisting of poly(phosphazenes), poly(acrylic acids), poly(methacrylic acids), copolymers of acrylic acid or methacrylic acid and polyvinyl ethers or poly(vinyl acetate), and sulfonated polystyrene, comprising a gas encapsulated therein in an amount effective for use as an imaging agent.

5,487,391

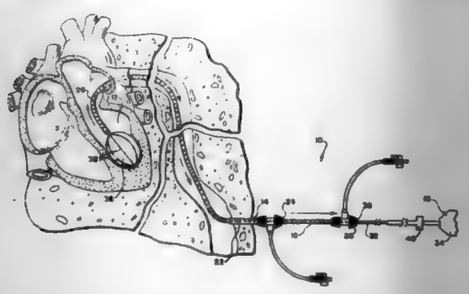
SYSTEMS AND METHODS FOR DERIVING AND DISPLAYING THE PROPAGATION VELOCITIES OF ELECTRICAL EVENTS IN THE HEART

Dorin Panescu, Sunnyvale, Calif., assignor to EP Technologies, Inc., Sunnyvale, Calif.

Filed Jan. 28, 1994, Ser. No. 188,242

Int. Cl.[6] G06F *15/42*

U.S. Cl. 128—699 **32 Claims**



1. A system for examining heart tissue comprising

at least two electrodes,

means for locating the electrodes in contact with a heart tissue region,

means for sensing with the electrodes timing of a local depolarization event in the heart tissue region, and

means for deriving a propagation vector velocity of the depolarization event.

5,487,392

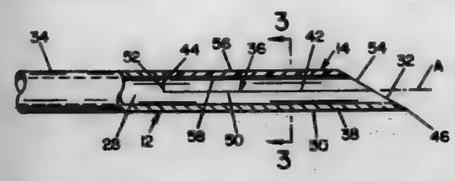
BIOPXY SYSTEM WITH HEMOSTATIC INSERT

John R. Haaga, 4309 N. Hilltop, Chagrin Falls, Ohio 44022

Filed Nov. 15, 1993, Ser. No. 151,914

Int. Cl.[6] A61B *10/00*

U.S. Cl. 123—753 **31 Claims**



1. A biopsy needle for taking a biopsy specimen from a site in a patient comprising an outer tubular cannula having an axis, an inner tubular cannula coaxial with and relatively displaceably received in said outer cannula, a stylet coaxial with and relatively displaceably received in said inner cannula, each said outer and inner cannula and said stylet having a distal portion including a distal end and a proximal portion extending from said distal portion, each said inner cannula and said stylet being axially displaceable relative to said outer cannula between retracted and extended positions in which the distal portions thereof are retracted within the distal portion of said outer cannula in said retracted position and extended axially outwardly spaced from the distal end of said outer cannula to extend into said site in said extended position, said distal portion of said stylet including a cutting recess for severing said specimen at said site, said distal portion of said inner cannula including means for capturing said specimen in said cutting recess, a hemostatic insert supported on said distal portion of said inner cannula for displacement therewith from said retracted to said extended position thereof, said insert being separable from said distal portion of said inner cannula to remain at said site upon removal of said distal portions of said inner cannula and stylet therefrom, and said insert having a radially outer surface means for receiving said insert in said distal portion of said outer cannula in said retracted position of said inner cannula.

5,487,393

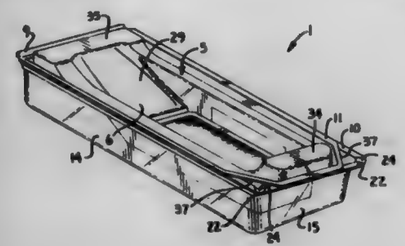
URINE SPECIMEN COLLECTION RECEPTACLE

James S. Haswell, Olathe, and Michael S. Stevens, Lawrence, both of Kans., assignors to Beckwell International, Inc., Olathe, Kans.

Filed Feb. 7, 1994, Ser. No. 192,590

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—760 **13 Claims**



1. A body fluid collection device comprising:

(a) an outer trough forming a body fluid reservoir;

(b) an inner lid including funnel means;

(c) said lid being received on said trough to substantially close said trough and with said funnel means positioned within said trough to direct a fluid from said funnel means into said reservoir;

(d) spout means formed on an edge of said trough to facilitate pouring a fluid from said reservoir to another container;

(e) said trough being rectangular and having corner areas; and

(f) said spout means being formed at one of said corner areas.

5,487,394

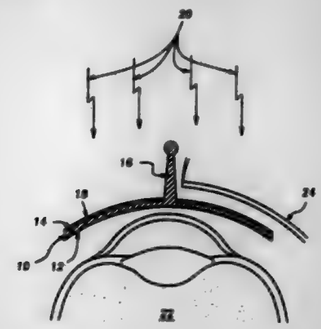
TUNGSTEN EYE SHIELDS FOR ELECTRON BEAM TREATMENT

Almon S. Shiu, Bellaire; Samuel S. Tung, Missouri City, and Robert J. Gastorf, Houston, all of Tex., assignors to The Board of Regents of the University of Texas System, Austin, Tex.

Filed Jul. 22, 1994, Ser. No. 278,757

Int. Cl.[6] A61F *5/37*; *9/00*

U.S. Cl. 128—846 **16 Claims**



1. An eye shield for insertion between an eye and an eyelid, comprising a tungsten body having a curved inner surface and a curved outer surface, the body being sufficiently thick to attenuate electron beams in the energy range of six to nine million electron volts such that the tolerance doses to different optic structures within an eye are not exceeded and the body being sufficiently thin such that the shield can be inserted between an eye and an eyelid.

5,487,395

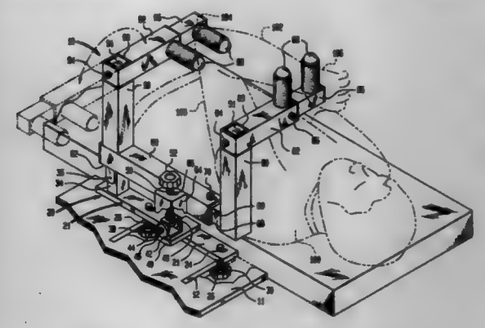
APPARATUS FOR SUPPORTING AN ARM

Robert J. Strowe, Ramsey, N.J., assignor to Galt Scan, Inc., Ridgewood, N.J.

Continuation of Ser. No. 160,859, Nov. 30, 1993, abandoned. This application Feb. 2, 1995, Ser. No. 383,617

Int. Cl.[6] A61F *5/37*

U.S. Cl. 128—878 **16 Claims**



1. An apparatus for supporting an arm comprising:

base means;

first and second vertical support means extending from the base means;

elbow support means attached to the first vertical support means for supporting an elbow, the elbow support means comprising:

a pair of members spaced to support an elbow by the condyles of the humerus;

the pair of members extending generally horizontal with respect to the base means;

the pair of members slideably moveable with respect to each other to vary the space between the pair of members for supporting various sized elbows;

the members positioned generally parallel to each other and maintained in said generally parallel relationship when moved with respect to one another; and

wrist support means attached to the second vertical support means for supporting a wrist.

5,487,396

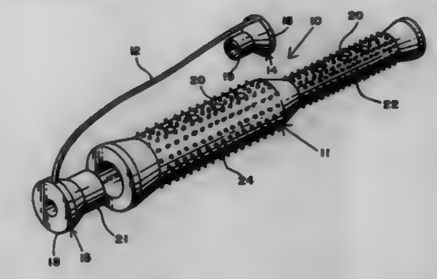
PERMANENT ROD KIT AND METHOD

Samantha L. Wilson, 6824 114th Pl., Unit D, Miami, Fla. 33173

Filed Jan. 12, 1994, Ser. No. 180,438

Int. Cl.[6] A45D *2/14*

U.S. Cl. 132—248 **8 Claims**



1. A perm rod kit comprising, in combination,

a hollow perm rod body of substantially circular cross-section,

one portion of the body having a diameter larger than the other portion for a loose wrap on the larger diameter portion and tight wrap on the smaller diameter portion,

a band cap and a band plug conformed to penetrate opposite ends of the hollow body of the perm rod,

an elastic band secured to the band cap and the band plug for securing a strand of hair applied to the perm rod body,

and a divider section between the tight wrap and loose wrap sections of the body, which tight wrap and loose wrap sections extend laterally and coaxially in opposite directions from said divider section.

5,487,397

POOL BRUSH HYDROFOIL

Richard A. Bean, 7827 Midbury Dr., Dallas, Tex. 75230

Filed Nov. 29, 1994, Ser. No. 349,995

Int. Cl.[6] E04H *3/16*

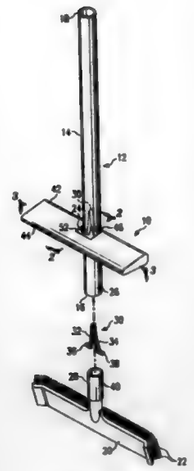
U.S. Cl. 134—6 **9 Claims**

6. A method for cleaning the walls of a pool with a pool brush having a handle and a brush head, the handle having a pair of opposed holes formed therein, comprising the steps of:

inserting a resilient piece in the handle having a pair of engagement pins, each engagement pin passing through one of the opposed holes;

inserting the handle into a notch on a hydrofoil to engage each of the engagement pins with an engagement pin receiving aperture in the hydrofoil to pivotally attach the hydrofoil to the brush handle; and

moving the pool brush along the wall of the pool to alternately pivot the hydrofoil between positions creating a fluid force urging the brush head against the side of the pool to facilitate cleaning.

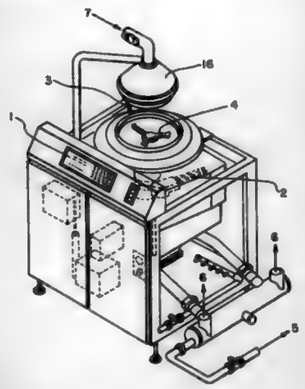


5,487,398

ROTARY CLEANING METHOD WITH CHEMICAL SOLUTIONS AND ROTARY CLEANING APPARATUS WITH CHEMICAL SOLUTIONS

Tadahiro Ohmi, 1-17-301, Komegabukuro 2-chome, Aoba-ku, Sendai-shi, Miyaga-ken 980; Naomichi Yonekawa, Sendai; Hiroyuki Horiki; Toshimitsu Kaji, both of Tokyo; Fumitomo Kunimoto, Sendai, and Takeo Tamaki, Urawa, all of, Japan, assignors to Tadahiro Ohmi, Miyagi; Nisso Engineering Co., Ltd., Tokyo, and MTC Co., Ltd., Saitama, all of, Japan

Filed Jun. 20, 1994, Ser. No. 262,602
Claims priority, application Japan, Jun. 22, 1993, 5-150897
Int. Cl.[6] B08B 3/04
U.S. Cl. 134—95.1 14 Claims



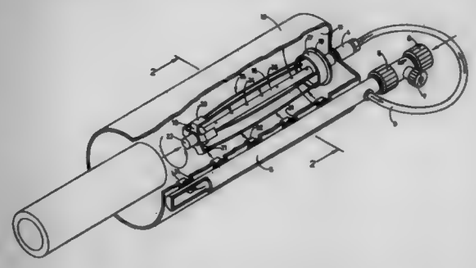
1. A cleaning apparatus comprising at least:
a cleaning bath having a movable cover at its top for sealing the bath by closing the cover;
object-to-be-cleaned holding means for holding an object to be cleaned in the cleaning bath;
rotating means for rotating the object-to-be-cleaned holding means;
gas introducing means for introducing gas into the cleaning bath;
a first nozzle for feeding a first chemical solution to the surface of an object to be cleaned held by the object-to-be-leaned holding means;
a second nozzle for feeding a second chemical solution to the surface of an object to be cleaned held by the object-to-be-cleaned holding means;
a third nozzle for spraying a first chemical solution onto the back of an object to be cleaned held by the object-to-be-cleaned holding means;
a fourth nozzle for spraying a second chemical solution onto the back of an object to be cleaned held by the object-to-be-cleaned holding means;
a fifth nozzle for feeding ultrapure water to the surface of an object to be cleaned held by the object-to-be-cleaned holding means;
a sixth nozzle for spraying ultrapure water onto the back of an object to be cleaned held by the object-to-be-cleaned holding means;
a chemical solution feed line connected to each of the first to the fourth nozzles;
an external chemical solution feeder connected to each chemical solution feed line for feeding a chemical solution;
an ultrapure water feed line connected to the fifth and sixth nozzles;
ozone adding means for selectively adding ozone to ultrapure water; and
a drainage line for completely assorting waste liquids after cleaning.

5,487,399

PAINT ROLLER CLEANER

Dale A. Hannah, 13260 Welch St., Waterford, Calif. 95386

Filed Mar. 23, 1995, Ser. No. 409,860
Int. Cl.[6] B08B 3/02
U.S. Cl. 134—138 8 Claims



1. A paint roller pad cleaning device comprising:
a. a hollow cylindrical housing that is closed on one end having a plurality of openings longitudinally spaced along the outside thereof;
b. a first hollow shaft shiftably attached to the outside of said housing, said shaft having a plurality of sprayers mounted thereon corresponding to said longitudinal openings, said sprayers pointing to the inside of said housing;
c. a valve means and water source attached to said first shaft;
d. a rotatable paint roller pad support frame centrally attached inside said housing, said frame surrounding a second fixed hollow shaft attached to the closed end of said housing;
e. a plurality of spray openings in said second shaft; and
f. a conduit means for connecting said first shaft to said second shaft.

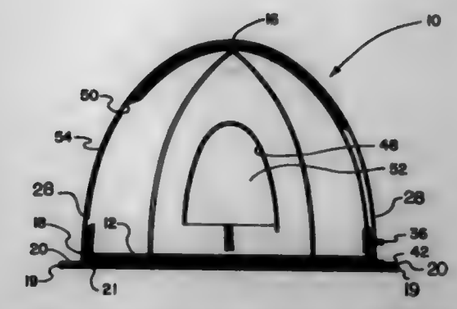
5,487,400

SELF-INFLATING TENTS

Katherine J. Dawkins, #1-168 Indian Rd Cres, Toronto, Ontario, Canada

Filed Mar. 14, 1994, Ser. No. 212,050
Int. Cl.[6] E04B 1/34
U.S. Cl. 135—87 1 Claim

1. A new and improved self-inflating tent comprising, in combination:



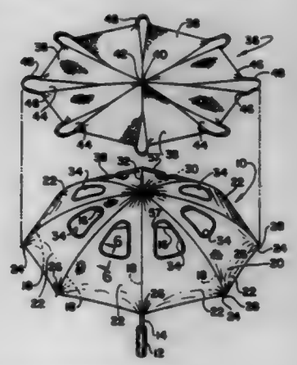
a mattress having a top and bottom side of a circular configuration, the bottom side having a circular sheet attached thereto having a diameter larger than a diameter of the mattress;
a dome shaped tent having a lower peripheral edge secured to the mattress adjacent to the bottom side providing a flange at an outer most periphery of the tent to constitute a ground rim;
the material of the tent and mattress being fabricated of an open cell polyurethane capable of unaided air expansion, the open cell polyurethane being enclosed by an exterior and interior liner of an air impervious flexible plastic;
a first valve coupled to the tent to allow the flow of air into the open cells of the tent material and to expand the tent material, the first valve also allowing air to exit therefrom the tent material when the tent material is compressed and the first valve is opened;
a second valve coupled to the mattress and passing through the lower peripherial edge of the tent to allow flow of air into the mattress material the second value also allowing air to exit therefrom the mattress material when the mattress material is compressed and the second valve is opened;
a plurality of grommets extending though the ground rim securing the mattress and tent in a predetermined location;
apertures formed in the tent, said apertures having windows and doors located therein; and
a carrying bag for receiving the tent and mattress when in a collapsed and folded orientation.

5,487,401

WINDPROOF UMBRELLA

Johnson, Gary D., New York, and Stanley Hochfeld, Howard Beach, both of N.Y., assignors to Leonard Holtz, New York, N.Y.

Continuation of Ser. No. 730,783, Jul. 24, 1991, Pat. No. 5,368,055, which is a continuation-in-part of Ser. No. 309,620, Feb. 10, 1989, Pat. No. 4,979,534. This application Nov. 15, 1994, Ser. No. 340,079
Int. Cl.[5] A45B 25/22
U.S. Cl. 135—33.7 7 Claims



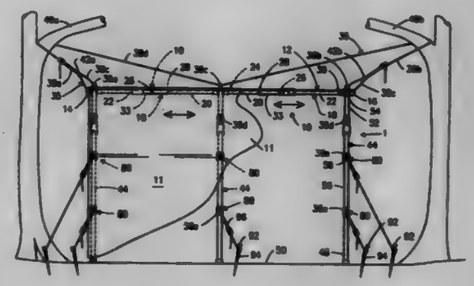
1. A windproof umbrella comprising:

5,487,402

PORTABLE SHELTER WITH EXPANDABLE FRAME

Michael S. Clary, P.O. Box 2544, Crystal River, Fla. 34423, assignor to Michael S. Clary, and Cynthia G. Clary, both of Crystal River, Fla.

Filed Aug. 11, 1994, Ser. No. 289,014
Int. Cl.[6] E04H 15/04
U.S. Cl. 135—87 20 Claims



1. A portable shelter erectable on a support surface, said shelter comprising:
a frame further comprising;
a ridge pole, having a first end and a second end, said ridge pole further comprising at least one section, said section comprising a first part and a second part, said second part slideably engaging said first part such that said ridge pole is extendable between an expanded position and a retracted position;
a plurality of posts, each said post having a first end attached to said ridge pole and a second end engaging a support surface; and
a lifting means comprising a first joining means attached to said first end of said ridge pole and a second joining means attached to said second end of said ridge pole; a first line having a first end connected to said first joining means and having a second end attached to a first support means at a point in a horizontal plane that lies above said ridge pole; a second line having a first end connected to said second joining means and having a second end attached to a second support means at a point in a horizontal plane that lies above said post having a lower end to be grasped by a user and an opposite upper end;
a plurality of ribs extending outwardly in a radial direction from said upper end of said post, each rib having a free end portion;
a lower canopy secured in covering relation on said ribs, said lower canopy including a plurality of vent holes therethrough, said vent holes being arranged between said post and said free end portions of said ribs, and said vent holes having upper peripheral portions at portions of said vent holes closest to said upper end of said post, and said vent holes having lower peripheral portions at portions of said vent holes closest to said free end portions of said ribs;
an upper canopy positioned over said lower canopy in covering relation to all of said vent holes;
said upper canopy extending from said post to an area below said lower peripheral portions of said vent holes and said upper canopy having a lower peripheral edge extending below lower extremities of said vent holes, said upper canopy being held in a fixed position in the vicinity of said post;
a plurality of elastic members coupling said upper canopy to said ribs in the vicinity of said free end portions of said ribs, for thereby securing said upper canopy between said upper end of said post and the vicinity of said free portions of said ribs with an elastic tautness and to permit at least a lower peripheral edge portion of said upper canopy to elastically separate from said lower canopy while also covering all of said vent holes to prevent rain water from entering said vent holes from above the umbrella.

ridge pole, the first support means being spaced apart from the second support means, whereby a lifting force is applied to said ridge pole.

5,487,403

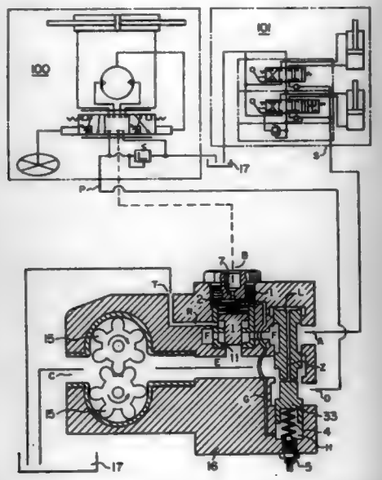
VARIABLE DISCHARGE PUMP WITH LOW UNLOAD TO SECONDARY

James R. Mollo, 209 Julrich Ave., McMurray, Pa. 15317

Continuation-in-part of Ser. No. 121,275, Sep. 13, 1993, Pat. No. 5,368,061, which is a continuation-in-part of Ser. No. 784,388, Oct. 29, 1991, Pat. No. 5,244,358, which is a continuation-in-part of Ser. No. 426,750, Oct. 24, 1989, abandoned, which is a continuation-in-part of Ser. No. 211,163, Jun. 22, 1988, abandoned, which is a continuation-in-part of Ser. No. 8,313, Jan. 29, 1987, abandoned. This application Nov. 28, 1994, Ser. No. 346,607

Int. Cl.[6] F15B *13/06*

U.S. Cl. 137—115 **10 Claims**



1. A load sensed variable output gear pump system comprising:
a housing;
a fluid delivery pump within said housing having an inlet and an outlet;
a main inlet passage located in said housing and extending to said inlet of said pump;
a main outlet passage located in said housing and extending from said outlet of said pump, whereby fluid in said main outlet passage is pressurized by said fluid delivery pump;
a secondary outlet passage located in said housing;
a bypass outlet passage located in said housing and adapted to be connected to a reservoir;
a load sensed passage located in said housing and connected to load pressure;
a first control means for controlling flow through said secondary outlet passage from said main outlet passage, said first control means including:
i) a first chamber located in said housing having a first chamber inlet opening connected to said main outlet passage, a first chamber outlet opening connected to said secondary outlet passage, a first chamber load opening connected to said load sensed passage and a first chamber bypass opening connected to said bypass outlet passage, and
ii) a plunger movably positioned within said first chamber and movable between a first position closing said first chamber inlet opening and a second position spaced from said first chamber inlet opening for allowing fluid to flow through said first chamber inlet opening between said main outlet passage and said secondary outlet passage, said plunger having an effective surface area ratio of 2:1 between an area of said plunger acted upon by pressure from said load sensed passage and an area of said plunger acted upon by pressure from said main outlet passage, wherein said plunger is in said second position when no pressure is applied to said load sensed passage, whereby said main outlet passage is connected to said secondary outlet passage; and
a second control means for controlling flow through said secondary outlet passage from said main outlet passage, said second control means including:
i) a second chamber located in said housing having a second chamber inlet opening connected to said main outlet passage, a second chamber outlet opening connected to said secondary outlet passage and a second chamber load opening,
ii) a spool within said second chamber movable between a first position closing said second chamber inlet opening and a second position spaced from said second chamber inlet opening allowing fluid to flow through said second chamber inlet opening between said main outlet passage and said secondary outlet passage, said spool having an effective surface area of 1:1 between an area of said spool acted upon by pressure from said load sensed passage and an area of said spool acted upon by pressure from said main outlet passage, and
iii) a spring biasing said spool towards said first position, wherein said spool is in said first position when no pressure is applied to said fluid load sensed passage.

5,487,404

VALVE FOR A TAP OF A COMPRESSED OR LIQUIFIED GAS CYLINDER, AND TAP PROVIDED WITH SUCH A VALVE

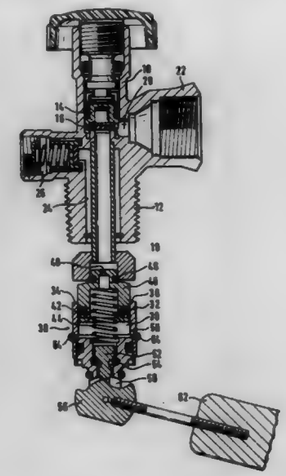
Leon Kerger, Helmdange, Luxembourg, assignor to Torrent Trading Ltd., Toltola, Virgin Islands (Br.)

Filed Jul. 12, 1994, Ser. No. 273,920

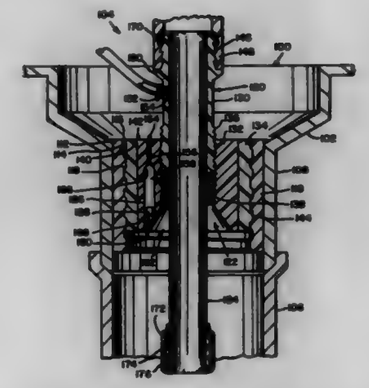
Claims priority, application Luxembourg, Jul. 12, 1993, 88379

Int. Cl.[6] F16K *31/24;31/34;33/00*

U.S. Cl. 137—413 **6 Claims**



1. Two-way valve for a tap of a gas cylinder, which valve is intended to be fitted on a selectively operable inlet pipe (18) of the tap, said two-way valve (30) permitting both filling and draining of the gas cylinder and comprising a casing (32) with at least one lateral opening (34, 36) which can be sealed off by a sealing device (40) provided with a passage (48) for gas, resiliently yieldable means (44) for displacing the sealing device (40) to a position of obstruction of the openings (34, 36) and for permitting the sealing device (40) to move to a position of opening against the action of the resiliently yieldable means (44) through the effect of the pressure of the filling gas, a level-controlling valve (52) movable between open and closed positions and operable, when in said open position, to permit gas to flow between the gas cylinder and the passage (48), and means (62) for detecting the filling level in the gas cylinder and for actuating the level-controlling valve (52) in response to such level, said level-controlling valve, when not held in an open position by said detecting means (62), being operable by the pressure of the gas in the cylinder when the pipe (18) is open, characterized by at least one orifice (50) disposed in at least one of a wall portion of the inlet pipe (18) and a wall portion of the casing (32) for establishing communication between the inside of the casing (32) and the inlet pipe (18), on the one hand, and the inside of the cylinder, on the other hand, said orifice (50) being associated with resilient vent means (64) which resist the maximum filling pressure in order to ensure the leak tight closure of the orifice (50) and which yield at a pressure greater than the maximum filling pressure in order to open the orifice (50) to prevent pressure from building up within either one of the inlet pipe (18) and the casing (32).



5,487,405

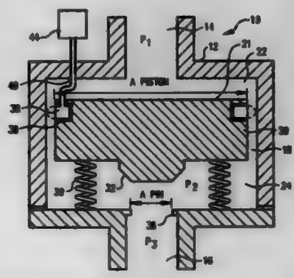
FLOW CONTROL VALVE HAVING FLOW ADJUSTABLE BY VARIABLE RING

Paul K. Skoglund, 2222 - 79th Ave. NE., Bellevue, Wash. 98004

Continuation-in-part of Ser. No. 69,459, Jun. 1, 1993, Pat. No. 5,301,713. This application Apr. 7, 1994, Ser. No. 224,677

Int. Cl.[6] G05D *7/01*

U.S. Cl. 137—501 **18 Claims**



1. A valve comprising:
a housing having an inlet and outlet defining a flow passage through said housing, divided into a first chamber and a second chamber, and having an inner wall;
a piston mounted in a bore in said flow passage, said piston having an outer wall and cooperating with said outlet to alter the flow area through said outlet; spring means biasing said piston toward said inlet; and
means encircling at least one of said inner wall of said housing and said outer wall of said piston and having an alterable cross-sectional area for altering fluid flow between said inner wall of said housing and said outer wall of said piston.

5,487,406

DRAIN CONTROL VALVE AND MANIFOLD SYSTEM

James D. Jirasek, 109 S. 31st St., Temple, Tex. 76504

Filed Sep. 30, 1994, Ser. No. 315,510

Int. Cl.[6] F16K *15/14;37/00;* D06F *39/08*

U.S. Cl. 137—519 **20 Claims**

1. A valve, comprising:
a valve body having a rigid wall defining inlet and outlet openings at opposite ends thereof and a main flow passageway between said inlet and outlet openings;
a tubular valve member of elastomeric material having upstream and downstream ends in fluid communication with one another, said upstream end secured to said rigid wall so as to receive fluid entering said passageway through said inlet opening, said tubular valve member being normally open to fluid flow but being yieldingly collapsible in response to downstream pressure increases to prevent fluid from passing therethrough; and,
a ring secured about said tubular valve member, said ring dimensioned to prevent the passage of said downstream end through said inlet opening in the event of a downstream pressure increase.

5,487,407

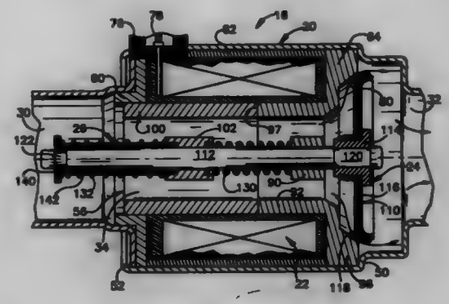
SOLENOID CONTROLLED ONE-WAY VALVE

Garlan L. Baker, Louisville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 1, 1994, Ser. No. 348,540

Int. Cl.[6] F16K *15/00;31/02*

U.S. Cl. 137—522 **11 Claims**



1. A valve assembly for affecting fluid flow in a system comprising:
a valve housing defining flow openings at opposite ends thereof and a valve seat structure;
a valving member comprising a valving element positioned for engagement with said valve seat and a stem element fixed to and projecting from said valving element, said valving element movable between an open position spaced from said valve seat for enabling fluid flow through said housing and a closed position engaged with said valve seat;
a solenoid assembly comprising an armature movable with respect to said valving member and said valve housing, said solenoid having an energized condition wherein said armature is subjected to an electromagnetic force and a deenergized condition;
first and second spring elements reacting against said valving member, at least one spring element engagable with said armature;

said first and second spring elements coacting to produce a net spring force maintaining said valving member in one of said positions in the presence of system fluid pressure forces in a given range above a predetermined system net pressure force tending to shift the valving member toward the other position when said solenoid assembly is de-energized;

said solenoid assembly energized to shift said armature for substantially reducing the net spring force applied to said valving member for enabling system fluid pressure forces in said range to shift said valving member toward said other position.

5,487,408

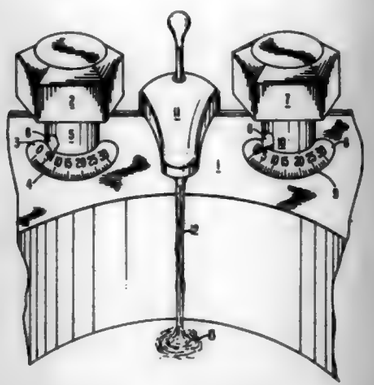
WATER SINK SYSTEM

Naum Pokhis, 1132 S. Doheny, Los Angeles, Calif. 90035

Filed Nov. 30, 1994, Ser. No. 346,870

Int. Cl.[6] F16K *11/18*

U.S. Cl. 137—556.3 1 Claim



1. A water sink system, comprising a water discharge member; two rotatable knobs for allowing hot water and cold water to flow into the water discharge member and meet there to produce discharged water with a desired temperature; a scale provided near each of the turnable knobs and having a plurality of graduation marks; and a pointer provided on each of said turnable knobs and turnable with the latter, so that when a user by turning the turnable knob reaches a desired temperature, each pointer points to a respective graduation mark of each scale, which graduation marks can be memorized by a user and thereafter he can turn said knobs immediately to the memorized graduation marks, so that the hot water and the cold water are mixed correspondingly and mixed water is discharged from said water discharge member with a desired temperature, each of said scales having a lower surface provided with an adhesive layer so that each of said scales can be attached to a supporting element of the water sink system by said adhesive layer, each of said pointers having a substantially horizontal pointed part and a substantially vertical arced part, said substantially vertical arced part being of one piece with said substantially horizontal pointed part and surrounding a turning part of each of said knobs, said substantially vertical arced part of each of said pointers having an inner surface provided with an adhesive layer so that each of said pointers can be attached to said turning part of a respective one of said knobs by aid adhesive layer provided on said inner surface of said arced point of each of said pointers.

5,487,409

SPOOL VALVE

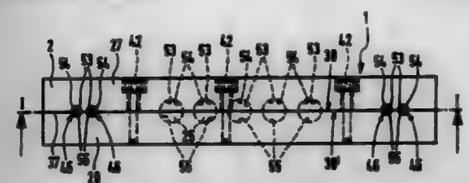
Kurt Stoll, Esslingen, Germany; Jan R. de Fries, Wallisellen, Switzerland, and Herbert Köngeter, Reichenbach, Germany, assignors to Festo KG, Esslingen, Germany

Filed Jul. 1, 1994, Ser. No. 269,759

Claims priority, application Germany, Jul. 24, 1993, 43 24 939.6

Int. Cl.[6] F15B *13/042*

U.S. Cl. 137—625.64 18 Claims



1. A spool valve comprising a valve housing in whose interior an axially extending spool receiving means is provided, in which a spool is located, the valve housing being longitudinally divided adjacent to the spool receiving means and having a plurality of housing parts fitted together along longitudinal sides thereof, a sealing arrangement adapted to function to define flow paths in the valve between the spool and a wall integral with the housing, and valve ducts serving to direct a working fluid, said ducts extending in the wall of the valve housing, wherein at least one length portion of each valve duct extends in a parting interface of the valve housing, the parting interface comprising a parting plane in which at least two parts of the valve housing are adjacent to one another, the length portion of the valve duct being composed of complementary wall peripheral sections, which are provided in the parting interface on the housing parts adjoining each other on longitudinal sides thereof, wherein at one axial end part at least of the spool receiving space a drive space is provided arranged in the interior of the longitudinally divided valve housing, the drive space serves to receive an actuating member adapted to be fluid driven by means of a control pressure medium, said actuating member serving for operation of the valve spool, and opens into a drive valve duct serving for the supply of the control pressure medium, said drive valve duct having its entire length extending in the parting interface and opens at an end opposite to the associated drive space at an external surface of the valve housing.

5,487,410

PROPORTIONAL SOLENOID VALVE UNIT

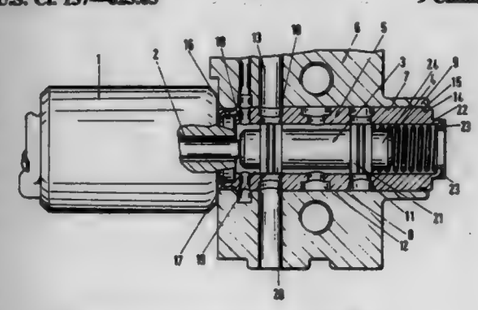
Bernd Niethammer, Nürtingen, Germany, assignor to Hydraulik-Ring Antriebs- und Steuerungstechnik GmbH, Nürtingen, Germany

Filed Feb. 10, 1995, Ser. No. 386,377

Claims priority, application Germany, Feb. 10, 1994, 9402205 U

Int. Cl.[6] F16K *31/04*

U.S. Cl. 137—625.65 9 Claims



1. A proportional solenoid valve unit comprising:

a casing with a receiving chamber;

a valve housing received in said receiving chamber;

a solenoid with a pushrod connected to said valve housing;

a piston positioned in said valve housing so as to be slidable;

at least one pressure spring positioned at one end of said piston opposite said solenoid;

said piston displaceable by said pushrod of said solenoid against the force of said at least one pressure spring;

said receiving chamber having a longitudinal extension and a constant diameter along said longitudinal extension; and

flange means for connecting said valve housing to said casing and said solenoid.

5,487,411

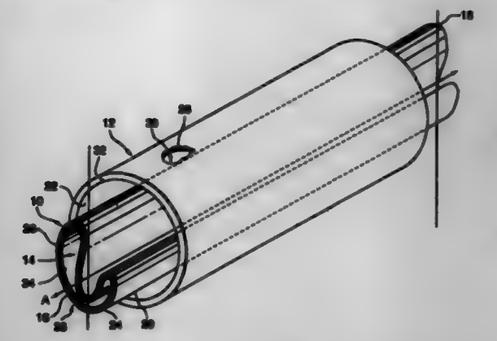
LINER PIPE FOR REPAIR OF A HOST PIPE

Joseph E. F. Goncalves, Mississauga, Canada, assignor to Ipex Inc., Toronto, Canada

Filed Nov. 22, 1994, Ser. No. 345,727

Int. Cl.[6] F16L *55/16*

U.S. Cl. 138—98 12 Claims



1. A liner pipe for repair of a host pipe;

the liner pipe having a hollow inside; a length defining a longitudinal axis; and a cross-sectional shape and size in a plane transverse to the longitudinal axis;

the cross-sectional shape and size of the liner pipe being such that the liner pipe can be fed through the host pipe; the liner pipe comprising an inner layer and an outer

the outer layer being comprised of flexible thermoplastic material; and

the inner layer being comprised of rigid thermoplastic material which, when softened by heating to attain a flexibility similar to that of the outer layer, becomes sufficiently pliable to allow the cross-sectional shape and size of the liner pipe to conform to an inner cross-sectional shape and size of the host pipe.

5,487,412

GLASS FIBER AIRDUCT WITH COATED INTERIOR SURFACE CONTAINING A BIOCIDE

Kent R. Matthews, Littleton; Eric G. Schakel, Sedalia, and Ricardo R. Gamboa, Littleton, all of Colo., assignors to Schuller International, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 67,769, May 26, 1993, Pat. No. 5,379,806. This application Nov. 9, 1994, Ser. No. 337,586

Int. Cl.[6] F16L *9/14*

U.S. Cl. 138—149 4 Claims

1. A glass fiber airduct for conveying an airstream comprising: a rigid, glass fiber duct formed of duct board having a density of at least 3.5 pounds per cubic foot; said glass fiber duct having an interior surface adapted to be in contact with an airstream; said interior surface of said glass fiber duct having a polymeric coating layer comprising a polymeric coating of a surface of said duct board; said polymeric coating having a dry solids content between 10 and 20 grams per square foot of said duct board surface; said polymeric coating layer having an inorganic biocide to prevent microbiological growth on said interior surface of said glass fiber duct; and said polymeric coating layer retaining its abrasion strength and puncture resistance after being subjected to a temperature of 250° Fahrenheit for 60 days whereby said interior surface of said glass fiber duct can be cleaned without exposing glass fibers to the airstream.

5,487,413

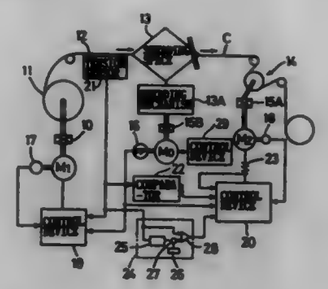
METHOD FOR RESTARTING THE OPERATION OF AN AIR JET LOOM, AFTER DEFECTIVE WEFT REMOVAL

Kunio Hatakeyama, Hisashi, and Yoshihiko Habu, Kanazawa, both of, Japan, assignors to Kabushiki Kaisha Ishikawa Seisakusho, Ltd., Kanazawa, Japan

Filed Oct. 18, 1994, Ser. No. 324,615

Int. Cl.[6] D03D *51/08;47/34*

U.S. Cl. 139—116.2 2 Claims



1. A method for restarting the operation of an air jet loom which is provided with a pick finding device and an improper weft removing device, wherein a loom, a let-off motion and a take-up motion each have their own independent driving source, for removing an improper weft when there occurs an error in a picking motion in an air jet weaving operation, comprising steps in the following order of:

a. stopping the loom at approximately 300° with respect to the rotational angle of a main shaft, and then rotating the loom in a reverse direction from 300° to approximately 30° with respect to the rotational angle of the main shaft;

b. cutting an improper weft stretching from a main nozzle into a shedding motion with a cutter provided adjacent to the main nozzle;

c. operating the loom in a normal rotational direction from 30° to approximately 140° with respect to the rotational angle of the main shaft;

d. operating the pick finding device to separate the main shaft and the shedding motion, and once again connecting the main shaft and the shedding motion after reversely rotating only a harness frame for 360°;

e. removing an improper weft remaining in the shedding motion with the improper weft removing device, and inserting a new weft into the shedding motion by injecting pressurized air from the main nozzle;

f. operating the take-up motion in normal rotation while the loom is stopped, and at the same time, rotating the let-off motion in reverse rotation, wherein a ratio between said normal and said reverse rotations is from 1:7 to 1:3; and

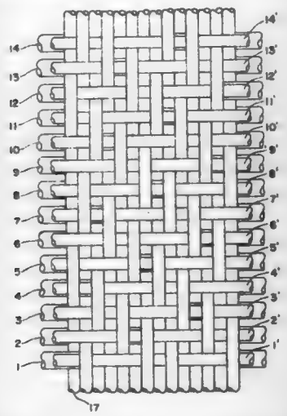
g. restarting the weaving operation by simultaneously starting the loom, take-up motion and let-off motion.

5,487,414

DOUBLE LAYER PAPER-MAKING FABRIC

Takehito Kuji, Tokyo, and Tatsuhiko Yasuoka, Shizuoka, both of, Japan, assignors to Nippon Filcon Co., Ltd., Tokyo, Japan

Filed Sep. 1, 1994, Ser. No. 297,567
Claims priority, application Japan, Sep. 6, 1993, 5-254624
Int. Cl.[6] D03D *23/00*
U.S. Cl. 139—383 A **18 Claims**



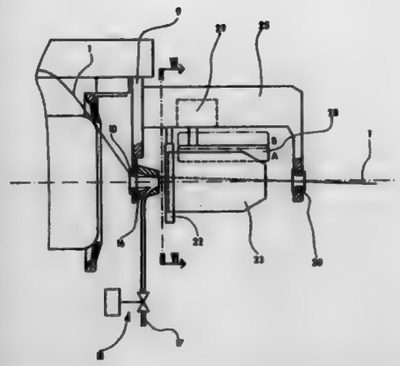
1. A paper-making fabric having a plurality of repeating design units, each of the repeating design units comprising fourteen yarns or more for each of warps, upper wefts and lower wefts, each of the upper wefts being extended in parallel over each of the lower wefts, wherein, in a first repeating design unit, a first lower weft being interwoven with a warp at a first position, a first and a second upper wefts which are adjacent to each other being interwoven with the warp at a third position, a third and a fourth upper wefts which are adjacent to each other being interwoven with the warp at a fourth position, further wherein the number of upper or lower wefts disposed between the first position and the third position and the number of upper or lower wefts disposed between the fourth position and the first position of a second repeating design unit subsequent to the first repeating design unit are the same, and the warp travels in a substantially linear manner between upper and lower wefts disposed between the third position and the fourth position.

5,487,415

WEFT FEEDER WITH RETHREADING AND BRAKING DEVICES

Bruno Maino, Vigliano Biellese, Italy, assignor to Roj Electrotex S.p.A., Biella, Italy

PCT No. PCT/EP92/00834, § 371 Date May 23, 1994, § 102(e) Date May 23, 1994, PCT Pub. No. WO/9306277, PCT Pub. Date Apr. 1, 1993
PCT Filed Apr. 13, 1992, Ser. No. 211,123
Claims priority, application Italy, Sep. 19, 1991, VC91U0010
Int. Cl.[6] D03D *47/34*
U.S. Cl. 139—452 **4 Claims**



1. Weft feeder for gripper or projectile looms, comprising:

a body means for housing a motor;

a drum mounted on a motor shaft and held stationary, around which a winding arm rotated by the motor winds up a weft yarn reserve;

an extension of said body means carrying sensors to detect and control the weft yarn reserve being wound on the drum;

brake means, in the form of a ring with an annular brush, for braking weft yarn against an end surface of the drum;

pneumatic means for restoring the continuity of the weft yarn from a feed spool to a loom, in case of yarn breakage or interruption;

a first compressed air nozzle means, positioned at an inlet of the weft feeder, for introducing therein a new weft yarn fed from the feed spool; and

yarn launching and guiding means for introducing the new weft yarn into a first yarn, guide eyelet centered on a longitudinal axis of the drum;

characterized in that,

downstream of said first yarn guide eyelet (**10**), there are mounted a separating element (**28**, **42**) to open apart two brake leaves (**23**) of a double-leaf brake (**21**), and a second yarn guide eyelet (**20**), said separating element (**28**, **42**) being controlled by an actuator (**29**, **39**, **43**) so as to form a duct (**32**) to guide the weft yarn (**1**) from the first yarn guide eyelet (**10**) to the second yarn guide eyelet (**20**).

5,487,416

LEAD CONDITIONING SYSTEM FOR SEMICONDUCTOR DEVICES

James E. Maksim, Santa Clara, Calif., assignor to Precision Technologies, Inc., Santa Clara, Calif.

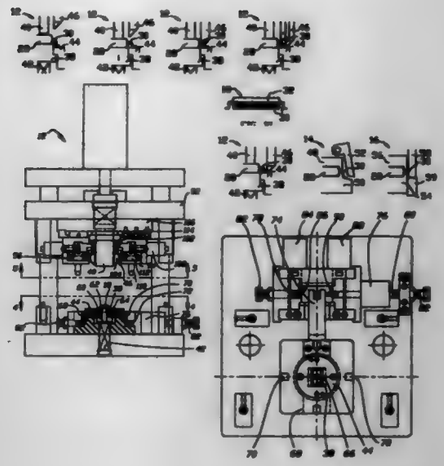
Continuation-in-part of Ser. No. 806,054, Dec. 11, 1991, Pat. No. 5,273,681. This application Dec. 3, 1993, Ser. No. 147,874
The portion of the term of this patent subsequent to Dec. 28, 2010, has been disclaimed.
Int. Cl.[6] B21F *01/02*
U.S. Cl. 140—105 **24 Claims**

1. An apparatus for conditioning the bent leads of a semiconductor device of the type normally having parallel leads projecting from a body in a predetermined configuration comprising:

means for engaging and massaging said leads to reintroduce a predetermined spacing between each of said leads projecting from said body to bring said leads into parallelism;

means for forming said leads to a partially unbent condition, said forming means including a support formed to receive said semiconductor device and at least one arm pivotal between a first position spaced from said leads and a second position compressing a portion of said leads between said arm and said support; and

means for reforming said leads to said predetermined lead configuration.

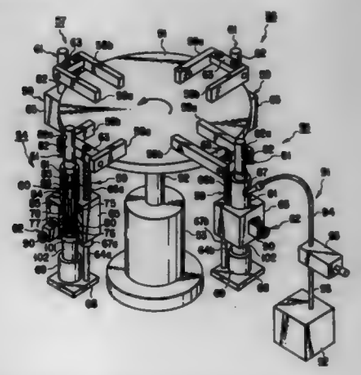


5,487,417

ELECTROLYTE INJECTION APPARATUS

Shigeo Kasahara; Kiyoshi Sueoka; Gen Takayama; Shingo Satoh, and Hidemi Houjyou, all of Tokyo, Japan, assignors to Toshiba Battery Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1994, Ser. No. 298,679
Claims priority, application Japan, Sep. 3, 1993, 5-219898; Aug. 9, 1994, 6-187396
Int. Cl.[6] H01M *4/82*
U.S. Cl. 141—32 **15 Claims**



1. An electrolyte injection apparatus comprising:

a rotary table;

an electrolyte injection member supported by said rotary table so as to be tilted by a centrifugal force upon rotation of said rotary table, said injection member having an internal hole whose bottom section is tapered, and a small-diameter exit hole formed in a lower end thereof and communicating with said internal hole;

a battery which contains no electrolyte and in which an electrode group consisting of a laminated structure formed by interposing a separator between positive and negative electrodes is accommodated in a case such that a lamination plane of said electrode group is parallel to a direction of depth of said case;

holding means for holding said battery; and

electrolyte supply means for supplying an electrolyte to said injection member;

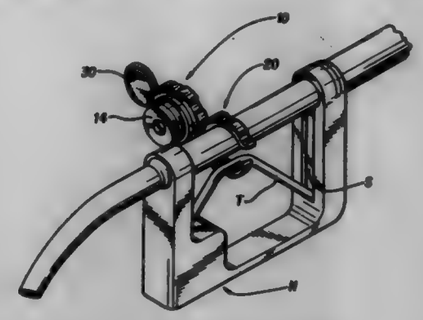
wherein said holding means holds said battery below said injection member such that a lower region of said exit hole of said injection member is situated inside an opening of said case of said battery, with a desired distance maintained between the lower region of said exit hole and an upper end of said electrode group.

5,487,418

GAS CAP CONSTRUCTION

Bernard Reyes, 510 Mokauea St., Honolulu, HI. 96819-3231

Filed Oct. 11, 1994, Ser. No. 320,668
Int. Cl.[6] B65D *51/24*
U.S. Cl. 141—392 **3 Claims**



1. An improved gas cap construction comprising:

a main cap body portion;

means for engaging a tank throat extending from one side of said cap body;

a raised disk on said cap body being located and hinged on the side opposite said tank throat engagement means, said disk thus defining a first generally planar cap portion surface of said disk and a second generally planar cap portion surface of said disk, said first surface and said second surface being substantially parallel to one another; and

a clamp portion hingedly attached to said body portion, said clamp portion and a hinged attachment being configured such that said clamp portion is positionable to lie in a plane substantially parallel to that of both said first surface and said second surface: whereby

said improved cap is removable from a throat of a gas tank, and where said clamp portion is movable to a position wherein it's usable to maintain the handle of a gas pump in an operable position and said disk is movable to a position wherein it's usable to maintain the handle of a gas pump in an operable position.

5,487,419

REDISPERSIBLE MICRODENOMINATED CELLULOSE

Michael K. Weibel, West Redding, Conn., assignor to Microcell, Inc., West Redding, Conn.

Filed Jul. 9, 1993, Ser. No. 89,682
Int. Cl.[6] D21C *9/00*
U.S. Cl. 162—9 **10 Claims**

1. A process for preparing dry, redispersible microdenominated cellulose comprising microdenominated cellulose prepared by repeatedly passing a liquid suspension of cellulose through a zone of high shear, said zone being defined by two confronting surfaces, with one of said surfaces rotating relative to the other, until said cellulose suspension is rendered substantially stable and has a Canadian Standard Freeness that consistently increases with repeated passage through said zone of high shear, said microdenominated cellulose having a settled volume of greater than 50% as determined on the basis of a 1.0% by weight suspension in water after twenty-four hours and drying said suspension of microdenominated cellulose in the presence of a dispersion agent in an amount effective to impart to said dry microdenominated cellulose a viscosity, when dispersed in water, of at least 50% of

the viscosity of an equivalent concentration of never dried microdenominated cellulose dispersed in water.

5,487,420

METHOD FOR FORMING METAL MATRIX COMPOSITE BODIES BY USING A MODIFIED SPONTANEOUS INFILTRATION PROCESS AND PRODUCTS PRODUCED THEREBY

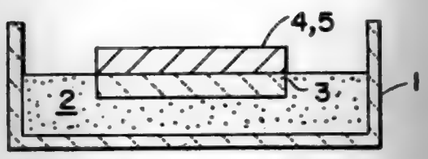
Marc S. Newkirk, Newark, Del., assignor to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 60,467, May 11, 1993, abandoned, which is a continuation of Ser. No. 806,847, Dec. 9, 1991, abandoned, which is a continuation of Ser. No. 520,923, May 9, 1990, abandoned. This application May 4, 1994, Ser. No. 238,183

The portion of the term of this patent subsequent to Nov. 10, 2008, has been disclaimed.

Int. Cl.[6] B22D *19/14;19/00*

U.S. Cl. 164—97 **22 Claims**



1. A method for forming a metal matrix composite, comprising:
providing a permeable mass comprising a preform or a filler material;
separately placing physically distinct bodies of a matrix metal and a non-infiltrating metal each in contact with at least one surface of the permeable mass at different locations thereon; and
spontaneously infiltrating at least a portion of said permeable mass with said matrix metal in a molten condition, thereby causing said non-infiltrating metal to infiltrate at least a portion of said permeable mass substantially contiguous with said molten matrix metal.

5,487,421

STRIP CASTING APPARATUS WITH ELECTROMAGNETIC CONFINING DAM

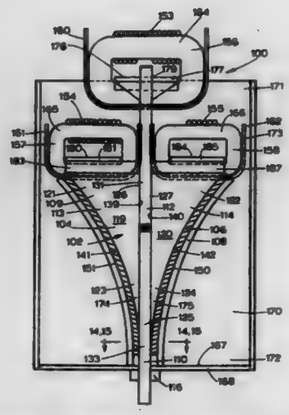
Howard L. Gerber, Chicago, Ill., assignor to Inland Steel Company, Chicago, Ill.

Filed Jun. 22, 1994, Ser. No. 263,874

Int. Cl.[6] B22D *11/06;27/02*

U.S. Cl. 164—467 **30 Claims**

1. An electromagnetic dam for preventing the escape of molten metal through the open end of a vertically extending gap located between two horizontally disposed, counter-rotating casting rolls comprising means for containing a pool of molten metal, said dam including a confining coil having a first part for disposition adjacent said casting rolls, said first part of the confining-coil comprising the following components:
a first vertically disposed, central conductor portion having a pair of opposite sides;
a pair of wedge-shaped, vertically disposed conductor portions, each located on a respective opposite side of said first central conductor portion, in close, substantially abutting relation thereto;
and means for electrically insulating said wedge-shaped conductor portions from said first central conductor portion;
said first central conductor portion having a relatively narrow front surface disposed between said pair of opposite sides and comprising means for facing the open end of said gap, said front surface having a lowermost part;



each of said wedge-shaped conductor portions having a front surface tapering in width from a relatively wide upper part to a relatively narrow lowermost part, said front surface of said wedge-shaped portion comprising means for facing the open end of said gap;
and means including said previously recited components, for generating a horizontal magnetic field, in response to the flow of time-varying electric current through said coil, for exerting a magnetic confining pressure on said pool of molten metal at the open end of said gap;
said first part of the confining coil having a front surface comprising said front surfaces of (1) the central conductor portion and (2) the wedge-shaped conductor portions.

29. A strip casting process comprising the steps of:
providing a pair of horizontally disposed, counter-rotating casting rolls (a) having a gap therebetween with an open end and (b) having facing casting surfaces converging downwardly toward a nip between the rolls;
containing a pool of molten metal in said gap, said pool having a predetermined maximum height, a relatively wide top part and a relatively narrow lowermost part at said nip;
casting said molten metal into a strip as the metal in said pool descends toward said nip;
providing an electromagnetic dam comprising a vertically disposed confining coil having a front surface with upper and lower parts;
positioning said front surface of the confining coil adjacent said open end of the gap (i) with said upper part of the front surface located opposite said wide top part of the molten metal pool, when the pool is at its predetermined maximum height, and (ii) with said lower part to the front surface located opposite said narrow, lowermost part of the pool;
flowing a current, having a first pre-selected amperage, through that part of the front surface of the confining coil opposite the wide top part of the molten metal pool, to confine that part of the pool;
and flowing a current having a second pre-selected amperage, substantially less than said first pre-selected amperage, through that part of the front surface of the confining coil opposite the narrow lowermost part of the molten metal pool, to confine that part of the pool.

5,487,422

MOUNTING BRACKET FOR A HEAT EXCHANGER

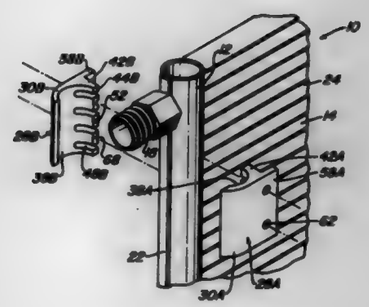
John T. Bertva, Colleyville; Scott L. Hutto, and John M. McCrady, both of Burleson, all of Tex., assignors to Wynns Climate Systems, Inc., Fort Worth, Tex.

Filed Jan. 25, 1994, Ser. No. 186,290

Int. Cl.[6] F28F *9/00*

U.S. Cl. 165—67 **13 Claims**

1. In a heat exchanger having a forward side and rearward side, a pair of oppositely disposed headers, each header having an



exterior wall, a plurality of substantially flat parallel flow tubes disposed between the headers for providing fluid communication between the headers, the flow tubes having opposite side edges located on the forward and rearward sides of the heat exchanger, at least one mounting bracket, comprising:
forward and rearward bracket members, each bracket member having a header engagement portion and a tube engagement portion, the header engagement portion having an inner wall which fits flush around a portion of the exterior wall of one of the headers, the tube engagement portion of the forward bracket member extending rearward and the tube engagement portion of the rearward bracket member extending forward, each tube engagement portion terminating in an inner face, and each tube engagement portion having at least one slot which extends from the inner face and which is parallel to the flow tubes for receiving one of the side edges of the flow tubes;
a mounting flange which is joined to at least one of the bracket members; and
fastening means for fastening the bracket members together with the forward bracket member located on the forward side of the heat exchanger, the rearward bracket member located on the rearward side of the heat exchanger, with said one of the headers gripped by the header engagement portions, and with one of the flow tubes located in the slot; and wherein
the inner face of one of the tube engagement portions has a protruding locator pin, the other of the inner faces having a recess which receives the locator pin when the bracket members are fastened together.

5,487,423

HEAT EXCHANGER

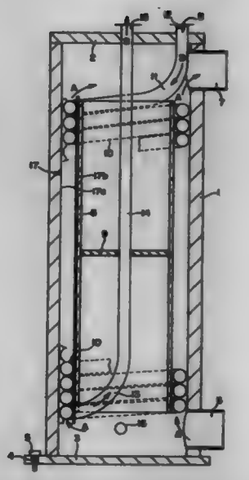
Francis Romero, Angers Cedex, France, assignor to Placine Service Anjou SA, France

Continuation of Ser. No. 17,746, Feb. 16, 1993, abandoned. This application Dec. 5, 1994, Ser. No. 349,472

Int. Cl.[6] F28D *7/10*

U.S. Cl. 165—156 **3 Claims**

1. A heat exchanger for reheating a secondary fluid such as a pool of fresh or sea water, said exchanger comprising a hollow cylindrical body (1) having an inlet for receiving said secondary fluid to be reheated and an outlet for discharging said reheated fluid, a sleeve (8) co-axially located inside the body and spaced from an inside wall of said body and forming an annular space there between, a coiled tube (10) in which the primary fluid circulates and which is located inside and co-axially with said annular space, an intake (12) and an output (15) for said coiled tube 10, one end of said coiled tube being coupled directly to one of said intake and said output, an opposite end of said coiled tube being coupled to the other of said intake and said output via a pipe extending through a center of said coiled tube, the secondary fluid passing through said annular space and over said coiled tube, the body (1) and the sleeve (8) being made of a reinforced polyester plastic-based material, the coiled tube (10) being made of titanium, a first spacer (17*a*) between the inside wall of the body (1) and the coiled tube (10), said first spacer being a strip provided with a



series of recesses for individually receiving and supporting each turn of the coiled tube (10), and a second spacer (17*b*) between the outside wall of the sleeve (8) and the coiled tube (10), said second spacer being a strip pushing said individual turns against said supporting shapes in said first spacer.

2. A heat exchanger for reheating a secondary fluid such as a pool of fresh or sea water, said exchanger comprising a hollow cylindrical body (1) having an inlet for receiving said secondary fluid to be reheated and an outlet for discharging said reheated fluid, a sleeve (8) co-axially located inside the body and spaced from said body and forming an annular space therebetween, the body (1) and the sleeve (8) being made of a reinforced polyester plastic-based material, a coiled tube (10) in which the primary fluid circulates and which is located inside said annular space, the secondary fluid passing through said annular space and over said coiled tube, the coiled tube (10) being made of titanium, a first spacer (17*a*) between an inside wall of the body (1) and the coiled tube (10), said first spacer being an undulating strip provided with a series of arcuate recesses for individually receiving and supporting each turn of the coiled tube (10), and a second spacer (17*b*) between the outside wall of the sleeve (8) and the coiled tube (10), said second spacer being a strip which is smooth on opposite sides for pushing said individual turns against said supporting shapes in said first spacer whereby said coil is installed and locked in space by the sliding of said second spacer into an area between said outside wall of the sleeve and said coiled tube for locking said individual turns in said arcuate recesses.

5,487,424

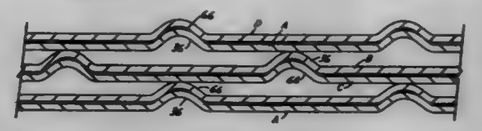
DOUBLE-WALL WELDED PLATE HEAT EXCHANGER

Roger C. Davison, Wichita Falls, Tex., assignor to Tranter, Inc., Augusta, Ga.

Continuation-in-part of Ser. No. 76,110, Jun. 14, 1993. This application Aug. 5, 1994, Ser. No. 286,536

Int. Cl.[6] F28F *3/08*

U.S. Cl. 165—166 **5 Claims**



5. A plate heat exchanger comprising:
a first set of plate assemblies,
a second set of plate assemblies,
the plate assemblies of the first set being arranged alternately with the plate assemblies of the second set in a stacked,

parallel relationship such that the plate assemblies of the first and second sets are respectively interleaved with one another,

each plate assembly of said first set comprising a first plate and a second plate, said first and second plates of each plate assembly of said first set having parallel, generally planar main body portions defining a space therebetween for the flow of a first fluid,

each plate assembly of said second set comprising a third plate and a fourth plate, said third and fourth plates of each plate assembly of said second set having parallel, generally planar main body portions defining a space therebetween for the flow of a second fluid,

the main body portion of the first plate of each plate assembly of the first set having a plurality of spaced-apart raised dimples projecting away from the main body portion of the second plate thereof, the main body portion of the second plate of each plate assembly of the first set having a plurality of spaced-apart raised dimples projecting toward the main body portion of the first plate thereof but in offset relation thereto to establish the aforesaid space therebetween for the flow of the first fluid,

the dimples of the first and fourth plates of the interleaved plate assemblies nesting with one another to define minimum spacing therebetween and provide venting for possible leaks,

the main body portion of the third plate of each plate assembly of the second set having a plurality of spaced-apart raised dimples projecting away from the main body portion of the fourth plate thereof, the main body portion of the fourth plate of each plate assembly of the second set having a plurality of spaced-apart raised dimples projecting toward the main body portion of the third plate thereof but in offset relation thereto to establish the aforesaid space therebetween for the flow of the second fluid,

the dimples of the second and third plates of the interleaved plate assemblies nesting with one another to define minimum spacing therebetween and provide venting for possible leaks.

5,487,425

COMPOSITION AND METHOD FOR RECOVERY OF PETROLEUM AND GAS

Takamasa Ohno, Musashino; Keietsu Kato, Chiba; Yoshiyuki Yamaguchi, Tokyo; Masami Murakami, Akishima, all of, Japan; Shogo Suzuki, Calgary, Canada; Shoichi Kanda, and Tsuyoshi Nakagawa, both of Yokohama, Japan, assignors to Nitto Chemical Industry Co., Ltd., and Japan Petroleum Exploration Co., Ltd., both of Tokyo, Japan

Filed Sep. 22, 1994, Ser. No. 310,486

Claims priority, application Japan, Sep. 24, 1993, 5-238173

Int. Cl.[6] C09K *7/02*

U.S. Cl. 166—295 **6 Claims**

1. A composition for recovery of petroleum and gas, which comprises:

(a) a copolymer having a molecular weight of 100,000 or more, consisting of 30–75 mole % of N-vinylpyrrolidone unit, 5–65 mole % of (meth)acrylamide unit and 5–20 mole % of (meth-)acrylic acid unit or a salt thereof,

(b) a water-soluble aldehyde,

(c) a phenol compound, and

(d) water.

5,487,426

ROD GUIDE WITH REMOVABLE VANES

Dan E. O'Hair, Conroe, Tex., assignor to Enterra Patco Oilfield Products Inc., Houston, Tex.

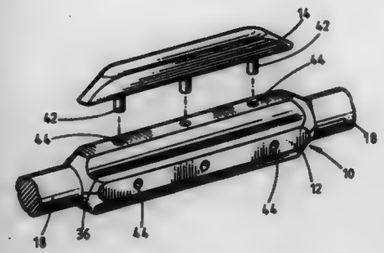
Filed Sep. 23, 1994, Ser. No. 311,496

Int. Cl.[6] F21B *17/10*

U.S. Cl. 166—378 **12 Claims**

12. A method of forming a rod guide comprising the steps of:

a. molding a body to a sucker rod segment, the body adapted to receive a plurality of vanes;



b. separately molding a plurality vanes; and

c. detachably anchoring the vanes directly to the body such that the vanes remain stationary in relation to the body while the vanes are anchored to the body.

5,487,427

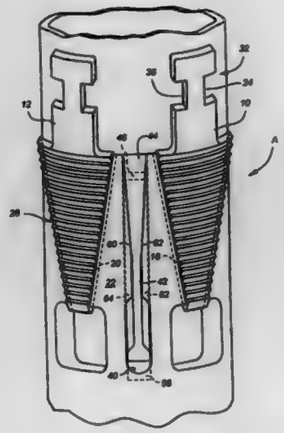
SLIP RELEASE MECHANISM

Alfred R. Curington, The Woodlands, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Apr. 6, 1994, Ser. No. 223,597

Int. Cl.[6] E21B *23/00;23/06;33/129*

U.S. Cl. 166—382 **20 Claims**



1. An apparatus for activating a slip for downhole use comprising:

at least one slip;

an annularly shaped slip support member having a longitudinal axis, said slip movably mounted to said slip support member for selective movement toward and away from said longitudinal axis of said slip support member; and

a weakening assembly retained by said slip support member and selectively movable with respect to said slip support member while remaining retained thereby to facilitate retraction of said slip toward said longitudinal axis of said slip support member.

10. A method of releasing a slip from a set position where it is wedged between a support member and a casing or liner, comprising:

providing a weakening assembly retained by the support member;

moving the weakening assembly with respect to the support member while continuing to retain said weakening assembly thereto;

weakening a wall in said support member by said moving; and

retracting the slip from the casing or wellbore.

5,487,428

STRAIGHT-AHEAD TRAVELING CONTROL SYSTEM FOR A BULLDOZER

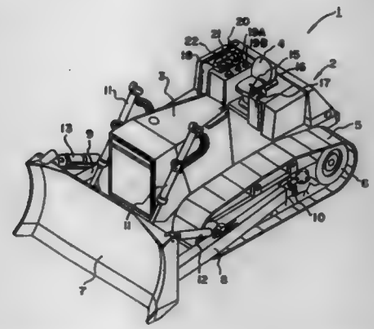
Shigeru Yamamoto; Shigenori Matsushita; Shu huai Zhang; Satoru Nishita, and Kazushi Nakata, all of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jun. 23, 1994, Ser. No. 264,348

Claims priority, application Japan, Jun. 23, 1993, 5-152406

Int. Cl.[6] A01B *63/111;* **E02F** *3/76*

U.S. Cl. 172—4.5 **13 Claims**



1. A straight-ahead traveling control system for a bulldozer comprising:

(a) driving mode setting means which can set an automatic blade control mode for dozing operation;

(b) yaw angle detector means for detecting a yaw angle of a vehicle body in relation to a target traveling direction for the vehicle body;

(c) blade tilt angle detector means for detecting a tilt angle of a blade tilting laterally in relation to the ground; and

(d) blade controller means for controlling tilting of the blade based on a final tilting amount obtained by adding a first blade tilting amount used for driving the vehicle body straight ahead to a second blade tilting amount used for forming a laterally horizontal earth surface after digging by the blade, the first blade tilting amount being obtained from the yaw angle of the vehicle body detected by the yaw angle detector means and the second blade tilting amount being obtained from the tilt angle of the blade detected by the blade tilt angle detector means, when the driving mode setting means has set the automatic blade control mode.

5,487,429

SPRING TOOTH HARROW PACKER

Michael B. Gates, R.R. 1, Box 60, Lansford, N. Dak. 58750

Continuation-in-part of Ser. No. 16,791, Feb. 11, 1993, Pat. No. 5,358,056, which is a continuation-in-part of Ser. No. 725,342, Jul. 3, 1991, abandoned. This application Sep. 9, 1994, Ser. No. 303,778

Int. Cl.[6] A01B *49/02;5/04*

U.S. Cl. 172—175 **6 Claims**

1. A spring tooth harrow packer, comprising:

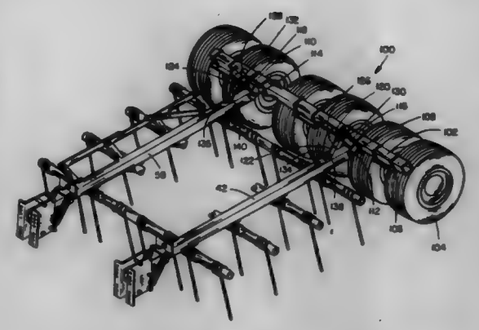
an elongated, horizontally disposed and transversely extending draw bar having rearward and forward sides;

said draw bar being wheel supported and having a hitch extending forwardly therefrom for attachment to a tractor;

a plurality of harrow sections operatively secured to said draw bar and being positioned rearwardly thereof; said harrow sections including a plurality of ground engaging spring teeth;

each of said harrow sections being pivotally secured, about a horizontal axis, to said draw bar;

and a packer assembly mounted on the rearward end of each of said harrow sections;



said packer assembly including a plurality of rotatable packer elements;

said packer assembly including a transversely extending support bar which is secured to the rearward end of the associated harrow section;

and adjustment means for selectively vertically moving said packer assembly with respect to the associated harrow section for selectively controlling the penetration depth of at least the teeth at the rearward end of the associated harrow section and wherein said adjustment means permits said packer assembly to be raised out of ground engagement to enable the spring tooth harrow packer to only harrow.

5,487,430

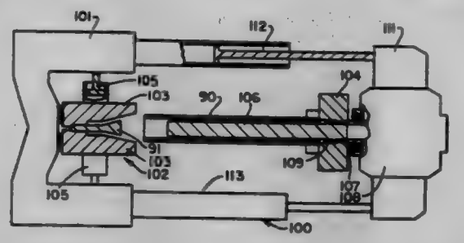
PNEUMATIC GROUND-PIERCING TOOL AND BODY THEREFOR

Steven W. Wentworth, Greenfield; Robert F. Crane, Mequon, and Jon A. Haas, Oconomowoc, all of Wis., assignors to Earth Tool Corporation, Oconomowoc, Wis.

Division of Ser. No. 591,099, Oct. 1, 1990, Pat. No. 5,199,151, which is a continuation-in-part of Ser. No. 435,953, Nov. 13, 1989, Pat. No. 5,025,868. This application May 5, 1992, Ser. No. 878,741

Int. Cl.[6] E21B *11/02*

U.S. Cl. 173—91 **14 Claims**



1. A tool body for use in a pneumatic ground-piercing tool, which body comprises a metal tube having a tapered front end portion, and an anvil having a frustoconical rear portion which seats against the inner surface of the front end portion and a cylindrical shank which extends out of a front end opening of the metal tube, made by the method which comprises:

forcing a front end portion of a metal tube between spaced, frustoconical surfaces of a forming anvil and a die to form the end portion into a frustoconically tapered shape on both the inner and outer surfaces thereof, the forming anvil having a frustoconical rear portion which seats against the inner surface of the front end portion and a cylindrical shank which extends out of the front end opening of the metal tube, whereby the inner surface of the front end opening of the tube has the same diameter as the cylindrical shank of the forming anvil;

removing the forming anvil from the tube; and

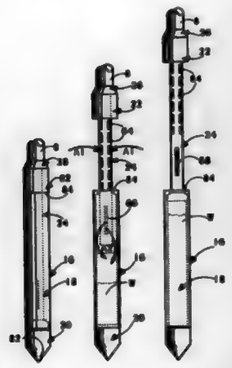
installing a different anvil in place of the forming anvil, which different anvil has substantially the same shape as the forming anvil, except that a portion of the different anvil has a diameter slightly greater than the corresponding similarly shaped portion of the forming anvil so that the different anvil is interference-fitted in the body.

5,487,431

SUBTERRANEAN FLUID SAMPLING SYSTEMS AND METHODS

David E. Webb, Vero Beach, Fla., assignor to Drilling Services, Inc., Ft. Pierce, Fla.

Filed Jun. 20, 1994, Ser. No. 262,688
Int. Cl.[6] E21B 7/26
U.S. Cl. 175—20 **2 Claims**



1. In a subterranean sampling system of the direct push type comprising an elongated push tube having a tool connector lower end and hydraulic means to force said push tube downwardly through subterranean strata, an improved sampler unit connected to said lower end which comprises:

a cylinder defining a fluid sample retention space, said cylinder comprising a first end portion and a second end portion,

a pierce member defined by a pointed distal end portion and a proximal end portion in fluid tight connection with said first end portion of said cylinder,

guide means comprising a first end inlet terminus through which a central bore extends, a second end fluid tight connection with said cylinder second end portion and a longitudinal conduit extending from said central bore to said second end fluid tight connection,

an elongated tube defined by an external wall, an internal wall, a closed end part, an open end part and a longitudinal body part joining said closed end part to said open end part, said body part having a plurality of spaced apart slots extending radially through said external and internal walls,

said elongated tube being slideably received in said central bore of said guide means to prevent fluid passage between said external wall and said central bore, and

means providing a fluid tight connection between said push tube and said open end part of said elongated tube, but unconnected to said guide means or said cylinder whereby said elongated tube may first be moved partially out of said cylinder to position less than all of said plurality of spaced apart slots outside said cylinder thereby permitting and thereafter positioning all of said spaced apart slots outside said cylinder thereby preventing fluid to flow from said strata into said cylinder.

5,487,432

SUBSURFACE TOOL

Jon E. Thompson, 30 White Hills, NE., Grand Rapids, Mich. 49546

Filed Feb. 22, 1995, Ser. No. 392,096
Int. Cl.[6] E21B 49/02
U.S. Cl. 175—20 **6 Claims**



2. A soil penetrating tool comprising:

a shaft having an upper end and a soil penetrating lower end element;

a transverse elongated handle having a pair of ends for manual gripping thereof, and a central zone; and

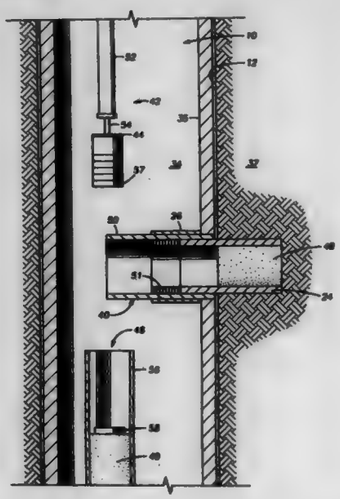
an isolator coupling between said shaft and said handle, said coupling being an electrically insulating element having an upper end secured to said handle central zone, and having a lower end secured to said shaft upper end.

5,487,433

CORE SEPARATOR ASSEMBLY

Bruce W. Mackay, Sugar Land, and Abbas Arian, Houston, both of Tex., assignors to Western Atlas International Inc., Houston, Tex.

Filed Jan. 17, 1995, Ser. No. 373,654
Int. Cl.[6] E21B 25/02
U.S. Cl. 175—78 **4 Claims**



1. A core collector mounted on a coring tool for use in a borehole, comprising in combination:

a hollow core cutting bit having a borehole sidewall core-cutting position and a core-storage position;

a core ejector means;

means for causing said core ejector means sequentially

1) to execute an ejecting stroke to eject a core from said core cutting bit into a core storage means when said core cutting bit is disposed in the core-storage position and

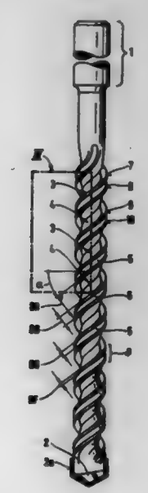
2) to positively deposit a core separator ring on top of the ejected core prior to executing a withdrawal stroke.

5,487,434

ROCK DRILL WITH CONVEYING GROOVE

Josef Obermeier, Pelting, Germany, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Nov. 14, 1994, Ser. No. 338,866
Claims priority, application Germany, Nov. 12, 1993, 43 38 587.9
Int. Cl.[6] F21B 10/44
U.S. Cl. 175—323 **6 Claims**



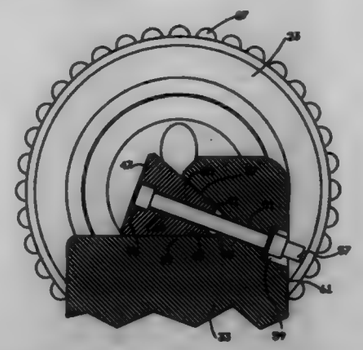
1. A rock drill has an axially elongated shank with an axially extending outside surface and a central axis, said shank has an axially extending chucking shank section (1) at one end thereof and a drilling tip (2) at an opposite end thereof, helically shaped conveying first grooves are formed in said outside surface and extend from adjacent said drilling tip towards said chucking shank section (1), helically shaped lands (R) are located between said conveying first grooves and extend from adjacent said drilling tip towards said chucking shank section, said lands (R) form said outside surface and have a helically-shaped auxiliary second groove (5, 6) positioned between a pair of helically-shaped guidance regions (7, 8, 9, 10) adjoining said first grooves, said first grooves and said lands having an angle of inclination relative to the central axis, wherein the improvement comprises that said conveying first grooves have a width (BH) measured perpendicularly to the angle of inclination, said lands comprising said guidance regions (7, 8, 9, 10) and said second grooves (5, 6) have a width (BG) measured perpendicularly to the angle of inclination, and the width (BH) of said first grooves is in a ratio in the range of 1.4 to 2.5 times to the width (BG) of said lands.

5,487,435

MOUNTING SYSTEM FOR RAISE AND SHAFT CUTTERS

Dolph R. Crawley, Arlington, and Steven R. Brooke, Mansfield, both of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Jul. 7, 1994, Ser. No. 271,710
Int. Cl.[6] F21B 10/12
U.S. Cl. 175—363 **9 Claims**



1. A mounting system to secure raise or shaft cutters to a bit body, comprising:

a mount adapted for connection to the bit body and having at least one leg that extends at an acute angle to the rotational axis of the bit body;

a journal having one wedge shape end adapted to be secured to a wedge shape opening in the leg;

an earth disintegrating cutter rotatably secured to the journal;

the wedge on the journal having a fastener hole to register coaxially with a fastener hole in the leg and being adapted to receive a fastener to secure the wedge on the journal in the wedge shape in the leg;

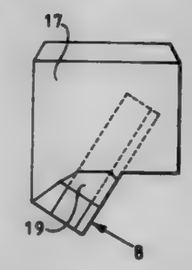
one side of the wedge shape being generally perpendicular to the rotational axis of the bit body, the adjacent side forming an acute angle with the perpendicular side.

5,487,436

CUTTER ASSEMBLIES FOR ROTARY DRILL BITS

Nigel D. Griffin, Whitminster, England, assignor to Camco Drilling Group Limited, Stonehouse, England

Filed Jan. 18, 1994, Ser. No. 183,048
Claims priority, application United Kingdom, Jan. 21, 1993, 9301146
Int. Cl.[6] E21B 10/46
U.S. Cl. 175—432 **11 Claims**



1. A cutter assembly for a rotary drill bit comprising a preformed polycrystalline diamond cutting element at least partly embedded in a solid post, the cutting element comprising a layer of polycrystalline diamond bonded to a substrate of a material less hard than the polycrystalline diamond and being a non-thermally stable cutting element of a kind which begins to suffer significant thermal

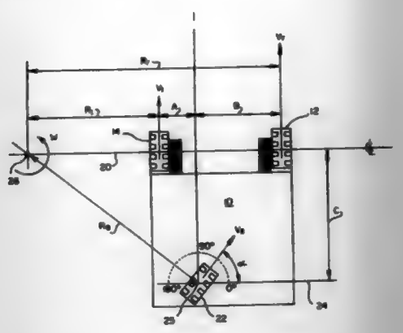
degradation at a temperature which is less than about 1000° C., and said solid post being formed from solid infiltrated matrix material comprising a body of particles of a powdered material which is less hard than the polycrystalline diamond, the particles having been bonded together by infiltration into the body of particles of a molten metal alloy which has subsequently solidified.

5,487,437

COUPLED DIFFERENTIAL TURNING CONTROL SYSTEM FOR ELECTRIC VEHICLE TRACTION MOTORS

Isaac Avitan, c/o Schaeff Inc., P.O. Box 9700, Sioux City, Iowa 51102-9700

Filed Mar. 7, 1994, Ser. No. 207,299
Int. Cl.[6] B62D *11/02*
U.S. Cl. 180—6.5 **21 Claims**



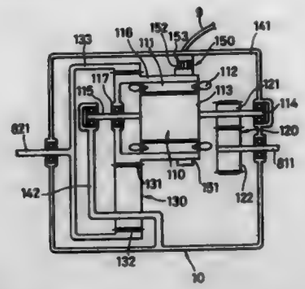
1. A turning control system for an electric vehicle which traverses a support surface along a direction of travel, the vehicle having a left traction motor and a right traction motor, a left motor drive control circuit for controlling the operation of the left traction motor and a right motor drive control circuit for controlling the operation of the right traction motor, means drivingly coupling each traction motor with traction means for engaging and propelling the vehicle over a support surface, the traction means being laterally spaced from one another relative to the direction of travel of the vehicle, the turning control system comprising means for generating a signal representative of a desired vehicle steer angle, means receiving the desired vehicle steer angle signal and in response thereto, generating a left reference signal and a right reference signal, each reference signal being representative of the required speed and direction of the respective left and right traction motor for effecting a vehicle turn at the desired steer angle, the turning control system further including motor coupling means, the motor coupling means including means for receiving a signal representative of the instantaneous speed of the left traction motor, for receiving a signal representative of the instantaneous speed of the right traction motor and for receiving the reference signals and in response thereto, generating a signal representative of speed lag of the left traction motor and generating a signal representative of speed lag of the right traction motor, means for modifying the left reference signal as a function of the signal representative of the speed lag of the right traction motor to generate a left motor coupled control signal and means for modifying the right reference signal as a function of the signal representative of the speed lag of the left traction motor to generate a right motor coupled control signal, the turning control system further including means for applying the left motor coupled control signal to the left motor drive control circuit and means for applying the right motor coupled control signal to the right motor drive control circuit, whereby effective speed control is provided for each traction motor which compensates for speed lag in the respective opposite motor to avoid oversteering and understeering and to provide slip free engagement between the traction means and the support surface.

5,487,438

DRIVING SYSTEM FOR AN ELECTRIC VEHICLE

Shigenori Kinoshita, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Sep. 9, 1993, Ser. No. 118,309
Claims priority, application Japan, Sep. 11, 1992, 4-269369
Int. Cl.[6] B60K *1/00*
U.S. Cl. 180—65.1 **12 Claims**



1. A driving system for an electric vehicle, the electric vehicle including a left-hand wheel, a right-hand wheel and an AC motor having a primary side and a secondary side, said primary side receiving power from a battery used as a power source, said driving system comprising;
a motor frame;
supporting means for rotatably separately supporting the primary side of said AC motor and the secondary side of said AC motor relative to said motor frame for rotation about a first axis;
a first power transmission shaft for driving one of said left-hand and right-hand wheels;
means for reversibly operatively connecting one of the primary side and the secondary side of said AC motor to said first power transmission shaft;
a second power transmission shaft for driving the other one of said left-hand and right-hand wheels;
means, comprising an external gear and an internal gear meshing with said external gear, for non-reversibly operatively connecting the other of the primary side and the secondary side of said AC motor to said second power transmission shaft; and
means for feeding electricity from said battery to the primary side of said AC motor;
wherein, said first and second power transmission shafts are coaxially supported on a second axis relative to said motor frame, and said second axis is offset from and parallel to said first axis.

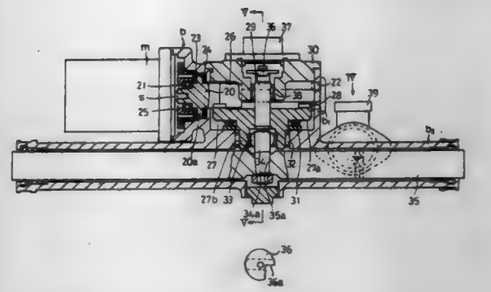
5,487,439

REAR WHEEL STEERING DEVICE

Katsukuni Kabuto, Inuyama, and Joji Otsuka, Kani, both of, Japan, assignors to Kayaba Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 875,043, Apr. 28, 1992, abandoned.
This application Feb. 7, 1994, Ser. No. 192,387
Int. Cl.[6] F16K *31/52*
U.S. Cl. 180—79.1 **6 Claims**

1. A wheel steering device comprising
a drive motor having an output,
a rotatably mounted gear wheel having an input side, an output side and a vertical axis of rotation,
a spherical bearing mounted on the gear wheel at the output side of said gear wheel, the spherical bearing having a center axis offset from the gear wheel axis of rotation,
a rod disposed proximal the output side of the gear wheel at a location below a location at which the spherical bearing is carried at said gear wheel output side,
a stud shaft having an upper end part and a lower tapered end part, the stud shaft upper end part being received in said spherical bearing with a stud shaft axis coaxial with the spherical beating axis, the stud shaft lower tapered end part being received fixed in a companionly configured tapered bore in the rod, and
means drivingly coupling the drive motor output with the input side of said gear wheel thereby to rotate the gear wheel, the spherical bearing being drivingly connected with the gear wheel output side so that on rotation of said gear wheel drive is transmitted from the stud shaft to the rod to rotate said rod about a rod longitudinal axis and to slide it in a rod axial direction.

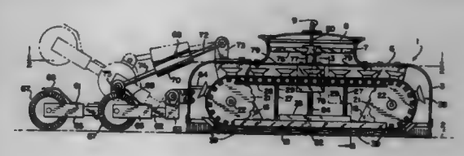


5,487,440

ROBOTIC APPARATUS

Henry R. Seemann, 2420 N. 202 Pl., Seattle, Wash. 98133

Filed May 18, 1993, Ser. No. 63,464
Int. Cl.[6] B62D *55/265*
U.S. Cl. 180—164 **28 Claims**



1. A robotic apparatus for traversing a surface, comprising a supporting structure, a pair of parallel tracks, an endless member mounted for travel on each track, drive means for driving each endless member in a path of travel, each track including a first recess and a second recess, said recesses disposed in side-by-side laterally spaced relation, said recesses each having an open side facing the respective endless member, a plurality of vacuum cups mounted on each endless member, first port means providing communication between said first recess of each track and a first group of vacuum cups, second port means providing communication between the second recess of each track and a second group of said vacuum cups, and vacuum means for creating a negative pressure in each recess.

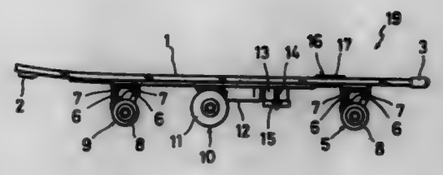
5,487,441

MOTORIZED BOARD WITH PRESSURE ACTUATED POWER SWITCH

Sadao Endo; Yoshito Tokinaga, and Kazuo Sasaki, all of Tokyo, Japan, assignors to Unitec Corporation, Tokyo, Japan

Filed May 14, 1993, Ser. No. 61,884
Claims priority, application Japan, Feb. 13, 1993, 5-047493
Int. Cl.[6] A63C *3/00*
U.S. Cl. 180—181 **1 Claim**

1. A motorized board with pressure actuated power switch comprising:
a board for supportingly receiving a player's foot;
wheels mounted to front and rear locations of a bottom surface of the board;
a driving wheel propelled by a geared motor and mounted to the bottom surface of the board;
a battery mounted to the board for energizing the geared motor for the driving wheel;
a switch unit carried on an upper surface of the board and operable responsive to a player foot pressure imposed thereon for turning on the geared motor, the switch unit being in off condition in an absence of said foot pressure imposition; and
said switch unit including a pressure switch for circuit connecting the battery with the geared motor, and an isolator switch intervening circuit connection of the pressure switch with one of the battery and the geared motor.

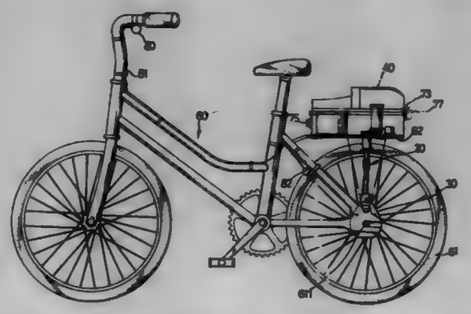


5,487,442

TRANSMISSION APPARATUS OF A ELECTRICAL BICYCLE

Jung-Lin Hua, 11th Fl., No. 1, Lane 1, Kuo Feng St., Tso Ying Dist., Kaohsiung City, Taiwan, Prov. of China

Filed Oct. 5, 1994, Ser. No. 318,131
Int. Cl.[6] B62K *11/10*
U.S. Cl. 180—220 **3 Claims**



1. A transmission apparatus of an electrical bicycle which includes a battery, a power switch, a carrie· board, a rear wheel, and a hub of the rear wheel, comprising
an upper transmission set including a speed-reducing motor connected to a drive gear which is meshed to a driven gear which has a hexagonal shaft extending downward therefrom;
a middle transmission set comprising an upper rod, a lower rod, and a universal joint connected therebetween, the upper rod at a top thereof including a tubular head which defines a hexagonal hole for receiving the hexagonal shaft thus connecting the upper rod to the driven gear;
a lower transmission set comprising a first bevel gear extended from the lowered rod, a second bevel gear meshing with the first bevel gear, a tube extended from the second bevel gear and received in the hub of the rear wheel, at least one unidirectional needle bearing positioned between the hub and the extended tube allowing the extended tube to drive the hub to rotate thus moving the rear wheel forward yet not allowing the hub to drive the extended tube to rotate;
whereby when the power switch is turned on, the speed-reducing motor is energized to rotate, thus driving the rear wheel to move forward via transmission through the drive gear, the driven gear, the upper rod, the universal joint, the lower rod, the first bevel gear, the second bevel gear, the extended tube, the unidirectional bearing, and the hub, while when the power switch is turned off and the electrical bicycle is physically

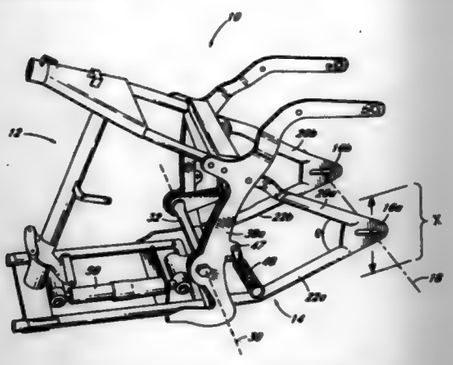
pedaled, the hub rotates to drive the rear wheel to move forward yet not drive the transmission apparatus.

5,487,443

MOTORYCLE TORSION SUSPENSION SYSTEM

Kenneth R. Thurm, 2348 Rockridge Cir., Orange, Calif. 92667

Filed Jan. 18, 1994, Ser. No. 183,604
Int. Cl.[6] B62K 25/12
U.S. Cl. 180—227 19 Claims



1. A suspension system for a motorcycle, comprising:

a frame;

a swing arm pivotally mounted to said frame on a pivot axis, said swing arm having a pair of wheel mounts located on a wheel axis spaced to receive a wheel, a pair of arms extending from each of said wheel mounts, a connector connecting each said pair of arms, each connector being joined to the other connector by an upper transverse cross member and a lower transverse cross member; and

a torsion bar extending along said pivot axis, said torsion bar being rigidly connected at a first end to said frame and being connected at a second end to said swing arm wherein said frame substantially covers said connectors and said torsion bar from a side view of said motorcycle.

5,487,444

SHOCK-ABSORBING SAFETY HARNESS

Mark Dennington, P.O. Box 2447, Kenai, Ak. 99611-2447

Filed Mar. 23, 1993, Ser. No. 35,459
Int. Cl.[6] A62B 35/00
U.S. Cl. 182—6 13 Claims



1. A safety harness for suspending a person wearing the harness from a single safety lanyard, comprising:

a harness securable to a person's torso and having an anterior side and a posterior side and defining left and right sides;

a resilient harness support assembly having at least three end branches, a first end branch being connected to the harness proximate the left anterior side of the harness, a second end branch being connected to the harness proximate the right anterior side of the harness, and a third end branch being connected to the posterior side of the harness, the harness support assembly further having an intermediate portion disposed between the third end branch and the first and second end branches, at least a portion of the resilient harness support assembly being constructed from a resilient material;

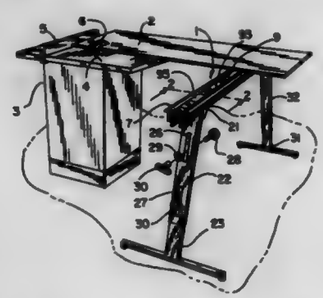
a lanyard coupling coupled to the intermediate portion of the resilient harness support assembly and disposed centrally relative to the left and right sides of the harness for connection to the single safety lanyard whereby the harness and the single safety lanyard support the person's weight and position the person in a vertically and laterally upright disposition when the person is suspended from the single safety lanyard, the resilient harness support assembly being reversibly deformable to absorb impact loads imposed on the safety lanyard and the harness and a fail-safe lanyard connected at a first end to the harness and at a second end to the safety lanyard.

5,487,445

BALL TRANSFER RAIL FOR TABLE SAW

Roy Biehl, 6631 N. Sidney Pl., Milwaukee, Wis. 53209

Division of Ser. No. 241,685, May 12, 1994, Pat. No. 5,375,679, which is a continuation of Ser. No. 953,646, Sep. 29, 1992, abandoned. This application Sep. 14, 1994, Ser. No. 306,131
Int. Cl.[6] F16M 11/00
U.S. Cl. 182—181 4 Claims



1. A ball rail assembly for controlling the movement of sheet material, said ball rail assembly comprising:

a longitudinally extending U-shaped rail member having a longitudinal axis, a base and a pair of opposite upstanding side walls forming a channel therebetween;

a ball transfer cartridge slidably received within said channel, said ball transfer cartridge including a hollow housing having an open top, an open bottom supported directly on said base and a pair of opposite shelves, each of said shelves having a dimple projecting upwardly therefrom, said housing also having a ball bearing projecting continuously through and above said open top of said housing; and

holding means on said upstanding side walls of said rail member for preventing the vertical displacement of said ball transfer cartridge within said rail member and holding said ball transfer cartridge in said channel while permitting longitudinally sliding movement of said ball transfer cartridge in said channel along said longitudinal axis; said holding means comprising a pair of flanges directed inwardly towards said housing, each of said flanges having an underside engageable with one of said dimples to provide a friction fit of said ball transfer cartridge within said rail, at least one of said flanges formed with a ledge extending outwardly, said ledge preventing contaminants from entering said channel and simultaneously directing the edge of the sheet material over said rail and onto said ball bearing.

5,487,446

APPARATUS FOR SELF-ADJUSTING THE HEIGHT OF AN OUTRIGGER ATTACHABLE TO SCAFFOLDING

Eric T. Patnode, P.O. Box 8, and Brian J. Jarvis, P.O. Box 2, both of Isle Lamotte, Vt. 05463

Filed May 9, 1994, Ser. No. 239,464
Int. Cl.[6] E04G 1/20
U.S. Cl. 182—148 3 Claims



1. A new and improved apparatus for self-adjusting the height of an outrigger attachable to scaffolding comprising, in combination:

a C-channel support having a back wall and side walls with a plurality of apertures located along the length of the back wall, the exterior of the back wall having clamps for removable coupling with tubular scaffolding;

a vertically disposed angle iron positioned parallel with the support on the side there opposite from the clamps and having coupled thereto at its upper and lower ends a wheel carriage for riding within the C-channel support;

an outrigger platform extending forwardly from the angle iron and secured thereto for supporting an operator standing on the platform;

a rotatable handle secured with respect to the angle iron at an upper extent thereof for rotation by an operator, the handle having at its interior end a bevel gear and a large sprocket gear with peripheral teeth for rotation upon rotation of the handle, the teeth adapted to sequentially engage next adjacent apertures of the channel support upon rotation of the handle to effect the raising and lowering of the angle iron and platform upon rotation of the handle in either one direction;

a brake rod having an upper end pivoted to the angle iron and the lower end with a finger adapted to be positioned into a predetermined aperture on the channel support, and a lever pivotally secured to the angle iron coupled to the brake rod tending to withdraw the finger from the aperture upon the pressing of the lever; and

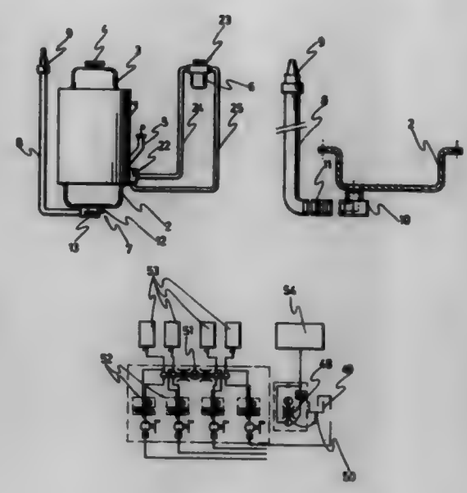
a spring coupled at its upper end to the angle iron and at its lower end to a preselected area of the brake rod tending to urge the finger into a preselected aperture for locking purposes.

5,487,447

SYSTEM FOR FACILITATING AN OIL CHANGE AND/OR AN OIL FILTER CHANGE IN INTERNAL COMBUSTION ENGINES

Manuel J. Martinez Velazquez, Uncastillo, 7, 3-A, Zaragoza, Spain

Filed May 9, 1994, Ser. No. 240,087
Claims priority, application Spain, Sep. 22, 1992, 9201887; Jan. 22, 1992, 9202109; Mar. 16, 1993, 9300552
Int. Cl.[6] F16C 3/14
U.S. Cl. 184—1.5 22 Claims



1. A system for expediting a change of motor oil in internal combustion engines which include a crankcase, said system comprising:

extraction means for extracting oil frown the crankcase;

filling means for filling oil into the crankcase;

control means for controlling the operations of extraction and filling of oil;

the extraction means and filling means including:

first duct means which have a first end fixed in the proximity of the lowest point at a bottom portion of the crankcase, said first duct means having a second end which has a first connecting means;

a second remote duct means releasably connectable by a second connecting means to said first connecting means of said first duct means;

a remote unit for extraction and filling of oil, said remote unit being connected to said second duct means;

wherein the control means includes means for carrying out a controlled suction of oil from the crankcase, through said first duct means and said second duct means to said remote unit, and means for carrying out a controlled filling of the crankcase supplying oil from the remote unit through said second duct means and said first duct means;

the remote unit being connected to at least a first tank for storing oil extracted from the crankcase, the remote unit being connected to at least a second tank from which oil is supplied to the crankcase, the remote unit includes means for controlling the quantities of oil extracted from and supplied to the crankcase respectively, and

the remote unit includes means for processing and storing data relating to the quantity of oil extracted from and supplied to the crankcase, respectively; and

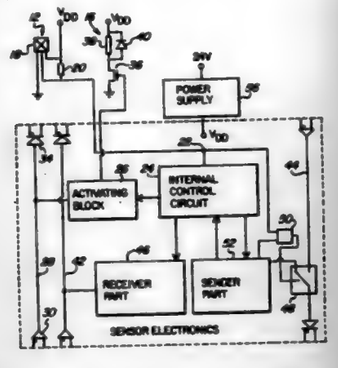
the first duct means comprises one single duct through which oil is pumped during extraction from the crankcase as well as during filling of the crankcase.

5,487,448

DEVICE FOR MONITORING A CONTROL UNIT

Karl-Otto Scholkopf, Esslingen; Werner Böhm, Weinstadt; Gerhard Kellings, Moers; Michael Bollerott, Essen, and Klaus Scherer, Düsseldorf, all of, Germany, assignors to Thyssen Aufzuge GmbH, Neuhausen, and Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V., Munich, both of, Germany

Continuation of Ser. No. 956,773, Feb. 11, 1993, abandoned.
This application Nov. 23, 1994, Ser. No. 344,517
Claims priority, application Germany, Apr. 18, 1991, 41 12 626.2
Int. Cl.[6] B66B 5/00;13/16
U.S. Cl. 187—247 20 Claims



15. An electronic switching unit for use in an electrical control system in which a plurality of such units are coupled to form a safety chain, said switching unit comprising:

a non-contacting, testable sensor;

control electronics for detecting and altering the state of said sensor;

an ascending branch terminal for coupling said unit to an ascending branch that communicates signals from a primary control of said electrical control system to a succession of said units;

a return branch terminal for coupling said unit to a return branch leading back to said primary control via said succession of units; and

an electronic changeover device for interrupting said return branch when said sensor is not in a state fulfilling a safety criterion for said safety chain.

5,487,449

MAGNETIC ELEVATOR DOOR COUPLING

David W. Barrett, East Hartland; Thomas M. McHugh, Farmington; Edward E. Ahigian, West Hartford; Jerome F. Jaminet, South Windsor; Thomas He, Unionville; Richard E. Peruggi, Glastonbury; Thomas M. Kowalcyk, Farmington, and Richard E. Kulak, Bristol, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Apr. 6, 1994, Ser. No. 223,898
Int. Cl.[6] B66B 13/12
U.S. Cl. 187—330 6 Claims

1. Apparatus for coupling an elevator hoistway door at a landing to an elevator car door so that the two may be operated in unison, comprising:

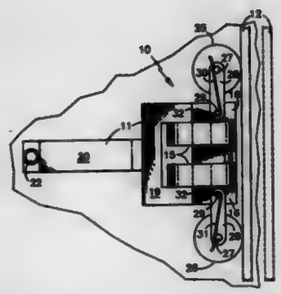
a vertical, magnetically permeable vane extending outwardly into the hoistway from a surface of a hoistway door;

a magnetic coupler disposed on an elevator car door in a position so that it is adjacent said vane whenever the elevator on which said car door is mounted is within the landing zone for the landing corresponding to said hoistway door and so that opening of the elevator car door will cause said magnetic coupler to engage said vane, the magnetic force between said magnetic coupler and said vane rigidly coupling said doors together for operation in unison;

an axle attached to said magnetic coupler and disposed in a position adjacent to and vertically displaced from said magnetic coupler;

a roller disposed on said axle; and

a spring disposed between said magnetic coupler and said axle resiliently urging said roller in a generally horizontal direction toward the door-open position of said car door.

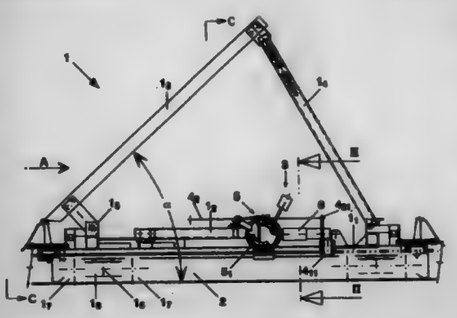


5,487,450

BRAKING APPARATUS AND METHOD FOR A RAIL-BOUND CARRIAGE OF AN INCLINED OR VERTICAL ELEVATOR

Hans Gerber, Surrey, Canada, assignor to Garaventa Holding A.G., Goldau, Switzerland

Filed Aug. 23, 1994, Ser. No. 294,651
Claims priority, application Switzerland, Aug. 24, 1993, 2510/93
Int. Cl.[6] B66B 5/04;5/12
U.S. Cl. 187—367 15 Claims



1. A braking apparatus for a carriage which travels on rails of an inclined or vertical elevator, said elevator including a cable driving device having cables connected to the carriage for moving the carriage along the rails, said carriage having a main frame assembly and a movable frame assembly slidably mounted to said main frame assembly, said braking apparatus comprising:

a cam disk assembly, rotatably mounted to said movable frame assembly and having eccentric disks releasibly held in a first position at a predetermined distance away from a surface of each of said rails for frictionally engaging said rails when released from said first position;

a plurality of brake blocks, said cam disk assembly causing said brake blocks to engage frictionally said rails when said eccentric disks frictionally engage said rails;

a releasing device for causing said eccentric disks to release from said first position and engage frictionally said rails when at least one of the following occurs:

at least one of said cables breaks; and

said carriage travels above a predetermined speed; and

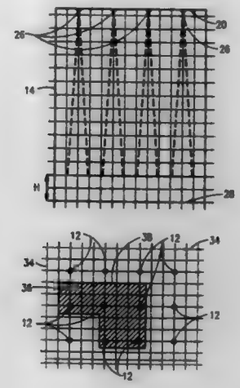
at least one shock absorber for damping relative movement between said movable frame assembly and said main frame assembly, when said brake blocks engage said rails, to stop movement of said carriage along said rails.

5,487,451

SYSTEM AND METHOD FOR DETERMINING THE AVAILABILITY OF AN ELEVATOR CAR FOR RESPONSE TO HALL CALLS

David M. Hughes, New Britain, and Gary Meguerdichian, Farmington, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Jan. 26, 1994, Ser. No. 187,669
Int. Cl.[6] B66B 3/00
U.S. Cl. 187—392 9 Claims



1. A system for determining the availability of an elevator car, said system comprising:

an orthogonal array of at least twelve sensors, said orthogonal array being disposed within the elevator car, each sensor of said orthogonal array having a transmitter and a receiver and each sensor outputting a signal indicative of the presence of an object within a section of said elevator car; and

means for receiving and processing said signals from said sensors to determine a cross-sectional area of said elevator car available for oncoming passengers.

5,487,452

REVOLVING PLATE CLAMPING DEVICE

Patrice Moinard, Montreuil; Alain Thioux, Bry sur Marne, and Jean Claude Mery, Pavillons Sous Bois, all of, France, assignors to Bendix Europe Services Techniques, Drancy, France

PCT No. PCT/FR93/00233, § 371 Date May 6, 1993, § 102(e) Date May 6, 1993, PCT Pub. No. WO93/21455, PCT Pub. Date Oct. 28, 1993
PCT Filed Mar. 10, 1993, Ser. No. 50,171
Claims priority, application France, Apr. 9, 1992, 92 04336
Int. Cl.[6] F16D 55/08
U.S. Cl. 188—72.7 3 Claims

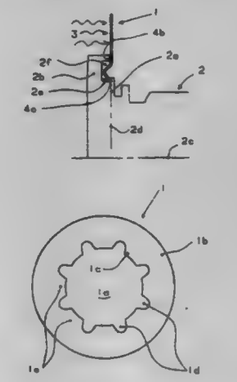
1. Clamping device consisting of two substantially parallel plates of which one at least may be driven in rotational movement about an axis perpendicular to a surface of the one plate, a plurality of guide cavities hollowed out in said one plate at a distance from the axis and a plurality of corresponding balls inserted into the cavities and gripped between the two plates, each guide cavity forming a cam and providing a bearing surface rising monotonically, covering a non-nil angle of the rotational movement, from a portion of maximum depth to the surface of the plate, characterized in that the portion of maximum depth of the cavity forms a housing for the corresponding ball, which holds the ball in a single determined position, and in that the cavity consists in a portion of lesser depth of a ramp which intercepts the housing in a plurality of points of intersection in the direct vicinity of which the ball forms a first slope tangent with the housing and in the vicinity of which points the ramp has a second slope which is substantially shallower than the first slope, said points of intersection thus being situated on a slope discontinuity comprising an edge.

5,487,453

THERMAL PROTECTION DEVICE

Jonny Moroni, Livry Gargan, France, assignor to AlliedSignal Europe Services Techniques, Drancy, France

PCT No. PCT/FR93/00153, § 371 Date May 4, 1993, § 102(e) Date May 4, 1993, PCT Pub. No. WO93/21457, PCT Pub. Date Oct. 28, 1993
PCT Filed Feb. 16, 1993, Ser. No. 50,199
Claims priority, application France, Apr. 9, 1992, 92 04335
Int. Cl.[6] F16D 65/00
U.S. Cl. 188—264 G 2 Claims



1. A thermal protection device which can be used for protecting a disk- or drum-brake boot and composed of a support and a thermal screen, the thermal screen comprising a plate pierced through by an orifice to present an outer edge and an inner edge, the plate consisting of an elastically deformable material not subject to buckling and held in place on the support by means of at least one first bearing surface on which the plate exerts, by means of the inner edge, a force resulting from elastic deformation, said device comprising additional bearing means supplying the plate

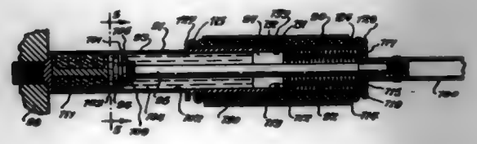
with a second bearing surface and enabling the plate to exert on the first and second bearing surfaces forces oriented respectively in opposite directions, the inner edge of the plate cut out so as to present a plurality of tabs, the support comprising a first cylindrical portion having a circular periphery which constitutes the first bearing surface, the second bearing surface comprising at least one portion of an axial face of a second cylindrical portion of the support, contiguous with the first cylindrical portion and arranged toward the outside of the first cylindrical portion along a radial direction of the first cylindrical portion, the axial face of the second cylindrical portion of the support, except at the second bearing surface, hollowed out to provide a cavity, the plate near of the inner deformed out of a plane of the plate and along two folds of opposite concavities to form an annular flange, said flange located in the cavity without touching a bottom of the cavity, and the second bearing surface comprising at least one portion of the periphery of the axial face of said second cylindrical portion.

5,487,454

LEAKAGE BELLOWS OF HYDRAULIC DAMPER PROTECTED BY OPPOSITELY WOUND COIL SPRINGS

Alan R. Klembczyk, Cheektowaga, and John C. Metzger, East Aurora, both of N.Y., assignors to Tayco Developments, Inc., North Tonawanda, N.Y.

Filed Dec. 1, 1994, Ser. No. 347,872
Int. Cl.[6] F16F 9/04
U.S. Cl. 188—298 **11 Claims**



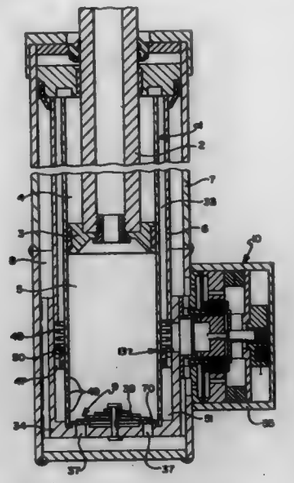
1. A hydraulic damper and spring combination comprising a cylinder, a chamber in said cylinder, fluid in said chamber, an end wall in said cylinder, a seal in said end wall, a piston head in said chamber, a piston rod mounting said piston head and passing through said seal and having an external piston rod portion on the opposite side of said end wall from said chamber, a bellows, a first end on said bellows in fluid tight relationship to said end wall on the opposite side thereof from said chamber, a second end on said bellows affixed in fluid tight and encircling relationship to said external piston rod portion whereby any leakage from said chamber through said seal is received in said bellows, a first spring wound in a first direction having a first end portion encircling said cylinder and having a first outer end bearing against a portion of said cylinder, a second spring encircling said external piston rod portion and wound in a second direction which is opposite to said first direction and having a second outer end in effective bearing relationship with said external piston rod portion, and first and second inner ends on said first and second springs, respectively, effectively bearing against each other whereby said inner ends of said first and second springs will travel in the same direction as said springs expand and contract to thereby eliminate the application of torsional forces from said springs to said bellows.

5,487,455

VARIABLE FLOW VALVE WITH POSITION SENSOR

Hans-Jörg Feigel, Rosbach, Germany, assignor to ITT Automotive Europe GmbH, Germany

PCT No. PCT/EP93/00353, § 371 Date Aug. 24, 1994, § 102(e) Date Aug. 24, 1994, PCT Pub. No. WO93/17254, PCT Pub. Date Sep. 2, 1993
PCT Filed Feb. 13, 1993, Ser. No. 295,684
Claims priority, application Germany, Feb. 29, 1992, 42 06 380.9
Int. Cl.[6] F16F 9/46; B60G 17/08
U.S. Cl. 188—299 **23 Claims**



1. A vibration absorber valve, comprising:
a valve body,
an electromechanical transducer for actuating said valve body,
a measuring apparatus for monitoring the actuating travel of said valve body,
an electric circuit coupled to said measuring apparatus and in such a way that in a first range of volumetric flow rate of a fluid through said valve body, a first restricting function is performed and in a second range of volumetric flow rate of a fluid through said valve body, a second restricting function is performed.

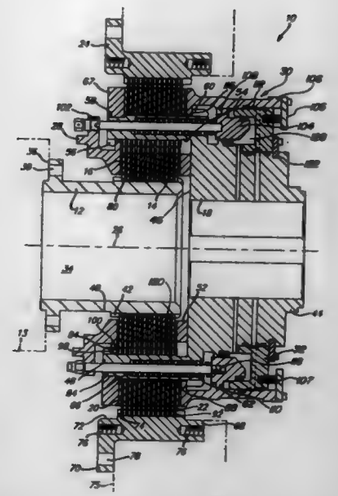
5,487,456

PRESS DRIVE WITH OIL SHEAR CLUTCH/BRAKE DRIVES WITH INTERNAL FLYWHEEL BRAKE

Gordon M. Sommer, Grosse Pointe Shores, Mich., assignor to Sommer Company, Warren, Mich.

Filed Jul. 7, 1994, Ser. No. 271,485
Int. Cl.[6] F16D 67/04
U.S. Cl. 192—18 A **13 Claims**

1. An oil-shear clutch/brake drive comprising:
a housing;
an input member rotatably disposed with respect to said housing;
an output member rotatably disposed with respect to said housing;
a brake disposed between said housing and said output member, said brake being movable between an applied condition where said output member is locked to said housing and a released condition where said output member can rotate relative to said housing;
a clutch disposed between said input member and said output member, said clutch being movable between an engaged condition where said input member is locked to said output member and a disengaged condition where said input member can rotate relative to said output member;
a clutch engagement member connected to said clutch to move said clutch between said engaged condition and said disengaged condition;
a brake engagement member connected to said brake to move said brake between said applied condition and said released condition, said brake engagement member being connected to said clutch engagement member;
brake biasing means for urging said brake engagement member to move said brake into said applied condition; and
lost-motion drive means disposed between said brake engagement member and said clutch engagement member for allowing movement of said clutch engagement member totally independent of said brake biasing means and said brake engagement member.

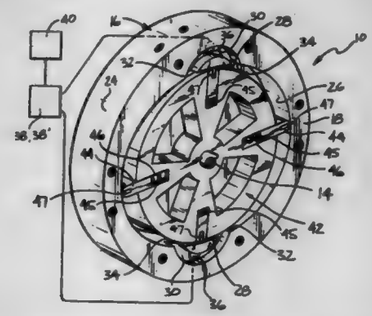


5,487,457

PRESSURE ACTIVATED ROTARY CLUTCH

Bowdie J. Isanhart, Fort Smith, Ark., assignor to Entrepreneurial Technologies, Inc., Little Rock, Ark.

Filed Jun. 22, 1994, Ser. No. 264,158
Int. Cl.[6] F16D 31/00
U.S. Cl. 192—58.2 **15 Claims**



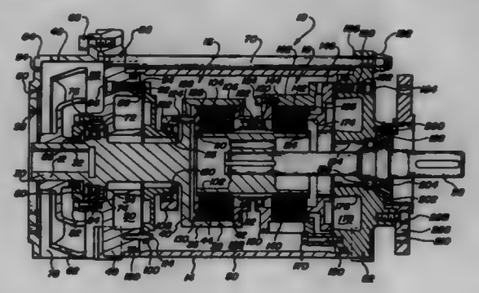
1. A pressure activated rotary hydraulic clutch comprising:
a sealed unit enclosing hydraulic fluid;
said unit being mounted to and rotatable about a rotatable shaft;
said shaft defining an axial direction and having a leading end disposed in said unit;
said unit including a circumferentially extending outer wall and also a circumferentially extending inner wall;
said inner wall including at least one lobe having a major dimension and a minor dimension from said shaft;
a hydraulic fluid passageway in said unit and having an inlet in said inner wall on one side of said minor dimension and an outlet in said inner wall on another side of said minor dimension;
a flow control valve disposed in said fluid passageway for controlling hydraulic fluid flow therethrough;
a flow control valve actuator in communication with said flow control valve for operating said flow control valve;
a rotor fixed to said leading end within said inner wall and rotatable with said shaft; said rotor being in proximity with said minor dimension of said lobe;
a vane on said rotor for moving said hydraulic fluid through said fluid passageway when the passageway is open and said shaft is rotated and for driving said unit through said hydraulic fluid when said passageway is restricted; and
whereby said unit rotates independently of said shaft and rotor when said passageway is unrestricted and said unit rotates with said shaft and rotor when said valve is operated to restrict fluid flow through said fluid passageway.

5,487,458

ELECTRICALLY ENERGIZED OIL SHEAR DRIVE SYSTEM

Gordon M. Sommer, Grosse Pointe Farms, Mich., assignor to Midwest Brake Bond Company, Warren, Mich.

Filed Nov. 3, 1993, Ser. No. 148,197
Int. Cl.[6] F16D 67/06
U.S. Cl. 192—18 B **12 Claims**



1. A drive system for transmitting power from a drive to an apparatus, said drive system comprising:
a stationary housing;
an output member for transmitting rotation from said drive system, said output member adapted to engage said apparatus and rotatably mounted in said housing;
an input member for transmitting rotation to said drive system, said input member adapted to engage said drive and rotatably mounted in said housing;
a selectively operable brake for prohibiting rotation of said output member with respect to said housing; said brake being capable of being positioned in an applied or a released condition;
a non-rotating brake application member including a first axially movable pressure plate for positioning said brake in said applied or said released condition;
a selectively operable clutch for locking said input member to said output member, said clutch being capable of being positioned in an engaged or disengaged condition;
a non-rotating clutch engagement member including a second axially movable pressure plate for positioning said clutch in said engaged or said disengaged condition;
a first spring member for biasing said non-rotating brake application member such that said brake is normally positioned in said applied condition; and

a second spring member for biasing said non-rotating clutch engagement member such that said clutch is normally positioned in said engaged condition.

5,487,459

COLLECTION AND ISSUING APPARATUS FOR ROUND PARKING CARDS

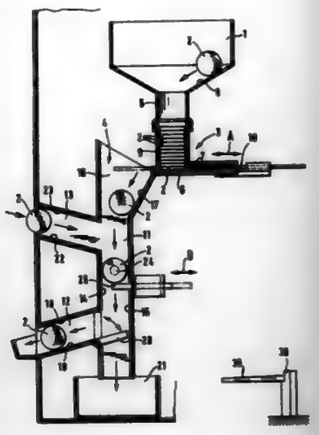
Johann Farmont, Duesseldorf, Germany, assignor to Farmont Tecknik GmbH & Co. KG, Germany

Continuation-in-part of Ser. No. 84,545, Jun. 29, 1993, abandoned. This application Feb. 15, 1994, Ser. No. 196,648

Claims priority, application Germany, Feb. 20, 1993, 9302481 U; Jan. 13, 1994, 44 00 744.2

Int. Cl.[6] **G07F** *7/02; G07B 15/00*

U.S. Cl. 194—213 **14 Claims**



1. A parking system comprising:

round parking cards, each having unique attributes; and a collection and issuing apparatus including:

a supply container for holding the parking cards, said container having a base;

a separation device located at the base for issuing the parking cards to at least one guiding chute, the guiding chute having at least first and second side chutes which branch off from the guiding chute at respective inclinations and which are provided for issuing and collecting the parking cards in a rolling manner under the force of gravity, respectively; and

a measuring point being located in the guiding chute for reading the unique attributes of issued and collected parking cards, the measuring point being connected to a control means for actuating a parking barrier.

5,487,460

SHORT STRAND ORIENTER

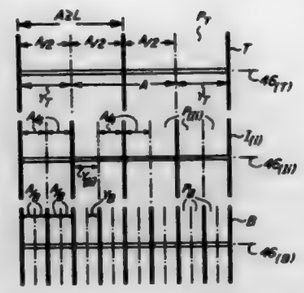
Derek Barnes, West Vancouver, Canada, assignor to MacMillan Bloedel Limited, Vancouver

Filed Jul. 29, 1994, Ser. No. 283,018

Int. Cl.[6] **B65G** *47/24*

U.S. Cl. 198—382 **11 Claims**

1. An orienting system for orienting wood strands comprising at least three decks including a top deck, a bottom deck and at least one intermediate deck between said top and bottom decks to form a series of said at least three decks stacked substantially vertically one directly above the other, substantially vertically extending passages through each of said decks, each of said passages in each said deck having a width defined by a pair of spaced walls, said decks being in vertically adjacent pairs, each of said pairs comprised of an upper deck which may be one of said top deck and said intermediate decks and a lower deck which may be one of said bottom deck or said intermediate decks, said passages through said bottom deck having a preselected width y measured in a first direction between and substantially perpendicular to said walls of said bottom deck, said width y being sufficiently small to ensure orientation of said strands passing therethrough to the desired mean angular deviation relative to a second direction substantially perpendicular to said first direction, said passages in an upper deck of each pair of vertically adjacent decks in said series have widths measured in said first direction correlated with passage widths of passages through its adjacent said lower deck of said pair of decks so that a passage through said upper deck of each said pair of adjacent decks is divided into two passages by passages directly therebelow formed through its adjacent said lower deck of said pair of vertically adjacent decks, the combined widths of said two passages directly therebelow being equal to the width of said passage through said upper deck so that strands falling downward though a passage in said upper deck may fall directly onto only one top edge of a common wall between its said two passages directly therebelow in said lower deck, said top deck forming an upper deck of one of said pairs of vertically adjacent decks and said bottom deck forming a lower deck of another of said pairs of vertically adjacent decks and each said intermediate deck forming an upper deck with its vertically adjacent lower deck and a lower deck with its immediately adjacent upper deck and wherein said walls of said passages in each said upper deck in each said pair of vertically adjacent decks are substantially vertically and axially aligned one with each outer walls of a pair of adjacent of said passages directly therebelow in its said lower deck immediately therebelow.



5,487,461

APPARATUS FOR TRANSPORTING PACKS

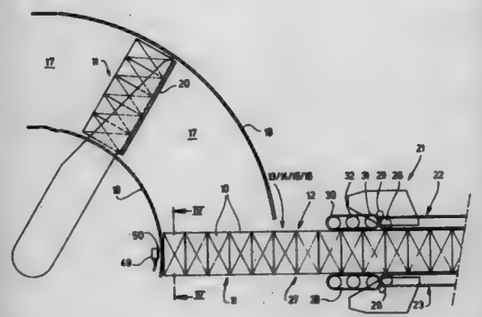
Heinz Focke, and Oskar Balmer, both of Verden, Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Germany

Filed Apr. 6, 1993, Ser. No. 43,485

Claims priority, application Germany, Apr. 7, 1992, 42 11 643.0; Aug. 1, 1992, 42 25 494.9

Int. Cl.[6] **B65G** *15/50*

U.S. Cl. 198—571 **10 Claims**



10. In an apparatus for conveying in a forward conveying direction a string (12) of packs which is formed from a plurality of rows (13, 14, 15, 16) of packs disposed above one another, the packs (10) being conveyed in a closely packed position and being aligned from row to row, and for forming pack groups (11) by pushing off the pack groups transversely to said conveying direction of the pack string (12), said apparatus having two side conveyors (22, 23), disposed in regions on opposite sides of the pack string, for applying a first conveying drive to the pack string (12) in said conveying direction, the improvement wherein:

a) at least one sensor (49) is assigned to each row (13, 14, 15, 16) and generates a control signal indicative of the relative position of said each row relative to the other rows;

b) two conveyor belts (28) are respectively assigned to, and disposed on opposite sides of, each row (13 to 16);

c) said conveyor belts (28) are located outside of said regions of said side conveyors (22, 23); and

d) the conveyor belts (28) are controlled by said control signal generated by said sensor (49) such that, if one row (13 to 16) lags behind the other rows with respect to said conveying direction, the conveyor belts (28) assigned to said one row apply an additional conveying drive to said one row until there is attained an alignment of the packs (10) of said one row with the packs of the other rows.

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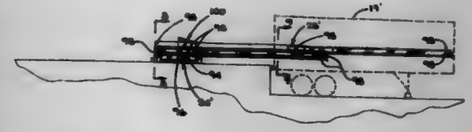
EXTENDABLE CONVEYOR WITHOUT BASE UNIT

Phillip J. Gilmore, Healdsburg, Calif., assignor to Rapistan Demag Corporation, Grand Rapids, Mich.

Division of Ser. No. 131,198, Oct. 1, 1993, Pat. No. 5,423,413. This application Aug. 25, 1994, Ser. No. 295,947

Int. Cl.[6] **B65G** *15/26*

U.S. Cl. 198—594 **48 Claims**



1. An extendable conveyor for conveying product between a particular location and a selectable variable location, said extendable conveyor having at least one extendable unit, a stationary support that is configured to be rigidly attached to a support surface for supporting said at least one extendable unit and a conveying surface defined on an extended portion of said at least one extendable unit, wherein said stationary support supports said at least one extendable unit between at least a fully extended position extending forwardly from said stationary support in the direction of said selectable variable location and a fully retracted position extending rearwardly from said stationary support in a direction opposite said direction of said selectable variable location, said stationary support including a forward support portion that provides upwardly directed support for said at least one extendable unit and a rearward support portion that provides downwardly directed support for said at least one extendable unit in said fully extended position, said support portions being separated a distance that is less than one-half of the length of said at least one extendable unit to provide cantilever support for said at least one extendable unit in said extended position from a support area that is significantly shorter than said extendable unit.

5,487,463

BANDED BOTTLE NECK CARRIER

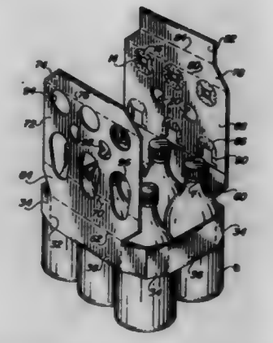
Randall L. Harris, Powder Springs, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Jul. 15, 1994, Ser. No. 276,007

Int. Cl.[6] **B65D** *75/00*

U.S. Cl. 206—145 **9 Claims**

1. A carrier package for a plurality of rows of bottles having a neck portion which includes an outwardly projecting shoulder, comprising:



a continuous flexible band snugly encircling the bottles;

the band having an upper edge and a lower edge, the lower edge being a free unconnected edge;

opposite side panels connected to the upper edge of the band;

one of the side panels being connected to an outer support panel ply and the other side panel being connected to an inner support panel ply, the outer and inner support panel plies being in face-to-face relationship to form a two-ply support panel;

each support panel ply containing bottle openings which are aligned in the support panel and through which the necks of the bottles extend; and

a plurality of support tabs connected to the outer support panel ply by fold lines extending along portions of the periphery of each bottle opening therein, the support tabs having edges engaging the underside of the bottle shoulders.

5,487,464

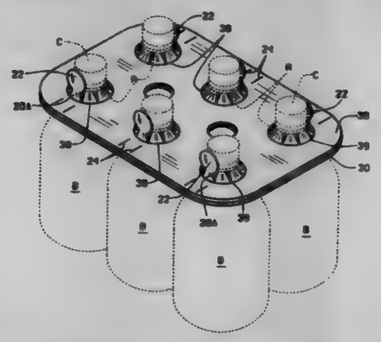
PAPERBOARD CARRIER WITH CONTAINER RELEASE PROVISION

Richard T. Galbierz, and Michael A. Galbierz, both of St. Louis, Mo., assignors to Imperial Packaging, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 170,012, Dec. 20, 1993, abandoned. This application Jul. 29, 1994, Ser. No. 282,778

Int. Cl.[6] **B65D** *75/00*

U.S. Cl. 206—149 **21 Claims**



1. A paperboard carrier for containers arranged in side-by-side positions and apertures in the carrier each having a closed margin sized to accommodate the filler ends of the containers, said carrier comprising:

a) a flat paperboard sheet having apertures therein for receiving the group of containers having filler ends;

b) a circular arranged group of tabs delineating each aperture, said tabs projecting radially inwardly from outer ends at said closed margin of said aperture, said group of tabs having inner terminal ends forming an open space in said aperture;

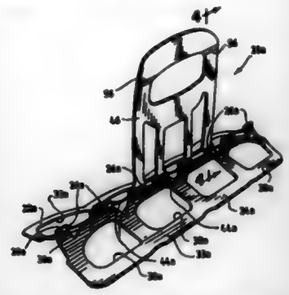
c) one of said group of tabs being formed with an enlarged terminal end substantially filling said open space in said aperture;
d) an embossed ring in said carrier surrounding the closed ends of said group of tabs, said embossed ring forming a hingable connection with each of said tabs;
e) score lines formed in said carrier in alignment with said one tab and extending outwardly from said embossed ring to define a tear strip in said carrier sheet; and
f) said group of tabs being responsive to the insertion of a container filler end into each of said apertures to forcibly pivot said tabs out of the plane of said carrier to support said container filler ends, said enlarged terminal end of said one tab being positioned along side the filler ends of the containers to be accessible to tear out along said score lines to release the containers from said carrier.

5,487,465

CONTAINER CARRIER

James A. Brookow, Buffalo Grove, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Apr. 20, 1994, Ser. No. 230,308
Int. Cl.[6] B65D *71/00*
U.S. Cl. 206—150 13 Claims



1. A carrier for carrying a plurality of containers comprising:
first and second container engaging portions made of a plastic material of a predetermined thickness and freely extending from a joined portion of a predetermined length at adjacent edges of said container engaging portions;
said joined portion being formed by merging juxtaposed surfaces of longitudinal edges of said container engaging portions together; and
said container engaging portions including a plurality of annular bands defining apertures therein for respectively securely holding therein a single container, each said annular band having a height defined by said thickness of the plastic material and a radial width defined by the distance between an outer margin of its aperture and an outer margin of the band, said radial width being substantially greater than said height of the band;
said container engaging portions generally defining a plane along said radial width when the carrier is assembled with containers, said joined portion extending generally perpendicularly with respect to said plane when the carrier is assembled with containers and said joined portion being interrupted along its length to define cut outs between said bands and separated joined portion segments.

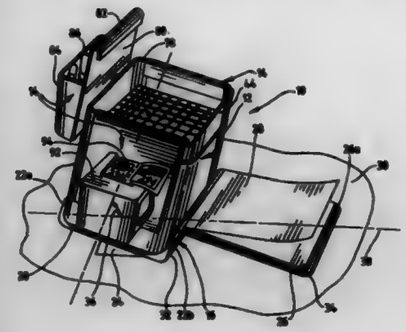
10. A carrier for a plurality of containers comprising:
first and second generally planar container engaging portions of plastic sheet material of predetermined thickness and having first longitudinal inner edge margins and opposite outer edges, said inner edge margins having fused facing surfaces providing a joined portion of predetermined length, said container engaging portions including a plurality of annular, substantially planar bands defining apertures therein, each aperture for respectively receiving and retaining a single container, said generally planar container engaging portions being positionable in a first position wherein said container engaging portions extend in the same direction from said joined portion with said outer edges of said container engaging portions adjacent each other and said apertures of said container engaging portions respectively juxtaposed over one another, said generally planar container engaging portions being movable to a second position wherein said container engaging portions are folded oppositely from said joined portion substantially to a common plane for assembly with containers and said joined portion extends generally perpendicularly with respect to said common plane when the carrier is assembled with containers.

5,487,466

DESKTOP ACCESSORIES HOLDER

Jerry A. Robson, 50 Maple Ln., Mansfield, Ohio 44906

Continuation of Ser. No. 101,470, Aug. 2, 1993, abandoned.
This application Sep. 23, 1994, Ser. No. 311,719
Int. Cl.[6] A45C *11/34*; B65D *85/28*
U.S. Cl. 206—214 12 Claims



1. A pencil cup comprising:
a cup body having an upwardly facing open end,
a collar portion engaged upon the cup body and forming a mouth of the cup adjacent the open end, and
a mesh of rubber bands having edge portions fastened between the collar portion and the cup body and extending across the upwardly facing open end of the cup body.

5,487,467

DOLL-SHAPED RECEPTACLE FOR PLASTIC BAGS

Victoria Sherman, 3116 Alhambra Cir., Coral Gables, Fla. 33134

Filed May 25, 1994, Ser. No. 248,665
Int. Cl.[6] B65D *83/00*
U.S. Cl. 206—216 14 Claims

1. A receptacle for plastic bags and other like articles, comprising:
(a) an upper member having the general shape and appearance of a portion of a doll body, said doll body portion defining a torso, head, and a pair of arms, said upper member comprising an outer shell and an inner support element disposed within said outer shell, said pair of arms being connected together to form a means for holding a towel or like item, said upper member including a garment constructed of fabric material disposed on said outer shell;
(b) a lower element structured and disposed for receiving articles therein, said lower element being shaped and configured as a skirt, said lower element being constructed of fabric material, said lower element being integrally formed with said garment and extending downwardly therefrom, said lower element defining a cavity therein, said lower element including a bottom zone, said bottom zone defining an opening in communication with said cavity and being sized to allow passage therethrough of an article;
(c) an expandable elasticized band attached to said bottom zone in surrounding relation to said opening, said band being in a normally contracted condition whereby said opening is partially closed; and
(d) a loop of string attached to a rear surface of said head of said upper member.

2. A receptacle for plastic bags and other like articles, comprising:
(a) an upper member having a general configuration and appearance of an upper portion of a doll body;
(b) a lower element structured and disposed for receiving an article therein, said lower element having the general shape and configuration of a skirt, said lower element being attached to said upper member and extending downwardly therefrom, said lower element defining a cavity therein, said lower element having an opening therein in communication with said cavity, said opening being structured and dimensioned to allow passage therethrough of the article and to contain the article within said cavity; and
(c) said upper element further including a pair of arms, said arms being connected together to form a holding member for a towel or like item.

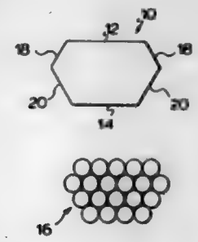


5,487,468

CIGARETTE PACKAGE DESIGN

Michael H. Sheahan, Whitby, Canada, assignor to Rothmans, Benson & Hedges Inc., North York, Canada

Continuation of Ser. No. 992,784, Dec. 18, 1992, abandoned.
This application Nov. 28, 1994, Ser. No. 348,234
Claims priority, application United Kingdom, Dec. 18, 1991, 9126854
Int. Cl.[6] B65D *85/10*
U.S. Cl. 206—242 1 Claim



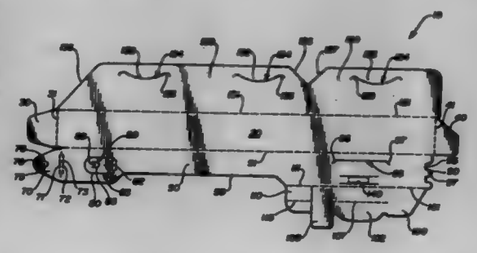
1. A cigarette package containing cigarettes in an array of said cigarettes arranged in multiple rows, each cigarette in said array having the same cross-sectional dimension and the same length, said cigarette package comprising a plurality of vertical walls defining a hexagon in cross-sectional shape, said plurality of walls being dimensioned such that said array of cigarettes contained in said package bears against the walls, so that said array of cigarettes has the same cross-sectional shape as said package,
said array of cigarettes being in the form of a nested array of twenty cigarettes in four rows,
said plurality of vertical walls defining a hexagon comprising a front wall, a rear wall parallel to said front wall, first side walls extending at an obtuse angle away from each end of the rear wall and second side walls extending at an obtuse angle away from each end of the front wall to integrally join with the first side walls at a further obtuse angle,
said rear wall engaging five cigarettes in a rear row of said nested array, said front wall engaging four cigarettes in a front row of said nested array, said first side walls engaging the end cigarettes of the rear row and an adjacent row to said rear row in said nested array containing six cigarettes and said second side walls engaging the end cigarettes of the front row and an adjacent row to said front row in said nested array containing five cigarettes.

5,487,469

PACKAGE FOR ENDOSCOPIC INSTRUMENT

Constance Roisdy, New Egypt, N.J., and E. Paul Johnson, San Angelo, Tex., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jan. 25, 1994, Ser. No. 187,274
Int. Cl.[6] B65D *85/20*
U.S. Cl. 206—363 8 Claims



1. A foldable package for an endoscopic suturing device comprising:
a base panel having a pair of opposed major sides and a pair of opposed minor sides;
a first upper closure panel foldably mounted to the first major side of the base panel;
a second, lower closure panel foldably mounted to the first major side of the base panel below the first closure panel;
a mounting panel having a pair of opposed major sides and a pair of opposed minor sides mounted to the other major side of the base panel along a first major side of the mounting panel;
a retaining panel mounted to the other major side of the mounting panel;
a bottom tab panel foldably mounted to the lower minor side of the base panel;
a top panel extending from the opposite upper minor side of the base panel;
needle park means mounted to the mounting panel;
means for locking the closure panels to the base panel and mounting panel; and,
means for locking the retaining panel to the base panel.

7. A foldable package for an endoscopic suturing device comprising:
a base panel having a pair of opposed major sides and a pair of opposed minor sides;
a first upper closure panel foldably mounted to the first major side of the base panel;

a second, lower closure panel foldably mounted to the first major side of the base panel below the first closure panel;
a mounting panel having a pair of opposed major sides and a pair of opposed minor sides mounted to the other major side of the base panel along a first major side of the mounting panel;
a retaining panel mounted to the other major side of the mounting panel;
a bottom tab panel foldably mounted to the lower minor side of the base panel;
a top panel extending from the opposite upper minor side of the base panel;
needle park means mounted to the mounting panel;
means for locking the closure panels to the base panel and mounting panel; and
means for locking the retaining panel to the base panel comprising a tab extending from the retaining panel and a tab pocket in the mounting panel.

8. A foldable package for an endoscopic suturing device comprising:
a base panel having a pair of opposed major sides and a pair of opposed minor sides;
a first upper closure panel foldably mounted to the first major side of the base panel;
a second, lower closure panel foldably mounted to the first major side of the base panel below the first closure panel;
a mounting panel having a pair of opposed major sides and a pair of opposed minor sides mounted to the other major side of the base panel along a first major side of the mounting panel;
a retaining panel mounted to the other major side of the mounting panel;
a bottom tab panel foldably mounted to the lower minor side of the base panel;
a top panel extending from the opposite upper minor side of the base panel;
needle park means mounted to the mounting panel;
means for locking the closure panels to the base panel and mounting panel wherein the locking means for the closure panels comprises tab pockets for engaging the base panel and mounting panel;
a suture retaining tab extending from a, top minor side of the mounting panel;
a pull tab extending from the retaining panel;
a stability tab foldably mounted to the second major side of the mounting panel below the retention panel; and,
means for locking the retaining panel to the base panel comprising a tab extending from the retaining panel and a tab pocket in the mounting panel.

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MERCHANDISE ENCAPSULATING PACKAGING SYSTEM AND METHOD THEREFOR

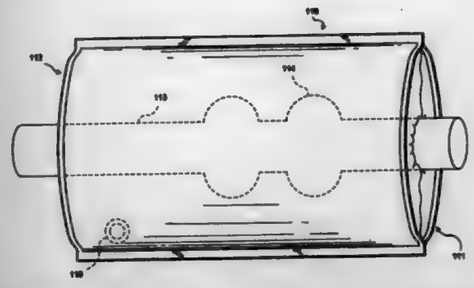
Daniel A. Pharo, Los Angeles, Calif., assignor to Puff Pac Industries, Inc., Los Angeles, Calif.

Continuation of Ser. No. 22,654, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 920,006, Jul. 27, 1992, abandoned, which is a continuation of Ser. No. 780,522, Oct. 17, 1991, abandoned, which is a continuation of Ser. No. 518,992, May 4, 1990, abandoned. This application Dec. 30, 1994, Ser. No. 367,678

Int. Cl.[6] B65D *81/02;30/00*

U.S. Cl. 206—522 **1 Claim**

1. A packaging system comprising an outer bag having opposite ends each with an opening formed therein, an inner bag mounted within said outer bag having a pair of opposite ends each with an opening formed therein, said openings cooperating to define a pocket extending through said packaging system and adapted to retain delicate portions of an article therein while other portions of said article extend from said packaging system though said openings, said inner bag being secured to said outer bag to suspend said inner bag within said outer bag, said outer and inner bags defining



a chamber therebetween, means for at least substantially filling said chamber with a filler medium to substantially surround said inner bag and said delicate portions of said article therewith, and a plurality of additional seals between at least a portion of a pair of adjacent surfaces of each of said outer bag and said inner bag at locations other than where said inner bag is suspended from said outer bag, said additional seals maintaining communication of said filler medium within said chamber.

5,487,471

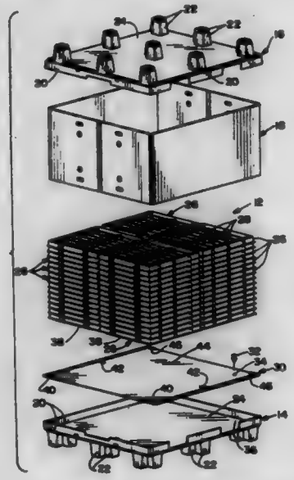
PACKAGING CONTAINER ASSEMBLY FOR ELECTRICAL CONNECTOR COMPONENTS

Kyle J. Marchek, Lisle, and Timothy R. McClelland, Bolingbrook, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Oct. 19, 1994, Ser. No. 325,764

Int. Cl.[6] B65D *85/38;85/62*

U.S. Cl. 206—725 **7 Claims**



1. A packaging container assembly for electrical connector components, comprising:
a pallet;
a tray alignment plate positionable onto the pallet;
at least one tray positionable onto the alignment plate and including means for supporting electrical connector components in a given orientation;
complementary interengaging alignment means between the tray and the alignment plate for assuring proper alignment of the tray relative to the alignment plate and, thereby, assuring proper orientation of the electrical connector components within the assembly; and
wherein said alignment means comprise at least one set of generally parallel elongated slots, and the alignment means on the tray comprise means for positioning within the slot.

4. A packaging container assembly for electrical connector components, comprising:
a pallet;
a tray alignment plate positionable onto the pallet;
at least one tray positionable onto the alignment plate and including means for supporting electrical connector components in a given orientation;
complementary interengaging alignment means between the tray and the alignment plate for assuring proper alignment of the tray relative to the alignment plate and, thereby, assuring proper orientation of the electrical connector components within the assembly,
wherein said pallet includes a generally planar top wall, and said tray alignment plate comprises a sheet-like member for positioning onto the top wall; and
wherein said alignment means include slots in the sheet-like member.

5,487,472

COLOR SORTER FOR SORTING OUT MOLDY PULSE

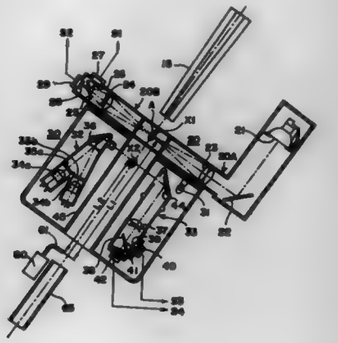
Satoru Satake, Tokyo; Tadanobu Inaashi, and Takafumi Ito, both of Hiroshima, all of, Japan, assignors to Satake Corporation, Tokyo, Japan

Filed Jun. 30, 1994, Ser. No. 269,109

Claims priority, application Japan, Jun. 30, 1993, 5-183451

Int. Cl.[6] B07C *5/342;5/00*

U.S. Cl. 209—581 **9 Claims**



1. A pulse color sorter comprising:
a pulse feeder for continuously feeding pulse to be examined to a first and a second detecting position with a predetermined distance provided therebetween;
a first detector arranged at said first detecting position and including first illuminating means for illuminating said pulse passing said first detecting position, and first light-receiving means for receiving light of different wavelengths dispersed and transmitted through said pulse and generating a first and a second detection signal on the basis of light of said different wavelengths, said first light-receiving means having spectral means for dividing said dispersed and transmitted light from said pulse into two different light beams directed in different directions, a short wavelength pass optical filter for selectively passing a particular short wavelength region of one of said two light beams from said spectral means, a first light receiver for detecting intensity of light passed through said short-wavelength pass optical filter, a long-wavelength pass optical filter for selectively passing a long wavelength region of the other one of said two light beams from said spectral means, and a second light receiver for detecting intensity of light passed through said long-wavelength pass optical filter;
a second detector arranged at said second detecting position and including a second illuminating means for illuminating said pulse passing said second detecting position, a reference color means having a brightness control function, and a second light-receiving means opposing said reference color means with said second detecting position intervened therebetween, for receiving light reflected by said pulse illuminated by said second illuminating means and light from said reference color means and generating a third detection signal on the basis of a difference between intensity of said light reflected by said pulse and intensity of said light from said reference color means;
a controller for calculating a ratio between said first and second detection signals generated by said first detector and judging said pulse as an abnormal pulse, thereby generating an eject signal for ejecting said abnormal pulse, when the resultant ratio calculated is outside a first predetermined threshold range or said third detection signal generated from said second detector is outside a second predetermined threshold range; and
an ejector connected to said controller and operable in response to said eject signal to eject said abnormal pulse to a flow-down path different from a flow-down path through which said normal pulse is allowed to flow down.

5,487,473

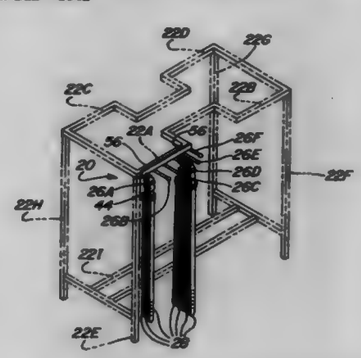
BELT RACK VENDING FIXTURE

Allan L. Ford, Melrose Park, Pa., assignor to Reborn Products Co., Inc., Bensalem, Pa.

Filed Aug. 18, 1993, Ser. No. 108,352

Int. Cl.[6] A47F *7/00*

U.S. Cl. 211—59.1 **16 Claims**



1. A rack for displaying and vending plural belts, said belts being in plural groups of different sizes, with the number of belts in each group being directly proportional to the popularity of belts of that size, said rack comprising a base and a plurality of prong members, said base comprising at least one elongated member from which said plurality of prong members project outward, said elongated member including a pair of ends and a center, said base being arranged for mounting the rack onto a support, each of said prong members being arranged in increasing length order from the ends of said elongated member inward to said center and being of length directly proportional to the number of belts in the group suspended therefrom, so that when said group of belts is suspended therefrom said prong member is full.

5,487,474

DEVICE FOR DISPLAYING ARTICLES

Bernard Heimendinger, Montmorency, France, assignor to FAPEC, Montmorency, France

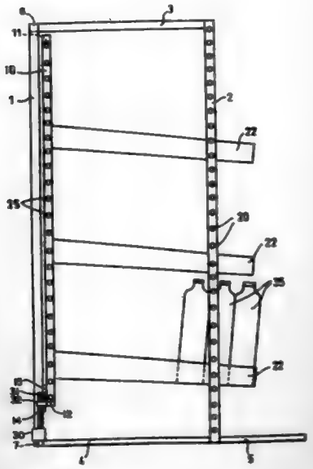
Filed May 9, 1994, Ser. No. 239,620

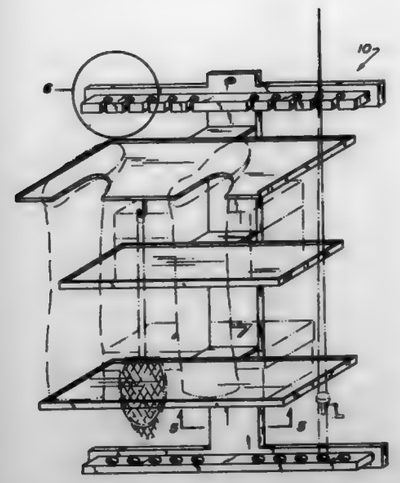
Int. Cl.[6] A47F *5/00*

U.S. Cl. 211—59.2 **3 Claims**

1. Device for displaying articles which comprises:
fixed frame means comprising front and rear vertical stanchions interconnected by front, rear and side crossmembers,

VOL 1182 ISS 5 JA 30 1996 UMI





adjustable rear frame means slidingly supported by said fixed frame means, which comprises rear vertical stanchions braced by crossmembers,

at least one horizontal front load bar supported by said front vertical stanchions of the fixed frame means,

at least one horizontal rear load bar supported by said rear vertical stanchions of the adjustable rear frame means,

at least one display rack of which a front part is pivotally supported by said front load bar and of which a rear part is supported by said rear load bar,

a lost motion connection provided between said fixed frame means and adjustable rear frame means whereby the adjustable rear frame means can be moved relative to said fixed frame means and

drive means which includes a motor having a movable element secured to said adjustable rear frame means for moving said rack between a downwardly extending position so that the articles contained in said rack are automatically placed via gravity in front of the rack and an upwardly extending position where the rack slants toward the rear to allow easy reloading of said rack with articles which, via gravity, are automatically disposed at the rear portion of the rack.

5,487,475

FISHING EQUIPMENT STORAGE APPARATUS

Raymond W. Knee, 118 Wright Rd., Delta, Pa. 17314

Filed Dec. 8, 1994, Ser. No. 352,398

Int. Cl.[6] A47F *7/00*

U.S. Cl. 211—70.8 **6 Claims**

1. A new and improved fishing equipment storage apparatus for organizing fishing gear so that it can all be kept in one place comprising, in combination:

a vertical rectangular base having a first end, a second end, an intermediate extent therebetween, and two side portions, the rectangular base having an aperture formed therethrough downwardly of the first end, the aperture serving to allow the vertical rectangular base to be mounted to a wall;

an upper panel integral with the vertical rectangular base downwardly of the aperture formed therethrough, the upper panel extending outwardly from the rectangular base from the two side portions thereof, the upper panel having a plurality of soft foam strips secured to a front surface thereof, the plurality of soft foam strips serving to receive fishing rod tips securably therein;

an upper shelf having an upper surface, a lower surface, a front end, and a back end, the back end having an extension integral therewith, the front end having a plurality of cutouts therein, the cutouts serving to allow hip boots or chest waders to be hung therefrom, the lower surface of the extension having an upper portion of a first shelf bracket secured thereto, a lower portion of the first shelf bracket secured to the intermediate extent of the vertical rectangular base downwardly of the upper panel, a hook secured to the lower surface of the upper shelf inwardly of the front end;

a middle shelf having an upper surface, a lower surface, a front end, and a back end, the back end having an extension integral therewith, the lower surface of the extension having an upper portion of a second shelf bracket secured thereto, a lower portion of the second shelf bracket secured to the intermediate extent of the vertical rectangular base downwardly of the upper shelf;

a lower shelf having an upper surface, a lower surface, a front end, and a back end, the back end having an extension integral therewith, the lower surface of the extension having an upper portion of a third shelf bracket secured thereto, a lower portion of the third shelf bracket secured to the intermediate extent of the vertical rectangular base downwardly of the middle shelf;

a bottom panel integral with the vertical rectangular panel upwardly of the second end thereof, the bottom panel extending outwardly from the rectangular base from the two side portions thereof, the bottom panel having a plurality of recesses therein, the recesses serving to receive ends of the fishing rods therein.

5,487,476

ORNAMENTAL TREE FLOWER POT DISPLAYS

Marvin W. Barfield, Rte. 2, Box 805, Rockville, Va. 23146

Filed Mar. 29, 1994, Ser. No. 219,280

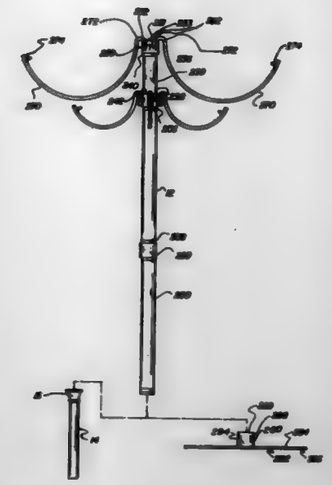
Int. Cl.[6] A47F *5/00*

U.S. Cl. 211—71 **10 Claims**

1. A new and improved ornamental tree flower pot display comprising, in combination:

an upper support pipe comprised of metal and formed as a hollow cylinder with openings at both ends, the pipe having an upper end and a lower end and an inner surface and an outer surface, the pipe also including a plurality of external screw threads on the outer surface of its uppermost extent and lowermost extent, with the pipe adapted to be positioned vertically in the operative orientation with a length measuring between about four feet and six feet;

a lower support bar comprised of metal and formed as a hollow cylinder with openings at both ends, the bar having an upper end and a lower end and an inner surface and an outer surface, the bar also including a plurality of external screw threads on the outer surface of its upper most extent and lowermost extent, with the bar adapted to be positioned vertically in the operative orientation with a length measuring between about eighteen inches and thirty inches, with the lower support bar having a smaller diameter than the upper support pipe;



a joint comprised of metal and formed in a hollow generally cylindrical configuration with openings at both ends, the joint having an upper region and a lower region and an inner surface and an outer surface, with the upper region and its corresponding opening having a larger diameter than the lower region and its corresponding opening, with the opening in the upper region including a plurality of internal screw threads on its inner surface to permit releasable coupling with the lowermost extent of the upper support pipe, with the opening in the lower region including a plurality of internal screw threads on its inner surface to permit releasable coupling with the uppermost extent of the lower support bar;

a four unit branch ring comprised of metal and including a center piece formed in a hollow generally cylindrical configuration with openings at both ends, the center piece having an inner surface and an outer surfaced with a plurality of internal screw threads throughout the entire extent of its inner surface, the center piece including four equidistantly positioned metal branch holders affixed to its outer surface, the holders being formed in a hollow generally cylindrical configuration with openings at both ends, each holder having a small circumference and a length measuring between about sixty and eighty percent of the length of the center piece, the holders being centrally located on the center piece with their open ends positioned in unison with the open ends of the center piece, the ring adapted to be coupled with the uppermost extent of the upper support pipe in the operative orientation;

a ring cap comprised of metal and formed in a planar generally cylindrical configuration, the cap having a flat upper surface and a flat lower surface with a cylindrically shaped side therebetween, the side including a plurality of external screw threads throughout its extent to permit releasable coupling with the four unit branch ring, the upper surface having a generally hexagon shaped nut affixed to its central portion, the nut including a centrally located circular aperture extending therethrough; and

four branches, each branch being comprised of metal and formed as a long thin cylindrical member shaped in a generally semi-circular configuration, each branch having two free ends, a first free end terminating in an outwardly extending hook, a second free end terminating in a flat surface and includes a generally perpendicularly extending cylindrically shaped projection located proximate to the flat surface, each end of each branch capable of being inserted into one of the four branch holders of the branch ring when the ring being coupled to the upper support pipe is in the operative orientation, the projection being positioned to point toward the hook on the first free end of the branch when in the operative orientation.

5,487,477

Patent Not Issued For This Number

5,487,478

INVERTED KINGPOST CRANE

William D. Morrow, 13223 Spencer Rd., Houston, Tex. 77041

Filed Oct. 17, 1994, Ser. No. 323,857

Int. Cl.[6] B66C *23/84*

U.S. Cl. 212—253 **20 Claims**



1. An inverted kingpost crane comprising:

a vertical, elongated sleeve having a vertical sleeve axis;

said sleeve including a cross-member vertically spaced from an upper end of said sleeve;

an axial cross-member opening extending vertically through said cross-member;

a vertical, elongated kingpost having a vertical kingpost axis;

said kingpost rotatable within said sleeve;

upperworks, including boom, mounted on said kingpost;

upper bearing means intermediate said kingpost and said sleeve;

lower bearing means comprising a bearing block;

said bearing block slidably positioned in said cross-member opening;

a bearing block retainer removably affixed to said cross-member;

said bearing block retainer positioned and constructed to provide vertical support for said bearing block and selectively maintain said bearing block in said cross-member opening;

thereby said bearing block may be removed and installed in said cross-member opening without removal of said kingpost from said sleeve;

said bearing block extending above said cross-member when operatively positioned in said cross-member opening; and

thereby a bearing block upper surface contacts a kingpost lower surface.

5,487,479

METHOD FOR NESTING LONGITUDINALLY DIVISIBLE CRANE BOOM SEGMENTS

David J. Pech; Robert J. Walker, both of Manitowoc, and Michael J. Wanek, Two Rivers, all of Wis., assignors to The Manitowoc Company, Inc., Manitowoc, Wis.

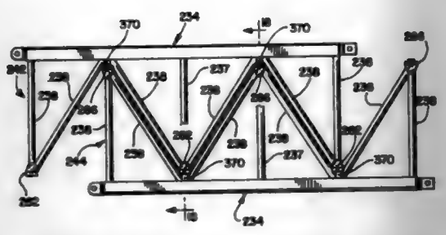
Continuation-in-part of Ser. No. 988,499, Nov. 23, 1992, Pat. No. 5,406,767. This application Feb. 4, 1993, Ser. No. 13,640

Int. Cl.[6] B66C *23/64*; B65G *57/00*; E04C *3/02*; E04H *12/00*

U.S. Cl. 212—270 **14 Claims**

1. A method of nesting the sections of a longitudinally divisible crane boom segment for transport comprising the following steps:

a) providing a crane boom segment longitudinally divisible into at least a first and second section, each of the sections comprising at least one chord member and a plurality of partial lacing elements having a first end permanently attached to the



at least one chord member and a second end attached to a partial lacing element of the other of said sections, at least the first section having at least one bracket thereon;

b) disconnecting the second end of the plurality of partial lacing elements of the first section from the partial lacing elements of the second section;

c) translating one of the sections longitudinally with respect to the other of said sections;

d) placing the at least two sections in a nested configuration; and

e) connecting the nested first and second sections together by connecting the second end of at least one of the partial lacing elements of the second section to the at least one bracket of the first section.

5,487,480

HYDRO-PNEUMATIC CUSHIONING DEVICE

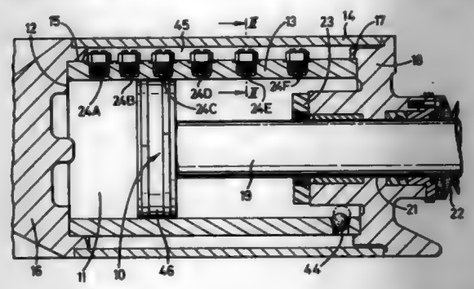
Ronald C. Page, Coventry; John J. Bushnell, Leamington Spa, and Terence D. Williams, Coventry, all of, United Kingdom, assignors to Oleo International Holdings Limited, Coventry, United Kingdom

Filed Jun. 10, 1994, Ser. No. 257,704

Claims priority, application United Kingdom, Jun. 10, 1993, 9311999

Int. Cl.[6] B61G *9/00*

U.S. Cl. 213—43 **6 Claims**



1. A hydro-pneumatic cushioning device for use in an end-of-car coupler for a railway vehicle, the cushioning device comprising structure forming a cylinder chamber which has an axis and which is closed at a first end, and an annular chamber which surrounds the cylinder chamber, there being metering holes in the structure which provide metered communication between the chambers, each metering hole being spaced from the other metering holes in a direction which is parallel to the axis of the cylinder chamber, and a plunger which is slidable within the cylinder chamber and which has a rod portion which passes through a second end of the cylinder chamber in a fluid-tight manner, the cylinder chamber being filled with liquid and there being a volume of gas within the annular chamber when the device is used, the gas acting through the liquid to urge the plunger towards said second end of the cylinder chamber when the device is not loaded, wherein each of said metering holes has a respective valve fitted into it, each valve comprising a stepped piston which has two ends and an intermediate portion which is a sliding fit in a part of said structure between said cylinder chamber and said annular chamber, the diameter of the stepped piston being smaller at one of its ends than it is at the other of its ends, the smaller diameter end of the piston serving as an obturating member which is adapted to seat on a valve seat formed around the respective metering hole whereby to close that metering hole and the larger diameter end being exposed to pressure in said annular chamber which acts on the stepped piston to seat the smaller diameter end on said valve seat whereby passage of liquid through the respective metering hole is inhibited when a force which is less than a predetermined threshold force is applied to urge the plunger axially within the cylinder chamber, the valve being operable to be opened to allow displacement of liquid between the chambers when a force which is greater than the predetermined threshold force is applied to urge the plunger within the cylinder chamber, whereby there is no displacement of liquid from the cylinder chamber to the annular chamber when any force is applied to urge the plunger axially within the cylinder chamber is less than said predetermined threshold force and whereby all said valves between said plunger and the end of the cylinder chamber towards which it is urged open substantially simultaneously to allow displacement of liquid between the chambers through all the metering holes between the plunger and the end of the cylinder chamber towards which the plunger is urged when a force in excess of said predetermined threshold force is applied to the plunger.

5,487,481

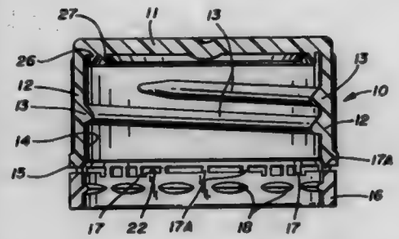
TAMPER EVIDENT PLASTIC CLOSURE

Dieter Sander, 315 Watline Avenue, Mississauga Ont., Canada, and Uwe F. Meyer, 50 Meadowbank Road, Islington Ont., Canada

Filed Oct. 31, 1994, Ser. No. 332,589

Int. Cl.[6] B65D *39/00*

U.S. Cl. 215—252 **8 Claims**



1. A tamper evident closure comprising a top portion, an annular depending skirt extending therefrom, a tamper indicating ring connected to said depending skirt by a plurality of circumferentially spaced frangible elements, said tamper indicating ring having a plurality of annularly spaced elevated bridge portions thereon extending axially towards said depending skirt, the elevated bridge portions defining areas of decreased ring spacing from said depending skirt, some of said frangible elements extending from said elevated bridge portion to said depending skirt, said tamper indicating ring including circumferentially spaced inwardly facing arcuate projections and an internal spiral thread on said depending skirt.

5,487,482

HANDLED CLOSURE DEVICE

Lawrence W. Rocheleau, 101 Coppermill Rd., Wethersfield, Conn. 06109

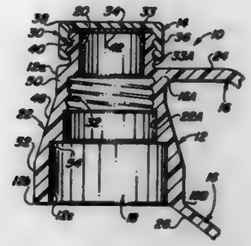
Filed Jan. 14, 1994, Ser. No. 182,638

Int. Cl.[6] B65D *23/12*

U.S. Cl. 215—396 **14 Claims**

1. A handled closure device for mounting to a bottle having a closure cap, said device comprising:

(a) a closure body having spaced upper and lower portions and defining an interior cavity extending between said upper and lower portions, said interior cavity having an open bottom adapting said closure body to be fitted over and receive an upper portion of a bottle containing a liquid and after a closure cap applied on the upper portion of the bottle is removed therefrom;



(b) first mounting means defined on said upper portion of said closure body for mounting the closure cap to undergo rotational movement relative to said upper portion of said closure body between an opened position wherein the closure cap is removed from said closure body and the flow of the liquid from the bottle through the device is permitted and a closed position wherein the closure cap is secured over and seals with said upper portion of said closure body and the flow of the liquid from the bottle through said device is prevented;

(c) second mounting means defined on said closure body for removably mounting said closure body on the upper portion of the bottle, said second mounting means being spaced above said lower portion of said closure body and said open bottom of said interior cavity therein and adjacent to said first mounting means on said upper portion of said closure body and thus located closer to said first mounting means on said upper portion of said closure body than to said lower portion thereof; and

(d) a handle disposed exteriorly of said closure body and being attached to and extending outwardly from said closure body.

5,487,483

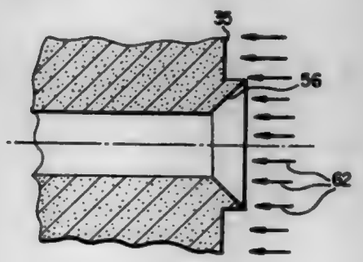
NOZZLES FOR INK JET DEVICES AND METHOD FOR MICROFABRICATION OF THE NOZZLES

Joel A. Kubby, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 24, 1994, Ser. No. 248,847

Int. Cl.[6] B44C *1/22*

U.S. Cl. 216—27 **34 Claims**



1. A method for microfabricating an ink jet nozzle including the steps of:

physical sputter erosion of a front face of the ink jet nozzle to expose (111) crystallographic planes around an orifice of the ink jet nozzle; and

chemically etching a remainder of the front face of the ink jet nozzle at a rate between 35–400 times faster than the (111) crystallographic planes to create a lip surrounding the orifice.

5,487,484

DEVICE FOR THE AIRTIGHT CLOSING OF A PACKAGE WITH FAST OPEN-AND-SHUT SYSTEM

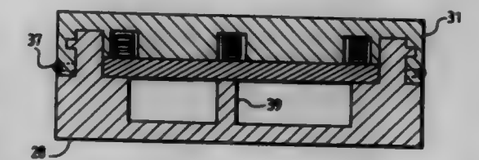
Philippe Bonnian, Houilles, and Jean Chassias, Paris, both of, France, assignors to Thomson - CSF, Paris, France

Filed Jun. 10, 1994, Ser. No. 258,294

Claims priority, application France, Jun. 11, 1993, 93 07051

Int. Cl.[6] B65D *55/00;45/32*

U.S. Cl. 220—201 **8 Claims**



1. A device for the airtight closing of fast open-and-shut packages; which comprises:

a first lid fixed to an open face of a package, said package including an interior compartment;

at least one shape memory alloy spring located outside said compartment and biasing the lid toward the compartment; and

a facing lid fixedly connected to the package and facing the first lid wherein the springs are positioned between the first lid and the facing lid.

5,487,485

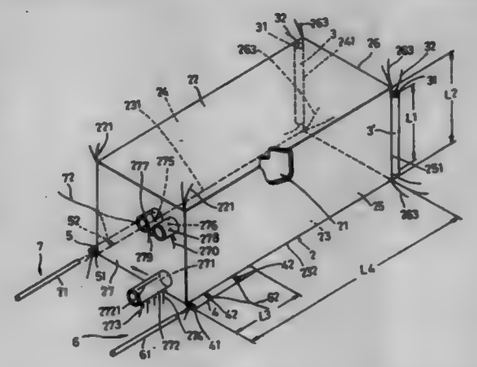
LINER FOR A CARGO CONTAINER

Ming-Sheng Yang; Yu-Show Cherng, and Chien-Te Lu, all of Taipei, Taiwan, Prov. of China, assignors to Chi Mei Corporation, Taiwan, Prov. of China

Filed Apr. 13, 1995, Ser. No. 421,535

Int. Cl.[6] B65D *87/00*

U.S. Cl. 220—403 **17 Claims**



1. A liner mounted within a cargo container for receiving bulk cargo, said cargo container having attachment elements for connection with said liner, said liner comprising:

an expansible liner body having an expanded shape adapted to fit inside the cargo space of said cargo container, said liner body including a top panel, a bottom panel opposite to said top panel, a left side panel interconnecting left edges of said top and bottom panels, a right side panel interconnecting right edges of said top and bottom panels, a front panel interconnecting front edges of said top, bottom, left side and right side panels, and a rear panel interconnecting rear edges of said top, bottom, left side and right side panels, all of said top, bottom, left side, right side, front and rear panels together defining an accommodation space thereamong for receiving the bulk cargo, said rear panel having an outlet opening formed therethrough and communicated with said accommodation space;

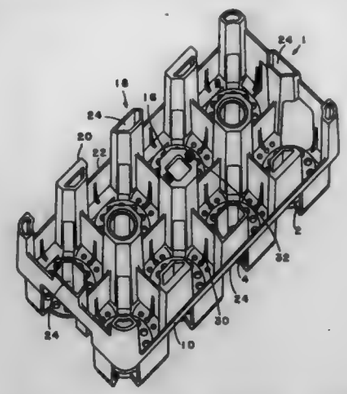
a first reinforcing member secured to and along said front edge of said left side panel of said liner body;
a second reinforcing member secured to and along said front edge of said right side panel of said liner body;
a first connecting member provided outwardly of said left side panel, and secured to and along said left edge of said bottom panel of said liner body adjacent to said rear panel;
a second connecting member provided outwardly of said right side panel, and secured to and along said right edge of said bottom panel of said liner body adjacent to said rear panel; and
left and right pulling members mounted respectively to said first and second connecting members to pull said first and second connecting members upwardly and to raise the dead corners formed adjacent to said first and second connecting members to cause parts of the bulk cargo retaining in the dead corners to fall towards said outlet opening.

5,487,486
BEVERAGE CONTAINER WITH ICE COMPARTMENT FILLED BY INVERTED SCOOPING
David M. Meneo, 241 Karen Dr., Orange, Conn. 06477-2935
Continuation of Ser. No. 114,436, Aug. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 920,018, Jul. 27, 1992, abandoned. This application Jan. 19, 1995, Ser. No. 374,850
Int. Cl.[6] B65D *25/04*
U.S. Cl. 220—504 **23 Claims**



1. A beverage container comprising:
an upwardly open and downwardly closed beverage compartment having an upward opening for receiving beverages that extends across substantially the entire width of the beverage compartment, the beverage compartment being downwardly closed across the entire width of the upward opening of the beverage compartment;
an upwardly closed and downwardly open frusto-conical ice compartment positioned inwardly with respect to the beverage compartment in permanent heat exchange contact with the beverage compartment, the ice compartment being integrally molded as one piece with the beverage compartment of an impact resistant material sufficient to resist repeated scooping impacts with crushed ice and having a sealable downward opening for receiving ice into the ice compartment, the downward opening extending across substantially the entire width of the ice compartment and including a lip suitable for scooping into crushed ice;
a handle attached to the beverage container adapted for use in an upright and in an inverted position and cooperating with the ice compartment and the downward opening thereof to form an ice scoop for scooping ice into the ice compartment, the handle having a comfortable shape when held tightly and a comfortable angle of connection to the container at a top and bottom end of the handle such that a user's fingers are not compressed between the handle and the container when the container is held in an upright position for filling the beverage compartment with a beverage and when held in an inverted position for scooping ice into the ice compartment; and
a cap for sealing the downward opening of the ice compartment when the beverage compartment is upright to retain ice scooped into the ice compartment, the cap including internal threads for engaging external threads on the beverage container to seal the cap across the downward opening of the ice compartment.

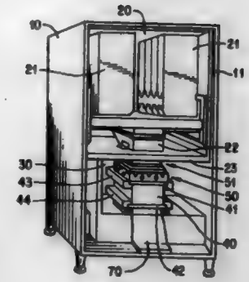
5,487,487
CRENELATED CONTAINER CASE
Roy Hammett, Odessa, Fla., assignor to International Container Systems, Inc., Tampa, Fla.
Continuation-in-part of Ser. No. 241,614, May 11, 1994, Pat. No. 5,421,471. This application Jul. 28, 1994, Ser. No. 283,204
Int. Cl.[6] B65D *1/24*
U.S. Cl. 220—509 **11 Claims**



1. A nestable case for carrying a plurality of containers, comprising:
a) a base having a top surface and a bottom surface, wherein said top surface comprises a plurality of areas corresponding to the plurality of containers; and
b) a crenelated sidewall connected to said base and extending around said top surface of said base, said crenelated sidewall being dimensioned such that when an identical case is nested thereon, the sidewall of the identical case nests into the overlying case more than one-quarter the depth of the overlying case, and when the identical case is cross-stacked thereon, the identical case nests into the overlying case more that one-third the depth of the overlying case.

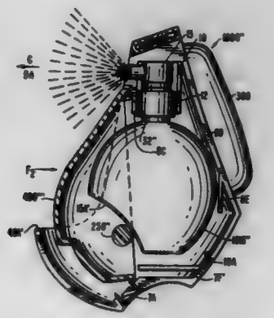
5,487,488
VENDING MACHINE
Wan J. Cho, Busan, Rep. of Korea, assignor to LG Industrial Systems Co., Ltd., Seoul, Rep. of Korea
Filed Jun. 1, 1994, Ser. No. 252,357
Claims priority, application Rep. of Korea, Jun. 2, 1993, 9522/1993 U; Jun. 29, 1993, 11663/1993 U
Int. Cl.[6] B65D *83/00*
U.S. Cl. 221—150 HC **21 Claims**

1. A vending machine having a food storage box, a food freezing chamber having a chute for permitting the food from the food storage box to fall down, a food heating apparatus for heating the food fallen from the chute, and a food heating chamber having a food discharging port for discharging the heated food, comprising:



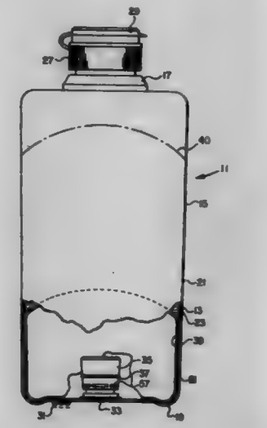
a movable type cooled air discharging prevention means, provided between a food discharging opening provided at a lower portion of the chute and an upper shutter provided at an upper portion of the food heating apparatus, for preventing cooled air from being discharged outside; and
a stationary type supporting means, provided between a lower plate of the food freezing chamber and the movable type cooled air discharging prevention means, for permitting the movable type cooled air discharging prevention means to smoothly move and to absorb impacts thereon.

5,487,489
PUMP DISPENSER WITH MOVABLE BOTTLE
Stephan Weiss, 211 E. 70th St., New York, N.Y. 10021, and David Seidler, Forest Hills, N.Y., assignors to Stephan Weiss, New York, N.Y.
Division of Ser. No. 111,291, Aug. 24, 1993, Pat. No. 5,377,869, which is a continuation-in-part of Ser. No. 938,889, Aug. 31, 1992, abandoned, and a continuation-in-part of Ser. No. 937,656, Aug. 27, 1992, Pat. No. Des. 352,890, and a continuation-in-part of Ser. No. 936,253, Aug. 27, 1992, Pat. No. Des. 353,993. This application Nov. 21, 1994, Ser. No. 342,883
Int. Cl.[6] B67D *5/64*
U.S. Cl. 222—1 **15 Claims**



1. A method for pump spray dispensing a liquid from a vessel comprising the steps of
1) maintaining a pump spray dispensing means of the vessel for dispensing a liquid in a substantially stationary position in a portable housing for the vessel; and,
2) moving the vessel relative to said pump spray dispensing means in response to an activating force applied by a user along a first axis to cause the liquid to dispense from the pump spray dispensing means along a second axis wherein there is an angle α between the first and second axes and α is greater than 90° and less than about 270° or greater than about 270° and less than about 90°; and, there is a pumping axis of the pump spray dispensing means which is substantially perpendicular to the first axis.

5,487,490
PRODUCT DISPENSER WITH AIR DISPLACEMENT DEVICE
David W. Estes, Arlington, Tex., assignor to CODEV Corp., Rockford, Ill.
Continuation of Ser. No. 220,907, Mar. 30, 1994, abandoned. This application Dec. 9, 1994, Ser. No. 352,532
Int. Cl.[6] B65D *35/28;37/00*
U.S. Cl. 222—1 **20 Claims**



5. In a product dispenser of the type having a plastic squeeze bottle with a bottom, a top and a resilient sidewall which define a volume for containing a product therein, a dispensing orifice which extends from within the plastic squeeze bottle for passing the product from the volume to an exterior of the plastic squeeze bottle, an inflatable element having an expandable wall disposed within the plastic squeeze bottle for receiving air from the exterior of the plastic squeeze bottle and expanding against the resilient sidewall in response to negative pressures within the plastic squeeze bottle caused by releasing external pressure applied to the resilient sidewall; and wherein the air is contained within the inflatable element to separate the air from the product and to urge the inflatable element to fill a void within the volume created by evacuating a portion of the product from within the plastic squeeze bottle, the improvement comprising in combination:
a valve body having a seal surface and a first orifice, the first orifice extending through the valve body and the seal surface for passing the air flowing from the exterior of the plastic squeeze bottle through the valve body and through the seal surface;
a flow port extending through the valve body and the seal surface, at a first point which is distal from the first orifice, for passing the air through the seal surface and the valve body, and into the inflatable element;
a diaphragm disposed for pressing against the seal surface between the first orifice and the flow port in response to positive pressures within the inflatable element, and for lifting from the seal surface between the first orifice and the flow port in response to the negative pressures within the plastic squeeze bottle;
wherein lifting the diaphragm from the seal surface in response to the negative pressures within the plastic squeeze bottle passes the air from the exterior of the plastic squeeze bottle through the first orifice, across the seal surface, through the flow port, and into the inflatable element; and
wherein pressing the diaphragm into the seal surface in response to the positive pressures within the inflatable element seals between the flow port and the first orifice, to seal air within the inflatable element.

5,487,491

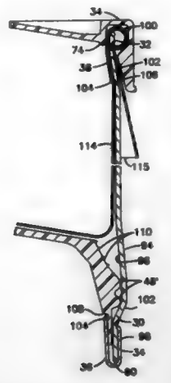
CARTRIDGE DISPENSER WITH INTERIOR BAG AND INTERLOCKING LID

Ernest L. Smith, Kansas City, Mo., and Joseph A. Pantelleria, Overland Park, Kans., assignors to Sealright Company, Inc., Kansas City, Mo.

Continuation-in-part of Ser. No. 71,966, Jun. 7, 1993, Pat. No. 5,348,196. This application Apr. 29, 1994, Ser. No. 235,098

Int. Cl.[6] B65D *35/28*

U.S. Cl. 222—95 21 Claims



1. A dispensing container, comprising:

at least one peripheral side wall;

a plunger located at a first end of said at least one side wall, said plunger having an outer periphery in close sliding contact with an interior face of said side wall and being capable of movement toward a second end of said side wall, said plunger including a transition portion extending from a center portion radially outward toward said interior face of the side wall and downward toward said first end;

a cap located at a second end of said side wall and including an opening for the contents of the container to pass therethrough during said movement of said plunger;

a flexible bag having a flexible bottom and flexible sidewall defining, and an opening leading to, a closed cavity defined therein, at least a portion of said bag being located within said at least one peripheral side wall; and

a fold confining area located between said transition portion and the interior face of said side wall, said transition portion confining folds of the bag to said fold confining area as the plunger is moved toward said second end.

5,487,492

ICE COOLED BEVERAGE DISPENSER HAVING AN INTEGRAL CARBONATOR

Douglas P. Goulet, Big Lake, Minn., assignor to IMI Cornelius Inc., Anoka, Minn.

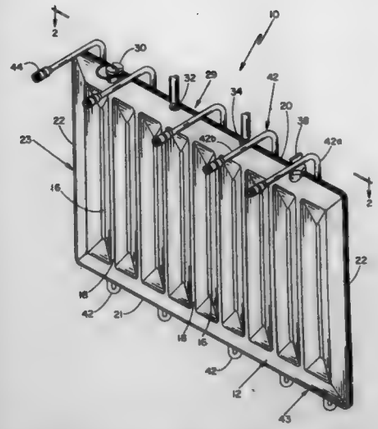
Continuation of Ser. No. 29,073, Mar. 10, 1993, Pat. No. 5,368,198, which is a continuation-in-part of Ser. No. 936,153, Aug. 26, 1992, abandoned. This application Nov. 15, 1994, Ser. No. 339,849

Int. Cl.[6] B67D *5/00*

U.S. Cl. 222—129.1 11 Claims

1. An ice cooled beverage dispenser comprising:

a cold plate, the cold plate being L-shaped and having a horizontal portion and a vertical portion, the cold plate for cooling beverage fluids by heat exchange with ice, the beverage fluids flowing through beverage lines extending through the cold plate from beverage sources to one or more beverage dispensing means, a bin liner comprising a U-shaped wall segment secured to and extending upward from and around a perimeter edge of the cold plate horizontal portion, and the bin liner having opposing vertical edges for securing to opposing end



edges of the cold plate vertical portion whereby the bin liner and the cold plate define an ice retaining volume, and

a carbonator, the carbonator having a first side, and a second side, and the first and second sides being substantially planar with co-extensive surface areas wherein common perimeter edges thereof are joined to form a carbonator perimeter edge, and the first side closely spaced from the second side defining a width dimension wherein the carbonator comprises a substantially flat container wherein length and height dimensions of the first and second sides are substantially greater than the width dimension, and the carbonator having an interior volume defined by the first and second sides and the carbonator perimeter edge, and the carbonator having a gas inlet fitting for connecting the internal volume thereof to a source of carbon dioxide gas, a water inlet fitting for connecting the carbonator internal volume to a source of potable water, and one or more carbonated water outlet fittings for providing connection from the carbonator interior volume to the one or more beverage dispensing means, and the carbonator held within the cold plate vertical portion.

5,487,493

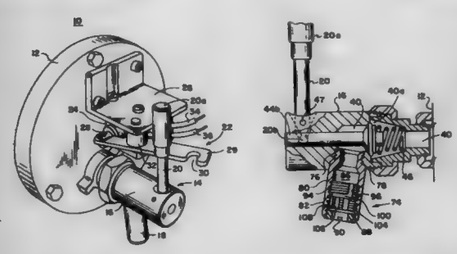
FROZEN BEVERAGE DISPENSING APPARATUS

Rex P. McNabb, P.O. Box 460879, Garland, Tex. 75046

Filed May 23, 1994, Ser. No. 247,236

Int. Cl.[6] B67D *5/32*

U.S. Cl. 222—153.14 22 Claims



1. Apparatus for dispensing material in at least a partially frozen state, said apparatus having a container for storing the material under pressure and a valve mounted with the container for controlling the dispensing of the material, said valve including a valve body with a bore communicating with the interior of the container, closure means disposed in the bore and being adapted to close the bore to prevent the material from passing therethrough when the closure means is in a first position, and actuating means for moving the closure means to a second position whereby the material is allowed to pass through the bore, the closure means being normally in said first position, a portion of the actuating means being external to the valve body, the improvement comprising securing means for automatically engaging said external portion of said actuating means in response to a predetermined condition to prevent said actuating means from being able to move said closure means to said second position, whereby said closure means is secured in said first position to prevent the material from being dispensed.

9. Apparatus for dispensing material in at least a partially frozen state, said apparatus comprising:

a container for storing the material under pressure;

a valve mounted with said container for controlling the dispensing of the material, said valve having a valve body with a bore communicating with the interior of said container, closure means disposed in said bore and being adapted to close the bore to prevent the material from passing therethrough when the closure means is in a first position, and actuating means for moving said closure means to a second position, whereby the material is allowed to pass through the bore, said closure means being normally in said first position; and

diffusion means mounted with said valve body, said diffusion means having a conduit with an internal passageway communicating with said bore, the material being allowed to pass through said bore for being dispensed through said conduit when said closure means is in said second position, said diffusion means further including a diffusion member for diffusing the material generally outwardly from a central longitudinal axis of said conduit and downwardly, the central longitudinal axis of said conduit being oriented generally transversely relative to a longitudinal axis of said bore.

5,487,494

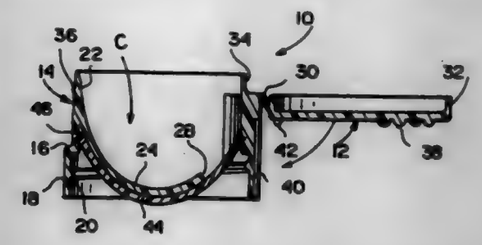
DISPENSING CAP WITH INTERNAL MEASURING CHAMBER AND SELECTIVELY USEABLE SIFTER

Edward S. Robbins, III, 2802 E. Avalon Ave., Muscle Shoals, Ala. 35661

Continuation-in-part of Ser. No. 288,896, Aug. 10, 1994, which is a continuation of Ser. No. 47,086, Apr. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 237,336, May 3, 1994, Pat. No. 5,465,871, which is a continuation of Ser. No. 979,042, Nov. 19, 1992, abandoned. This application Mar. 31, 1994, Ser. No. 220,530

Int. Cl.[6] B67D *5/38*

U.S. Cl. 222—158 17 Claims



1. A measuring/dispensing cap adapted for attachment to an open, upper end of a container, the cap comprising first means for enabling an accurately determined amount of container contents to be dispensed from the cap in a first operating mode; second means for enabling substantially unrestricted pouring of container contents through the cap in a second operating mode; and third means for enabling sifting of container contents in either of said first or second modes; wherein said first means includes a weir panel within said cap, said weir panel having a weir aperture defined partly by a straight weir edge in combination with a dispensing door in a closed position; and wherein said second means includes said first means in combination with the dispensing door in an open position; and wherein said third means comprises a sifter disk underlying said weir panel and rotatable relative thereto, said sifter disk formed with a cut out rotatable into alignment with said weir aperture in a first sifter disk position, and a plurality of sifter apertures adjacent said cut out and rotatable into alignment with said weir aperture in a second sifter disk position.

5,487,495

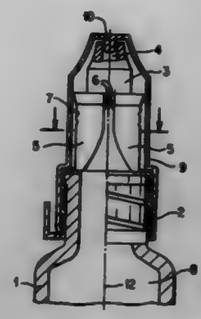
MANUALLY ACTUATED DROPPER

Klaus Derksen, Karlsbad, Germany, assignor to Pohl GmbH & Co. K.G., Karlsruhe, Germany

Filed Apr. 8, 1994, Ser. No. 226,217

Int. Cl.[6] B65D *37/00*

U.S. Cl. 222—209 10 Claims



1. A manually actuated dropper device for the mouth of a liquid container, comprising:

an elastically deformable bellows having longitudinal axis and a protruding region, said protruding region of said bellows having a perforation for serving as a dropper opening;

attachment means for sealingly connecting the bellows to the mouth of a container; and

two spring tongues connected to said attachment means, said spring tongues

being configured to extend at least partially around the bellows and extending substantially parallel to the longitudinal axis of the bellows; said spring tongues having protruding end portions that can be displaced towards each other, thereby deforming the bellows located there between; and

stop surfaces on the ends of the spring tongues, wherein the degree to which the spring tongues can be displaced towards each other is limited to a fixed value by the mutual contact of said stop surfaces;

wherein the spring tongues and the protruding region of the bellows having the perforation project upwordly away from the attachment means.

5,487,496

LEAD DELIVERY SYSTEM FOR CASTING STRAPS IN THE MANUFACTURE AND ASSEMBLY OF LEAD-ACID BATTERIES

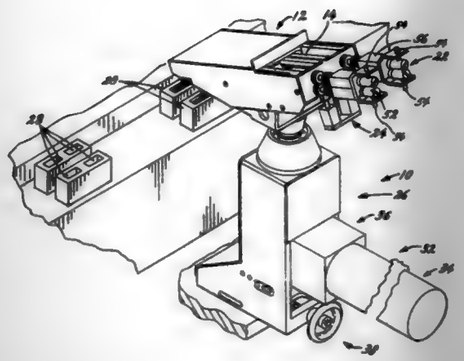
Cory D. Benson, Savage, Minn., assignor to GNB Battery Technologies, Inc., Mendota Heights, Minn.

Filed Aug. 24, 1994, Ser. No. 295,291

Int. Cl.[6] B22D *35/06*

U.S. Cl. 222—593 10 Claims

1. An apparatus for delivering molten lead to at least one cast-on-strap mold having a lead delivery position and a wait position comprising a lead delivery member having a lead reservoir sized to hold a volume of molten lead adequate to fill a plurality of cast-on-strap mold cavities, at least one nozzle communicating with said lead reservoir and having an outlet, a valve for each nozzle operable to allow molten lead to be delivered through said outlet of said nozzle when the apparatus is in the lead delivery position and a heater for maintaining the molten lead at a selected temperature, a frame structure for mounting said apparatus to allow said lead supply member to be rotated between the lead



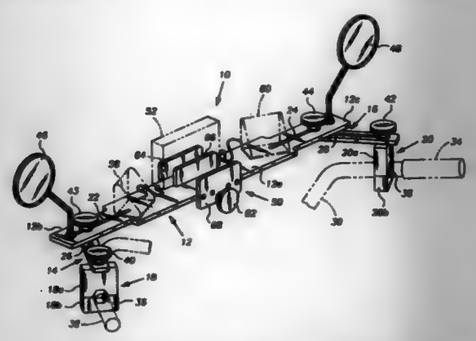
delivery and wait positions about an axis of rotation, means for rotating said lead supply member between the lead delivery and wait positions, said lead reservoir being positioned sufficiently close to the axis of rotation so as to allow movement of said lead delivery member at a selected rate between the lead delivery and wait positions, and the outlet of said nozzle being positioned directly above the cast-on-strap molds when said lead supply member is in the lead delivery position.

5,487,497

BICYCLE HANDLE BAR ACCESSORY MOUNT

Frank P. Kwiatkowski, 311 N. Drake Ave., Fullerton, Calif. 92632

Filed Nov. 21, 1994, Ser. No. 342,894
Int. Cl.[6] B62J *7/06*
U.S. Cl. 224—41 **18 Claims**



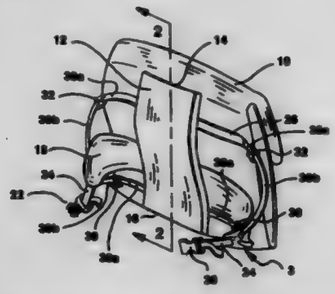
1. A handle bar accessory mounting assembly for a vehicle having a handle bar, said assembly comprising:
an elongate generally rigid generally bar-shaped support member having a generally planar upper surface;
an adjustable clamping mechanism on said support member, said mechanism including a fixed member and a movable member for enabling retention of an accessory therebetween on said upper surface;
first and second suspension members;
means on first ends of said suspension members and the distal ends of said support member for adjustably attaching said distal ends of said support member to said first ends of said suspension members, respectively;
means coacting with each of the other ends of said suspension members for mounting said assembly to the handle bar of said vehicle;
said main body portion includes a slot transverse to the longitudinal axis of said support member and said fixed member is a plate attached to a longitudinal edge of said main body portion in perpendicular relation to said transverse slot;
said movable member is configured with a guide tongue portion in sliding engagement within said transverse slot; and
said clamping mechanism includes a manually operable threaded shaft member in threaded engagement with said guide tongue portion for enabling movement of said movable member in response to actuation of said shaft member.

5,487,498

SPORTING PACK WITH APPARATUS FOR CONCENTRATING WEIGHT OF PACK AT LUMBAR REGION OF WEARER

Dana W. Gleason, 409 E. Olive, Bozeman, Mont. 59715

Filed Jul. 27, 1994, Ser. No. 281,437
Int. Cl.[6] A45F *5/00*
U.S. Cl. 224—224 **5 Claims**



1. A sporting pack having an apparatus for transferring weight of the pack to a lumbar region of a wearer, comprising:
a pack;
a lumbar pad having an upper surface and lower surface and attached to the pack at the upper and lower surfaces;
a hip belt positioned between the lumbar pad and the pack for encircling a waist of the wearer;
an elongate, first stay having opposite ends and being disposed between the lumbar pad and the pack and spaced apart from the hip belt, the first stay extending substantially parallel with the hip belt widthwise across the pack and first attachment means coextensive with said first stay for attaching said first stay to said pack, said attachment means having opposite end portions; and
a first pair of strap means connected to each end portion of the first attachment means, respectively, and opposite ends connected to the hip belt, respectively for forcing the stay against the lumbar pad in a direction into the back of the wearer.

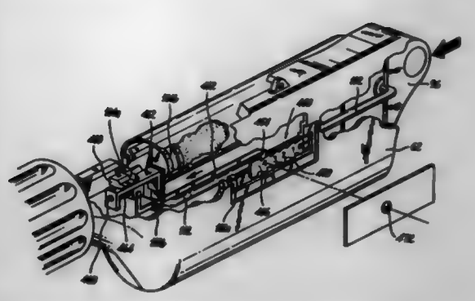
5,487,499

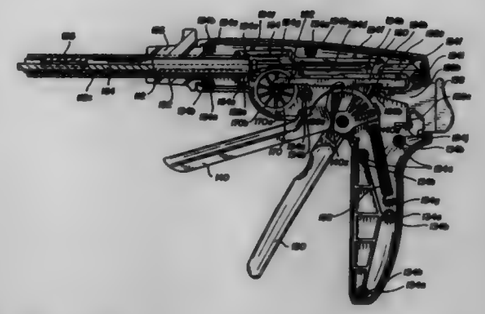
SURGICAL APPARATUS FOR APPLYING SURGICAL FASTENERS INCLUDING A COUNTER

Gregory Sorrentino, Wallingford, and Alim Alli, East Norwalk, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 8, 1993, Ser. No. 134,239
Int. Cl.[6] A61B *17/072*
U.S. Cl. 227—175.1 **10 Claims**

1. A surgical apparatus for driving surgical fasteners comprising:
a) a frame portion;
b) an elongated body portion extending from said frame portion;
c) a fastener applying assembly operatively associated with a distal end portion of said body portion and including:
i) a cartridge member having a plurality of surgical fasteners disposed therein; and
ii) an anvil member mounted adjacent said cartridge member against which fasteners ejected from said cartridge member are driven;





d) fastener ejection means actuable from said frame portion for ejecting said plurality of surgical fasteners from said cartridge assembly;
e) a pneumatic actuation system disposed within said frame portion and operatively associated with said fastener ejection means;
f) a trigger operatively associated with said frame portion for actuating said pneumatic actuation system; and
g) counter means for indicating to a user the number of times said pneumatic actuation system may be operated, said counter means being adapted and configured to inhibit the actuation of said trigger after said apparatus has been operated a predetermined number of times.

6. A surgical apparatus for driving surgical fasteners comprising:
a) a frame portion;
b) an elongated body portion extending distally from said frame portion;
c) a fastener applying assembly operatively associated with a distal end portion of said body portion and including:
i) a cartridge member having a plurality of surgical fasteners disposed therein; and
ii) an anvil member mounted adjacent said cartridge member against which said fasteners are driven when ejected from said cartridge member;
d) fastener ejection means actuable from said frame portion for sequentially ejecting said plurality of surgical fasteners from said cartridge assembly;
e) a pneumatic actuation system disposed within said frame portion and operatively associated with said fastener ejection means, said pneumatic actuation system including a longitudinally translating piston member; and
f) counter means for indicating to a user the number of times said pneumatic actuation system may be operated, said counter means being configured to interact with said piston member as said piston member translates longitudinally within said frame portion;
g) means operatively associated with said counter means for inhibiting the operation of said pneumatic actuation system after said apparatus has been operated a predetermined number of times.

5,487,500

SURGICAL STAPLER INSTRUMENT

Bryan D. Knodel; Bennie Thompson, both of Cincinnati, and Richard P. Nuchols, Loveland, all of Ohio, assignors to Ethicon Endo-Surgery, Inc., N.J.

Continuation-in-part of Ser. No. 191,412, Feb. 3, 1994. This application Apr. 29, 1994, Ser. No. 235,070
Int. Cl.[6] A61B *17/068*
U.S. Cl. 227—181.1 **7 Claims**

1. A surgical instrument comprising:
a handle portion;
a tissue enclosing portion having first and second implements capable of performing a function during a surgical procedure;
a reciprocating section adapted to move back and forth along an axis of said implement portion, said reciprocating section including a work portion capable of causing said first and second implements to perform said function;
a drive member;
a movable actuator associated with said handle portion which when engaged with said drive member causes said drive member to move back and forth along said implement portion;
a tissue clamping actuator for causing tissue to be clamped between said first and second implements; and
means on said tissue clamping member for preventing said drive member with said movable actuator if the thickness of the tissue clamped between said first and second implements does not fall within a predetermined range; and
wherein said implement portion comprises:
a staple cartridge having a plurality of staples and at least one slot for receiving a distal end of said work portion, said staple cartridge defining said first implement;
an elongated channel extending from said handle portion and having a distal end which is adapted to receive said staple cartridge;
an anvil mounted on said elongated channel for pivotable movement toward and away from said cartridge, said anvil defining said second implement;
said work portion causing said staples to fire toward said anvil upon movement of said distal end of said work portion into said cartridge;
a closure tube having distal and proximal ends, said distal end of said closure tube being adapted to engage said anvil for effecting pivotable movement of said anvil;
a closure trigger having a handle section and a gear segment section; and,
a closure yoke having distal and proximal ends said distal end of said yoke being connected to said proximal end of said closure tube and said proximal end of said yoke having a gear rack which is adapted to engage said gear segment section such that movement of said closure trigger effects movement of said closure tube.

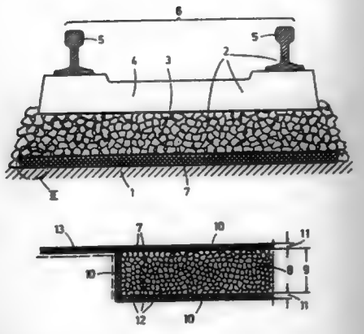
5,487,501

SHOCK ABSORBER COMPONENT FOR RAILWAY TRACK HAVING POUROUS RUBBER PARTICLE CORE ENCLOSED BY COVER LAYER

Wilhelm Engst; Alexander Repczuk, both of Köln, and Horst Weller, Bad Berleburg, all of, Germany, assignors to Clouth Gummiwerke Aktiengesellschaft, Köln, Germany

PCT No. PCT/DE92/00541, § 371 Date Jan. 10, 1994, § 102(e) Date Jan. 10, 1994, PCT Pub. No. WO93/01355, PCT Pub. Date Jan. 21, 1993
PCT Filed Jun. 30, 1992, Ser. No. 178,270
Claims priority, application Germany, Jul. 9, 1991, 41 22 682.8
Int. Cl.[6] E01B *1/00*
U.S. Cl. 238—2 **12 Claims**

1. A shock absorber component in the form of a strip, plate, or mat which can be laid flat on a bed for supporting a superstructure, the shock absorber component comprising:
a core layer made up only of porous rubber particles bonded to each other;



a cover layer surrounding said core layer;

said cover layer being directly vulcanized to said core layer and being made of a compact rubber material;

a plurality of said components are placed one next to the other so that each two mutually adjoining components conjointly define an abutting interface; and, the cover layer of each of said components having a projection which covers the abutting interface; and,

said core layer having an upper surface, a lower surface, and side surfaces; said cover layer including a top portion covering said upper surface; and, said projection being a flange extension of said top portion extending laterally beyond said core layer at one of said side surfaces.

5,487,502

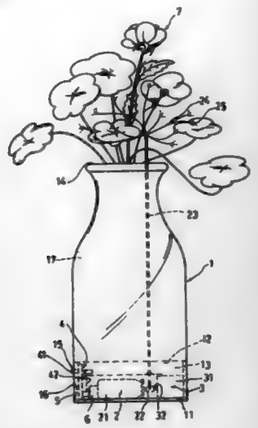
DECORATIVE MEANS FOR EMITTING ODOR AND GENERATING SOUND

Ming-Kang Liao, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei, Taiwan, Prov. of China

Filed Jul. 25, 1994, Ser. No. 280,086

Int. Cl.[6] A61L *9/04*

U.S. Cl. 239—69 **1 Claim**



1. A decorative means comprising:

a main body having a decorative article held in said main body;

an odor distributing means mounted in said main body and having a container filled therein with a compressed fluid capable of producing odors and a discharge pipe connected to said container for emitting the compressed fluid towards said decorative article,

a releasing valve in communication with said pipe for valving the fluid to said decorative article;

a driving means including: a solenoid switch mounted in the main body, a driving latch slidably held in an electromagnetic coil electrically connected to a control circuit of a control means, a restoring spring retained in the solenoid switch and normally tensioning the latch rearwardly, the electromagnetic coil operatively attracting the latch electromagnetically forwardly to depress and open the releasing valve of the container to emit the compressed fluid to be sprayed outwardly through at least one nozzle connected to said discharge pipe;

said control means electrically connected with a power source for powering said driving means for controlling the opening and closing of said releasing valve; and

a sound generating means electrically connected with said control means and mounted in combination with said driving means in said main body, whereby upon triggering of said control means, said driving means will be actuated to open said releasing valve of said container for emitting the compressed fluid onto said decorative article for producing odor thereon, and said sound generating means will be simultaneously actuated for producing sound therefrom; the improvement which comprises:

said odor distributing means including a plurality of capillary tubes divergently distributed from an upper end of the discharge pipe and protruding outwardly from the discharge pipe to be disposed in a wide area within the decorative article, and a plurality of nozzles, each said nozzle at one end of each said capillary tube and having a plurality of spraying perforations drilled in each said nozzle for spraying fluid outwardly as emitted from said container upon opening of the releasing valve.

5,487,503

WRAPPED ARTICLE WITH TEAR SLITS

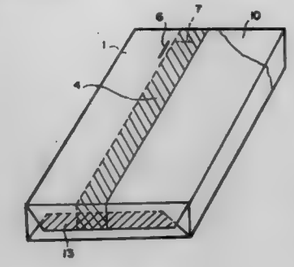
Makoto Sato; Takayoshi Ose, and Satoshi Aramaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 11, 1994, Ser. No. 208,817

Claims priority, application Japan, Mar. 12, 1993, 5-010749 U; Apr. 1, 1993, 5-016103 U; Apr. 1, 1993, 5-016106 U; Jun. 21, 1993, 5-033053 U

Int. Cl.[6] B65D *65/30;85/677*

U.S. Cl. 229—87.05 **17 Claims**



1. An article is covered with a wrapping film, and a body seal section is made by making both ends of the wrapping film overlap with each other and bonding them together, the improvement comprising:

a first slit formed, substantially parallel to both the edge of a lower section of film and the body seal section, on the edge of an upper section of the film which is in the body seal section; and

a second slit formed on the periphery of the lower section of the film at a right angle to the first slit in such a manner as to traverse the body seal section.

5,487,504

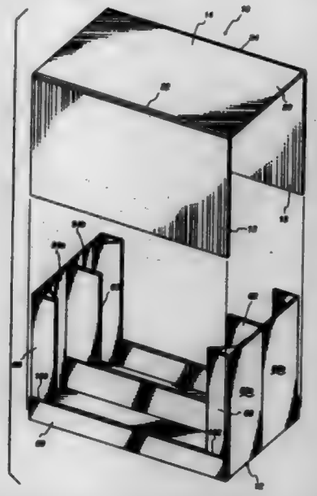
PAPERBOARD TRAY AND COVER ASSEMBLY

William J. Baird, Indianapolis, Ind., assignor to Inland Container Corporation, Indianapolis, Ind.

Filed Jul. 25, 1994, Ser. No. 279,914

Int. Cl.[6] B65D *25/04*

U.S. Cl. 229—120.17 **21 Claims**



1. A tray of paperboard material made from an integral, one-piece blank, comprising:

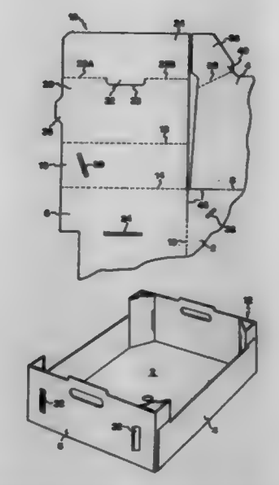
a floor having a midportion formed of at least two layers folded against one another to form an upstanding divider wall, integrally formed with the floor and dividing the floor into two portions;

front and rear walls upwardly extending from opposite ends of the floor;

opposed sidewall panels between the front and rear walls, upwardly extending from the floor, above the front and rear walls;

vertical beam members formed of at least two layers integrally formed with the sidewall panels and folded against one another with a fold line extending upwardly from the floor so as to outwardly extend from the sidewall panels toward one another and cooperating with the sidewall panels to form sidewalls of generally T-shaped cross section, the folded portions extending upwardly from the floor along the sidewall panels; and

the vertical beam members located at opposing ends of the divider wall.



walls (4, 6), wherein a first flap (32) is formed by a second panel (20) of said plurality of substantially parallel panels, the second panel being connected to a first inner panel (16) of said plurality of substantially parallel panels by a second fold line (18), the first inner panel being connected to each of the one pair of said side walls (4,6) by an inner fold line (14), wherein the second panel has a width along the longitudinal length of said plurality of substantially parallel panels greater than the first inner panel of said plurality of substantially parallel panels, and wherein a first slot (34) is formed in each of the one pair of said side walls (4, 6) connected to the first inner panel (16), said first slot (34) engaging the first flap (32) when the box is erected, wherein a second flap (26) is formed at an upper edge of another pair of said side walls (4, 6), and that a second slot (30) provided in the inner panel (16) to allow the second flap (26), after being bent along a fold line (28), to be connected to said second slot (30), wherein a triangular column is formed at each of four corners of an erected box by one side wall of each pair of said side walls (4, 6) and the second panel.

5,487,505

ARRANGEMENT FOR A CARTON

Bo-Arne Nilsson, Mörarp, Sweden, assignor to Björkebo Gårdi AB, Mörarp, Sweden

PCT No. PCT/SE93/00377, § 371 Date Dec. 7, 1994, § 102(e) Date Dec. 7, 1994, PCT Pub. No. WO93/22206, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 29, 1993, Ser. No. 325,359

Claims priority, application Sweden, Apr. 29, 1992, 9201365

Int. Cl.[6] B65D *5/30;21/032*

U.S. Cl. 229—191 **18 Claims**

1. An arrangement for a box in the form of a flat blank when in an initial position of the box, said arrangement comprising a bottom (2), a pair of first side walls and a pair of second side walls (4, 6), each side wall of each pair of said side walls being respectively connected to the bottom (2) via fold lines (8, 10) and being substantially vertical when erected, a plurality of substantially parallel panels connected to each of one pair of said side

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5,487,506

EASY-OPEN CONTAINER HAVING AN IMPROVED REINFORCING AND TEAR STRIP

Michael T. Drummond, Florence; Calvin G. Hill, Hartsville; Richard M. Lowman, Jr., Hartsville; William C. Suski, Hartsville, all of S.C.; Rodney W. Roberts, Otisco, Ind., and James W. Lowry, Florence, S.C., assignors to Sonoco Products Company, Hartsville, S.C.

Filed Jun. 22, 1994, Ser. No. 263,556

Int. Cl.[6] B65D *85/00*

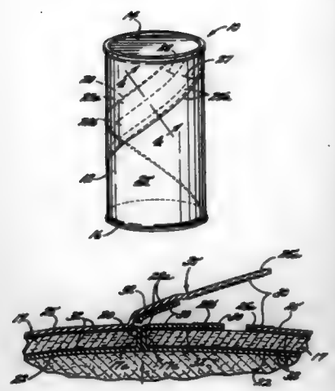
U.S. Cl. 229—202 **13 Claims**

1. An easy-open container particularly adapted for packaging products under pressure and comprising:

a spirally-wound paperboard bodywall layer in strip form defining a substantially cylindrical container having opposed ends, said bodywall layer having longitudinal edges lying adjacent each other to thereby define an easy-open spiral seam extending between said opposed ends;

a flexible barrier liner layer in strip form spirally-wound inside said bodywall layer in superimposed position therewith and being wider than said bodywall layer to define longitudinal edge portion means on each side thereof which extend transversely beyond said bodywall layer side edges; said liner edge portion means extending through and out of said easy-open spiral seam and positioned on the outside of said bodywall layer in folded-over superimposed position therewith;

a flexible label layer in strip form spirally-wound outside said bodywall layer and said folded-over liner edge portion means



in superimposed position therewith and having longitudinal edge portions overlapped with each other, said label layer being positioned in bridging relation to said easy-open spiral seam and said folded-over liner layer edge portion means;

a tab cut extending through the upper of said label layer edge portions and inwardly thereof to generally the outer edge of said folded-over liner layer edge portion mean to define a tear tab to be used in easy-opening of said container; and

low strength bonding means positioned between said overlapped label layer edge portions, and high strength bonding means positioned between said superimposed label layer and folded-over liner layer edge portion means and between said superimposed label layer and bodywall layer for creating a reinforcing and tear strip extending from said tear tab along said easy-open spiral seam and between the outer edge of the uppermost of said overlapped label layer edge portions and said easy-open spiral seam and which includes the portion of the uppermost of said overlapped label layer edge portions and said folded-over liner layer edge portion means bonded thereto by said high strength bonding means.

5,487,507

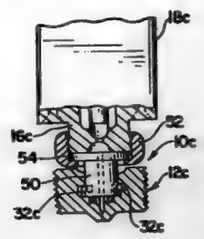
QUICK RELEASE AND CONNECT NOZZLE ASSEMBLY

Daniel P. McDonald, Arlington Heights, Ill., and John P. Smitherman, Salinas, Calif., assignors to Illinois Tool Works Inc., Glenview, Ill.

Continuation of Ser. No. 119,309, Sep. 13, 1993, abandoned. This application Dec. 16, 1994, Ser. No. 358,047

Int. Cl.[6] B05B *15/06*

U.S. Cl. 239—391 **19 Claims**



1. A quick release and connect nozzle assembly for used with a material dispensing head, comprising:

nozzle engagement means disposed upon a portion of said dispensing head and comprising a pair of diametrically opposed, radially outwardly projecting pins having a predetermined axial thickness;

a nozzle member having an aperture defined therethrough for fluidic communication with said dispensing head so as to provide dispensing of a material in a predetermined pattern;

an annular recess defined within an interior end wall of said nozzle member;

a compressible O-ring disposed within said annular recess defined within said interior end wall of said nozzle member and having a portion thereof projecting outwardly from said annular recess defined within said interior end wall of said nozzle member;

connecting means integral with said nozzle member for engagement with said dispensing head projecting pins and comprising a pair of diametrically opposed entry slots defined at a first axial entrance position of said nozzle member; a pair of diametrically opposed terminal end channels, having an axial depth which is greater than said axial thickness of said radially outwardly projecting pins of said dispensing head, defined at a second axial position of said nozzle member which is axially spaced from said first axial position of said nozzle member at which said entry slots of said nozzle member are defined; and a pair of diametrically opposed, semicircular tracks defined upon interior peripheral wall surfaces of said nozzle member and interconnecting said pair of diametrically opposed entry slots defined at said first axial entrance position and said pair of diametrically opposed terminal end channels defined at said second axial position such that a terminal end channel connected to a first one of said pair of semicircular tracks is disposed axially beneath an entry slot connected to a second one of said pair of semi-circular tracks; said diametrically opposed entry slots defined at said first axial entrance position having a predetermined axial depth which is substantially equal to said predetermined axial thickness of said diametrically opposed, radially outwardly projecting pins of said nozzle engagement means such that upon insertion of said diametrically opposed projecting pins of said nozzle engagement means into said entry slots of said nozzle member, immediate rotation of said nozzle member relative to said dispensing head will cause said nozzle member to be axially translated toward said dispensing head as a result of said diametrically opposed projecting pins of said nozzle engagement means moving circumferentially within said semi-circular tracks of said nozzle member from said first axial entrance position to said second axial terminal position, and said axial translation of said nozzle member toward said dispensing head will cause an end wall of said dispensing head to compress said outwardly projecting portion of said compressible O-ring disposed within said annular recess defined within said interior end wall of said nozzle member such that said nozzle member will be securely mounted upon said dispensing head as a result of said diametrically opposed projecting pins of said dispensing head having travelled through said semicircular tracks of said nozzle member so as to be disposed beneath said axial entrance entry slots, as well as said nozzle member being biased away from said dispensing head whereby said diametrically opposed projecting pins of said dispensing head will be disposed within portions of said terminal end channels of said nozzle member which are closest to said entry slots of said nozzle member so that said nozzle member is axially locked upon said dispensing head without axial play.

5,487,508

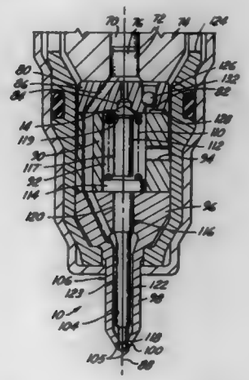
INJECTION RATE SHAPING CONTROL PORTED CHECK STOP FOR A FUEL INJECTION NOZZLE

Lianghe Zuo, Normal, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 220,854, Mar. 31, 1994, abandoned. This application Jan. 31, 1995, Ser. No. 380,930

Int. Cl.[6] F02M *45/04*

U.S. Cl. 239—533.5 **6 Claims**



1. A nozzle and tip assembly adapted for a fuel injector comprising:

a needle housing defining an internal cavity and at least one spray orifice;

a movable check disposed in the internal cavity and operably blocking at least one spray orifice;

a stop fixed relative to the housing defining a control port; and

a rate shaping valve disposed between the check and the stop and reciprocal between a first position wherein the valve is seated in the control port thereby limiting check travel and a second position wherein the valve is spaced from the control port permitting fuel flow therethrough, thereby decreasing a quantity of fuel injected through the at least one orifice early in an injection cycle.

5,487,509

CRUSHER AND A CRUSHING MECHANISM FOR THE SAME

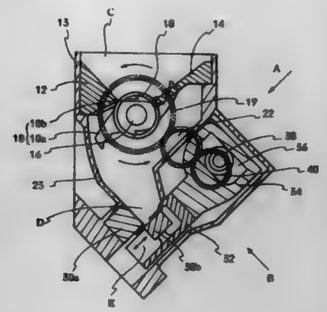
Tomio Hama, Ina, Japan, assignor to Kabushiki Kaisha Harmo Souken, Nagano, Japan

Filed May 23, 1994, Ser. No. 247,847

Claims priority, application Japan, May 27, 1993, 5-126033; May 27, 1993, 5-126034

Int. Cl.[6] B02C *9/04; 1/00*

U.S. Cl. 241—152.2 **11 Claims**



1. A crusher, comprising:

a fixed member having a first blade portion for crushing a material to be crushed into pieces;

a movable member being capable of moving to and away from said fixed member, said movable member having a second blade portion, which crushes the material into pieces with said first blade portion when said movable member is moved toward said fixed member;

a driving mechanism for moving said movable member to and away from said fixed member; and

a preparatory crushing section which includes a rotary blade member, wherein the material is preparatorily crushed by said preparatory crushing section and introduced to said fixed member and said movable member.

5,487,510

APPARATUS FOR PREPARING RUBBER SCRAP FOR RECYCLING

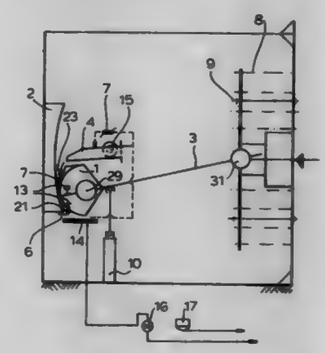
Stefan Ficker, Munich, Germany, assignor to Ingenieurburo S. Ficker Verfahrenstechnik, Munich, Germany

Filed Mar. 22, 1994, Ser. No. 215,916

Claims priority, application Germany, Apr. 1, 1993, 43 10 689.7

Int. Cl.[6] B02C *19/08*

U.S. Cl. 241—199.6 **13 Claims**



1. An apparatus for treating rubber particles having textile and/or metallic inclusions, the apparatus comprising:

a nonsmooth support surface;

a press body having a nonsmooth surface juxtaposed with the support surface, forming with the support surface a gap flaring opposite to a feed direction, and displaceable transverse and parallel to the support surface;

feed means for continuously feeding the particles in the feed direction to the gap;

first actuator means for pressing the particles against the support surface in a direction transverse to the support surface with the press-body surface at a pressure of in excess of 10 kg/cm^2; and

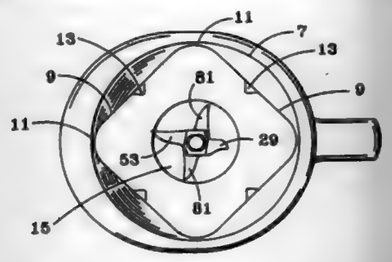
second actuator means for relatively displacing the support surface and the press body in a direction generally parallel to the support surface and to the feed direction and thereby subjecting the particles to shear to separate the inclusions from the rubber of the particles.

5,487,511

BLENDER BLADES AND SYSTEM ADAPTED FOR ICE CRUSHING

Arthur J. Sansone, Stamford, Conn., and Asik Braginsky, Forest Hills, N.Y., assignors to Conair Corporation, Stamford, Conn.

Filed Aug. 12, 1994, Ser. No. 289,427
Int. Cl.[6] B02C *18/12;18/20*
U.S. Cl. 241—282.1 **12 Claims**



1. A set of blades for use in a blender, said blender including a jar, a base, and an associated motor, said set of blades including

a pair of upwardly-extending blades, including a first upwardly-extending blade and a second upwardly-extending blade, said pair having a common first base and a first axis of rotation perpendicular to said common first base, said blades being of substantially the same shape and configuration, and said first upwardly-extending blade being at a lesser angle relative to said first axis than the angle of said second upwardly-extending blade relative to said first axis, whereby said first upwardly-extending blade extends further in the direction of said first axis than said second upwardly-extending blade,

each of said upwardly-extending blades having a leading edge and each said leading edge being of involute shape with a convex portion and a concave portion,

a pair of downwardly-extending blades, including a first downwardly-extending blade and a second downwardly-extending blade, said pair of downwardly-extending blades having a common second base and a second axis of rotation perpendicular to said common second base, and

said pair of upwardly-extending blades and said pair of downwardly-extending base being mounted together for common rotation with said first axis and said second axis in alignment with one another.

5,487,512

TAKE-UP APPARATUS FOR AND PACKAGE OF TAPE TYPE NON-TWISTED CARBON FIBER BUNDLE

Hironobu Nojiri; Kazuyuki Yakushiji, both of Ehime; Minoru Yoshinaga, Yokohama, and Hiroyuki Terasaka, Ohtsu, all of, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 944,736, Sep. 14, 1992, which is a continuation of Ser. No. 722,539, May 20, 1991. This application Mar. 17, 1994, Ser. No. 214,181
Claims priority, application Japan, May 21, 1990, 2-131912
Int. Cl.[6] B65H *18/08;54/00;23/02*
U.S. Cl. 242—471 **3 Claims**

1. A take-up apparatus for tape type non-twisted carbon fiber bundles consolidated into a sheet by a resin composition, comprising:

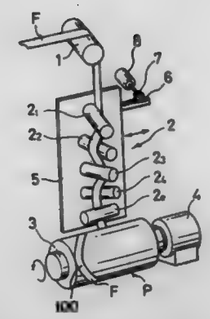
guide rollers adapted to first receive said carbon fiber bundles from a fiber bundle supply source;

a bobbin adapted to take up therearound said carbon fiber bundles sent out from said guide roller structure;

a driving means for rotating said bobbin; and

a traverse drive unit adapted to traverse said guide roller structure and said bobbin reciprocatingly and relatively to each other in parallel with the axial direction of said bobbin,

said guide roller structure including



an introduction guide roller in cylinder shape disposed so that an angle θ_1 between an axial direction of said introduction guide roller and an axial direction of said bobbin is substantially 90°,

a final guide roller in cylinder shape disposed so that an angle θ_2 between an axial direction of the final guide roller and the axial direction of said bobbin is in a range from −15° to +5°, and

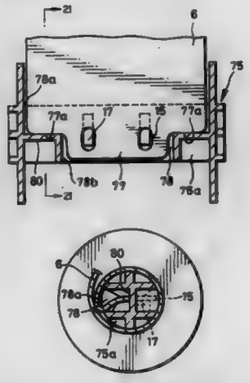
a plurality of intermediate guide rollers in cylinder shape disposed between said introduction guide roller and said final guide roller so that an angle difference between one intermediate guide roller and an adjacent guide roller is not more than 45°.

5,487,513

PHOTOGRAPHIC FILM CASSETTE MACHINE WITH FILM ANCHORING DEVICE

Koichi Takahashi; Hiroshi Kataoka; Haruo Ichikawa; Tetsuya Takatori, and Toshiharu Naito, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 791,285, Nov. 13, 1991, abandoned. This application Feb. 16, 1994, Ser. No. 197,455
Claims priority, application Japan, Nov. 13, 1990, 2-306533; Feb. 4, 1991, 3-035732
Int. Cl.[6] G03B *23/02*
U.S. Cl. 242—348.1 **6 Claims**



1. A photographic film cassette wherein a spool, with photographic film wound thereon, is rotatably contained in a cassette shell, and rotation of said spool propels a film leader to an outside of said cassette shell, compromising:

a slit formed in a core of said spool for receiving a film trailer portion of said photographic film, said slit having a shape which corresponds to the shape of said film trailer portion to conform to said film trailer portion, an entrance portion of said slit having a width which is substantially equal to a maximum width of said photographic film;

at least one anchoring hole formed in said film trailer portion;

at least one anchoring claw projecting from a first inside surface of said slit so as to engage with said anchoring hole; and

at least one pressing projection projecting from a second inside surface of said slit, and extending toward said first inside surface, so as to press said film trailer portion toward said anchoring claw and prevent said anchoring hole from disengaging from said anchoring claw wherein said entrance portion of said slit extends in a direction of an axis of rotation of said spool core, said entrance portion receives said film trailer portion across the maximum width of said photographic film; and

an abutment positioned inside of said slit so as to abut said film trailer portion.

5,487,514

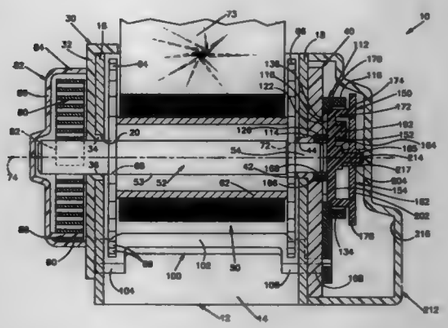
Patent Not Issued For This Number

5,487,515

SEAT BELT RETRACTOR WITH LOCK BAR ACTUATOR

Michael K. Hishon, New Baltimore, and Steven Stoll, Mt. Clemens, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Nov. 23, 1993, Ser. No. 156,583
Int. Cl.[6] B60R *22/405*
U.S. Cl. 242—383.4 **28 Claims**



1. Apparatus comprising:

a frame;

a spool supported for rotation on said frame;

locking means for blocking rotation of said spool when said locking mean is actuated;

an actuator member supported for movement relative to said frame, said actuator member having means for actuating said locking means upon movement of said actuator member from an unactuated position to an actuated position; and

means for moving said actuator member from said unactuated position to an actuated position;

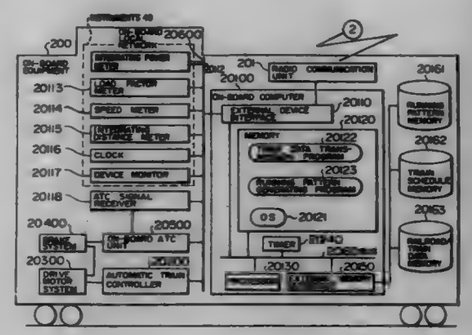
said actuator member including spring means for resisting movement of said actuator member relative to said frame, said actuator member having a first portion supported for movement relative to said frame, said first portion of said actuator member defining said unactuated and actuated positions, said actuator member further having a second portion which is fixed relative to said frame, said spring means resisting movement of said first portion relative to said second portion.

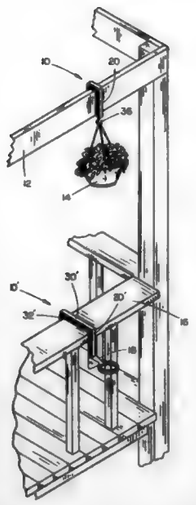
5,487,516

TRAIN CONTROL SYSTEM

Satoru Murata; Atsushi Kawabata; Shuuichi Miura; Kenfumi Tashiro; Yasuo Morooka; Masakazu Yahiro; Masaki Katahira, and Kazuo Kera, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

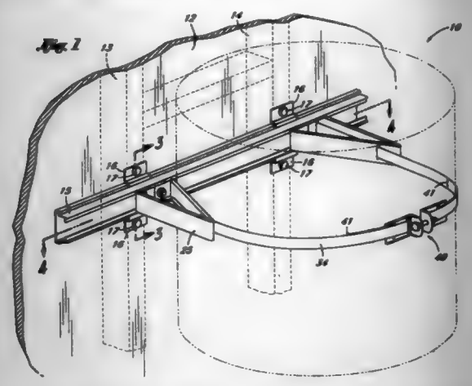
Filed Mar. 15, 1994, Ser. No. 213,358
Claims priority, application Japan, Mar. 17, 1993, 5-056750
Int. Cl.[6] B61L *27/00*
U.S. Cl. 246—182 C **19 Claims**





support means removably connected to the lower end of the body, for supporting an article on said hanger.

5,487,518
WATER HEATER RESTRAINT
William E. McCraney, 22262 Kittery Cir., Huntington Beach, Calif. 92646, and William J. McCraney, 1918 W. Chestnut St., Santa Ana, Calif. 92703
Filed Feb. 3, 1994, Ser. No. 191,271
Int. Cl.[6] A47K *1/08*
U.S. Cl. 248—225.11 1 Claim



1. A water heater restraint for securing a vertical cylindrical water heater adjacent a wall, which wall is supported by a plurality of vertical studs, said restraint comprising:

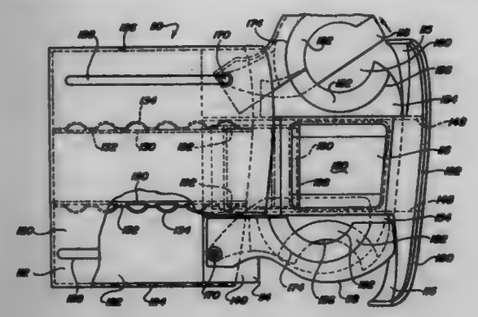
a bi-channel strut comprising an elongated member having an elongated back portion with a top edge and a bottom edge and having a pair of first channels adjacent said top and bottom edges and a pair of outwardly extending portions adjacent the pair of first channels, said outwardly extending portions each having an outer edge and a pair of second channels formed adjacent the outer edges of said pair of outwardly extending portions, each of said second channels having an inwardly directed elongated flange;

means for securing said hi-channel strut to the studs of a wall;

a pair of triangular gussets each having a base, an inner edge and an outer edge and each gusset being slidably positionable along said pair of second channels and when placed in a desired position with inner edges, each inner edge forming an inner support face which is angled outwardly away from the strut and away from each other, said inner edges facing inwardly having means for securement at the base thereof to said pair of second channels and each of said triangular gussets is formed from an elongated rectangular sheet of metal and the base of each gusset has two overlapping ends of the sheet and the overlapping ends have a hole therein through which a bolt may be passed and said gussets each being held to the second channel by a backer plate held against the inwardly directed elongated flange of the second channel and bolted to the base thereof; and

strapping means for surrounding a water heater and means for securing said strapping means to said pair of triangular gussets and against said elongated strut and wherein said strapping means is a pair of lengths of strapping and each length having an inner end and an outer end and each inner end has a hole therethrough and is secured to the respective bases of the gussets by passing a gusset bolt therethrough and positioning each of the respective inner ends between the base of the gusset and the respective backer plates and wherein each of the inner ends of the two lengths of strapping is passed through a slot in the hypotenuse of each gusset and another slot in the base of each gusset whereby a water heater may be secured to a wall by affixing the bi-channel strut to the wall against which the water heater is to be affixed, sliding the gussets to the outer edges of the water heater and placing the strapping means around the water heater and securing the strapping means to the gussets and the gussets to the bi-channel strut.

5,487,519
RETRACTABLE BEVERAGE CONTAINER HOLDER
David N. Grabowski, Rochester Hills, Mich., assignor to Chivas Products Limited, Sterling Heights, Mich.
Filed Mar. 26, 1993, Ser. No. 37,319
Int. Cl.[6] A47K *1/08*
U.S. Cl. 248—311.2 12 Claims



1. A container holder comprising:

a housing having a top surface and a bottom surface;

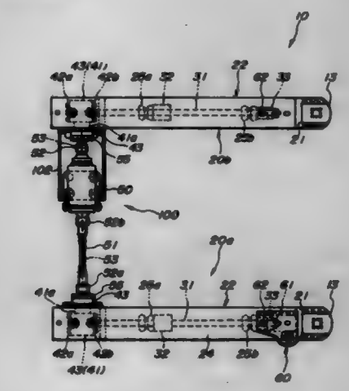
a frame disposed between said top and bottom surfaces and slidably mounted to said housing for movement between a retracted position within said housing and an extended position partially spaced apart from said housing, said frame having a first portion defining a central open area, said frame having a second portion defining a first partially circular opening;

a first arm disposed within said frame and having means for supporting a first container in a first direction disposed therein, said first arm defining a second partially circular opening and including a first pivot pin for pivotably mounting said first arm to said frame such that said first arm is movable between a closed position and an open position, said second partially circular opening of said first arm cooperating with said first partially circular opening of said frame to define a first partially circular aperture when in said open position, said first partially circular aperture operable to receive said first container; and

a first support base pivotably mounted to said frame by said pivot pin, said first support base supporting said first container in a second direction, said second direction being generally perpendicular to said first direction;

wherein said first support base comprises a first cup base pivotably attached by said pivot pin to said frame and operable to move from a raised stored position within said housing when said first arm is in said closed position to a lowered in use position wherein a portion of the first support base extend below said bottom surface of said housing when said first arm is in said open position.

5,487,520
POWER SEAT SLIDE DEVICE
Takayuki Mouri, and Tohru Isomura, both of Ayase, Japan, assignors to Ikeda Bussan Co., Ltd., Ayase, Japan
Filed Jun. 10, 1993, Ser. No. 74,444
Claims priority, application Japan, Sep. 25, 1992, 4-067087 U
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—429 10 Claims



1. A power seat slide device comprising:

first and second rail units each including a lower rail secured to a fixed member and an upper rail slidably engaged with the lower rail, the Upper rails of said first and second rail units carrying thereon a seat;

two threaded bolt members respectively incorporated with said first and second rail units, each threaded bolt member being rotatably carried by one of said lower and upper rails through first and second supporting members;

two nut members respectively incorporated with said first and second rail Units, each nut member being connected to the other of said lower and upper rails and meshed with said threaded bolt member so that rotation of said threaded bolt member about its axis induces a longitudinal movement of said upper rail relative to said lower rail;

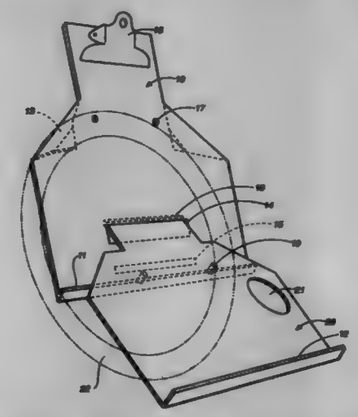
an electric power device for rotating both the threaded bolt members of said first and second rail units with an aid of electric power;

two first shock absorbing members respectively incorporated with said first and second rail units, each first shock absorbing member being slidably mounted on the threaded bolt member between said first supporting member and said nut member; and

two second shock absorbing members respectively incorporated with said first and second rail units, each second shock absorbing member being slidably mounted on the threaded bolt member between said second supporting member and said nut member,

wherein each of said first and second shock absorbing members comprises an elastomeric material and is shaped like a bobbin including a cylindrical core portion and two circular flange portions formed on front and rear ends of said cylindrical core portion.

5,487,521
STEERING WHEEL MOUNTED SUPPORT FOR COMPUTER, PRINTED MATTER, FOOD, AND/OR BEVERAGE
Jack D. Callahan, P.O. Box 460442, San Francisco, Calif. 94146-0442
Filed Mar. 15, 1995, Ser. No. 404,319
Int. Cl.[6] A47B *19/00*
U.S. Cl. 248—441.1 8 Claims



1. A vehicular mounting assembly releasable attached to a vehicle steering wheel comprising:

a clipboard having a top end, a bottom end, an upper surface and a back surface;

clip means on said clipboard top end for removable retaining printed material against said upper surface;

a planar tray having a top end, a bottom end, an upper surface and a back surface;

affixing means on said tray for removable securing said tray to the clipboard;

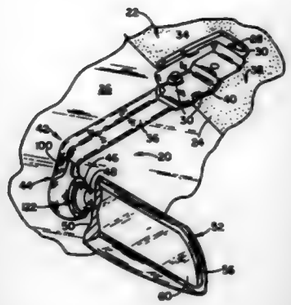
adjusting means on said clipboard; wherein said adjusting means cooperates with said affixing means for adjusting the tray at a plurality of angles with respect to the clipboard; and

means for attaching the clipboard to the steering wheel.

5,487,522
MIRROR SUPPORT BRACKET
Richard R. Hook, Hudsonville, Mich., assignor to Donnelly Corporation, Holland, Mich.
Filed Nov. 30, 1993, Ser. No. 159,838
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—549 24 Claims

1. A single ball joint support bracket for a vehicle rearview mirror housing, the mirror housing having a ball member extending therefrom, comprising:

a mirror stay having a first end terminating in a single, generally spherical, ball joint socket;



a cup, substantially enclosing the ball member extending from the mirror housing, disposed within said generally spherical ball joint socket, and having a rear surface; and

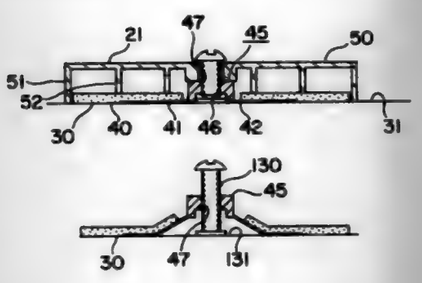
a biasing member disposed in said generally spherical, ball joint socket behind said cup, to force said cup toward one end of said socket and compress about the ball to sustain a substantially constant clamping force on the ball through a range of ambient temperatures, said biasing member including at least one of a disk, rectangular, square, hexagonal, leaf, and coil spring.

5,487,523

READILY RELOCATABLE SECURITY MOUNT WHICH CAN HOLD ARTICLES WITH A WIDE RANGE OF DIMENSIONS

William D. Ingram, Irvine, Calif., and J. Steven James, Philomath, Oreg., assignors to Ivie Industries, Irvine, Calif.

Filed Aug. 20, 1993, Ser. No. 109,725
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—551 **5 Claims**



5. A mount for releasably holding a separate article to a surface comprising:

a flexible mat having a first and a second face, said first face bearing adhesive means for attachment to said surface, and said second face bearing no adhesive means, said mat having an opening therethrough;

a flexible metal sheet contiguous to and adherent to said first face and surrounding said opening, and having a post extending through said opening and also having openings therethrough, through which said last-named openings said adhesive means, can contact said surface, said post having a threaded passage extending through said opening in said mat;

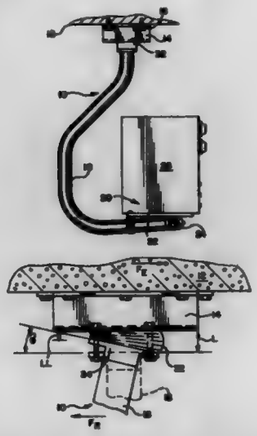
a headed bolt threaded into said post, whereby releasably to hold the article to said mat when said mat is adherent to said metal sheet and to said surface, whereby said bolt can further be turned to exert a force against said surface, gradually to release said mat from said surface by exertion of force between said metal plate and said surface.

5,487,524

MOUNTING ASSEMBLY WITH FORCED ABSORPTION CHARACTERISTICS

Carl A. Bergetz, River Forest, Ill., assignor to Peerless Industries, Inc., Melrose Park, Ill.

Filed Apr. 21, 1994, Ser. No. 230,893
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—613 **24 Claims**



1. A mounting assembly for mounting electrical appliances, such as television sets to a building comprising:

mounting means adapted for attachment to a building support surface, an arm member adapted for attachment to the mounting means, the arm member having means for supporting said appliance in a spaced-apart relationship from the building support surface, said mounting assembly including force absorbing means disposed between and in contact with said mounting means and said arm member, whereby said force absorbing means effectively dampens forces imparted upon the building and present in said building support surface, said force absorbing means being a compressible interface member having an axial length sufficient to permit angular articulation of said mounting arm with respect to said mounting means, said mounting means, interface member and mounting arm being held together by at least one fastener member extending therethrough, the fastener member being adjustable so as to permit the application of a preload to said interface member.

5,487,525

ADJUSTABLE KEYBOARD HOLDER FOR WORKSTATIONS

Matthew P. Drabczyk, 10985 St. Vrain Ct., Westminster, Colo. 80231, and Daniel C. Starkey, 4229 S. Cherokee St., Englewood, Colo. 80110

Continuation of Ser. No. 953,453, Sep. 29, 1992, Pat. No. 5,294,087, which is a continuation of Ser. No. 779,378, Oct. 18, 1991, abandoned. This application Mar. 14, 1994, Ser. No. 212,084
Int. Cl.[6] F16M *3/00*
U.S. Cl. 248—639 **7 Claims**

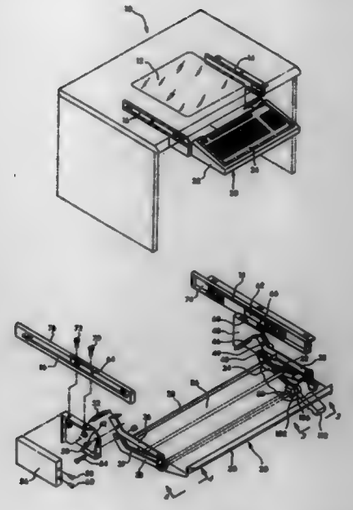
1. An adjustable keyboard holder for a workstation, said adjustable keyboard holder comprises:

a keyboard tray support;

means for mounting said keyboard support to a workstation;

means for infinitely adjusting the angular position of said keyboard tray support within a range of motion relative to the workstation;

means for infinitely adjusting the vertical position of said keyboard tray support within a range of motion relative to the workstation;



means for providing horizontal movement of said keyboard tray support from an operating position extending substantially beyond the edge of the workstation to a storage position substantially beneath the surface of the workstation; and

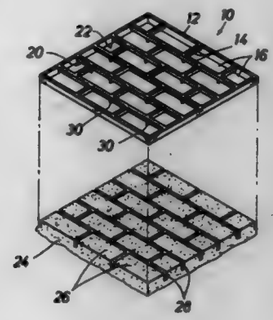
a single actuating mechanism mounted adjacent said keyboard tray support for releasing said angular adjusting means and said vertical adjusting means for adjustment and for locking said angular adjusting means and said vertical adjusting means in a selected angular and vertical position.

5,487,526

MOLD DEVICE FOR FORMING CONCRETE PATHWAYS

Jack T. Hupp, P.O. Box 1206, Richmond, Tex. 77469

Continuation-in-part of Ser. No. 900,062, Jun. 16, 1992. This application May 6, 1994, Ser. No. 239,045
Int. Cl.[6] E01C *7/00*
U.S. Cl. 249—2 **16 Claims**



1. A mold for forming a concrete surface, comprising:

perimeter sidewalls having top and bottom edges; and

a plurality of interconnecting beams having top and bottom edges;

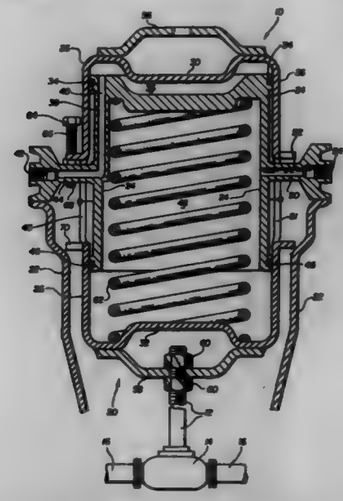
wherein said sidewalls and said interconnecting beams circumscribe a plurality of openings for forming a concrete slab, the top edges of said sidewalls and said interconnecting beams defining a continuous surface, and wherein said interconnecting beams extend downwardly from said continuous surface a distance less than said sidewalls, and further including at least one support leg downwardly depending from said interconnecting beams.

5,487,527

VALVE ACTUATOR

Philip W. Eggleston, Marshalltown, Iowa, assignor to Fisher Controls International, Inc., Clayton, Mo.

Filed Jun. 2, 1994, Ser. No. 252,926
Int. Cl.[6] F16K *31/122*
U.S. Cl. 251—62 **15 Claims**



13. An actuator for operating a control element used to regulate the flow of fluid through a fluid control valve said actuator comprising:

a pair of coaxially aligned members, one externally mounted with respect to the other and axially movable with respect to the other, said members having adjacent ends, wherein a chamber is defined between said adjacent ends for moving said one movable member away from said other member during operation of said actuator;

means for coupling said control element to said one movable member;

means for coupling said chamber to fluid under pressure for operating said actuator and moving said one movable member away from said other member from a first valve actuator position to a second valve actuator position; and

return means for axially moving said one movable member towards said other member from said second valve actuator position to said first valve actuator position.

5,487,528

QUIET APPLIANCE WATER VALVE

James W. Richmond, Carmel, Ind., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 22, 1993, Ser. No. 51,136
Int. Cl.[6] F16K *47/14;31/40;31/385*
U.S. Cl. 251—127 **10 Claims**

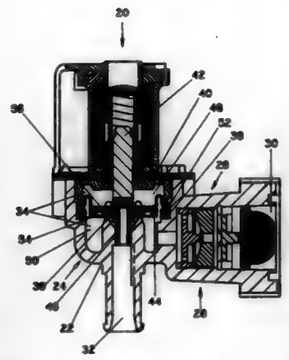
1. An appliance water valve, comprising:

(a) a valve body defining an inlet,, an outlet, and a valving cavity disposed between and communicating with the inlet and the outlet, and a valving surface between the inlet and the outlet;

(b) a main valve moveable to a position away from the valving surface for permitting flow from the inlet through the valving cavity to the outlet, and moveable to a position contacting the valving surface for preventing flow from the inlet through the valving cavity;

(c) a flow control located between the inlet and the valving cavity for providing a substantially constant rate of water flow; and,

(d) means for reducing water flow noise, comprises:



(1) a dispersion chamber having passage holes placed downstream of the flow control which indirectly communicates with a central exit port for radially dispersing and accelerating water to the periphery of the dispersion chamber and into the passage holes decelerating water to decrease inlet water velocity,

(2) a recombining chamber downstream of the dispersion chamber communicating with the dispersion chamber and the valving cavity receiving water from the passage holes in the dispersion chamber to redirect and accelerate all water flow radially from the periphery of the recombining chamber inward toward the central exit port thus causing water flow from opposing directions to converge at the central exit port and decelerate thereby reducing water velocity.

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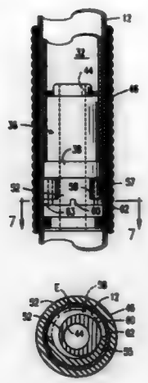
FLOW-THROUGH WASHING AND SCRUBBING BRUSH HANDLE

Duane H. Newville, 6242 3rd Ave. S., St. Petersburg, Fla. 33707

Continuation-in-part of Ser. No. 2,652, Jan. 11, 1993, Pat. No. 5,336,012. This application Jul. 7, 1994, Ser. No. 271,599

Int. Cl.[6] A46B *11/06*; A47L *13/22*; F16K *51/00*

U.S. Cl. 251—148 **3 Claims**



1. An improved flow-through washing and scrubbing brush handle, comprising:

an elongated hollow outer tube having a coupling structured for connecting a first end of said outer tube to a pressurized water supply;

an elongated rigid hollow inner tube mounted for slidable rotational and longitudinal movement within said outer tube, a first end of said inner tube extendable beyond a second end of said outer tube and connectable to a flow-through type brush head;

an elongated twist-lock body having a central longitudinal water passage therethrough, a first portion of said twist-lock body connected within a second end of said inner tube positioned within said outer tube;

said twist-lock body having a first sealing ring around the end of said first portion thereof for preventing water passing into said inner tube through said water passage from passing out of said inner tube second end;

a second sealing ring positioned transversely around an end of a second portion of said twist-lock body extending into said outer tube beyond said inner tube second end, said second sealing ring structured for preventing pressurized water entering said outer tube first end from passing between said inner and outer tubes;

said twist lock body second portion having an eccentric cam segment;

a locking collar loosely positioned transversely around said eccentric cam segment;

said locking collar having a generally C-shaped, eccentric construction that includes a pair of circumferentially spaced opposing ends having a first predetermined thickness, and wherein said locking collar gradually thickens, in a radial direction, until it reaches a second predetermined thickness at a preselected point between said opposing ends, said second predetermined thickness being greater than said first predetermined thickness;

a longitudinally extending protrusion formed on said eccentric cam segment;

said locking collar having a circumferentially extending recess formed therein, said recess forming a pair of stop surfaces that are circumferentially spaced further apart from one another than said opposing ends of said locking collar;

said locking collar being wedged against said outer tube when said outer tube is rotated in a first direction;

said locking collar being continuously rotatable with respect to said outer tube when said outer tube is rotated in a second direction opposite to said first direction; and

a stop surface of said locking collar abutting said longitudinally extending protrusion when said outer tube is rotated in said second direction;

said inner and outer tubes locking together when relatively rotated in said first direction and freewheeling in an unlocked configuration when said inner and outer tubes are rotated with respect to one another in said direction opposite to said first direction.

2. The improved flow-through washing and scrubbing brush handle as set forth in claim 1, further comprising:

means connected to said coupling and positioned within said outer tube first end for adjusting the volume and controlling the flow of water through said outer tube.

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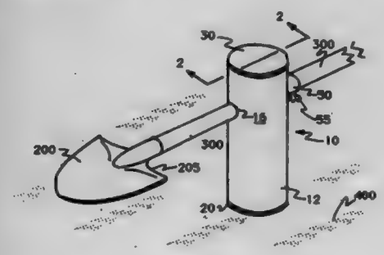
SHOVELING AID

Harold J. McCullough, 16238-56th Avenue, R.R. #10, Surrey, British Columbia, Canada

Filed Feb. 16, 1994, Ser. No. 197,517

Int. Cl.[6] A01B *1/02*

U.S. Cl. 254—131.5 **3 Claims**



1. For a shovel comprising a shovel blade and an elongated handle extending away from said blade, a shoveling aid comprising:

(a) an elongated bracing member comprising a pipe section extending from a base end to a top end, said pipe section including upper and lower openings on opposed sides of said pipe section, said upper opening being positioned nearer to said top end than said lower opening; and,

(b) means for attaching said bracing member to said handle at a selected position away from said blade to permit said shovel to be levered with said aid to lift a load carried by said blade, said attaching means comprising:

(i) a sleeve coupled to said pipe section in said upper opening, said sleeve being sized and oriented to longitudinally receive said handle at a predetermined angle relative to said pipe section, said handle being longitudinally receivable through said openings and said sleeve to said selected position; and,

(ii) means for releasably securing said handle in said sleeve at said selected position.

5,487,531

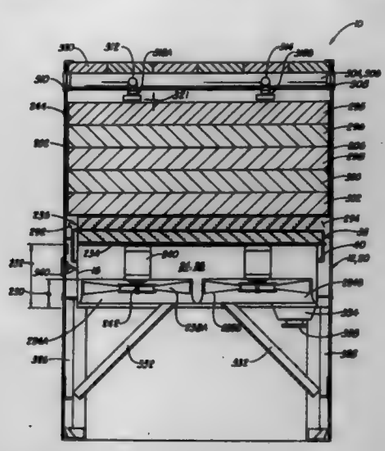
DUAL LAYERED DRAINAGE COLLECTION SYSTEM

Harold D. Curtis, Chickasha, Okla., assignor to Tower Tech, Inc., Chickasha, Okla.

Continuation-in-part of Ser. No. 161,069, Dec. 3, 1993. This application May 10, 1994, Ser. No. 240,280

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—30 **14 Claims**



2. A cooling tower apparatus, comprising:

a body of fill material;

a liquid distribution system located above said body of fill material for distributing liquid on top of said body of fill material so that said liquid gravitates downward through said body of fill material;

a fan located below said body of fill material for blowing cooling air upward through said body of fill material to contact and cool said liquid;

a dual-layer drainage collection system located between said body of fill material and said fan for collecting said liquid falling from said body of fill material and for preventing said liquid from reaching said fan, said drainage collection system including:

an upper layer of parallel elongated collection plates having a first length, said collection plates being sloped and overlapping in a direction transverse to said first length of said collection plates, said overlapping collection plates covering said fan; and

a lower layer of parallel elongated collection plates located between said upper layer and said fan for collecting overspray from said upper layer and preventing said overspray from reaching said fan;

wherein each of said collection plates of said lower layer is a hollow double-walled plate having an interior and having an upper opening communicated with said interior and located to receive liquid draining downward from one plate of said upper layer into said interior;

a basin laterally surrounding said fan, said basin including first and second parallel gutter means, on opposite sides of said fan, for receiving liquid from said drainage collection system and for directing said liquid into said basin;

said lengths of said collection plates lying generally perpendicular to said first and second gutter means of said basin, with ends of said collection plates being open to drain into said first and second gutter means; and

first and second end caps attached to each of said collection plates of said lower layer having first and second outlets, respectively, defined in said end caps and communicating the interiors of said collection plates of said lower layer with said first and second parallel gutter means, respectively.

5,487,532

DEVICE FOR INSERTING A LANCE INTO A PRESSURIZED CONTAINER, IN PARTICULAR A BLAST FURNACE

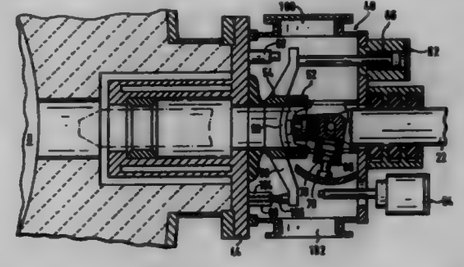
Emile Lonardi, Bascharage; Radomir Andonov, Mamer, and Giovanni Cinenti, Fentange, all of, Luxembourg, assignors to Paul Wurth S.A., Luxembourg

Filed May 26, 1994, Ser. No. 250,754

Claims priority, application Luxembourg, May 27, 1993, 88 230

Int. Cl.[5] C21C *5/48*

U.S. Cl. 266—271 **20 Claims**



1. A device for equipping an opening in a pressurized container for the axial insertion of a lance, the device comprising:

a leaktight casing including:

a first plate intended to be connected to a pressurized container and a second plate spaced from said first plate;

a first through opening in said first plate and a second through opening in said second plate, each of said openings intended for passing therethrough a lance;

sealing means attached to said second plate for establishing axial leaktightness around a lance when a lance is inserted therein;

passage means in said leaktight casing between said first and second through openings for establishing a passage for a lance between said first and second through openings, said passage means having an axis and including;

a first seat connected in a leaktight manner to said second through opening;

a second seat being connected in a leaktight manner to said first through opening, said second seat being arranged opposite said first seat along said axis and being movable along said axis with respect to said first seat;

closure means mounted in the leaktight casing for opening and closing said passage means between said first and second seats, said closure means being movable between a first position in which said closure means is aligned between said first seat and said second seat and a second position in which said closure means is outside of said first and second seats;

means for moving said closure means between said first and second positions;

first spring means for urging said closure means toward said second seat when said closure element is in its first position;

second spring means connected to said second seat to move said second seat towards said first seat whereby said second seat can urge said closure element, against the action of said first spring means, toward said first seat when said closure means is in its first position; and

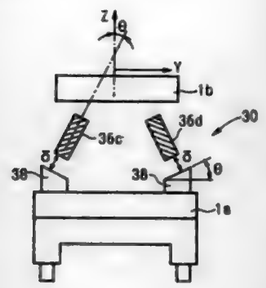
actuator means connected to said second seat to move said second seat, against the action of said second spring means, away from said first seat into a retracted position in which said second seat is axially spaced from said closure element.

5,487,533

AUTOMATIC TRANSPORT VEHICLE WITH THREE-AXIS MOTION SENSING AND VIBRATION DAMPING

Yutaka Kurita, and Yasushi Muragishi, both of Ise, Japan, assignors to Shinko Electric Co., Ltd., Japan

Filed Jun. 2, 1994, Ser. No. 252,912
Claims priority, application Japan, Jun. 4, 1993, 5-134965
Int. Cl.[6] B60P 7/16
U.S. Cl. 267—140.5 **20 Claims**



1. An automatic transport vehicle capable of damping vibration of a load carried thereon, the vehicle comprising:

a truck which is freely movable on road surface or track;

a bed supported elastically on the truck;

sensors which detect vibrations in the bed and which output detection signals;

at least a first actuator which displaces the bed relative to the truck in a first direction through which a first sensor detects the vibration,

a second actuator which displaces the bed relative to the truck in a second direction through which a second sensor detects the vibration,

a third actuator which displaces the bed relative to the truck in a third direction through which a third sensor detects the vibration, and

a controller which controls the actuators in response to detection signals from the sensors,

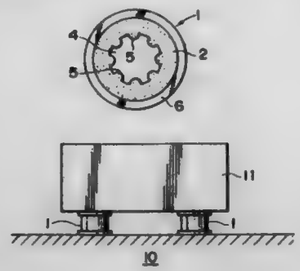
wherein the directions of action of the actuators are inclined with respect to the perpendicular to a plane in which the truck moves, the directions of action of the actuators facing in mutually different directions, the sensors detecting vibrations in the direction of action of each of the actuators.

5,487,534

LAMINATED RUBBER VIBRATION CONTROL DEVICE FOR STRUCTURES

Mitsuo Sakamoto; Norihide Koshika; Isao Nishimura; Katsuyasu Sasaki, and Satoshi Oorui, all of Tokyo, Japan, assignors to Kajima Corporation, Tokyo, Japan

Division of Ser. No. 976,437, Nov. 13, 1992. This application Sep. 30, 1994, Ser. No. 315,697
Claims priority, application Japan, Nov. 15, 1991, 3-300408
Int. Cl.[6] F16F 7/00
U.S. Cl. 267—141.1 **16 Claims**



1. A hollow core support and damper comprising: a plurality of vertically stacked rubber members having center openings and upper and lower parallel planar surfaces; first steel plates with like center openings interposed between and secured to adjacent rubber members, said stacked rubber members and said steel plates forming inner and outer wall surfaces to define a hollow core; a pair of imperforate second steel plates, one of which is secured to the said upper planar surface of the uppermost of said vertically stacked rubber members and the other of which is secured to said lower planar surface of the lowermost of said vertically stacked rubber members to sandwich said hollow core therebetween to form and to maintain an imperforate enclosed hollow chamber; at least one of said wall surfaces being configured to resist buckling of said damper due to horizontal deformation; a first horizontally vibration mass; a second horizontally vibratable mass; a plurality of said hollow core supports being positioned between said first horizontally vibratable mass and said second horizontally vibratable mass to position and to support said second horizontally vibratable mass vertically above said first horizontally vibratable mass, whereby said hollow core damper provides a high seismic vibration induced horizontal stroke, low horizontal shearing stiffness, and a long horizontal vibration period; whereby said second horizontally vibratable mass is free to vibrate passively on said plurality of said hollow core supports in response to horizontal seismic vibrations impacting said first horizontally vibratable mass; and wherein said inner wall surface of at least one said hollow core support is vertical and includes a plurality of reinforcing ribs.

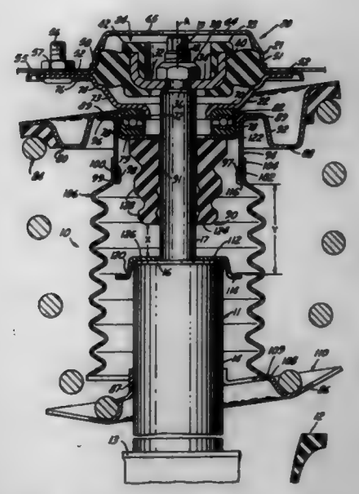
5,487,535

SUSPENSION STRUT METAL-TO-METAL JOUNCE STOP

Robert L. Carter, Gibraltar, and Sophia C. Barr, Birmingham, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 5, 1994, Ser. No. 349,297
Int. Cl.[6] B60G 15/00
U.S. Cl. 267—220 **5 Claims**

1. A shock-absorbing assembly for use in a suspension system for an automotive vehicle, the assembly operatively connected between sprung and unsprung masses of the vehicle, the assembly comprising a shock unit having a piston rod extending through an opening in one upper end thereof disposed for reciprocal movement along a principal axis of said unit, a mount fixed on an upper end of the piston rod adapted for attachment to the sprung mass, an annular support member located subjacent the upper mount, a metal-to-metal jounce stop arrangement for the assembly comprising:



means supporting an annular radially extending jounce stopper ledge adjacent said unit upper end;

a cylindrical metal canister fixed to and extending downwardly from an underside of the support member concentrically disposed on said unit principal axis, an elastomeric jounce bumper concentrically positioned on an upper portion of the rod having an upper end face in flush abutment with a central portion of the support member and a lower end face spaced a predetermined dimension above said unit upper end with the assembly in a static design mode;

said canister in said design mode concentrically encircling an upper portion of said bumper with its lower extremity defining an annular stopper edge vertically positioned intermediate said bumper upper and lower end faces so as to define a predetermined maximum axial jounce dimension between said canister stopper edge and said unit stopper ledge;

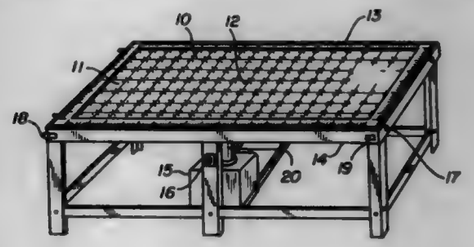
wherein upon the assembly undergoing maximum jounce travel said canister stopper edge contacting said unit stopper ledge said jounce bumper being compressed a predetermined axial dimension between said support member and said unit upper end obviating over-compression of said bumper thereby increasing the service-life thereof.

5,487,536

BANNER TABLE

Jerry F. McEachin, 3999 Williams St., Clarkston, Ga. 30021

Filed May 4, 1994, Ser. No. 237,775
Int. Cl.[6] B25B 11/00
U.S. Cl. 269—21 **8 Claims**



1. A table for cutting banners, the device comprising:

(a) a top surface of steel;

(b) a plurality of V-shaped grooves in the top surface for guiding a cutting instrument, the grooves having a rectangular grid pattern on the top surface and the grooves extending to an edge of the top surface;

(c) a measuring guide along each edge of the top surface for measuring a dimension of the banner, at least two adjacent guides raised to allow alignment of the banner to a corner of the top surface, and at least one measurement guide being removable;

(d) a clamp to clamp an end of a first table to an end of a second table;

(e) at least one alignment pin to align the grooves of the ends of the first and second tables;

(f) a vacuum chamber below the top surface;

(g) a vacuum means connected to the chamber; and

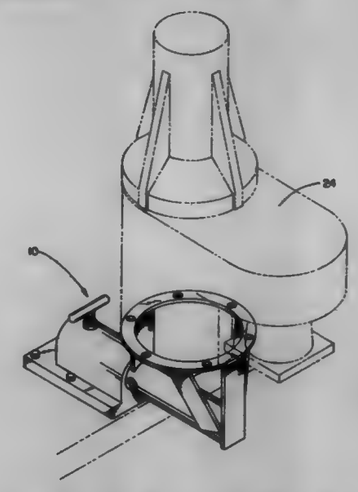
(h) a plurality of apertures between the top surface and the vacuum chamber to secure the banner to the top surface.

5,487,537

TRANSFER CASE STAND

Robert A. Rye, 523 E. Tamarack, Ironwood, Mich. 49938

Filed Jun. 9, 1994, Ser. No. 257,177
Int. Cl.[6] B23Q 1/04
U.S. Cl. 269—51 **3 Claims**



1. A transfer case stand for securely holding and supporting a transfer case of a vehicle from a fixed location for allowing ready access by a mechanic comprising, in combination:

a rigid and tubular casing having an open base end and a sealed tip end with the base end having a base coupling hole disposed therethrough;

a rigid ring positioned at a location above the casing such that the central axis of the ring is perpendicular to the central axis of the casing, the ring having a plurality of holes disposed therearound for receiving bolts of a transfer case of a vehicle;

a first brace, a second brace, a third brace, and a fourth brace with the first brace extended between the base end of the casing and the ring, the second brace extended between the tip end of the casing and the ring, and the third brace and the fourth brace being opposed and extended between the ring and casing near the tip end thereof such that the second brace, third brace, and fourth brace define a tripod;

a rigid holder having a planar base plate with an integral eyelet extended upwards therefrom to define a horizontally positioned aperture;

a rigid extension tube having a base section slidably and rotatably disposed within the aperture of the eyelet and a tip section disposed through the base end of the casing, the base section having a first coupling hole disposed therethrough and a second coupling hole disposed therethrough at a location perpendicular to the first coupling hole, the tip section having a third coupling hole disposed therethrough and aligned with the second coupling hole;

first coupling means secured through the base coupling hole of the casing and third coupling hole of the extension tube, thereby coupling the casing with the extension tube;

second coupling means extended through the eyelet of the holder, the second coupling means adapted to be secured through the first coupling hole of the extension tube in one orientation, thereby coupling the holder with the extension tube at a position such that the ring faces upwards, whereby allowing a transfer case coupled thereto to be held in a vertical orientation, the second coupling means further adapted to be secured within the second coupling hole of the extension tube in another orientation, thereby coupling the holder with the extension tube at a position such that the ring faces sideways, whereby allowing a transfer case coupled thereto to be held in a horizontal orientation; and

third coupling means adapted for securing the base plate of the holder to a fixed location such as a work bench.

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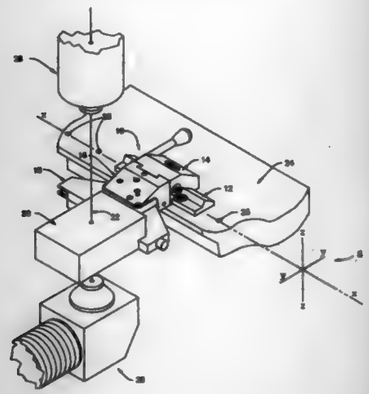
WORKPIECE HOLDING ASSEMBLY

Michael D. Tibbet, Ventura, Calif., assignor to Glaser Tool Co., Ventura, Calif.

Filed Aug. 10, 1994, Ser. No. 288,067

Int. Cl.[6] B23Q *1/04*

U.S. Cl. 269—71 **19 Claims**



1. A machine workpiece holding assembly having a machine table comprising:

a base module comprising a rail secured to said machine table and a rail clamp secured to said rail, said rail clamp having a leveler connector means for releasably engaging a leveler head; and,

a release module detachably connected to said base module comprising a leveler head having an attachment portion and a connector portion releasably engaged with said leveler connector means and, a workpiece clamping means for holding a workpiece having an attachment region connected to said leveler head attachment portion, said leveler head including a cant adjustment means for angularly orienting said workpiece clamping means comprising a pivot contact and two vertically adjustable contacts which are spaced from each other in a triangular pattern about said attachment portion.

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APPARATUS FOR CLAMPING A WORK PIECE IN A WELL DEFINED POSITION

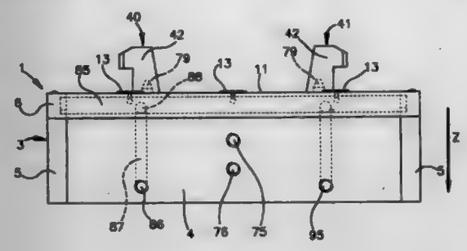
Basil Obrist, Gontenschwil, Switzerland, assignor to Erowa AG, Reinach, Switzerland

Filed May 3, 1994, Ser. No. 237,195

Claims priority, application Germany, May 4, 1993, 43 14 629.5

Int. Cl.[6] B23Q *1/06*

U.S. Cl. 269—309 **27 Claims**



1. An apparatus for clamping a work piece in a well defined position in the working area of a machining apparatus, comprising:

a base member adapted to be fixed in the working area of the machining apparatus;

a work piece carrier member adapted to be put onto said base member and to be clampingly fixed to said base member, said work piece carrier member being adapted to receive a work piece to be machined;

first aligning means provided on said base member and second aligning means provided on said work piece carrier member, said first and second aligning means cooperating in pairs with each other upon putting said work piece carrier member onto said base member to align the position of said work piece carrier member in three coordinate axes running perpendicularly to each other and with regard to its angular orientation;

clamping means generating a clamping force which keeps said work piece carrier member in a position defined by said first and second aligning means on said base member;

said first and second aligning means comprising first aligning element pairs including first and second stop surfaces cooperating with each other to define the position of said work piece carrier member in a coordinate axis (Z) running parallel to the direction of said clamping force generated by said clamping means;

said first and second aligning means comprising two laterally located and one centrally located second aligning element pairs including each a conically cross sectioned aligning ruler member as well as a counterpart member having a matching centering slot, said aligning ruler members and said counterpart members cooperating with each other to define the position of said work piece carrier member in a coordinate plane which is set by the two other coordinate axes (X and Y);

two opposite end portions of said base member and said work piece carrier member each being provided with one of said laterally located second aligning element pairs which together define the position of said work piece carrier member, -(a) in a coordinate axis (Y) running perpendicular to the connection line between said two second aligning element pairs, and -(b) with regard to its angular orientation, and a central portion of said base member and said work piece carrier member between said two laterally located second aligning element pairs being provided with a further one of said centrally located second aligning element pairs to define the position of said work piece carrier member in the third coordinate axis (X);

said clamping means comprising two synchronously operated clamping members, each one thereof being located between said centrally located second aligning element pair and one of said laterally located second aligning element pairs.

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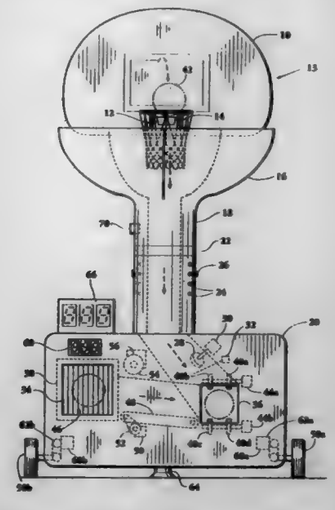
APPARATUS FOR USE IN PRACTICING THE FUNDAMENTALS OF BASKETBALL

Dickie R. Bixler, and Jessica A. Bixler, both of Rte. 1, Box 33, Pocoma, Okla. 73731

Filed May 22, 1995, Ser. No. 445,679

Int. Cl.[6] A63B *69/00*

U.S. Cl. 273—1.5 A **11 Claims**



11. An apparatus for use in practicing the fundamentals of basketball, comprising;

a. a retrieving bowl adapted to connect to a basketball goal to recover a basketball;

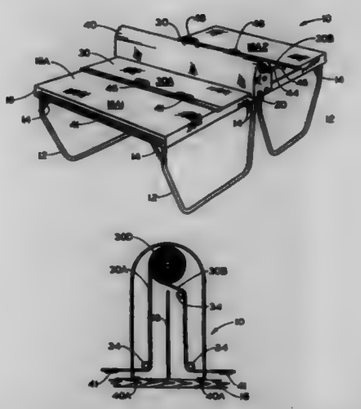
b. an adjustable, swivelable chute having upper and lower ends, the upper end being connected to the retrieving bowl; and

c. a base unit having:

(1) an ejection box connected to the lower end of the chute, the ejection box having motor-driven speed control wheels adjacent thereto;

(2) a passing box having a target area covered by a one-way flap; and

(3) a gravity channel extending from the passing box to the ejection box.



means on said second end of each strip for attaching said second end to cooperating attachment means on said table.

5,487,541

PING PONG TABLE COVER

Ivan S. Dictor, 16 Dione La., Hauppauge, N.Y. 11788

Filed Jun. 20, 1994, Ser. No. 262,544

Int. Cl.[6] A63B *67/04*

U.S. Cl. 273—30 **5 Claims**

1. A cover for a table tennis table having a panel delineating a rectangular substantially horizontal playing surface of a predetermined width and length, and a net positioned centrally of said length and spanning said width, said cover comprising;

a pair of rectangular strips of flexible weather barrier material, each strip having first and second ends and a length greater than one-half the length of said playing surface, and being substantially equal to the width of said playing surface;

an elongated shaft, means for rotatably supporting said shaft in a plane substantially parallel to and above said net;

means on said shaft for rotation thereof;

means connecting said first end of each rectangular strip longitudinally along said shaft, whereby rotation of said shaft in one direction will cause said strips to be wound about said shaft and rotation of said shaft in a direction opposite said one direction will cause said strips to unwound from said shaft for extension of said strips over a cooperating half of said playing surface;

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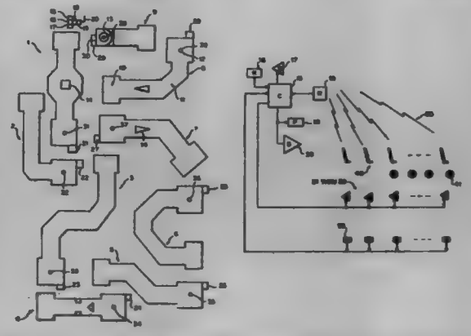
AUTOMATICALLY-SCORING GOLF GAME

Thomas P. Foley, 518 Red Oak Dr., Severna Park, Md. 21146

Filed Mar. 21, 1995, Ser. No. 408,044

Int. Cl.[6] A63B *69/36;67/02*

U.S. Cl. 273—176 FA **20 Claims**



18. In a plurality of clubs for striking balls, the improvement comprising:

a ball-strike sensor associated with each respective club;

a transmitter associated with each respective club, the transmitter being electrically coupled to the ball-strike sensor of the respective club for emitting an electrical signal upon striking the ball, the signal being unique to the respective club and distinguishable from signals of all others of the clubs whereby any of the plurality of clubs may be identified upon striking a ball.

5,487,543

SHOT PEENED GOLF CLUB HEAD

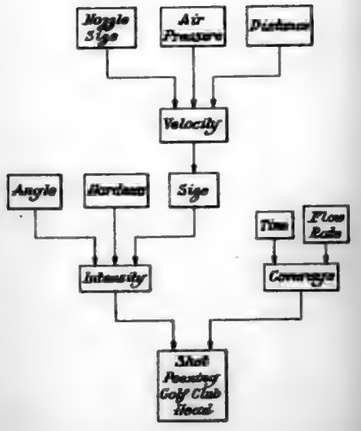
Charles R. Funk, 6202 N. Camino De Santa Valera, Tucson, Ariz. 85718

Filed Feb. 9, 1995, Ser. No. 386,263

Int. Cl.[6] A63B *53/04*

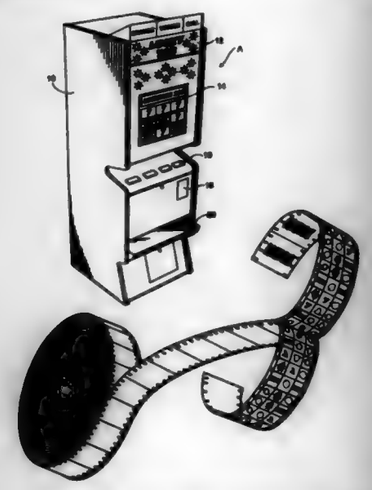
U.S. Cl. 273—78 **10 Claims**

10. A treated golf club made by a method which includes providing a golf club having a metal head with an exposed metal ball striking surface which is shot peened to improve feel with minimal vibrational feel in the hands of the user when the user strikes a golf ball with said ball striking surface, and with the shot



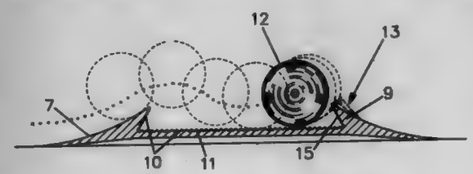
peening work hardening said exposed metal ball striking surface and creating a compressive stress in said ball striking surface.

5,487,544
ELECTRONIC GAMING APPARATUS AND METHOD
Ronald C. Clapper, Jr., 20753 Horace St., Chatsworth, Calif. 91311
Continuation of Ser. No. 879,747, May 6, 1992, Pat. No. 5,348,299. This application Sep. 14, 1994, Ser. No. 306,108
Int. Cl.[6] A63F 9/24
U.S. Cl. 273—138 A **22 Claims**



1. An improved pre-printed ticket containing strip for use in an electronic gaming apparatus of the type capable of dispensing a segment of a strip to be used as a ticket and which may win or score in a game depending on pre-printed indicia which may appear on the segment; said pre-printed ticket containing strip comprising a plurality of successive pre-printed strip segments capable of being severed from the strip to constitute tickets, each said strip segment further comprising:
a) a primary strip segment with a first face and a second face on the opposite side of the first face;
b) each of said plurality of strip segments constituting a separate ticket defining location on said strip with indicia on said first face in each of the separate locations and where the indicia of some locations will differ from the indicia of other locations, each of said strip segments arranged to be separated from said strip to provide a ticket which is dispensable from said gaming apparatus, certain of said tickets containing winning indicia and which tickets are randomly distributed throughout said ticket containing strip;
c) a code representative of the indicia associated with the separate strip segment on the strip and where information in the code is unintelligible to an individual by visual examination and only machine readable, such that the code can be read by the apparatus for further processing; and
d) a secondary strip disposed in juxtaposed relationship to the first face of the primary strip segment and capable of being separated from the primary strip segment, said indicia being hidden from view by said secondary strip and being visible when said secondary strip is removed and where removal of the secondary strip before dispensing of the ticket is evidence of tampering with the ticket.

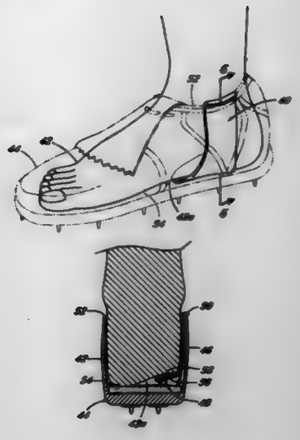
5,487,545
PORTABLE GOLF PUTTING CUP
Eric J. Schindler, 9086 Summerhill Point, Alpine, Calif. 91901
Filed Aug. 26, 1994, Ser. No. 296,681
Int. Cl.[6] A63B 69/36
U.S. Cl. 273—178 R **2 Claims**



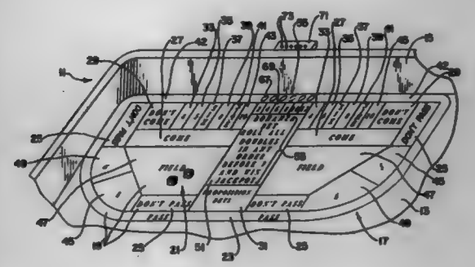
1. An indoor/outdoor golf putting cup comprising:
A circular base;
A central depression consisting of a bottom and a reclining inner wall wherein said reclining wall intersects said bottom at an acute angle; an upper surface which inclines from the outer edge of said base to the edge of said reclining inner wall of said central depression; wherein said upper surface and said reclining inner wall having a means for preventing a ball from jumping out of the cup comprising a flexible and shock absorbing material;
A reclining inner wall containing a plurality of ridges to grip the ball and slow it down;
said bottom of said center depression containing a plurality of ridges to grip the ball and slow the rotation of said ball.

5,487,546
GOLF TRAINING METHOD
John P. Yasuda, 18985 Vista Portola Rd., Trabuco Canyon, Calif. 92679
Filed Mar. 2, 1995, Ser. No. 399,168
Int. Cl.[6] A63B 69/36
U.S. Cl. 273—187.2 **5 Claims**

1. A method of aiding a golfer to properly transfer weight to an inside portion of a rear foot during a golf swing, comprising:
inserting a rear foot of a golfer into a shoe;
inserting a device having a generally flat body, with a length roughly equal to a distance between a top rim surrounding a main opening of a shoe and a portion of an instep of a foot of a wearer within said shoe, and a first flange extending generally horizontally inward from a lower portion of said body into said shoe such that said body extends generally vertically along a vertical wall of said shoe and said first flange extends generally horizontally above an insole of said shoe;
bringing said device into contact with said foot so that said flange exerts pressure on an underside of said instep of said foot.



5,487,547
CRAPS LAYOUT ARRANGEMENT HAVING JACKPOT AREA
Marcus V. Hobert, 3318 Kenwood Ave., Davenport, Iowa 52807
Filed Sep. 13, 1994, Ser. No. 305,178
Int. Cl.[6] A63F 9/04
U.S. Cl. 273—274 **29 Claims**



2. An amusement device comprising:
a pair of dice each having six faces bearing a visual representation of the numbers one through six, said dice being of a size for manually rolling to present one of eleven different numbers which define a plurality of point numbers, at least one natural number, and at least one craps number;
a game layout to provide a flat surface upon which said dice may be rolled and upon which bets may be laid by physical placement of wagers, said flat surface including indicia thereon representing a plurality of wager areas, said wager areas including:
(a) a pass line area for receiving a wager betting both
(i) that one or more rolls of dice will yield an established first point number without rolling the number "7"; and
(ii) that a natural number is rolled prior to establishing the first point number or prior to rolling a craps number;
(b) a don't pass area for receiving a wager betting both
(i) that one or more rolls of the dice will yield the number "7" prior to the rolling of an established first point number; and
(ii) that a craps number is rolled prior to establishing the first point number or prior to rolling a natural number; and
(c) a jackpot area for receiving a wager that a set of a plurality of dice outcomes are rolled, said set having a remote probability of occurrence.

5,487,548
QUESTION AND ANSWER BOARD GAME REPRESENTING SNOOKER
Thomas M. Daly, and Rita Daly, both of 87 Comeragh Park, Dillons Cross, Cork City, Ireland
Continuation of Ser. No. 82,518, Jun. 25, 1993, abandoned, which is a continuation of Ser. No. 870,674, Apr. 17, 1992, abandoned. This application Oct. 19, 1994, Ser. No. 326,810
Int. Cl.[6] A63F 9/18
U.S. Cl. 273—431 **17 Claims**



1. A method of playing a question and answer board game comprising the following steps:
(a) providing game board means simulating a SNOOKER table;
(b) providing twenty-one game board pieces positionable on said game board means, said game pieces having the same colors respectively as the balls used in SNOOKER and including fifteen red game board pieces, one yellow game board piece, one green game board piece, one brown game board piece, one blue game board piece, one pink game board piece, and one black game board piece;
(c) assigning ascending point values to said game pieces as follows:
red=1
yellow=2
green=3
brown=4
blue=5
pink=6
black=7
(d) providing a series of seven questions ranging in difficulty from easiest to most difficult, the seven questions being labeled in order of ascending difficulty as red, yellow, green, brown, blue, pink, and black;
(e) permitting a player to attempt to answer the easiest question in said series, said easiest question being a red question;
(f) permitting said player to attempt to answer a second question in said series of questions if said player answers said easiest question correctly, said second question being more difficult than said easiest question, said second question being selected by chance from said series of questions, wherein said second question must be a color question selected from the group consisting of yellow, green, brown, blue, pink, and black;
(g) assigning point values to said questions in said series, said point values ascending in accordance with difficulty and being equal to said point values assigned to said colors in step (c);
(h) deriving said player's score by summing together the point values of the questions in said series correctly answered by said player;
(i) associating the game board pieces and their respective colors with the point values assigned to said series of questions;
(j) removing the game pieces from said board when a corresponding question is correctly answered by an individual player;
(k) permitting said player to attempt to answer a third question in said series of questions if said player answers said second

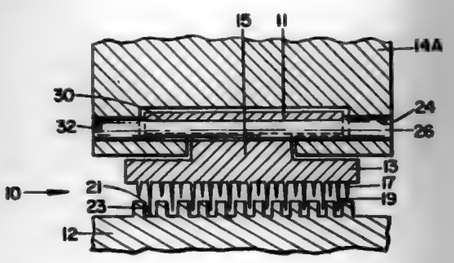
question correctly, said second question being selected by chance from said series of questions, wherein said second question must be a color question selected from the group consisting of yellow, green, brown, blue, pink, and black.

5,487,549

TURBINE INTERFITTING PACKING WITH CAM ADJUSTMENT

William S. Dalton; Patrick S. Dalton, both of Chesterfield, and Richard S. Clark, Feeding Hills, all of Mass., assignors to Demag Delaval Turbomachinery Corp. TurboCare Division, Chicopee, Mass.

Filed Oct. 24, 1994, Ser. No. 328,016
Int. Cl.[6] F16J *15/447*
U.S. Cl. 277—54 **1 Claim**



1. In an elastic fluid turbine employing packing ring segments mounted in a ring-like stationary holder or diaphragm having upper and lower half-parts which meet at a horizontal joint and circumscribe a rotor to minimize leakage between the components, the improvements which comprise means for interfitting the butt ends of certain of the packing ring segments at the diaphragm horizontal joint comprising slots in the butt ends of said certain of the packing ring segments located in the diaphragm upper half-part and protrusions on the butt ends of said certain of the packing ring segments located in the diaphragm lower half-part, the protrusions being engageable with the slots in interfitting manner at the diaphragm horizontal joint, and cam means on the diaphragm adjacent the horizontal joint and engageable with said certain of the packing ring segments for accurately positioning the packing ring segments relative to the horizontal joint, said cam means comprising cam pins mounted for rotation in pin holes in the diaphragm in the upper half part adjacent each end thereof and located upwardly of the horizontal joint, the cam pins extending through a cam slot in said certain of the packing ring segments, each cam pin having a cam surface engageable with the cam slot in the packing ring segment.

5,487,550

SECONDARY GAS/LIQUID MECHANICAL SEAL ASSEMBLY

Richard F. Salant; Itzhak Green, both of Dunwoody, Ga.; Larry A. Hufford, Vista, and Oley Giles, Glendale, both of Calif., assignors to BW/IP International, Inc., Long Beach, Calif.

Continuation of Ser. No. 792,517, Nov. 12, 1991, abandoned. This application May 26, 1993, Ser. No. 67,487
Int. Cl.[6] F16J *15/38*
U.S. Cl. 277—65 **15 Claims**

1. A mechanical seal assembly for preventing the flow of liquid along a shaft that is rotatable within a housing, the mechanical seal assembly comprising:

a primary mechanical seal assembly mounted around the shaft for preventing the flow of liquid along the shaft such that, in normal operation, a liquid medium exists on an upstream side of the primary mechanical seal assembly and a gaseous medium exists on a downstream side of the primary mechanical seal assembly; and

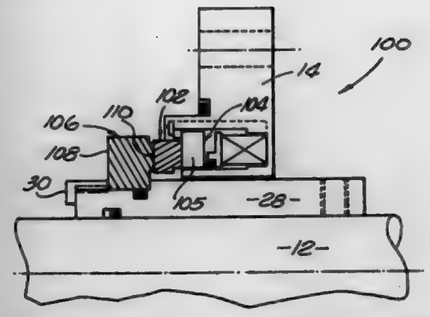
a secondary mechanical seal assembly mounted around the shaft on the downstream side of the primary mechanical seal assembly such that, in normal operation, the gaseous medium exists on an upstream side of the secondary mechanical seal assembly and, upon failure of the primary mechanical seal assembly, the liquid medium exists on the upstream side of the secondary mechanical seal assembly, the secondary mechanical seal assembly comprising

a stationary seal face element having a front surface and a back surface, and rotationally fixed relative to the housing, and

a rotating seal face element having a front surface and a back surface, and fixed relative to the shaft, the front surfaces of the seal face elements being in opposed relation to one another,

wherein the back surface of the stationary seal face element includes a slotted configuration that, during normal operation, generates a wave on the front surface of the stationary seal face element sufficient to generate an opening force to drive the seal face elements apart and provide a seal against the gaseous medium, and

wherein, upon failure of the primary mechanical seal assembly, a resulting hydrodynamic loading of the liquid medium on the seal face elements transitions the secondary mechanical seal assembly to provide a seal against the liquid medium.

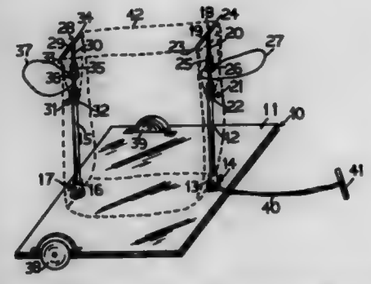


5,487,551

FLEXIBLE BAG MOUNTING AND CARRYING DEVICE

Samuel Kennedy, 540 Timothy Street, Apt. 302, New Market, Ontario, Canada

Filed Nov. 9, 1994, Ser. No. 336,398
Int. Cl.[6] B65B *67/12;* **B62B** *1/22*
U.S. Cl. 280—47.19 **9 Claims**



1. A flexible bag mounting and carrying device comprising,

a base board member,

two tubular post members mounted in an upright position on said base board member, said tubular post members being located directly opposite to each other,

a first T-shaped mounting bracket member mounted at the top of one tubular post member, said first T-shaped mounting bracket member having a horizontal bar member and an elongated vertical leg member, said vertical leg member being slidably engaged with the top portion of said one tubular post member, said horizontal bar member having a vertical slot formed at each end therein,

a second T-shaped mounting bracket member mounted at the top of the other tubular post member, said second T-shaped mounting bracket member having a horizontal bar member and an elongated vertical leg member, said vertical leg member of said second T-shaped mounting bracket member being slidably engaged with the top portion of said other tubular post member, said horizontal bar member of said second T-shaped mounting bracket member having a vertical slot formed at each end therein,

a first slider member slidably mounted on said elongated vertical leg member of said first T-shaped mounting bracket member, said first slider member being normally maintained in a selected position on said vertical leg member of said first T-shaped mounting bracket member by a set screw means provided on said first slider member,

a second slider member slidably mounted on said elongated vertical leg member of said second T-shaped mounting bracket member, said second slider member being normally maintained in a selected position on said vertical leg member of said second T-shaped mounting bracket member by a set screw means provided on said second slider member,

a first loop-shaped cable means mounted on said first slider member, said first loop-shaped cable means being operative to engage in a looping manner with said horizontal bar member of said first T-shaped mounting bracket member and said slots formed therein,

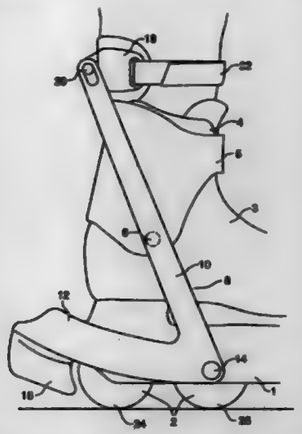
a second loop-shaped cable means mounted on said second slider member, said second loop-shaped cable means being operative to engage in a looping manner with said horizontal bar member of said second T-shaped mounting bracket member and said slots formed therein.

5,487,552

BRAKING MECHANISM FOR IN-LINE SKATES

Bernard Daoust, Montreal, Canada, assignor to Canstar Sports Group Inc., Ville Mont Royal, Canada

Filed Jul. 1, 1994, Ser. No. 266,354
Int. Cl.[6] A63C *17/14*
U.S. Cl. 280—11.2 **19 Claims**



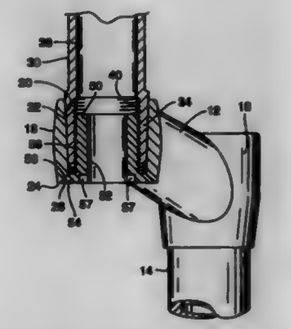
1. A braking mechanism for an in-line skate, said skate having a boot and a wheel-carrying chassis secured beneath said boot, said braking mechanism comprising two generally L-shaped levers, configured for positioning one on each side of the skate, each lever having two arms, comprising an upwardly projecting arm and a rearwardly projecting arm, the area of each said lever where said arms of said lever intersect being configured for pivotal connection to said chassis at one of corresponding pivotal connections on each side of the chassis, such that when so connected at one of said pivotal connections, each said upwardly projecting arm extends upwardly from said pivotal connection towards the rear of the calf of a skater wearing said skate, to an upper distal end, and such that each said rearwardly projecting arm extends rearwardly from said wheel chassis to a rearward distal end, said rearward distal ends being joined and having a brake pad secured beneath them, said upper distal ends having a braking pressure receiving means mounted on or extending laterally between them, configured for positioning behind the skater's calf, whereby rearward rotation of the skater's calf relative to the boot, when said braking mechanism is installed, produces rearward movement of said upper distal ends, thereby moving said brake pad downwardly by virtue of rotation of said levers about said pivotal connections, to engage the ground.

5,487,553

STEERING FORK FOR BICYCLES

James D. Pfleggi, Beaverton, Oreg., assignor to Halsan Designs, Inc., Wilsonville, Oreg.

Filed Sep. 8, 1994, Ser. No. 303,175
Int. Cl.[6] B62K *21/04*
U.S. Cl. 280—280 **4 Claims**



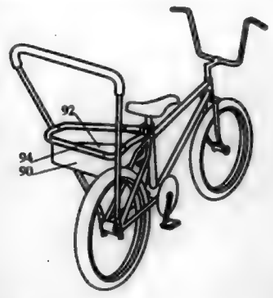
1. A steering fork for a bicycle comprising:

struts for connection to an axle of a bicycle front wheel at each side of the wheel, and a crown interconnecting the struts, an opening through the crown defining an interior wall surface having a frustum-like taper with its large end at the top of the crown, the bottom of the opening defining a peripheral shoulder;

multiple replaceable steerer tubes having application to different bicycle designs with base portions having an exterior outer wall surface with a frustum-like taper that coincides with the interior wall surface of the opening in the crown, said base portions of said steerer tubes having an open bottom end exposing a straight inner wall portion provided with screw threads; and

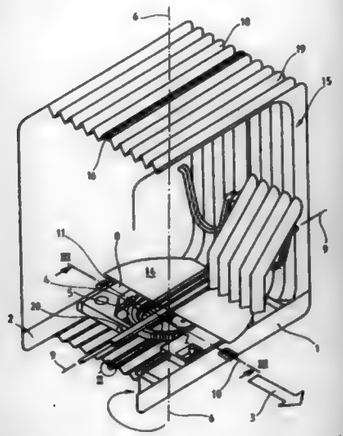
a bolt having a head portion and a shank portion, the head portion sized to fit against the shoulder defined in the bottom of the opening in the crown and the shank portion provided with screw threads that mate with the screw threads of the inner wall portion of the steerer tube whereby, the base portion of the steerer tube is inserted in the opening through the crown, the bolt is engaged with the threaded opening in the steerer tube and the head of the bolt is seated against the shoulder of the crown as the bolt is screwed into the steerer tube to effectively press fit the tapered exterior wall surface of the steerer tube against the tapered interior wall surface surrounding the opening in the crown.

5,487,554
BICYCLE TRAINING APPARATUS
William A. May, 3701 Rice Blvd., Houston, Tex. 77005
Filed Aug. 5, 1994, Ser. No. 286,655
Int. Cl.[6] B62H 1/10; B62J 9/00
U.S. Cl. 280—293 11 Claims



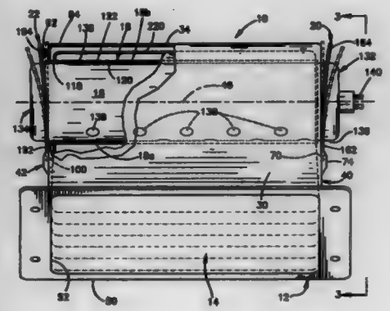
1. A training apparatus for installation on the frame and adjacent the rear wheel of a bicycle comprising:
a handle member having a base section and a pair of legs extending distally from the base section, the distal ends of the legs being adapted for connection to the bicycle frame;
a substantially U-shaped bracing member having a transverse section and a pair of arms extending distally from the transverse section, the arms having distal ends adapted for connection to the bicycle frame and proximate portions attached to the legs of the handle member, whereby upon connection of the handle member to the bicycle frame the base section is disposed above the bicycle frame and rearward of the bicycle's rear wheel.

5,487,555
HINGE CONNECTION BETWEEN TWO VEHICLES CONNECTED TO EACH OTHER IN AN ARTICULATED MANNER
Robert Koch, Bad Sooden-Allendorf; Knud Mosaner, Kassel, and Roland Schleicher, Fuldatal, all of, Germany, assignors to Hubner Gummi - und Kunstoff GmbH, Germany
Filed May 4, 1993, Ser. No. 57,714
Claims priority, application Germany, May 7, 1992, 42 15 065.5; Jun. 25, 1992, 42 20 777.0; Aug. 17, 1992, 42 27 126.6
Int. Cl.[6] B60D 1/50
U.S. Cl. 280—403 11 Claims



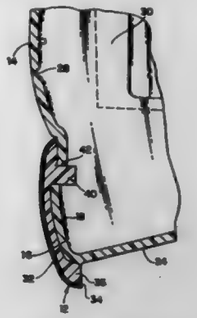
1. A hinge connection for connecting first and second articulated vehicles comprising
fifth wheel ring means having an inner ring member and an outer ring member rotationally mounted thereon for relative pivotal movement about a vertical buckling axis,
a base rigidly connected to one of said inner ring member and outer ring member,
rigid connection means fixedly connected to the other of said inner ring member and outer ring member for rigidly connecting said other ring member to one of said first and second articulated vehicles, and
elastomeric connection means mounted on said base outside of the circumference of said outer ring member for flexibly connecting said base to the other of said first and second articulated vehicles, said elastomeric connection means comprising a first plurality of elastomeric members whereby the pitch axis of said vehicles is displaced off center to a position between the outer circumference of said outer ring member and said other vehicle, at least one of said elastomeric members having a rubber component disposed in between two metal components, said metal components being spaced in the longitudinal direction.

5,487,556
AIR BAG MODULE
Jeffrey A. Jenkins, Shelby Township, and John W. Wiers, Romeo, both of Mich., assignors to TRWVehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Sep. 19, 1994, Ser. No. 308,364
Int. Cl.[6] B60R 21/16
U.S. Cl. 280—728.2 18 Claims



1. A vehicle safety apparatus comprising:
a housing;
an inflatable vehicle occupant restraint connected with said housing;
an inflation fluid source in said housing for supplying inflation fluid to said inflatable restraint, said inflation fluid source having a first end portion projecting from said housing; and
means for connecting said inflation fluid source with said housing, said connecting means comprising a spring member connected with said housing and having an annular configuration defining a central opening in said spring member, said first end portion of said inflation fluid source extending through said central opening in said spring member, said spring member including a portion having a first condition in which said first end portion of said inflation fluid source is movable through said central opening of said spring member and a second condition in which said first end portion of said inflation fluid source is not movable through said central opening of said spring member;
said spring member having a substantially planar configuration when said portion of said spring member is in the first condition and having an arcuate non-planar configuration when said portion of said spring member is in the second condition.

5,487,557
AIR BAG COVER HAVING AN APPLIQUE FASTENED THERETO AND METHOD OF MANUFACTURING SAME
Thomas L. Eckhout, Waterford, Mich., assignor to Larry J. Winget, Leonard, Mich.
Filed Oct. 20, 1993, Ser. No. 140,594
Int. Cl.[6] B60R 21/20
U.S. Cl. 280—728.3 17 Claims

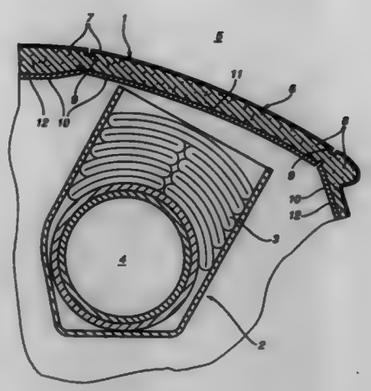


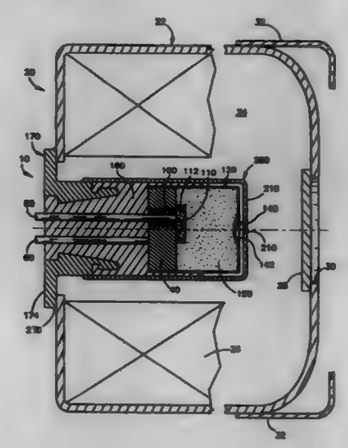
1. An automotive air bag cover comprising:
a front cover adapted to enclose an uninflated automotive air bag, the front cover having an inner surface and an outer surface, said outer surface further having an arcuate portion;
a seam formed in a surface of the cover for permitting the air bag to deploy; and
a decorative applique assembly permanently fastened over its area of exposure to a selected portion of said outer surface of said front cover in a non-overlapping fashion with said seam such that said decorative applique assembly does not detach from the front cover or interfere with said air bag upon inflation and exit of said air bag, said decorative applique assembly having a plastic liner and a decorative film fastened to a first surface of the plastic liner, the plastic liner and decorative film being shaped correspondingly to said arcuate portion of said outer surface, and said decorative applique assembly further having a plastic base attached to a second surface of said plastic liner to form said decorative applique assembly.

5,487,558
INSTRUMENT PANEL IN A MOTOR VEHICLE
Johannes Ball, Jockgrim; Wolfgang Henseler, Herrenberg; Uwe Gerstenberg, Kandel, and Thomas Fischer, Calw-Stammheim, all of, Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany
Filed Sep. 29, 1994, Ser. No. 314,648
Claims priority, application Germany, Sep. 29, 1993, 43 33 135.1; May 27, 1994, 44 18 582.0
Int. Cl.[6] B60R 21/16
U.S. Cl. 280—728.3 6 Claims

1. Instrument panel arrangement in a motor vehicle comprising:
an interior rigid reinforcement panel,
a foamed-plastic layer located above the reinforcement panel,
an outer skin which covers said foamed-plastic layer,
a cover section integrated into the instrument panel for covering an airbag unit, said cover section exhibiting a similar reinforcement panel, foamed-plastic layer, and outer skin as the adjacent instrument panel arrangement,
wherein the cover section is configured to move away and release an opening through which an airbag can unfold out of a receiving container of the airbag unit behind the instrument panel, and
wherein the similar reinforcement panel of the cover section is an adjoining part of said reinforcement panel separated from said reinforcement panel via cuts formed at an angle other than perpendicular to a plane of the reinforcement panel.

5,487,559
AIR BAG INFLATOR WITH PRESSURE SENSOR
Paul S. Headley, Mesa, Ariz., assignor to TRW Inc., Lyndhurst, Ohio
Filed Sep. 13, 1994, Ser. No. 305,064
Int. Cl.[6] B60R 21/26
U.S. Cl. 280—735 23 Claims





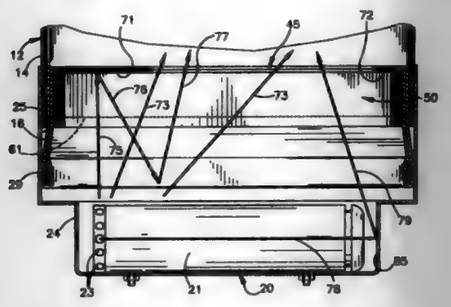
1. An apparatus for inflating an inflatable vehicle occupant restraint, comprising:
a container defining a chamber;
inflation fluid in the chamber at a pressure at least as great as a predetermined pressure; and
an electrically actuatable initiator connected with said container for, when actuated, causing said container to open to enable flow of inflation fluid into said inflatable vehicle occupant restraint to inflate said inflatable vehicle occupant restraint;
said initiator including pressure sensing means for sensing a decrease in the pressure in the chamber to a pressure below the predetermined pressure;
said initiator comprising an electrically conductive header supporting a pyrotechnic charge in said initiator, an inner cover electrically connected with said header and enclosing said pyrotechnic charge, and an outer cover disposed outward of and covering said inner cover, said pressure sensing means comprising said inner and outer covers.

5,487,560

APPARATUS FOR CONTROLLING FLOW OF INFLATION FLUID INTO AN AIR BAG

Al S. Emambakhsh, Flat Rock, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Aug. 19, 1994, Ser. No. 293,675
Int. Cl.[6] B60R 21/26
U.S. Cl. 280—740 12 Claims



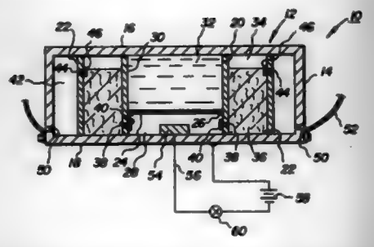
1. A vehicle occupant restraint system comprising:
an inflatable air bag;
a source of inflation fluid for inflating said air bag, said source of inflation fluid including (i) an inflator body having opposite ends and (ii) a nozzle opening disposed at one end of said inflator body;
deflector panel means attached to said air bag for (i) defining a single deflector opening through which inflation fluid is directed to flow into a predetermined region of said air bag to inflate said air bag along a predetermined trajectory and (ii) deflecting a portion of the inflation fluid flow from said nozzle opening disposed at said one end of said inflator body to flow through said deflector opening;
said deflector panel means comprising a first deflecting surface located on one side of said deflector opening and a second deflecting surface located on an opposite side of said deflector opening, said second deflecting surface having an area which is less than the area of said first deflecting surface.

5,487,561

SAFETY BAG INFLATION APPARATUS USING A LIQUID PROPELLANT GAS GENERATOR

John Mandzy, and David S. Degler, both of Pittsfield, Mass., assignors to Martin Marietta Corporation, King of Prussia, Pa.

Filed Dec. 9, 1994, Ser. No. 352,949
Int. Cl.[6] B60R 21/28
U.S. Cl. 280—741 29 Claims



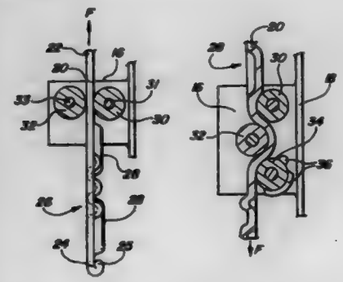
1. Occupant restraint apparatus for a motor vehicle, comprising:
an inflatable safety bag;
a housing having at least one vent in inflating fluid flow communication with the safety bag;
a reservoir of liquid propellant positioned in the housing;
a buffer zone positioned in the housing;
a first frangible seal separating the liquid propellant reservoir from the buffer zone;
a second frangible seal blocking fluid flow communication between the buffer zone and the housing vent; and
an inflation initiator, operating in response to a high impact vehicular accident, for pressurizing the buffer zone to initiate rupture of the first and second frangible seals and to ignite the liquid propellant in the buffer zone, ignition of the liquid propellant generating by exothermic reaction, a gas flowing from the buffer zone through the housing vent to inflate the safety bag.

5,487,562

ENERGY ABSORBING APPARATUS FOR A MOTOR VEHICLE

Gregory T. Hedderly, Livonia; Lisa A. Tyus, Belleville, and Leonard M. Brown, Farmington Hills, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1994, Ser. No. 364,908
Int. Cl.[6] B62D 1/11; B60R 22/28
U.S. Cl. 280—777 17 Claims



1. An energy absorbing apparatus for use in a motor vehicle, said energy absorbing apparatus comprising:
an anchor securely attached to said motor vehicle;
first and second rollers rotatably mounted to said anchor spaced apart from one another; and
a deformable strip threaded through said first and second rollers, said deformable strip comprising:
a first end adapted to receive an impact force from within said motor vehicle;
a second end opposite said first end;
and
a formed portion extending from said rollers to said second end, said formed portion includes prefabricated projections operative to be drawn through said first and second rollers when said impact force exceeds a predetermined minimum, said prefabricated projections thereby being plastically deformed in a predetermined order to provide variable withdrawal resistance of said formed portion, thereby controllably dissipating and absorbing energy from said impact force.

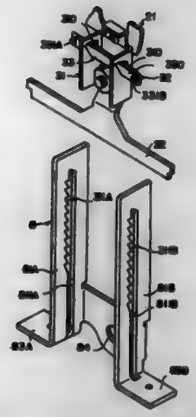
5,487,563

PRETENSIONER FOR VEHICLE SEAT BELT SYSTEMS

Koji Hiramatso, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan

Continuation of Ser. No. 40,520, Mar. 31, 1993, abandoned.
This application Jan. 9, 1995, Ser. No. 370,475
Claims priority, application Japan, Apr. 6, 1992, 4-112366
Int. Cl.[6] B60R 22/46
U.S. Cl. 280—806 4 Claims

1. A pretensioner for a vehicle seat belt system having belt-pulling means connected to a belt system component, driving means for moving the belt-pulling means along a predetermined path in a direction to apply pretension to the belt, and return-



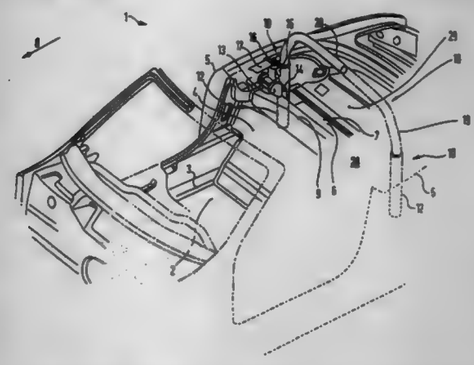
prevention means for preventing the belt-pulling means from moving in a direction such as to release the belt pretension and including a pawl coupled to the belt-pulling means, a support member having a set of ratchet teeth engageable by a tip of the pawl and a spring coupled to the pawl for biasing the pawl in a direction to engage the pawl tip with a tooth of the set of ratchet teeth, characterized in that the spring is a leaf spring that is U-shaped and includes a pair of leg portions and a base portion forming a loop connecting the leg portions and is received on the pawl with the base portion engaging the lower edge of the pawl and the leg portions engaging opposite surfaces of the pawl and an elastically deformable tongue portion extending from one of said portions of the leaf spring and engageable with one of a series of ratchet teeth on the support member upon movement of the belt-pulling means and the pawl in the release direction, the spring tongue portion being arranged relative to the pawl and to the set of ratchet teeth such that when the pawl and leaf spring are displaced in the release direction, the tongue portion engages a ratchet tooth and is deformed and bent back and applies an increased force to the pawl urging the pawl into engagement with a tooth of the set of ratchet teeth.

5,487,564

FASTENING DEVICE FOR A DEFLECTING FITTING

Peter Fueller; Juergen Kuebler; Herbert Guett, and Franz Amaseder, all of Munich, Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Germany

Filed Jul. 22, 1994, Ser. No. 278,908
Claims priority, application Germany, Jul. 23, 1993, 43 24 715.7
Int. Cl.[6] B60R 22/18;22/12;21/13
U.S. Cl. 280—808 17 Claims



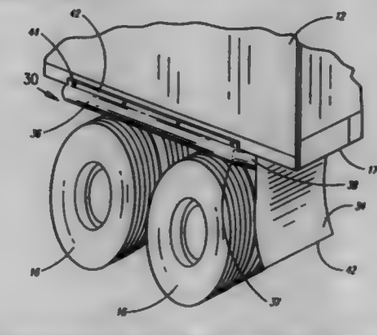
1. A fastening device for a guide fitting of a safety belt arrangement in a vehicle with a vehicle body which is open on top, the fastening device being arranged behind a seat in a rear portion of the vehicle body and extending above an approximately horizontally aligned partition of the vehicle body,
wherein the fastening device is formed by a hollow section which passes through an opening of the partition and continues below the partition, said hollow section being connected at a first connection location in an area of the opening of the partition, and at a second connection location at a support extending below the partition.

5,487,565

VEHICLE WATER SPRAY DIVERTER

Bradley J. Thompson, 9416 S. 69th East Ave., Skiatook, Okla. 74133

Filed Jan. 20, 1995, Ser. No. 375,955
Int. Cl.[6] B62B 9/16; B62D 25/16
U.S. Cl. 280—848 10 Claims



1. A device to block and divert lateral water spray generated from a vehicle, said vehicle including a plurality of tires and a body having a pair of lateral sides on opposite sides of a center, an underside between said lateral sides, and a rear, which device comprises:
an elongated, longitudinally extending first gutter portion attached to said vehicle to trap and direct said water spray toward said rear; and
a second gutter portion extending inwardly and downwardly and in fluid communication with said first gutter portion to divert said water spray from said first gutter portion away from said lateral sides toward said center and away from said underside down toward the ground.

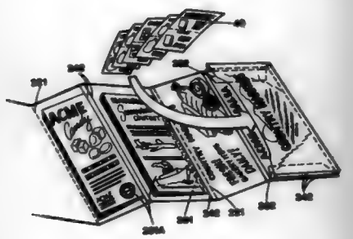
5,487,566

PROMOTIONAL ADVERTISING BROCHURE INCLUDING REUSABLE ENVELOPE DEVICE

J. Richard Hedge, Jr., 3939 W. Windmills Blvd. #2035, Chandler, Ariz. 85226

Division of Ser. No. 28,521, Mar. 9, 1993, Pat. No. 5,333,909, which is a continuation of Ser. No. 746,072, Aug. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 488,470, Feb. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 376,639, Jul. 6, 1989, abandoned. This application Jul. 29, 1994, Ser. No. 283,025
The portion of the term of this patent subsequent to Aug. 2, 2011, has been disclaimed.
Int. Cl.[6] B42D 15/00
U.S. Cl. 283—56 5 Claims

1. A reusable aftermarket envelope made of material adapted to be imprinted with advertising and structural copy for incorporating promotional events as a coordinated residual instrument organizationally enhanced for spontaneous identification of, and access to, promotions prior to actual usage, comprising:
a sheet of material having a front side and a reverse side with said sheet having also a plurality of folding means for establishing adjacent panel bodies being similar in size;





said reusable aftermarket envelope being constructed by said folding means of said sheet with the envelope being further comprised of at least two panel bodies of said sheet being fixedly adhered to one another by a securing means;

and, a landscape pictorial ad field located on a front side portion of the aftermarket envelope wherein the ad field aligns parallel to a horizontal axis of the envelope's said front side portion for providing a functional at a glance view as to the envelope's most likely accumulating contents.

5,487,567

PRINTING METHOD AND COPY-EVIDENT SECURE DOCUMENT

John R. Volpe, Stormville, N.Y., assignor to Francois-Charles Oberthur Group, Paris, France

Filed Apr. 24, 1992, Ser. No. 874,188
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—72 **51 Claims**



1. A copy evident document which when copied results in a copy with a readily visually perceptible warning indicia that the copy is not an original document comprised of:

a document substrate having a surface;

a composite design on said surface comprised of an image warning design bordered by a background design;

said image warning design and said background design are each comprised of generally parallel printed lines of approximately equal width and depth on said surface with the lines of said image warning design being offset at an angle to the lines of said background design,

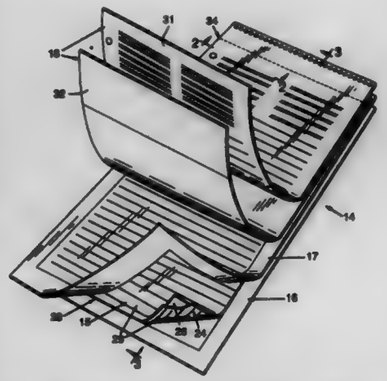
said lines of said designs being sufficiently fine in pitch and width so as to make the image warning design difficult to distinguish from the background design on casual inspection of the document with the naked eye while at the same time exploiting a photocopier's or facsimile machine's inability to accurately resolve the composite design, thereby making the image warning design appear readily apparent upon casual inspection of any copy of the document.

5,487,568

ADHESIVE FORM ASSEMBLY

Richard E. Ipsen, 12365 SW. Katherine St., Tigard, Oreg. 97223

Continuation of Ser. No. 967,287, Oct. 26, 1992. This application Apr. 15, 1994, Ser. No. 228,088
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—81 **26 Claims**



1. A form assembly for attaching a form to a surface, comprising:

a two-sided form having an outer periphery;

an attachment strip surrounding the outer periphery of the two-sided form and having an inner and outer side, at least one side of the two-sided form removably attached to the attachment strip by a line of weakness;

an adhesive layer on the inner side of the attachment strip; and

a liner strip substantially coextensive with at least part of the attachment strip,

the liner strip being removable from the attachment strip to expose the adhesive layer for adhering the attachment strip and thereby attaching the two-sided form to the surface.

5,487,569

CONNECTOR FOR THREE OR MORE CAPILLARY TUBES

Paul H. Silvis, Boalsburg, and Bradley R. Rightnour, Mingeville, both of Pa., assignors to Restek Corporation, Bellefonte, Pa.

Filed Oct. 12, 1994, Ser. No. 321,973
Int. Cl.[6] F16L *35/00*
U.S. Cl. 285—24 **12 Claims**

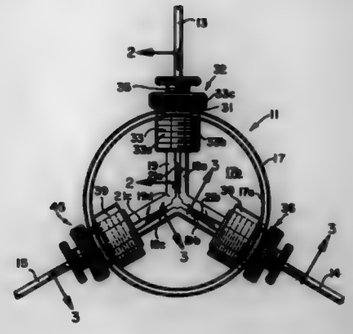
1. An easily-assembled, heat resistant connector (**11**) for releasably joining end portions of three capillary tubes (**13, 14, 15**) for use in chromatography without interrupting fluid flow or interfering with chromatographic results, comprising

a main body (**17**) having a cylindrical wall (**17*a***) and an interior space (**17*b***) inside the wall (**17*a***),

a glass insert (**19**) having first (**19*a***), second (**19*b***) and third (**19*c***) hollow legs which are connected together at a central portion (**19*d***) and are spread apart,

each leg (**19*a*, 19*b*, 19*c***) extending outwardly from the central portion (**19*d***) towards an open end portion,

each leg (**19*a*, 19*b*, 19*c***) having an inboard bore (**21*a*, 21*b*, 21*c***) with a taper that receives an end portion of one of the capillary tubes (**13, 14, 15**),



said taper being wider near the open end portion of the leg (**19*a*, 19*b*, 19*c***) and narrower near the central portion (**19*d***),

each leg (**19*a*, 19*b*, 19*c***) having an outboard bore (**25**) which is larger in diameter than the diameter of the inboard bore (**21*a*, 21*b*, 21*c***),

each leg outboard bore (**25**) having an open outer end and an inboard end with a stop shoulder (**27**),

each leg outboard bore (**25**) having an inner surface (**25*a***),

a ferrule (**29**) seated on the stop shoulder (**27**) of each leg (**19*a*, 19*b*, 19*c***)

each ferrule (**29**) having a bore for receiving the ead portion of one of the capillary tubes (**13, 14, 15**),

each ferrule (**29**) being in the shape of a truncated cone with an inboard bottom base (**29*b***) that is wider than its outboard top base (**29*c***), and an inboard bottom portion (**29*d***) with a cylindrical side surface,

a number of openings in the main body,

said openings being spaced apart around the wall of the main body,

screw connector assembly means mounted on the main body in said openings and connected to the glass insert legs for holding the glass insert in place, with

a first screw connector assembly (**32**) for controlling sealing pressure including

a first screw support (**33**) having a hollow shaft (**33*a***) with outer threads (**33*b***),

a knurled knob (**33*c***) at the outboard end of the shaft (**33*a***) for easily rotating the first screw support (**33**),

an inboard bore (**33*d***) formed in the first screw support (**33**),

said screw support inboard bore (**33*d***) fitting around the open end of the first leg (**19*a***) of the glass insert (**19**),

an outboard bore (**33*e***) of the first screw support (**33**),

said first screw support outboard bore (**33*e***) having inner threads (**33*f***),

a ferrule seated in the cup at the open end portion of the legs,

and an adjusting screw (**35**) having outer threads (**35*b***) for screwing into the inner threads (**33*f***) of the outboard bore (**33*e***) of the first screw support (**33**) and squeezing the ferrule to form seals between the ferrule and the capillary tube and between the ferrule and the legs of the glass insert.

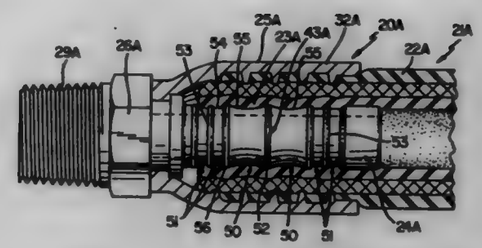
5,487,570

HOSE ASSEMBLY, HOSE COUPLING AND A PART THEREFOR AND METHODS OF MAKING THE SAME

Samuel L. Wilson, Greenfield, Mo., assignor to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 180,597, Jan. 13, 1994, Pat. No. 5,382,059. This application Nov. 10, 1994, Ser. No. 337,596
Int. Cl.[6] F16L *33/207*
U.S. Cl. 285—256 **14 Claims**

1. In a hose assembly comprising a hose coupling having an annular recess, and a hose having an end thereof clamped in said annular recess of said coupling, said coupling having a longitudinal axis and comprising a tubular insert portion inserted into said one end of said hose and having an external peripheral surface means that is generally parallel to said longitudinal axis, and a tubular ferrule portion disposed in generally concentric and spaced relation about said insert portion to define said annular recess therebetween and having been radially inwardly deformed toward said longitudinal axis to clamp said end of said hose between said ferrule portion and said insert portion after said end of said hose has been received in said annular recess, said external peripheral surface means having a plurality of spaced apart annular ridge means and having a plurality of spaced apart annular groove means therein that are separated from each other by said annular ridge means so that said insert portion has medial groove means intermediate opposite end groove means thereof, the improvement wherein said end groove means are narrower than said medial groove means, said medial groove means comprising a plurality of medial grooves.

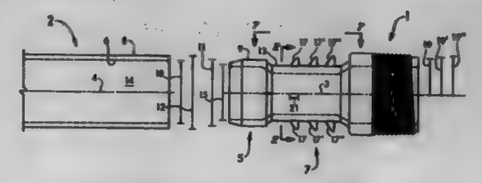


5,487,571

PIPE FITTING

Duane D. Robertson, 122 Loveland Way, Golden, Colo. 80401

Filed Aug. 29, 1994, Ser. No. 298,029
Int. Cl.[6] F16L *33/20*
U.S. Cl. 285—259 **42 Claims**



1. A pipe fitting and flexible pipe combination:

said flexible pipe being substantially cylindrical about a first axis and having inner and outer surfaces with respective inner and outer diameters and further having at least one open end and

said pipe fitting extending along a second axis and having a pipe sealing portion and a pipe gripping portion, said sealing portion having a substantially cylindrical section with an outer, substantially smooth, cylindrical surface extending about and along said second axis, said outer cylindrical surface having a diameter at least as large as the inner diameter of said flexible pipe, said gripping portion being spaced along said second axis from said sealing portion and having a substantially cylindrical section with an outer, substantially cylindrical surface extending about and along said second axis, said outer cylindrical surface of said gripping portion having a diameter less than the diameter of the outer cylindrical surface of said sealing portion and less than the inner diameter of said flexible pipe, said gripping portion further including a first pair of spikes, said spikes being located substantially 180 degrees apart from each other about said second axis and extending outwardly from the cylindrical surface of said gripping portion, each of said spikes extending

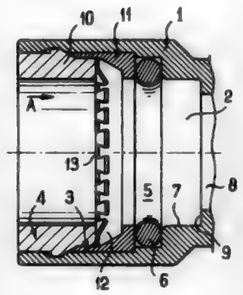
outwardly of said second axis for a distance greater than said cylindrical surface of said sealing portion extends outwardly of said second axis and greater than half the inner diameter of said flexible pipe, said spikes being located along said second axis substantially at a common location relative to said second axis, said cylindrical surface of said gripping portion being substantially smooth and uninterrupted about said second axis between said spikes, said cylindrical sections of said sealing and gripping portions having respective inner, substantially cylindrical surfaces extending about and along said second axis, said inner cylindrical surface of the cylindrical section of said sealing portion having a diameter greater than the diameter of the inner cylindrical surface of the cylindrical section of the gripping portion.

5,487,572

QUICK-CONNECTION COUPLING

Yves Combot-Courrau, Thorigne Fouillard; Benoît Le Saint, Rennes; Jean-Noël Musellec, Rennes, and Philippe Le Quere, Rennes, all of, France, assignors to Legris S.A., Rennes, France

Filed Mar. 18, 1994, Ser. No. 210,388
Claims priority, application France, Mar. 19, 1993, 93 03198
Int. Cl.[6] F16L *37/084*
U.S. Cl. 285—308 **9 Claims**



1. A coupling device for a tube, the device comprising a body provided with a bore for receiving the end of said tube, and means for retaining the tube in the bore, which means are constituted by an elastically deformable washer that is substantially frustoconical in shape, whose inside circumference is of a diameter smaller than the outside diameter of the tube, and which is subdivided into a plurality of teeth, the outside portion of the washer being disposed in a groove formed in the bore, wherein each tooth possesses a short root portion which, at rest, extends in a radial plane, and an active portion that is inclined relative to the radial plane of the root, and wherein each tooth is an undeformable body connected to the teeth adjacent thereto via elastically deformable peripheral link portions such that deformation of the washer as a whole gives rise to displacement of the teeth without deformation thereof.

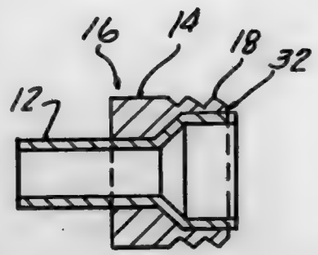
5,487,573

UNITARY ASSEMBLY OF TUBING AND A PRESSED ON, INTERFERENCE FIT, TERMINATING FITTING

John G. Panek, Churchville, and Richard L. Gottorff, Rochester, both of N.Y., assignors to ITT Corporation, New York, N.Y.

Filed Nov. 19, 1993, Ser. No. 155,460
Int. Cl.[6] F16L *35/00;13/14*
U.S. Cl. 285—332 **4 Claims**

1. A unitary assembly of tubing with a terminating fastener comprising:



a fitting having a tubular opening therein extending through said fitting along a longitudinal axis thereof and an enlarged major inside diameter opening adjacent one end thereof; and

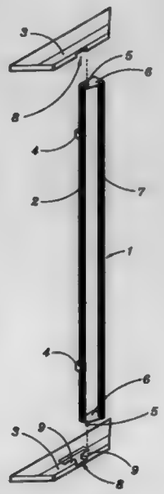
a tube having an enlarged diameter portion adjacent one end thereof, said enlarged diameter portion of said tube having an interference fit within said enlarged major inside diameter opening of said fitting, the fitting and the tube in face-to-face interference fit engagement along an entire longitudinal length of the fitting for preventing axial movement, rotational movement and radial deformation relative to one another.

5,487,574

DOOR OPERATING MECHANISM

Bo Salling, Skensved, Denmark, assignor to Scanbur A/S, Køge, Denmark

Continuation-in-part of Ser. No. 295,608, Aug. 25, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 463,068
Claims priority, application Denmark, Aug. 25, 1993, 0959/93
Int. Cl.[6] E05C *9/08*
U.S. Cl. 292—218 **4 Claims**



1. An enclosure comprising a plurality of wall members having free edges, including a top wall member, a bottom wall member, a rear wall member, and a pair of side wall members,

a sealing gasket mounted on the free edges of each of said top, bottom, and side wall members,

a door hingedly mounted at one edge thereof to an edge of one of said side wall members,

a door operating mechanism assembly comprising:

a vertical pivot shaft having a longitudinal axis, a central portion and two ends,

two clamps affixed to said door at a free vertical edge thereof, characterized in that one of said clamps is spaced apart from

an upper horizontal edge of said door, and the other of said clamps is spaced apart from a lower horizontal edge of said door, said vertical pivot shaft being rotatably retained in said clamps, said clamps being in spaced relationship from the ends of said vertical pivot shaft,

an eccentric pin mounted at each end of said shaft in fixed relationship thereto and having a first distance measured from the longitudinal axis of said vertical pivot shaft,

lever arm means affixed at one end thereof to an end of said shaft,

handle means affixed to the other end of said lever arm means,

a pair of keeper members mounted one at the edge of said top wall member and the other at the edge of said bottom wall member, each keeper member having an aperture to receive said eccentric pin and a detent provided therein to retain said eccentric pin said detent having a second distance measured from the longitudinal axis of the vertical pivot shaft, as maintained by said clamps,

characterized in that the first distance is larger than the second distance, so that, when said door is closed, said eccentric pins engage the detent of said keeper members, the ends of said vertical pivot shaft are forced inwardly and the central portion of said vertical pivot shaft is bowed outwardly, thereby providing a force clamping said door against the sealing gasket of said enclosure,

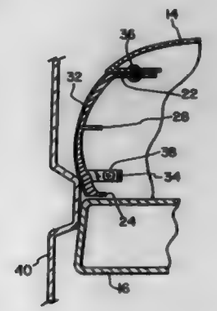
whereby said door may be closed and securely engaged against said sealing gasket by grasping said handle means and rotating said vertical pivot shaft until said eccentric pins enter said keeper members and engage the detents thereof.

5,487,575

ELECTROPLATED THERMOPLASTIC AUTOMOTIVE GRILLE HAVING IMPROVED FLEXIBILITY

Lee A. Chase, Ada, Mich., assignor to Lacks Industries, Inc., Grand Rapids, Mich.

Division of Ser. No. 99,748, Jul. 30, 1993, Pat. No. 5,452,931. This application May 4, 1995, Ser. No. 434,739
Int. Cl.[6] B62D *25/08;* **B05D** *1/32*
U.S. Cl. 293—115 **7 Claims**



1. A method for forming an automobile grille having a decorative coating so as to promote the flexural properties of said automobile grille, said method comprising the steps of:

forming said automobile grille to have a first segment, a second segment, and a plurality of support members interconnected with said first and second segments, said plurality of support members being formed from a polymeric material having a predetermined flexural modulus, said automobile grille having a first surface, an oppositely disposed second surface, and a side surface intermediate said first surface and said second surface, said first surface defining an outer decorative surface of said automobile grille; and

selectively depositing a metal on said first surface so as to form a decorative metallic layer on said first surface of said automobile grille without substantially forming said decorative metallic layer on said second surface;

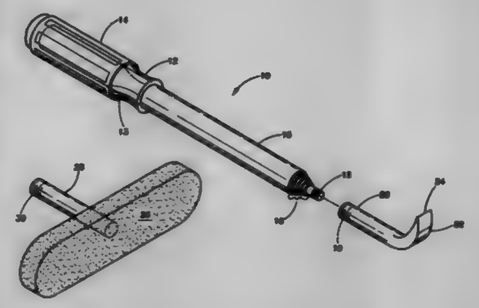
whereby said automobile grille is characterized by enhanced flexural properties in the absence of said decorative metallic layer on said second surface, so as to enable said automobile grille to more readily flex when impacted by an object without plastically deforming said automobile grille and without cracking said decorative metallic layer.

5,487,576

AIR MANAGEMENT SYSTEM FILTER REMOVING TOOL AND METALLIC DEBRIS RETRIEVER

Michael G. DuVivier, 312 Orange Grove St., San Fernando, Calif. 91340

Filed Apr. 25, 1994, Ser. No. 231,844
Int. Cl.[6] B25J *1/00*
U.S. Cl. 294—19.1 **1 Claim**



1. A telescoping retrieval hand tool for retreiving debris and filter screens in air management systems comprising:

a) a handle formed from a group of lightweight and strong materials including carbon composites, KEVLAR, and fiberglass;

a body of the handle;

a grip substantially surrounding the body;

a receiving means located along a longitudinal axis of the body further comprising an elongated hollow tube;

b) a tubular means further comprising:

a first tubular member disposed partially within the receiving means;

a plurality of elongated tube members concentrically aligned within the first tubular member and having a friction fit;

the plurality of elongated tube members capably movable in an axially sliding relative relationship;

c) means for limiting the length of extension of the plurality of elongated tube members further comprising an outwardly facing lip at one end of each of the plurality of elongated members and the first tubular member and an inwardly facing lip at the opposite end of each of the plurality of elongated tube members;

whereby the concentric arrangement of the plurality of elongated tube members allows the outwardly facing lip of an elongated tube member to engage the inwardly facing lip of the elongated tube member in which it is disposed, thereby preventing further axial movement;

d) a plurality of removal tools further comprising:

an elongated ellipsoidal steel magnet selectively and removably attached to the elongated tube having the longest extension;

a hook adapted to engage an edge of a screen when the screen is operatively disposed in an air flow duct, the hook selectively and removably attached to the elongated tube having the longest extension; and

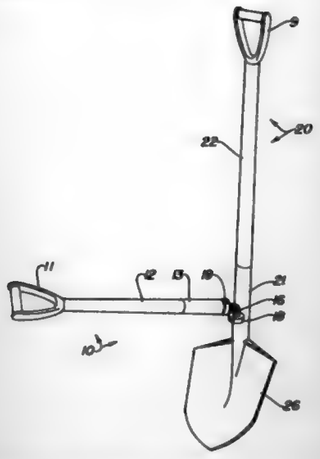
e) the hook and the tubular means being formed from a strong and lightweight material selected from a group of materials including plastic, fiberglass and KEVLAR.

5,487,577

PLIANT UNITARY COUPLING ELEMENT DUAL HANDLED SHOVEL

Randall W. Ball, 178 Laird Cir., Panama City, Fla. 32408

Filed Jun. 27, 1994, Ser. No. 266,976
Int. Cl.[6] A01B *1/22;* **B25G** *3/38*
U.S. Cl. 294—58 **1 Claim**



1. A dual-handled shovel comprising:
a primary handle having a first hand grip on one end and a first metal portion terminating in a shovel blade on the opposing end;
a first spring holding assembly, comprising a first one piece split spring clamp with a threaded center, and a first clamp screw, attached to the first metal portion;
a secondary handle having a second hand grip on one end and a second metal portion on the opposing end;
a second spring holding assembly, comprising a second one piece split spring clamp with a threaded center, and a second clamp screw, attached to the second metal portion; and
a coil spring having one end secured within the first one piece split spring clamp with a threaded center and its opposing end secured within the second one piece split spring clamp with a threaded center.

5,487,578

TWEEZER APPARATUS FOR USE IN MAKING STUFFED ARTICLES

Charlotte L. Williams, 3653 Jacob Rd., Grass Lake, Mich. 49240

Filed May 2, 1995, Ser. No. 432,684
Int. Cl.[6] A61B *17/30;* **B25B** *9/02*
U.S. Cl. 294—99.2 **4 Claims**



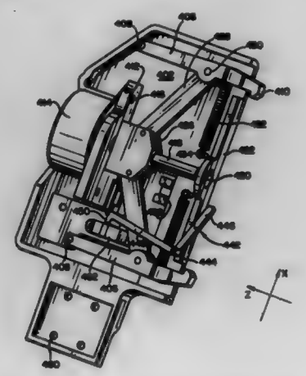
1. Stuffing tweezer apparatus comprising an elongated body member having a handle portion at one end and a pair of generally diverging leg members each having a pair of ends, one of said ends of each of said leg members being integral with said handle portion, each of said leg members being cantilever supported at said one end on said handle portion and terminating in a free working end spaced from said handle portion, the working end of one of said leg members being of a tapered shape and terminating in a point thereby enabling use of the working end of said one leg member to poke stuffing into niches in stuffed objects, the working end of the other one of said leg members terminating in a blunt surface to enable use of said working end of said other one of said leg members to pack stuffing into objects to be stuffed, said leg members being deflectable toward and away from each other to enable use of said leg members to trap stuffing in desired quantities between the tip ends of said leg members when said tip ends are moved toward each other, said trapped stuffing being releasable from a clamped position between the working ends of said leg members when said leg members move away from each other to move said working ends into spaced positions thereby enabling accurate placing of said stuffing into an object being stuffed.

5,487,579

PICKER MECHANISM FOR DATA CARTRIDGES

Daniel J. Woodruff, Lyons, Colo., assignor to Exabyte Corporation, Boulder, Colo.

Filed Aug. 26, 1993, Ser. No. 112,260
Int. Cl.[6] B66C *1/42*
U.S. Cl. 294—115 **7 Claims**



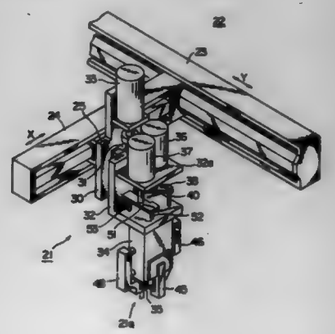
1. A picker mechanism for selectively gripping and transporting a data storage cartridge in an automated library, the picker mechanism comprising:
a picker frame;
a pair of gripper fingers pivotally mounted to the picker frame, each gripper finger having a portion thereof configured to engage a data storage cartridge;
a travelling carriage member;
a path-defining member which defines a displacement path along which the carriage member travels, the path-defining member being mounted to the picker frame;
a motor connected to the path-defining member for driving the carriage member along the path-defining member;
a first biasing spring connected between one of the fingers and the frame for exerting a first biasing force on a first of the pair of gripper fingers in a direction toward the displacement path and a second biasing spring connected between the other finger and the frame for exerting a second biasing force on a second of the pair of gripper fingers in a direction toward the displacement path;
a pair of linkage elements, each linkage element being attached to the carriage member and to a corresponding one of the gripper fingers;
a finger open sensor mounted to the frame for determining when the carriage member is in a first position along the displacement path, the pair of gripper fingers being pivoted to a gripper open position at the first position;
a cartridge presence sensor mounted to the frame for determining when the carriage member is in a second position along the displacement path, the pair of gripper fingers being pivoted in the second position to engage the data cartridge with the first biasing force and the second biasing force;
a controller connected to the finger open sensor and to the cartridge presence sensor which actuates the motor to drive the carriage member to a third position along the displacement path, the pair of gripper fingers being pivoted in the third position to a cartridge shove position.

5,487,580

CHUCK UNIT

Daisaku Kugo, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Mar. 24, 1994, Ser. No. 217,380
Claims priority, application Japan, Mar. 24, 1993, 5-090813
Int. Cl.[6] B25J *15/00;* **B23P** *21/00*
U.S. Cl. 294—119.1 **4 Claims**



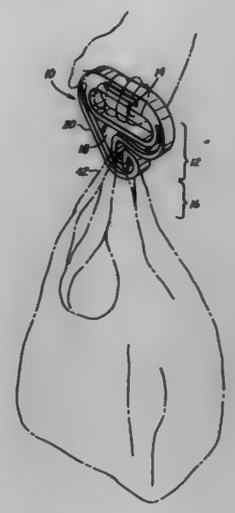
1. A chuck unit for chucking and downwardly extruding a workpiece which has two major surfaces, said chuck unit comprising:
a fixing pawl having a first vertical surface for supporting one of said major surfaces of said workpiece and a second vertical surface being perpendicular to said first vertical surface for stopping one side edge of said workpiece;
a first movable pawl being movable oppositely to said first vertical surface of said fixed pawl and having a third vertical surface for pushing the other one of said major surfaces of said workpiece in order to hold said workpiece in association with said first vertical surface of said fixed pawl;
a second movable pawl being movable oppositely to said second vertical surface of said fixed pawl and having a fourth vertical surface for pushing said workpiece against said second vertical surface of said fixed pawl; and
a pusher being vertically movable between said first vertical surface and said third vertical surface for downwardly extruding said workpiece
wherein said fixed pawl has a first vertical groove on said first vertical surface,
said first movable pawl has a second vertical groove on said third vertical surface being opposed to said first vertical groove, and wherein
said pusher vertically moves along a clearance defined by said first vertical groove and said second vertical groove.

5,487,581

HAND GRIP FOR CARRYING HEAVY PLASTIC BAGS

Robert A. Carmo, 407 Michel Pl., Placentia, Calif. 92670, and Edward A. Contreras, 14110 La Puertas, La Mirada, Calif. 90638

Continuation of Ser. No. 214,747, Mar. 18, 1994, abandoned. This application Apr. 25, 1995, Ser. No. 430,127
Int. Cl.[6] B65D *33/06*
U.S. Cl. 294—137 **3 Claims**



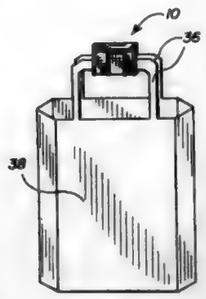
1. An integral hand grip for carrying an article having an extending strap comprising:
a substantially planar body with a first thickness having at least a peripheral reinforcing rib, said peripheral reinforcing rib having a second thickness greater than said first thickness of said planar body, said planar body defining a plane of said grip;
a closed hand hole defined in said body and being defined in said plane of said grip, said hand hole having an interior surface which is smoothed to provide a comfortable grasping surface, said rib circumscribing at least a portion of said hand hole, wherein said body has a substantially solid span disposed above said hand hole when said hand grip is oriented for carrying said article, said solid span providing a rigid element for grasping and having a thickness approximately equal to said second thickness of said rib; and
a single smooth edged, rigid hook integrally formed with said body below said hand hole when said hand grip is oriented for use, said hook for receiving said strap from said article to suspend said article from said hand grip when in use, said hook receiving said strap at a first center point within said hook, said hand hole having a second center point center, said first center point of said hook being aligned with said second center point of said hand hole so that said grip is balanced when loaded with said article to permit holding of said grip without substantial torque being applied thereto by said article when said grip is held in its normal orientation, said hook having a hook mouth, said hook mouth being oriented in said direction of said hand hole so that a selected rotation of said grip around an axis perpendicular to said plane of said grip rotates said mouth of said hook downwardly to allow said strap of said article to be unloaded from said grip,
whereby said article may be comfortably carried.

5,487,582

DETACHABLE SHOPPING BAG HANDLE

Barbara S. Bourgeois, and Kim S. Dupuis, both of 3107 Orris La., Apartment 110, Metairie, La. 70002

Filed Dec. 13, 1994, Ser. No. 354,524
Int. Cl.[6] A45C 13/26; B65D 33/06
U.S. Cl. 294—146 1 Claim



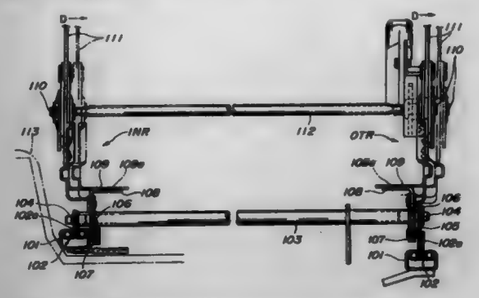
1. A detachable shopping bag handle comprising:
a first substantially rectangular, flexible, woven fabric member having a length between four and ten inches, a width between four and eight inches, and a first and second surface;
a second substantially rectangular, flexible, woven fabric member having a third and fourth surface and having a length and width substantially identical to said first fabric member;
a substantially rectangular, about one-half inch thick, padded portion, having a length and width substantially identical to said first fabric member, disposed between said first surface of said first fabric member and said third surface of said second fabric member and stitched in place with a first stitch set containing at least three substantially parallel lines of stitching and a second stitch set containing at least three substantially parallel lines of stitching, said first stitch set intersecting said second stitch set;
a binding wrapped about an entire first and second perimeter edge, respectively, of said first and second fabric members and stitched in place in a manner such that each stitch in said stitching passes through said binding twice, said first fabric member once, said padded portion once, and said second fabric member once;
a pocket member, constructed from a flexible fabric, attached to said second surface of said first fabric member defining a cavity, between said pocket member and said second surface, extending substantially the entire length of said first fabric member, having an opening running substantially the entire length of said pocket member along a first edge of said pocket member;
a flap member stitched to said second surface of said first flexible member in a manner to cover said opening;
a first section of hook material from a hook and pile type fastener attached to said second surface of said first flexible member;
a second section of pile-material from a hook and pile type fastener attached to said fourth surface of said second flexible member;
an eyelet member, secured through three concentric apertures formed through said first flexible member, said padded portion, and said second flexible member adjacent and centered along a short edge thereof, having an aperture therethrough of sufficient dimensions to allow a ring member to pass therethrough; and
a ring member installed through said aperture said ring member being adapted to pass through a hole formed in a base portion of a key.

5,487,583

LATERALLY ADJUSTABLE AUTOMOTIVE SEAT WITH LIFTER DEVICE

Isao Ikegaya, and Noboru Mochizuki, both of Kosai, Japan, assignors to Fuji Kiko Co., Ltd., Tokyo, Japan

Filed Nov. 29, 1993, Ser. No. 158,309
Claims priority, application Japan, Nov. 30, 1992, 4-082434 U; Nov. 30, 1992, 4-082435 U
Int. Cl.[6] B60N 2/04
U.S. Cl. 296—65.1 9 Claims



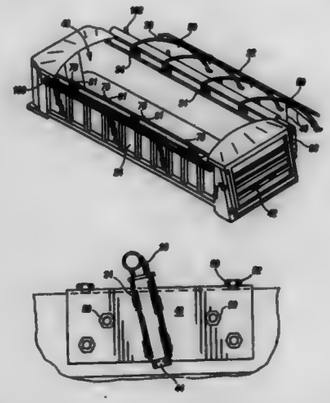
1. A seat for a vehicle having a body, comprising:
a pair of first rails mounted to the body of the vehicle;
a pair of second rails engaged with said pair of first rails, said pair of second rails having wall portions;
a connecting rod rotatably arranged between said wall portions of said pair of second rails;
a pair of links mounted to said connecting rod;
a pair of side brackets rotatably mounted to said pair of links; and
a pair of base plates mounted to said pair of side brackets, said pair of base plates having a bottom having first and second portions and an imaginary longitudinal axis, each portion being formed with at least two through holes at a predetermined interval in a cross direction with respect to said imaginary longitudinal axis of said bottom.

5,487,584

SWING AWAY SUPPORT SYSTEM FOR A COVERING

Lee Jespersen, Jacksonville, Fla., assignor to Wahpeton Canvas Co. South Dakota, Inc., Yankton, S. Dak.

Continuation of Ser. No. 30,681, Mar. 12, 1993. This application Jul. 7, 1994, Ser. No. 271,567
Int. Cl.[6] B60P 7/04
U.S. Cl. 296—100 18 Claims



1. A structure to support a removable covering over an opening of a body, the structure comprising:

a plurality of bows spanning the opening, each bow having first end pivotally attached to one side of the opening and second end reversibly engaging the opposing side of the opening; and,
connecting means to connect at least two bows to each other, the connecting means being pivotally connected to each connected bow between the first bow end and the second bow end;
whereby the bows may be simultaneously pivoted between a position spanning the opening to a position at least partially retracted from the opening by movement of the connecting means.
13. A structure to support a removable covering over an opening of a body, the structure comprising:
a bow having a first end and a second end; and
pivot means attached to one side of the opening for engaging the first end of the bow to allow pivotal movement about the pivot means;
wherein pivotal movement of the bow relative to the pivot means at least partially lifts the bow from the opening.

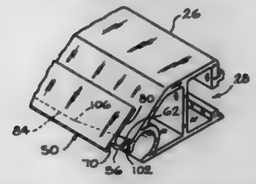
5,487,585

RELEASE FOR FLEXIBLE TONNEAU COVER

Donald G. Wheatley, 4451 Ford Rd., Ann Arbor, Mich. 48105

Filed Sep. 12, 1994, Ser. No. 304,144
Int. Cl.[6] B60P 7/04
U.S. Cl. 296—100 10 Claims





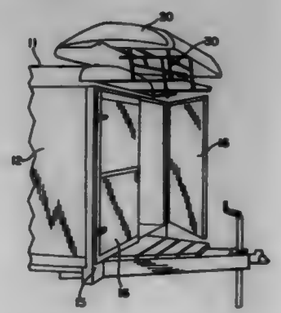
1. A tonneau cover for covering an area of a vehicle, said vehicle area being bounded by spaced sidewalls each having a top surface, said tonneau cover comprising:
a flexible fabric cover having side edges and a central region bounded by said side edges, said side edges being positionable above the vehicle spaced sidewalls so that said cover can extend over the vehicle area to be covered;
a frame having a plurality of elongated rails each having two ends, one of said rails being mounted on the top surface of each vehicle sidewall, at least one of said rails having a flange extending generally away from the vehicle area to a terminal edge, said flange extending a nominal width W;
an elongated fastener having two ends and being attached to said flexible cover along one of said side edges, said fastener having a base attached to said flexible fabric cover and a hook projecting from said base, said hook being formed by a return bend portion extending from said base generally away from said flexible fabric cover and then turning generally toward said central region of said cover forming a bight with a concave inner surface and ending in a distal edge spaced from said fastener base, said return bend portion having a nominal length measured from said base to said distal edge, said fastener being mounted to said frame by placing said bight around said rail flange with said terminal edge of said rail flange being seated in said bight and contacting said concave inner surface along a line of contact spaced from the distal edge of said return bend portion;
said fastener being flexible to enable said return bend portion to be removed from said rail flange by flexing of said fastener to move said line of contact between said rail and said bight toward and past said distal edge of said fastener to remove said cover from said rail; and
one of said return bend portion of said fastener and said flange of said rail being tapered over an end portion of short length adjacent to one end of said fastener and said rail to enable said distal end of said return bend portion to be moved off said rail flange at said one end with reduced relative movement between said fastener and said rail.

5,487,586

FRAME FOR SECURING A WIND DEFLECTOR TO A TRAILER

James R. Kinkaide, Elkhart, Ind., assignor to Wells Cargo, Inc., Elkhart, Ind.

Filed Jan. 11, 1994, Ser. No. 180,138
Int. Cl.[6] B62D 35/00
U.S. Cl. 296—180.1 28 Claims



1. A frame for attaching a wind deflector to a trailer, comprising:
a first plurality of brackets for attaching said frame to the trailer;
a plurality of vertical pivot tubes attached to said first brackets;
a plurality of horizontal pivot tubes attached to said vertical pivot tubes;
a plurality of vertical support tubes attached to said horizontal pivot tubes; and
a second plurality of brackets attached to said vertical support tubes, said second plurality of brackets for securing the wind deflector to the trailer.

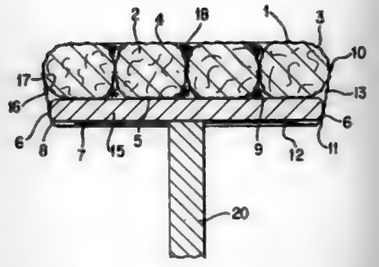
5,487,587

SEAT CUSHION ASSEMBLY REMOVABLY RETAINABLE ON A SEAT SURFACE

Frances G. Hylton, Ruther Glen, Va., assignor to Decorite, Inc., Ashland, Va.

Continuation of Ser. No. 293,192, Aug. 19, 1994, abandoned, which is a continuation of Ser. No. 972,106, Nov. 5, 1992, abandoned, which is a continuation of Ser. No. 704,987, May 24, 1991, abandoned. This application Dec. 19, 1994, Ser. No. 358,683
Int. Cl.[6] A47C 27/00
U.S. Cl. 297—219.1 14 Claims

1. A seat cushion assembly specifically configured for a stool, said stool having a seat with a generally planar, upper support surface and a generally planar, lower surface extending generally parallel with respect to the upper support surface, the lower support surface always being lower than the upper support surface and being joined thereto by a generally vertically extending edge portion, said assembly comprising:
a cushion for placement on said upper support surface of said seat, said cushion comprising an inner cushioning member of cushioning material having an outer perimeter and an outer



cover of a single piece of material surrounding at least an upper surface of said inner cushioning member to provide a single compartment for the material and being connected thereto at said outer perimeter to form an internally beadless seam with said cushioning material being contained in said single compartment, said inner cushioning member and said outer cushioning cover being dimensioned such that said cushion covers substantially the entire upper support surface when the seat cushion is installed on said seat;

a skirt extending from said cushion, the skirt comprising an upper portion connected to said seat cushion at said beadless seam and extending generally vertically over the generally vertically extending edge of the seat; said skirt having a lower portion extending from the upper portion and extending radially inwardly over a substantial portion of the lower surface of said seat for non-positive engagement therewith when said seat cushion is mounted on said seat; and,

an elastic member disposed at said lower portion of said skirt to gather the lower portion of the skirt and hold the skirt in abutment with said generally planar lower surface of said seat.

5,487,588

CHILD SAFETY SEAT

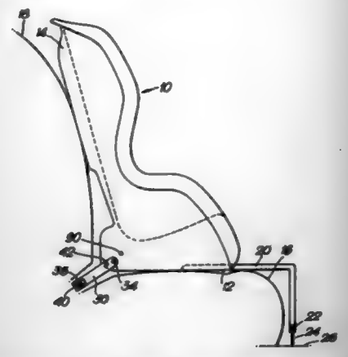
David W. Burleigh, Bognor Regis, England; Waldemar Czernakowski, Blaustein, and Hermann Wetter, Ulm, both of, Germany, assignors to Britax-Excelsior Limited, England, and Britax Romer Kindersicherheit GmbH, Germany

Filed Mar. 22, 1994, Ser. No. 215,808

Claims priority, application United Kingdom, Apr. 8, 1993, 9307446

Int. Cl.[6] B60N *2/28*

U.S. Cl. 297—253 **18 Claims**



1. A child safety seat for use in a vehicle, compriaing a seat body having a seat portion and a backrest portion, and a pair of attachment buckles mounted by means of rigid links on opposite sides of the seat body for movement between a first position in which they project rearwardly so as to be engageable with two standard anchorage units on the vehicle which are accessible between a seat portion and a backrest portion of a seat of the vehicle and a second position in which they provide support for guide means for an adult seat belt, releasable means for securing each of the attachment buckles either in its first position or in its second position, and additional releasable means for holding the attachment buckles in an intermediate position in which the adult seat belt is fastened, subsequent movement of the attachment buckles into their second position being arranged to apply additional tension to the adult seat belt.

5,487,589

VEHICLE SEAT

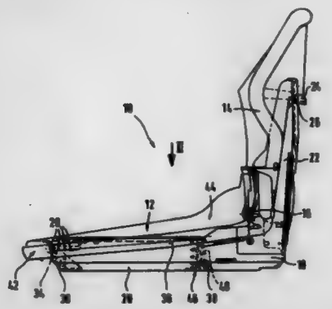
Hermann Meiller, Amberg, and Wolfgang Beier, Rieden, both of, Germany, assignors to Grammer AG, Amberg, Germany

Filed Jan. 23, 1995, Ser. No. 376,780

Claims priority, application Germany, Jan. 26, 1994, 44 02 170.4

Int. Cl.[6] A47C *1/023;1/026*

U.S. Cl. 297—342 **5 Claims**



1. A vehicle seat comprising: a base means having a first portion which in the position of use of the seat is at least substantially horizontal and a second portion which in said position of use of the seat is at least substantially vertical whereby the base means is of an at least substantially L-shaped configuration; a seat plate means on the first portion of the base means and having a front edge portion and a rearward portion; a backrest means pivotably movably connected to the seat plate means are mounted on the second portion of the base means; first retaining members at the underside of said seat plate means at the front edge portion thereof in spaced-apart relationship in the longitudinal direction of the seat; a stationary mounting support means on the first portion of the base means and having a co-operating retaining member for latching engagement with a corresponding first retaining member on said seat plate means; spring elements operatively disposed between said first portion of the base means and said seat plate means at the rearward portion thereof and spaced from each other in the transverse direction of the seat; and a sliding shoe for each spring element, each sliding shoe being slidably movably supported on said first portion of the base means to provide support for the respective spring element against said first portion of the base means.

5,487,590

CHAIR TO PROMULGATE KINESTHETIC THERAPY: APPARATUS AND METHOD

Robin Haynes, 1730 Industrial Dr., Auburn, Calif. 95603

Filed Jun. 30, 1994, Ser. No. 268,785

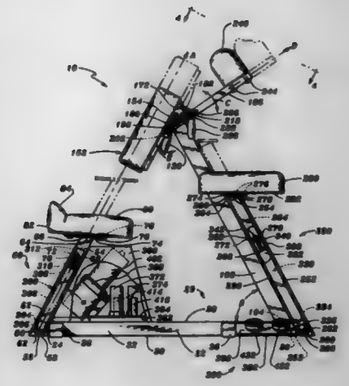
Int. Cl.[6] A47C *1/02*

U.S. Cl. 297—344.14 **16 Claims**

1. A massage chair, comprising, in combination:

a base having a longitudinal extent and longitudinal extremities;

a seat support at one said longitudinal extremity;



a seat fixed horizontally and telescopically supported on said seat support;

chest, arm and face support at another said extremity;

said supports in the same vertical plane and having acute angles facing upwardly and inwardly towards each other but spaced apart at upper extremities thereof defining an open space between an upper surface of said seat and a lower surface of a chest pad;

an arm pad fixed horizontally and telescopically supported on said chest, arm and face support;

said chest pad located on said chest, arm and face support and having means to adjust said chest pad along an axis coincident with said seat support telescoping adjustment; and

a face pad connected to said chest, arm and face support and having axial adjustment means and arcuate adjustment means.

5,487,591

BACK SHELL WITH SELECTIVE STIFFENING

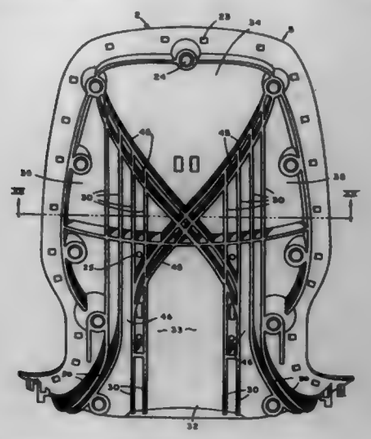
Glenn A. Knoblock, Kentwood, Mich., assignor to Steelcase, Inc., Grand Rapids, Mich.

Continuation of Ser. No. 797,717, Nov. 25, 1991, Pat. No. 5,333,934, which is a continuation of Ser. No. 738,888, Jul. 31, 1991, abandoned, which is a continuation of Ser. No. 850,528, Apr. 10, 1986, Pat. No. 5,050,931. This application May 31, 1994, Ser. No. 252,666

The portion of the term of this patent subsequent to May 17, 2005, has been disclaimed.

Int. Cl.[6] A47C *3/12*

U.S. Cl. 297—452.14 **40 Claims**



1. A molded seat back, comprising:

a generally planar shell having a forward surface and a rearward surface, said shell having a plurality of ribs disposed on one of the surfaces to control flexure of the shell, said ribs including:

a plurality of angularly related first ribs, at least one of said first ribs being angled different from another of said first ribs to form a generally X-shaped pattern, said first ribs having upper and lower leg portions defined on opposite sides of the point at which said first ribs intersect; and

a plurality of substantially vertical second ribs, said second ribs being laterally spaced apart, at least a portion of at least one of said second ribs being positioned within the space defined between the upper leg portion of one of said first ribs and the lower portion of another, differently angled, first rib, said upper leg portions of said angularly related first ribs defining therebetween an uninterrupted planar portion of said shell.

5,487,592

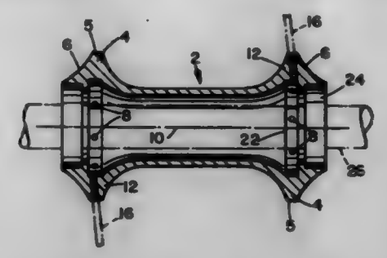
HUB FOR BICYCLE WHEELS

Clark W. Rasmussen, 9584 Fernal Ave., San Diego, Calif. 92123

Continuation-in-part of Ser. No. 844,516, Mar. 2, 1992, abandoned. This application Apr. 30, 1993, Ser. No. 56,352

Int. Cl.[6] B60B *21/06*

U.S. Cl. 301—59 **11 Claims**



1. A hub shell for a spoked bicycle wheel comprising:

a hollow, generally-cylindrical body having a spoke flange with a perimeter face and a hub head at each end thereof and an axis running through a center of said body, said perimeter face being angled inwardly with respect to said axis wherein said spoke flange on one end of said body is wider than said spoke flange on the other end of said body;

an annular recess at each said end for retaining a bearing means; and

a plurality of bores distributed radially around said spoke flange directed inwardly at an angle from said spoke flange, said bores having internal threads for mating win an external thread of a spoke wherein said spoke is threaded at both ends, a first end for attachment to said hub head and a second end for attachment at a rim of said bicycle wheel, wherein said plurality of bores on the one end of said spoke flange is positioned around said perimeter face in a staggered arrangement and said angle is 3.5°±1°.

5,487,593

ANTI-LOCK BRAKING SYSTEM PROVIDING PUMP MOTOR DUTY CYCLE BASED ON DECELERATION AND MOTOR VOLTAGE FEED BACK

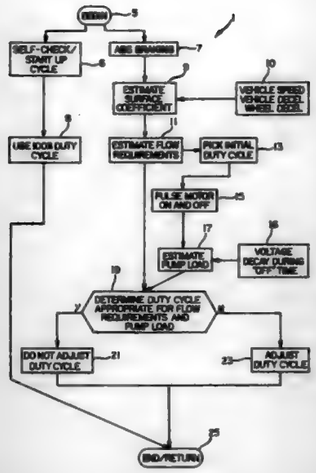
Jeffrey R. Potts, Granger; Charles E. Lindeman, and Thomas A. Grana, both of South Bend, all of Ind., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Nov. 23, 1994, Ser. No. 344,766

Int. Cl.[6] B60T *13/18*

U.S. Cl. 303—11 **10 Claims**

1. A method of determining a duty cycle of a pump motor in an anti-lock braking system of a vehicle, comprising the steps of:



a. determining that the mode of braking is during anti-lock braking,

b. utilizing estimated calculated vehicle deceleration and wheel deceleration to estimate the coefficient of friction of a surface engaged by wheels of the vehicle,

c. estimating pump flow requirements for said pump motor,

d. selecting an initial duty cycle for the pump motor,

e. pulsing the pump motor on and off in accordance with the selected initial duty cycle,

f. utilizing decay voltage of the pump motor when the pump motor is deactivated to estimate a pump load requirement imposed on the motor,

g. determining if the selected initial duty cycle is sufficient to provide the estimated pump flow requirements and the pump load requirement, and

h. controlling operation of the pump motor by changing, as necessary, the duty cycle.

5,487,594

METHOD FOR UPDATING A WHEEL REFERENCE VALUE BY ASSESSING PROXIMITY FOR THE BRAKING POWER CURVE PEAK

Michael J. Schneider, Bloomfield Township, Mich., assignor to AlliedSignal Inc., Morristown, N.J.

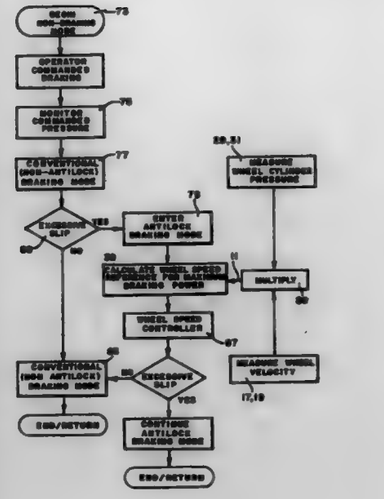
Filed Nov. 30, 1994, Ser. No. 346,726
Int. Cl.[6] B60T *8/00*
U.S. Cl. 303—155 **12 Claims**

1. In the control of a vehicle anti-lock braking system of the type utilizing measured wheel velocity and computed wheel reference values to control braking torque, the method of searching for maximum braking power comprising the steps of:

determining (125) on which side of the peak of a braking power curve the vehicle is operating if the vehicle is not operating at the peak of the braking power curve;

incrementing (129, 117) a prior wheel reference value by an amount which changes the prior wheel reference value toward the peak of the braking power curve thereby calculating an updated wheel reference value (119); and

utilizing (127) the updated wheel reference value to control appropriately the braking torque of a wheel.

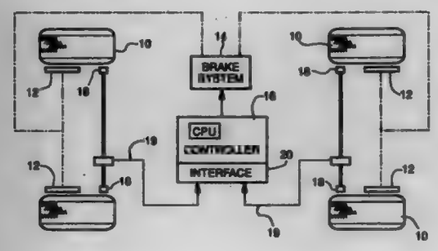


5,487,595

DUAL HYSTERESIS METHOD OF GENERATING SQUARE WAVES FROM AUTOMOTIVE WHEEL SPEED SIGNALS

William D. Wise, Flora; Marc L. De Wever; Dale J. Kumke, both of Kokomo; Everett R. Lumpkin, Galveston; Matthew D. Sale, and Brian W. Schousek, both of Kokomo, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Feb. 28, 1994, Ser. No. 203,097
Int. Cl.[6] B60T *8/60*; G01P *3/489*
U.S. Cl. 303—168 **3 Claims**



1. In an automotive vehicle control using wheel speed information and having a plurality of wheel speed sensors each producing an analog signal having a frequency proportional to its respective wheel speed and subject to single cycle anomalies, a method of generating square waves for each sensor having the same frequencies as the corresponding analog signals comprising the steps of:

periodically sampling and digitizing the analog signals one at a time to sequentially produce digital values comprising a series of digital values for each of the sensors;

sequentially evaluating the digital values to identify peaks and valleys in each of the signals by comparing each digital value to the previous value in the same series;

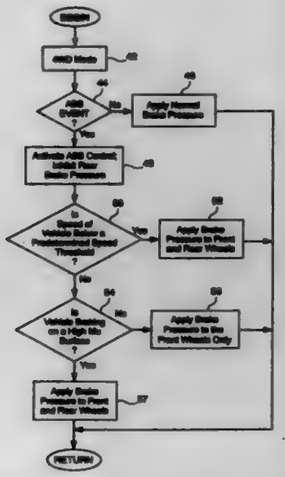
applying a dual hysteresis method to each series of digital values to trigger square wave transitions following each peak and valley, thereby generating a square wave corresponding to each digital series.

5,487,596

METHOD AND SYSTEM FOR CONTROLLING REAR WHEEL ANTI-LOCK BRAKE CONTROL ON FOUR-WHEEL DRIVE VEHICLES BRAKING ON HIGH MU SURFACES

Dan Negrin, Wiesbaden, Germany, assignor to Kelsey-Hayes Company, Livonia, Mich.

Continuation-in-part of Ser. No. 303,453, Sep. 9, 1994, abandoned. This application Mar. 14, 1995, Ser. No. 403,428
Int. Cl.[6] B60T *8/64*
U.S. Cl. 303—149 **20 Claims**



1. A method for controlling an antilock brake system in a four-wheel drive vehicle having front and rear wheels during an anti-lock braking event, the method comprising:

determining whether the vehicle is braking on a high mu surface; and

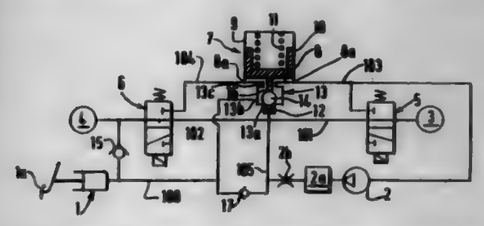
inhibiting application of brake pressure to the rear wheels until the vehicle is braking on a high mu surface.

5,487,597

HYDRAULIC CIRCUIT WITH A CAPACITY FORMING A DISTRIBUTOR

Pierre Lebret, Le Chesnay, France, assignor to AlliedSignal Europe Services Technique, Drancy, France

PCT No. PCT/FR94/00466, § 371 Date May 20, 1994, § 102(e) Date May 20, 1994, PCT Pub. No. WO94/27849, PCT Pub. Date Dec. 8, 1994
PCT Filed Apr. 23, 1994, Ser. No. 244,168
Claims priority, application France, May 25, 1993, 93 06181
Int. Cl.[6] B60T *13/18*
U.S. Cl. 303—116.2 **8 Claims**



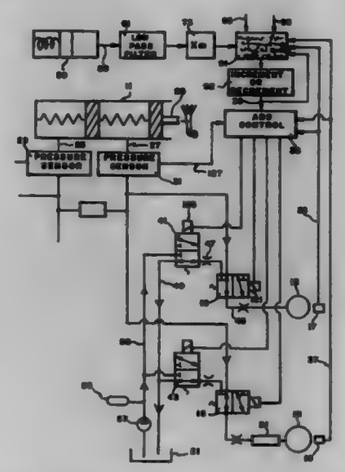
1. A hydraulic brake circuit for a motor vehicle provided with at least an electrically pilot-controlled braking function, and including at least a master cylinder, an electric pump, first and second brake motors, first and second respective solenoid valves, and a low-pressure capacity comprising a variable volume accumulation chamber connected to a remainder of the circuit by an inlet and defined within a cylinder by a piston which is stressed toward the inlet by means of a first spring generating a first force acting in a direction capable of reducing the volume of the chamber to a minimum value, characterized in that the capacity furthermore comprises an access chamber having first and second inlets and an outlet communicating with the inlet of the accumulation chamber, in that a sealing member, which can move between first and second extreme positions, is arranged in the access chamber in order to seal selectively the first inlet of the access chamber in a first position, and the outlet of the access chamber in a second position, in that the sealing member is placed selectively in the first position by the first spring acting on the sealing member by means of the piston when the volume of the accumulation chamber is close to the minimum value, in that the sealing member is placed in the second position by a second spring acting counter to the first spring and generating a second force which is smaller than the first force, when the volume of the accumulation chamber is substantially greater than the minimum value, and in that the second inlet is in permanent communication with an inside of the access chamber.

5,487,598

VARIABLE DUTY CYCLE ANTILOCK BRAKING SYSTEM WITH ACCELEROMETER

Robert M. Rivard, West Bloomfield; Michael J. Schneider, Bloomfield Township, both of Mich.; Tamas I. Pattantyus, Elyria, Ohio; Kenneth S. Towers, Granger, Ind., and Jack R. Phipps, Bristol, Tenn., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Dec. 12, 1994, Ser. No. 353,861
Int. Cl.[6] B60T *8/32*
U.S. Cl. 303—166 **9 Claims**



1. A method of calculating wheel speed reference for the control of a vehicle antilock braking system comprising the steps of:

measuring (59) the current vehicle deceleration;

repeatedly computing (73) the force causing the vehicle deceleration utilizing the measured vehicle deceleration;

repeatedly computing a wheel speed reference by determining the sign (87) of the ratio of the most recent change in computed force to the most recent change in computed wheel speed reference, and updating a previously computed wheel speed reference by incrementing (92) that previous reference by a first amount in the event the sign of the determined ratio is positive, and decrementing (92) that previous reference by a second amount in the event the sign of the determined ratio is negative to define a current wheel speed reference; and

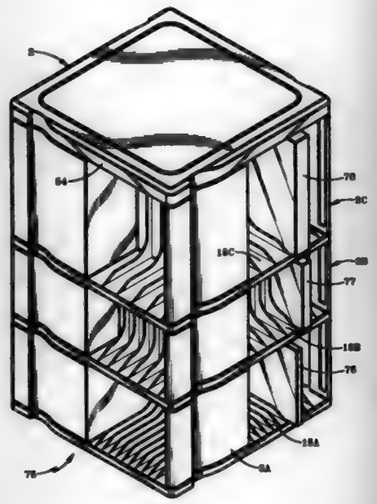
controlling (33) the braking system as a function of said current wheel speed reference.

5,487,599

STORAGE CABINET FOR RECORDED MEDIA

James T. Weisburn, Massillon, and Christopher G. Gallagher, Akron, both of Ohio, assignors to Alpha Enterprises, Inc., North Canton, Ohio

Filed Sep. 16, 1994, Ser. No. 308,115
Int. Cl.[6] A47B *81/06*
U.S. Cl. 312—9.46 16 Claims



1. A storage cabinet for recorded media including:

a plurality of polygonal-shaped cabinet modules arranged in a vertical stacked relationship, each module having four sides, with a storage compartment being formed in certain sides thereof;

a first attachment device provided on an upper portion of each of said modules, said first attachment device includes a plurality of flexible fingers extending upwardly from the upper portion of the module adjacent certain corners thereof, each of said fingers being formed with an opening forming a first locking member;

a second attachment device provided on a bottom portion of each of said modules adaptable for mating engagement with the first attachment device of a lower module to secure said modules in a stacked relationship, said second attachment device includes a plurality of openings formed in the bottom portion of the module adjacent certain corners thereof for receiving the flexible fingers of the adjacent module therein, and a nub being formed within each of said openings of the bottom portion of the module and extending into the openings of said flexible fingers for forming a second locking member;

a top cover having an attachment device engageable with the first attachment device of an uppermost module to secure said cover on said uppermost module;

base means mounted on the bottom portion of a lowermost module for rotatably supporting the plurality of stacked modules on a support surface; and

mounting means for mounting the base means on the bottom portion of said lowermost module.

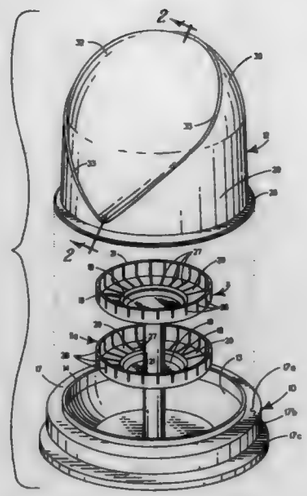
5,487,600

CONTAINER FOR EARRINGS AND SMALL JEWELRY

Brenda G. Griffin, P.O. Box 288, Sagle, Iowa 83860

Filed Jan. 9, 1995, Ser. No. 370,099
Int. Cl.[6] A47F *3/10*
U.S. Cl. 312—135 3 Claims

1. A covered container for earrings and small jewelry, comprising in combination:



a base defining a container dish with upstanding rim supported by an annular peripheral skirt structurally communicating with the upstanding rim of the container dish and depending therefrom to define a lower rim for support on an underlying supporting surface, said container dish having in its medial portion an upstanding cylindrical fastening column;

a storage tray having a medial tray dish with a peripheral upstanding rim having an upper edge, said upstanding rim structurally supporting a radially outwardly extending annular support shelf having an upstanding rim thereabout,

said annular support shelf defining a plurality of spaced radially extending channels,

said upstanding rim of the annular support shelf defining a plurality of vertical channels extending from the upper edge of the rim into spaced adjacency with the annular support shelf and aligned with each channel defined in the support shelf, and

said storage tray having a depending tubular support column defining a cylindrical channel for rotatable support on the fastening column of the container dish; and

a cover having a lower rim adapted to fit about the upstanding rim of the container dish and upon the peripheral skirt of the base, said cover having a medial body portion and hemispherical top portion to define an internal chamber to contain the storage tray when the cover is positioned on the base.

5,487,601

BASEBALL CARD STORAGE AND PROTECTION DEVICE

John F. Lucardie, 713 San Antonio Dr., Covina, Calif. 91723

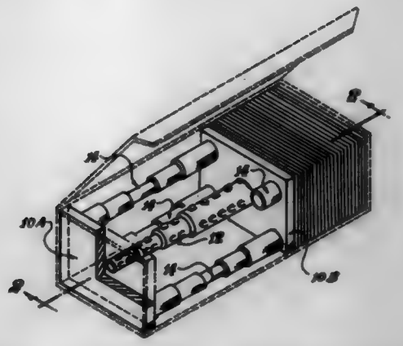
Filed Jul. 28, 1993, Ser. No. 98,954
Int. Cl.[6] A47B *63/00*
U.S. Cl. 312—183 1 Claim

1. A protection device for use in a baseball card storage box, comprising:

a first plate and a second plate, each plate having at least four corners,

a connector made up of five close fitting, telescoping tubular, parts fitted one part into another and two end parts, each end part perpendicularly fastened to the center of one of said end plates, said connector being extendable and retractable along an axis of said connector when said end plates are pulled away or pushed toward each other, said tubular parts of said connector having an outside and an inside, said outside being provided with molded bubbles on the outside and cavities on the inside into which said bubbles can be snugly positioned to secure said end plates apart at discrete distances when said end plates are pulled apart or pushed together,

four telescoping guide tubes connected to said end plates one of said telescoping guide tubes at each of said corners, said telescoping guide tubes being movable longitudinally between an extended position and a retraced position, said telescoping guide tubes being provided with molded annular shoulder stops to prevent the device from being pulled apart.



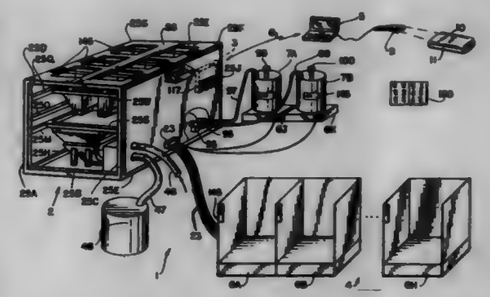
each set of said non-symmetrical modular mixing elements including at least one modular mixing element having a left-hand-twist mounted immediately downstream and contiguous with at least one modular mixing element having a right-hand twist.

5,487,603

INTELLIGENT SYSTEM AND PROCESS FOR AUTOMATED MONITORING OF MICROINGREDIENT INVENTORY USED IN THE MANUFACTURE OF MEDICATED FEED RATIONS

Charles H. Hoff, Ault, Colo., and Bernard J. Bergen, Encinitas, Calif., assignors to Lextron, Inc., Greeley, Colo.

Filed Feb. 28, 1994, Ser. No. 203,017
Int. Cl.[6] B01F *15/04*
U.S. Cl. 366—141 36 Claims



1. A programmable microingredient dispensing and mixing machine, comprising:

a housing of rugged construction; programmed control means for controlling the operation of various components of said machine in accordance with a control program;

an information storage and processing means for storing and processing information relating to the measured weight of microingredients in said machine;

a plurality of dispensing bins disposed in said housing, each said dispensing bins including

means for storing a supply of a preassigned type of microingredient, and

means for dispensing a specified amount of said preassigned type of microingredient from said dispensing bin for weight measurement under the control of said programmed control means;

first weight measuring means for independently measuring the weight of microingredieat stored in each one of said dispensing bins under the control of said programmed control means, and producing first weight information for storage in said programmed information storage and processing means, said first transmitted weight information being representative of the measured weight of the microingredients stored in each one of said dispensing bins;

a weigh hopper, disposed within said housing, and for temporarily storing an amount of microingredient dispensed from one of said dispensing bins, into said weigh hopper, said weigh hopper including means for discharging said measured amount of microingredient under the control of said programmed control means;

second weight measuring means, disposed in said housing, for measuring the amount of microingredient stored in said weigh hopper and producing second weight information for storage in said information storage and processing means, said second weight information being representative of the weight of said measured amount of microingredient stored in said weigh hopper; and

a mixing tank for containing one or more types of microingredient discharged from said weigh hopper under the control of said programmed control means, said mixing tank including

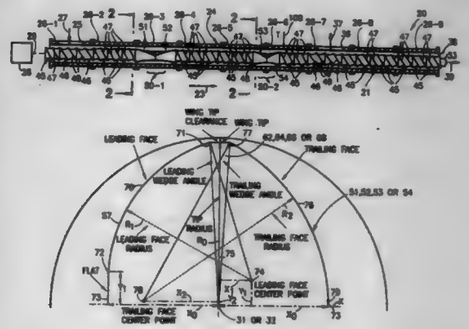
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5,487,602

MULTI-SCREW, EXTRUSION-COMPOUNDING MACHINE WITH MODULAR MIXING ELEMENTS

Lefteris N. Valsamis, Stratford; Eduardo L. Canedo, Beacon Falls; Jose M. Pereira, Bridgeport, and Douglas V. Poecich, East Hampton, all of Conn., assignors to Farrel Corporation, Ansonia, Conn.

Filed Jun. 3, 1994, Ser. No. 253,397
Int. Cl.[6] B29B *7/48*
U.S. Cl. 366—81 22 Claims



1. A multi-screw extrusion-compounding machine comprising:

a housing assembly including two adjoining and substantially cylindrical barrel sections each having an inner wall surface;

an extrusion-compounding screw disposed within each of said adjoining barrel sections with the screws being axially adjacent each other and rotatable in the same direction about an axis of rotation;

each screw including a plurality of transport screw elements removably mounted on and keyed to a rotationally drivable shaft;

said transport screw elements intermeshing;

each screw including at least one set of non-symmetrical modular mixing elements;

each modular mixing element being removably mounted on and keyed to said shaft;

each modular mixing element having a plurality of non-symmetrical wings;

said modular mixing elements intermeshing; and

means for mixing said discharged microingredients with a specified amount of consumptive fluid carrier, such as water, to form a microingredient slurry mixture, and

means for transporting said microingredient slurry mixture away from said mixing tank under the control of said programmed control means, for subsequent usage.

5,487,604

MULCH RECEIVING BIN AND METHOD OF USING SAME

Ronald S. Moran, 21 Porter Street, Ryde, NSW 2112, Australia

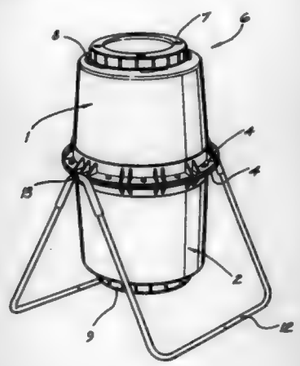
PCT No. PCT/AU92/00591, § 371 Date Apr. 29, 1994, § 102(e) Date Apr. 29, 1994, PCT Pub. No. WO93/09044, PCT Pub. Date May 13, 1993

PCT Filed Oct. 30, 1992, Ser. No. 232,201

Claims priority, application Australia, Jan. 31, 1991, PK 9254

Int. Cl.[6] B01F 9/06

U.S. Cl. 366—225 20 Claims



1. A rotatable mulch bin, comprising:

a pair of drum members, each drum member having an open end provided with a joining flange and an opposite closed end;

at least one of said pair of drum members having an openable closure member disposed at said opposite closed end;

said pair of drum members being interconnected together at the joining flanges so that the opposite ends are disposed spaced apart from one another for helping to define a garden waste receiving bin;

members including a breaker bar and defining a pivot axis extending diametrically through the interconnected joining flanges for breaking up clumps of garden waste;

bearing means disposed on said drum members for supporting rotatably said bar to help facilitate the substantially free rotation of the bin about said pivot axis; and

a support stand for supporting from below said bar, said bar being supported so that said bin is rotatable about said pivot axis to cause the garden waste to fall under the force of gravity against the breaker bar to facilitate mulching the waste.

5,487,605

PROCESS AND DEVICE FOR THE CONTINUOUS BLENDING OF LIQUID AND/OR POURABLE MATERIALS INTO FOODSTUFF MASSES

Gunter Zehle, Bergholz; Hubert Juhnke, Potsdam, and Thomas T. Izmar, Köln, all of, Germany, assignors to Izmar Maschinen GmbH, Cologne, Germany

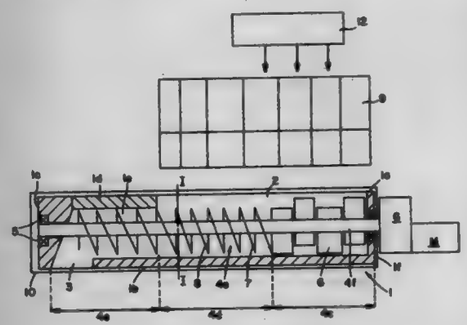
PCT No. PCT/EP92/00705, § 371 Date Apr. 11, 1994, § 102(e) Date Apr. 11, 1994, PCT Pub. No. WO92/17069, PCT Pub. Date Oct. 15, 1992

PCT Filed Mar. 30, 1992, Ser. No. 122,460

Claims priority, application Germany, Mar. 29, 1991, 41 10 416.1

Int. Cl.[6] B01F 7/04

U.S. Cl. 366—300 26 Claims



1. A process for continuous mixing of liquid, pourable, or lumpy substances into basic foodstuff masses said process comprising, introducing said substance into a mixing container which receives the basic foodstuff mass and rotating at least two helicoidal screws in opposite directions to convey a resulting mix horizontally in an axial direction along a mixing line, wherein each of said at least two screws has a circular cross-section and perimeters which overlap in part with perimeters of the other screws, and further comprising introducing different substances at different axial locations of the mixing line.

5,487,606

MIXER FOR DOUBLE CARTRIDGE DISPENSER

Wilhelm A. Keller, Obstgartenweg 9, CH-6402 Merlischachen, Switzerland

Filed Aug. 23, 1993, Ser. No. 110,707

Claims priority, application European Pat. Off., Aug. 24, 1992, 92810645

Int. Cl.[6] B01F 5/06; B67D 5/56

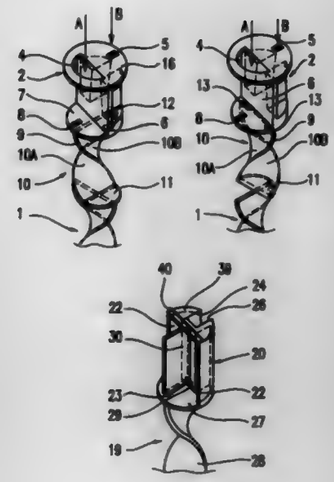
U.S. Cl. 366—339 19 Claims

1. A mixer for a double cartridge dispenser, comprising:

a mixer housing which is attachable to said dispenser; and

a mixing helix group which is arranged in said mixer housing, said mixing helix group having an inlet portion for communicating with two dispensing openings of said dispenser;

said inlet portion being divided into a larger inlet chamber for receiving a first component having a greater dispensing volume from a first cylinder of the dispenser and a smaller inlet chamber for receiving a second component having a smaller dispensing volume than said first component from a second cylinder of the dispenser, said larger inlet chamber being larger than said smaller inlet chamber, and said mixing helix group comprising a first means for stemming a flow of said first component through said mixing helix group and a second means for supplying a stemmed flow of said first component to said smaller inlet chamber for carrying the second component along with the first component through the mixing helix group.



5,487,607

RADIATION CLINICAL THERMOMETER

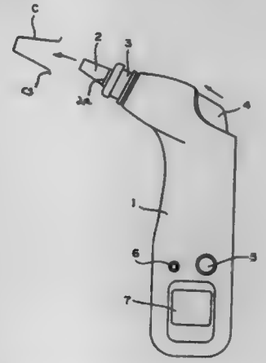
Shigeru Makita; Yoshihiko Sano, both of Kyoto, Japan; Yasushi Nakamura, Irvine, Calif., and Hiroyuki Ota, Shiga, Japan, assignors to Omron Corporation, Kyoto, Japan

Continuation-in-part of Ser. No. 45,054, Apr. 7, 1993, abandoned. This application Dec. 29, 1993, Ser. No. 176,459

Claims priority, application Japan, Apr. 8, 1992, 4-86738

Int. Cl.[6] G01K 1/08; G01J 5/02

U.S. Cl. 374—158 13 Claims



1. A radiation clinical thermometer comprising:

a body housing;

a temperature measuring circuit secured in said body housing;

a probe secured to said body housing;

a temperature sensor disposed in said probe;

a power supply secured in said body housing and connected in circuit with said temperature measuring circuit and said temperature sensor;

means for detecting if a probe cover is mounted on said probe;

means, operatively connected to said detecting means, for determining a condition to enable operation of said thermometer; and

means, operatively connected to said determining means, for enabling operation of said thermometer.

5,487,608

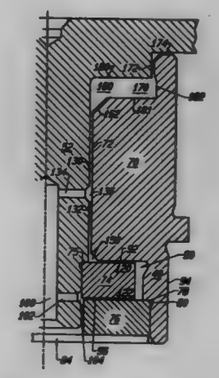
SINGLE PLATE HYDRODYNAMIC BEARING WITH SELF-BALANCING FLUID LEVEL AND FLUID CIRCULATION

Hans Leuthold; David J. Jennings, both of Santa Cruz; Wesley R. Clark, Watsonville; Raquib Khan, Pleasanton, and Guenther Heine, Aptos, all of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jul. 22, 1994, Ser. No. 278,754

Int. Cl.[6] F16C 17/10

U.S. Cl. 384—113 24 Claims



1. A spindle comprising an electromagnetic motor and a bearing system, said bearing system comprising a sleeve and a shaft fitted into an axial bore or bushing of said sleeve, said shaft and said bushing rotating freely relative to each other, said shaft defining together with said bushing a journal bearing; said shaft further supporting an annular thrust plate, said thrust plate extending into a recess formed by an axial face stepped into said sleeve and a counterplate parallel to said thrust plate and attached to said sleeve, and said axial face defining together with the adjacent thrust plate surface a first thrust bearing, and the gap between said thrust plate and said counterplate forming a second thrust bearing, both thrust bearings opposing each other; furthermore, said counterplate defining a bore concentric to said shaft, said shaft ending within said bore of said counterplate, said bore in said counterplate being closed off by a shield on the side opposing the stump of said shaft, thus creating a fluid filled bearing system which is open only on one end; said shaft further comprising an axial center bore serving as a reservoir for fluid for said fluid filled bearing system, said center bore communicating with said journal bearing through a first radial bore terminating adjacent said bushing defining said journal bearing, and with said thrust bearing through a flowpassage defined by gaps around said stump of the shaft of by a second radial bore in said shaft terminating adjacent to said second thrust bearing.

5,487,609

SLIDE UNIT FOR LINEAR MOTION

Makoto Asada, Kurokawa, Japan, assignor to THK Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 961,721, Mar. 11, 1993, abandoned. This application Nov. 8, 1994, Ser. No. 339,280

Claims priority, application Japan, May 13, 1991, 3-042344 U

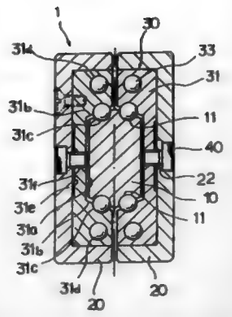
Int. Cl.[6] F16C 29/06

U.S. Cl. 384—18 10 Claims

1. A linear motion slide unit comprising:

an elongated inner rail;

said elongated inner rail having at least one first side rolling member groove extending along the length of said inner guide rail on a first side of a width of said inner guide rail;



said elongated inner guide rail having at least one second side rolling member groove extending along the length of said inner guide rail on a second side, opposite to said first side, of the width of said inner guide rail;

a first outer rail attached to said first side of said elongated inner rail and reciprocally movable in an axial direction of said inner rail along said first side thereof;

a second outer rail attached to said second side of said elongated inner rail and reciprocally movable in the axial direction of said inner rail along said second side thereof;

at least one first side linear motion guide fixedly secured to said first outer rail and supported slidable with respect to the inner rail through a number of rolling members, said first side linear motion guide being formed with endless tracks in which the rolling members are endlessly circulated, said rolling members being supported along said first side rolling member groove;

at least one second side linear motion guide fixedly secured to said second outer rail and supported slidable with respect to the inner rail through a number of rolling members, said second side linear motion guide being formed with endless tracks in which the rolling members are endlessly circulated, said rolling members being supported along said second side rolling member groove; and

whereby said first side linear motion guide and said second side linear motion guide each are located on opposite sides of said inner guide rail from one another.

5,487,610

WHEEL FOR ROLLER DRAWER GUIDES

Horst Lautenschläger, Reinheim, Germany, assignor to MEPLA-Werke Lautenschläger GmbH & Co. KG, Germany

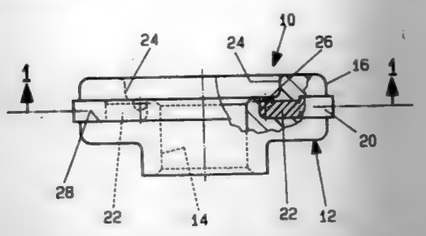
PCT No. PCT/EP94/01375, § 371 Date Jan. 18, 1995, § 102(e) Date Jan. 18, 1995, PCT Pub. No. WO94/26147, PCT Pub. Date Nov. 24, 1994

PCT Filed Apr. 29, 1994, Ser. No. 374,516

Claims priority, application Germany, May 18, 1993, 9307532 U

Int. Cl.[6] A47B *88/00*

U.S. Cl. 384—19 **6 Claims**



1. A wheel for roller drawer guides for extractable furniture parts, having a wheel body of stable shape mountable for rotation on an axle, which wheel body has a circumferential groove the circumferential groove having at least one recess, and a tire of elastically deformable material projecting slightly outward of the circumference of the wheel body, which tire is formed in the groove in a fluid state, wherein an annular groove opens from a lateral surface of the wheel body and the recess is formed as at least one passage running from the circumferential groove to the annular groove.

5,487,611

SEALING SYSTEM FOR A BEARING

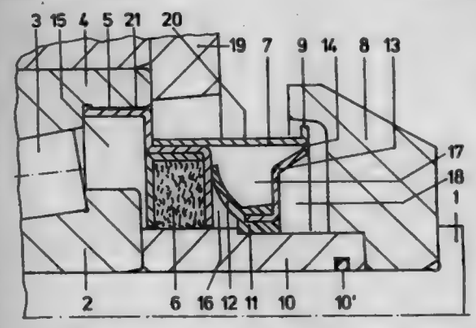
Peter Dreschmann, Dittelbrunn, and Wilhelm Walter, Oberthulba, both of, Germany, assignors to FAG Kugelfischer Georg Schafer AG, Germany

Filed May 13, 1994, Ser. No. 242,434

Claims priority, application Germany, Jan. 21, 1994, 9400995 U

Int. Cl.[6] F16C *33/78*

U.S. Cl. 384—478 **13 Claims**



1. A sealing system for a roller bearing, wherein the roller bearing comprises an axle, an inner bearing race on the axle, bearing rollers around the inner race and an outer bearing race around the bearing rollers;

the inner and outer races having an axial end;

said system comprising a sealing cap axially spaced from the same respective axial end of the inner and outer races;

a first sealing ring sealingly mounted to the outer race, spaced radially out from the inner race; the first sealing ring including an axial area enclosing a bore and extending toward an axial outer end of the first sealing ring that is spaced from the sealing cap a short enough distance as to define a sealing gap between the axially outer end of the axial area of the first sealing ring and the sealing cap;

a felt ring disposed within the bore defined by the axial area of the first sealing ring and located axially out from the end of the inner race; the felt ring being axially spaced away from the bearing rollers as to define a first grease holding chamber axially between the bearing rollers and the felt ring and a second grease holding chamber axially outward of the felt ring;

a second sealing ring located axially outward of the felt ring and including a sealing lip thereon which seals at the felt ring such that the felt ring and the sealing lip may rotate with respect to each other;

the sealing lip from the second sealing ring closing the second grease chamber which is axially outward of the felt ring;

the first sealing ring and the felt ring are mounted to the outer race to rotate with the outer race;

a slinger disk located axially outward of the sealing lip and extending radially outward in the bore within the axial area of the first sealing ring, the slinger disk extending a radial distance as to define a second sealing gap between the axial area of the first sealing ring outward of the slinger disk and the slinger disk;

the slinger disk being so placed in the axial area and with reference to the second sealing gap defined by the slinger disk as to define respective first and second trapping chambers on opposite axial sides of the slinger disk.

5,487,612

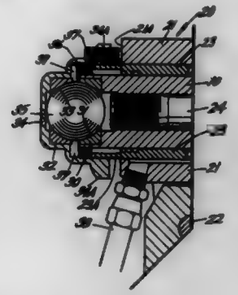
SHAFT SUPPORTING BEARING ASSEMBLY WITH AXIALLY DISPOSED CAP AND BALL MEMBER

Ronald L. Anderson, 410 Chambers St., Eugene, Oreg. 97402

Filed Nov. 28, 1994, Ser. No. 345,130

Int. Cl.[6] F16C *19/00*

U.S. Cl. 384—501 **10 Claims**



1. A bearing assembly for supporting a shaft against radial and thrust loads and including,

a housing having a bushing to receive the shaft,

a first bearing ring for installation in the shaft end,

a cap offset from said one end of said shaft,

a second bearing ring housed in said cap,

a ball element carried by said first and second bearing rings and concentric with said shaft whereby radial and thrust loads applied to said shaft are borne by said ball element and said first and second bearing rings, and

bearing adjustment means on said cap and said housing, and

a locking element carried by said cap for seated engagement with said housing.

5,487,613

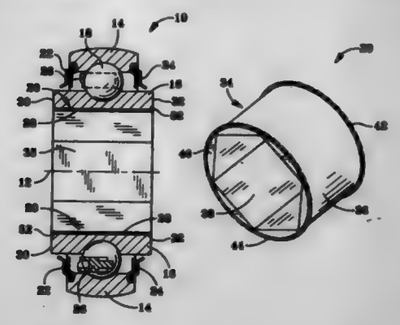
ADAPTOR FOR INNER BEARING RING BORE

Walter P. Waskiewicz, Bristol, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed May 1, 1995, Ser. No. 432,447

Int. Cl.[6] F16C *43/00*

U.S. Cl. 384—539 **22 Claims**



1. An adaptor for use with an inner bearing ring, the inner bearing ring having an axis, a cylindrical bore and first and second end surfaces, the adaptor comprising;

a tubular portion having a cylindrical outer surface adapted to be received within the inner bearing ring cylindrical bore, a non-cylindrical inner surface adapted to receive a non-cylindrical shaft, and providing first and second adaptor ends; and

a plurality of foldable tabs distributed along the circumference of the first and second adaptor ends, the foldable tabs being directed substantially radially outwardly from the cylindrical outer surface of the tubular portion and angled axially inwardly;

the tubular portion and foldable tabs being formed integrally of a resilient material such that the foldable tabs may transiently fold to permit insertion of the adaptor into the bearing ring cylindrical bore and engage the first and second bearing ring end surfaces to retain the adaptor in the inner bearing ring after insertion.

5,487,614

METHOD OF PRINTING A MULTIPLE COLOR IMAGE USING HEAT SENSITIVE INKS

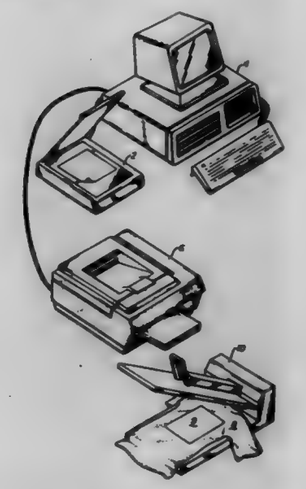
Nathan S. Hale, Mt. Pleasant, S.C., assignor to Sawgrass Systems, Inc., a South Carolina Corporation, Mt. Pleasant, S.C.

Continuation of Ser. No. 195,851, Feb. 10, 1994, Pat. No. 5,431,501, which is a continuation-in-part of Ser. No. 724,610, Jul. 2, 1991, Pat. No. 5,302,223, which is a continuation-in-part of Ser. No. 549,600, Jul. 9, 1990, abandoned. This application Mar. 8, 1994, Ser. No. 207,756

The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.

Int. Cl.[6] B41J *2/315*

U.S. Cl. 400—120.02 **4 Claims**



1. A method of printing a multiple color image using heat sensitive inks printed by a color thermal ink jet printer, comprising the steps of:

a. creating a multiple color image;

b. providing a color thermal ink jet printer;

c. printing, by thermal means and by multiple color process, heat sensitive inks in at least three colors to form said multiple color image on a medium by means of said inks, wherein the printing by thermal means is at a temperature which is below the temperature at which said heat sensitive inks activate, and wherein the thermal means is said color thermal ink jet printer; and

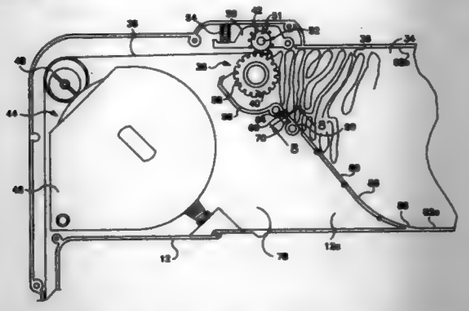
d. transferring said heat sensitive inks from said medium to an object on which the image is to appear by applying heat to said medium at a temperature which is above the temperature at which said heat sensitive inks activate, so as to cause sufficient of said heat sensitive inks to activate and bond to said object to form the multiple color image on said object.

5,487,615

RIBBON DRIVE ASSEMBLY FOR RIBBON CARTRIDGE

Sakae Hayao, Chatsworth, Calif., assignor to Sercomp Corporation, Chatsworth, Calif.

Filed Oct. 28, 1994, Ser. No. 330,446
Int. Cl.[6] B41J *35/28*
U.S. Cl. 400—207 13 Claims



1. A ribbon cartridge for printers, the ribbon cartridge including a housing having a bottom wall portion, a re-inking assembly provided within the housing for re-inking a ribbon, and a ribbon drive assembly provided within the housing for advancing the ribbon, the improvement comprising:

a first engaging device affixed to the bottom wall portion of the housing; and

a second engaging device provided on the ribbon drive assembly for removably engaging the first engaging device; and

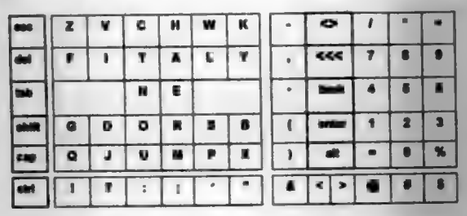
wherein the ribbon drive assembly includes a bracket and a drive gear rotatably mounted on the bracket, the bracket including a step-like protrusion and the first engaging device having a first hook for engaging with the step-like protrusion of the bracket.

5,487,616

METHOD FOR DESIGNING AN ERGONOMIC ONE-FINGER KEYBOARD AND APPARATUS THEREFOR

Jean D. Ichbiah, 58 Lexington St., Essex, Mass. 01803, assignor to Jean D. Ichbiah, Burlington, Mass.

Filed Jun. 1, 1995, Ser. No. 457,042
Int. Cl.[6] B41J *5/10*
U.S. Cl. 400—489 12 Claims



1. A method for designing a keyboard layout and assigning a plurality of characters in a target language to a keyboard for efficient entry of data using a single data entry vehicle, said keyboard comprising a plurality of keys including at least one key for each of said plurality of characters in said target language wherein the keys are arranged and disposed in a simple geometric formation, said formation defining a distance between every pair of said keys and said keys further arranged in accordance with the method comprising the steps:

(a) calculating a frequency of use for each of said plurality of characters from a representative corpus of text for said target language;

(b) calculating a frequency of transitions between each pair of characters in said plurality of characters from said representative corpus of text for said target language;

(c) defining a geometry for the keys of the keyboard and calculating the corresponding distance between every pair of keys in said keyboard;

(d) defining a current assignment for the plurality of characters to at least one of the keys on the keyboard and computing an average distance of travel for the single data entry vehicle by weighing the corresponding distance between every pair of said keys assignment by the frequency of transition between the corresponding characters for the assigned keys according to the current assignment;

(e) defining an alternative assignment obtained by permutation of the plurality of characters on said keys and replacing the current assignment by the alternative assignment if the average distance of travel for the alternative assignment is less than that for the current assignment;

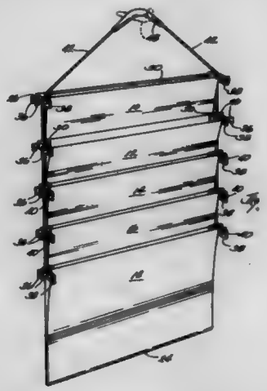
(f) repeating step (e) for all permutations of the plurality of characters.

5,487,617

HANGING FILE SYSTEM AND APPARATUS

Josephine A. Cole, 2034 N. 49th St., Milwaukee, Wis. 53208, and Kenneth J. Muderlak, 4481 N. Maryland Ave., Shorewood, Wis. 53211

Filed Feb. 22, 1994, Ser. No. 199,549
Int. Cl.[6] B42D *15/00;* B42F *15/00*
U.S. Cl. 402—4 6 Claims



1. The combination with pendant files of the type having heavy paper stock folders having generally rectangular front and back panels each of which has upper and lower edges hinged to one another at said lower edges, each of said panels also having upper front and rear corners, said front and back panels being provided with downwardly opening front and rear hook means respectively which are to be placed over supports in a file storage facility, means enabling a plurality of said folders to be suspended on a vertical surface in a vertically overlapping manner affording easy viewing of the upper edges of each folder and easy access to an interior of each folder, said enabling means comprising,

support means connected to each of said rear hook means and including means receiving the adjacent front hook means,

means flexibly interconnecting all said support means on each side of a group of file folders and including a central hanging point on the portion of said interconnecting means which extends between said upper corners of the file which is uppermost when the files are hung on a vertical surface,

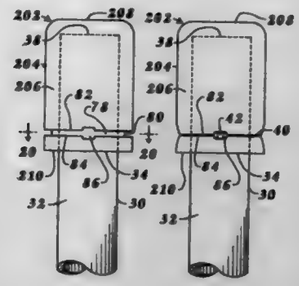
and stop means mounted on said interconnecting means to limit downward movement of each said support means to provide for vertical spacing between the files.

5,487,618

BARRIER DEVICE FOR A TRAFFIC BOLLARD TO PROTECT DETACHED MOVABLE OBJECTS DURING CONTACT

Charles E. Cox, 1016 Superior St. Lot 6, Fort Myers, Fla. 33916

Filed Jul. 25, 1994, Ser. No. 280,078
Int. Cl.[6] E01F *15/00*
U.S. Cl. 404—6 3 Claims



1. An impact protection sleeve to be secured to a bollard, the bollard of the type protecting stationary objects from vehicular contact, the bollard having a terminal end, a circular cross section, a periphery, a determinable location of attachment, the terminal end being an end accessible above ground level, the determinable location of attachment being the desired position for installation of the protective attachment device, the bollard having a circumference measured at the determinable location of attachment, the protective attachment device to provide impact absorbing properties to protect secondary, movable objects from damage during contact with the bollard, the impact protection device comprising:

a) a body, the body formed substantially of a compressible, impact absorbent material, the body having a resilient shape, an interior surface, an exterior surface, a trench, a top end, a bottom end, the resilient shape being cylindrical, the interior surface having a circumference, the interior surface to be in contact with the periphery of the bollard following attachment, the exterior surface providing impact absorbing protection for the movable objects being protected form contact with the bollard following attachment, the trench formed in the exterior of the body and axially extending circumferentially around the body relatively parallel to the bottom end of the body, the trench having an upper outer edge, a lower outer edge and a base, the base of the trench offset from the interior surface of the body, the bottom end open of the body to permit installation of the body over the terminal end of the bollard;

b) a draw strap to secure the body to the bollard, the draw strap placed within the trench during installation, the draw strap having a locking member and a flexible tab, the flexible tab extending from the locking member and terminating with a pull end, the locking member having a channel and a pivotal engagement member, the channel having an insertion side and an exit side, the channel forming a passage through the locking member, the pivotal engagement member penetrating the channel, the extending tab having incorporated thereon spaced teeth, the locking member adaptable to receive through the channel form the insertion side a portion of the tab in a unidirectional manner permitting insertion therethrough while providing for engagement of the locking member to engage the teeth of the tab to prohibit removal of the portion of the tab inserted therethrough, the draw strap causing contraction of the trench to bring the upper outer edge of the trench in close proximity to the lower outer edge of the trench following installation;

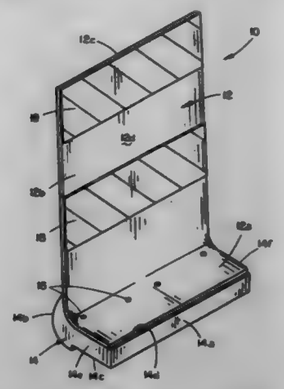
whereby the impact protection device would be secured to the bollard to provide impact absorbing protection to other detached movable objects which may impact the bollard during normal movement of the other objects.

5,487,619

SELF-RIGHTING WARNING MARKER

Terence M. Winebrenner, 11914 "T" St., Omaha, Nebr. 68137

Filed Jan. 24, 1995, Ser. No. 377,477
Int. Cl.[6] E01F *13/00*
U.S. Cl. 404—6 11 Claims



1. A self-righting warning marker, comprising:

a base having a forward surface defining a free end thereof, a rearward surface, opposing left and right ends, and opposing top and bottom surfaces;

said rearward surface adjoining a portion of the bottom surface along an arcuate pivot surface, means providing pivotal movement of the marker from to a substantially horizontal orientation to an upright orientation, the horizontal orientation having the rearward surface in contact with ground and the top and bottom surfaces generally perpendicular thereto;

a warning sign attached to said base and extending upwardly therefrom oriented generally perpendicularly to the base bottom surface;

said warning sign having indicia thereon for visually alerting a person located forwardly of the marker;

said warning marker having a center of gravity located to cause the base to be biased to an upright orientation from the horizontal orientation, pivoting along said pivot surface;

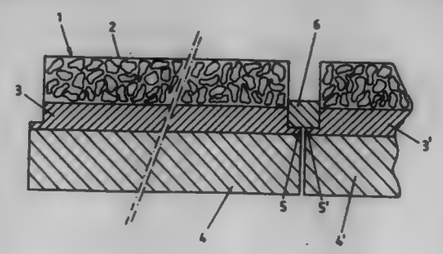
said base bottom surface having a forward edge located to stop pivotal movement of the base from the horizontal position beyond a predetermined upright position.

5,487,620

DRAINING PAVEMENT ELEMENT, METHOD FOR MANUFACTURING IT AND PAVEMENT MADE WITH IT

Harm W. Holman, Doesburg, Netherlands, assignor to Terra IJsel B.V., Lathum, and Harm Willem Holman, Doesburg, both of, Netherlands

Filed Jun. 28, 1994, Ser. No. 266,550
Claims priority, application Netherlands, Jun. 30, 1993, 9301143
Int. Cl.[6] E01C *5/00;9/00*
U.S. Cl. 404—31 22 Claims



1. Pavement element which comprises:

an upper layer consisting of a liquid permeable composition of solid particles and at least one binding agent,

a lower, liquid impervious layer connected to the bottom of said upper layer and having an outer perimeter, and

a lower layer sealing means associated with at least a portion of the outer perimeter of the lower layer for joining the lower layer of adjacent pavement elements together in a liquid tight manner in order to obtain a unitary liquid impervious layer formed from a plurality of adjacent pavement elements.

5,487,621

LARGE-DEPTH UNDERGROUND DRAINAGE FACILITY AND METHOD OF RUNNING SAME

Kunio Takada, Ibaraki; Kenji Otani; Masayuki Yamada, both of Tsuchiura; Saburo Maru, Ibaraki; Sumio Sudo, Ibaraki, and Sadashi Tanaka, Ibaraki, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 900,418, Jun. 18, 1992, Pat. No. 5,360,289, and a continuation-in-part of Ser. No. 988,755, Dec. 10, 1992, Pat. No. 5,360,290. This application Feb. 4, 1994, Ser. No. 192,289

Claims priority, application Japan, Feb. 5, 1993, 5-018783

Int. Cl.[6] E02F *1/00*; E02B *11/00*

U.S. Cl. 405—52 **6 Claims**



1. In a large-depth underground drainage facility including an underground water channel of a large capacity which is provided in an underground location at a large depth and which is slanting gently; a plurality of vertical shafts for leading drain water downwardly into said underground channel from flood control channels provided in an near to a ground surface; a pump well provided at a downstream end of said underground channel; and a pump station having a pump for pumping water which has flowed into said pump well to rivers or the sea;

the improvement wherein said pump in said pump station includes an impeller disposed generally at a medium water level of said underground channel; wherein said pump is capable of pumping the water from a closed channel water level at a rated flow rate and also of pumping the water from an open channel water level at a minimum flow rate; and wherein said pump achieves maximum efficiency at a flow rate between the rated flow rate and the minimum flow rate.

5,487,622

SYSTEM FOR TREATING POLLUTED GROUNDWATER

John A. Cherry; Enoch S. Vales, both of Waterloo, and Robert W. Gillham, Guelph, all of, Canada, assignors to University of Waterloo, Waterloo, Canada

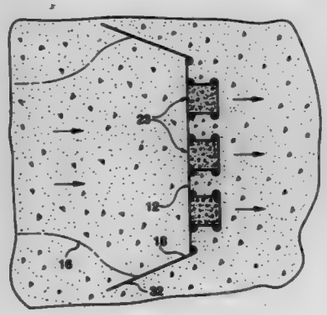
PCT No. PCT/GB93/00860, § 371 Date Oct. 20, 1994, § 102(e) Date Oct. 20, 1994, PCT Pub. No. WO93/22241, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 23, 1993, Ser. No. 331,535

Claims priority, application United Kingdom, Apr. 23, 1992, 9208822

Int. Cl.[6] C02F *1/00*; E02D *19/18*;*5/06*

U.S. Cl. 405—128 **22 Claims**



1. System for in-situ treatment of contaminated groundwater in an aquifer, wherein:

the system is of the kind in which the contaminated groundwater moves through the aquifer due to in-ground pressure-head gradients;

the system includes a barrier or wall that extends down into the ground, the wall being placed in the path of the in-ground movement of the contaminated groundwater, the wall dividing an upstream portion of the aquifer from a downstream portion of the aquifer;

the wall is watertight, in the sense of being effective to substantially prevent the passage of groundwater through the wall;

the system includes at least one gap or gate in the wall;

the system includes a body of treatment material;

the body of treatment material is porous and permeable to the extent that groundwater can pass through the treatment material;

the treatment material is of such a chemical composition, in relation to the nature of the contaminant, that the contaminant in the water undergoes a chemical change, upon the water being passed through the treatment material;

the body is located in the ground, in the gate, and is so arranged that groundwater can pass from the upstream portion of the aquifer to the downstream portion of the aquifer through the treatment material;

the system includes a gate sealing means which is effective to prevent the passage of groundwater between the wall and the body of treatment material in the gate, whereby groundwater cannot pass from the upstream portion of the aquifer to the downstream portion of the aquifer except through the treatment material;

the arrangement and dimensions of the gate, the body of treatment material, and the sealing means are such, in relation to the velocity of flow of the groundwater, that even the shortest path through the treatment material from the upstream portion of the aquifer to the downstream portion of the aquifer is long enough to ensure a residence period of the contaminated water within the body of treatment material of sufficient time as to ensure the effective treatment of the contaminant.

5,487,623

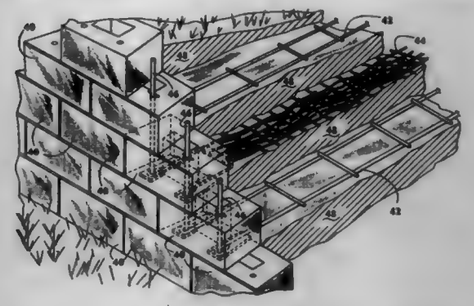
MODULAR BLOCK RETAINING WALL CONSTRUCTION AND COMPONENTS

Peter L. Anderson, Centreville; Michael J. Cowell, Leesburg, and Dan J. Hotek, Chantilly, all of Va., assignors to Societe Civile des Brevets Henri C. Vidal, France

Continuation-in-part of Ser. No. 40,904, Mar. 31, 1993. This application Aug. 18, 1993, Ser. No. 108,933

Int. Cl.[6] E02D *29/02*

U.S. Cl. 405—286 **35 Claims**



1. An improved wall construction comprising, in combination:

a plurality of facing block members arrayed in overlapping courses one upon the other, each block member having a generally planar front face, a back face, sides connecting the front face to the back face, and generally parallel top and bottom surfaces;

each block member also including at least two generally parallel, spaced counterbores in one of the parallel top and bottom surfaces extending from adjacent the front face through the back face, and a cross-counterbore connecting the parallel counter bores;

each block member further including a throughbore extending adjacent the front face of the block member from each one of the counterbores through the top or bottom surface, each counterbore surrounding a throughbore, said throughbores being parallel;

a stabilizing element comprising a tension arm in each of the counterbores of selected block members to define pairs of tension arms, each said pair of said tension arms of each stabilizing element being generally parallel and connected together by a cross member positioned in the cross-counterbore;

the stabilizing elements including soil engaging means projecting away from the back face of each block member into compacted soil; and

compacted soil for receipt of the soil engaging means for engagement with the soil.

5,487,624

POWDER FEEDING APPARATUS, ELECTROSTATIC POWDER COATING APPARATUS AND POWDER FLOW-RATE MEASURING APPARATUS

Hiromichi Toyota, and Masao Iwanaga, both of Tokyo, Japan, assignors to I.T.M. Corporation, Tokyo, Japan

Filed Feb. 18, 1994, Ser. No. 198,764

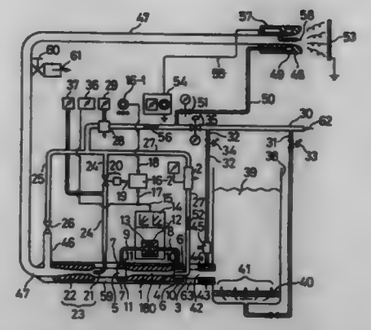
Int. Cl.[6] B65G *51/16*

U.S. Cl. 406—14 **52 Claims**

1. A powder feeding apparatus in which powder is fed through a large-diameter powder/feeding duct by a carrier gas supply means, said powder feeding apparatus comprising:

a means for adjusting a portion of a carrier gas to a fixed flow rate and supplying said portion as a powder flow rate detection gas;

a sensor nozzle which is provided on the downstream side of said means and through which said powder flow rate detection gas flows out;



a powder flow rate measuring capillary which is provided on the downstream side of and in close proximity to said sensor nozzle, which has an inlet and an outlet, and which has a diameter that is smaller than that of said large-diameter powder feeding duct;

pressure difference measuring means which are connected to said inlet and said outlet through filter means for the purpose of measuring a pressure difference between the inlet and the outlet of said capillary and which constitute a blind pipe route having an invariant interior volumes during normal operation;

a means for introducing powder to the inlet of said powder flow rate measuring capillary;

a large-diameter powder feeding duct connected to the downstream side of said capillary; and

a means for adjusting the pressure difference between the inlet and the outlet of said powder flow rate measuring capillary.

5,487,625

OXIDE COATED CUTTING TOOL

Bjorn Ljungberg, Enskede, and Anders Lenander, Tyreso, both of, Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed Nov. 30, 1993, Ser. No. 159,217

Claims priority, application Sweden, Dec. 18, 1992, 9203852

Int. Cl.[6] B23P *15/28*; B32B *9/04*

U.S. Cl. 407—119 **7 Claims**

1. A coated cutting tool body with one or more refractory layers of which at least one layer is alumina, said alumina layer having a thickness (d) of 0.5–25 μm and a single phase α-structure with a grain size (s):

$.5\ \mu m<s<1\ \mu m$ for $.5\ \mu m<d<.5\ \mu m$; and

$.5\ \mu m<s<3\ \mu m$ for $.5\ \mu m<d<25\ \mu m$,

said alumina layer exhibiting a texture coefficient greater than 1.3 for the (012) growth direction of the equivalent crystallographic planes defined as:

$$TC(hkl)=\frac{I(hkl)}{I_o(hkl)}\left\{\frac{1}{n}\Sigma\frac{I(hkl)}{I_o(hkl)}\right\}^{-1}$$

wherein:

I(hkl)=measured intensity of the (hkl) reflection;

I_o(hkl)=standard intensity of the ASTM standard powder pattern diffraction data; and

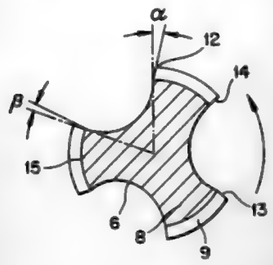
n=number of reflections used in the calculation, wherein (hkl) reflections used are: (012), (104), (110), (113), (024), (116).

5,487,626

THREADING TAP

Peder Von Holst, Sandviken, Sweden, and Josef Giessler, Mühlenbach, Germany, assignors to Sandvik AB, Sandviken, Sweden

Filed Sep. 7, 1994, Ser. No. 301,608
Claims priority, application Sweden, Sep. 7, 1993, 9302885
Int. Cl.[6] B23G 5/06
U.S. Cl. 408—144 6 Claims



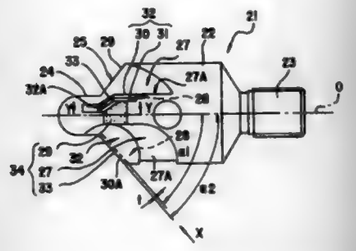
1. A threading tap comprising an elongate, substantially cylindrical shaft, which at one is provided with two or more lands which are straight or helically twisted around the central axis of the shaft, which lands are provided with cutting threads of substantially equal profiles and which are separated by straight or equally twisted chip-conveying flutes, at least the portion of the threading tap provided with lands comprising a core of high speed steel or tool steel and a cover of a hard material of 30 to 70% by volume of submicronic hard materials of carbides, nitrides and/or carbonitrides of Ti, Zr, Hf, V, Nb, Ta, Cr, Mo and/or W in a metallic matrix based on Fe, Co and/or Ni, the chip surfaces adjacent to the cutting edges of the cutting threads having a negative rake angle between −6° and −12°.

5,487,627

COUNTER SINK DRILL

Hiroshi Kasutani; Takao Koyama, both of Gifu; Kouji Hashimoto, and Yutaka Adachi, both of Aichi, all of, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Jul. 26, 1994, Ser. No. 280,767
Int. Cl.[6] B23B 51/10
U.S. Cl. 408—145 3 Claims



1. A counter sink drill including a pilot portion disposed at a distal end of a cutter body rotatable about its axis, said distal end projecting along said axis, and a countersinking section adjacent said pilot portion on a base end of said cutter body,

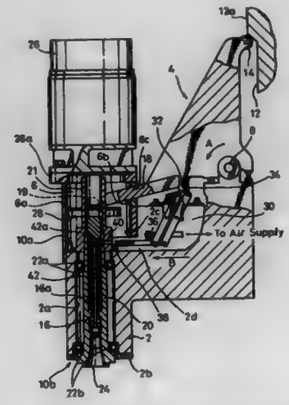
said countersinking section comprising a roughing section formed of an abrasive layer on a conical surface on said cutter body, a chip discharge groove recessed from said roughing section radially inwardly with respect to said axis, and a finishing edge having a path of rotation about said axis and aligned with said roughing section along said axis, at least one of said roughing section, said chip discharge groove and said finishing edge being disposed in the circumferential direction of said cutter body.

5,487,628

DEVICE FOR PREVENTING CUTTING FLUID FROM ENTERING A BEARING ON A SPINDLE IN A MACHINE TOOL

Ryuji Suzuki, Yamanashi, Japan, assignor to Fanuc Ltd., Yamanashi, Japan

Filed Dec. 15, 1994, Ser. No. 356,549
Claims priority, application Japan, Dec. 16, 1993, 5-316892
Int. Cl.[6] B23Q 11/00
U.S. Cl. 409—135 11 Claims



1. A device for preventing cutting fluid from entering a bearing rotatably supporting a spindle in a machine tool, comprising

means for forming a pressure chamber enclosing a region adjacent to said bearing; and

means for supplying air to said pressure chamber to increase the pressure within said pressure chamber.

5,487,629

COOLING AND DUST COLLECTING APPARATUS FOR MACHINE TOOL

Fumio Watanabe, Utsunomiya, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1994, Ser. No. 321,856
Claims priority, application Japan, Dec. 1, 1993, 5-301765
Int. Cl.[6] B23C 9/00; B23Q 11/00
U.S. Cl. 409—137 20 Claims

1. A cooling and dust collecting apparatus for a machine tool for cooling a cutter and for sucking and discharging cutting chips to the outside of said apparatus, said apparatus comprising:

a housing fixed to said machine tool for enclosing a spindle and a cutter of said machine tool;

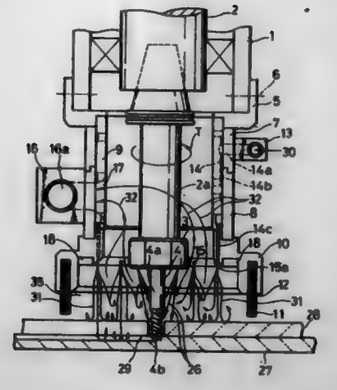
an elastic hood suspended from the bottom end of said housing for ensuring an enclosure of said housing;

cold air supplying means for supplying pressurized cold air;

a first cold air intake attachment mounted on said housing for introducing said pressurized cold air from said cold air supplying means into said housing;

a second cold air intake attachment mounted on said housing for introducing said pressurized cold air from said cold air supplying means into said housing;

a plurality of first cold air outlet holes provided at equal spaces on a bottom surface of said housing so as to form an air curtain around said cutter with said pressurized cold air blown vertically from said first cold air outlet holes;



a plurality of second cold air outlet holes provided in a ring attachment detachably connected to the bottom of said housing so as to cool said cutter with said pressurized cold air blown diagonally and downwardly from said second cold air outlet holes;

first cold air passage means provided in said housing for communicating said first cold air intake attachment and said first cold air outlet holes;

second cold air passage means provided in said housing for communicating said second cold air intake attachment and said ring attachment;

a cold air discharging attachment mounted on said housing for discharging cutting chips from inside of said housing together with said pressurized cold air; and

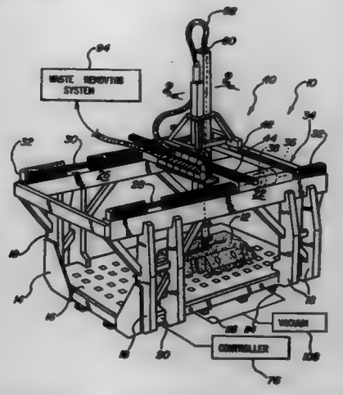
cutting chip sucking means communicated to said cold air discharging attachment for sucking and collecting cutting chips.

5,487,630

MACHINE FOR CUTTING A WORKPIECE MADE OF STYROFOAM OR LIKE MATERIAL

Jonathon Campian, 1900 E. 14 Mile Rd., Madison Heights, Mich. 48071

Division of Ser. No. 208,616, Mar. 9, 1994, Pat. No. 5,429,460.
This application Feb. 9, 1995, Ser. No. 386,276
Int. Cl.[6] B23C 9/00
U.S. Cl. 409—225 7 Claims



1. A machine for cutting a workpiece made of styrofoam or like material comprising said frame,

a frame having a generally planar base adapted to support the workpiece,

a rotary cutter,

means the rotatably driving said rotary cutter,

means the movably mounting said cutter to said frame above said base,

wherein said cutter removes material from the workpiece upon contact with the workpiece,

means for evacuating material removed from the workpiece through openings formed in said cutter,

means for attaching the workpiece to said base, said attaching means comprising at least one fluid port formed through said base,

a vacuum source,

means the fluidly connecting said vacuum source to said port,

a plurality of fluid ports formed through said base and fluidly connected to said vacuum source, said ports being spaced apart from each other, and

valve means associated with each port, said valve means be operable between an open and a closed position,

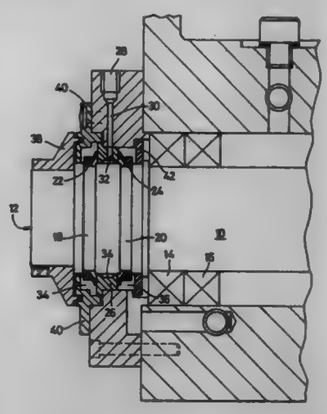
wherein said base comprises a recess surrounding each fluid port and wherein valve means comprises a flap positioned in said recess, said flap having an opening formed through it, said flap being movable between a first position in which said flap opening registers with said port and a second position in which said flap overlies and covers said port.

5,487,631

MACHINE TOOLS

Robin E. Child, Leamington Spa, Great Britain, assignor to Systematic Drill Head Co. Ltd., Warwickshire, United Kingdom

PCT No. PCT/GB93/01791, § 371 Date May 18, 1994, § 102(e) Date May 18, 1994, PCT Pub. No. WO94/07061, PCT Pub. Date Mar. 31, 1994
PCT Filed Aug. 23, 1993, Ser. No. 244,178
Claims priority, application United Kingdom, Sep. 19, 1992, 9219873
Int. Cl.[6] B23Q 11/12
U.S. Cl. 409—231 13 Claims



1. A machine tool spindle assembly comprising a rotatable spindle; a pair of resilient wiping seals; a fixed, non-rotatable component encircling said spindle, said seals being mounted on said spindle for rotation therewith and making sealing engagement with opposite faces of said component when said spindle is at rest; and means for applying pressure fluid to said wiping seals so as to effect displacement of said seals from engagement with said component.

5,487,632

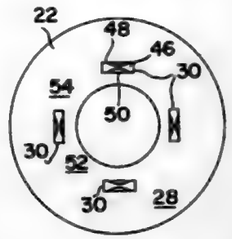
DIRECT TENSION INDICATOR WASHER

A. Craig Hood, Wayne, Pa., and Lloyd J. Larson, Buffalo, Minn., assignors to J & M Turner, Inc., Southampton, Pa.

Continuation-in-part of Ser. No. 81,636, Jun. 24, 1993, Pat. No. 5,370,483. This application Jun. 20, 1994, Ser. No. 262,787

Int. Cl.[6] F16B *31/02*

U.S. Cl. 411—10 4 Claims



1. A pre-load indicating washer comprising an annular body and a plurality of pairs of:

(a) protuberances integral with said annular body struck and partially sheared from said annular body to project from a first face of said annular body, and

(b) indentations left in a second face of said annular body opposite from said first face upon formation of said protuberances,

each of said protuberances defined by:

(a) a pair of outer side walls extending away from said first face of said annular body, and

(b) an outer surface extending between said pair of outer side walls and between two spaced regions of said first face of said annular body, and

each of said indentations defined by:

(a) a pair of inner side walls extending through said annular body from said second face of said annular body and from which a pair of outer side walls of one of said protuberances has been sheared, and

(b) an inner surface extending between said pair of inner side walls and between two spaced regions of said second face of said annular body,

each pair of said protuberances and indentations formed with a mass concentration along a central region between said outer side walls of said protuberance and said inner side walls of said indentation and extending along a selected length between said two spaced regions of said first face of said annular body and said two spaced regions of said second face of said annular body with:

(a) the regions at which said inner side walls of said indentations meet said inner surfaces of said indentations having a radius of curvature of at least 1/32", and

(b) both said outer surface of said protuberance and said inner surface of said indentation curved with a radius of curvature of at least 0.288".

5,487,633

SELF-DRILLING SCREW

David J. Roberts, Mornington, Australia, assignor to W. A. Deutscher Pty. Ltd., Moorabbin, Australia

Filed Jun. 9, 1994, Ser. No. 257,308

Claims priority, application Australia, Jun. 9, 1993, PL9263

Int. Cl.[6] F16B *23/00;25/00*

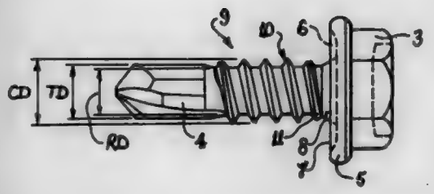
U.S. Cl. 411—387 20 Claims

1. A self-drilling screw for use with both relatively thick metal plate and relatively thin metal sheet, comprising:

an elongate shank;

an enlarged head formed upon one end of said elongate shank;

a drilling tip formed upon an opposite end of said elongate shank and having a predetermined diametrical extent;



an enlarged shank section located adjacent to said head, wherein the cross-sectional size of said enlarged shank section progressively increases in a direction away from said drilling tip and toward said enlarged head; and

a thread having a first portion formed upon a portion of said elongate shank which extends between said enlarged shank section and said drilling tip, and having a crest diameter dimension which is greater than said diametrical extent of said drilling tip and a root diameter dimension which is less than said diametrical extent of said drilling tip such that said first portion of said thread is able to threadedly engage a relatively thick metal plate when said self-drilling screw is inserted through said relatively thick metal plate; and a second portion which also extends onto said enlarged shank section such that said enlarged shank section and said second portion of said thread are able to distort a relatively thin metal sheet into wedging interengagement with said second portion of said thread and said enlarged shank section when said self-drilling screw is inserted through said relatively thin metal sheet.

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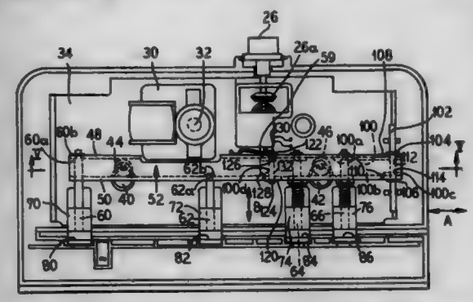
PUNCH SELECTABLE PUNCH PRESS

Al Vercillo, Harwood Heights, Ill., assignor to General Binding Corporation, Northbrook, Ill.

Filed Jun. 27, 1994, Ser. No. 266,231

Int. Cl.[6] B42B *9/00*

U.S. Cl. 412—16 14 Claims



1. In a punch press having a plurality of punches arranged to punch holes through sheets, the improvement comprising:

a pressure bar reciprocatable toward and away from sheets to be punched;

a first punch and a second punch arranged spaced along said pressure bar and movably inserted through respective holes in the pressure bar, the first and second punch having first and second groove formations respectively;

a selector rail mounted reciprocally with respect to said pressure bar and having notches alignable with and facing said first and second groove formations of said punches, reciprocation of said selector rail in a first direction engaging a first notch to said first groove formation and disengaging said second notch from said second groove formation, and reciprocating said selector rail in an opposite direction disengaging said first notch from said first groove formation and engaging said second notch to said second groove formation;

said selector rail movable with said pressure bar toward said paper to instigate punching of said sheets; and

a respective one of said first and second punches, once disengaged from said selector rail is disengaged from said pressure bar.

5,487,635

SLIDE-IN STORE FOR ROLLER PALLETS AND A PROCESS FOR INSERTING GOODS INTO AND WITHDRAWING GOODS OUT OF SAID STORE

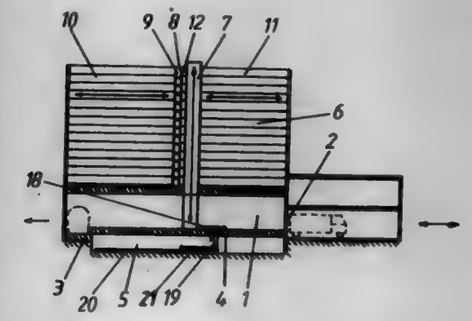
Ludger Heilkuhl; Siegfried Möre; Günter Pelzer, and Friedhelm Wesselmann, all of Gütersloh, Germany, assignors to Miele & Cie. GmbH & Co., Gueterslob, Germany

Continuation-in-part of Ser. No. 752,658, Aug. 21, 1991, abandoned. This application Mar. 21, 1994, Ser. No. 216,087

Claims priority, application Germany, Mar. 7, 1989, 39 07 264.9

Int. Cl.[6] B65G *1/04*

U.S. Cl. 414—277 11 Claims



1. A slide-in warehouse for roller pallets comprising:

at least three superimposed and horizontally positioned storage levels;

each storage level having a loading channel and being connected to at least one transport passage,

horizontally movable transport vehicles for moving at a right angle with each loading channel, one of said transport vehicles being positioned at each storage level, which transport vehicles comprise means for the horizontal insertion and withdrawal of the roller pallets in the loading channels;

said horizontally movable transport vehicles respectively positioning the roller pallets at the beginning of each loading channel and each transport vehicle having means for coupling a roller pallet to the transport vehicle;

a vertically movable transport vehicle for moving said roller pallets between said at least three storage levels;

wherein said at least three storage levels are located one on top of the other and further comprising:

a first storage level being an operational level for the insertion and withdrawal of goods;

a second storage level for the storage and consignment of the goods; and

a third storage level comprising an auxiliary operational level for the storage, preparation and supplying of the roller pallets into the operational level.

5,487,636

TIME AND COST EFFICIENT STORAGE FACILITY

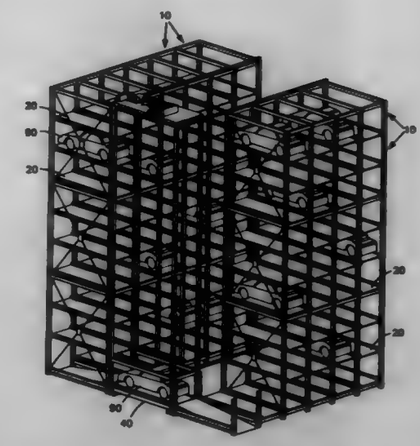
Mais Mkrtchyan, 614 Salem St., #2, Glendale, Calif. 91203

Filed Apr. 12, 1995, Ser. No. 421,431

Int. Cl.[6] B65G *1/04*

U.S. Cl. 414—286 5 Claims

1. A multilevel storage facility comprising:



a plurality of vertically stacked storage chambers and a plurality of storage platforms, each of the chambers containing one of the platforms, all of the chambers being accessible from a common face of the facility;

an elevator, mounted to move along the common face of the facility for providing access to any one of the chambers;

each of the chambers and the elevator providing a lower storage means for engaging one of the platforms when said platform is empty, and an upper storage means for engaging one of the platforms, when said platform contains an item for storage thereon, each of the platforms including a plurality of wheels positioned for engaging the upper storage means, and alternately, the lower storage means, such that with the elevator aligned with any one of the chambers, the respective elevator and chamber lower storage means and upper storage means are respectively aligned so that platform transfers are enabled therebetween;

the elevator further including a first transferring means for transferring one of the platforms between one of the chambers and the elevator, and a second transferring means for transferring one of the platforms between the elevator lower storage means and the elevator upper storage means; the second transferring means including a plurality of U-shaped sections, each providing an upper, and a lower rest surface for supporting one of the wheels of one of the platforms, the U-shaped sections including means for vertical positioning thereof, such that with the wheels of one of the platforms positioned on the lower rest surfaces of the U-shaped sections respectively, the platform is vertically positionable within the upper, or alternately, the lower storage means of the elevator by vertical adjustment of the position of the U-shaped sections in synchronized motion, and with the lower rest surfaces positioned in the elevator lower storage means, the upper rest surfaces are positioned in the elevator upper storage means, the exchange of platform positions being enabled during elevator movement;

such that an item to be stored in the facility is loaded onto one of the platforms positioned on the elevator upper storage means, and then moved to any empty chamber, swapping the loaded platform in the elevator with the empty platform in the chamber, the loaded platform being transferred into the chamber upper storage means, the empty chamber platform being transferred into the elevator lower storage means, the empty platform then being transferred to the elevator upper storage means in anticipation of repeating a storing sequence; and

to retrieve an item from the facility, first an empty one of the platforms in the elevator upper storage means is transferred to the elevator lower storage means, the elevator is positioned adjacent to a target one of the chambers, and the loaded chamber platform on the chamber upper storage means is transferred to the elevator upper storage means, while the empty elevator platform on the elevator lower storage means is placed into the chamber lower storage means.

5,487,637

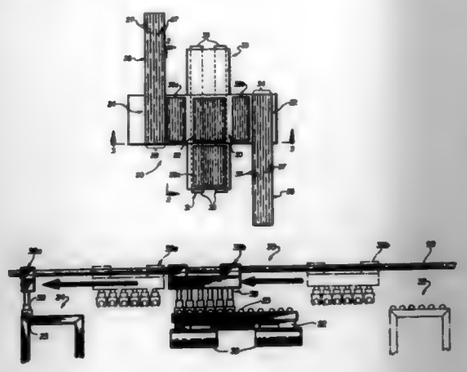
AUTOMATIC TRAY LOADING, UNLOADING AND COMPENSATING SYSTEM

Andrew E. Mojden, Hinsdale, and Richard P. Hoinacki, Oak Lawn, both of Ill., assignors to Fleetwood Systems, Inc., Romeoville, Ill.

Continuation of Ser. No. 984,181, Nov. 20, 1992, Pat. No. 5,372,473. This application Oct. 5, 1994, Ser. No. 318,351

Int. Cl.[6] B65G *57/00*

U.S. Cl. 414—788.4 **12 Claims**



1. An article handling system for compensating for differences between a rate of supply of articles at a first location and a rate of demand for articles at a second location, said system comprising: an infeed station for receiving a plurality of articles from said first location; a working station for accommodating an article-holding tray for storage of a plurality of articles; an outfeed station for receiving articles from said tray at said working station for delivery to a second location; at least two pick-and-place devices, each adapted to engage and thereafter discharge articles, and comprising at least one infeed pick-and-place device and at least one outfeed pick-and-place device; said working station being located between said infeed station and said outfeed station, with a path of movement of said pick-and-place devices overlying said single working station; operating means operating said at least one infeed pick-and-place device for movement between said infeed station and an overlying position with regard to said tray located at said working station for removing articles from said infeed station and discharging articles removed from said infeed station into said tray located at said working station, and for operating said at least one outfeed pick-and-place device for movement between an overlying position with respect to the same tray serviced by the infeed pick-and-place device and said outfeed station for removing articles from said tray located at said working station and for delivering articles removed from said tray to said outfeed station; and control means for controlling the operating means and said pick-and-place devices to remove stacks of articles from said infeed station, to discharge stacks of articles into tray means located at said working station, to remove stacks of articles from tray means at said working station, and to deliver stacks of articles to said outfeed station, respectively.

5,487,638

APPARATUS AND METHOD FOR LOADING ROLLS OF WEB INTO A CHAMBER

Fredric S. Salsburg, Victor, and Matthew D. Fairbrother, Caledonia, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 20, 1993, Ser. No. 139,377

Int. Cl.[6] B65G *59/02*

U.S. Cl. 414—796.9 **5 Claims**

1. Apparatus for loading an object from a stack having a first axis into a container having a chamber with a second axis transverse to the first axis, the object including a central opening with an interior wall, said apparatus comprising:

a fixed frame member having a reference axis;

a support member pivotably mounted to said frame member for rotation about said reference axis between a first position at which an object is raised from the stack along said first axis and a second position at which an object is inserted into the chamber along said second axis, and wherein said support member is connected to a follower member;

means for guiding said support member between said first and second positions, said means for guiding comprising a guide track engageable by said follower member, said guide track defining a first elevational position along said first axis and a second elevational position along said second axis;

engaging means rotatably mounted to said support member for firmly engaging the object along said first axis and delivering the object along said second axis into the chamber; and

means mounted to said support member for raising and lowering said engaging means along said support member between said first and second positions.

5,487,639

VORTEX FLOW BLOWER AND VANE WHEEL THEREFOR

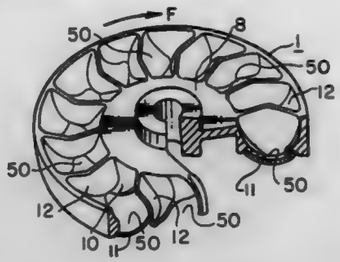
Hiroshi Asabuki; Masayuki Fujio, both of Sakura; Takashi Watanabe, Narita; Susumu Yamazaki, Tsuchiura, and Fumiaki Ishida, Narashino, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 22, 1994, Ser. No. 200,109

Claims priority, application Japan, Feb. 23, 1993, 5-033516; Mar. 17, 1993, 5-056718

Int. Cl.[6] F01D *1/12*

U.S. Cl. 415—55.1 **11 Claims**



1. A vortex flow blower for transferring gas, comprising a motor having an output rotational shaft, and a vane wheel driven by the shaft, wherein the vane wheel comprises:

vortex flow chambers opening in a direction substantially parallel to the output rotational shaft to receive the gas therein, to urge the gas in a substantially circumferential direction of the vane wheel, and to generate and accelerate a vortex flow of the gas therein,

a vane member including a hub through which the vane member is connected to the output rotational shaft, a plurality of vanes each extending monolithically from the hub in a substantially radial direction of the vane wheel, said vanes each including a front surface for urging the gas in the substantially circumferential direction of the vane wheel, and a vortex flow chamber wall extending monolithically from both the hub and each of the vanes, and

a cover means contacting the vortex flow chamber wall to form the vortex flow chambers together with the vortex flow chamber wall and the vanes, and

wherein the vortex flow chamber wall curves to project in a substantially radial direction of the vane wheel.

5,487,640

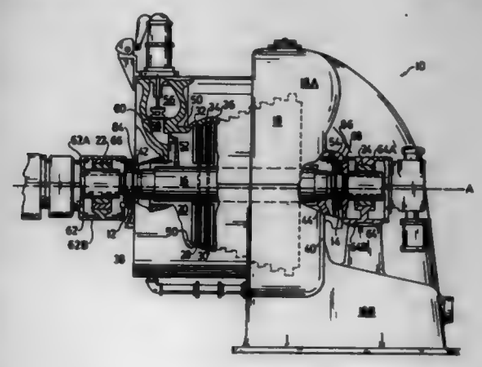
BALANCING RINGS FOR ASSEMBLED STEAM TURBINES

Carl F. Shaffer, Naperville, Ill., assignor to Dresser-Rand Company, Corning, N.Y.

Continuation-in-part of Ser. No. 214,762, Mar. 16, 1994, abandoned. This application Jun. 13, 1994, Ser. No. 258,405

Int. Cl.[6] F01D *25/00*

U.S. Cl. 415—119 **19 Claims**



1. A rotary machine comprising:

a shaft rotatable about an axis;

a housing defining a machine interior and having a first end wall through which said shaft extends;

first and second bearings for rotatably supporting said shaft, wherein said first and second bearings are axially spaced and at least said first bearing is positioned outside the machine interior and proximate said first end wall of said housing; and

at least one balancing ring having a plurality of holes, said balancing ring being coaxially-mounted on said shaft outside the machine interior between said end wall of said housing and said first bearing.

5,487,641

Patent Not Issued For This Number

5,487,642

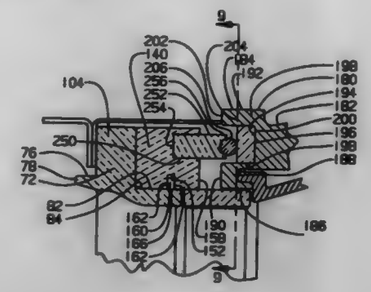
TURBINE NOZZLE POSITIONING SYSTEM

Paul F. Norton, San Diego, Calif., and James E. Shaffer, Maitland, Fla., assignors to Solar Turbines Incorporated, San Diego, Calif.

Continuation-in-part of Ser. No. 215,439, Mar. 18, 1994, Pat. No. 5,380,154. This application Aug. 12, 1994, Ser. No. 262,179

Int. Cl.[6] F04D *29/60*

U.S. Cl. 415—209.2 **6 Claims**



1. A system for positioning a nozzle guide vane assembly within a gas turbine engine having a central axis, a combustor and a turbine assembly positioned therein, said system positioning the nozzle guide vane assembly in radially spaced relationship to the central axis and the turbine assembly and in axially spaced relationship to the combustor, said system for positioning comprising:

an outer shroud defining an outer surface and having a mounting leg extending radially outwardly therefrom, said mounting leg having an opening therein, said outer shroud being positioned adjacent the combustor;

a tip shoe ring defining an inner surface being radially positioned about the turbine assembly and an outer surface having a mounting member extending radially inwardly therefrom, said mounting member having an opening therein being axially aligned with the corresponding opening in the mounting leg;

a nozzle support ring being positioned in contacting relationship to the tip shoe ring and having plurality of holes therein;

a support structure and a spherical bearing being interposed the nozzle support ring and a support structure being attached to the gas turbine engine;

a plurality of pins being positioned in the opening in the mounting leg, the opening in the mounting member and in at least a portion of each of the plurality of holes in the nozzle support ring, said plurality of pins positioning the outer shroud, the tip shoe ring and the nozzle support ring in a ring shaped structure and;

means for retaining the plurality of pins from axial movement.

5,487,643

PARTIAL ADMISSION AXIAL IMPULSE TURBINE INCLUDING COVER FOR TURBINE WHEEL ROTATING ASSEMBLY

Lowell W. Pearson, Hermosa Beach, Calif., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Jan. 18, 1994, Ser. No. 181,326

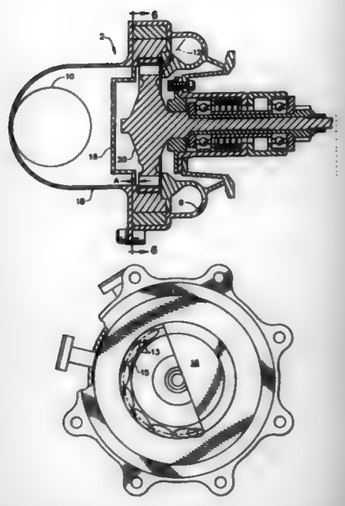
Int. Cl.[6] F01D *9/00*

U.S. Cl. 415—211.2 **14 Claims**

1. An axial impulse partial admission turbine, comprising:

a plurality of nozzles configured in an array forming a partial arc, each of said nozzles comprising an opening for allowing gas to flow therethrough;

a rotating turbine wheel having an inlet face opposite said are shaped nozzle array and an exit face on the side opposite the inlet face;



a turbine wheel housing enclosing a portion of the rotating turbine wheel and providing an exit plenum adjacent the exit face of the turbine wheel; and

a turbine pressure gradient control cover positioned in said exit plenum and affixed to the turbine wheel housing, opposite the turbine wheel exit face covering a portion of the turbine exit face not axially aligned with the arc shaped nozzle array, wherein gas flowing through said nozzle array flows axially through the turbine, and the cover reduces peripheral gas flow past the exit face of the turbine wheel to thereby reduce the turbine pressure gradient loss and increase turbine efficiency.

5,487,644

PUMP HAVING A SINGLE OR A PLURALITY OF HELICAL BLADES

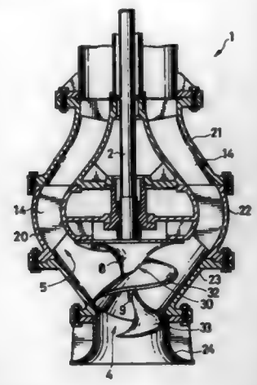
Eiichi Ishigaki; Kazumitsu Oura, and Takaharu Honda, all of Kagawa, Japan, assignors to Ishigaki Mechanical Industry Co., Ltd, Tokyo, Japan

Continuation of Ser. No. 941,446, Dec. 14, 1992, abandoned. This application Oct. 17, 1994, Ser. No. 323,589

Claims priority, application Japan, Feb. 13, 1987, 62-19618; Aug. 31, 1989, 1-102287

Int. Cl.[6] F01D *9/00*

U.S. Cl. 415—220 **3 Claims**



1. A vertical pump wherein a plurality of blades (10, 11, 12) is fixedly mounted on a forward end of a rotary drive shaft (2) and wherein an outer peripheral portion (32) of each of said plurality of blades (10, 11, 12) is in proximity with an inner surface of a casing (20), characterized in that:

said casing (20) extending in the direction of said rotary drive shaft 92) has a bell mouth (24) fixed on a lower end of said casing (20) and a portion of said casing (20), surrounding said blades (10, 11, 12), has a configuration bulged in the form of a bowl;

said blades (10, 11, 12) are helical in configuration, and are arranged with their phases equidistantly shifted respectively about said rotary drive shaft (2);

each said helical blade has a forward end portion extending downwardly more than the lower end of said casing (20) and less than the lower end of said bell mouth (24);

a plurality of twisted guide vanes (14) is arranged at a flow passage in an upper portion above said helical blades (10, 11, 12) in said bowl-shaped configuration portion of said casing (20); and

said bowl-shaped configuration portion of said casing (20), by which said helical blade (10, 11, 12) and said guide vane (14) are surrounded, is divided at a location between said blades (10, 11, 12) and said guide vanes (14) and at an intermediate portion of said guide vanes (14), whereby said casing is formed by three portions.

5,487,645

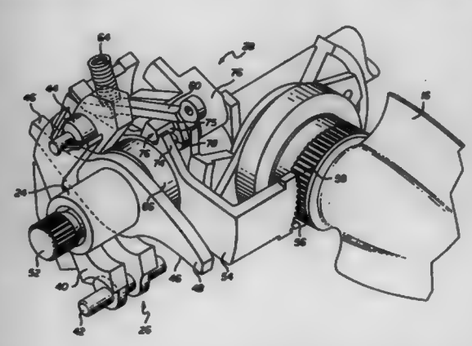
RAM AIR TURBINE WITH SECONDARY GOVENOR

Steven R. Eccles, Torrance, Calif., assignor to AlliedSignal Inc., Morris Township, N.J.

Filed Nov. 18, 1994, Ser. No. 341,718

Int. Cl.[6] F01D *7/02*

U.S. Cl. 416—51 **13 Claims**



1. A ram air turbine for deployment within an air stream to rotatably drive an output shaft, said ram air turbine comprising:

a rotary hub carried by said output shaft and having at least two turbine blades radiating outwardly therefrom, said turbine blade being supported by said hub to permit adjustment of blade pitch angle;

a primary governor coupled to said turbine blades and including first flyweight means responsive to hub rotation to adjust the blade pitch angle within a range of low to high pitch angles to maintain the rotational speed of said hub and the output shaft at a substantially constant operating speed; and

a secondary governor including shift means for shifting said turbine blades to a selected midrange pitch angle when said hub and the output shaft are in an at-rest condition, said midrange pitch angle being selected for faster acceleration of said hub and the output shaft from the at-rest condition on initial deployment, and said secondary governor further including means for disabling said shift means when said hub and the output shaft are accelerated to a selected rotational speed to permit subsequent speed control in response to operation of said primary governor.

5,487,646

VACUUM PUMP CONTROL APPARATUS FOR AN EVACUATING TYPE WASTE WATER COLLECTING SYSTEM

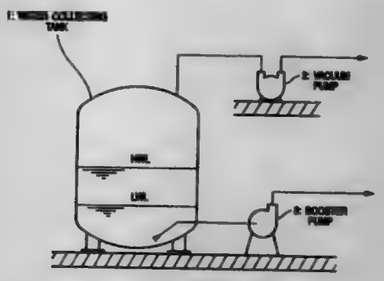
Akihiro Ushitora, Kanagawa; Kazuo Yamaguchi, Tokyo, and Tuneo Asanagi, Kanagawa, all of, Japan, assignors to Ebara Corporayion, Tokyo, Japan

Continuation of Ser. No. 982,085, Nov. 25, 1992, which is a continuation-in-part of Ser. No. 619,118, Nov. 28, 1990, abandoned. This application Sep. 30, 1994, Ser. No. 316,715

Claims priority, application Japan, Nov. 30, 1989, 1313236

Int. Cl.[6] F04B *41/02;49/02*

U.S. Cl. 417—4 **14 Claims**



1. A vacuum pump control apparatus for an evacuating-type waste water collecting system in which waste water discharged from houses and facilities is transported to a water collecting tank by means of vacuum sewer pipes provided with a negative pressure therein, and in which the waste water collected in said water collecting tank is discharged by means of a booster pump while the air in said water collecting tank is discharged by means of a vacuum pump, said vacuum pump control apparatus comprising:

(a) gas-liquid ratio detection means for detecting the ratio of the amount of air to the amount of waste water to be collected into said water collecting tank; and

(b) control means linked to the detecting means for controlling the operating time of said vacuum pump determined by the gas-liquid ratio detected by said gas-liquid ratio detecting means so that a target value of said gas-liquid ratio is recovered when it falls below the target value to thereby maintain the gas-liquid ratio in said vacuum sewer pipes at said target value.

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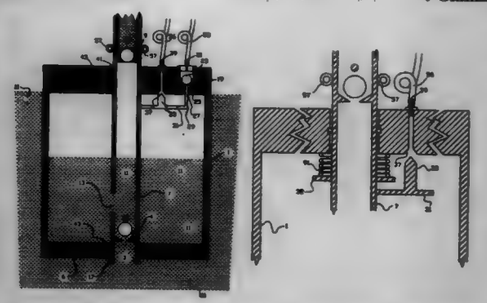
PNEUMATICALLY POWERED SUBMERSIBLE FLUIDS PUMP WITH CASING ACTIVATOR AND BIASING MEANS

Michael K. Breslin, 149 Shelley Dr., Mill Valley, Calif. 94941

Division of Ser. No. 325,856, Oct. 19, 1994, Pat. No. 5,470,206. This application Mar. 23, 1995, Ser. No. 409,384

Int. Cl.[6] F04F *1/06*

U.S. Cl. 417—131 **4 Claims**



1. A process for pumping of fluids to an opening in a discharge pipe utilizing a compressed gas power source comprising the steps of:

providing an enclosed buoyant casing having a top portion and a bottom portion;

mounting said enclosed buoyant casing for sliding sealed movement with respect to said discharge pipe between upper and lower positions;

providing an inlet to said enclosed buoyant casing, said inlet having means for allowing fluid to flow in and not out;

discharging air from an upper portion of said enclosed buoyant casing to flood said enclosed buoyant casing with fluid through said inlet to sink said enclosed buoyant casing to a lower position when said enclosed buoyant casing is in an upper position;

providing an outlet to said discharge pipe, said outlet having means for allowing fluid out to said discharge pipe but not in to said enclosed buoyant casing; and

flooding said casing with compressed air when said enclosed buoyant casing moves to a lower position to force fluid within said enclosed buoyant casing out said outlet when said casing is in said lower position.

5,487,648

SHELL CONFIGURATION FOR A HERMETIC COMPRESSOR

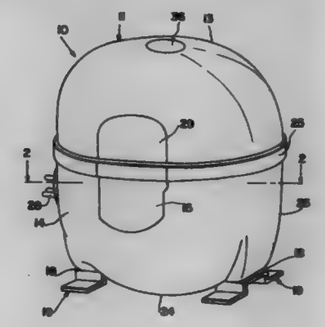
Biagio Alfano, Milan, and Edoardo Biscaldi, Saronno, both of, Italy, assignors to Necchi Compressori S.r.l., Pavia, Italy

Filed Jun. 22, 1994, Ser. No. 310,309

Claims priority, application Italy, Nov. 12, 1993, PV93A0012

Int. Cl.[6] F04B *53/16*

U.S. Cl. 417—312 **8 Claims**



1. A hermetic motor compressor comprising a shell formed by an upper and a lower cap connected one to the other in such a way that an airtight closure is obtained in the shell, and by feet fixed to said lower cap for positioning said compressor in the correct position during its working, said lower cap defining non-flat opposing surfaces having a very large curvature radius in relation to a curvature radius of a circle circumscribing the largest cross-section of the lower cap connected to first, second, third and fourth curved surfaces, said first and second curved surfaces being connected to a flat surface and third and fourth curved surfaces being connected one to the other, said lower cap further defining a spherical-shape in a lower part thereof, and said upper cap defining a band on a lower part thereof to fit over an upper part of said lower cap.

5,487,649

INFINITELY VARIABLE PNEUMATIC PULSATILE PUMP

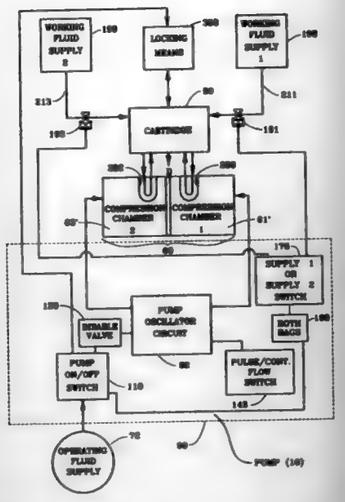
James H. Dorsey, III, Lighthouse Point, Fla., and Joe E. West, Meridian, Tex., assignors to American Hydro-Surgical Instruments, Inc., Delray Beach, Fla.

Filed Sep. 29, 1993, Ser. No. 128,850

Int. Cl.[6] F04B *45/00; A61M 1/00*

U.S. Cl. 417—395 **20 Claims**

1. A variable pneumatic pulsatile pump comprising:



a pump means including at least two pneumatically independent compression chambers independently and fluidly communicating with a supply of pressurized operating fluid;

a pneumatic control circuit in fluid communication with said pump means for controllably communicating said pump means with said pressurized operating fluid so as to variably and selectively supply and deprive said compression chambers with said pressurized operating fluid; and

at least one supply of working fluid to be selectively admitted to and ejected from said pump means in response to said pneumatic control circuit.

5,487,651

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

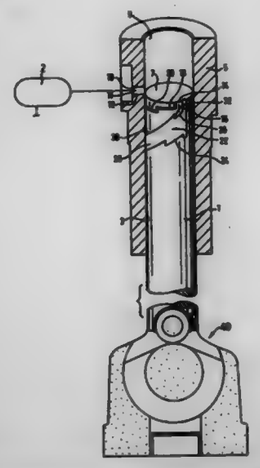
Josef Guentert, Gerlingen, and Hans Brett, Bietigheim-Bissingen, both of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 31, 1994, Ser. No. 220,650

Claims priority, application Germany, Mar. 31, 1993, 43 10 457.6

Int. Cl.[6] F02M *59/26*

U.S. Cl. 417—499 **5 Claims**



1. A fuel injection pump for internal combustion engines having a rotatable pump piston (1) axially guided in a cylinder bore (3) of a cylinder liner (5) and driven back and forth by a cam drive (40), said piston (1) with a face end (7) defines a pump work chamber (9) and which, on a jacket face, has a control opening (22) that communicates with the pump work chamber (9) and has an oblique control edge, said control edge cooperates with a control opening (11) in the wall of the cylinder liner (5) that leads from a low pressure chamber (2), wherein an edge of the face end (7) on the side of the pump piston (1) facing the pump work chamber (9), toward whose jacket face a first control edge (14) is formed that cooperates with the control opening (11) and that is defined on the piston circumference by means of a longitudinal groove (16) and, on its side remote from the longitudinal groove (16), has a second region, indented parallel with the piston's longitudinal axis toward the cam drive side of the pump piston (1), forming a second control edge (18), the second control edge (18) transitions into an additional region, which is indented toward the drive end of the pump piston (1), and which region, with the jacket face of the pump piston (1), forms a third control edge (20), and that the oblique control edge, beginning at the level of the face-end control edges (14, 18, 20) at the longitudinal groove (16) and dropping off as it continues, is divided into two control edges, of which a first oblique control edge (26) begins at the longitudinal groove (16) and, at the level of the transition between the first face-end control edge (14) and the second face-end control edge (18), transitions via a shoulder (32) along the piston's longitudinal axis toward the pump work chamber (9) into a second oblique control edge (30), wherein the spacing between the second oblique control edge (30), at its end associated with the first oblique control edge (26), and the second face-end control edge (18) is smaller than the span of the piston longitudinally of the the control opening (11) in the wall of the cylinder liner (5).

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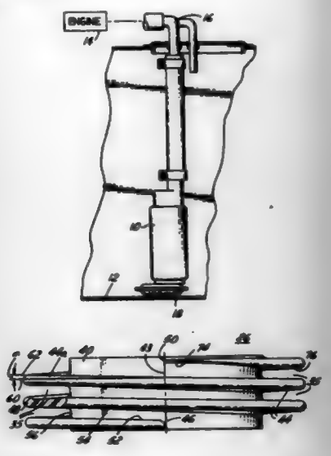
AUTOMOTIVE FUEL PUMP WITH HELICAL IMPELLER

Robert D. Gaston, Dearborn Heights, and Dequan Yu, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 7, 1993, Ser. No. 162,566

Int. Cl.[6] F03B *3/12*

U.S. Cl. 417—423.3 **17 Claims**



1. A fuel pump for supplying fuel from a fuel tank to an automotive engine, comprising:

a pump housing;

a motor mounted within a motor chamber within said housing and having a shaft extending therefrom;

an inlet in an end of said housing in fluid communication with said tank; and

a helically shaped pumping element fitted to said shaft between said inlet and said motor for pumping fuel in a generally axial direction from said tank, through said inlet, to said motor chamber, and to an outlet leading to said engine, with said pumping element being toleranced so as not to contact said pump housing;

said helically shaped pumping element comprising a helical blade making at least two turns around a longitudinal axis through said shaft, and wherein said at least two turns have a pumping face generally facing said motor and a back face generally facing said inlet;

so that fuel flows from said tank, through said inlet, and is scooped by said leading edge into an impeller inlet in said helically shaped pumping element defined by said leading edge, said housing, a hub fitted to said shaft and to which said blade is attached, and a back side of a blade turn adjacent said inlet blade turn, said back side of said blade generally facing said inlet.

5,487,653

AXIAL LEAKAGE RESISTANT APPARATUS OF SCROLL-TYPE COMPRESSOR

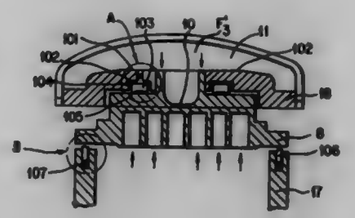
Byung C. Lee, Seoul, Rep. of Korea, assignor to Goldstar Co. Ltd., Seoul, Rep. of Korea

Filed Aug. 12, 1994, Ser. No. 288,794

Claims priority, application Rep. of Korea, Aug. 17, 1993, 1993-15922

Int. Cl.[6] F04C *18/04*

U.S. Cl. 418—14 **4 Claims**



1. An axial leakage resistant apparatus of a scroll compressor having an upper fixed scroll connected to a main frame, and a lower orbiting scroll, said apparatus comprising:

a pressurization means for pressurizing the fixed scroll by using a part of the refrigerant gas of high pressure in an exhalation chamber; said pressurization means include a high pressure bore interconnecting the exhalation chamber and a high pressure chamber for passing the high pressure refrigerant gas from said exhalation chamber to said high pressure chamber, and a pressurization element in said high pressure chamber for pressurizing said fixed scroll toward said orbiting scroll in response to said high pressure refrigerant in said high pressure chamber, and

supporting means including pins fitted in holes in said fixed scroll and said main frame, and elastic members for supporting said fixed scroll through said pins by buffing said pins with elastic force.

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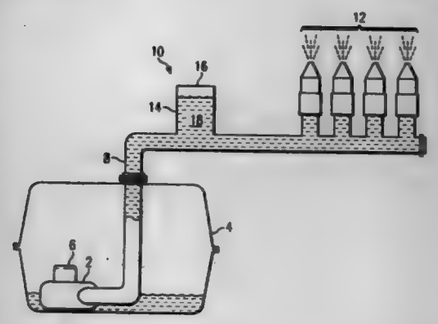
FUEL FLOW STABILIZER

Gil F. Shultz, Novi, Mich., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Mar. 5, 1993, Ser. No. 27,013

Int. Cl.[6] F02M *37/04*

U.S. Cl. 417—543 **2 Claims**



1. A fuel supply system for supplying liquid fuel to an engine of the type in which the fuel is delivered to said engine by fuel injectors, comprising:

a fuel pump;

a fuel delivery line connected between said fuel pump and said fuel injectors;

an accumulator in said fuel delivery line for accumulating a reserve amount of fuel in ordinary operation for ensuring that said fuel delivery line instantaneously supplies a required amount of fuel to the injectors in response to a sudden demand for additional fuel, said accumulator comprising a sealed tank containing said reserve amount of fuel and an amount of air that expands and compresses in response to pressure exerted by fuel in said fuel line; and

means for resupplying air from a fuel tank to said accumulator when said fuel supply system is inoperative;

wherein said accumulator supplies fuel from said reserve amount of fuel to said fuel line in response to a sudden demand for fuel which cannot immediately be satisfied by said fuel pump;

and wherein said accumulator receives excess fuel from said fuel line in response to a sudden decrease in the demand for fuel which cannot be satisfied by said fuel pump.

5,487,654

HERMETIC COMPRESSOR WITH HEAT SHIELD

Frank S. Wallis; Timothy R. Houghtby; Kenneth J. Mounier, all of Sidney, Ohio, and Roger C. Weatherston, East Amherst, N.Y., assignors to Copeland Corporation, Sidney, Ohio

Division of Ser. No. 95,185, Jul. 23, 1993, Pat. No. 5,358,391, which is a continuation-in-part of Ser. No. 978,947, Nov. 18, 1992, abandoned, and a continuation-in-part of Ser. No. 998,557, Dec. 30, 1992, abandoned, which is a division of Ser. No. 884,412, May 18, 1992, Pat. No. 5,219,281, which is a division of Ser. No. 649,001, Jan. 31, 1991, Pat. No. 5,114,322, which is a division of Ser. No. 387,699, Jul. 31, 1989, Pat. No. 4,992,033, which is a division of Ser. No. 189,485, May 2, 1988, Pat. No. 4,877,382, which is a division of Ser. No. 899,003, Aug. 22, 1986, Pat. No. 4,767,293. This application Aug. 31, 1994, Ser. No. 298,658

Int. Cl.[6] F04C *18/04;29/04;* F04B *39/06*

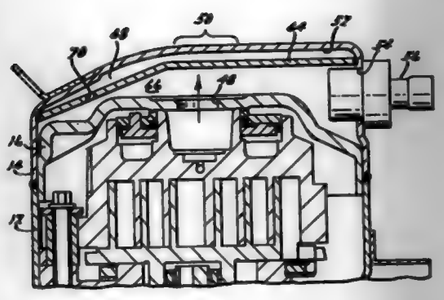
U.S. Cl. 418—55.1 **20 Claims**

1. A hermetic compressor comprising:

(a) a hermetic shell defining an enclosed chamber and having an exit port;

(b) a muffler plate dividing said enclosed chamber into a compressor chamber and a plenum chamber;

(c) a gas compressor disposed in said compressor chamber having a discharge port from which relatively hot compressed gas is discharged, said port being positioned so that said hot compressed gas is discharged into said plenum chamber in a direction toward a local area on an interior surface of said shell; and



(d) a heat shield spaced apart from said muffler plate and disposed between said port and said local area to insulate said local area from the relatively high temperature of said discharge gas, said shield being formed as a diaphragm affixed to said shell and defining an insulating chamber between said shield and said shell, said heat shield being formed having no flow passage in a flow path between said discharge port and said exit port.

5,487,655

METHOD OF AND APPARATUS FOR PRODUCING A SPUN FILAMENT WEB

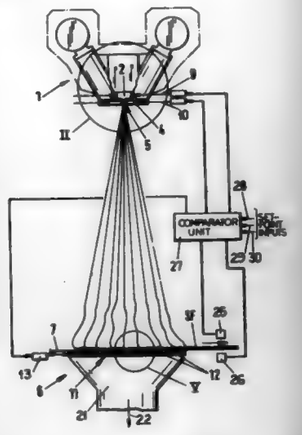
Detlef Frey, Troisdorf, and Bernd Masbach, Siegburg, both of, Germany, assignors to Reifenhauser GmbH & Co. Maschinenfabrik, Troisdorf, Germany

Filed Apr. 11, 1994, Ser. No. 226,598

Claims priority, application Germany, Apr. 15, 1993, 43 12 309.0

Int. Cl.[6] **B29B** *13/02;* **B29C** *33/02*

U.S. Cl. 425—72.2 **6 Claims**



1. A spin-blowing apparatus for producing a nonwoven spun-filament web, comprising:

a spinneret in a form of an orifice plate at a temperature constituting a first parameter and having a multiplicity of orifices for feeding a thermoplastified synthetic resin downwardly in respective filaments;

a filament-blowing head provided with a slot-shaped outlet gap adjacent said orifice plate and formed with means for entraining said filaments in flat filament-blowing streams of air directed at said filaments in a downwardly moving curtain of filaments and air through said slot-shaped outlet gap, said gap having a length corresponding to a width of a web to be produced, said outlet gap having a gap width constituting a second parameter;

means including a continuously moving sieve belt for collecting said curtain of filaments below said head to form a nonwoven web of said filaments of said curtain on said belt with properties of weight per unit area and air permeability of the web, air flow resistance through said belt constituting a third parameter; and

control means operable during formation of said web on said belt for continuously controlling at least one of said parameters to regulate at least one of said properties, said plate in a region of said orifices being subdivided into separately controllable heated zones across said width of the web, said one of said parameters being said first parameter, temperatures of said zones being independently controlled in response to said deviation of said actual value from said set-point value.

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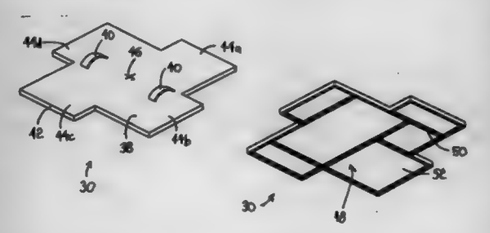
DECORATIVE FORMING APPARATUS

Michael A. Kaltanjian, 16067 Arbela Dr., Whittier, Calif. 90603

Filed May 16, 1994, Ser. No. 242,273

Int. Cl.[6] **B29C** *59/02;* **E01C** *23/02*

U.S. Cl. 425—385 **5 Claims**



1. A tool for forming imprints in a deformable material, comprising:

an upper support plate;

a rectilinear outline having four identically shaped outwardly extending legs;

a lower forming surface; and

a center point, wherein said tool can be rotated 90° from a first position where it forms a first outline pattern to a second position about said center point where it forms a second outline pattern such that said second outline pattern is identical to said first outline pattern in both the first and second positions.

5,487,657

SELECTIVELY ACTUATABLE LIGHTER

Floyd B. Fairbanks, Naugatuck; Thomas G. Snell, Madison, and James M. McDonough, Guilford, all of Conn., assignors to BIC Corporation, Milford, Conn.

Continuation of Ser. No. 912,421, Jul. 10, 1992, abandoned, which is a continuation of Ser. No. 609,668, Nov. 6, 1990, abandoned, which is a continuation of Ser. No. 239,734, Sep. 2, 1988, Pat. No. 5,002,482. This application Jun. 3, 1993, Ser. No. 71,863

The portion of the term of this patent subsequent to Mar. 26, 2008, has been disclaimed.

Int. Cl.[6] **F23D** *11/36*

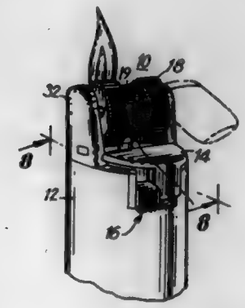
U.S. Cl. 431—153 **10 Claims**

1. A lighter having a fuel cutoff mechanism, said mechanism comprising:

a depressible valve actuator pivotably mounted on the lighter which, upon depression, actuates a fuel supply thereby permitting fuel to flow out from said fuel supply;

a latch member which is normally positioned beneath a portion of said valve actuator to prevent depression of said depressible valve actuator, said latch member having an integral finger actuatable portion manipulable along a first cross-wise direction and a second direction by a user to a position which permits depression of said valve actuator; and

wherein such selective actuation of said fuel supply and a corresponding production of sparks by a spark-producing assembly ignites fuel from said fuel supply, and wherein said cross-wise direction is a direction substantially perpendicular to a longitudinal axis defined by a top end and a bottom end of the lighter.



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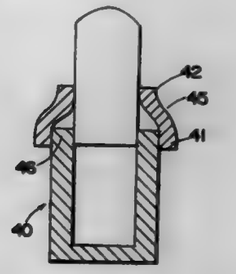
SAFETY DEVICE FOR NOVELTY CANDLE HOLDERS

Seungsoo Lee, 808 Pony Trail, Franklin Lakes, N.J. 07417

Continuation-in-part of Ser. No. 37,302, Mar. 26, 1993, Pat. No. 5,363,590. This application Sep. 14, 1994, Ser. No. 306,109

Int. Cl.[6] **F23D** *3/16*

U.S. Cl. 431—253 **14 Claims**



1. A safety device for a candle-flame activatable electronic device, said electronic device being enclosed in a flammable housing and said housing having a candle housing section that holds a candle, wherein said safety device comprises a nonflammable elongated hollow structure which has an upper and a lower section and two open ends, said upper and lower sections having an inner surface and an outer surface, wherein the contour of said inner surface of said upper section conforms to the circumferential contour of said candle and the contour of said inner surface of said lower section conforms to the outer circumferential contour of said candle holding section.

5,487,659

FUEL LANCE FOR LIQUID AND/OR GASEOUS FUELS AND METHOD FOR OPERATION THEREOF

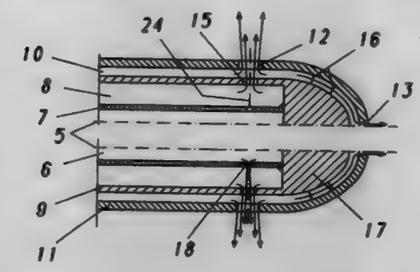
Adnan Eroglu, Unteriggenthal, Switzerland; Franz Joos, Wellheim-Baumholz, Germany; Peter Novacek, Gebenstorf, and Peter Senior, Mellingen, both of, Switzerland, assignors to ABB Management AG, Baden, Switzerland

Filed Jun. 20, 1994, Ser. No. 262,454

Claims priority, application Germany, Aug. 10, 1993, 43 26 802.1

Int. Cl.[6] **F23D** *14/46*

U.S. Cl. 431—350 **20 Claims**



1. A fuel lance for liquid and/or gaseous fuels for use in a combustion chamber, which fuel lance comprises:

(a) a liquid fuel pipe extending along a lance center line and surrounding a liquid fuel passage for carrying a liquid fuel;

(b) a gas pipe surrounding the liquid fuel pipe and forming therebetween a gas passage for carrying a gaseous fuel;

(c) a lance outer shell surrounding the gas pipe and forming an air passage around the gas pipe for carrying cooling air and atomizer air;

(d) at least one air/fuel nozzle provided in a side of the lance outer shell at a downstream end of the fuel lance for air flow out of the air passage into the combustion chamber surrounding the fuel lance;

(e) at least one gas nozzle provided in the gas pipe for gas flow out of the gas passage into the air passage, wherein the at least one gas nozzle is positioned relative to the at least one air/fuel nozzle so that gas from the gas nozzle flows with air from the air passage through the at least one air/fuel nozzle into the combustion chamber; and

(f) at least one liquid fuel nozzle provided in the liquid fuel pipe for liquid fuel flow out of the liquid fuel passage the at least one liquid fuel nozzle being positioned relative to the at least one gas nozzle and at least one air/fuel nozzle so that liquid fuel from the liquid fuel nozzle flows through the air passage and, with the air, through the at least one air/fuel nozzle into the combustion chamber.

16. A method of operating a fuel lance, including a liquid fuel pipe extending along a lance center line and defining a liquid fuel passage and having at least one liquid fuel nozzle for liquid fuel flow out of the liquid fuel passage, a gas pipe surrounding the liquid fuel pipe and forming therebetween a gas passage and having at least one gas nozzle for gas flow out of the gas passage into the air passage, and a lance outer shell Surrounding the gas pipe and forming an air passage around the gas pipe for cooling air and atomizer air and having at least one air/fuel nozzle in a peripheral side of the lance outer shell at a downstream end of the fuel lance for air flow out of the air passage into the combustion chamber, wherein the gas nozzle is positioned relative to the air/fuel nozzle so that gas from the gas nozzle flows with air from the air passage through the at least one air/fuel nozzle into the combustion chamber and the liquid fuel nozzle is positioned relative to the gas nozzle and air/fuel nozzle so that liquid fuel from the liquid fuel nozzle flows through the air passage and with the air, through the air/fuel nozzle into the combustion chamber the method comprising the steps of:

directing air through the air passage to the air/fuel nozzle to cool the fuel lance and distribute fuel and

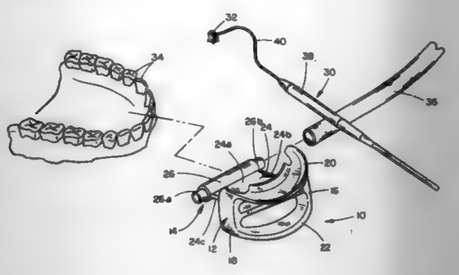
wherein the air is blown through the air/fuel nozzle into the combustion chamber as a flow jacketing the fuel flow.

5,487,660

ORTHODONTIC APPARATUS

Jackson J. Good, 501 N. 13th St., Norfolk, Nebr. 68701

Filed Aug. 12, 1994, Ser. No. 290,490
Int. Cl.[6] A61C *3/00;5/00*
U.S. Cl. 433—3 15 Claims



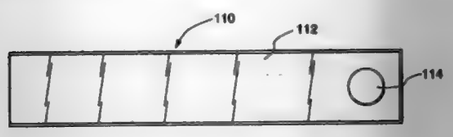
1. An orthodontic apparatus comprising:
an upper lip support connected to and spaced vertically above a lower lip support;
a generally horizontal, flat platform affixed generally midway between the upper and lower lip supports; and
a pair of generally vertical, spaced apart walls interconnecting the upper and lower lip supports and forming an access opening between said walls and lip supports for access to a patient's teeth above and below said platform.

5,487,661

PORTABLE DENTAL CAMERA AND SYSTEM

Keith C. Peithman, York, Pa., assignor to Dentsply International, Inc., York, Pa.

Filed Oct. 8, 1993, Ser. No. 134,158
Int. Cl.[6] A61C *1/00;1/16*
U.S. Cl. 433—29 6 Claims



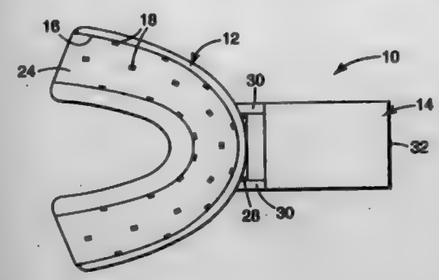
1. A Combination comprising a dental camera handpiece and a flexible dental camera cover having an elongated generally cylindrical body wall and
a lens,
said lens being supported by said body wall, said dental handpiece having a charge coupled device and a prism, said lens being positioned to refract light onto said prism, said prism being positioned to reflect said refracted light onto said charge coupled device.

5,487,662

DENTAL IMPRESSION TRAY FOR PHOTOCURABLE IMPRESSION MATERIAL

Cary A. Kipke, Woodbury, and James G. Bentsen, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 22, 1994, Ser. No. 216,148
Int. Cl.[6] A61C *1/00;3/00;5/00;9/00*
U.S. Cl. 433—37 27 Claims



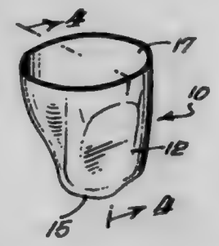
1. A dental impression tray comprising:
a body having a channel for receiving a quantity of photocurable dental impression material; and
at least one solid state light emitter mounted on said body for curing dental impression material in said channel, wherein said at least one solid state light emitter emits light having a wavelength in the range of about 630 to 980 nanometers.

5,487,663

ORAL APPLIANCES AND METHOD

George M. Wilson, 1536 Goddard Dr., Visalia, Calif. 93277

Continuation of Ser. No. 106,580, Aug. 16, 1993, abandoned.
This application Dec. 15, 1994, Ser. No. 357,074
Int. Cl.[6] A61C *5/08*
U.S. Cl. 433—218 12 Claims



1. A dual purpose dental appliance for forming a crown or serving as one, comprising:
a jacket formed of a flexible resin material, said jacket being of a generally cylindrical configuration with parallel side walls and having one end thereof closed to define a cup-like receptacle,
a coating of bonding agent on the inner walls of said cup-like receptacle, and a predetermined quantity of composite restorative material disposed in said receptacle,
said jacket being of such size as to fit over a prepared tooth, to thereby provide a crown on said tooth.

5,487,664

DENTAL POST PROVIDED WITH SUPPORT FRAME

Bernard Weissman, 225 E. 48th St., New York, N.Y. 10017

Filed Aug. 18, 1994, Ser. No. 292,259
Int. Cl.[6] A61C *5/08*
U.S. Cl. 433—221 19 Claims



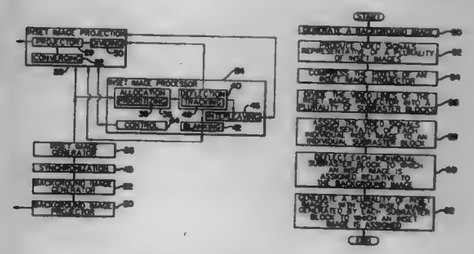
1. A dental post for retaining a dental restoration on a prepared tooth stub having a canal therein, said dental post comprising:
an elongated body;
first means for matchingly fitting into the tooth canal, said first means including a smooth cone-shaped lower end portion;
second means for coacting with a securing material to prevent said dental post from being pulled out of the tooth canal, and also for permitting said dental post to be retrieved from the tooth canal, said second means including a threaded portion for engagement with the securing material while allowing said threaded portion to be unscrewed from the securing material for removing said dental post from the tooth canal;
third means for facilitating the unscrewing of said threaded portion from the securing material, said third means being a non-circular portion;
said threaded portion being disposed between said smooth cone-shaped lower end portion and said non-circular portion; and
engagement means being disposed at a free top end of said elongated body for interlocked engagement with a support frame disposed on the tooth stub and straddling an upper part of said dental post, said engagement means including a chisel-like portion.

5,487,665

VIDEO DISPLAY SYSTEM AND METHOD FOR GENERATING AND INDIVIDUALLY POSITIONING HIGH RESOLUTION INSET IMAGES

Robert J. Lechner, St. Charles County, and Harold R. Streid, St. Louis County, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Oct. 31, 1994, Ser. No. 331,418
Int. Cl.[6] G09B *9/08;19/16*
U.S. Cl. 434—44 23 Claims



1. A visual display system comprising:
background image projection means for generating a background image having a predetermined size and resolution;
inset image generation means for producing video signals representative of a plurality of inset images;
inset image projection means, responsive to said inset image generation means, for generating a plurality of inset images, each having a smaller size and a higher resolution than the background image, in response to the video signals produced by said inset image generation means, said inset image projection means including:
an inset image projector having a plurality of video lines; and
dividing means for dividing the plurality of video lines into a plurality of subraster blocks wherein each subraster block can generate an inset image; and
inset image processing means, responsive to said inset image generation means, for controlling the generation of inset images by said inset image projection means, said inset image processing means including: allocation means for assigning the video signals representative of each individual inset image to an individual subraster blocks of said inset image projector; and deflection means, responsive to said allocation means, for producing positioning signals corresponding to the individual positions of each of the subraster blocks to which an inset image is assigned by said allocation means relative to the background image.

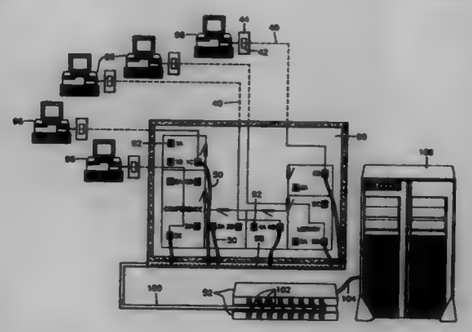
17. A method of displaying a composite video image having a plurality of inset images and a background image wherein the inset images are smaller and of a higher resolution than the background image, the method comprising the steps of:
generating a background image having a predetermined size and resolution;
producing video signals representative of a plurality of inset images, each having a smaller size and a higher resolution than the background image;
dividing the plurality of video lines of an inset image projector into a plurality of subraster blocks;
assigning the video signals representative of each individual inset image to an individual subraster block;
generating a plurality of inset images in response to the assigned video signals wherein one inset image is generated by each subraster block; and
deflecting each individual subraster blocks relative to the background image.

5,487,666

SCHEMATIC PATCH PANEL

Thomas H. DiGiovanni, 11 Earth Star Place, Gaithersburg, Md. 20878

Continuation-in-part of Ser. No. 815,156, Dec. 31, 1991, Pat. No. 5,291,377. This application Feb. 1, 1994, Ser. No. 189,834
Int. Cl.[6] G09B *25/00*
U.S. Cl. 434—72 14 Claims



1. A patch panel for a computer local area network, said patch panel comprising:
a panel including a plurality of openings,

a plurality of removably secured cover plates inserted into and secured to said plurality of openings and having a facing surface of each cover plate forming a continuous mounting surface, and

a schematic floor plan representative of a building site located on said continuous mounting surface formed by said facing Surfaces of said cover plates located in said plurality of openings to schematically identify locations of wall outlets of said building site and for facilitating easily changing locations of computers in a local area network.

10. A local area network of computer terminals, said local area network comprising:

a network central controller,

a patch panel including a support surface and a schematic floor plan representative of a building site located above said support surface and having marked locations representative of wall outlets, said support surface having a plurality of openings covered with a plurality of removably secured cover plates inserted into and secured to said plurality of openings and having a facing surface of each cover plate foxing a continuous mounting surface and said schematic floor plan being located on said continuous mounting surface,

a plurality of wall outlets for connection of a computer terminal to said patch panel,

cable lines interconnecting said plurality of wall outlets to a corresponding marked location on said schematic floor plan of said patch panel representative of a location of each wall outlet,

a connector at each end of each of said cable lines located at said wall outlets and in one of said openings of said support surface, and

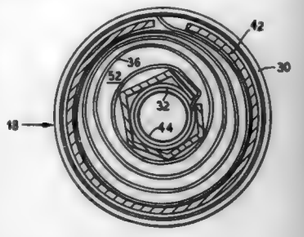
a cable extension connected between said network central controller and said connector located at said patch panel so that upon connection of a computer terminal with a wall outlet at said connector of one of said cable lines, said computer terminal will be networked with said network central controller and said computer terminal once changed in location in the local areal network is easily changed in connection at the patch panel according to the schematic floor plan.

5,487,667

AUTOMOBILE CLOCKSPRING WITH VIBRATION DAMPENER

Patrick A. Bolen, Carthage, Ill., assignor to Methode Electronics, Inc., Chicago, Ill.

Filed Mar. 11, 1994, Ser. No. 209,967
Int. Cl.[6] H01R *35/04*
U.S. Cl. 439—164 **10 Claims**



1. A clockspring interconnector comprising:

a housing having a housing wail;

said housing wall defining a chamber;

a rotor hub attached to said housing;

a flat conductor cable coiled within said chamber having a first end and a second end;

said first end attached to said rotor hub;

said second end attached to said housing; and

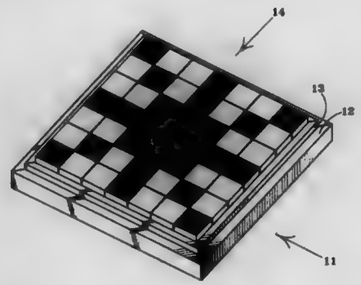
a vibration dampener adjacent to and compressing said flat conductor cable and having a generally cylindrical shape, encircling the majority of said chamber.

5,487,668

SET OF BLOCKS FOR MAKING DESIGNS

Margaret A. Oyen, Rhinebeck, and Linda Baldwin, Pine Plains, both of N.Y., assignors to Mill Hill Factory, Inc., Rhinebeck, N.Y.

Filed Nov. 9, 1993, Ser. No. 150,394
Int. Cl.[6] G09B *19/00*
U.S. Cl. 434—98 **11 Claims**



1. A designing set comprising:

a plurality of cubes, each cube having six faces;

a work base having an area with an odd number of spaces designated thereon for deposit of the cubes thereon, one in each space,

the spaces on the base being the same in number as the number of cubes,

each face of each of the cubes being distinguished from each other face of the cube by a color different from colors distinguishing each other face of the cube,

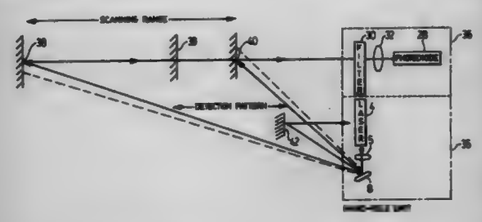
one face of half of the cubes plus one of the cubes being distinguished by one or the other of the colors black or white, and one face of the remaining cubes being distinguished by the other of the colors black or white, and no face of the remaining cubes being distinguished by the color that distinguishes said one face of the said half of the cubes.

5,487,669

MOBILITY AID FOR BLIND PERSONS

George F. Kelk, 11 Pine Forest Road, Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 28,218, Mar. 9, 1993, abandoned. This application Jul. 7, 1993, Ser. No. 87,342
Int. Cl.[6] A61H *3/00*
U.S. Cl. 434—112 **8 Claims**



1. A hand-held mobility aid for determining the positions of objects relative to a user, comprising:

means for transmitting laser radiation at a range of angles so as to scan a predetermined sector at a predetermined rate;

means for receiving said laser radiation reflected from an object;

scanning triangulation means responsive to the reflected radiation for continuously determining the distance of said object from the mobility aid;

means for producing an audible tone corresponding continuously to the distance of said object from the mobility aid; and

means for transmitting said audible tone or tones from said producing means to a user, said mobility aid being adapted to fit in the hand of said user allowing said user to hand scan an area wherein

said means for transmitting laser radiation comprises:

(a) a laser diode and lens;

(b) a pulse generator operating at a predetermined frequency stimulating said laser diode so as to produce pulses of laser radiation;

(c) an oscillating mirror/magnet assembly receiving said pulses of laser radiation and oscillating at a predetermined resonant frequency such that reflected laser radiation is transmitted; and

(d) means for generating a signal at said predetermined resonant frequency for oscillating said oscillating mirror/magnet assembly;

wherein said means for receiving said laser radiation comprises:

(a) a filter admitting radiation at the wavelength of the laser radiation;

(b) a lens for focusing said admitted radiation; and

(c) a photodetector for converting said admitted radiation into photocurrent;

and wherein said scanning triangulation means comprises:

(a) a synchronous detector receiving said photocurrent and said pulse generator signal and producing a demodulated signal;

(b) a phase-to-voltage converter sampling said oscillating signal at time intervals determined by said demodulated signal and time averaging said sampled signal; and

(c) a voltage-to-frequency converter converting said integrated signal into an audio signal having a frequency proportional to the voltage of said time averaged signal,

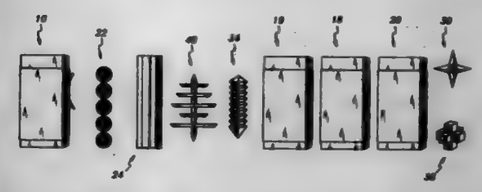
said means for producing an audible tone comprising an audio amplifier amplifying said audio signal in an audio band.

5,487,670

DYNAMIC LANGUAGE TRAINING SYSTEM

Helga F. Leonhardt, 640 San Elijo St., San Diego, Calif. 92106

Continuation-in-part of Ser. No. 424,716, Oct. 20, 1989, abandoned. This application Aug. 8, 1991, Ser. No. 742,403
The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.
Int. Cl.[6] G09B *1/00*
U.S. Cl. 434—167 **18 Claims**



1. An educational method for teaching the functions, interrelationships and interaction between the parts of a natural human language, comprising the steps of:

providing a plurality of objects of differing and unique geometrical shapes, each part of speech of said natural human language being represented by an object of a different unique geometrical shape;

selecting a clause with a plurality of words;

assigning appropriate ones of said objects to represent each of said plurality of words, the shape of each one of said appropriate ones of said objects corresponding to the part of speech of the word represented;

displaying said appropriate ones of said objects in combination with the represented words;

arranging said appropriate ones of said objects in accordance with a predetermined grammatical pattern based on grammatical rules of said natural human language to form the clause; and

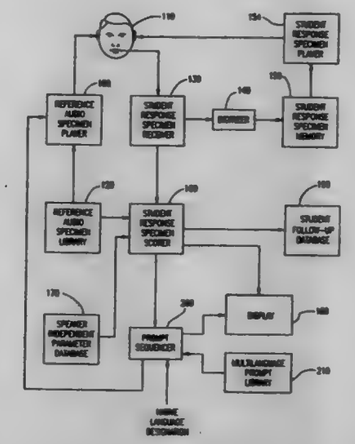
causing said appropriate ones of said objects to undergo animated shape changes and animated interaction between the appropriate ones of said objects, said animated shape changes and animated interactions representing symbolically the actions performed on or by, and the interactions between, the plurality of words in the clause.

5,487,671

COMPUTERIZED SYSTEM FOR TEACHING SPEECH

Zeev Shpiro, Tel Aviv, Israel; Gabriel F. Groner, Palo Alto, Calif., and Erik Ordentlich, Huntingdon Valley, Pa., assignors to DSP Solutions (International), Hamilton, Bermuda

Filed Jan. 21, 1993, Ser. No. 7,242
Int. Cl.[6] G09B *5/00*
U.S. Cl. 434—185 **26 Claims**



1. Apparatus for interactive speech training comprising:

an audio specimen generator for playing a pre-recorded reference audio specimen to a user for attempted repetition thereby;

a reference audio specimen library in which reference audio specimens are stored and to which the audio specimen generator has access, wherein said audio specimen library comprises a multiplicity of recordings of speaker dependent audio specimens produced by a plurality of speech models;

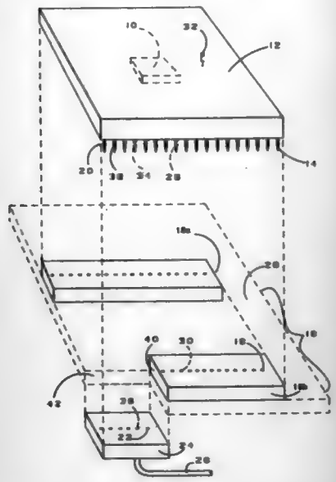
a speaker independent parameter database storing a plurality of speaker independent references which are different from the reference audio specimens stored in said reference audio specimen library; and

an audio specimen scorer for scoring a user's repetition audio specimen by comparison of at least one parameter of the user's repetition audio specimen with a speaker independent reference, said speaker independent reference being characterized in that it is classified in a category according to at least one of age, gender and dialect categories.

5,487,672

Patent Not Issued For This Number

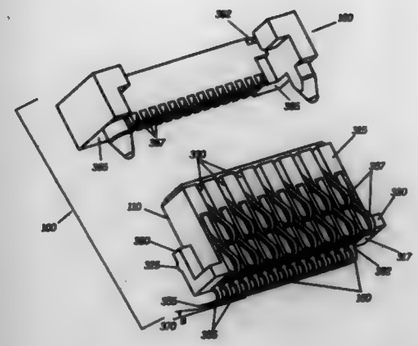
5,487,673
PACKAGE, SOCKET, AND CONNECTOR FOR INTEGRATED CIRCUIT
Jorge S. Hurtarte, La Mirada, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.
Filed Dec. 13, 1993, Ser. No. 165,608
Int. Cl.[6] H01R 9/09
U.S. Cl. 439—69 3 Claims



1. A combination comprising:
(a) a package containing an integrated circuit, the package including a plurality of pins;
(b) a socket which includes means defining a plurality of holes, some of which are situated to engaged complementary pins of the package;
(c) a cable connector which includes means defining a plurality of holes, some of which are situated to engaged complementary pins of the package, different from the pins situated to engage the holes of the socket;
(d) a motherboard mounting the socket; and
(e) means defining a hole in the motherboard opposite the pins complementary to the cable connector.

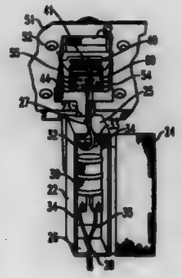
5,487,674
SURFACE MOUNTABLE LEADED PACKAGE
Andrzej T. Guzik, Pompano Beach; Todd L. Smith, and Jeffrey P. Marchuk, both of Ft. Lauderdale, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 6, 1993, Ser. No. 85,806
Int. Cl.[6] H01R 4/02
U.S. Cl. 439—83 2 Claims

1. A surface mountable connector having a plurality of leads coplanar in a target plane, comprising:
a housing having a connector interface surface and a mounting surface, the housing having lead slots extending to the mounting surface, the housing having an integral guide rail and a first retainer portion;
a plurality of leads mounted within the lead slots, said plurality of leads having free end portions exiting the mounting surface of the housing, said free end portions being preformed to angle away from the target plane and toward the mounting surface;
a correction bar mounted on said housing along the guide rail, the correction bar having a second retainer portion that cooperates with the first retainer portion to secure the correction bar to the housing, the correction bar engaging said free end portions and biasing said free end portions toward the target plane to form a coplanar contact surface for mounting the



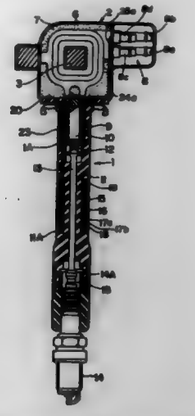
connector, said correction bar having positioning notches for limiting lateral movement of said free end portions;
wherein at least one of the first and second retainer portions comprises a protrusion that engages the other retainer portion in a snap fit arrangement.

5,487,675
INTEGRATED PROTECTOR AND MODULAR JACK
Bassel Hage Daoud, Parsippany Township, Morris County, N.J., assignor to AT&T Corp., Murray Hill, N.J.
Filed Sep. 26, 1994, Ser. No. 311,987
Int. Cl.[6] H01R 13/74;13/648
U.S. Cl. 439—95 13 Claims



8. A customer bridge assembly comprising:
a jack adapted for mounting in an aperture in a chassis;
a housing mechanically attached to the jack, the housing including a surge protector with a ground contact therein; and
a contact member electrically coupled to the ground contact and attached to the jack, the contact member including at least one contact finger extending from at least one side of the member and adapted to make electrical contact with a conductive member extending essentially perpendicular to a major surface of the chassis.

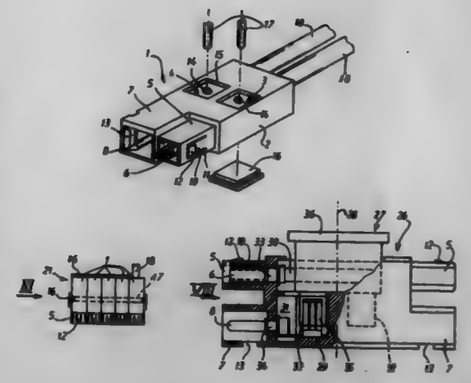
5,487,676
SPARK PLUG CAP WITH IGNITION VOLTAGE DETECTIVE CAPACITOR FOR INTERNAL COMBUSTION ENGINE
Shigeru Maruyama; Yuichi Shimasaki; Masaki Kanehiro; Takashi Hisaki; Shigeki Babe; Takuji Ishioka; Jiro Takagi, and Eitetsu Akiyama, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 9, 1993, Ser. No. 149,378
Claims priority, application Japan, Nov. 10, 1992, 4-326167
Int. Cl.[6] F02P 17/00
U.S. Cl. 439—125 17 Claims



1. A spark plug cap covering the terminal of a spark plug for an internal combustion engine, including;
an insulative cap body;
a case for housing an ignition coil to be attached to the insulative cap body and having a terminal for the ignition coil;
a first conductor housed in the insulative cap body for carrying an ignition voltage produced by the ignition coil to the spark plug terminal; and
a second conductor located around the first conductor keeping a predetermined distance therefrom while sandwiching an insulative material therebetween such that a capacitor is formed between the first and second conductors for detecting the ignition voltage;
wherein the improvement comprises;
a first contact provided at the end of said insulative cap body and electrically connected with said second conductor; and
a second contact electrically connected with the terminal of said case such that the second contact is brought into contact with the first contact when said case is attached to said insulative cap body.

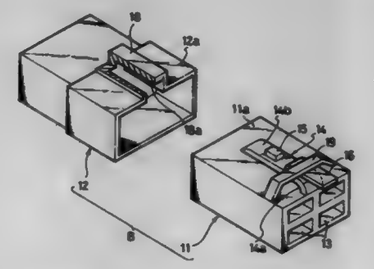
5,487,677
HERMAPHRODITE ELECTRICAL CONNECTOR
Max Hoffner, Hirsingue, France, assignor to Maxi System International S.A., Mulhouse, France
PCT No. PCT/FR92/00755, § 371 Date Jan. 31, 1994, § 102(e) Date Jan. 31, 1994, PCT Pub. No. WO93/03515, PCT Pub. Date Feb. 18, 1993
PCT Filed Jul. 31, 1992, Ser. No. 190,174
Claims priority, application France, Aug. 8, 1991, 91 10228
Int. Cl.[6] H01R 13/627;23/27
U.S. Cl. 439—293 12 Claims

1. Hermaphrodite electrical connector (1, 21, 22, 23, 26) comprising at least one female contact part (3, 33) fitted with a socket (6) arranged to fit longitudinally onto a pin of a male contact part of another similar connector, at least one male contact part (4, 34) with a pin (8) arranged to fit longitudinally into the socket (6) of the female contact part of a another similar connector, and an oblong insulating case (2, 24, 29) which laterally surrounds the



said contact parts and which presents, close to the pin and the socket, male and female sections arranged to fit into and onto the corresponding sections of the said similar connector turned of 180°, characterised in that:
the said male and female sections of the case comprise two tubular protection and insulating sections (5, 7), which form an integral part of the case (2, 24, 29), the male tubular section (5) surrounding the socket (6) and the female tubular section (7) surrounding the pin (8);
the case (2, 24, 29) comprises, on the said male and female tubular sections (5, 7) locking members comprised of a resilient tab (10) with a lug (12) on one side of the case and a lateral recess on the opposite side of the case to receive the said lug of the other similar connector; and
the said resilient tab (10) is provided in a wall of the male tubular section (5), with its lug (12) pointing outwards, and the said lateral recess (13) is an orifice provided in a wall of the female tubular section (7).

5,487,678
CONNECTOR HOUSING HAVING A LOCK MECHANISM
Masanori Tsuji; Motohisa Kashiyama, and Takuya Kitamura, all of Shizuoka, Japan, assignors to Yazaki Corporation, Japan
Filed Nov. 4, 1994, Ser. No. 335,976
Claims priority, application Japan, Nov. 8, 1993, 5-059839 U
Int. Cl.[6] H01R 13/627
U.S. Cl. 439—352 4 Claims



1. A connector housing comprising:
a first connector housing and a second connector housing capable of being fitted to each other;
a lock mechanism for fixing said first and second connector housings in a fitted state, said lock mechanism including a locking arm provided on said first connector housing and having a free end portion extending in a direction of fitting of said first and second connector housings and an engagement

member, said lock mechanism also including a lock member capable of receiving and engaging with said locking arm;

disengagement means for disengaging said lock mechanism, said disengagement means including an operating lever extending from said locking arm in a direction opposite to the direction toward the free end portion of said locking arm, said operating lever being capable of moving outward and generally perpendicularly to the direction of fitting of said first and second connector housings to cause a swinging motion of said locking arm such that said locking arm and said lock member are disengaged from each other; and

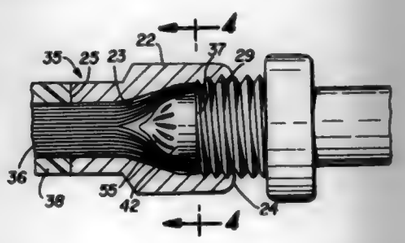
a frame member in which said locking arm can be inserted, said frame member is provided on said second connector housing, and said frame member contacts said locking arm at its inner end during the outward motion of said operating lever to form a fulcrum of the swinging motion of said locking arm.

5,487,679

ELECTRIC CONNECTOR

Laythol W. Quaintance, HCl 4415, Pima, Ariz. 85543

Filed May 23, 1994, Ser. No. 247,600
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—428 **7 Claims**



1. An electric connector comprising:

a female connector member having a central throughbore with a smaller straight bore section of substantially uniform diameter defining a smaller inner surface and an enlarged bore section gradually enlarging away from said straight bore section defining a generally tapered inner contact surface,

an electric conductor having a bundle of electrically conductive strands extending through said throughbore and terminating in an end in said enlarged bore section,

a male connector member having a tapered outer contact surface converging toward and terminating in a pointed end and extending into said conductor end to flare said strands at said end,

said female and male connector members having interfitting connecting means to releasably connect said male connector member to said female connector member and grip said strands between said inner and outer contact surfaces to form an electric connection between said male connector and said conductor,

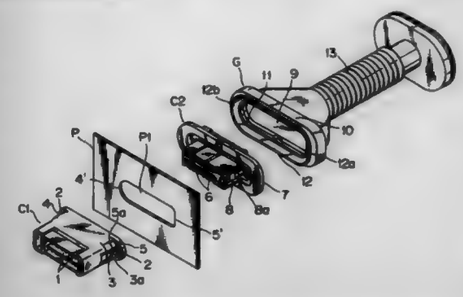
said outer contact surface being provided by a malleable material having a hardness less than the hardness of said strands and said strands are pressed into said outer contact surface to form depressions in said malleable material for increased contact surface area between said strands and male connector member.

5,487,680

METHOD AND STRUCTURE FOR FIXING A CONNECTOR TO A VEHICLE BODY PANEL

Makoto Yamanashi, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 144,570, Nov. 2, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 485,797
Claims priority, application Japan, Nov. 4, 1992, 4-294975
Int. Cl.[6] H01R *13/73*
U.S. Cl. 439—552 **5 Claims**



2. A structure for coupling two mating connectors for use in vehicles, wherein said structure comprises:

a first connector attached to a vehicle body side wire harness;

a second connector attached to a door side wire harness, and having a locking mechanism at one lateral side; and

a panel provided to the vehicle body for fixing said first connector to a connector fixing hole formed therein, wherein said first connector further comprises:

a pair of first and second fitting flanges formed to protrude from opposite lateral ends of the front portion, the respective adjacent portions to rear surface sides of said first and second fitting flanges having different shapes so as to allow said first connector to be fitted to said fixing hole in only one orientation, and

a pair of resilient locking pieces respectively disposed behind said fitting flanges to be fitted with the inner surface of said panel;

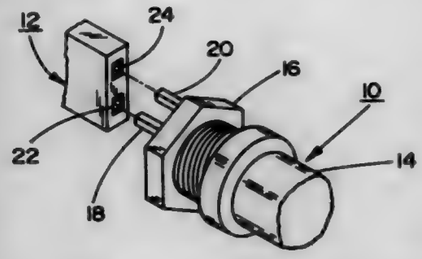
wherein the relationship among the lengths of the longitudinal side l1, the lateral side l2, and the depth l3 of the first connector C1, and the length of the longitudinal side l1', and the lateral side l2' of said connector fixing hole P1 will be l1>l1', l2'>l2, and l1'>l3.

5,487,681

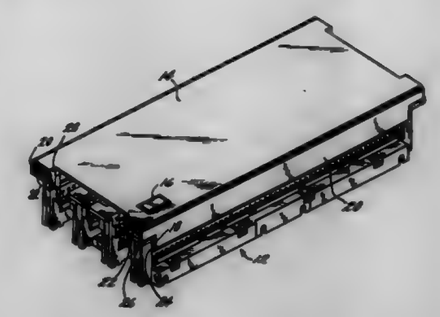
PIN BNC COAXIAL CABLE CONNECTOR RECEPTACLE

Albert A. Star, Dix Hills, and Anthony T. Carbone, Port Jefferson Station, both of N.Y., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Aug. 25, 1994, Ser. No. 296,024
Int. Cl.[6] H01R *9/07*
U.S. Cl. 439—581 **14 Claims**



1. A pin BNC coaxial cable connector which is adapted for direct interconnection with a mono-signal socket connector having first and second socket terminals; said BNC coaxial cable connector comprising a receptacle body; a first contact post member and a second contact post member each respectively having a square transverse cross-sectional configuration and each projecting from an end of said receptacle body, said second contact post member extending in parallel spaced relationship with said first contact post member to enable conductive reception of said first and second contact post members in, respectively, the first and second socket terminals of the mono-signal socket connector; said first contact post member comprising a center pin projecting from the receptacle body; a ground ring on said receptacle body, said second contact post member being a pin projecting from and conductively fastened to said ground ring.

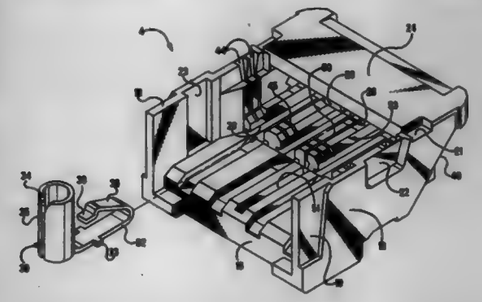


5,487,682

SHIELDED DATA CONNECTOR

Mitchell E. Miller, Clemmons; Julian J. Ferry, Kernersville, both of N.C.; Brian E. Kilbey, Chesham, England; Bruce S. Coolbear, East Barnet, England, and Richard F. Gandy, St. Albans, England, assignors to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 101,529, Aug. 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 941,526, Sep. 8, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 479,250
Claims priority, application United Kingdom, Nov. 3, 1992, 9222960; Dec. 29, 1992, 9227064; Feb. 22, 1993, 9303502
Int. Cl.[6] H01R *13/648*
U.S. Cl. 439—607 **24 Claims**



1. A shielded electrical connector comprising

an insulative housing member having a terminal support platform having an open upper face;

a plurality of electrical contacts positioned along said platform, laterally positioned therealong;

said terminal support platform including a longitudinally extending rib upstanding from said platform and positioned between at least two of said contacts;

said rib including a longitudinally extending slot therein; and

a cross talk shield positioned within said slot and within said rib intermediate said two contacts.

5,487,683

SNAP-ON COVER FOR TELECOMMUNICATIONS CONNECTOR BLOCK

Robert C. Carlson, Jr., Torrington, Conn., assignor to The Siemon Company, Watertown, Conn.

Filed Jan. 21, 1994, Ser. No. 184,544
Int. Cl.[6] H01R *9/22*
U.S. Cl. 439—718 **7 Claims**

1. A cover for a terminal block comprising:

a planar cover having opposed first and second ends and opposed first and second longitudinal sides;

a first sidewall depending downwardly from a first longitudinal side and a second sidewall depending downwardly from a second longitudinal side, each of said sidewalls including two opposed outer corners;

a cut-out in each of said corners;

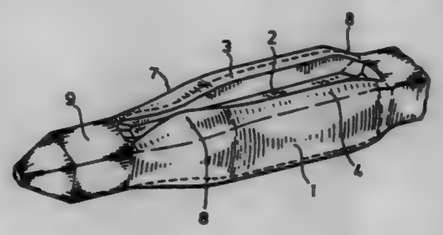
resilient latch means depending downwardly from said planar cover at each of said opposed first and second ends, said latch means being disposed inwardly from, and in spaced alignment with a pair of said cut-outs, whereby, said cover is snap lockable to said terminal block by said resilient latch means engageable with platforms of said terminal block.

5,487,684

ELECTRICAL CONTACT PIN FOR PRINTED CIRCUIT BOAED

Petrus W. H. Schalk, Drunen, and Paulus J. M. Pigmans, Tilburg, both of, Netherlands, assignors to Berg Technology, Inc., Reno, Nev.

Continuation of Ser. No. 192,769, Feb. 7, 1994, abandoned, which is a continuation of Ser. No. 954,127, Jul. 1, 1992, abandoned. This application Dec. 14, 1994, Ser. No. 357,858
Int. Cl.[6] H01R *13/42*
U.S. Cl. 439—715 **3 Claims**



1. An electrical contact pin for insertion into a through hole in a printed circuit board, said through hole having inner walls, said electrical contact pin having a longitudinal axis, said electrical contact pin comprising:

an insertion portion for guiding said electrical contact pin into said through hole;

a cross rib integrally formed with said insertion portion, said cross rib defining longitudinal surfaces along said longitudinal axis;

fin-like contacts extending from said longitudinal surfaces towards distal ends, each of said fin-like contacts having a contact surface and a curved portion, wherein each of said curved portions extends a distance along the entire length as well as a substantial portion beginning from said longitudinal surfaces towards said distal ends of said fin-like contacts and is curved inwardly towards the center of said longitudinal surfaces; and

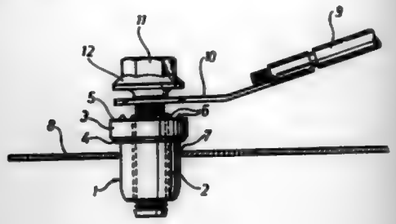
a guiding portion comprised of a leading portion of each of said fin-like contacts, said guiding portion having a guiding surface which is curved to define a gradual curvature.

5,487,685

ELECTRICAL CONTRACT NUT

Ola Stillbäck, Hisings Backa, and Lars Lindahl, Onsala, both of, Sweden, assignors to AB Volvo, Sweden

Continuation of Ser. No. 170,244, Dec. 27, 1993, abandoned.
This application Jun. 7, 1995, Ser. No. 481,921
Claims priority, application Sweden, Jun. 28, 1991, 9102006
Int. Cl.[6] H01R 4/30
U.S. Cl. 439—801 2 Claims



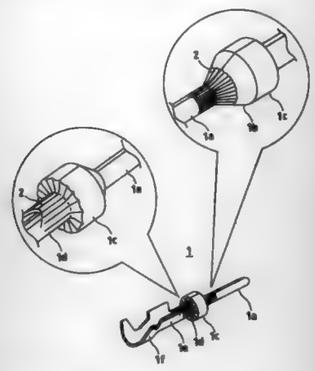
1. An electrical contact nut intended to be welded to a sheet metal component, said nut comprising:
a first cylindrical portion, and
a second cylindrical portion having a larger width dimension than said first cylindrical portion, such that said second cylindrical portion extends beyond said first cylindrical portion in a radial direction; said second cylindrical portion comprising:
a transverse side facing said first cylindrical portion, said transverse side being provided with an annular region of weldable material, and
a front side facing opposite to said transverse side, said front side being provided with means for increasing friction between said nut and a component which is intended to be mounted on said front side whereby, co-rotation of said component relative to said nut is substantially reduced.

5,487,686

PIN TERMINAL

Yoshitsugu Sawada, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Jun. 9, 1994, Ser. No. 257,829
Claims priority, application Japan, Jun. 10, 1993, 5-163815
Int. Cl.[6] H01R 4/02
U.S. Cl. 439—884 3 Claims



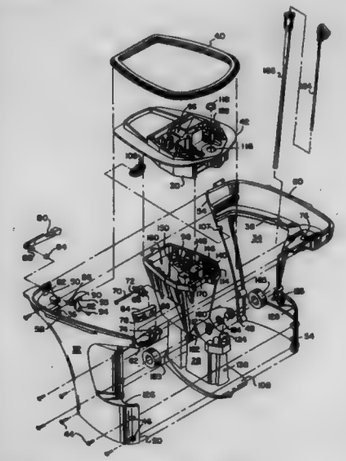
1. A pin terminal comprising:
an electrical connection portion;
a body portion continuously provided with the electrical connection portion;
an interconnecting portion continuously provided with the body portion;
a wire connection portion continuously provided with the interconnecting portion; and
corrugated configuration portions circumferentially provided at least one of between the body portion and the electrical connection portion and between the body portion and the interconnecting portion, respectively,
wherein the body portion has a cylindrical shape larger in diameter than the electrical connection portion and the interconnecting portion.

5,487,687

MIDSECTION AND COWL ASSEMBLY FOR AN OUTBOARD MARINE DRIVE

George D. Idzikowski, Oshkosh; Wayne M. Jaszewski, Jackson, and George E. Phillips, Oshkosh, all of Wis., assignors to Brunswick Corporation, Lake Forest, Ill.

Filed Jul. 18, 1994, Ser. No. 276,477
Int. Cl.[6] B63H 21/00
U.S. Cl. 440—77 26 Claims



1. An outboard marine drive comprising:
a power head;
an upper cowl assembly enclosing the power head;
a lower gear case drivingly connected to the power head;
a midsection housing disposed between the power head and the lower gear case; and
a midsection cowl assembly comprising a first cowl section and a second cowl section, wherein the first and second cowl sections adapt to fit together for enclosing at least a majority of the midsection housing and wherein the first and second cowl sections have edge portions which cooperate to form a joint between the cowl sections when the cowl sections are assembled together about the marine drive midsection housing.

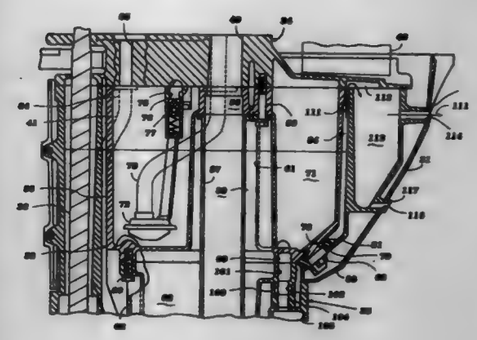
5,487,688

OUTBOARD MOTOR

Yukio Sumigawa, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Sep. 8, 1994, Ser. No. 302,593
Claims priority, application Japan, Sep. 8, 1993, 5-247582
Int. Cl.[6] B63H 21/38
U.S. Cl. 440—88 28 Claims

1. An outboard motor comprised of a power head containing an internal combustion engine having an exhaust discharge for discharging exhaust gases from said engine, a drive shaft housing depending from said power head and containing a propulsion device driven by said engine for propelling an associated watercraft, an oil tank for supplying lubricant to said engine depending into said drive shaft housing, a cooling jacket extending along at least one external wall of said oil tank, and means for circulating water through said cooling jacket for cooling said oil tank and the lubricant contained therein, said cooling jacket being defined by an upstanding wall, the upper edge of a portion of which forms a weir and wherein said means for circulating water delivers water to said cooling jacket and the level of coolant being maintained by said weir.

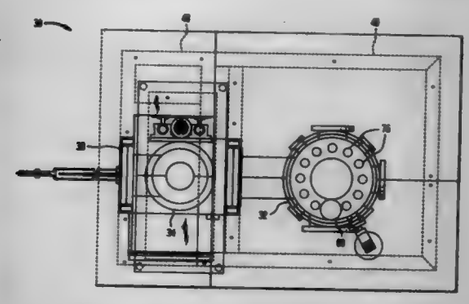


5,487,689

HIGH THROUGHPUT ASSEMBLY STATION AND METHOD FOR IMAGE INTENSIFIER TUBES

Richard F. Floryan, Roanoke, Va., and David D. Frisch, Fort Wayne, Ind., assignors to ITT Corporation, New York, N.Y.

Filed Aug. 15, 1994, Ser. No. 290,380
Int. Cl.[6] H01J 9/24;9/38;9/48
U.S. Cl. 445—29 20 Claims



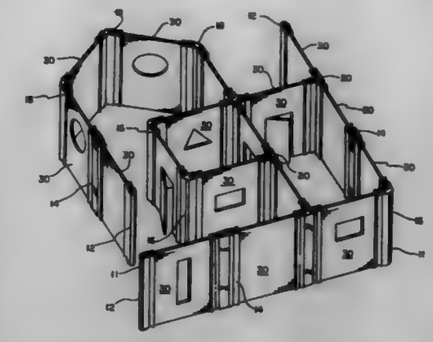
14. A method of assembling photocathodes into vacuum tube housing, comprising the steps of:
loading a plurality of photocathodes into a first chamber;
loading a plurality of vacuum tube housing into a second chamber, each of said vacuum tube housing including a protective cap;
evacuating said first chamber and said second chamber as a common vessel;
processing said photocathodes within said first chamber;
removing said protective cap from each one of said plurality of vacuum tube housings;
processing said vacuum tube housings within said second chamber;
automatically transferring individual ones of said photocathodes from said first chamber to said second chamber; and
assembling photocathodes to said vacuum tube housings in said second chamber, thereby forming a plurality of vacuum tube assemblies.

5,487,690

CLAMPS FOR MAKING CORRUGATED PANEL FREE STANDING PLAY STRUCTURES

Thomas N. Stoffle, and Linda M. Stoffle, both of W6037 County B, Peshtigo, Wis. 54157

Filed Jan. 24, 1994, Ser. No. 185,038
Int. Cl.[6] A63H 33/10
U.S. Cl. 446—105 6 Claims



1. A clamp, in combination with corrugated panels, for connecting corrugated panels, to make a free standing play structure, comprising, in operative combination:
corrugated panels having length, width, thickness, and crush strength, to be retained by said clamp;
a flexible, plastic, one piece longitudinal extrusion, comprising in cross section;
a web;
a pair of clamp legs, said clamp legs projecting from said web; said clamp legs forming a U-shaped panel receiving opening, extending lengthwise of said extrusion;
panel insertion guide means, formed by each pair of said clamp legs, including flared tips of each pair of said clamp legs that are wider apart than the thickness of said corrugated panel to be clamped, for supporting said panel and guiding said panel into the clamp;
panel elastic deformation means formed by opposing radii, each radius, formed in a flexible section of each clamp leg, said radii applying a force less than the crush strength of said panel, to the corrugated panel held between said pair of clamp legs, whereby said corrugated panel, forced between the legs, is elastically deformed in order to retain said panel within the legs;
panel crush deformation means, formed by an opposed pinch point projection, formed in each clamp leg, the width between opposed pinch points, less than the width of said corrugated panel to be clamped, said clamp legs applying a force greater than the crush strength of said panel, at the pinch point without piercing the cardboard whereby said corrugated panel forced between the clamp legs is crush deformed, to retain the panel within the legs.

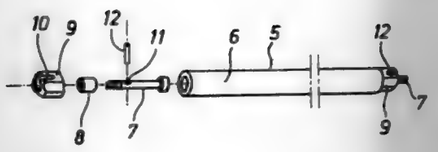
5,487,691

SPHERE AND ROD CONSTRUCTION TOY

Frank T. S. Chiu, Tuen Mun, Hong Kong, assignor to Yip Tai Toys Industrial Ltd., Tuen Mun, Hong Kong

Filed Mar. 16, 1994, Ser. No. 213,699
Claims priority, application China, Jan. 3, 1994, 94200035.8
Int. Cl.[6] A63H 33/12
U.S. Cl. 446—126 5 Claims

1. A sphere and rod construction toy comprising generally spherical construction members and rod members for connecting said spherical construction members whereby:
said generally spherical construction members are hollow having five threaded openings provided at both the upper and lower hemispheres thereof and having four to eight threaded



openings provided along the equator thereof; the axis of each threaded opening passes through the center of the spherical member; and

said rod members are extensible and contractible;

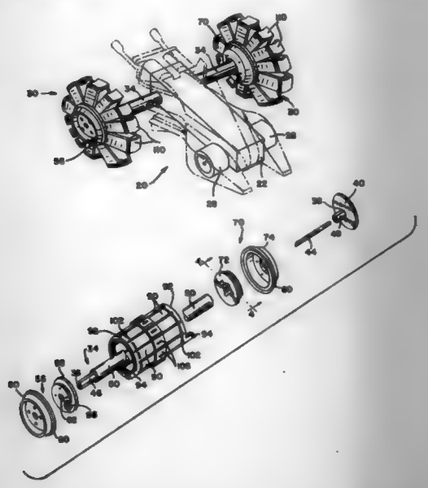
and wherein said extensible and contractible rod members comprise a hollow rod member, each end of which having a ring member being secured within an inner wall thereof, a screw slidably received in said ring member with its threaded portion extending out the end of said hollow rod member, an orientation pin being fixedly received in a transverse opening on said screw, and a screw fastening sleeve member slidably connected along said screw between said ring member and said orientation pin, said screw fastening sleeve member having orientation slots for receiving therein the ends of said orientation pin, whereby said rod members can be connected to said generally spherical construction members by wrenching said screw fastening sleeve member with a wrench thereby screwing said screw into a said threaded opening.

5,487,692

EXPANDABLE WHEEL ASSEMBLY

Kevin B. Mowrer, Loveland, and Robert L. Beck, Cincinnati, both of Ohio, assignors to Tonka Corporation, Pawtucket, R.I.

Filed Sep. 30, 1994, Ser. No. 315,718
Int. Cl.[6] A63H *17/00*
U.S. Cl. 446—465 **25 Claims**



1. A wheel assembly for use with a toy vehicle comprising:

an axle having a first end and a second end;

a first hub fixed to the axle proximate the first end;

a second hub supported by the axle and movable between the second end of the axle and the first hub, the second hub including a plurality of inwardly directed and substantially triangular-shaped points having means for maintaining coaxial alignment of the second hub and the axle; and

a plurality of webs spanning between and joined to the first hub and the second hub and each web having a central portion; and

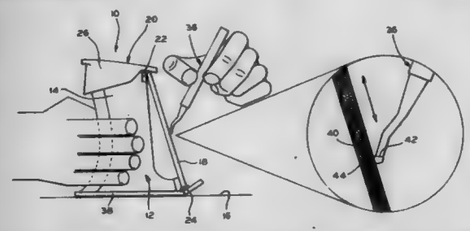
wherein the axle, the first hub, the second and movable hub, and the webs are included in means for moving the central portions of the webs outward from the axle in response to centrifugal force induced by rotation of the wheel assembly.

5,487,693

SHARPENING DEVICE AND METHOD FOR SHARPENING A DENTAL INSTRUMENT

John H. Prusaitis, and Timothy J. Prusaitis, both of c/o 5706 Northwest Hwy., Chicago, Ill. 60646

Continuation of Ser. No. 6,137, Jan. 19, 1993, abandoned, which is a continuation of Ser. No. 826,139, Jan. 27, 1992, abandoned. This application Aug. 31, 1994, Ser. No. 299,250
Int. Cl.[6] B24D *15/06*
U.S. Cl. 451—45 **5 Claims**



1. A method of sharpening a dental instrument having a handle and a tip formed to have a cutting edge defined by a face and lateral side, comprising the steps of:

providing base means supporting a sharpening stone in a fixed position and placing said base means on a horizontal surface to cause said sharpening stone to be fixed at a preselected angle to said horizontal surface;

holding said handle of said dental instrument with one hand and holding said base means with the other hand;

placing said lateral side of said tip of said dental instrument into direct contact with said sharpening stone;

orienting said tip of said dental instrument such that said face is disposed parallel to said horizontal surface and in a horizontal plane without regard to the angle of said handle relative to said sharpening stone; and

thereafter imparting relative movement between said tip of said dental instrument and said sharpening stone while maintaining said face parallel to said horizontal surface and in a horizontal plane without regard to the angle of said handle relative to said sharpening stone.

5,487,694

METHOD FOR SHAPING HONEYCOMB SUBSTRATES

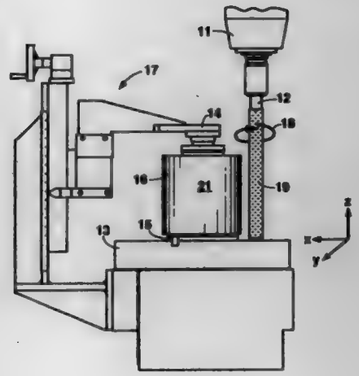
Scott W. Deming, Elmira, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Nov. 12, 1993, Ser. No. 151,107
Int. Cl.[6] B24B *19/08*
U.S. Cl. 451—49 **5 Claims**

1. A method for producing a honeycomb body having a side surface bounded by a closed cylinder of a selected circumference and curvature which comprises the steps of:

providing an extruded honeycomb body having a selected length and having a side surface bounded by a closed cylinder of a circumference larger than the selected circumference; and

removing material from the side surface to reduce the circumference thereof at least to the selected circumference, wherein the step of removing material comprises abrasively removing material from the side surface with a rotating abrasive means having a length at least equal to the selected length and an axis of rotation parallel to the side surface, the rotating abrasive means being attached to a spindle means which allows the abrasive means to move in a plane perpendicular to the axis of rotation.

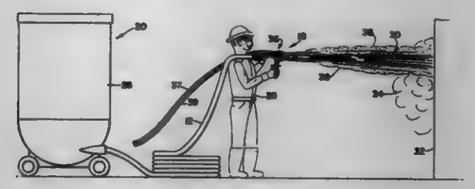


5,487,695

BLAST NOZZLE COMBINED WITH MULTIPLE TIP WATER ATOMIZER

James D. Shank, Vestal, N.Y., assignor to Church & Dwight Co., Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 958,552, Oct. 8, 1992, Pat. No. 5,319,894. This application Dec. 17, 1993, Ser. No. 169,774
Int. Cl.[6] B24C *5/04*
U.S. Cl. 451—102 **20 Claims**



1. A blast nozzle and water atomizer combination for directing a stream of abrasive particles against a targeted surface for the removal of surface contaminants therefrom and for reducing dust formation comprising: a blast nozzle including a means to accelerate a mass of abrasive particles from the inlet of said blast nozzle to the outlet thereof and a means to atomize water with air attached to the exterior of said blast nozzle, said means to atomize water comprising multiple atomization nozzles spaced around the exterior of said blast nozzle, each atomization nozzle including means to mix separate streams of water and air and including outlet means separate from said blast nozzle outlet and positioned to direct said atomized water to a location adjacent said targeted surface without substantially interfering with said mass of abrasive particles as said abrasive particles are directed from the outlet of said blast nozzle to said targeted surface.

5,487,696

APPARATUS FOR POLISHING MEDALS FOR GAME MACHINE AND FOR SEPARATING ABRASIVE THEREFROM

Takatoshi Takemoto; Masayoshi Yoshikawa, both of Tokyo; Moriyuki Aoyama, Okazaki; Meiji Muramatsu, Yokohama, and Kazunari Kawashima, Tokyo, all of, Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan

PCT No. PCT/JP91/01432, § 371 Date Nov. 15, 1993, § 102(e) Date Nov. 15, 1993, PCT Pub. No. WO92/17316, PCT Pub. Date Oct. 15, 1992
PCT Filed Oct. 18, 1991, Ser. No. 119,246
Claims priority, application Japan, Mar. 26, 1991, 3-061707; Aug. 27, 1991, 3-215619
Int. Cl.[6] B24B *31/073*
U.S. Cl. 451—105 **20 Claims**



1. An apparatus for polishing medals for a game machine and for separating an abrasive from the medals, including: a polishing pipe **1** which is disposed upright for lifting a mixture of the medals and the abrasive supplied thereto while stirring the mixture so as to polish the medals; and a separation unit A which is disposed at an upper portion of said polishing pipe **1** for separating said abrasive from the mixture of said medals and abrasive delivered from said polishing pipe **1**, and re-feeding said abrasive into said polishing pipe **1**; said polishing pipe **1** having an intake port **2** for receiving said medals and said abrasive supplied thereto, at a lower portion side thereof, a medal delivery port **3** at an upper end portion thereof, and a rotatable screw element **4** which lifts up said medals and said abrasive while stirring them together, which is characterized in:

that said separation unit A is provided with a return pipe **5** for returning the separated abrasive to said intake port; and

that said return pipe **5** is provided with a flap which is movable toward said intake port **2** by a weight of said abrasive, at a lower portion thereof which communicates with said intake port **2**.

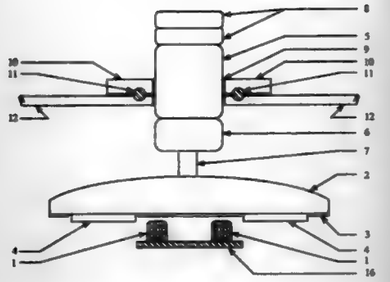
5,487,697

POLISHING APPARATUS AND METHOD USING A ROTARY WORK HOLDER TRAVELLING DOWN A RAIL FOR POLISHING A WORKPIECE WITH LINEAR PADS

Elmer W. Jensen, New Castle, Del., assignor to Rodel, Inc., Newark, Del.

Filed Feb. 9, 1993, Ser. No. 15,609
Int. Cl.[6] B24B *7/00*
U.S. Cl. 451—324 **20 Claims**

1. An apparatus for polishing a flat surface comprising: (a) one or more linear polishing pads each of which has a long linear dimension such that the surface of each pad which contacts said workpiece is long and narrow; and (b) a carrier which holds at least one workpiece to be polished, said carrier mounted to a rail which is parallel to a longitudinal axis of said linear polishing pad or pads whereby said carrier periodically passes each workpiece over a different portion of said pad surface as said carrier travels along said rail generally in a straight line parallel to said long linear



dimension of said linear polishing pad or pads down the length of said linear polishing pad or pads.

5,487,698

STUNNING APPARATUS

Peter J. Kettlewell, Marston Mortaine; Mark E. R. Paice, Hitchen; William C. Whetlor, Kempston, and Julian M. Sparrey, Silsoe, all of, England, assignors to British Technology Group Ltd., London, United Kingdom

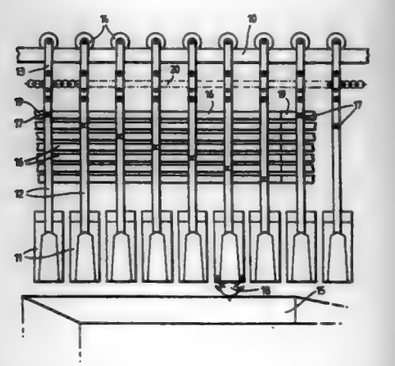
PCT No. PCT/GB92/01872, § 371 Date Apr. 12, 1994, § 102(e) Date Apr. 12, 1994, PCT Pub. No. WO/9307757, PCT Pub. Date Apr. 29, 1993

PCT Filed Oct. 13, 1992, Ser. No. 211,679

Claims priority, application United Kingdom, Jan. 18, 1991, 9122142

Int. Cl.[6] A22B *3/06*

U.S. Cl. 452—58 **13 Claims**



1. An apparatus for passing an electrical current through each of a series of items of varying electrical resistance, including

a continuous shackle train having shackles evenly spaced along its length,

a water bath,

electrical circuitry having a connection to the bath,

means for connecting the circuitry to the shackles, where any item bridging a shackle and the water bath completes an individual electrical circuit and causes a predetermined current to pass through each item, and

means for controlling the predetermined current to maintain the predetermined current for a predetermined time, the predetermined current being the same for each item regardless of the electrical resistance of each of the items.

5,487,699

TREATMENT OF POULTRY

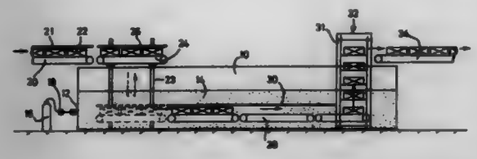
Christopher M. Tyrrell, Bungay; David R. Wills, Roydon; David V. Gardiner, Starston, and Barry W. Landymore, Brockdish, all of, United Kingdom, assignors to Anglia Autoflow Limited, Diss, United Kingdom

Filed Nov. 30, 1994, Ser. No. 346,786

Claims priority, application United Kingdom, Jan. 27, 1994, 9401520

Int. Cl.[6] A22B *3/00*

U.S. Cl. 452—66 **8 Claims**



1. Apparatus for gas stunning of poultry, the apparatus comprising:

a plurality of containers each in the form of an open-topped rectangular drawer which is moulded from a synthetic plastics material with apertures to allow the passage of stunning gas into the containers,

a chamber accommodating a heavier than air gas or gases effective to stun the poultry,

an infeed conveyor for delivering a series of said containers, each containing poultry, to an inlet end of the chamber,

a covering panel spaced above the infeed conveyor by a distance which allows the passage of the containers on the infeed conveyor and which covers the tops of the containers in a manner to prevent the poultry in the containers escaping therefrom,

lowering means for accepting the containers delivered by the infeed conveyor and for lowering the containers into the chamber, the lowering means including a cover which is positioned so as to cover the open tops of the containers while on the lowering means and thereby prevent poultry escaping from the containers while on the lowering means,

conveyor means within the chamber for accepting the containers from the lowering means and for transporting the containers through the chamber,

covering means above the conveying means, the covering means being spaced above the conveying means by a distance which allows the passage of the containers on the conveyor means and which covers the tops of the containers to prevent the poultry in the containers escaping therefrom, the covering means being of apertured construction to permit the passage of gas therethrough, so that the gas enters the containers and air leaves the containers through the apertures in the containers and through the covering means,

lifting means for receiving the containers at an outfeed end of the conveyor means and lifting the containers out of the chamber,

and an outfeed conveyor for accepting containers with stunned poultry and for transporting the containers with stunned poultry away from the chamber.

5,487,700

POULTRY SHACKLE WITH ROTATABLE STIRRUPS

Kenneth D. Dillard, Canton, Ga., assignor to Dapec, Inc., Canton, Ga.

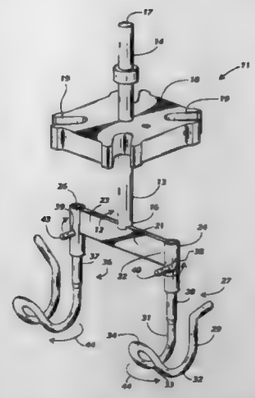
Filed Jun. 6, 1995, Ser. No. 498,980

Int. Cl.[6] A22C *21/00*

U.S. Cl. 452—188 **12 Claims**

1. A poultry support shackle assembly for transporting a poultry carcass along the overhead conveyer system of a poultry processing line, said shackle assembly comprising:

a support frame adapted to be coupled to the overhead conveyor system;



a pair of spaced apart stirrup members depending from said support frame with each of said stirrup members being adapted to receive and releasably hold a corresponding hock of the poultry carcass to suspend the carcass by its hocks and legs from the stirrup members;

mounting means for mounting at least one of said stirrup members to said support frame for rotation about a substantially vertical axis extending along said at least one stirrup member so that the poultry hock and leg suspended from said stirrup member are free to rotate to accommodate rotation and spreading of the legs of the poultry carcass that occurs during processing of the carcass.

5,487,701

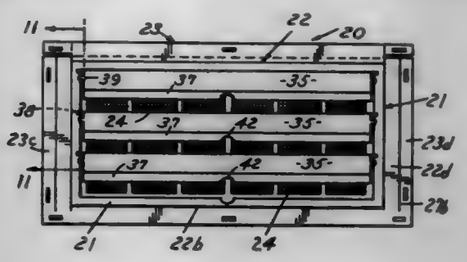
PLASTIC FOUNDATION VENT

Charles E. Schidegger, Metamora; Clyde G. Allen, North Branch; Michael C. Clark, Columbiaville; Aundrea Nurenberg, and Jack Wnuk, both of Lapeer, all of Mich., assignors to Mid-America Building Products Corporation, Plymouth, Mich.

Filed Jun. 20, 1994, Ser. No. 262,237

Int. Cl.[6] F24F *13/08*

U.S. Cl. 454—271 **10 Claims**



1. A plastic foundation vent comprising

a plastic body with an integral peripheral rectangular wall surrounding the plastic body and defining opposed long sides and opposed short sides,

an integral peripheral flange extending outwardly from the peripheral wall,

a central integral screen portion having openings,

said peripheral flange having a front surface and a rear surface,

a first groove provided on the rear surface of the top flange to define a live hinge line permitting the flange to be bent backwardly and forwardly,

a second groove on the front surface of the flange on each of the short sides to permit bending of the flange along the short sides.

5,487,702

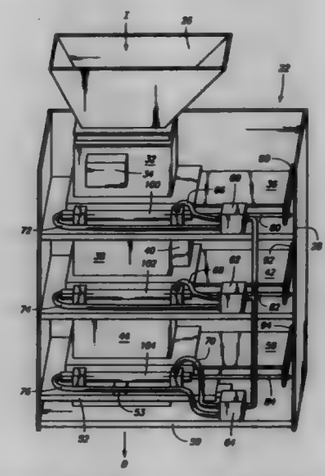
GRAIN WEIGHING AND MEASURING SYSTEM

Ronald Campbell, Mendon, Utah; Gaylon Campbell, Pullman, Wash., and Craig Christensen, Logan, Utah, assignors to HarvestMaster, Inc., Logan, Utah

Filed Jul. 6, 1994, Ser. No. 272,238

Int. Cl.[6] A01F *12/50*

U.S. Cl. 460—7 **27 Claims**



1. A weighing and measuring apparatus for continuously measuring sub-samples of a grain plot during harvesting, comprising:

an enclosure;

an inlet controllably directing a continuous flow of grain into the enclosure;

volume sizing means mounted within the enclosure for separating a known volume sub-sample of grain from the continuous flow of grain into the enclosure;

moisture measuring means mounted within the enclosure for detecting the moisture content of the grain sub-sample;

weigh means mounted within the enclosure for weighing the grain sub-sample;

a reference measurement means positioned adjacent the weigh means inside the enclosure for determining external forces acting on the grain sub-sample during weighing and measuring; and

an outlet for directing the grain sub-sample from the enclosure and into a grain storage tank of a grain harvester.

5,487,703

STRAW WALKER FOR CHAFF REMOVAL IN A COMBINE

George J. Kuchar, P.O. Box 595, Carlinville, Ill. 62626

Filed Feb. 8, 1994, Ser. No. 193,266

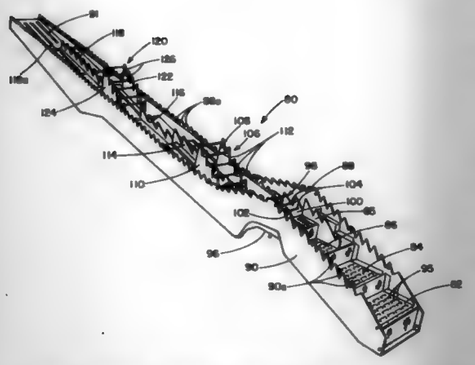
Int. Cl.[6] A01F *12/32*

U.S. Cl. 460—85 **20 Claims**

1. Apparatus for use in a combine for receiving a mixture of grain and chaff, wherein said apparatus is displaced so as to agitate the mixture of grain and chaff for separating the grain from the chaff, said apparatus comprising:

an elongated, generally linear, flat bottom panel having a plurality of spaced apertures therein for supporting the chaff while permitting transit of the grain through said apertures during agitation of the grain and chaff mixture;

first and second side panels attached to respective, opposed lateral edges of said bottom panel, said first and second side panels respectively including first and second sets of teeth arranged in a spaced manner on a respective upper edge of the side panel along the length thereof for engaging and moving the mixture of grain and chaff in a rearward direction at a first



speed, wherein the spacing between adjacent teeth in the first and second sets of teeth is D_1; and

a first inner panel, mounted to an upper surface of said bottom panel intermediate said first and second side panels and having a third set of teeth disposed in a spaced manner on an upper edge and along the length thereof for engaging and moving the mixture of grain and chaff in a rearward direction at a second speed, wherein the spacing between adjacent teeth in said third set of teeth is D_2, where $D_2>D_1$ and said second speed is greater than said first speed.

5,487,704

APPARATUS FOR DAMPING VIBRATIONS

Oswald Friedmann, Lichtenau, and Johann Jäckel, Bühl, both of, Germany, assignors to LUK Lamellen und Kupplungsbau GmbH, Bühl, Germany

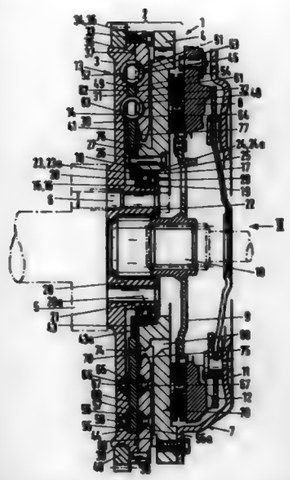
Continuation of Ser. No. 626,384, Dec. 12, 1990, abandoned, which is a continuation of Ser. No. 434,524, Nov. 7, 1989, abandoned, which is a continuation of Ser. No. 63,301, Jun. 17, 1987, abandoned. This application May 7, 1993, Ser. No. 60,490

Claims priority, application Germany, Jul. 5, 1986, 36 22 697.1; Jan. 4, 1986, 36 33 870.2; Dec. 13, 1986, 36 42 679.2

The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.

Int. Cl.[6] F16D *3/14*

U.S. Cl. 464—24 **44 Claims**



1. Apparatus for damping vibrations between an engine and a clutch in a power train, comprising a first flywheel connectable with the engine; a second flywheel rotatable relative to the first flywheel and having a friction surface enagageable with a clutch plate of the clutch; at least one damper device including an input component constituted by said first flywheel, an output component constituted by said second flywheel, a chamber including a radially outer portion constituting a compartment, a supply of viscous medium which at least partially fills said compartment, a plurality of energy storing elements which are disposed and supported in said compartment, said chamber having internal surfaces bounding said compartment and including radially outer portions positioned at the path of radially outward movements of the energy storing elements under the action of centrifugal force when said flywheels rotate to thus produce a frictional damping action between said flywheels, said flywheels being rotatable relative to each other against the resistance of said energy storing elements, said energy storing elements and said at least one damper device further having means for deforming said energy storing elements, said deforming means including at least one first abutment provided on said chamber and located in said compartment and a flange rotatable with one of said flywheels and having at least one second abutment in said compartment, said energy storing elements jointly extending along an arc which approximates between 70 and 96 percent of a complete circle; and wear reducing means contacting said supply of viscous medium and being positioned in the path of radially outward movement of said energy storing elements under the action of centrifugal force in response to rotation of said flywheels to intercept said energy storing elements and to at least reduce the wear by said energy storing elements upon the radially outer portions of said internal surfaces during rotation of said flywheels.

5,487,705

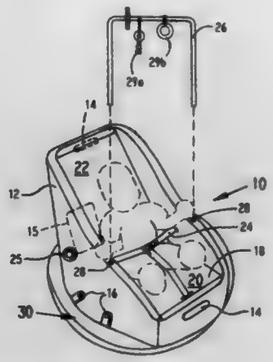
BABY CAROUSEL

William A. Clarke, 4549 Budd Dr., Erie, Pa. 16506

Filed Sep. 23, 1993, Ser. No. 126,040

Int. Cl.[6] A63G *1/10*

U.S. Cl. 472—29 **19 Claims**



1. An entirely portable infant entertainment device comprising:

a) a stationary base;

b) a seat member rotationally attached to said base for receiving an infant in a semi-reclined position;

c) a drive element for rotating said seat member relative to said base member to entertain said infant;

d) means for supplying power to said drive element; and,

e) means for playing music when said seat member is activated.

5,487,706

ENTERTAINMENT SYSTEM AND ASSOCIATED METHOD

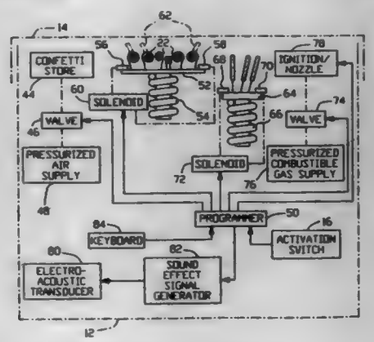
Peter J. Wilk, 185 W. End Avenue, New York, N.Y. 10023

Continuation-in-part of Ser. No. 943,392, Sep. 10, 1992, Pat. No. 5,304,096. This application Apr. 1, 1994, Ser. No. 221,481

The portion of the term of this patent subsequent to Apr. 19, 2011, has been disclaimed.

Int. Cl.[6] A63H *13/16*

U.S. Cl. 472—54 **24 Claims**



1. An entertainment system comprising:

a housing;

first ejection means in said housing for ejecting a first entertainment device from said housing;

second ejection means in said housing for ejecting a second entertainment device from said housing, said second entertainment device being different from said first entertainment device, one of said first entertainment device and said second entertainment device including a pair of balloons interconnected by and supporting a banner with a message; and

control means operatively connected to said first ejection means and said second ejection means for operating said second ejection means a predetermined interval after operating said first ejection means to produce a three-dimensional entertainment display which varies over a significantly extended time period.

5,487,707

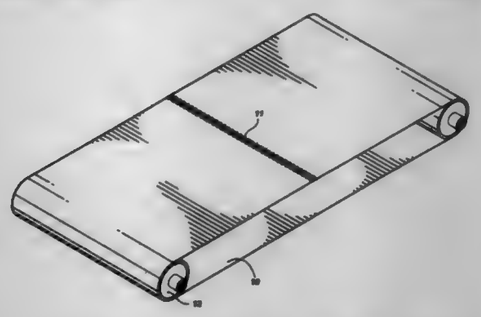
PUZZLE CUT SEAMED BELT WITH BONDING BETWEEN ADJACENT SURFACES BY UV CURED ADHESIVE

Lucille M. Sharf, Pittsford; Laurence J. Lynd, Macedon; James F. Smith, Walworth, and Edward L. Schlueter, Jr., Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 29, 1994, Ser. No. 297,201

Int. Cl.[6] F16G *1/00*

U.S. Cl. 474—253 **23 Claims**



1. An endless, seamed, flexible belt comprising a strip of a flexible material having two ends that are joined to form the endless belt having a substantially uniform thickness and only a single seam, the two ends having a plurality of mutually mating elements in a puzzle cut pattern, the opposite surfaces of the two ends being in an interlocking relationship to prevent separation of the two ends, the surfaces of the mutually mating elements defining voids therebetween to permit the presence of an ultraviolet radiation cured adhesive, the seam including the ultraviolet radiation cured adhesive in the voids between the surfaces of the mutually mating elements, wherein there is absent any substantial thickness differential between the seam and the adjacent interlocking mating elements, wherein the seam extends linearly across the entire width of the belt, and wherein there are absent thermally induced distortions in the belt caused by the curing of the adhesive.

5,487,708

AUTOMATIC TRANSMISSION CONTROL SYSTEM FOR AUTOMOBILES

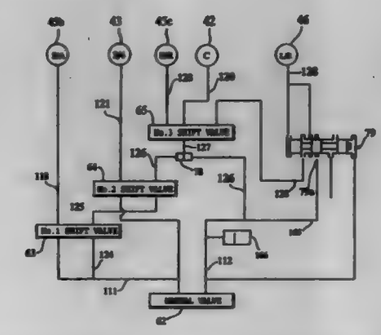
Toshihisa Marusue, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 16, 1994, Ser. No. 290,637

Claims priority, application Japan, Aug. 17, 1993, 5-203433

Int. Cl.[6] F16H *61/00*

U.S. Cl. 475—116 **5 Claims**



1. An automatic transmission control system including a plurality of frictional coupling elements, provided within an automatic transmission, which are selectively locked and unlocked by supplying and releasing hydraulic pressure so as to place the automatic transmission into any desired gear in various ranges, including at least a low speed range and a reverse range, said frictional coupling elements including a low/reverse frictional coupling element for providing said low speed range and said reverse range, said automatic transmission control system comprising:

a hydraulic pressure circuit for supplying hydraulic pressure to each of said frictional coupling elements from a hydraulic pressure source;

a first shift valve for connecting and disconnecting supply of said hydraulic pressure to said low/reverse frictional coupling element through said hydraulic pressure circuit so as to lock and unlock said low/reverse frictional coupling element in said low speed range and in said reverse range; and

a second shift valve for connecting and disconnecting supply of said hydraulic pressure to one of said frictional coupling elements, which causes mechanical locking of said automatic transmission when said one of said frictional coupling elements is locked simultaneously with locking of said low/reverse frictional coupling element, so as to lock and unlock said one of said frictional coupling elements;

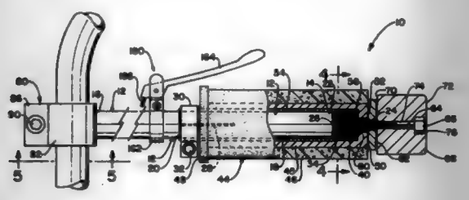
said first shift valve and said second shift valve cooperating with each other so as to connect supply of said hydraulic pressure alternatively to said low/reverse frictional coupling element and said one of said frictional coupling elements.

5,487,709

ADJUSTABLE ROTATING RESISTANCE EXERCISER

Thomas E. Froelich, Sr., 2332 12th St., Cuyahoga Falls, Ohio 44223, and Jeffrey T. Bertka, Cuyahoga Falls, Ohio, assignors to Thomas E. Froelich, Sr., Cuyahoga Falls, Ohio

Filed May 27, 1994, Ser. No. 249,958
Int. Cl.[6] A63B *23/14*
U.S. Cl. 482—46 10 Claims



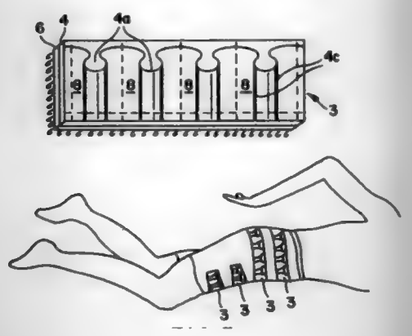
1. An adjustable rotating resistance exerciser, comprising:
a handlebar;
an inner collar disposed around and mounted to at least one end of said handlebar;
an internally threaded square shaft extending axially from said inner collar;
means for generating resistance disposed on said internally threaded square shaft;
a tubular grip handle disposed over said means for generating resistance and said inner collar such that said tubular grip handle rotates around said handlebar; and
means for adjusting said means for generating resistance, wherein said means for adjusting is rotatably mounted to said tubular grip handle.

5,487,710

SWIMMER'S DRAG SUIT HAVING DETACHABLE AND REPOSITIONABLE POCKETS

Blaise Lavorgna, 27735 Pemberton Dr., and Peter R. Sebastian, 27163 Loch Lomond Ct., both of Salisbury, Md. 21801

Filed Mar. 30, 1995, Ser. No. 413,266
Int. Cl.[6] A63B *31/00*
U.S. Cl. 482—55 17 Claims



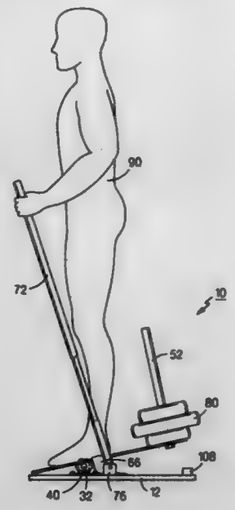
1. A device for training swimmers, said device comprising: a swimsuit; a drag-creating strip comprising material forming at least one cavity having an open end; and fastening means for detachably fastening the drag-creating strip to said swimsuit in any one of a plurality of different orientations, whereby the open end of said at least one cavity is positionable on the swimsuit worn by the swimmer at various orientations relative to the direction of movement of the swimmer through the water.

5,487,711

LOWER LEG EXERCISE DEVICE AND METHOD

Oscar L. Little, P.O. Box 2621, Danbury, Conn. 06813

Filed Nov. 25, 1994, Ser. No. 344,944
Int. Cl.[6] A63B *23/04*
U.S. Cl. 482—79 8 Claims



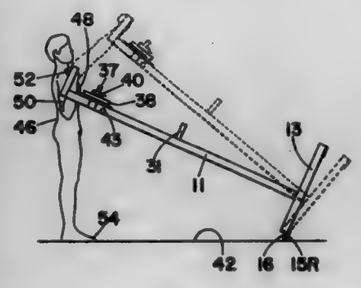
1. A method of exercising lower leg muscles of a person, comprising:
(a) providing a base member to be placed on a horizontal surface;
(b) providing two, elongate, parallel plates attached to rotating means mounted on said base member;
(c) providing support means disposed at distal ends of said plates to accommodate thereon selected weights;
(d) said person standing on said plates, with a foot over each of said rotating means; and
(e) said person moving said weights between a first, lowered position and a second, elevated position by alternatingly flexing and relaxing muscles in said person's lower leg.

5,487,712

METHOD OF EXERCISING USING A PIVOTING EXERCISE APPARATUS

David M. Kann, 609 Cross Ridge Clr. North, Fort Worth, Tex. 76120

Filed Feb. 8, 1994, Ser. No. 193,278
Int. Cl.[6] A63B *21/06*
U.S. Cl. 482—97 9 Claims



1. A method of exercising with an exercise apparatus, comprising the steps of:

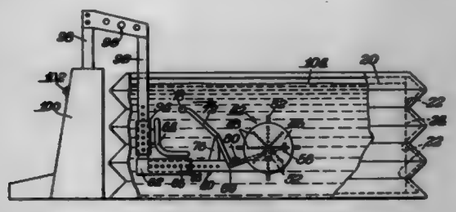
providing a vertically oriented frame having first and second ends, where a bar extends across said second end of the frame and said first end is coupled to a base that is located on a floor surface, said base being horizontally oriented;
locating weights directly on said vertically oriented frame;
pivoting said vertically oriented frame and said base so that said frame moves from a vertical orientation to a first non-vertical position and said base moves from a horizontal orientation to a non-horizontal orientation;
moving said frame together with said base by way of said bar so that said frame moves from said first non-vertical position to a second non-vertical position.

5,487,713

AQUATIC EXERCISE AND REHABILITATION DEVICE

Brian R. Butler, 2727 Hillview Dr., Broomall, Pa. 19008

Continuation-in-part of Ser. No. 105,758, Aug. 12, 1993, Pat. No. 5,316,532. This application May 2, 1994, Ser. No. 236,559
The portion of the term of this patent subsequent to May 31, 2011, has been disclaimed.
Int. Cl.[6] A63B *21/008;22/06*
U.S. Cl. 482—111 12 Claims



1. An aquatic exercise and rehabilitation apparatus, comprising an exercise cycle having a frame, a seat, a pedal assembly, a pair of drive shafts and an oscillatable handlebar assembly,
(a) said pedal assembly having two inner and two outer concentrically interconnected discs;
(b) said inner discs being rotatably mounted to an axle which in turn is fixedly mounted to said frame, and said inner discs each being connected to one of said outer discs by bridge means such that rotation of either disc will effect rotation of the other;
(c) said outer discs having crank arms with foot pedals attached thereto; and
(d) said handlebar assembly having two levers pivotally connected to said frame; said levers each being pivotally connected to said drive shafts which are in turn pivotally connected to said bridge means such that operation of either said handlebar assembly or said pedal assembly will effect movement of the other; and
(e) said seat being mounted to a lift assembly for selectively moving a user to a first position outside a treatment vessel and a second position within the treatment vessel whereby said exercise cycle may be adapted for use in the treatment vessel by individuals with unilaterally or bilaterally diminished mobility or range of motion the upper or lower extremities.

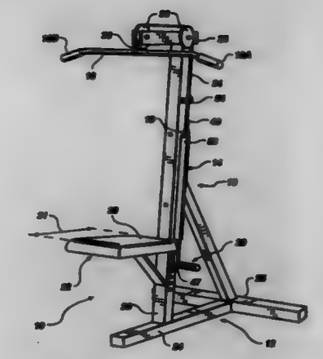
5,487,714

EXERCISE MACHINE WITH ENCLOSED RESISTANCE ASSEMBLY

Carlo Ferrari, Alicante, Spain, assignor to Weider Health and Fitness, Inc., Woodland Hills, Calif.

Filed Nov. 19, 1993, Ser. No. 155,008
Int. Cl.[6] A63B *21/02*
U.S. Cl. 482—123 7 Claims

1. An exercise machine comprising:
a frame;



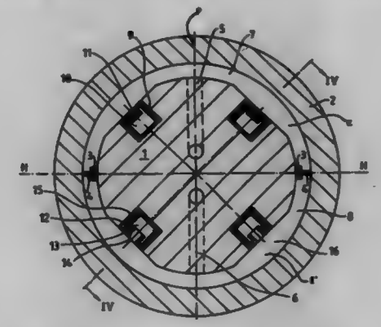
a movable element operably associated with said frame for movement relative to said frame by a user in the performance of exercise;
resistance means having a first end and a second end, said second end being connected to said movable element, said resistance means having an elastically deformable element extending between said first end and said second end to resist movement of said movable element;
biasing means adapted to said resistance means proximate said first end for adjustably tensioning said resistance means, said biasing means including a handle for grasping by a user to move said first end relative to said frame, said biasing means having first means for removable connection to said frame;
second means associated with said frame for removably interconnecting said first means and said second means at a selected location of a plurality of locations on said frame to adjust the tensioning of said resistance means; and
enclosure means connected to said frame for substantially enclosing said elastically deformable element, said enclosure means including;
an outer sleeve member attached to said frame with said elastically deformable element substantially therewithin, and
an inner sleeve attached to said resistance means proximate said first and to enclose a portion of said resistance means therewithin, said inner sleeve being sized to telescope into said outer sleeve.

5,487,715

ROLL WITH VIBRATION DAMPER

Christian Schiel, Heidenheim, Germany, assignor to J.M. Voith GmbH, Heidenheim, Germany

Filed May 24, 1994, Ser. No. 248,867
Claims priority, application Germany, May 29, 1993, 43 18 835.3
Int. Cl.[6] F16C *13/00*
U.S. Cl. 492—16 10 Claims



1. A roll for use in fiber web processing comprising:
a) a fixed central axis;

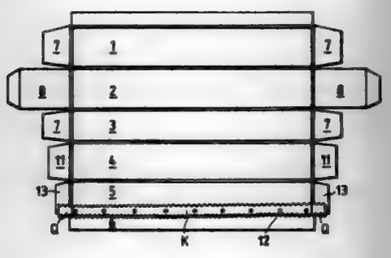
b) a roll shell adapted to rotate about the central axis;
c) a first chamber disposed between the central axis and the roll shell, said chamber being half-annular in form and filled with a liquid for transferring a hydraulic supporting force from the central axis to the roll shell;
d) a second chamber partially filled with air and partially filled with liquid; and,
e) a plurality of narrow capillary lines connecting the first and second chambers, said capillary lines having a capillary characteristic (K) of between about 2.5×10^{7} m^{-2} and about 2.5×10^{8} m^{-2}.

5,487,716

WRAP FILM CONTAINING BOX AND MANUFACTURING METHOD THEREFOR

Tadayuki Yuki, and Iku Kato, both of Mie, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 183,399, Jan. 19, 1994, Pat. No. 5,423,464. This application Mar. 30, 1995, Ser. No. 413,955
Int. Cl.[6] B31B *1/90*
U.S. Cl. 493—86 **3 Claims**



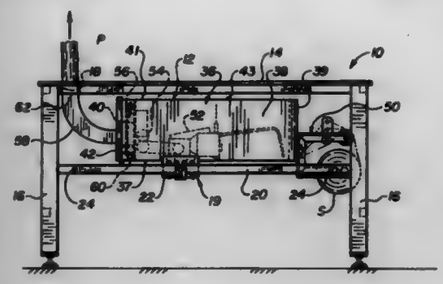
1. A method for manufacturing a wrap film containing cardboard box from a flat, pre-formed, premarked cardboard box blank comprising the steps of:
overlapping a thin long metal plate, having serrations along at least one lateral edge, and a thin sheet body so that at least one lateral end of the thin sheet body projects beyond a lateral end of the thin long metal plate;
forming fastening claws at predetermined locations on an inside surface of a flat, preformed, premarked cardboard box blank by positioning said overlapping metal plate and thin sheet on said inside surface with said thin sheet in contact with said cardboard surface and said serrations positioned to extend beyond an open edge of said box when said box is assembled and opened to dispense wrap film contained therein and by biasing said thin metal serrated plate at spaced intervals along said edge to be opened for forming fastening claws therein and projecting said fastening claws through said cardboard;
fastening said thin metal serrated plate to said cardboard by causing said inserted fastening claws to be bent outwardly from the projection through said cardboard and flat on an opposite surface of said cardboard; and
bending said flat, pre-formed, premarked cardboard box blank, with said thin metal serrated plate affixed thereto, along pre-marked lines to assemble the container box.

5,487,717

DISPENSING TABLE FOR A CUSHIONING CONVERSION MACHINE

James E. Tekavec, Willoughby, and James A. Simmons, Painesville Township, both of Ohio, assignors to Ranpak Corp., Concord Twp., Ohio

Continuation-in-part of Ser. No. 66,337, May 21, 1993. This application Nov. 23, 1993, Ser. No. 155,931
Int. Cl.[6] B31F *1/10*
U.S. Cl. 493—352 **11 Claims**



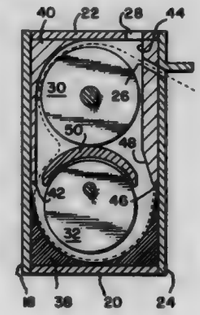
1. In combination, a dispensing table and a cushioning conversion machine slidably mounted to the table;
the dispensing table including a substantially horizontal work platform;
the cushioning conversion machine including a frame having an upstream end and a downstream end;
the cushioning conversion machine also including conversion assemblies which are mounted to the frame and which convert stock material into a cushioning product; and
the cushioning conversion machine being slidable to an operating position whereat the cushioning product is deposited on the work platform during operation of the machine wherein the machine is slidably mounted below the work platform; and
wherein the machine includes a final outlet through which the cushioning product emerges and wherein the work platform includes an opening which is aligned with the final outlet when the machine is in the operating position.

5,487,718

FOLDER FOR SHEET PAPER SUCH AS LETTER-MAIL, FLIERS AND THE LIKE

Tadeusz Staniszewski, Budd Lake, N.J., assignor to Shap, Inc., Demarest, N.J.

Filed Feb. 25, 1994, Ser. No. 202,373
Int. Cl.[6] B65H *45/14*
U.S. Cl. 493—421 **14 Claims**



1. A folder for sheet paper such as letters and fliers, comprising:
a housing;

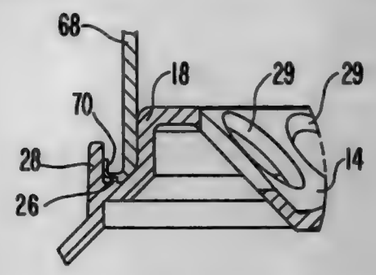
only one, rotatable, sheet-engaging element journalled in said housing for moving the sheet paper in the housing;
means confined within said housing for driving said element in rotation;
a guide, mounted within said housing in juxtaposition with said element for guiding the sheet paper between the guide and the sheet engaging element in order to fold the sheet paper;
first access means for admitting sheet paper into said housing;
second access means for discharging folded sheet paper from said housing; and
first and second abutment means, within said housing, said first abutment means for engagement thereof by a leading end of the sheet paper and said second abutment means for engagement thereof by a first fold of the sheet paper.

5,487,719

CENTRIFUGE ROTOR ASSEMBLY

James M. Houston, Evergreen, and Kenneth Biggio, Littleton, both of Colo., assignors to Denver Instrument Company, Arvada, Colo.

Filed Jan. 14, 1994, Ser. No. 181,417
Int. Cl.[6] B04B *5/02*
U.S. Cl. 494—16 **19 Claims**



1. A rotor assembly for use in a centrifuge having a drive motor, said rotor assembly comprising:
a rotor having a plurality of apertures for holding fluid containers and a circular groove surrounding said plurality of apertures, said groove including a substantially vertical inner sidewall and a substantially vertical ridge positioned outwardly of said inner sidewall;
an impervious cover that engages said groove and provides a seal to prevent the escape of fluid from said rotor, said cover including an outer substantially vertical surface which fits in sealed engagement with said ridge of said groove and an inner substantially vertical surface which fits in sealed engagement with said sidewall of said groove; and
connection means for permitting the connection and disconnection of said rotor to the centrifuge drive motor while said cover is in the engaged position.

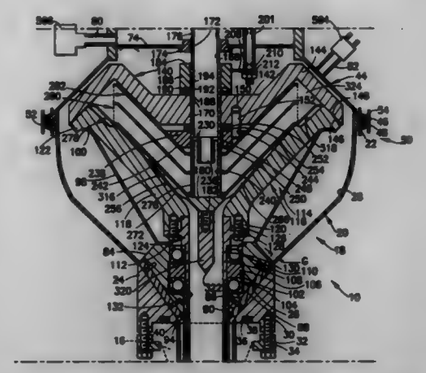
5,487,720

PARTICLE CONCENTRATOR

Dan R. Pace, Halifax, Canada, assignor to Occam Marine Technologies Ltd., Nova Scotia, Canada

Continuation of Ser. No. 777,321, Dec. 2, 1991, abandoned. This application Mar. 28, 1994, Ser. No. 218,464
Claims priority, application Canada, Apr. 3, 1990, 2013694
Int. Cl.[6] B04B *9/00;1/00*
U.S. Cl. 494—35 **21 Claims**

1. A decanting centrifuge assembly for separating particulate matter from a fluid held within a container comprising:
a housing;
lower bearing support means within said housing;
a lower bowl assembly including an upwardly and outwardly flaring lower bowl member affixed to lower bearing means, a cylindrical member extending downwardly therefrom, and bearing means between said lower bearing means and said lower bearing support means for rotatably and bearingly supporting said lower bowl assembly within said housing;
cylindrical transfer tube means extending downwardly into said housing to within said lower bowl member;
an assembly of upwardly and outwardly flaring vertically spaced apart frustoconical discs attached to the lower end of said transfer tube means in an upper discharge chamber of said housing and lower inlet port means adjacent said discs;
apertured connection means integrally connecting said transfer tube means to said lower bearing means;
partition means blocking said transfer tube means between said inlet port means and said connection means;
recycle fluid discharge means in said housing;
an upper bowl member having an outer rim engageable with an outer rim of said lower bowl member and defining a centrifuge chamber with said lower bowl member, said centrifuge chamber enclosing said discs;
means biasing said upper bowl member towards said lower bowl member; and
means for creating a pressure differential between said container and said discharge chamber, said pressure differential serving to transfer fluid from said container into said centrifuge assembly via said cylindrical member, said connection means including an annular portion having a plurality of circumferential spaced aperture extending therethrough and leading from said cylindrical member into said centrifuge chamber.



5,487,721

Patent Not Issued For This Number

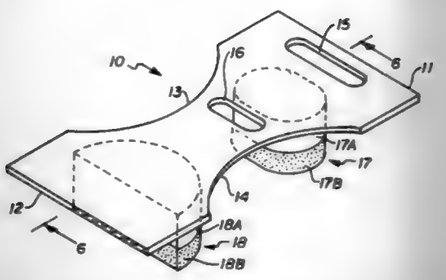
5,487,722

APPARATUS AND METHOD FOR INTERPOSED ABDOMINAL COUNTERPULSATION CPR

Sherman E. Weaver, II, and Horace Weaver, both of Box 623, Alvin, Tex. 77512-623

Filed May 3, 1994, Ser. No. 237,720
Int. Cl.[6] A61H *31/00*
U.S. Cl. 601—41 **17 Claims**

1. A device for manually administering interposed abdominal counterpulsation cardiopulmonary resuscitation (IAC-CPR) to a patient comprising:
a longitudinal generally flat rectangular member formed of substantially rigid material having a top side, an underside, and opposed ends configured to be gripped by the left and right hands, respectively, of a person treating the patient, a first force-transmitting element adjustably fixed to said underside configured to engage a patient's chest region, and a second force-transmitting element adjustably fixed to said underside configured to engage the patient's abdominal region;



said first and second force-transmitting elements spaced longitudinally apart from one another;

said rectangular member being positioned on the patient's torso with its longitudinal axis aligned generally with the longitudinal axis of the patient's body and said first and second force-transmitting elements engaged on the patient's chest region and abdominal region, respectively, and said opposed ends being gripped by the hands of the person treating the patient for applying force to said rectangular member; and

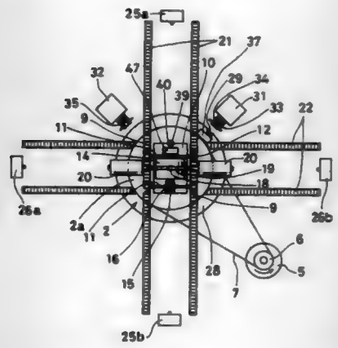
manual force being applied by the person treating the patient alternately to each one of said opposed ends in alternating sequence to administer chest compressions in alternating sequence to abdominal compressions.

5,487,723

MULTI-DIRECTIONAL ROLLING MASSAGER

Takakazu Ito, 1-866, Kami Higashiozone-cho, Kita-Ku, Nagoya, Japan

Filed Dec. 30, 1993, Ser. No. 175,925
Int. Cl.[6] A61H *15/00*
U.S. Cl. 601—99 **17 Claims**



1. A massager for incorporation into a seat comprising:

a selectively rotatable switch drum having a pair of switch tracks on opposite sides of a center of rotation of said rotatable wwitch drum;

pairs of parallel travel tracks on a same plane with the switch tracks extending radially from said switch drum at ninety degrees angular intervals whereby pairs of said travel tracks extend diametrically in opposite directions from said center of rotation;

a self-propelled carriage having wheels and an electric drive motor for travel from said switch tracks and onto said travel tracks;

means for selectively rotating said switch drum in rotational angular intervals for aligning the switch tracks with diametrically disposed pairs of said parallel travel tracks for travel of said carriage thereon back and forth in opposite directions along paths orthogonal to each other;

said carriage having two rotatable massage rollers disposed extending in opposite directions laterally of said carriage and transported thereon during travel;

means comprising electrical means having controls for sequencing in timed relationship rotation of said switch drum and energizing of said electric motor for effecting travel of said carriage along said paths alternately and back and forth in opposite directions thereon for said massage rollers to massage body parts of a user during travel of said carriage on said travel tracks; and

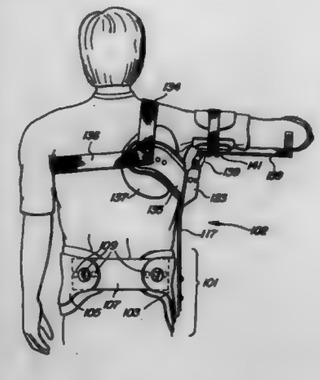
an enclosure enclosing said massager as a unit with said massage rollers disposed with surfaces which partially project from a side of said enclosure to massage the body parts of a user.

5,487,724

ORTHOPAEDIC SHOULDER BRACE HAVING ADJUSTABLE PELVIC AND ARM SUPPORTS

Shannon R. Schwenn, Orlando, Fla., assignor to Orthomerica Products, Inc., Newport Beach, Calif.

Filed May 27, 1994, Ser. No. 250,056
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—20 **16 Claims**



1. A shoulder brace adapted to adjustably distribute weight onto a user's waist and hip, comprising:

a pelvic belt having a left rigid shell and a right rigid shell, each of the two rigid shells having an upper curved portion for comfortably fitting around a side of a waist of the user and having a lower curved portion for comfortably fitting onto a hip of the user, each of the two rigid shells being rotatably connected to a rigid joining shell to accommodate different hip sizes of different users;

a thorax band adapted to be wrapped around a portion of the user's torso beneath a shoulder of the user; and

a support connected to one of the rigid shells for connecting the pelvic belt to the thorax band, and adapted to support an arm rest.

5,487,725

PNEUMATIC VITRECTOMY FOR RETINAL ATTACHMENT

Gholam A. Peyman, New Orleans, La., assignor to Syntec, Inc., Winfield, Mo.

Continuation-in-part of Ser. No. 241,749, May 12, 1994. This application Dec. 1, 1994, Ser. No. 348,051
Int. Cl.[6] A61B *17/20*
U.S. Cl. 604—22 **18 Claims**

1. An instrument for introduction into an eyeball for the treatment of detached retinal tissue comprising:

an outer tube having an aspiration port formed therein;





an inner tube slidably engaged within said outer tube, said inner tube having means thereon for aspirating fluid and tissue through said aspiration port and means for severing said tissue;

means for moving said inner tube within said outer tube; and

a tapered extension tip integrally formed on an end of said outer tube, said extension tip having a sharp cutting edge formed on a periphery thereof capable of piercing the eyeball;

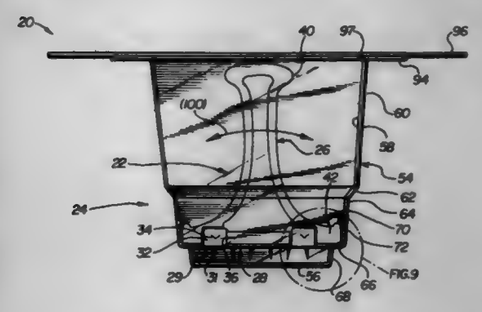
said extension tip being positioned on said outer tube between said aspiration port and the detached retinal tissue so as to prevent the detached retinal tissue from being aspirated into said aspiration port.

5,487,726

VACCINE APPLICATOR SYSTEM

Richard Rabenau, Birmingham, and Fred E. Williams, Jr., Arab, both of Ala., assignors to Ryder International Corporation, Arab, Ala.

Filed Jun. 16, 1994, Ser. No. 260,882
Int. Cl.[6] A61B *17/20*
U.S. Cl. 604—46 **10 Claims**



1. In a percutaneous vaccine applicator system, a packaging assembly for use with a percutaneous vaccine applicator of the type having a plurality of spikes, said packaging assembly providing for applicator storage and disposal, said packaging assembly comprising:

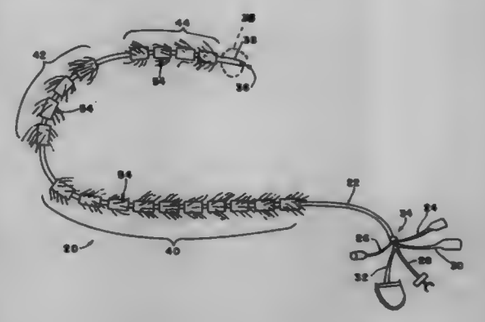
a container and a removable cover attached to said container, said container having walls and a base panel defining a container cavity, said container cavity being sized and dimensioned for receiving a percutaneous vaccine applicator, a ledge formed in said walls, a ledge rim surface of said ledge being spaced away from an inside surface of said base panel a dimension which is greater than the length of the spikes on a percutaneous vaccine applicator to be retained in said container cavity for maintaining a gap between a tip of the spikes of the applicator and an inside surface of said base panel to prevent the spikes from puncturing said base panel, at least one detent protrusion projecting into said cavity from a corresponding wall, said detent protrusion being spaced from a corresponding portion of said ledge rim to retain a portion of said applicator therebetween prior to use and for disposal after use.

5,487,727

METHOD OF IMPLANTING AN INTRAVASCULAR MEMBRANE LUNG

Michael T. Snider, Hershey; Kane M. High, Middletown, both of Pa.; Georg Panol, Warwick, R.I.; James Ultman, State College, Pa.; Russell B. Richard, Hershey, Pa.; John K. Stene, Hummelstown, Pa., and Garfield B. Russell, Palmyra, Pa., assignors to The Penn State Research Foundation, University Park, Pa.

Division of Ser. No. 817,173, Jan. 6, 1992, Pat. No. 5,336,164.
This application Apr. 22, 1994, Ser. No. 232,788
Int. Cl.[6] A61M *37/00;31/00*
U.S. Cl. 604—49 **7 Claims**



1. A method of implanting in a living body an intravascular membrane lung by way of percutaneous insertion into cavities of the body through which blood flows in series including a femoral vein, an inferior vena cava, a right ventricle, a pulmonary artery, and natural lungs, said method comprising the steps of:

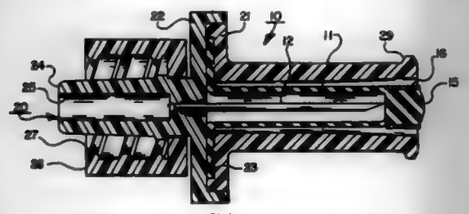
(a) inserting percutaneously into the femoral vein a distal end of an elongated catheter having a longitudinal axis and first and second conduits therethrough, and including a plurality of elongated hollow flexible microporous gas exchange fibers having outer surfaces, said fibers tethered only at one end to the catheter and in communication with the first and second conduits and extending transversely of the longitudinal axis of the catheter;

(b) advancing the catheter into and through the femoral vein until the gas exchange fibers extend transversely of the catheter and are positioned within and substantially coextensive with the pulmonary artery, within and substantially coextensive with the right ventricle, and within and substantially coextensive with the inferior vena cava;

(c) delivering oxygen through the first conduit of the catheter to the gas exchange means and thence to the blood flowing across the gas exchange means; and

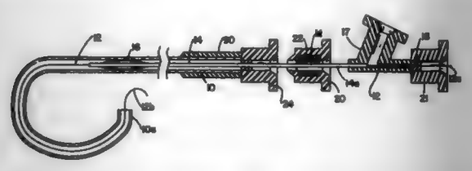
(d) removing carbon dioxide from the blood flowing across the gas exchange means, through the gas exchange means, then through the second conduit of the catheter.

5,487,728
CONNECTOR ASSEMBLY
Vincent L. Vaillancourt, 14 Bunyan Dr., Livingston, N.J. 07039
Filed May 19, 1994, Ser. No. 245,893
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—86 **20 Claims**



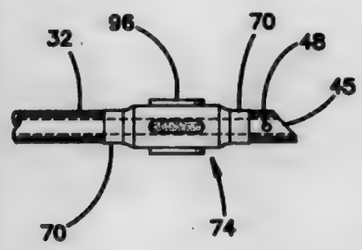
1. A connector assembly comprising
a female luer connector including a housing having a rigid tubular portion projecting therefrom, a hollow needle mounted in said housing concentrically within said tubular portion, a tubular shield mounted over said needle and including a resilient collapsible tubular portion concentric to said needle and a septum at a distal end of said collapsible tubular portion in facing relation to said needle and a ring disposed about said septum to circumferentially compress said septum and prevent circumferential distortion of said septum; and
a male luer connector including a hollow tube for movement coaxially into said rigid tubular portion of said female luer housing, said hollow tube being sized to abut and move said septum into said rigid tubular portion while collapsing said collapsible tubular portion of said shield to effect piercing of said needle through said septum and entry into said hollow tube.

5,487,729
MAGNETIC GUIDEWIRE COUPLING FOR CATHETER EXCHANGE
Ernesto Avellanet, and Ernesto Hernandez, both of Miami Lakes, Fla., assignors to Cordis Corporation, Miami Lakes, Fla.
Continuation of Ser. No. 133,324, Oct. 8, 1993, which is a division of Ser. No. 920,864, Jul. 28, 1992, Pat. No. 5,269,759.
This application Mar. 25, 1994, Ser. No. 217,930
The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 **5 Claims**



1. Apparatus for facilitating catheter exchange in the vascular system of a patient, which comprises:
a flexible guidewire member for introduction into the vascular system of the patient, said flexible guidewire having first magnetic attraction means along a length of said guidewire member that is adapted to remain outside of the patient's body;
said first magnetic attraction means comprising ferromagnetic material;
a catheter adapted for advancement over said guidewire member;
second magnetic attraction means for positioning outside the patient's body in close proximity to said first magnetic attraction means to retain said guidewire member in position via magnetic force,
whereby said catheter may be withdrawn over said guidewire member while said guidewire member is retained in position in the vascular system of the patient, via magnetic force.

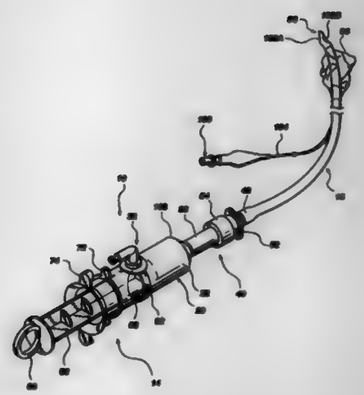
5,487,730
BALLOON CATHETER WITH BALLOON SURFACE RETENTION MEANS
Stuart J. Marcadis, Portage, Ind., and James H. Devries, Grand Rapids, Mich., assignors to Medtronic, Inc., Minneapolis, Minn.
Continuation of Ser. No. 999,488, Dec. 30, 1992, abandoned.
This application May 27, 1994, Ser. No. 250,863
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 **3 Claims**



1. An elongated flexible catheter for supplying perfusion liquid to a bodily vessel having an orifice, the catheter comprising:
a body having a proximal end, a distal end receivable in a vessel by way of the vessel orifice, and an infusion lumen formed within the body and extending between the proximal end and the distal end;
at least one infusion lumen outlet at the catheter distal end for discharge of liquid from the lumen;
a radially expandable sealing member surrounding the body proximally of the outlet, the sealing member being receivable in the orifice in its unexpanded state and expandable into engagement with a vessel wall to form a seal of the orifice thereof;
the sealing member including a plurality of spaced apart felt patches affixed to the outer surface of the sealing member to enhance the purchase between the vessel wall and the sealing member in the expanded state to resist removal of the distal end from the vessel and loss of the seal.

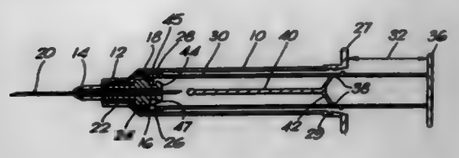
5,487,731
ESOPHAGEAL INTUBATION DETECTOR WITH INDICATOR
Marshall T. Denton, Salt Lake City, Utah, assignor to Wolfe Tory Medical, Inc., Salt Lake City, Utah
Filed Feb. 22, 1994, Ser. No. 199,628
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—100 **22 Claims**

1. An esophageal intubation detection system for use in determining whether a tip of an endotracheal tube is in a patient's esophagus or in the patient's trachea, the system comprising:
the endotracheal tube including the tube tip;
volume changing means having a cavity, for changing the volume of cavity, the cavity being connected to the endotracheal tube; and



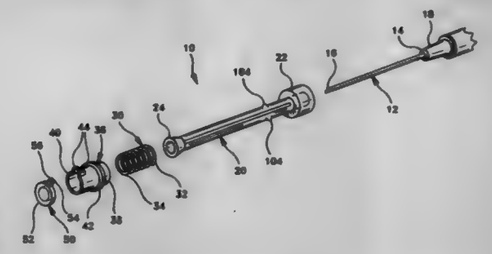
an indicator that is activated in response to a significant pressure differential across the indicator and that thereby provides an indication regarding the position of the tube tip, the indicator being pneumatically connected to the endotracheal tube and the volume changing means,
whereby, if the tube tip is in the esophagus, the tube tip becomes occluded musing the significant pressure differential across the indicator as the volume of the cavity changes activating the indicator, and if the tube tip is in the trachea, the tube tip is not occluded and there is no significant pressure differential as the volume of the cavity changes.

5,487,732
SYRINGE WITH RETRACTABLE NEEDLE
Peter Jeffrey, Liverpool, Great Britain, assignor to Safe-T-Limited, Isle of Man, United Kingdom
PCT No. PCT/GB93/01004, § 371 Date Dec. 13, 1994, § 102(e) Date Dec. 13, 1994, PCT Pub. No. WO93/23098, PCT Pub. Date Nov. 25, 1993
PCT Filed May 17, 1993, Ser. No. 335,795
Claims priority, application United Kingdom, May 15, 1992, 9210463; Jul. 8, 1992, 9214512
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—110 **16 Claims**



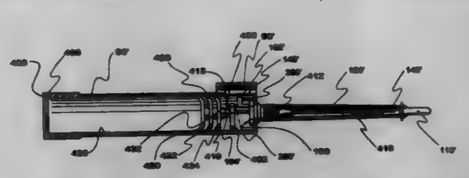
1. A hollow needle applicator for cartridged drugs etc. including automatic needle retraction after cartridge contents expression, said applicator comprising a cartridge which is at least partially accommodated bodily within a hollow piston actuator or carrier and will be released for retraction under bias thereinto or further thereinto by way of a piston rod serving to operate contents discharge piston provision of said cartridge and said piston further having deflectable arms that extend sideways further than side walling of said cartridge and into temporary latching engagement with holding formation of said piston actuator or carrier until released by deflection of the arms by engagement with open rear end of said cartridge.

5,487,733
ASSEMBLY WITH COLLAPSIBLE SHEATH AND TIP GUARD
Richard J. Caizza, Barry Lakes, and Jon S. Bell, Midland Park, both of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Continuation of Ser. No. 309,372, Sep. 20, 1994, abandoned.
This application Apr. 11, 1995, Ser. No. 420,890
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—110 **28 Claims**



1. A needle assembly comprising:
a needle cannula having a pointed tip;
a first collapsible member surrounding at least a portion of said needle cannula and being resiliently biased toward an expanded condition in which a portion of said first collapsible member approaches said tip;
a tip guard mounted to said first collapsible member for selective movement toward and away from said needle cannula; and
a second collapsible member disposed intermediate said first collapsible member and said needle cannula and surrounding at least a portion of said needle cannula, said second collapsible member being resiliently biased toward and expanded condition in which a portion of said second collapsible member approaches said tip, said second member being configured to activate said tip guard and move said tip guard into covering relationship with said tip when said first and second members are in said respective expanded conditions.

5,487,734
SELF RETRACTING CATHETER NEEDLE APPARATUS AND METHODS
Gale H. Thorne, Bountiful, and David L. Thorne, Kaysville, both of Utah, assignors to Specialized Health Products, Inc., Bountiful, Utah
Continuation-in-part of Ser. No. 370,728, Jan. 10, 1995. This application May 8, 1995, Ser. No. 436,976
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—195 **11 Claims**



1. A disposable, single-use, self-retracting catheter insertion needle assembly and housing in which the needle assembly is stored and transported, said needle assembly comprising:
the housing having a manually distortable section, providing a medically safe transport package for the needle assembly, and having an exit and reentry end for a portion of the needle assembly;
a needle cover disposed for transport within the housing and being a part of the portion;
an elongated medical needle disposed within the housing and further within the needle cover and having a sharpened end disposed toward the exit and reentry end of the housing;

a catheter disposed about the elongated needle;
a needle cover attachment hub disposed about said medical needle and separably attachable to and detachable from the needle cover, said cover attachment hub being disposed about said needle during transport and before and during blood withdrawal but separable therefrom;
said cover attachment hub further comprising a latch which, for needle insertion, is positioned to lock said needle assembly at a predetermined position relative to said exit and reentry end whereat the needle extends outward from said housing and is thereby positioned for use;
a distal part of the assembly firmly affixed to said medical needle at at least an end of the assembly distal from the sharpened end, said distal part comprising:
a separable attachment between the distal part and said cover attachment hub;
an attachment release apparatus integrally associated with said separable attachment and disposed in close communication with an internal surface in close communication with the distortable section of said housing such that the release apparatus is actuated by manual distortion of that section of said housing;
means for affixing said needle assembly to a linear motion force storage apparatus which derives return energy for needle retraction from needle extension through the needle exit and reentry end.

5,487,735

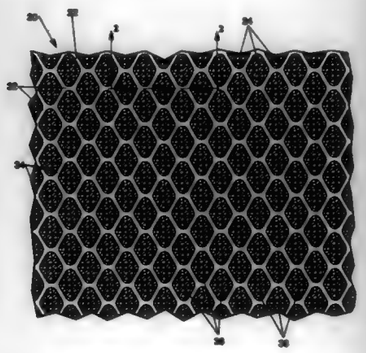
Patent Not Issued For This Number

5,487,736

MULTI-TOPOGRAPHY SUBSTRATE HAVING SELECTIVELY DISPOSED OSMOTIC ABSORBENT, INCORPORATION THEREOF IN A DISPOSABLE ABSORBENT ARTICLE AND PROCESS OF MANUFACTURE THEREFOR

Dean Van Phan, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 153,863, Nov. 17, 1993, abandoned.
This application May 5, 1995, Ser. No. 435,556
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—368 **19 Claims**



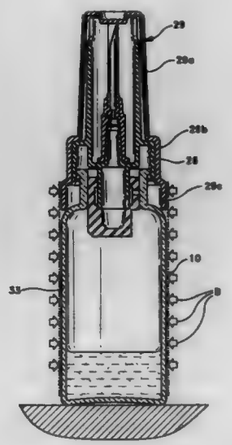
1. An absorbent structure comprising:
a fibrous capillary substrate having two elevations, a first elevation defining a first pattern and a second elevation defining a second pattern, each said elevation comprising one or more regions, said regions having two different densities, a relatively high density and a relatively low density, whereby said fibers of said substrate are deflected in said regions having said low density; and
an immobilized osmotic absorbent cured in situ from a liquid precursor and disposed on one or more of said regions corresponding to one of said elevations of said capillary substrate.

5,487,737

STORAGE AND TRANSFER BOTTLE DESIGNED FOR STORING A COMPONENT OF A MEDICAMENTAL SUBSTANCE

Gabriel Meyer, Vesenaz, Switzerland, assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 566,423, Aug. 29, 1990, abandoned.
This application Oct. 18, 1993, Ser. No. 138,878
Claims priority, application Switzerland, Dec. 27, 1988, 4805/88; Jan. 30, 1989, 3919/89
Int. Cl.[6] A61J *1/00*
U.S. Cl. 604—403 **21 Claims**



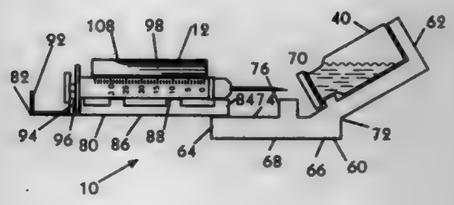
1. A single compartment storage and transfer bottle designed for storing a medicinal substance and for transferring the medicinal substance, said bottle including a hollow body opened at one end and forming a restricted open neck, a capsule slidably mounted to said neck, a stopper device being engagable within said restricted open neck and supported by said capsule, said bottle being sterilizable and being designed to resist thermal strains of lyophilization, said stopper device having an internal cavity and at least one radial canal communicating with said internal cavity, a transfer device mounted to said capsule and communicating with the internal cavity of said stopper device, said stopper device being displacable between a storage position in which said stopper device constitutes an impermeable seal with said restricted open neck and said radial canal is closed by an inner surface of said restricted open neck, and a utility position in which said radial canal communicates with an interior of said bottle to form an opening for allowing evacuation of said medicinal substance from said bottle through said radial canal and said internal cavity, a cap covering at least a portion of said capsule, and an annular seal extending between said cap and bottle body, said seal holding said cap on said bottle body.

5,487,738

APPARATUS FOR DRAWING FLUIDS INTO A HYPODERMIC SYRINGE

Eugene B. Sciulli, 1024 N. Shore Dr. NE., St. Petersburg, Fla. 33701-1440

Filed Mar. 31, 1995, Ser. No. 414,436
Int. Cl.[6] A61B *19/00*
U.S. Cl. 604—414 **8 Claims**



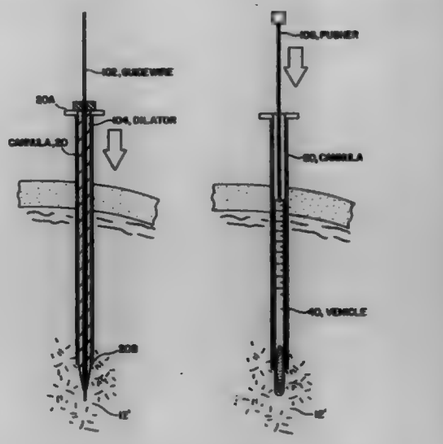
1. A new and improved apparatus for drawing fluid into a hypodermic syringe comprising, in combination:
a hypodermic syringe of the type having a cylindrical container for fluids to be dispensed, the hypodermic syringe having an open proximal end and a distal end with a needle at the distal end and a shoulder at the proximal end, the hypodermic syringe also having a reciprocal rod with a distal end formed with a piston positioned interior of the container, the rod also having a proximal end with a plunger for reciprocating the piston for drawing fluids into the cylinder and the forcing of fluids therefrom;
a vial having a closed cylindrical extent at its lower end and a neck of a reduced diameter with an opening at its upper end and a closure pierceable by a needle, the bottle also having a quantity of medicinal fluid therein for being drawn from the vial by a needle of a hypodermic syringe;
a holder having a distal end and a proximal end and a central extent therebetween with a planar lower surface therebeneath, the distal end including an upper support surface adapted to support the vial of medicinal fluid, the support surface being formed at an angle of about 30 degrees with respect to the lower surface and sloping downwardly toward the central extent of the holder, the upper surface of the proximal end being planar and provided with a forward stop perpendicular to the upper surface;
a reciprocable platform having a proximal end and a distal end with a lower horizontal surface slidable upon the upper surface at the proximal end of the holder, the platform also having an upper surface formed with a curvature adapted to receive thereon the hypodermic syringe, the platform also having an upturned distal end adapted to limit the withdrawal movement of the plunger, the platform also having a recess at a central extent adapted to receive the shoulder to preclude axial movement thereof; and
a base having a planar upper horizontal surface adapted to receive thereon the lower horizontal surface of the holder with coupling components therebetween.

5,487,739

IMPLANTABLE THERAPY SYSTEMS AND METHODS

Patrick Aebischer, Barrington; Moses Goddard, Tiverton, both of R.I.; John G. Moldauer, Brooklyn; Paul J. Mulhauser, New York, both of N.Y.; Anne M. Rathbun, Providence, R.I.; Paul R. Sanberg, Greenwich, R.I.; Alfred V. Vasconcellos, Cranston, R.I., and Nicholas F. Warner, Belmont, Mass., assignors to Brown University Research Foundation, Providence, R.I.

Continuation of Ser. No. 998,368, Dec. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 722,947, Jun. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 369,296, Jun. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 121,626, Nov. 17, 1987, Pat. No. 4,892,538.
This application Jun. 2, 1995, Ser. No. 459,815
Claims priority, application WIPO, Jun. 25, 1992, PCT/US92/05369
Int. Cl.[6] A61K *9/22*
U.S. Cl. 604—890.1 **20 Claims**



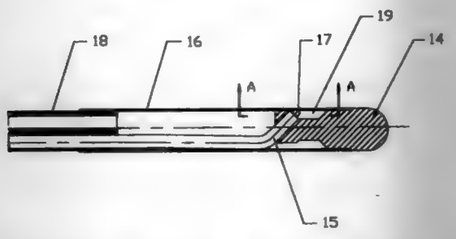
1. A system for delivering a biologically active factor to a selected treatment site in a subject, comprising:
i) a single cannula adapted for penetration through tissue into a selected position in proximity with the treatment site, having a bore with a substantially smooth interior surface running axially therethrough through which a vehicle may slidably move, an open, proximal end into which the vehicle may be slidably inserted and a distal end having an opening through which the vehicle may slidably move wherein the external diameter and bore diameter are tapered toward the distal tip;
ii) an obturator disposable within the cannula to prevent tissue material from entering the distal end of the cannula when it is inserted into tissue;
iii) a vehicle which encapsulates the biologically active factor, the vehicle having an outer surface which comprises a biocompatible semipermeable outer membrane through which the biologically active factor may be released into the selected treatment site, and a shape which enables slidable insertion into the proximal end of the cannula, slidable movement along the bore of the cannula, slidable passage through the distal end of the cannula by removal of the cannula from the proximity of the treatment site; and
iv) a pusher disposable within the cannula to engage the outer surface of the vehicle, to slidably move the vehicle through the bore, and to hold the vehicle in place at the selected treatment site when the cannula is removed from the proximity of the treatment site, the pusher being removable after the vehicle is positioned at the treatment site.

5,487,740

LASER DEVICE FOR ABLATION OF HUMAN TISSUE

Stanislaw Sulek, Irvine, and Hany M. G. Hussein, Newport Beach, both of Calif., assignors to Energy Life Systems Corporation, Costa Mesa, Calif.

Filed Mar. 2, 1994, Ser. No. 204,980
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—15 19 Claims



19. A lasing catheter for laser ablation of human tissue, in a selected body cavity comprising in combination:

said lasing catheter having an elongated flexible body with a solid distal end region;

located in least one laser port at said solid distal end region having an aperture;

at least one elongate fiberoptic in said lasing catheter terminating at said aperture in said laser port for directing a laser beam outwardly through said fiberoptic at a target site near aperture in said laser port; and said fiber optic being adjacent said aperture;

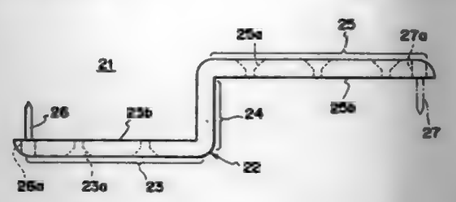
a cap made from a material that can absorb laser light and generate heat mounted to said distal end region covering said laser port so as to absorb all of said laser light from said laser beam.

5,487,741

BONE PLATE

Yu Maruyama; Yoshu Taguchi, both of Tokyo, and Kijuro Hayano, Chino, all of, Japan, assignors to Taguchi Medical Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1993, Ser. No. 152,426
Claims priority, application Japan, Nov. 16, 1992, 4-084967 U
Int. Cl.[6] A61B *17/56;17/58;* A61F *2/30;2/28*
U.S. Cl. 606—60 13 Claims



1. A bone plate adapted to be attached to a surface of a bone across a broken-away portion of the bone to thereby fix the broken-away portion, said bone plate comprising:

a body including a bent portion between a pair of mount portions;

said mount portions having bottom surfaces adapted to contact the bone and upper surfaces adapted to be compatible with upper tissue, said mount portions extending from said bent portion to opposite ends of said body and being substantially parallel to each other, said bottom surfaces oppositely facing each other,

said bent portion extending in a direction having an angle with respect to a plane of at least one of said bottom surfaces;

at least one opening formed in said body for receiving a fastener therein and fixing said bone plate; and

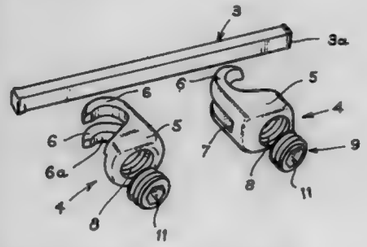
at least one pin protruding from at least one of said bottom surfaces of said body, adapted to be driven into the bone to thereby at least tentatively set said body relative to the bone.

5,487,742

TRANSVERSE FIXATION DEVICE FOR A SPINAL OSTEOSYNTHESIS SYSTEM

Yves P. Cotrel, Paris, France, assignor to Sofamore Danek Group, Memphis, Tenn.

Continuation of Ser. No. 666,665, Mar. 7, 1991, abandoned.
This application Nov. 24, 1993, Ser. No. 158,156
Claims priority, application France, Mar. 8, 1990, 90 02970
Int. Cl.[6] A61F *5/00*
U.S. Cl. 606—61 27 Claims



1. A spinal osteosynthesis system, comprising:

a spinal rod configured to be implanted on a spinal segment;

a transverse bar; and

a fixation element including;

a body; and

a bifurcated hook portion attached to said body, said hook portion defining two hook-shaped blades extending outwardly from said body and defining a first surface for engaging the rod, said blades being spaced apart along their outward extension a distance at least equal to a width of the transverse bar, and

said body defining a second surface between said blades configured to slidingly engage a corresponding side of the transverse bar when the bar is fully seated between said blades.

5,487,743

ANTERIOR DORSO-LUMBAR SPINAL OSTEOSYNTHESIS INSTRUMENTATION FOR THE CORRECTION OF KYPHOSIS

Jean-Marie Laurain, Poulilley les Vignes, France; Ronald L. DeWald, Chicago, Ill.; Jean-François D'Amore, Stella Plage, and Guy Deneuvillers, Merlimont, both of, France, assignors to Sofamore, S.N.C., Rang-au-Fliers, France

Filed Feb. 15, 1994, Ser. No. 196,517
The portion of the term of this patent subsequent to Apr. 28, 2009, has been disclaimed.
Int. Cl.[6] A61B *17/70;17/80*
U.S. Cl. 606—61 8 Claims

1. Anterior dorso-lumbar spinal osteosynthesis instrumentation for the correction of kyphosis due to the destruction of one or two vertebral bodies, comprising in combination:

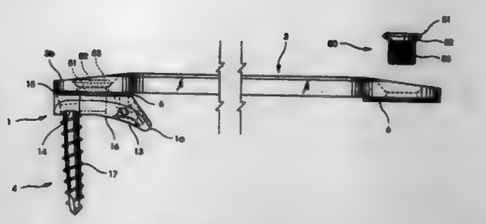
a pair of vertebral implants;

bone screws for anchorage of said implants to two corresponding vertebrae located on each side of a damaged vertebra;

a plate having two end portions for connection to said two implants;

means for fixing said end portions to said implants;

said two end portions of said plate having a rounded periphery; and



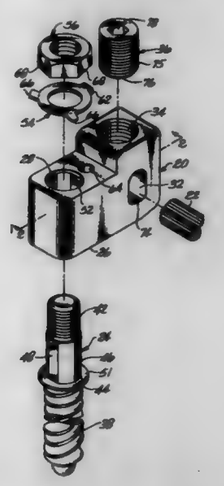
said fixing means including first apertures defined in each of said implants, second apertures defined in said end portions of said plate, and fixing screws provided with rounded heads so that the surface of said fixing screws is flush with the surface of said plate when said fixing screws are anchored in a central aperture of said first apertures of said implants and said second apertures of the respective end portions of said plate.

5,487,744

CLOSED CONNECTOR FOR SPINAL FIXATION SYSTEMS

Robert S. Howland, Seal Beach, Calif.; assignor to Advanced Spine Fixation Systems, Inc., Cypress, Calif.

Continuation of Ser. No. 45,370, Apr. 8, 1993, abandoned.
This application Apr. 15, 1994, Ser. No. 227,907
Int. Cl.[6] A61B *17/70*
U.S. Cl. 606—61 16 Claims



1. A clamp assembly for connecting a spine rod to a vertebra fasteners, the clamp assembly comprising:

a spine rod;

a vertebra fastener including a shaft having a first threaded end for insertion into a vertebra and a second threaded end for receiving a threaded nut;

an L-shaped clamp having a body portion forming one side of the L-shape and a foot portion forming the foot of the L-shape comprising:

a first outward, away-from-the-spine surface forming one side of the body portion of the L-shape;

a first aperture for receiving the shaft of the vertebra fastener with an opening of the first aperture in the first outward, away-from-the-spine surface;

a second aperture for receiving the spine rod and cooperating with the spine rod to securely grip the rod to the body portion;

a second outward, away-from-the-spine surface forming one end of the foot portion of the L-shape, having surface plane which is not co-planar with the first outward, away-from-the-spine surface; and

a threaded aperture, with an opening of the threaded aperture in the second outward, away-from-the-spine surface, in communication with the second aperture;

a set screw for threading into the threaded aperture to clamp the spine rod within the second aperture;

a threaded nut having an upper surface and a lower surface for fastening the body portion to the second threaded portion of the vertebra fastener wherein when the nut is threaded to the vertebra fastener and the lower surface rests on the first outward, away-from-the-spine surface, the upper surface is substantially coplanar with the second outward away-from-the-spine surface so that the assembled clamp has a generally flat planar profile outward, away from the spine, without any portions substantially protruding from the clamp outwardly, away from the spine, thereby inhibiting irritation to the back muscles of a patient once the system is installed; and

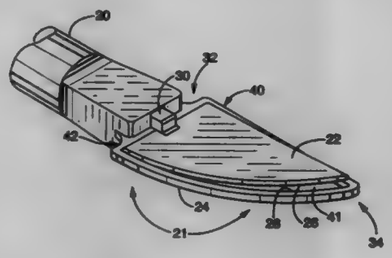
means for locking the nut to the body portion to prevent the nut from loosening.

5,487,745

CURVILINEAR SURGICAL PUNCH

Thomas P. McKenzie, 851 Tilden Dr., Lodi, Calif. 95242

Continuation of Ser. No. 65,842, May 21, 1993, abandoned.
This application Mar. 7, 1994, Ser. No. 208,073
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—83 12 Claims



3. A surgical instrument, comprising:

(a) a lower frame member having a proximal end and a distal end, said lower frame member being substantially planar from said proximal end to said distal end, said lower frame member including a cavity;

(b) an upper blade member having a proximal end and a distal end, said upper blade member having a length and a width, said upper blade member being substantially planar from said proximal end to said distal end, said proximal end of said upper blade member pivotally coupled to said proximal end of said lower frame member;

(c) support means for supporting said upper blade member and said lower frame member and for articulating said upper blade member in relation to said lower frame member between an open position and a closed position wherein said upper blade member is received in said cavity in said lower frame member in said closed position and wherein said upper blade member and said lower frame member lie in substantially parallel planes in said closed position; and

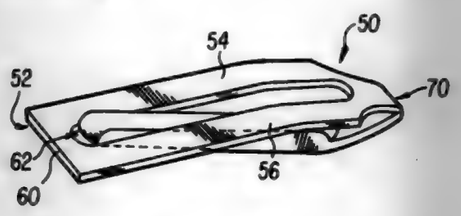
(d) said upper blade member having a top surface and a bottom surface, said top surface lying in a first plane, said bottom surface lying in a second plane, said first and second planes being substantially parallel, said bottom surface being continuously planar across the entire length and width of said upper blade member, said upper blade member including first and second rectilinear edges, said upper blade member including a curvilinear edge which is honed between said first and second planes, said curvilinear edge extending from said proximal end to said distal end of said upper blade member.

5,487,746

SURGICAL CLIP HAVING A LONGITUDINAL OPENING THROUGH WHICH CLAMPED TISSUE PROTRUDES

George W. Yu, 1326 Bayhead Rd., Annapolis, Md. 21401, and H. Logan Holtgrewe, 473 Fair Oak Dr., Severna Park, Md. 21146

Filed Nov. 23, 1994, Ser. No. 347,081
Int. Cl.[6] A61B 17/04
U.S. Cl. 606—151 22 Claims



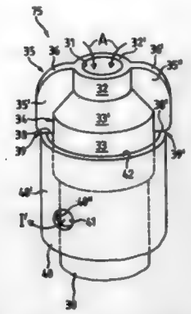
1. A surgical clip comprising:
a first side having a first leg; and
a second side having a second leg and a third leg connected to each other at a joining region at which the first leg is joined to the second and third legs, the second and third leg defining a longitudinal opening therebetween and extending through the second side;
wherein when tissue between the first leg of the first side and the second and the third legs of the second side is clamped by the surgical clip, the first leg pushes a portion of the tissue through the longitudinal opening, and at least a portion of the first leg intersects a plane defined by the second and third legs.

5,487,747

OPTHALMIC SURGICAL APPARATUS FOR MACERATING AND REMOVING THE LENS NUCLEUS FROM THE EYE OF A LIVING BEING

Robert Stagmann, Pretoria, South Africa, and Rudolf Demmerle, Schaffhausen, Switzerland, assignors to Grieshaber & Co. AG Schaffhausen, Schaffhausen, Switzerland

Filed May 3, 1994, Ser. No. 237,707
Claims priority, application Switzerland, May 7, 1993, 01470/93; Apr. 9, 1994, 01042/94
Int. Cl.[6] A61B 17/32
U.S. Cl. 606—166 23 Claims



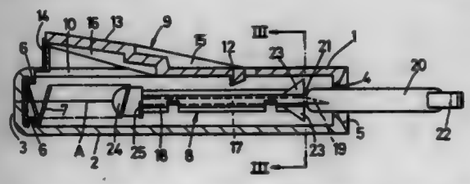
1. An ophthalmic surgical device for macerating and removing the lens nucleus of the eye of a living being, comprising:
a housing defining an axis and being adapted for gripping by a user; and
cutting means supported by said housing for macerating the lens nucleus, said cutting means including a tubular probe received coaxially within said housing, a cutting element extending in elongation of said tubular probe in axial direction beyond said housing in form of at least two rotatable wing-like blades oriented approximately transversely to the axis and defining an inlet opening in communication with said tubular probe, and a mounting attached to a forward position of said housing and secured to said tubular probe, said mounting being traversed by said inlet opening and supporting said wing-like blades,
said housing having a first passageway for introducing a fluid to said wing-like blades and a second passageway suitably sealed from said first passageway for withdrawing macerated lens nucleus via said inlet opening and said tubular probe, wherein said mounting is of approximate funnel-shaped configuration, with a first cylindrical section secured to said tubular probe, a conical section having one end connected to said first cylindrical section and another end, and a second cylindrical section connected to said other end of said conical part and having an upper surface, said wing-like blades being attached to said mounting and having an upper surface which extends flush with said upper surface of said second cylindrical section.

5,487,748

BLOOD SAMPLING DEVICE

Jeremy Marshall, and David D. Crossman, both of Oxford, United Kingdom, assignors to Owen Mumford Limited, Oxford, United Kingdom

PCT No. PCT/GB93/00650, § 371 Date Sep. 27, 1994, § 102(e) Date Sep. 27, 1994, PCT Pub. No. WO93/19671, PCT Pub. Date Oct. 14, 1993
PCT Filed Mar. 30, 1993, Ser. No. 307,624
Claims priority, application United Kingdom, Apr. 1, 1992, 9207120
Int. Cl.[6] A61B 5/14
U.S. Cl. 606—182 7 Claims



1. A disposable pricker comprising an elongate body with a lancet non-rotatably carried therein, the lancet tip normally being within the body, a spring urging the lancet in a direction to project its tip from the body, a trigger mechanism carried by the body with a portion within the body arranged to retain the lancet in a fully retracted position energizing the spring and a second portion outside the body manually actuable to release the lancet to cause the tip to have a momentary position projecting from an opening in the forward end of the body, and a cap encasing the lancet tip and having a shank traversing said opening, wherein said shank extends outwardly of said body through said opening a distance sufficient to permit said lancet to be moved against the action of said spring to said fully retracted position solely by pushing said cap further into said body through said opening, and wherein said cap is breakable free of the lancet by twisting when so retracted to leave the tip exposed within said body.

5,487,749

SURGICAL NEEDLE HOLDER

James R. Smith, Flat 2, 193 Sutherland Avenue, Little Venice, London W9 1ET, England

Filed Mar. 23, 1994, Ser. No. 216,398
Claims priority, application United Kingdom, Mar. 24, 1993, 9306080
Int. Cl.[6] A61B 17/06
U.S. Cl. 606—205 2 Claims

1. A surgical needle holder which comprises:



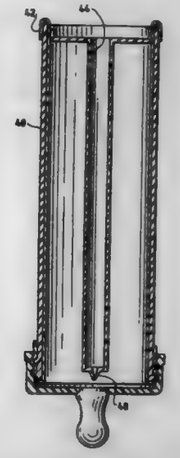
a) a pair of elongate members which are linked together at a pivot point in scissors-like fashion and which include projecting jaw portions forming jaws for releasably holding a surgical needle;
b) handle portions for opening and closing the jaws, said handle portions being shaped to provide a gap between the handle portions in the region of the pivot point when the projecting jaw portions are closed, said gap being dimensioned to receive a tip of the surgical needle; and
c) wherein at least one of said handle portions includes a protrusion extending therefrom and towards the other handle portion, said protrusion located on said at least one handle portion to extend into said gap so as to guard the tip of the needle and prevent the needle tip passing between the handle portions.

5,487,750

NURSING BOTTLE WITH MEDICATION DISPENSER

Mark T. Burchett, and Lori W. Burchett, both of 10505 Golf Rd., Orland Park, Ill. 60462

Continuation-in-part of Ser. No. 61,698, May 12, 1993, Pat. No. 5,383,906. This application Sep. 29, 1994, Ser. No. 315,201
Int. Cl.[6] A61J 17/00
U.S. Cl. 606—236 7 Claims



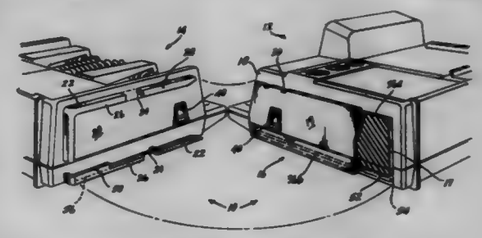
1. A liquid medication dispenser suitable for delivering a controlled mixture of palatable beverage into which a liquid medication has been diluted comprising:
a. a bottle having a top opening and bottom end;
b. a nipple assembly attached to said top opening and having at least one perforation therein to allow liquid to pass through;
c. a deformable container placed within said bottle for containing formula or other pallable beverage, said deformable container having a bottom end a top end and a longitudinal axis extending from said bottom end to said top end of said deformable container;
d. at least one tab projecting from the bottom end of said deformable container for securing said deformable container to the bottom end of said bottle;
e. an internal sleeve extending longitudinally from the bottom end of said deformable container through the longitudinal access of said container and having an open proximal end situated at the bottom end of said deformable container and a distal end facing the top opening of said bottle;
f. a syringe suitable for insertion in the proximal end of said internal sleeve;
g. an elongated hollow tip formed on the distal end of said internal sleeve and extending a predetermined distance towards the perforation in said nipple assembly;

5,487,751

MECHANICAL CONNECTOR FOR SECURING COMPATIBLE MEDICAL INSTRUMENTS TOGETHER

Stephen W. Radons, Snohomish; Steven L. King, Kirkland; Randall D. Mills, Woodinville, and Cliff Cristobal, Kirkland, all of Wash., assignors to Physio-Control Corporation, Redmond, Wash.

Filed Nov. 4, 1994, Ser. No. 334,624
Int. Cl.[6] A61B 19/02
U.S. Cl. 607—1 2 Claims



1. A mechanical connector for securing a first and a second medical instrument together, wherein said first and second medical instruments include an electrical interface through which data can be transmitted from the first instrument to the second instrument, the connector comprising:
a tongue portion disposed on the first instrument, the tongue portion including a joining section disposed on a side wall of the first instrument and an outer wall disposed on the joining section, the outer wall having a width that is wider than the joining section to create a top and a bottom channel between the outer wall and the side wall of the first instrument, the top channel having a substantially uniform depth along its entire length and the bottom channel having a first depth along a major portion of its length and a second depth that is deeper than the first depth at a rearward portion of the bottom channel, said deep portion of the bottom channel defining a keyway;
a groove portion disposed on a side wall of the second instrument, the groove portion including a pair of angle flanges extending from the side wall of the second instrument, said groove portion being capable of receiving said outer wall of the tongue portion such that the electrical interfaces of the first and second instruments are engaged.

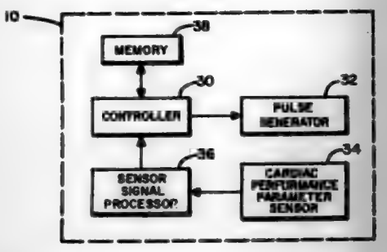
5,487,752

AUTOMATED PROGRAMMABLE STIMULATING DEVICE TO OPTIMIZE PACING PARAMETERS AND METHOD

Rodney W. Salo, Fridley; Julio C. Spinelli, Shoreview, and Bruce A. Tockman, Minneapolis, all of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed Nov. 15, 1994, Ser. No. 339,567
Int. Cl.[6] A61N 1/365
U.S. Cl. 607—17 18 Claims

1. A cardiac stimulator system comprising:
(a) a cardiac stimulator for normally applying cardiac stimulating pulses having programmable pacing cycle parameters to a heart during a first predetermined time interval sufficiently long to establish a baseline condition for a cardiac performance parameter;



(b) means for measuring and storing values of said cardiac performance parameter;

(c) means for periodically changing one of said programmable pacing cycle parameters during a second predetermined time interval that is only a small fraction of said first predetermined time interval;

(d) means including said means for measuring and storing values of said cardiac performance parameter for measuring and storing values of said cardiac performance parameters during successive ones of said first and second predetermined time intervals; and

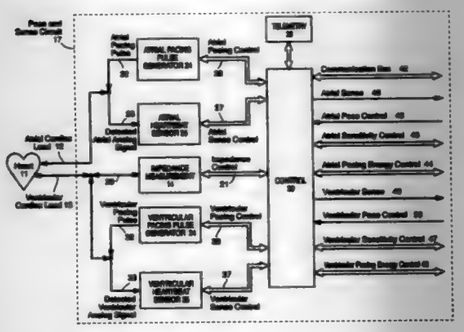
(e) means for determining whether an improvement in said cardiac performance parameter over the baseline condition occurs during ones of said second predetermined time intervals.

5,487,753

RATE-RESPONSIVE PACEMAKER WITH ANAEROBIC THRESHOLD ADAPTATION AND METHOD

Dean J. MacCarter, Englewood; Don Hopper, Denver; Daniel Cooper, Lakewood, and Roger Hassell, Golden, all of Colo., assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Mar. 16, 1995, Ser. No. 405,507
Int. Cl.[6] A61N *1/365*
U.S. Cl. 607—017 **27 Claims**



1. A rate responsive pacemaker comprising:

sensing means for sensing a metabolic demand parameter of a patient;

converting means for converting said metabolic demand parameter into a pulse rate, said converting means receiving said metabolic demand parameter and determining in response thereto a pulse rate in accordance with a preselected function, said function being based on the anaerobic threshold level of said patient; and

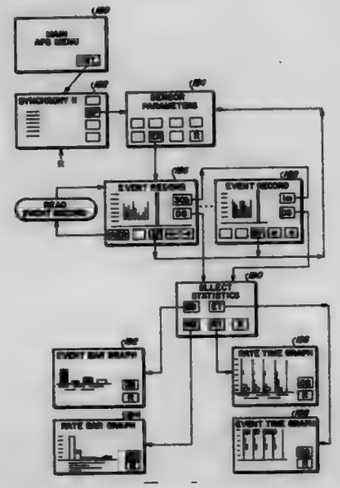
pulse generating means for generating heart pulses corresponding to said pulse rate.

5,487,754

METHOD AND APPARATUS FOR REPORTING AND DISPLAYING A SEQUENTIAL SERIES OF PACING EVENTS

Jeffery D. Snell, Northridge; Harold C. Schloss, Los Angeles; Brian M. Mann, Beverly Hills; John W. Poore, South Pasadena, and Roy B. Medlin, West Hills, all of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.

Division of Ser. No. 846,460, Mar. 2, 1992, Pat. No. 5,431,691.
This application Oct. 25, 1994, Ser. No. 328,217
Int. Cl.[6] A61N *1/37*
U.S. Cl. 607—27 **35 Claims**



1. A system for reporting a sequential series of pacing events for use with an implantable pacemaker, said implantable pacemaker having means for storing pacing event data and means for telemetrically transmitting said pacing event data, said system comprising:

means for telemetrically receiving said pacing event data;

means for displaying a rate axis;

means for displaying a time axis orthogonal to the rate axis;

means for displaying a plurality of symbols arranged in a timed sequence relative to the time axis, said symbols representing pacing events, as recorded within said pacing event data, that have occurred in the sequence displayed, said symbols being positioned relative to the rate axis to indicate the rate at which the pacing events occurred; and

means for displaying a time scale indication that provides a graphical depiction of the time scale associated with the displayed timed sequence of symbols, and an indication of how much of the total time represented by said pacing event data is currently being displayed.

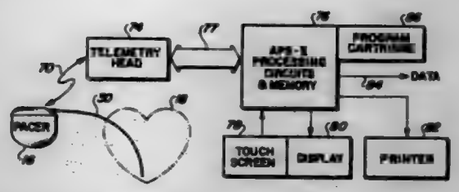
5,487,755

METHODS FOR DISPLAYING A SEQUENTIAL SERIES OF PACING EVENTS

Jeffery D. Snell, Northridge; Harold C. Schloss, Los Angeles; Brian M. Mann, Beverly Hills; John W. Poore, South Pasadena, and Roy B. Medlin, West Hills, all of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.

Division of Ser. No. 846,460, Mar. 2, 1992, Pat. No. 5,431,691.
This application Oct. 25, 1994, Ser. No. 328,218
Int. Cl.[6] A61N *1/37*
U.S. Cl. 607—27 **17 Claims**

1. A method for operating a pacing system, said pacing system comprising An external device and an implantable pacemaker, for reporting a sequential series of pacing events that occur within said implantable pacemaker, said external device having a display, a memory, and telemetry means for establishing a telemetric link



with said pacemaker, said pacemaker having means for pacing a patient's heart, said pacemaker further having means for detecting the occurrence and rate of a plurality of specified pacing events and sequentially recording the occurrence and rate of each event in the order in which it occurs in an event record, said event record being stored in a memory buffer within said pacemaker, said pacemaker further having a telemetry circuit coupled to said memory buffer for selectively telemetering data from said memory buffer to said external device, said method comprising:

(a) establishing said telemetric link between said telemetry means of said external device and said telemetry circuit of said pacemaker;

(b) downloading into said memory of said external device said event record from said memory buffer of said pacemaker via said telemetric link with said telemetry circuit of said pacemaker;

(c) processing said event record to determine a pacing event type and rate and time of occurrence for each specified pacing event within said event record; and

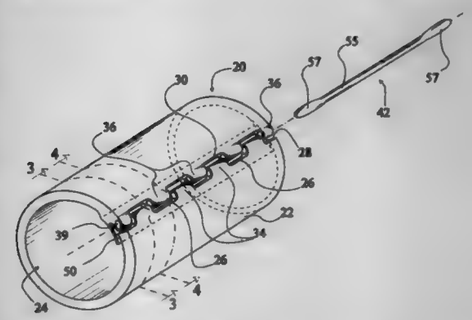
(d) displaying, on said display of said external device, a graphical depiction of the pacing events in said event record as a function of rate and time.

5,487,756

IMPLANTABLE CUFF HAVING IMPROVED CLOSURE

Klaus Kallesoe, Burnaby; Joaquín A. Hoffer, Anmore; Kevin Strange, Port Moody, and Ignacio Valenzuela, Richmond, all of, Canada, assignors to Simon Fraser University, Burnaby, Canada

Filed Dec. 23, 1994, Ser. No. 363,334
Int. Cl.[6] A61N *1/05;1/04*
U.S. Cl. 607—118 **30 Claims**



1. An implantable cuff comprising:

(a) a flexible tubular cuff member having a longitudinal slit extending through a wall thereof, said slit having first and second edges; and

(b) a closure associated with said slit, said closure comprising:

(i) two or more spaced apart first apertured members affixed to said cuff member at said first edge, said first apertured members having apertures aligned generally with said slit; and

(ii) a second apertured member interdigitated between two of said first apertured members and affixed to said cuff member at said second edge, said second apertured member having an aperture aligned generally with said slit

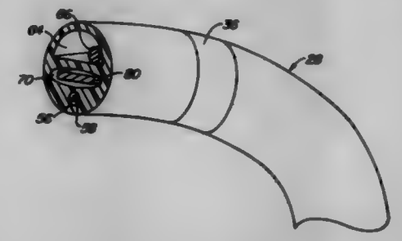
(c) retaining means for maintaining said closure closed with at least one said second apertured member interdigitated between said first apertured members.

5,487,757

MULTICURVE DEFLECTABLE CATHETER

Csaba Truckai, Sunnyvale; Richard S. Jaraczewski, Livermore; Frank Nguyen, San Jose, and Scott H. West, Tracy, all of Calif., assignors to Medtronic CardioRhythm, San Jose, Calif.

Continuation of Ser. No. 95,447, Jul. 20, 1993, abandoned.
This application Feb. 21, 1995, Ser. No. 391,333
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—122 **35 Claims**



34. A steerable electrophysiology catheter comprising:

a handle;

a shaft with a first bending stiffness, the shaft having a proximal end secured to the handle, a distal end, and an axial lumen therebetween;

a deflectable tip with a second bending stiffness less than the first bending stiffness, the deflectable tip having a proximal end secured to the distal end of the shaft, a distal end and an axial tip lumen in communication with the axial lumen of the shaft;

at least one electrode secured to the deflectable tip;

means for conducting current between the proximal end of the shaft and the electrode;

a manipulator wire extending through the axial lumen of the shaft and the tip lumen, the manipulator wire having a distal end secured to the distal end of the deflectable tip and a proximal end near the proximal end of the shaft;

an elongate, flexible stiffener element slidably disposed in the axial lumen of the shaft and the tip lumen, the stiffener element having a proximal end and a third bending stiffness;

means, coupled to the handle, for applying axial force to the manipulator wire to deflect the deflectable tip into a first curvature;

means, including a first slide axially slidable on the handle and secured to the proximal end of the stiffener wire, for axially moving the stiffener element relative to the deflectable tip such that at least a portion of the deflectable tip assumes a second curvature;

the handle including an outer surface, opposite which the first slide is positioned, and an inner surface; and

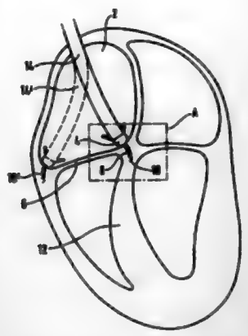
the stiffener element moving means including a ball and slider element secured to the first slide and positioned against the inner surface of the handle, the ball slider element having at least one low friction element in contact with the inner surface of the handle.

5,487,758

ELECTRODE SYSTEM FOR PACEMAKERS

Kurt Hoegnelid, Västerhaninge, and Alf Oehman, Vaellingby, both of, Sweden, assignors to Siemens-Elema AB, Solna, Sweden

Filed Sep. 22, 1993, Ser. No. 124,454
Claims priority, application Sweden, Sep. 28, 1992, 92027929
Int. Cl.[6] A61N 1/05.
U.S. Cl. 607—123 13 Claims



1. An electrode system for pacemakers, comprising:

ventricular electrode means for placement in contact with heart tissue in the ventricle for sensing electrical activity and for stimulating tissue, said ventricular electrode means including an insulated electrical conductor for transmitting signals to and from heat tissue;

said conductor terminating in an exposed, insulated tissue-penetrating terminal portion with an uninsulated tip insertable and anchorable in the atrial wall facing the septum, said terminal portion having a length proceeding into the region of the septum of superior part of the outer ventricular wall; and

at least one atrial electrode means for placement in contact with heart tissue in the atrium for sensing electrical activity and stimulating tissue in the atrium, said atrial electrode means including a conductor for transmitting signals to and from tissue in the atrium, said conductor for said atrial electrode means and said conductor for said ventricular electrode means being disposed in a single cable having a cable end with said terminal portion of said ventricular electrode projecting from said electrode cable, and said atrial electrode means including an exposed electrode disposed at said cable end, said exposed electrode of said atrial electrode means and said terminal portion of said conductor of said ventricular electrode means being disposed relative to each other for causing said cable end and said exposed electrode of said atrial electrode means to be positioned in a lower part of the atrium when said terminal portion of said ventricular electrode means is disposed high up in the ventricle.

5,487,759

NERVE STIMULATING DEVICE AND ASSOCIATED SUPPORT DEVICE

Charles A. Bastyr, 12476 Rue Fountain Bleau, San Diego, Calif. 92131, and Paul T. Kolen, 7212 Linden Ter., Carlsbad, Calif. 92009

Filed Jun. 14, 1993, Ser. No. 77,349
Int. Cl.[6] A61N 1/18
U.S. Cl. 607—149 20 Claims

1. An electrical stimulation system for applying a stimulation signal to a human user, said system comprising:

stimulation means for generating modulated electrical signals having a waveform of predetermined amplitude and therapeutic frequency;

support means removably attachable to a human user for carrying said stimulation means in proximity to said human user,



said support means including a connection means for physically and electrically connecting said stimulation means to said support means;

a plurality of electrode pads of a predetermined size disposed on said support means so as to be positioned against the skin of said user when the support means is in position on the user; and

said connection means electrically connecting the stimulation means to the electrode pads when the stimulation means is connected to the support means;

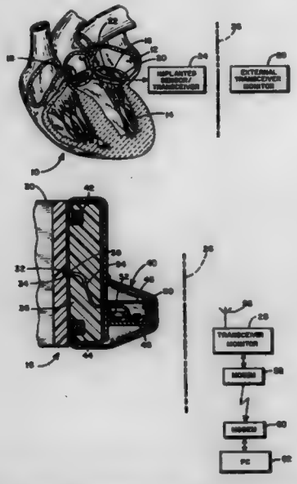
said connection means including a plurality of keyed connectors, the keyed connectors being configured to be representative of said size of the electrode pads, said stimulation means including a plurality of output connectors for engaging with said keyed connectors, said stimulation means including means for modifying the electrical signals in response to the configuration of the keyed connectors so as to match the impedance of said electrode pads.

5,487,760

HEART VALVE PROSTHESIS INCORPORATING ELECTRONIC SENSING, MONITORING AND/OR PACING CIRCUITRY

Manuel A. Villafana, Minneapolis, Minn., assignor to ATS Medical, Inc., Minneapolis, Minn.

Filed Mar. 8, 1994, Ser. No. 207,760
Int. Cl.[6] A61F 2/24
U.S. Cl. 623—2 20 Claims



1. In combination, an artificial heart valve of the type having a tubular body member, defining a lumen and pivotally supporting at least one occluder, said body member having a sewing cuff covering an exterior surface of said body member, and an electronic sensor module disposed between said sewing cuff and said exterior surface, wherein said sensor module incorporates a sensor element for detecting movement of said at least one occluder between an open and a closed disposition relative to said lumen and wherein said sensor module further includes a signal transceiver coupled to said sensor element, and means for energizing said signal transceiver, and wherein said sensor module includes means for encapsulating said sensor element, signal transceiver and energizing means in a moisture-impervious container.

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5,487,761

PROCESS FOR DYEING PAPER WITH DISAZO DYES

Adolf Käser, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

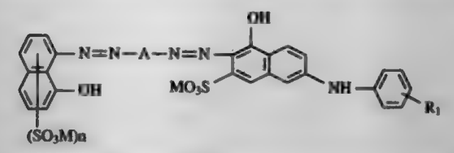
Filed Apr. 20, 1994, Ser. No. 230,264

Claims priority, application Switzerland, Apr. 29, 1993, 1303/93

Int. Cl.[6] C09B *31/00*

U.S. Cl. 8—527 4 Claims

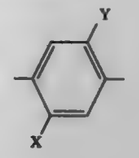
1. An aqueous solution of a dye having a pH of at least 11 which comprises 2 to 20 per cent by weight of a dye of the formula



(1)

and at least 0.1 mol of $Li^{\oplus}$ per mol of dye of the formula (1), in which

A is a radical of the formula



(2)

wherein

X is hydrogen, C_1–C_8-alkyl, C_5–C_8-cycloalkyl, C_1–C_4-alkoxy, or —NH—CO—Z,

Y is C_1–C_4-alkoxy which is unsubstituted or substituted by hydroxyl, C_1–C_4-alkoxy, sulfo, carboxyl, phenyl, phenoxy or phenylaminocarbonyl,

Z is hydrogen, C_1–C_8-alkyl, C_5–C_8-cycloalkyl, naphthyl, phenyl, C_1–C_4-alkoxy, mono- or dialkylamino, naphthylamino or phenylamino,

R_1 is hydrogen, C_1–C_8-alkyl, C_5–C_8-cycloalkyl, C_1–C_4-alkoxy, halogen, SO_3M or carboxyl,

M is hydrogen or one equivalent of a colorless cation, and

n is 1 or 2.

5,487,762

METHOD OF MINIMIZING DEPOSITS WHEN FIRING TIRE DERIVED FUELS

Rabindra K. Sinha, Coraopolis, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Feb. 1, 1995, Ser. No. 382,347

Int. Cl.[6] C10L *1/24*

U.S. Cl. 44—363 11 Claims

1. A method of minimizing deposit formation in a system firing tire derived fuels, comprising adding to said system an effective amount of a suspension comprising: (a) from about 45 to 50% by weight magnesium hydroxide ($Mg(OH)_2$) (b) from about 1 to 5% by weight organic dispersant selected from the group consisting of organic dispersants containing amino, sulfonyl and carboxylic groups; and (c) the balance water.

5,487,763

FUEL COMPOSITIONS

Iain More, Abingdon; Kenneth Lewtas; Jacqueline D. Bland, both of Wantage, and Sally J. Ayres, Stanton Harcourt, all of, United Kingdom, assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 71,905, Jun. 2, 1993, abandoned, which is a continuation of Ser. No. 539,586, Jun. 18, 1990, abandoned, which is a continuation of Ser. No. 356,749, May 24, 1989, abandoned, which is a continuation of Ser. No. 166,708, Mar. 11, 1988, abandoned. This application Feb. 23, 1995, Ser. No. 393,521

Claims priority, application United Kingdom, Mar. 12, 1987, 8705839

Int. Cl.[6] C10L *1/18*

U.S. Cl. 44—393 8 Claims

1. A fuel composition comprising a major proportion by weight of a distillate fuel oil boiling in the range of 120° C. to 500° C. and a minor proportion by weight of an additive combination for modifying the shape and structure of wax crystals comprising (A) a copolymer of (1) an alpha olefin having 12 to 17 carbon atoms per molecule or an aromatic substituted olefin having 8 to 40 carbon atoms per molecule, and (2) an ester, said ester being a mono- or dialkyl fumarate, itaconate, citraconate, mesaconate, trans- or cis-glutaconate, in which the alkyl group has 10 to 18 carbon atoms; and (B) a co-additive which is pour point depressant copolymer of ethylene and vinyl acetate having a Mn of from 1,000 to 6,000 wherein the vinyl acetate comprises about 20 to about 40 wt. % of the copolymer.

5,487,764

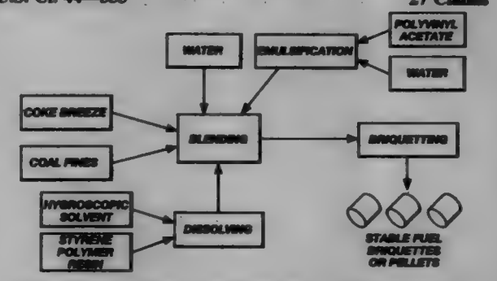
RECLAIMING AND UTILIZING DISCARDED AND NEWLY FORMED COKE BREEZE, COAL FINES, AND BLAST FURNACE REVERT MATERIALS, AND RELATED METHODS

George W. Ford, Jr., Salt Lake City, Utah, assignor to Covol Technologies, Inc., Lehi, Utah

Continuation of Ser. No. 184,099, Jan. 21, 1994, Pat. No. 5,453,103. This application Dec. 13, 1994, Ser. No. 354,693

Int. Cl.[6] C10L *5/02*

U.S. Cl. 44—553 27 Claims



1. A method of forming a solid blast furnace fuel product which does not risk generation or release of a hazardous substance, comprising the steps of;

(a) creating a water lean well mixed mixture of coke breeze and/or coal fines and water to form free carboxy ions on the surface of the carbon particles;

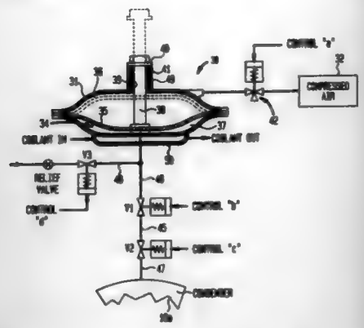
(b) dissolving styrene polymer resin in a hygroscopic solvent;

(c) combining the dissolved styrene resin in the water and coke breeze and/or coal fines mixture and well mixing the combination, to react the surface with the mixture of hygroscopic solvent and styrene to form free carbon ions by exchange of the styrene polymer resin in the hygroscopic solvent for water;

(d) emulsifying polyvinyl acetate in water, adding the emulsion to the combination of set (c) and well mixing the resultant to react the polyvinyl acetate with the styrene resin;

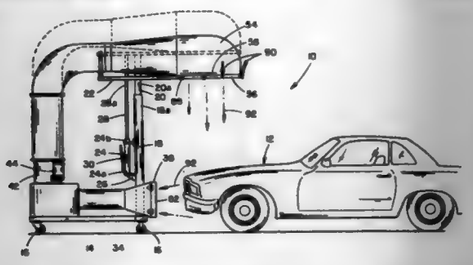
(e) subdividing the resultant of step (d) into segments and applying preasure to each segment to create hard, non-degradable solid fuel objects.

5,487,765
APPARATUS FOR PURGING NON-CONDENSABLE GASES FROM CONDENSERS
Alon Kedar, Nes Ziona, and Ohad Zimron, Rishon Lezion, both of, Israel, assignors to Ormat Turbines (1965) Ltd., Yavne, Israel
Continuation of Ser. No. 74,144, Jun. 9, 1993, abandoned, which is a continuation of Ser. No. 878,903, May 6, 1992, abandoned, which is a continuntion-in-part of Ser. No. 675,865, Mar. 27, 1991, Pat. No. 5,113,927. This application Jul. 13, 1994, Ser. No. 274,577
Int. Cl.[6] B01D *35/01*
U.S. Cl. 55—310 39 Claims



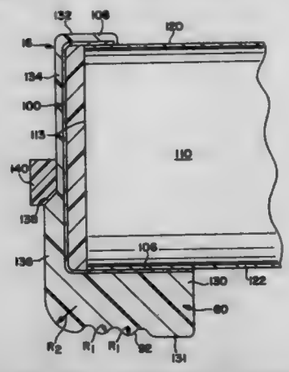
1. Apparatus for purging non-condensable gases from a source containing vaporized, condensable working fluid, said apparatus comprising:
a) an enclosed chamber located above a connection to said source;
b) a movable, flexible diaphragm in said chamber for dividing the latter into upper and lower portions;
c) two flow control valves serially connected together and located between the said connection and the lower portion of said chamber;
d) a venting valve connected to said lower portion;
e) each of said valves being selectively operable and having an open and a closed state;
f) means for moving said diaphragm in said chamber thereby changing the volume of said lower portion; and
g) means for synchronizing the states of the valves with changes in the volume of said lower portion.

5,487,766
PORTABLE AIR FILTRATION APPARATUS
Mervin R. Vannier, 2145 S. 35th St., Omaha, Nebr. 68105
Filed May 24, 1994, Ser. No. 248,397
Int. Cl.[5] B01D *46/02*
U.S. Cl. 55—356 9 Claims



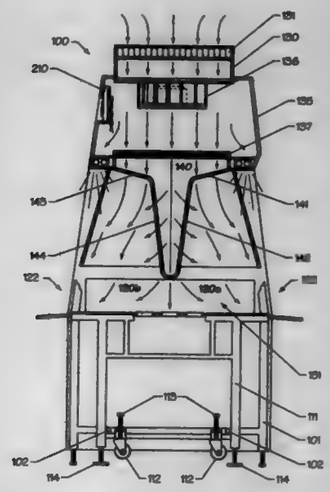
1. An air filtration apparatus comprising:
an intake duct having an intake opening in a forward end thereof;
a vertical pipe section having a lower end connected to a rearward end of the intake duct;
an exhaust duct having a rearward end connected to an upper end of said pipe section, and a forward end projecting forwardly from the rearward end;
an exhaust opening formed in a bottom surface of the exhaust duct forward end;
said intake duct, pipe section and exhaust duct forming an air flow passage from the intake opening to the exhaust opening;
a blower mounted in said air flow passage for moving air from the intake opening, through the air passage and out the exhaust opening;
a first particulate filter mounted in said intake opening;
a second particulate filter mounted in said exhaust opening; and
said pipe section including means for selectively adjusting the vertical length between the upper and lower ends of the pipe section, thereby selectively adjusting the location of the exhaust opening in a vertical direction relative to the intake opening, including:
said pipe section including a telescoping pipe section;
a vertically oriented length adjustable upright with an upper end connected to the exhaust duct and a lower end connected to the intake duct; and
means operably connected to the upright for selectively adjusting the length thereof;
said telescoping pipe section including:
an outer pipe having a lower end connected to the rearward end of the intake duct and extending upwardly therefrom to an upper end;
an inner pipe having an upper end connected to the rearward end of the exhaust duct and a lower end extending outwardly therefrom; said inner pipe telescoping within said outer pipe to form a length adjustable air passage therethrough.

5,487,767
RADIALLY SEALED AIR FILTERS
Johnny M. Brown, Moore, Okla., assignor to Dana Corporation, Toledo, Ohio
Continuation of Ser. No. 129,393, Sep. 30, 1993, abandoned. This application Jan. 30, 1995, Ser. No. 380,316
Int. Cl.[6] B01D *46/00*
U.S. Cl. 55—357 11 Claims



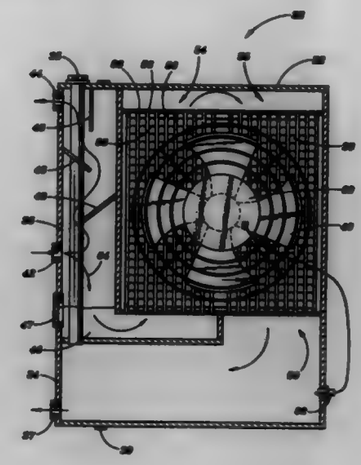
1. In an annular filter comprised of an annular element of filtering material disposed between a pair of concentric screens, the annular filter element having radially extending first and second end faces and being suitable for mounting in a housing having a bottom and a cover with an axially extending annular projection extending therefrom into the housing, the improvement comprising:
a metallic end cap having a radially extending annular portion for fitting over the first end face of the filter element;
the metallic end cap further having a radially, inner, axially extending portion and a radially, outer, axially extending portion, each portion extending over one of the cylindrical screens;
a layer of adhesive disposed between the radially extending portion of the metallic end cap and the first end face of the filter element for bonding the metallic end cap to the filter element;
a seal of relatively vulcanized rubber material overlying the metallic end cap and being bonded thereto wherein the vulcanized rubber comprising the seal has a shore A hardness of about 35 to 50 durometer;
the seal having a radially disposed position with an axially facing outer end and axially facing inner end facing away from the outer end;
the radially disposed portion having a frustoconical surface proximate the inner end and a plurality of annular ribs proximate the outer end.

5,487,768
MINIENVIRONMENT FOR MATERIAL HANDLING
Donald J. Zytka, P.O. Box 666, Cascade, Colo. 80809; Peter G. Madden, 2190 Miller Dr., Longmont, Colo. 80501, and Robert B. Eglinton, P.O. Box 221695, Carmel, Calif. 93922
Filed Jan. 31, 1994, Ser. No. 189,416
Int. Cl.[6] B01D *46/00*
U.S. Cl. 55—385.2 29 Claims



1. An apparatus for providing a filtered-air environment for material handling comprising:
(a) a frame assembly, the frame assembly defining a material handling area within the frame assembly;
(b) a filtered-air delivery assembly for delivering filtered air to the material handling area, the filtered-air delivery assembly including:
(i) an air flow generator assembly for directing air to the material handling area from an area external to the material handling area, and
(ii) a filter assembly for filtering the air directed from the external area to the material handling area by the air flow generator assembly;
(c) an air flow redirector configured within the frame assembly for redirecting the air filtered by the filter assembly over the material handling area, the air flow redirector defining at least a pair of work space areas within the material handling area, each work space area having a separate opening for exposing each work space area to the external area such that material is handleable by a person or by a machine in each work space area from the external area through each work space's respective opening.

5,487,769
INTEGRAL APPARATUS FOR SEPARATING LUBRICANT FROM A HOT COMPRESSED GAS AND FOR COOLING THE SEPARATED LUBRICANT
William R. Hutchinson, and Daniel T. Martin, both of Clemmons, N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Sep. 27, 1994, Ser. No. 313,496
Int. Cl.[6] B01D *45/00*
U.S. Cl. 55—442 9 Claims



9. A fluid system comprising:
a means for compressing a gas;
an integral separator and cooling apparatus for removing a lubricant from a heated, compressed lubricant and gas mixture, and for cooling the separated lubricant, the integral separator and cooling apparatus including,
(a) a cooling core having a first flow channel portion and a second flow channel portion;
(b) a receiving plenum mounted on the cooling core, the receiving plenum fluidly communicating with the first flow channel portion of the cooling core, the receiving plenum having a gas inlet for a heated, compressed lubricant and gas mixture, and a gas outlet for a heated, compressed gas;
(c) a means for precipitating a liquid lubricant from the heated, compressed lubricant and gas mixture, the liquid lubricant precipitating means being disposed within the receiving plenum;
(d) a lubricant reservoir mounted on the cooling core, the lubricant reservoir fluidly communicating with the second flow channel portion of the cooling core;
(e) a means for directing a flow of cooling fluid across the first and second flow channels;
(f) a thermal control means for controlling the cooling fluid directing means in response to the temperature of lubricant within the lubricant reservoir; and
a fluid powered device disposed in fluid receiving relation with the gas outlet of the receiving plenum.

5,487,770

DETECTION OF MARKED MINERAL OILS AND NOVEL AZO DYES

Rainer Dyllick-Brenzinger, Weinheim; Friedrich-Wilhelm Raulfs, Ludwigshafen; Ulrike Schlösser, Ludwigshafen; Karin H. Beck, Ludwigshafen, and Gerhard Scholz, Ludwigshafen, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

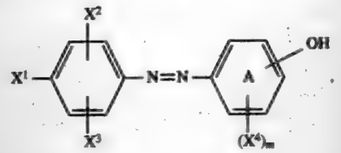
Filed Oct. 12, 1994, Ser. No. 321,629

Claims priority, application Germany, Jan. 12, 1993, 43 34 678.2

Int. Cl.[6] C10L *1/22*

U.S. Cl. 44—328 10 Claims

1. A method for detecting azo dye marked mineral oils by treating the marked mineral oil with an extractant comprising water, a solvent and a base, the azo dye transferring from the mineral oil into the aqueous phase, which comprises using as marker an azo dye of the formula I



(I)

where

ring A may be benzofused,

m is from 1 to 4,

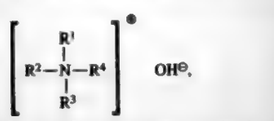
X^1 is hydrogen, C_1–C_4-alkyl, cyano or nitro,

X^2 is hydrogen, C_1–C_4-alkyl, cyano, nitro, C_1–C_4-alkoxy or C_1–C_{16}-alkoxycarbonyl,

X^3 is hydrogen, C_1–C_4-alkyl, cyano or C_1–C_{16}-alkoxycarbonyl, and

X^4 is hydrogen, hydroxyl, C_1–C_8-alkyl, which may be phenyl-substituted, C_1–C_4-alkoxy, amino, C_1–C_4-dialkylamino or C_1–C_{16}-monoalkylamino whose alkyl chain may be interrupted by from 1 to 3 oxygen atoms in the ether function,

as solvent a partially or completely water-miscible organic solvent, and as base an alkali or alkaline earth metal hydroxide, an alkali metal carbonate or an ammonium compound of the formula



(II)

where R^1, R^2, R^3 and R^4 are each independently of the others C_1–C_{16}-alkyl or benzyl.

5,487,771

HIGH-EFFICIENCY METAL MEMBRANE ELEMENT, FILTER, AND PROCESS FOR MAKING

Robert S. Zeller, Boston, Mass., assignor to Millipore Corporation, Bedford, Mass.

Continuation of Ser. No. 71,554, Jun. 4, 1993, abandoned. This application Jul. 27, 1994, Ser. No. 281,047

Int. Cl.[6] B01D *46/10;* C22C *1/04*

U.S. Cl. 55—523 19 Claims

1. A high-porosity metal filter comprising:

a membrane element formed by sintering a mass of dendritic metal particles in the absence of any extraneous material cohesively binding or supporting said dendritic particles forming said mass;

each of said metal particles having intertwined appendages and the intertwined appendages between adjacent sintered dendritic metal particles forming a matrix of substantially interconnected pores;

the porosity of said membrane element being defined by said intertwined appendages and being at least 55%.

5,487,772

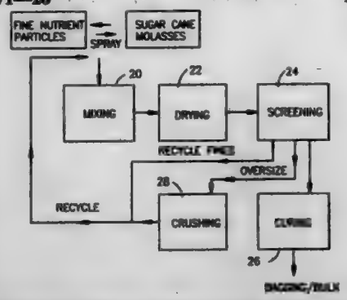
CARBOXYLATE NUTRIENTS AND METHODS FOR THEIR PRODUCTION AND USE

Paul E. McCoy, 255 Dolphin Point Rd., Unit 511, Clearwater, Fla. 34630

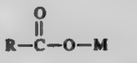
Continuation-in-part of Ser. No. 182,218, Jan. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 146,958, Nov. 3, 1993, Pat. No. 5,453,277, and a continuation-in-part of Ser. No. 776, Jan. 5, 1993, abandoned. This application Jan. 11, 1995, Ser. No. 371,352

Int. Cl.[6] A23K *1/175;* C05F *5/00*

U.S. Cl. 71—26 11 Claims



1. Method of supplying a cationic granular nutrient to a plant in a rapidly solubilizing form comprising applying to an area of plant growth an effective amount of a cationic granular nutrient containing at least 50% dry weight of a salt of saccharic acid of the formula:



wherein M is a nutrient cation selected from the group consisting of manganese, zinc, copper, iron, magnesium, boron, calcium and potassium and

R is a saccharide residue derived from molasses; the cationic granular nutrient being prepared by spraying a stoichiometric excess of a sugar cane molasses containing at least 76% by weight solids on a finely divided powdered oxide having the formula MO wherein M has the same meaning as set forth above; thereafter, drying in a rotary dryer at a temperature of 160° to 175° F. and curing for a sufficient time period to form the cationic granular nutrient.

5,487,773

PROCESS FOR PRODUCING SINTERED BODY AND MAGNET BASE

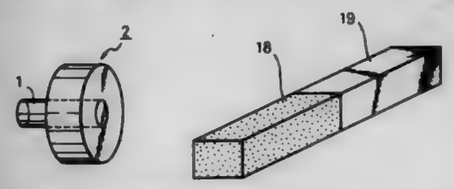
Yoshihiko Seyama, and Yutaka Shimizu, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 961,857, Oct. 16, 1992, Pat. No. 5,393,484. This application Oct. 4, 1994, Ser. No. 317,361

Claims priority, application Japan, Jan. 18, 1991, 3-269864

Int. Cl.[6] B22F *3/12;5/00*

U.S. Cl. 75—228 3 Claims



1. A magnetic base comprising:

a first portion, comprising one of a core portion or a core-containing peripheral portion, of an Fe-50% Co alloy; and

a second portion integral with the first portion and comprising a magnetic circuit-constituting portion of an Fe-Si alloy.

5,487,774

GAS PHASE FRACTIONATION METHOD USING POROUS CERAMIC MEMBRANE

Reid A. Peterson; Charles G. Hill, Jr., and Marc A. Anderson, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Nov. 8, 1993, Ser. No. 148,714

Int. Cl.[6] B01D *53/22*

U.S. Cl. 95—45 19 Claims

1. A method for using a porous ceramic membrane to fractionate individual gases from a mixture of gases, the mixture comprising molecules of a gas having a larger average molecular radius and molecules of a gas having a smaller average molecular radius, the method comprising the steps of:

providing a porous ceramic membrane comprising a metal oxide other than silica or alumina, the membrane having a mean pore diameter of less than about 40 Å;

passing the mixture of gases by the membrane at an average input pressure lower than one-half of the vapor pressure of the gas having the larger average molecular radius;

adsorbing preferentially the gas molecules having the larger average molecular radius within the membrane pores, thereby initiating non-Knudsen transport of the gas molecules having the larger average molecular radius in the pores; and

recovering a permeate stream enriched for gas molecules having the larger average molecular radius.

5,487,775

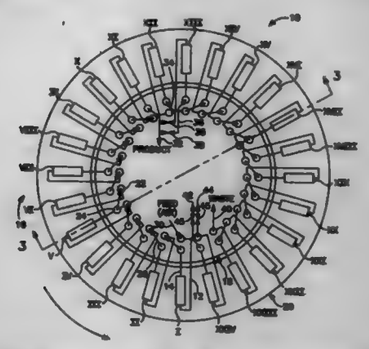
CONTINUOUS PRESSURE DIFFERENCE DRIVEN ADSORPTION PROCESS

Alberto LaCava, South Plainfield, N.J., and Kevin McKeigue, New York, N.Y., assignors to The BOC Group, Inc., New Providence, N.J.

Filed May 9, 1994, Ser. No. 240,048

Int. Cl.[6] B01D *53/047*

U.S. Cl. 95—98 15 Claims



1. A method of separating a multi-component gaseous mixture comprising:

passing the multi-component gaseous mixture through a first portion of an adsorbent at a sufficiently high pressure to adsorb at least one more preferentially adsorbed component of the multi-component gaseous mixture;

regenerating a second portion of said adsorbent at a sufficiently low partial pressure of said at least one more preferentially adsorbed component to desorb the at least one more preferentially adsorbed component from said adsorbent;

said multi-component gaseous mixture being passed through said first portion of the adsorbent and said second portion of said adsorbent being subjected to said sufficiently low partial pressure in discrete sections of said adsorbent making up said first and second portions of the adsorbent so that the sections forming said first portion of said adsorbent become successively less saturated with the at least one more preferentially adsorbed component as said multi-component mixture passes through said first portion of said adsorbent to form least and most saturated sections and so that the sections of adsorbent forming said second portion of the adsorbent become successively more concentrated in said at least one more preferentially adsorbed component to form regenerated and non-regenerated sections;

expelling a product stream enriched with at least one less preferentially adsorbed component of said multi-component mixture from said least saturated section; and

said second portion of said adsorbent being subjected to said sufficiently low partial pressure by introducing a purge stream, enriched with said at least one less preferentially adsorbed component of said multi-component mixture, to said regenerated section and such that purge stream is expelled as waste from said non-regenerated section;

continually and simultaneously shifting masses of said adsorbent between said first and second portions of said adsorbent so that the adsorbent forming said regenerated section is shifted to said first portion of said adsorbent and used to form said least saturated sections and so that the adsorbent forming said most saturated section is shifted to said second portion of said adsorbent and used to form said non-regenerated section;

the continual and simultaneous shifting of the masses of said adsorbent being made to occur at a sufficient frequency to maintain the sections forming the first and second portions of the adsorbent successively less saturated and successively more concentrated, respectively, in the more preferentially adsorbed components.

5,487,776

ANTI-FUNGAL NAIL LACQUER AND METHOD THEREFOR

Marcel Nimni, 2800 Neilson Way #908, Santa Monica, Calif. 90405

Filed Mar. 17, 1994, Ser. No. 210,220

Int. Cl.[6] A61K *7/043*

U.S. Cl. 106—18.35 14 Claims

1. An anti-fungal nail lacquer composition consisting essentially of an organic film former in solution in an organic solvent system therefor, a suspending agent, and an anti-fungal effective amount of griseofulvin, said organic film former forming a water permeable film containing the griseofulvin when the organic solvent system evaporates, wherein a portion of the griseofulvin is in solution and a portion of the griseofulvin is present as a colloidal suspension.

5,487,777

STABLE CMC SLURRY

Arvo O. Lundan; Ånals: Per-Håkan V., and Mikko J. Lähteenmäki, all of Äänekoski, Finland, assignors to Metsä-Serla Chemicals Oy, Äänekoski, Finland

PCT No. PCT/FI93/00132, § 371 Date Oct. 7, 1994, § 102(e) Date Oct. 7, 1994, PCT Pub. No. WO93/20139, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 30, 1993, Ser. No. 284,628

Claims priority, application Finland, Mar. 31, 1992, 921413; Jul. 3, 1992, 923097

Int. Cl.[6] C09D *101/28*

U.S. Cl. 106—188 25 Claims

1. A carboxymethyl cellulose slurry which comprises:

(a) about 10 to 60%, based on the total weight of the slurry, of carboxymethyl cellulose,

(b) about 40 to 60%, based on the total weight of the slurry, of water soluble polyethylene glycol, the average molar mass of which is below about 1000 g/mol, and

(c) about 1 to 50%, calculated as a solid and based on the total weight of the slurry, of an inert powder or dispersion.

5,487,778

SURFACTANT COMPOSITION AND METHOD OF MAKING THE SAME

Richard J. Kaiser, Bethlehem, Pa., assignor to Binney & Smith Inc., Easton, Pa.

Division of Ser. No. 110,877, Aug. 24, 1993, abandoned, which is a division of Ser. No. 839,330, Feb. 20, 1992, Pat. No. 5,262,535. This application May 1, 1995, Ser. No. 432,277

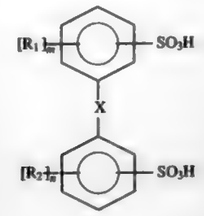
Int. Cl.[6] C09D 5/00; 7/12

U.S. Cl. 106—287.23 9 Claims

1. An aqueous paint composition comprising:

(a) a water-based paint; and

(b) from about 10% to about 40% by weight of the reaction product of:



wherein X is a member selected from the group consisting of N, O and S; R_1 and R_2 are independently a straight or branched, saturated or unsaturated nonaromatic hydrocarbon of four to eighteen carbon atoms; m is 1 or 2; and n is 0, 1 or 2; and case is at the group for connection of this problem.

5,487,779

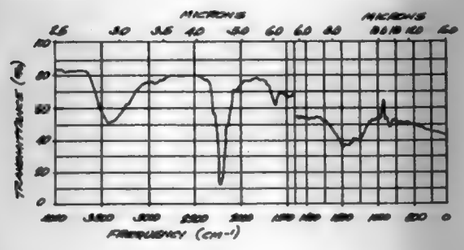
CORROSION INHIBITING PIGMENT COMPOSITION AND METHOD

John Sinko, Glendale, Wis., assignor to Wayne Pigment Corp., Milwaukee, Wis.

Filed Nov. 19, 1993, Ser. No. 155,586

Int. Cl.[6] C04B 14/36

U.S. Cl. 106—480 10 Claims



1. A method of preparing a (M)bis-hydrogen cyanamide composition with enhanced corrosion preventive activity, wherein M is a divalent metal selected from the group consisting of nickel, cobalt or mixtures thereof comprising

precipitating metal hydroxides selected from the group consisting of $Ni(OH)_2$, $Co(OH)_2$ or mixtures thereof, in situ in a liquid reaction medium, containing an excess of H_2NCN and immediately reacting the resultannt precipitate with said H_2NCN.

5,487,780

APPARATUS FOR APPLYING COATING MATERIALS TO OVERLAPPED INDIVIDUAL SHEETS

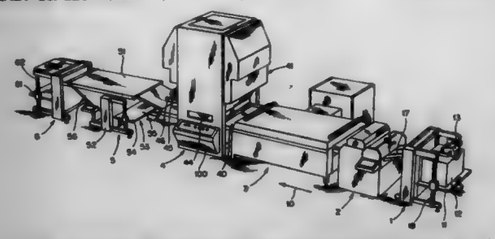
Johannes A. Ritter, Seeheim-Jugenheim, Germany, assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Feb. 15, 1994, Ser. No. 196,490

Claims priority, application Germany, Feb. 19, 1993, 43 05 081.6

Int. Cl.[6] B05C 1/00

U.S. Cl. 118—231 18 Claims



1. An apparatus for applying a coating material to a plurality of sheets as the sheets are conveyed past the apparatus, comprising:

(a) means for overlapping a plurality of sheets, such that a first minor portion of each sheet overlies a portion of a first adjacent sheet, and a second minor portion of each sheet underlies a portion of a second adjacent sheet wherein the first and second portions of each sheet are opposed portions of the sheet;

(b) a first coating station for applying a primer layer to a first major surface of each sheet, and a low adhesion backsize to a second major surface of each sheet;

(c) a second coating station comprising (i) means for receiving coating material from a supply of such material, (ii) means for at least partially drying the coating material on the receiving means and (iii) means for transferring the coating material from the receiving means to at least a portion of the primer coated first major surface of the overlapped sheets as the sheets are conveyed past the coating station to form coated sheets; and

(d) means for collecting the coated sheets.

5,487,781

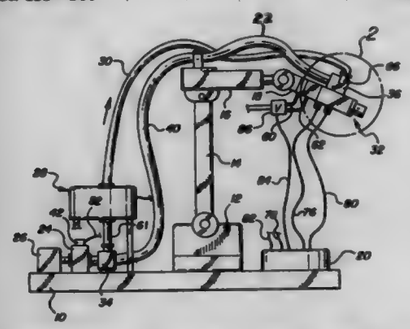
MASTIC APPLICATOR SYSTEM

Thomas J. Brennan, Rochester Hills; Michael E. DeFilippi, Grosse Pointe Park; Steven M. Guyp, Grosse Pointe, and Gregory D. Kremer, Livonia, all of Mich., assignors to Johnstone Pump Company, Troy, Mich.

Filed May 17, 1994, Ser. No. 243,697

Int. Cl.[6] B05D 9/00

U.S. Cl. 118—300 17 Claims



1. A mastic applicator system including a conduit assembly including a mastic passage, an end member including a mastic passage in communication with the conduit assembly mastic passage, and a nozzle assembly including a nozzle outlet and a mastic passage in communication with the end member mastic passage and the nozzle outlet, the improvement comprising:

a conditioning fluid passage Is provided in the conduit assembly proximate the conduit assembly mastic passage;

a further conditioning fluid passage is provided in the end member proximate the end member mastic passage;

a yet further conditioning fluid passage is provided in the nozzle assembly proximate the nozzle assembly mastic passage; and

the conditioning fluid passage of said conduit assembly, said end member, and said nozzle assembly are arranged in serial fashion so that a conditioning fluid may flow serially through the conduit assembly, end member, and nozzle assembly in proximity to the respective mastic passages so as to maintain a substantially constant mastic temperature in the entire mastic applicator system.

5,487,782

ELECTROSTATIC SPRAY COATING DEVICE FOR ELECTRICALLY CONDUCTIVE, NON-COMBUSTIBLE COATING FLUID

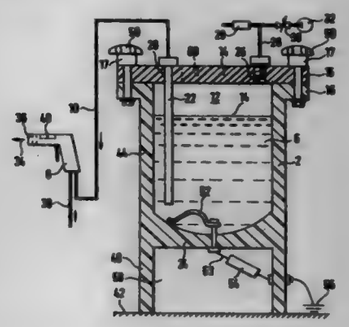
Kurt Seewaldt, Dietzenbach, Germany, assignor to ITW Oberflachentechnik GmbH, Dietzenbach, Germany

Filed Nov. 30, 1993, Ser. No. 159,677

Claims priority, application Germany, Dec. 1, 1992, 42 40 325.6

Int. Cl.[6] B05B 5/00

U.S. Cl. 118—621 10 Claims



1. Electrostatic spray coating device for electrically conductive, non-combustible coating fluid, comprising: a pressure container (2) for the coating fluid (5), a spraying device (8) for atomizing and electrostatic charging of the coating fluid with high voltage, a tube (10) of electrically insulating material for feeding the coating fluid (5) from the pressure container (2) to the spraying device (8), at least one compressed air inlet (26) of electrically insulating material in the pressure contniner (2) above a maximal filling level (4) of the pressure container (2), at least one fluid outlet (20), which issues with spacing underneath the at least one compressed air inlet (26) into an interior of the container and to which there is connected the tube (10), the pressure container (2) formed of electrically insulating material which shields the high voltage of the electrically charged coating fluid (6) in the container (2) against the outside environment of the container (2), at least one grounding contact (52) is arranged in the container interior so that it is electrically connected with the coating fluid (6), an electric conduction path (53) is provided which connects the at least one grounding contact (52) for the electric discharge of the device and of the coating fluid with a ground potential (56) lying outside of the pressure container (2) electrically at least when the high voltage is switched off, the electric conduction path (53) having an electric resistor with a resistance in the range between the order of a mega ohm and a giga ohm and at least one separating switch which is automatically opened when the high voltage is switched-on, and wherein the separating switch is automatically closed when the high voltage is switched off.

5,487,783

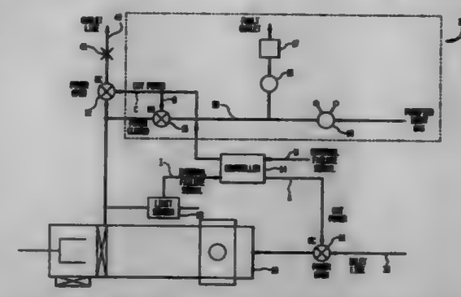
METHOD AND APPARATUS FOR PREVENTING RUPTURE AND CONTAMINATION OF AN ULTRA-CLEAN APCVD REACTOR DURING SHUTDOWN

Paul D. Agnello, Wappingers Falls, and Thomas O. Sedgwick, Croton-on-Hudson, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 14, 1994, Ser. No. 227,752

Int. Cl.[6] C23C 16/00

U.S. Cl. 118—715 10 Claims



1. Apparatus for maintaining an optimum pressure and purity level in a vessel having an inlet gas flow and an outlet gas flow, during shutdown of the vessel to prevent imploding of the vessel when inlet and outlet gas flows are discontinued, comprising:

a. a reactant gas source for supplying said inlet gas flow to said vessel, and a separate source of purified inert gas;

b. containment means for containing said reactant gas from said vessel;

c. means for communicating said reactant gas from said vessel to said containment means and from said containment means to said vessel;

d. means for regulating the pressure of said containment means and said vessel;

e. means for backfilling said containment means only with said purified inert gas when said pressure of said containment means and said vessel drops to a lower level; and

f. means for venting said containment means when said pressure of said containment means and said vessel rises to a higher level.

5,487,784

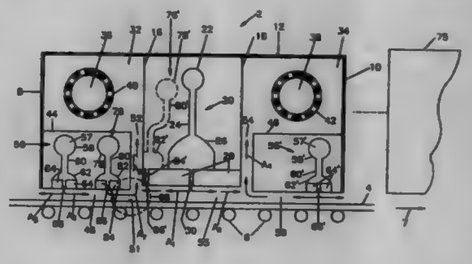
FORMATION OF TIN OXIDE FILMS ON GLASS SUBSTRATES

Frank B. Ellis, Jr., 42 Montadale Cir., Princeton, N.J. 08540

Division of Ser. No. 87,033, Jul. 6, 1993, Pat. No. 5,393,563, which is a continuation-in-part of Ser. No. 784,578, Oct. 29, 1991, abandoned. This application Nov. 22, 1994, Ser. No. 343,127

Int. Cl.[6] C23C 16/00

U.S. Cl. 118—718 18 Claims



1. A deposition system for forming a metal oxide film on a substrate comprising:

means for defining an opening;

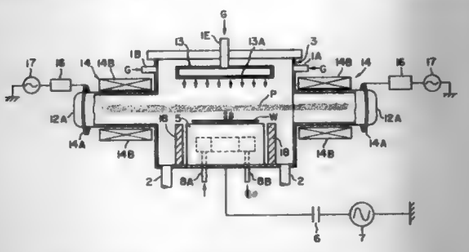
means for supplying reactants to said opening for forming said metal oxide film;
means for defining a first passageway that extends under and beyond either side of said opening, for supporting a substrate on which the metal oxide film is to be formed;
means for defining second and third passageways providing exhaust ducts that respectively meet said first passageway at junctions at opposite ends of said first passageway;
means defining a fourth passageway that extends from a source of ambient air to the junction of said first and second passageways;
means defining a fifth passageway that extends from ambient air to the junction of said first and third passageways;
transport means for moving said substrate progressively through said fourth, first, and fifth passageways, respectively;
means for controlling roughness of said film including means for injecting a dry gas into said fourth passageway so as to prevent ambient air from reaching the junction of said first, second, and fourth passageways; and
means for injecting a film growth inhibiting gas into said first passageway at a point between said opening, and the junction of said first, second and fourth passageways.

5,487,785

PLASMA TREATMENT APPARATUS

Yasuhiro Horiike, Hiroshima, and Takayuki Fukasawa, Yamanashi, both of, Japan, assignors to Tokyo Electron Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1994, Ser. No. 233,591
Claims priority, application Japan, Mar. 26, 1993, 5-092303; Mar. 26, 1993, 5-092304
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 E **20 Claims**



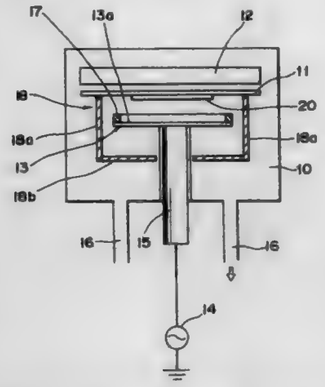
1. A plasma treatment apparatus comprising:
a processing vessel capable of being maintained at a degree of vacuum;
gas supply means for supplying a process gas into said processing vessel;
gas exhaust means for exhausting gases from within said processing vessel after treatment is completed;
plasma generation means provided in said processing vessel to generate radio-frequency waves within said processing vessel to cause generation of a plasma in said process gas; and
holder means provided in said processing vessel to hold an object to be subjected to treatment by said plasma, said object having a surface to be treated;
said gas supply means comprising;
a plurality of first gas supply means arranged equidistantly around a periphery of said processing vessel, said first gas supply means being provided to direct the process gas toward a center of said processing vessel and over said surface of the object; and
second gas supply means arranged at a center of an upper portion of said processing vessel to supply the process gas toward a central portion of the processing vessel and over said surface of the object;
said gas exhaust means comprising a plurality of gas exhaust structres arranged equidistantly around said periphery of said process vessel.

5,487,786

PLASMA CHEMICAL VAPOR DEPOSITION DEVICE CAPABLE OF SUPPRESSING GENERATION OF POLYSILANE POWDER

Atsushi Chida, Nara; Hitoshio Sannomiya, Osaka; Katsuhiko Nomoto, Kashiwara; Hiroshi Okamoto, and Yoshihiro Yamamoto, both of Nara, all of JP, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 22, 1994, Ser. No. 363,246
Claims priority, application Japan, Dec. 24, 1993, 5-326639; Aug. 4, 1994, 6-183265
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—723 E **5 Claims**



1. A plasma CVD device having within a deposition chamber:
a substrate holding electrode for holding a substrate;
a high frequency application electrode arranged opposite to and parallel to the substrate held by the substrate holding electrode;
a high frequency power supply for applying high frequency power to the high frequency application electrode; and
a substrate heater for heating the substrate held by the substrate holding electrode, wherein a material gas introduced between the substrate holding electrode and the high frequency application electrode is decomposed by glow discharge generated by a high frequency power applied between the two electrodes, so that a thin film is deposited on the heated substrate,
the plasma CVD device comprising:
a first electrode heater installed along a peripheral portion of the high frequency application electrode, and heating the peripheral portion of the high frequency application electrode; and
a second metallic electrode heater which is composed of a bottom portion and a side portion provided uprightly along a peripheral edge of the bottom portion and formed into a concave shape in section, and which surrounds the high frequency application electrode with a spacing therebetween, and which heats a surface of the high frequency application electrode opposite to its surface facing the substrate as well as the peripheral portion of the high frequency application electrode.

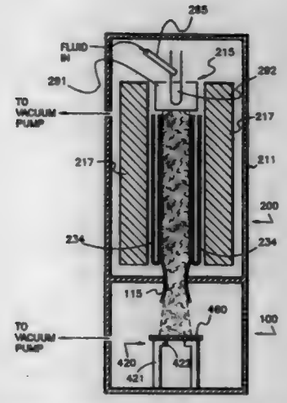
5,487,787

APPARATUS AND METHOD FOR PLASMA DEPOSITION

Gordon L. Cann; Cecil B. Shepard, Jr., both of Laguna Beach, and Frank X. McKevitt, Anaheim Hills, all of Calif., assignors to Celestech, Inc., Irvine, Calif.

Continuation of Ser. No. 3,573, Jan. 13, 1993, which is a division of Ser. No. 698,446, May 10, 1991, Pat. No. 5,204,144.
This application Jan. 6, 1995, Ser. No. 369,427
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 R **2 Claims**

1. Apparatus for depositing a substance, comprising:



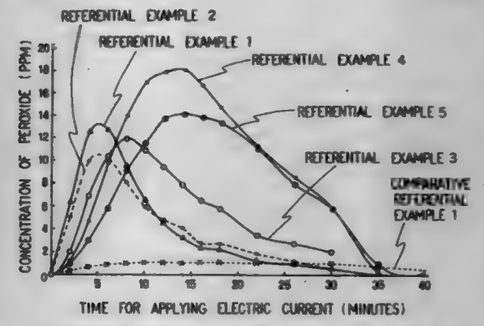
means for producing a plasma beam containing the constituents of said substance, said beam having a generally cylindrical elongated envelope and a longitudinal axis; and
a plurality of target substrates on which said substance is to be deposited, said substrates having surfaces generally along the envelope of the beam that are parallel to the longitudinal axis of said beam.

5,487,788

METHOD FOR CLEANING AND DISINFECTING CONTACT LENS

Hideaki Kamiya, Gifu; Satoshi Hashimoto, and Satoru Matumoto, both of Nagoya, all of, Japan, assignors to Tomei Sangyo Kabushiki Kaisha, Nagoya, Japan

Continuation-in-part of Ser. No. 41,203, Apr. 1, 1993. This application May 9, 1994, Ser. No. 239,887
Claims priority, application Japan, Apr. 3, 1992, 4-82215
Int. Cl.[6] B08B *3/10*
U.S. Cl. 134—1 **4 Claims**



1. A method for cleaning and disinfecting a contact lens comprising the steps of:
A. immersing a contact lens in a treating solution, which does not generate hypohalogenous acid salts, selected from the group consisting of boric acid salt buffer solution, phosphoric acid salt buffer solution, citric acid salt buffer solution, acetic acid salt buffer solution, oxalic acid salt buffer solution, succinic acid salt buffer solution, tartaric acid salt buffer solution, an aqueous solution containing a treating agent of which main components are boric acid and borax, Na_2SO_4 aqueous solution and admixture thereof,
B. applying a direct current to the treating solution with repeatedly reversing a positive electrode and a negative electrode of a pair of electrodes plural times so that the interval of time before reversing is different from the interval of time after reversing by at least 22.5 seconds and that the interval for reversing the positive electrode and the negative electrode is 0.1 second to 120 seconds, to generate hydrogen peroxide or ozone and raise the temperature of the treating solution to 50° to 100° C., and
C. bringing the contact lens into direct contact with bubbles generated on the electrodes.

5,487,789

PAINT STRIPPER

Johnny O. Sim, Alhambra, Calif., assignor to McGean-Rohco, Inc., Cleveland, Ohio

Continuation of Ser. No. 192,644, Feb. 7, 1994, Pat. No. 5,411,678. This application Nov. 9, 1994, Ser. No. 336,428
Int. Cl.[6] C11D *7/30*
U.S. Cl. 134—38 **8 Claims**

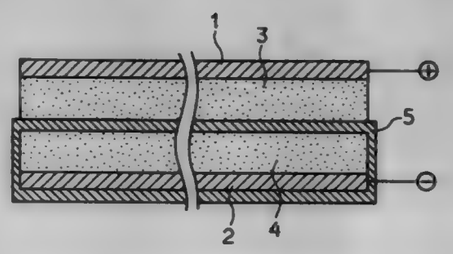
1. A method of stripping paint from a surface which comprises
(A) contacting the paint with a paint-stripper composition comprising
(A-1) from about 10% to about 80% by weight of at least one organic solvent selected from the group consisting of benzyl alcohol, alkyl-substituted benzyl alcohols, furfuryl alcohol, alkyl-substituted furfuryl alcohols and acetylenic alcohols containing from 3 to about 5 carbon atoms;
(A-2) from about 1% to about 20% by weight of pyrrole;
(A-3) from about 0.1% to about 8% by weight of at least one other organic amine compound as an activator; and
(A-4) water; in an amount and for a period of time sufficient to reduce the adhesion of the paint to the surface; and
(B) removing said paint and paint-stripper composition from said surface.

5,487,790

ELECTRIC POWER GENERATING ELEMENT

Shigeyuki Yasuda, *c/o* Tomonokai Research Laboratory 2-227, Kibuki-cho-kita, Kasugai-shi, Aichi-ken, Japan

Filed Nov. 25, 1992, Ser. No. 981,217
Claims priority, application Japan, Nov. 25, 1991, 3-336326; Mar. 9, 1992, 4-050655; Jul. 28, 1992, 4-201281
Int. Cl.[6] H01L *37/00*
U.S. Cl. 136—200 **7 Claims**



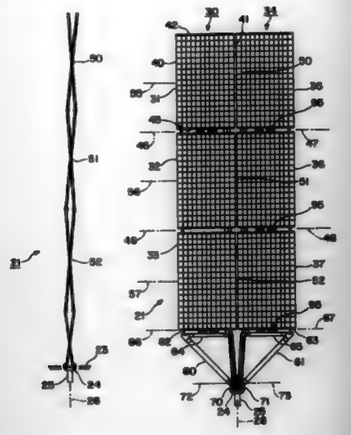
1. An electric power generating element converting heat energy to an electric energy, comprising:
a) a positive electrode;
b) a negative electrode formed from a metal;
c) a positive electrode composition provided on the surface of the positive electrode and comprising polyethylene glycol and graphite particles dispersed in the polyethylene glycol; and
d) a negative electrode composition provided at a side of the negative electrode and comprising polyethylene glycol containing a salt providing an ionic conductivity.

5,487,791

STOWABLE AND SELF-DEPLOYABLE PARALLELOGRAM-TYPE PANEL ARRAY

Michael R. Everman; David M. Murphy, both of Santa Barbara, and James J. Wachholz, Goleta, all of Calif., assignors to AEC Able Engineering Co., Inc., Goleta, Calif.

Filed May 25, 1994, Ser. No. 249,125
Int. Cl.[6] H01L *31/045*
U.S. Cl. 136—245 8 Claims



1. A stowable and self deployable parallelogram type panel array comprising:

a first set and a second set of rigid panels, each panel having a pair of parallel sides and a pair of parallel ends, said sets extending parallel to one another, on opposite sides of a central axis of the array;

a fold hinge joining the ends of adjacent panels in each set, each fold hinge mounting its respective panels to fold toward and away from each other along a fold axis, said fold axes being normal to a plane which includes the central axis;

pivot hinges rotationally connecting adjacent panels of the two sets at the mid-point of their adjacent sides for rotation around pivot axes which are parallel to the fold axes;

a base;

a first yoke and a second yoke journaled to said base for rotation around a respective yoke axis which is parallel to the hinge fold axes;

a first attachment hinge and a second attachment hinge respectively joining respective first and second yokes to an end of a panel in the first and second set, for rotation around a respective attachment axis which is parallel to the fold axes;

coordinating means interlinking said yokes whereby angular movement of one yoke is accompanied by an equal and opposite angular movement of the other yoke, said coordinating means comprising, a first gear and a second gear integral with said first and second yokes, respectively, and rotationally mounted to said base to journal said first and second yokes around said yoke axes, said gears having respective axes of rotation on said yoke axes, and also having identical teeth meshed together to coordinate the rotation of said yokes, the said axes of rotation being on opposite sides of said central axis from their respective set of panels when viewed in a plane normal to said hinge fold axes; and

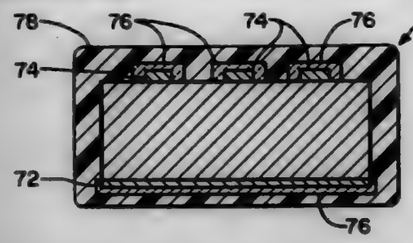
power means in each fold hinge biasing adjacent panels toward their deployed condition, said power means constituting the only source of force for deployment of the array.

5,487,792

MOLECULAR ASSEMBLIES AS PROTECTIVE BARRIERS AND ADHESION PROMOTION INTERLAYER

David E. King, Lakewood; Alvin W. Czanderna, Denver, and Cheryl E. Kennedy, Lafayette, all of Colo., assignors to Midwest Research Institute, Kansas City, Mo.

Filed Jun. 13, 1994, Ser. No. 258,984
Int. Cl.[6] H01L *31/04;31/048;31/0216;31/0224*
U.S. Cl. 136—256 12 Claims



1. An article having a metal surface, comprising:

a diffusion barrier comprising an agent having the general formula HS—$(CH_2)_{11}$—COOH deposited on said metal surface.

5,487,793

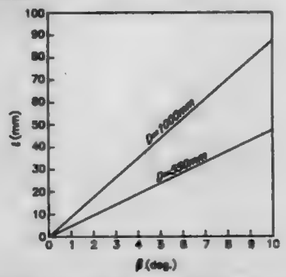
Patent Not Issued For This Number

5,487,794

METHOD OF PRODUCING CRYSTAL BODIES HAVING CONTROLLED CRYSTALLINE ORIENTATION

Hiromi Mitsunori, and Toshio Sadayori, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Continuation of Ser. No. 904,520, Jun. 25, 1992, abandoned, which is a division of Ser. No. 499,442, Jun. 21, 1990, Pat. No. 5,205,872. This application May 17, 1994, Ser. No. 245,231
Claims priority, application Japan, Dec. 10, 1988, 63-311024; Dec. 10, 1988, 63-311025
Int. Cl.[6] C21D *8/12;* C30B *28/02*
U.S. Cl. 148—111 4 Claims



4. In a method of producing bi-directionally oriented electromagnetic steel sheets, having improved magnetic properties, wherein said steel sheets are prepared by hot rolling a slab of silicon-containing steel sheet treating material, rendering said hot rolled sheet into a final thickness, and then subjecting said rendered sheet to primary recrystallization annealing and finish annealing, a magnetic property improvement step consisting essentially of:

selecting a coil-like steel sheet as said treating material;

selecting a seed material having a crystal structure a) the same as said treating material or b) which differs from said crystal structure of said treating material by having interstitial or substitutional elements present in amounts such that the crystal lattices of said seed material and said treating material differ by 30% or less, wherein said seed material has said crystalline orientation at a state of energy lower than that of said treating material;

abutting and joining a surface of said seed material having a desired crystalline orientation against a coiled end face of said coil-like steel sheet, said abutting being performed between the steps of hot rolling and finish annealing, according to the following orientation relationships:

$|\alpha| \leq 10°$

$|\beta| \leq 10°$

where

α is the angle defined by the projection line of the <001> axis of said seed material with respect to the rolling face of said steel sheet and the rolling direction of said steel sheet; and

β is the inclination angle of the {100} face of said seed material with respect to said rolling face of said steel sheet.

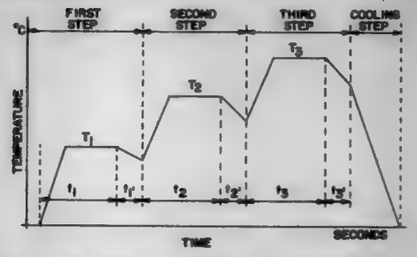
heating to a temperature not lower than the recrystallization temperature of said seed material to cause grain boundary movement and causing said desired crystalline orientation of said seed material to grow and project said desired crystalline orientation of said seed material over the whole of said steel sheet.

5,487,795

METHOD FOR HEAT TREATING AN IMPACT BEAM OF AUTOMOTIVE VEHICLE DOOR AND A SYSTEM OF THE SAME

Jong-Kyu Kim, and Jin-Suk Lee, both of Kyungbuk, Rep. of Korea, assignors to Dong Won Metal Ind. Co., Ltd., Rep. of Korea

Filed Jul. 1, 1994, Ser. No. 269,483
Claims priority, application Rep. of Korea, Jul. 2, 1993, 93-12358; Apr. 27, 1994, 94-8904
Int. Cl.[6] C21D *9/00*
U.S. Cl. 148—520 2 Claims



1. A method for heat treating an impact beam of an automotive vehicle door exhibiting high tensile strength, yield strength and elongation, comprising the steps of:

preparing hot rolled steel sheets consisting essentially of 0.18 % to 0.22% carbon; 1.0 to 1.5% manganese; 0.15 to 0.4% silicon; not more than 0.025% phosphorous; not more than 0.008% nitrogen; not more than 0.0010% sulfur; 0.01 to 0.04% aluminum; 0.001 to 0.003% boron; 0.1 to 0.3% chromium; 0.01 to 0.035% titanium; and the balance essentially consisting of iron;

roll-forming and welding the steel sheets to make a tube-shaped impact beam;

carrying out a heat treatment including three steps of high frequency induction heating and air cooling the impact beam consecutively; and

carrying out quenching of water cooling said heat treated and air cooled impact beam;

wherein said heat treatment step includes the steps of:

first high frequency induction heating said impact beam for 0.83 to 2.5 seconds at 500° to 720° C. and air cooling said beam for 0.27 to 1 second;

second high frequency induction heating said impact beam first heat treated for 0.83 to 2.5 seconds at 750° to 850° C. and air cooling said beam for 0.27 to 2 seconds; and

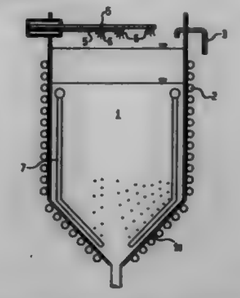
third high frequency induction heating said impact beam second heat-treated for 0.83 to 2.5 seconds at 830° to 960° C. and air cooling said beam for 1.5 to 5 seconds.

5,487,796

METHOD OF QUENCHING METALS

Sorayapour Soraya, Kurt-Schumacher-Allee 84, 66740 Saarlouis, Germany

Filed Apr. 5, 1995, Ser. No. 417,377
Claims priority, application Germany, Nov. 15, 1994, 44 40 777.7
Int. Cl.[6] C21D *1/60*
U.S. Cl. 148—633 10 Claims



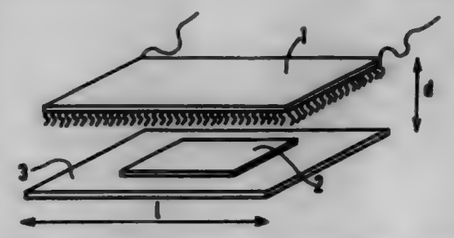
1. A method of quenching metals, comprising the steps of quenching said metal in a boiling aqueous solution comprising sodium tetraborate between 20 and 50% by weight and introducing a gas to the solution for compensating losses of components of the solution and preconditioning pollutants in the solution for their subsequent removal.

5,487,797

PROCESS FOR THE MANUFACTURE OF A FLAT PRODUCT OF ZIRCONOUM ALLOY OR HAFNIUM ALLOY COMPRISING A CONTINUATION OF HOT ROLLING AFTER INFRARED REHEATING, AND ITS UTILIZATIONS

Gerard Dumas, Albertville; Pierre Barberis, Ugine, and Gerard Bunel, Echauffour, all of, France, assignors to Cezus Compagnie Europeenne du Zirconium, Courbevoie, France

Filed Mar. 2, 1995, Ser. No. 398,006
Claims priority, application France, Mar. 2, 1994, 94 02613
Int. Cl.[6] C22F *1/18*
U.S. Cl. 148—672 14 Claims



1. In a process for manufacturing a sheet, band or strip of zirconium alloy or hafnium alloy comprising the steps of:

hot roughing an ingot into a blank;

hot rolling the blank in the alpha temperature range comprising a plurality of hot rolling passes and at least one reheating in a furnace between said hot rolling passes, and including at least an initial hot rolling pass and a final hot rolling pass following a furnace reheating, to form a hot rolled blank of predetermined thickness; and

cold rolling the hot rolled blank including at least one cycle of rolling pinch passing followed by heat treatment;

the improvement comprising subjecting the hot rolled blank, before said cold rolling, to infrared reheating with a wave length between 0.8 and 5 micrometers, to increase the temperature of the hot rolled blank by at least 100° C. at a rate of at least 4° C./s, and continuing hot rolling until the blank has a thickness less than or equal to 0.8 times said predetermined thickness, said continuing including a plurality of hot rolling passes with at least one infrared reheating therebetween.

5,487,798

HIGH VELOCITY GUN PROPELLANT

Laurence O. Williams, Orlando, Fla., assignor to Martin Marietta Corporation, Bethesda, Md.

Continuation of Ser. No. 492,954, Mar. 13, 1990, abandoned. This application Jul. 2, 1992, Ser. No. 911,537

Int. Cl.[6] C06B *43/00;35/00*

U.S. Cl. 149—22 **12 Claims**

1. A propellant composition consisting essentially of ammonium azide, and a second material which is a metal, metal hydride, silicon or mixtures thereof wherein the ratio of ammonium azide to the second material is selected such that, upon reaction, the propellant forms a solid nitride and a gas phase which is substantially pure hydrogen.

5,487,799

METHOD OF PREVENTING FIRE IN SHIP ENGINE ROOM BY WRAPPING PROTECTED AREA WITH A LAMINATED MATERIAL

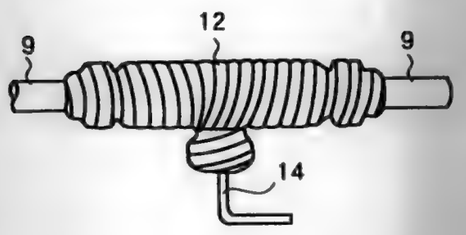
Ken Tsukada, Tokyo, Japan, assignor to Tokyo Nisshin Jahara Co., Ltd., Tokyo, Japan

Filed May 11, 1994, Ser. No. 241,410

Claims priority, application Japan, May 25, 1993, 5-145688

Int. Cl.[6] E04B *2/00;* **B32B** *31/00;* **B27N** *9/00;* **B63B** *17/00*

U.S. Cl. 156—71 **7 Claims**



1. A method of preventing fire in an engine room of a ship comprising the steps of:

providing a laminated material consisting of an aramid fabric base layer having an aluminum foil bonded to each surface thereof and a separable layer covering an adhesive on one of the aluminum foil covered surfaces;

identifying a portion of the engine room from which a flammable liquid is likely to spout;

cutting out the laminated material to obtain a laminated tape;

removing the separable layer from the laminated tape to expose the adhesive; and

winding the laminated tape round the identified portion so that the exposed adhesive will adhere to one of the identified portion and the wound laminated tape and seal the identified portion so that the flammable liquid will not spout therefrom, whereby fire is prevented by stopping the flammable liquid from spouting and igniting when the liquid settles on a heated surface of the engine room.

5,487,800

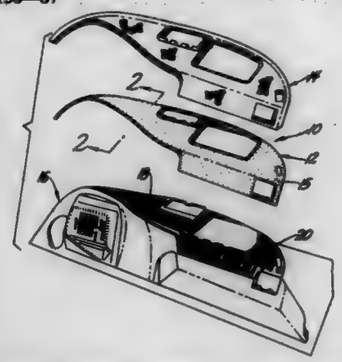
METHOD OF MAKING A COVERED ARTICLE BY VACUUM DRAWING

Robert A. Ash, Baltimore, Canada, assignor to Davidson Textron Inc., Dover, N.H.

Filed Jan. 24, 1994, Ser. No. 185,127

Int. Cl.[6] B32B *31/04;31/12;31/20*

U.S. Cl. 156—87 **24 Claims**



1. A method of making a covered article having a substrate and a cover comprising:

providing a substrate having a front surface to be covered, a back surface and a plurality of holes extending through it from the front surface to the back surface for vacuum drawing a cover against the front surface of the substrate,

providing fluid passages at the back surface in a peripheral margin adjacent an edge of the substrate to be wrapped by the cover,

supporting the substrate on a vacuum buck so that the peripheral margin of the back surface overhangs the vacuum buck and the fluid passages communicate with a vacuum source of the buck, and

forming a cover stock against the front surface of the substrate and a marginal portion of the cover stock against the peripheral margin of the back surface by pressure differential and with an adhesive disposed therebetween to provide a cover stock that is wrapped around the edge of the substrate and adhered to the substrate.

5,487,801

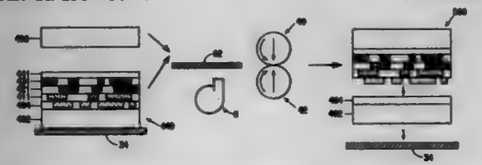
PRE-PROOF TEMPERATURE CONTROLLING ASSEMBLY

Michael P. Marion, Wallingford, and David C. Otto, Kennett Square, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 110,458, Aug. 23, 1993, abandoned. This application Nov. 23, 1994, Ser. No. 344,756

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—64 **5 Claims**



1. An off-press method for laminating a first precolored image photosensitive element to an image receiving substrate supported on a carrier plate and then transferring the color image from the receiving substrate to a transfer sheet to form a proof, comprising:

exposing the first precolored photosensitive element comprising a first aqueously developable precolored photosensitive layer on a first removable support through a first color separation transparency forming first image areas and first non-image areas in the first aqueously developable precolored layer;

processing the exposed first element to develop a first color image by washing away the first non-image areas with water;

stacking the first image bearing element in registration on the substrate on the carrier plate on a sheet preparation and feed table of a laminator;

sliding the stacked first image bearing element, substrate and carrier plate along a tray into a nip between a pair of rollers heated to about a temperature T1 and which are parallel or substantially parallel;

laminating the stacked first image bearing element to the substrate by transporting the first image bearing element on the substrate and the carrier plate through a pair of heated rollers;

during the sliding and laminating steps, cooling the tray and the first image bearing element, substrate and carrier plate on the tray to about a temperature T3 above room temperature and below the temperature T1;

peeling the removable support from the first image bearing element resulting in a modified first image bearing element;

stacking a transfer sheet on the modified first image bearing element on the carrier plate on the sheet preparation and feed table of the laminator;

sliding the stacked transfer sheet, modified first image bearing element, and carrier plate along the tray into the nip between the pair of rollers heated to about the temperature T1 and which are parallel or substantially parallel;

laminating the transfer sheet to the first image bearing element through the pair of heated rollers; and

during the second sliding and second laminating steps, cooling the tray and the first image bearing element, transfer sheet and carrier plate on the tray to about the temperature T3 above room temperature and below the first temperature.

5,487,802

ULTRASONIC WELDING METHOD AND APPARATUS FOR MOLDED RESIN MATERIALS

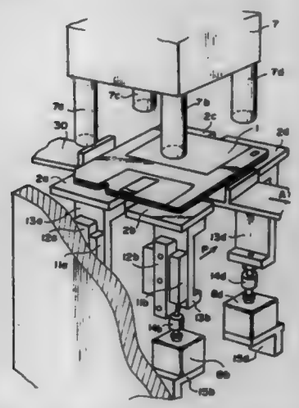
Akira Mizuta, and Fumio Yamazaki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 31, 1991, Ser. No. 815,160

Claims priority, application Japan, Jan. 9, 1991, 3-001044

Int. Cl.[6] B32B *31/16*

U.S. Cl. 156—73.1 **10 Claims**



1. An ultrasonic welding method for molded resin materials, comprising:

superimposing one upon the other corresponding parts of molded resin materials to be welded together;

holding the superimposed molded resin materials between a welding horn and a molded material receiving section;

supporting a plurality of section parts of said molded material receiving section independently of each other by a plurality of molded material receiving section support members;

associating with each of said section parts only a single different one of a plurality of fluid-pressure cylinders;

welding the corresponding parts of the molded resin materials together by said welding horn; and

as said corresponding parts of said molded resin materials are welded together, adjusting supporting forces of the plurality of said molded material receiving section support members independently of each other, by individually regulating the fluid pressure applied by said welding horn onto each pair of said corresponding parts of said molded resin materials is equal to a predetermined value.

5,487,803

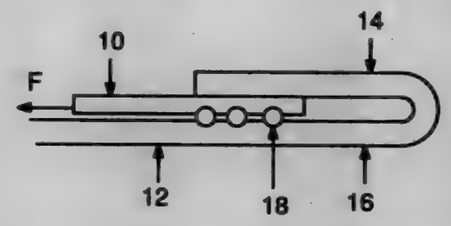
METHOD FOR OBTAINING MECHANICAL LOCK BETWEEN SURFACES

Eugene J. Sweeney, Plymouth, and Gregory A. Pelts, Novi, both of Mich., assignors to Lord Corporation, Cary, N.C.

Continuation of Ser. No. 67,501, May 25, 1983, abandoned. This application May 18, 1995, Ser. No. 443,988

Int. Cl.[6] B32B *7/08;7/12;* **F16B** *11/00*

U.S. Cl. 156—91 **23 Claims**



1. A method of forming a hem flange assembly, comprising the steps of:

(a) positioning a first panel adjacent to, but not contacting, a second panel such that an edge of the second panel extends beyond an edge of the first panel;

(b) providing spherical particulate granules and an adhesive between the overlapping portion of the two panels wherein the spherical particulate granules have a compressive strength that is greater than the respective yield strength of each of the two panels;

(c) folding the non-overlapping portion of the second panel over the edge of the first panel;

(d) applying pressure of 3,500 to 11,000 psi to the overlapping portion of the panels so that the panels move toward each other to a point where they remain a spaced distance apart and a substantial number of the spherical particulate granules are embedded in both of the panels, such that the pressure necessary to shift the first panel with respect to the second panel requires a shifting force greater than about 50 psi resulting in a temporary mechanical lock between the panels; and

(e) curing the adhesive to obtain a final lock between the panels and form the hem flange assembly.

5,487,804

METHOD ALLOWING THE INCORPORATION OF A METALLIC STRUCTURE INTO A PLASTIC

Bruno Thevenet, Lyons, and Denis Gille, Beillgnat, both of, France, assignors to PROTECMA, France

PCT No. PCT/FR93/00385, § 371 Date Dec. 15, 1993, § 102(e) Date Dec. 15, 1993, PCT Pub. No. WO93/21367, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 20, 1993, Ser. No. 167,885

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—148 **11 Claims**

1. A method of producing a molded article having electromagnetic and electrostatic properties that includes the steps of

providing a conductive metal yarn having a rectangular cross section such that the width of the yarn is about between 300 and 500 times its thickness;

providing a thermoplastic yarn;

knitting both yarns together into a plaited pattern on the same weft knitting machine to form a composite fabric wherein the metal yarn forms about 5% to 10% by weight of the composite fabric, said fabric being highly deformable in all directions, and said fabric having a top face and a bottom face such that one face primarily consists of metal yarn and the other face primarily consists of thermoplastic yarn;

heat forming a sheet of plastic;

calendering the fabric with the plastic sheet while the sheet is still in a heated state to at least partially implant one face of the fabric into a surface of said sheet, and

molding the fabric implanted sheet into an article having a complex shape whereby the deformable fabric faithfully follows the contour of the complex shaped article.

5,487,805

METHOD AND A DEVICE FOR THE AUTOMATIC SPLICING OF STRIPS DECOILED FROM ROLLS

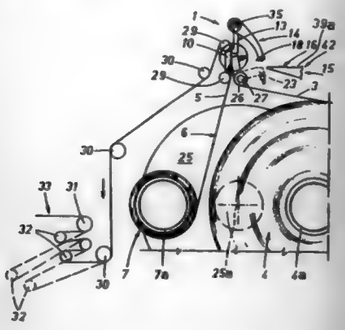
Silvano Borlani, and Antonio Gamberini, both of Bologna, Italy, assignors to G.D S.p.A., Bologna, Italy

Filed Mar. 24, 1994, Ser. No. 216,845

Claims priority, application Italy, Mar. 25, 1993, BO93A0112

Int. Cl.[6] B65H *21/00*

U.S. Cl. 156—159 **11 Claims**



1. A device for automatically splicing strips decoiled from rolls of material, comprising:

a fixed reference surface over which a depleting strip can be advanced;

a movable restraint assembly capable of movement between first position in which the restraint assembly is spaced from the fixed reference surface and a second position in which the restraint assembly is moved into engagement with said fixed reference surface so as to hold a trailing portion of the depleting strip motionless therebetween;

a cutting assembly capable of movement to effect a transverse cut through the trailing portion of the depleting strip as the depleting strip is held motionless between the fixed reference surface and the restraint means so as to form a cut end of the trailing portion of said depleting strip;

a movable retaining assembly capable of transferring a leading portion of a new strip of material from a position in which the leading portion is spaced from the trailing portion of said depleting strip to a position in which the leading portion is forced into engagement with said trailing portion adjacent said cut end; and

a securing assembly for providing a securing material between said leading portion of said new strip and said trailing portion of said depleting strip so that said leading portion and said trailing portion are secured to one another after being brought into engagement by said retaining assembly .

5,487,806

METHOD FOR EMBODYING A FLEXIBLE TUBULAR ELEMENT IMPREGNATED WITH RESIN TO BE SUBSEQUENTLY MOULDED

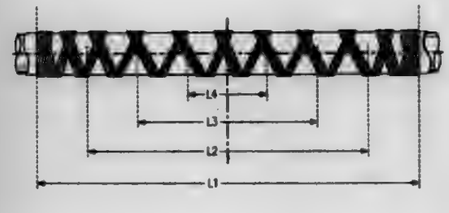
Paul-Henri Viellard, 22 rue Spontini, F75116 Paris, France

Continuation-in-part of Ser. No. 762,528, Aug. 8, 1991, abandoned. This application Jun. 18, 1993, Ser. No. 77,899

Claims priority, application France, Aug. 8, 1990, 90 10108; Dec. 5, 1990, 90 15225; Dec. 5, 1990, 90 15226; Jan. 21, 1991, 91 00509

Int. Cl.[6] A63B *49/10*; B65H *81/00*

U.S. Cl. 156—175 **5 Claims**



1. A method for embodying for subsequent moulding operation a tubular flexible element impregnated with resin, for realizing a tennis racket frame, which comprises the following steps:

(a) impregnating reinforcing fibers with resin;

(b) winding said impregnated reinforcing fibers around a tubular flexible sheath placed onto a rigid rotary-driven mandrel having a longitudinal axis, so that at least one additional winding of said reinforcing fibers is wound over a different length and according to a pitch which varies during winding operation of the additional winding, to obtain a tubular flexible element to be molded of which anisotrophy is controlled;

said tubular flexible element having a length comprised between 1200 and 1800 mm;

the impregnated reinforcing fibers winding laid over the flexible sheath having a total weight comprised between 150 and 250 g.; and

the impregnated fibers winding being laid over with angles contained between 18 degrees and 42 degrees with relation to the mandrel longitudinal axis;

said impregnated fibers winding comprising;

a first winding performed over a first length of the tubular flexible element and having a weight contained between 58% and 70% of the total weight;

a second winding performed over a second length, symmetrical to a middle of the first length of the tubular flexible element, comprised between 72% and 85% of the first length, the said second winding having a weight comprised between 12% and 26% of the total weight;

a third winding performed over a third length, symmetrical to the middle of the first length of the tubular flexible element, contained between 50and 62% of the first length, the said third winding having a weight comprised between 8% to 20% of the total weight;

and a fourth winding performed over a fourth length, symmetrical to the middle of the first length of the tubular flexible element, comprised between 16% and 33% of the first length, the said fourth winding having a weight comprised between 2% and 8% of the total weight; and

(c) separating said tubular flexible element from the mandrel and performing molding thereof.

5,487,807

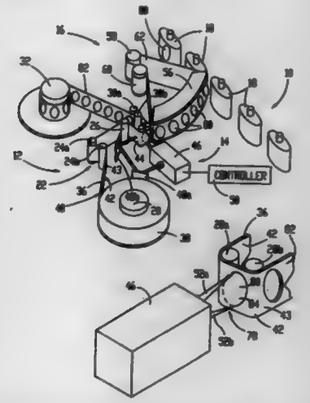
SYSTEM FOR PRODUCING LABELS FROM A WEB

Grlydon W. Nedblake, Kansas City, and John Garber, Fenton, both of Mo., assignors to Greydon W. Nedblake, Kansas City, Mo.

Continuation of Ser. No. 996,089, Dec. 23, 1992, Pat. No. 5,421,933. This application Dec. 27, 1994, Ser. No. 364,743

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—353 **24 Claims**



1. An apparatus for labeling objects comprising:

dispensing means for continuously dispensing an elongated web of label material without a carrier sheet from a supply thereof, said web presenting a plurality of label bodies surrounded by respective label boundaries;

a laser unit including laser means for producing a plurality of laser beams for cutting through said web, and

control means for controlling said laser beams so that said laser beams cut through said web along divergent paths of each of said label boundaries for separating said label bodies from said web in continuous succession; and

an application assembly including support means other than said web for supporting said label bodies before and after separation from said web,

transport means for transporting said label bodies away from said web in continuous succession toward objects to be labeled, and

applying means for applying said labels in continuous succession to a respective plurality of the objects thereby labeling the objects.

13. An apparatus for producing labels comprising:

dispensing means for dispensing an elongated web of label material from a supply thereof, said web presenting a plurality of label portions distributed along the length of said web and surrounded by respective label boundaries; and

a laser unit including laser means for producing a plurality of laser beams for cutting through said web, said dispensing means including means for passing said label portions in succession in the path of said laser beams, said laser unit further including control means for controlling said laser beams, said control means including electronic memory means for storing information representative of said boundaries, and

a controller for retrieving said information from said memory means and for controlling said laser beams in accordance with said information so that, for each of said label portions, said laser beams cut completely around said label portion along said boundary thereof before cutting the boundary of a successive label portion and so that said laser beams cut through said web along divergent paths of each of said label boundaries for separating said label portions from said web to produce corresponding labels in succession and a web matrix.

20. An apparatus for producing labels comprising:

dispensing means for dispensing an elongated web of label material from a supply thereof, said web presenting a plurality of label portions longitudinally distributed along said web, said label portions being surrounded by respective label boundaries; and

a laser unit including laser means for producing a laser beam for cutting through said web,

said dispensing means including means for passing said label portions successively in the path of said laser beam,

said laser unit further including control means for controlling said laser beam, said control means including

electronic memory means for storing information representative of said boundaries, and

a controller for retrieving said information from said memory means and for controlling said laser beam in accordance with said information so that, for each of said label portions, said laser beam cuts completely around said label portion along said boundary thereof before cutting the boundary of a successive label portion.

5,487,808

APPARATUS FOR LAMINATING PLATES

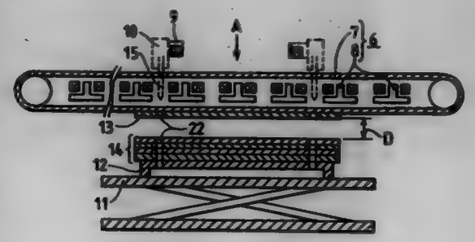
Isao Suzuki; Masuo Shindo, and Kiyoshi Naitoo, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 152,807, Nov. 15, 1993, abandoned. This application Feb. 9, 1994, Ser. No. 195,134

Claims priority, application Japan, Nov. 16, 1992, 4-304208; Feb. 16, 1993, 5-025868

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—556 **9 Claims**



1. An apparatus for laminating plates in an aligned position, each plate defining at least two guide holes, comprising:

a horizontal base for receiving a stack of said plates;

conveying means for conveying said plates to an elevated predetermined position overlying said horizontal base, one by one, said conveying means dropping said plates from said predetermined position onto said horizontal base to laminate said plates to each other; and

guide means including at least two guides pins overlying said conveying means in an elevated initial position and oriented to be perpendicular to a conveyed plate at said predetermined position, said guide means moving said guide pins down

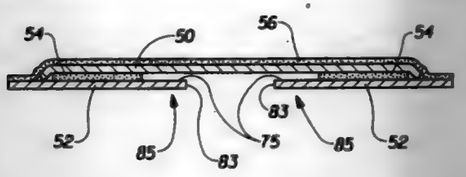
wardly from said initial position with a dropping plate to remain in said guide holes, respectively, to align each of said plates separately by said guide pins while laminating each plate on said horizontal base, and to return said guide pins to the initial position thereof.

5,487,809

METHOD FOR MANUFACTURING TAPE TAB STOCK THAT MAY BE USED TO PRODUCE TAPE TAB FASTENERS FOR DISPOSABLE ABSORBENT ARTICLES

David J. K. Goulait, and David W. Cabell, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 21, 1994, Ser. No. 263,115
Int. Cl.[6] B32B *31/18;31/08*
U.S. Cl. 156—259 15 Claims



1. A method for manufacturing tape tab stock that may be used to form tape tabs for use with a disposable absorbent article, the method comprising the steps of:

providing a backing substrate having a first surface, a first longitudinal centerline, a transverse centerline perpendicular to said longitudinal centerline and a pair of longitudinal edges;

applying a pressure-sensitive adhesive to at least a portion of said first surface of said backing substrate;

slitting said backing substrate in a direction parallel to said longitudinal centerline to form at least two segments, each said segment having an inner longitudinal edge;

separating said segments in a direction parallel to said transverse centerline;

contacting a release substrate, having a release surface, an adhesive surface and a second longitudinal centerline, with said pressure-sensitive adhesive, such that said release surface covers said pressure-sensitive adhesive and forms a unitary laminate comprising said segments and said release substrate;

applying a construction adhesive to at least a portion of said adhesive surface of said release substrate;

slitting said laminate in a direction parallel to said longitudinal centerline; and

separating said laminate into tape tab stock.

12. A method for manufacturing tape tab stock that may be used to form tape tabs for use with a disposable absorbent article, the method comprising the steps of:

providing a backing substrate having a pair of longitudinal edges;

applying a pressure-sensitive adhesive to said first surface of said backing substrate;

contacting a release substrate, having a release surface and an adhesive surface, with said pressure-sensitive adhesive, such that said release surface covers said pressure-sensitive adhesive forming a unitary laminate; and

applying a construction adhesive to at least a portion of said adhesive surface of said release substrate and at least a portion of said backing substrate forming a tape tab stock.

5,487,810

PROCESS FOR PRETREATING SURFACES OF PLASTIC ITEMS

Siegfried Thurm, Meerbusch; Klaus Sommer, Bergisch Gladbach; Peter Bier, Krefeld; Andreas Elschner, Mülheim/Ruhr; Manfred Kowitz, Moers, and Axel Sandquist, Monheim, all of, Germany, assignors to Bayer AG, Leverkusen, Germany

PCT No. PCT/EP93/00630, § 371 Date Sep. 16, 1994, § 102(e) Date Sep. 16, 1994, PCT Pub. No. WO93/19218, PCT Pub. Date Sep. 30, 1993
PCT Filed Mar. 17, 1993, Ser. No. 302,844
Claims priority, application Germany, Mar. 26, 1992, 42 09 807.6; Mar. 5, 1993, 43 06 971.1
Int. Cl.[6] C03C *15/00*
U.S. Cl. 216—67 4 Claims

1. A process for pretreating the surface of plastic items in a low-pressure plasma for the subsequent application of layers, especially metallic layers, wherein a process gas is used for the low-pressure plasma which contains sulphur hexafluoride (SF_6), characterised in that this process gas is kept essentially free of oxygen and the plastic surface is kept free of adsorbed or included fluorine during pretreatment.

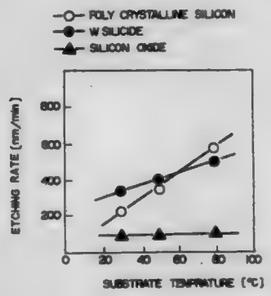
5,487,811

PROCESS FOR PREPARATION OF SEMICONDUCTOR DEVICE

Katsuhiko Iizuka, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 21, 1991, Ser. No. 748,157
Claims priority, application Japan, Aug. 23, 1990, 2-224030
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—656.1 10 Claims

1. A process for the preparation of a semiconductor device,



which comprises the steps of:

forming a mask including an organic film on a laminated film consisting of a W silicide layer and a non-single crystalline silicon layer formed over a substrate on which an oxide layer is formed;

etching the laminated film under a plasma atmosphere of a mixed gas including a chlorine gas and an oxygen gas but not including a sulfur-bearing gas to fabricate the laminated film into an almost vertical pattern in section, while maintaining the temperature of the substrate at 60° C. or more; and

removing the mask from the laminated film.

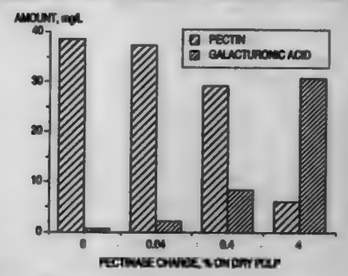
5,487,812

TREATMENT OF ALKALINE BLEACHED MECHANICAL WOOD PULP WITH PECTINASE

Jeffrey W. Thornton; Christer S. Eckerman; Rainer O. Ekman, and Bjarne R. Holmbom, all of Åbo, Finland, assignors to Mesta-Serla Oy, Mantta, Finland

Continuation of Ser. No. 874,867, Apr. 28, 1992, abandoned. This application Aug. 23, 1994, Ser. No. 294,876
Claims priority, application Finland, May 2, 1991, 912136
Int. Cl.[6] D21C *3/00*
U.S. Cl. 162—72 9 Claims

1. A method for the treatment of mechanical wood pulp in a



paper making process comprising:

bleaching the mechanical wood pulp under alkaline conditions to form alkaline treated mechanical wood pulp comprising wood fibers and an aqueous phase, wherein anionic pectins are released from the fibers and become dissolved into the aqueous phase by the alkaline treatment of the fibers;

treating said alkaline treated mechanical wood pulp comprising the wood fibers and the aqueous phase containing the dissolved anionic pectins with pectinuse wherein said pectinase decomposes the dissolved anionic pectins of said aqueous phase into galacturonic acid; and

subjecting the treated wood pulp to dewatering.

5,487,813

STRONG AND SOFT CREPED TISSUE PAPER AND PROCESS FOR MAKING THE SAME BY USE OF BIODEGRADABLE CREPE FACILITATING COMPOSITIONS

Kenneth D. Vinson; Paul T. Weisman, both of Cincinnati, and Dean V. Phan, West Chester, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

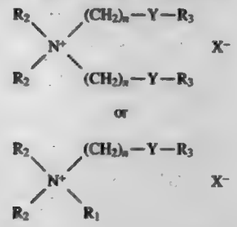
Filed Dec. 2, 1994, Ser. No. 348,434
Int. Cl.[6] D21H *21/22*
U.S. Cl. 162—111 31 Claims

1. A soft creped tissue paper comprising:

a) papermaking fibers; and

b) a biodegradable crepe facilitating composition comprising:

i) from about 0.02% to about 1.0% by weight, of a biodegradable bonding inhibitor, based on the dry weight of the papermaking fibers, having the formula:



wherein each R_2 substituent is a C1–C6 alkyl or hydroxyalkyl group, benzyl group or mixtures thereof; each R_1 substituent is a C12–C22 hydrocarbyl group, or substituted hydrocarbyl group or mixtures thereof; each R_3 substituent is a C11–C23 hydrocarbyl group, or substituted hydrocarbyl or mixtures thereof; Y is —O—C(O)— or —C(O)—O— or —NH—C(O)— or —C(O)—NH— or mixtures thereof; n is 1 to 4 and X= is a suitable anion;

ii) from about 0.02% to about 0.5% by weight, of a water soluble carboxymethyl cellulose, based on the dry weight of the papermaking fibers, wherein said carboxymethyl cellulose has a degree of substitution ranging from about 0.3 to about 1.4; and

iii) from about 0.05% to about 3.0% by weight, of a cationic starch, based on the dry weight of the papermaking fibers, wherein said cationic starch has a degree of substitution ranging from about 0.01 to about 0.1.

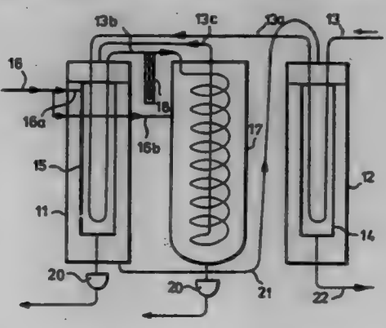
5,487,814

METHOD FOR DISTILLING AND STERILIZING FEED WATER

Lauri Santasalo, Helsinki, Finland, assignor to Finn-Aqua Santasalo-Sohlberg Oy, Hyrylä, Finland

Filed Sep. 28, 1993, Ser. No. 128,468
Claims priority, application Finland, Jan. 1, 1992, 924433
Int. Cl.[6] B01D *3/06;* C02F *1/06*
U.S. Cl. 203—2 18 Claims

1. A method for ensuring the sterility of distillate in a multi-stage



distilling apparatus having at least two distillation columns, comprising the steps of:

operating a first distillation column at a specific temperature,

passing feed water to be sterilized in a flow line through the first column without releasing the feed water into the first column,

heating the feed water in the flow line as it passes through the first column,

passing the feed water from the first column to a heat exchanger,

retaining the feed water in the heat exchanger for a delay time until the temperature of the feed water contained within the flow line passing through the first column reaches a temperature equal to or greater than the operating temperature of the first column and the feed water is sterilized, the delay time being calculated as a function of the operating temperature of the first column,

removing the feed water from the heat exchanger after said delay time,

returning the feed water to the first column and releasing the feed water from the flow line into the first column,

vaporizing at least a portion of the sterilized feed water in the first column,

condensing the vaporized portion of the sterilized feed water in the first column to form a sterile distillate, and

removing the sterile distillate from the first column.

5,487,815

METHOD OF OPTIMIZING THE CONTROL OF THE MASS TRANSFER ZONE IN DISTILLATION COLUMNS

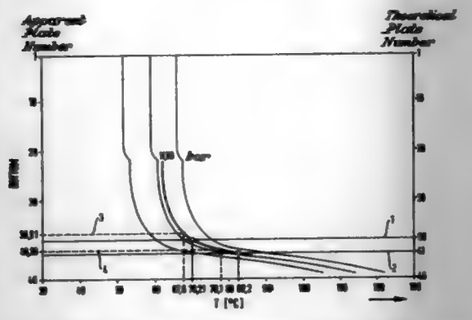
Hermann Rathert, Schwalbach am Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Germany

Continuation of Ser. No. 806,739, Dec. 12, 1991, abandoned. This application Feb. 2, 1994, Ser. No. 191,389

Claims priority, application Germany, Dec. 15, 1990, 40 40 185.5

Int. Cl.[6] B01D *3/42*

U.S. Cl. 203—2 **5 Claims**



1. A method of optimizing the performance of a heated distillation column, consisting essentially of the steps of:

a) providing a heated distillation column having a mass transfer zone, a plurality of measurement positions which correspond to theoretical plate numbers, and design data for optimum separation efficiency, said design data including a plurality of pressure dependent characteristic curves which assign to each measurement position of the distillation column corresponding to a theoretical plate number a nominal temperature,

b) feeding a distillable mixture to the distillation column and conducting said distillation process at an operating pressure to obtain a distilled product from a product take off means, and returning a portion of the distilled product at a reflux rate,

c) measuring a first temperature at a first measurement position corresponding to a first theoretical plate number within said mass transfer zone,

d) measuring a first pressure at said first position,

e) measuring a second temperature at a second measurement position corresponding to a second theoretical plate number within said mass transfer zone,

f) measuring a second pressure at said second position,

g) selecting the characteristic curve corresponding to the first pressure for determining the apparent plate number for the first temperature,

h) comparing said first temperature to the selected pressure dependent characteristic curve, and determining a first apparent plate number from said first temperature,

i) selecting the characteristic curve corresponding to the second pressure for determining the apparent plate number for the second temperature,

j) comparing said second temperature to the selected pressure dependent characteristic curve, and determining a second apparent plate number from said second temperature,

k) determining the difference between said first and second apparent plate numbers,

l) determining the difference between said first and second theoretical plate numbers, and

m) controlling the column heating or the column pressure or the reflux rate using the difference between the apparent plate number difference and the theoretical plate number difference.

5. A method of optimizing the performance of a heated distillation column, consisting essentially of the steps of:

a) providing a heated distillation column having a mass transfer zone, a plurality of measurement positions which correspond to theoretical plate numbers, and design data for optimum separation efficiency, said design data including a plurality of pressure dependent characteristic curves which assign to each measurement position of the distillation column corresponding to a theoretical plate number a nominal temperature,

b) feeding a distillable mixture to the distillation column and conducting said distillation process at an operating pressure to obtain a distilled product from a product take off means, and returning a portion of the distilled product at a reflux rate,

c) measuring a first temperature at a first measurement position corresponding to a first theoretical plate number within said mass transfer zone,

d) measuring a second temperature at a second measurement position corresponding to a second theoretical plate number within said mass transfer zone,

e) selecting a pressure dependent characteristic curve for each of said first and second temperatures,

f) comparing said first temperature to the selected pressure dependent characteristic curve, and determining a first apparent plate number from said first temperature,

g) comparing said second temperature to the selected pressure dependent characteristic curve, and determining a second apparent plate number from said second temperature,

h) determining the difference between said first and second apparent plate numbers,

i) determining the difference between said first and second theoretical plate numbers, and

j) controlling the column heating or the column pressure or the reflux rate using the difference between the apparent plate number difference and the theoretical plate number difference.

5,487,816

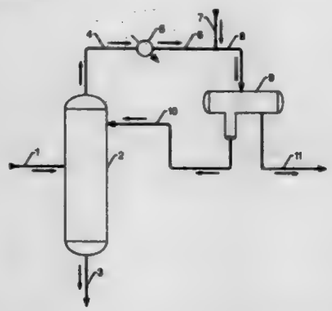
PROCESS FOR THE REDUCTION OF PHENOL CONTENT IN A CRUDE ORGANIC STREAM RECOVERED FROM A PHENOL STRIPPER

Russell C. Schulz, Glen Ellyn; Constante P. Tagamolila, Arlington Heights, and Patrick J. Bullen, Elmhurst, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed Jun. 24, 1994, Ser. No. 277,686

Int. Cl.[6] B01D *3/34*; **C07C** *37/74*

U.S. Cl. 203—14 **5 Claims**



1. A process for the separation of an admixture comprising phenol, alpha-methylstyrene (AMS) and water to produce an organic stream comprising alpha-methylstyrene and phenol which process comprises:

(a) introducing said admixture comprising phenol, alpha-methylstyrene and water into a fractionation zone;

(b) removing a high purity stream of phenol from the bottom of said fractionation zone;

(c) removing an overhead vapor stream comprising alpha-methylstyrene, phenol and water from said fractionation zone;

(d) condensing at least a portion of said overhead vapor stream to produce an aqueous phase comprising phenol and an organic phase comprising alpha-methylstyrene and phenol;

(e) introducing a base into the overhead of said fractionation zone to maintain the pH of said aqueous phase comprising phenol greater than about 6 so as to partition a large portion of the phenol into the aqueous phase from the organic phase;

(f) refluxing at least a portion of said aqueous phase comprising phenol and having a pH greater than about 6 to said fractionation zone; and

(g) recovering an organic stream comprising alpha-methylstyrene and phenol.

5. A process for the separation of an admixture comprising phenol, alpha-methylstyrene (AMS) and water to produce an organic stream comprising alpha-methylstyrene and phenol which process comprises:

(a) introducing said admixture comprising phenol, alpha-methylstyrene and water into a fractionation zone;

(b) removing a high purity stream of phenol from the bottom of said fractionation zone;

(c) removing an overhead vapor stream comprising alpha-methylstyrene, phenol and water from said fractionation zone;

(d) condensing at least a portion of said overhead vapor stream to produce an aqueous phase comprising phenol and an organic phase comprising alpha-methylstyrene and phenol;

(e) contacting said aqueous phase comprising phenol from step (d) with a base to maintain the pH of said aqueous phase comprising phenol greater than about 6 so as to partition a large portion of the phenol into the aqueous phase from the organic phase;

(f) refluxing at least a portion of said aqueous phase comprising phenol and having a pH greater than about 6 to said fractionation zone; and

(g) recovering an organic stream comprising alpha-methylstyrene and phenol.

5,487,817

PROCESS FOR TOCOPHEROLS AND STEROLS FROM NATURAL SOURCES

Christian Fizet, Zimmersheim, France, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 21, 1994, Ser. No. 185,571

Claims priority, application Switzerland, Feb. 11, 1993, 467/93

Int. Cl.[6] B01D *3/34*; **C07D** *311/72*

U.S. Cl. 203—38 **11 Claims**

1. A process for separating tocopherols and sterols from deodorizer sludges comprising sterols, fatty acids, and tocopherols, said process consisting essentially of the steps of:

(a) esterifying the sterols in the deodorizer sludge with fatty acids which are also present in the deodorizer sludge to form a mixture comprising sterol fatty acid esters, fatty acids, and tocopherols;

(b) distilling said mixture to obtain a first distillation fraction containing fatty acid residues, a second distillation fraction containing tocopherols, and a sterol fatty acid ester residue;

(c) isolating the tocopherols from the second distillation fraction; and

(d) isolating the sterols from the sterol fatty acid ester residue.

9. A process for separating tocopherols and sterols from deodorizer sludges comprising the steps of:

(a) esterifying the sterols in the deodorizer sludge with fatty acids which are also present in the deodorizer sludge containing sterol esters by heating the deodorizer sludge in a temperature range from about 150° C. to about 250° C. in a time range of from about 1 to about 12 hours to form an esterified sterol deodorizer sludge containing sterol esters;

(b) distilling said esterified sterol deodorizer sludge to form a fatty acid distillate and a residue;

(c) distilling said residue to form a distillate containing tocopherols and a residue containing esterified sterols;

(d) isolating the tocopherols from the distillate containing tocopherols; and

(e) isolating the sterols from the residue containing esterified sterols.

5,487,818

PROCESS FOR SEPARATING PHTHALIMIDO-PEROXYCAPROIC ACID FROM SOLUTIONS IN ORGANIC SOLVENTS

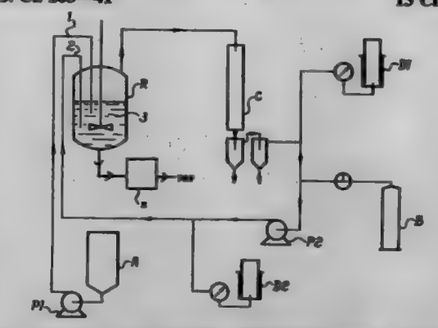
Claudio Cavallotti; Claudio Troglia, both of Milan, and Roberto Garaffa, Naples, all of, Italy, assignors to Ausimont S.p.A., Italy

Continuation-in-part of Ser. No. 97,839, Jul. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 28,661, Mar. 9, 1993, abandoned. This application Aug. 4, 1994, Ser. No. 285,927

Claims priority, application Italy, Mar. 10, 1992, MI92A0539

Int. Cl.[6] B01D *1/14*; **C07D** *209/48*

U.S. Cl. 203—41 **13 Claims**



1. A process for separating phthalimido-peroxycaproic acid (PAP) from a solution of PAP in an organic solvent, said organic solvent having a solubility in water equal to or lower than 10% by weight, and being selected from the group consisting of chlorohydrocarbons and aliphatic esters, said process comprising:

(a) dispersing the solution in an aqueous medium to form a suspension;

(b) evaporating the organic solvent by bubbling an inert gas into the resulting suspension; and

(c) recovering PAP from the suspension.

5,487,819

PRODUCTION OF METALS FROM MINERALS

Peter K. Everett, 2 Linden Way, Castlecrag NSW 2068, Australia

PCT No. PCT/AU93/00311, § 371 Date Dec. 23, 1994, § 102(e) Date Dec. 23, 1994, PCT Pub. No. WO94/00606, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 25, 1993, Ser. No. 360,695

Claims priority, application Australia, Jun. 26, 1992, PL3172

Int. Cl.[6] C25C *1/12*

U.S. Cl. 205—347 **47 Claims**

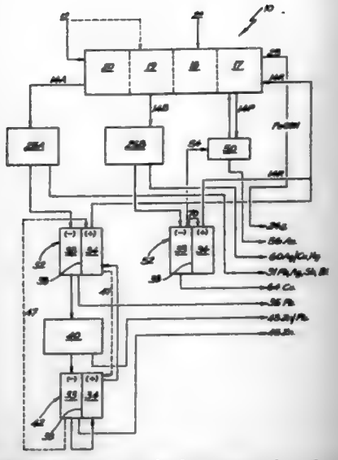
1. A process for producing one or more metals from a mineral containing the same, wherein the mineral is transferred to a leaching process comprising a high oxidation potential zone (hop zone) and a low oxidation potential zone (lop zone) and through which an electrolyte of acid pH is passed from the hop zone to the lop zone, comprising the steps of:

(i) feeding the mineral to the lop zone to contact the electrolyte whereby at least some of the or each metal is leached from the mineral, with at least some of the or each metal that is leached being in a low oxidation valence state;

(ii) electrolysing the electrolyte that leaves the lop zone in an electrolysis process to produce the one or more metals and to increase the oxidation potential of the electrolyte that leaves the electrolysis process;

(iii) returning the electrolyte of increased oxidation potential to the hop zone of the leaching process; and

(iv) reducing the oxidation potential of the electrolyte as it is passed through the hop zone to the lop zone to its level prior to electrolysis; wherein the oxidation potential of the electrolyte is reduced by continuous countercurrent contact of the electrolyte with the mineral as the electrolyte is passed



through the hop zone to the lop zone and as the mineral is passed from the lop zone to the hop zone.

5,487,820

PROCESS FOR REMOVING LEAD DIOXIDE RESIDUES

Rudolf Huber, Garching, and Norbert Paul, Altötting, both of, Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Dec. 21, 1994, Ser. No. 361,137

Claims priority, application Germany, Dec. 23, 1993, 43 44 034.7

Int. Cl.[6] C25F *1/00*

U.S. Cl. 205—716 **6 Claims**

1. A process for removing lead dioxide residues on conducting surfaces, which comprises cathodically reducing the lead dioxide in dilute nitric acid as an electrolyte.

5,487,821

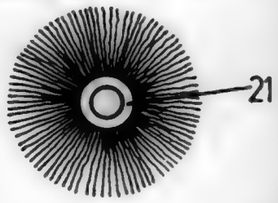
ANODE STRUCTURE FOR MAGNETRON SPUTTERING SYSTEMS

Peter A. Sieck, Santa Rosa; Russell J. Hill, El Cerrito, both of Calif.; John L. Vossen, Bridgewater, N.J., and Stephen C. Schulz, Benicia, Calif., assignors to The BOC Group, Inc., Murray Hill, N.J.

Continuation of Ser. No. 86,136, Jul. 1, 1993, abandoned. This application Apr. 18, 1995, Ser. No. 425,671

Int. Cl.[6] C23C *14/34*

U.S. Cl. 204—192.12 **17 Claims**



1. A magnetron apparatus for sputtering thin films onto a substrate comprising:

an evacuable coating chamber;

a cathode mounted in said coating chamber, wherein the cathode defines an outer target surface that comprises a sputtering material; and

an anode defining an electrically conductive body and having a plurality of points emanating from said conductive body, each of said points being defined by a tip of a wire.

5,487,822

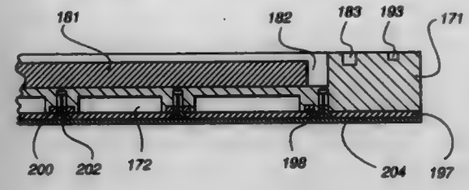
INTEGRATED SPUTTERING TARGET ASSEMBLY

Richard E. Demaray, Portola Valley; David E. Berkstresser, Los Gatos, and Manuel J. Herrera, San Mateo, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 157,763, Nov. 24, 1993, Pat. No. 5,433,835. This application Apr. 29, 1994, Ser. No. 236,715

Int. Cl.[6] C23C *14/34*

U.S. Cl. 204—298.09 **9 Claims**



1. A sputtering target assembly comprising:

a sputtering target in intimate contact with a first side of a backing plate forming part of a target backing plate assembly;

said target backing plate assembly configured to cover an opening of a sputtering chamber so as to seal the opening, said backing plate assembly having heat exchange fluid passages therethrough, said heat exchange fluid passages having one or more inlet and outlet openings,

wherein the target backing plate assembly comprises said backing plate and a cooling cover plate, said backing plate having a generally planar second side, said cooling cover plate having a generally planar third side fluid tightly joined to said second side, grooves being formed in at least one of said second and third sides to form heat exchange cooling passages between said target backing plate and said cooling cover plate,

wherein a bond is formed between said second side of said cooling cover plate and said third side of said backing plate using O-rings and fasteners, and comprises a continuous O-ring in an O-ring groove surrounding said heat exchange cooling passages, and individual O-rings surrounding one or more of the fasteners securing a field of said cooling cover plate within the pattern forming the inside edge of the opening to said third side of said backing plate within the perimeter of a continuous O-ring groove.

5,487,823

SPUTTERING TARGETS HAVING LIFE ALARM FUNCTION

Susumu Sawada, Tokyo; Junichi Anan, Kitaibaraki; Hiroki Nakamura, and Yoshihiro Sakaya, both of Tokyo, all of, Japan, assignors to Japan Energy Corporation, Tokyo, Japan

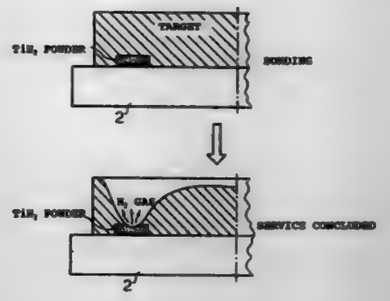
Filed Apr. 26, 1994, Ser. No. 233,171

Claims priority, application Japan, Apr. 28, 1993, 5-125067

Int. Cl.[6] C23C *14/34;14/52*

U.S. Cl. 204—298.12 **7 Claims**

1. A sputtering target having a life alarm function comprising a sputtering target and a gas-component source embedded in a bottom portion of said target.



5,487,824

ELECTROPLATING APPARATUS AND ELECTROPLATING METHOD OF SMALL ARTICLES

Thomas P. Griego, Grants, N.M., assignor to Uemura Kogyo Kabushiki Kaisha, Osaka, Japan

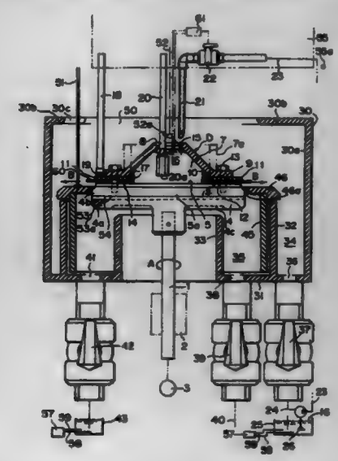
Filed Aug. 26, 1994, Ser. No. 295,055

Claims priority, application Japan, Aug. 31, 1993, 5-215636; Apr. 4, 1994, 6-065999

Int. Cl.[6] C25D *7/00;17/16;21/12*

U.S. Cl. 205—128 **5 Claims**

4. An electroplating method of small articles utilizing an apparatus comprising a treatment room fixed to the upper end of a drive shaft concentrically, the room being tubular with vertical center or the height of the room changing gradually low as radius increases, a cathodic contact ring to supply electricity being disposed the maximum diameter inside part or lower inside end of the treatment room, a porous ring near the contact ring allowing only operation liquid to pass and not allowing small articles to be electroplated to pass, an anode being disposed through an upper opening of the treatment room, the method comprising the steps of:



loading small articles to be treated in the treatment room;

pouring an electroplating liquid until the anode is always dipped;

rotating the above treatment room in a certain time and stopped in a short time or decelerate in a short time and repeating the above cycle;

after a certain time, stopping the supply of electroplating liquid;

supplying rinse water;

after another certain time, stopping the supply of rinse water; and

dehydrating the water centrifugally by high rotation.

5,487,825

METHOD OF PRODUCING ARTICLES OF ALUMINUM, MAGNESIUM OR TITANIUM WITH AN OXIDE CERAMIC LAYER FILLED WITH FLUORINE POLYMERS

Peter Kurze, and Hans-Jürgen Kletke, both of Düren, Germany, assignors to Electro Chemical Engineering GmbH, Zug, Switzerland

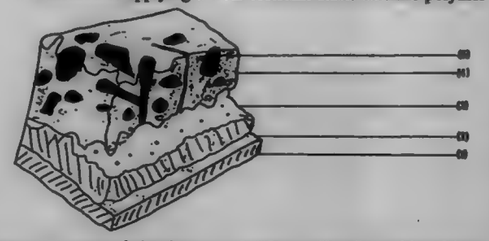
Filed Nov. 25, 1992, Ser. No. 981,343

Claims priority, application Germany, Nov. 27, 1991, 41 39 007.5

Int. Cl.[6] C25D *9/06*

U.S. Cl. 205—200 **4 Claims**

4. A method of applying a wear-resistant oxide ceramic polymer layer on a rotor of aluminum or aluminum alloy for turbine-driven molecular pumps, the method comprising plasma-chemically anodically oxidizing the rotor in a chloride-free electrolytic bath having a pH value of 7 to 8 at a constant current density of at least 1A/dm^2 until the voltage reaches an end value to form an oxide ceramic layer having a wide-mesh linked capillary system, removing electrolyte residues from the oxide ceramic layer, subsequently, introducing particles of fluorine polymers into the capillary system, each capillary of the capillary system having a diameter, wherein the particles have a particle size which at least in one dimension is smaller than the diameter of the capillaries, and subsequently subjecting the rotor to operating conditions in the molecular pump.



5,487,826

CARDBOARD MAILER PACKAGES

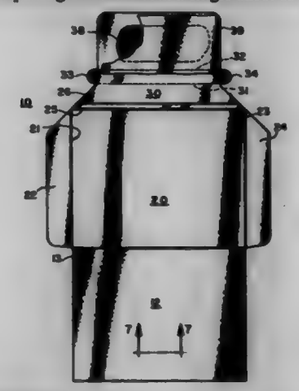
Gordon E. Back, Wallingford, Pa., and Jeffrey P. Greer, Wilmington, Del., assignors to International Envelope Company, Inc., Exton, Pa.

Continuation of Ser. No. 68,464, May 27, 1993, abandoned. This application Jan. 14, 1994, Ser. No. 182,307

Int. Cl.[6] B65D *85/57*

U.S. Cl. 206—308.3 **15 Claims**

1. A mailer package formed from a single sheet of foldable stock material comprising:



a pair of major, planar, parallel panels overlying one another and joined together along a first fold in the material, the first fold defining at least part of a first of four edges of the mailer package;

a pair of panel tabs extending from opposing edges of one panel of the pair of panels, the pair of panel tabs overlapping and being secured to opposing edge portions of a remaining panel of the pair of panels;

second and third folds connecting the pair of panel tabs with the opposing edges of the one panel, the second and third folds defining at least parts of second and third edges of the mailer package; and

a closure flap extending from a fourth edge of the one panel, the closure flap including at least a pair of lines of perforations therethrough, the lines of perforations extending generally parallel to one another and to a fourth fold joining the closure flap and a fourth edge of the one panel, the closure flap between the lines of perforations protruding laterally from a remainder of the flap to define at least one pull tab, and a remainder of the closure flap being sized and shaped to fit between the pair of panel tabs when the sheet of material is folded along the fourth fold and on to the remaining panel with only each pull tab defined between the lines of perforations overlapping either of the pair of panel tabs.

5,487,827

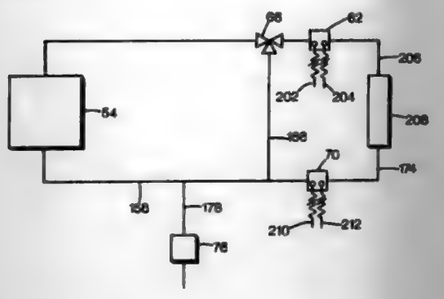
METHOD AND APPARATUS FOR KIDNEY DIALYSIS

Bruce A. Peterson, Milwaukie, and Michael E. Hogard, Oregon City, both of Oreg., assignors to Althin Medical, Inc., Miami Lakes, Fla.

Division of Ser. No. 122,047, Sep. 14, 1993, which is a division of Ser. No. 688,174, Apr. 19, 1991, Pat. No. 5,247,434. This application May 13, 1994, Ser. No. 242,312

Int. Cl.[6] B01D *61/32*

U.S. Cl. 210—87 **15 Claims**



1. A kidney dialysis machine comprising:

a dialyzer with a dialysate compartment, a blood compartment separated from the dialysate compartment by a dialysis membrane, a dialysate input, a dialysate output, a blood input, and a blood output;

means for preparing dialysate and means for circulating the dialysate through a dialysate circuit, the dialysate circuit including the dialysate compartment, the dialysate input and the dialysate output of the dialyzer;

means for effecting extracorporeal circulation of blood from a dialysis patient through a blood circuit, the blood circuit including the blood compartment, the blood input, and the blood output of the dialyzer;

shunting means for directing flow of dialysate away from the dialysate compartment;

sensing means for sensing that no dialysate is flowing to the dialysate compartment whenever said shunting means is directing dialysate flow away from the dialysate compartment; and

means responsive to said sensing means for turning off said means for circulating dialysate through the dialysate circuit whenever said shunting means should be directing dialysate flow away from the dialysate compartment but said sensing means detects dialysate flow to the dialysate compartment.

5,487,828

FILTRATION APPARATUS WITH EXCHANGEABLE FILTERS

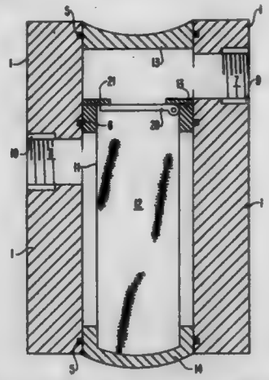
Richard C. Goet, Prinseneiland 53, 1013 LM Amsterdam, Netherlands

Filed Jan. 14, 1994, Ser. No. 181,052

Claims priority, application Netherlands, Jan. 28, 1993, 9300179

Int. Cl.[6] B01D *27/10;29/96*

U.S. Cl. 210—90 **7 Claims**



1. A filtration apparatus with exchangeable filters for filtration of fluids contaminated with solid particles, comprising:

a tubular filter housing of fluid-impermeable material, the housing having a tube wall and a central bore of equal length, the central bore configured for slideably receiving filter cartridges, the central bore having an insertion end, central portion, and discharge end;

a fluid entrance opening provided in the tube wall at the insertion end of the central bore;

a fluid exit opening provided in the tube wall at the central portion of the central bore, the fluid exit opening being diametrically opposed to the fluid entrance opening in the tube wall;

an interchangeable filter cartridge disposed in and substantially the same length as the central bore, the filter cartridge having a first end cap, a second end cap and a hollow, tubular filter element that includes an outer wall, a front end, and a rear end for enclosing a filter chamber, the first end cap being sealed on the front end of the filter element and the second cap being sealed on the rear of the filter element, so that the first end cap and second end cap of the interchangeable cartridge provide end caps for the central bore;

wherein the first end cap sealed on the front end provides an open connection with the outer wall of the filter element, the first end cap being of fluid-impermeable material and sized to match the size of the central bore;

wherein the second end cap sealed on the rear end has an annular opening which communicates with the filter chamber and the fluid entrance opening to establish an open fluid connection, the annular opening being provided with a side opening having a size equal to the size of the fluid entrance opening, the second cap being of fluid-impermeable material and sized to match the size of the central bore;

wherein at least one seal is provided, respectively, between each of the first end cap and second end cap and an inner wall of the tube wall for ensuring that fluid communication through the housing exists only between the fluid entrance opening, the filter cartridge and fluid exit opening; and

wherein the fluid communication between the filter cartridge and the fluid exit opening occurs only through the outer wall of the filter element.

5. A filtration apparatus according to claim 1, wherein the filter housing is provided with a differential pressure indicator which provides at least one of a signal and an indication when a pressure difference between the fluid entrance opening and the fluid exit opening exceeds a predetermined threshold value.

5,487,829

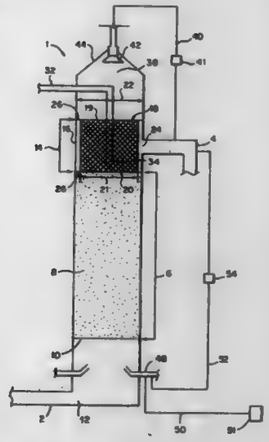
INTERNAL MEDIA CLEANING DEVICE FOR AEROBIC FLUIDIZED BED REACTORS

Steven I. Safferman, and Paul L. Bishop, both of Cincinnati, Ohio, assignors to The Unite States of America as represented by the Administrator of the United States Environmental Protection Agency, Washington, D.C., and The University of Cincinnati, Cincinnati, Ohio

Filed Mar. 3, 1994, Ser. No. 205,364

Int. Cl.[6] C02F *3/08*

U.S. Cl. 210—151 **11 Claims**



1. An improved reactor for treatment of wastewater having an influent line for wastewater, and effluent line for treated wastewater, and an aerobic bed fluidized by wastewater from said influent line, said bed being located between said influent line and said effluent line and containing particulate media seeded with a layer of bacteria, said improved reactor comprising:

internal particulate media cleaning means located between said bed and an outlet to said effluent line for creating turbulence which shears excess biomass from said particulate media within said cleaning means and permits controlled exit of said excess biomass from said cleaning means and said reactor while maintaining cleaned media within said reactor,

wherein said internal particulate media cleaning means comprises:

at least one cylindrical screen having a longitudinal passage therethrough,

said screen being respectively engaged to an inner periphery of said reactor above and below an outlet to said effluent line by gaskets fixed on opposite ends of said screen, and

air delivery means extending into said longitudinal passage for delivery of air to produce turbulence in a mixture of said waste water and said particulate media within said longitudinal passage.

5,487,830

STATIONARY SKIMMING DEVICE FOR A SWIMMING POOL

Daniel B. Huppert, W7641 County Rd. J., Beldenville, Wis. 54003

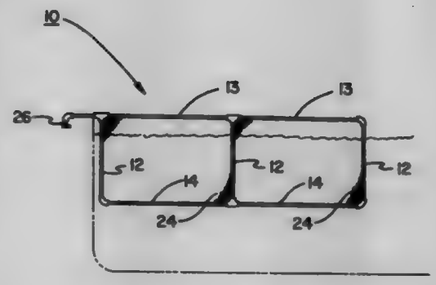
Filed Oct. 11, 1994, Ser. No. 320,277

Int. Cl.[6] B01D *35/02*

U.S. Cl. 210—169 **1 Claim**

1. A new and improved stationary skimming device for a swimming pool comprising, in combination:

seven tubular frame pipes and one tubular side pipe, each pipe being fabricated of plastic and formed in a hollow generally cylindrical configuration with two open ends, the open end of each pipe including adjustable coupling means affixed thereabout, each pipe including a plurality of radially positioned



apertures and adjustable coupling devices affixed along its length, the apparatus including three vertically positioned pipes having an upper end and a lower end, the pipes being positioned in horizontal alignment from the edge of a swimming pool outward, the apparatus including two upper horizontal pipes being positioned between the upper ends of the vertically positioned pipes, the apparatus including two lower horizontal pipes being positioned between the lower ends of the vertically positioned pipes, the lower horizontal pipes including a generally L-shaped shelf formed contiguously with the adjustable coupling devices and extending approximately radially therefrom, the apparatus further including a single tubular side pipe having an inboard end and an outboard end, the inboard end being positioned adjacent to the inboard end of the innermost horizontal pipe, the outboard end of the tubular side pipe being positioned adjacent to the upper end of the central vertical pipe, the apparatus being partially submerged in a swimming pool in the operative orientation;

seven tubular connectors being fabricated of plastic and formed in a hollow generally cylindrical configuration with two or more open ends, three elbow connectors being formed in a curved L-shaped configuration with coupling means affixed within their open ends, two three-way connectors being formed in a hollow generally cylindrical configuration with two linearly positioned open ends and a third open end positioned therebetween, a four-way connector being formed in a hollow generally cylindrical configuration with four open ends, a two-way connector being formed in a hollow generally cylindrical linear configuration with two open ends, the connectors coupling two or more pipes therein and permitting easy assembly and disassembly of the apparatus;

two screens being formed in a generally rectangular configuration, each screen being comprised of a plurality of vertical and horizontally positioned synthetic fibers, the fibers forming a grid configuration with a plurality of generally rectangular shaped holes extending therethrough, the edges of each screen being positioned within the adjustable coupling means along the length of each horizontal and vertical pipe, each screen extending between the horizontal and vertical pipes with the middle vertical pipe separating the two screens therebetween; and

two adjustable hooks each having an inboard region, an outboard region, and a central region therebetween, the inboard region having a generally cylindrical shaped sleeve extending therefrom, the sleeve having an aperture extending vertically therethrough, a hollow cylindrically shaped adjustment tube with a plurality of vertically positioned apertures extending therethrough being positioned within the sleeve, a lock pin formed in a solid generally L-shaped configuration being positioned through the sleeve and adjustment tube with the desired apertures in vertical alignment, the outboard end of the adjustable hook having a generally L-shaped configuration, one end positioned in the central region with the other end positioned under the ledge of a swimming pool, the central region being formed as a hollow cylindrically shaped member contoured into an L-shaped configuration, the central region coupling the inboard and outboard regions, one adjustment hook being coupled to a three-way connector at the inboard end of the vertical pipe, the second adjustment hook

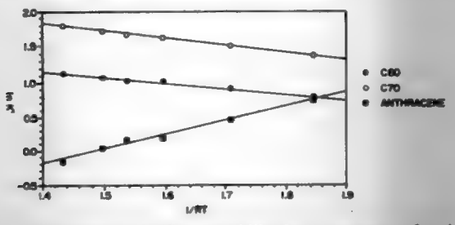
being coupled to the free end of the tubular side pipe, the second hook and side pipe constructed to help stabilize the apparatus as water flows through the screens.

5,487,831

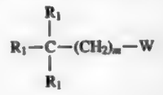
RECOGNITION AND SEPARATION OF CARBON CLUSTERS

William H. Pirkle, Champaign, and Christopher J. Welch, Northbrook, both of Ill., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

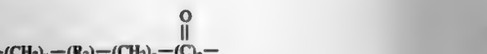
Continuation of Ser. No. 874,791, Apr. 27, 1992, Pat. No. 5,338,529. This application Mar. 23, 1994, Ser. No. 216,758
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—198.2 **29 Claims**

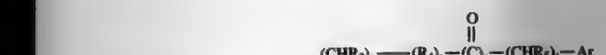


1. A chiral selector having immobilized on a support or forming part of a mobile phase compound having the formula:



wherein R_1 is





wherein

R_2 is O, S or NR_{12} wherein R_{12} is independently hydrogen or P═O with the proviso that when R_{12} is P═O, then only one such group is present and all R_2's are additionally bonded to R_{12};

R_4 is independently O, S or NH,

R_3 and R_5 are each independently hydrogen or lower alkyl,

n and o are each independently zero, 1, 2 or 3,

p, q, r, s and t are each independently zero or 1,

Ar is a monocyclic or ortho-fused polycyclic aromatic moiety having up to 10 carbon atoms, either of which may be unsubstituted or substituted with one or more lower alkyl, NO_2, $N(R_6)_3^+$, CN, $COOR_7$, SO_3H, COR_8 and OR_9 wherein R_6, R_7, R_8 and R_9 are each independently hydrogen or lower alkyl;

W is H or $CH{=}CH_2$; and

m is 1 to 10.

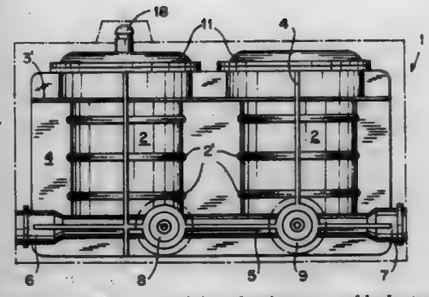
5,487,832

FILTER DESIGN

Dacio M. De Souza, Sao Paulo, Brazil, assignor to Brasfilter Industria E Comercio Ltd., Sao Paulo, Brazil

Filed Mar. 29, 1994, Ser. No. 219,811
Int. Cl.[6] B01D *35/30;35/34*
U.S. Cl. 210—232 **5 Claims**

1. A filter apparatus, comprising



a machine-made, cast or injected unitary, monoblock structure including

first and second hollow body filter housings, each of said housings having a substantially cylindrical shape and each of said first and second housings containing a filter element therein,

support means for supporting said first and second filter housings in said structure,

an inlet nozzle, an outlet nozzle, and nozzles for retro-cleaning and purification,

duct means for enabling fluid communication between said first filter housing, said second filter housing, said inlet nozzle, said outlet nozzle, and said nozzles for retro-cleaning and purification, and

a vertical duct arranged in each of said filter housings, said vertical ducts being coupled to said duct means, and

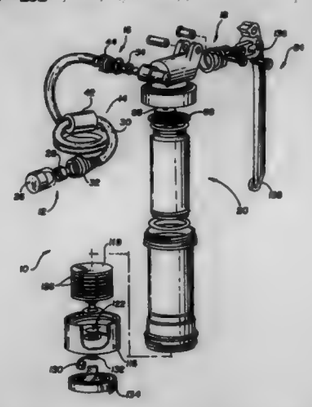
lids for covering said filter housings, said lids being machine-made, cast or injected unitary, monoblock structures.

5,487,833

WATER FILTER WITH ADJUSTABLE INLET HOSE ASSEMBLY

James F. Fife; Daniel J. Vorhis; Kenneth D. Laughlen, and Nancy L. Dienes, all of Seattle, Wash., assignors to Mountain Safety Research (MSR), Seattle, Wash.

Continuation of Ser. No. 108,442, Aug. 18, 1993, Pat. No. 5,330,640, which is a division of Ser. No. 732,975, Jul. 19, 1991, Pat. No. 5,266,196. This application Jul. 15, 1994, Ser. No. 275,800
The portion of the term of this patent subsequent to Nov. 3, 2010, has been disclaimed.
Int. Cl.[6] B01D *27/08*
U.S. Cl. 210—232 **22 Claims**



1. An inlet assembly in combination with a portable water filter, comprising:

an inlet conduit having a first end and a second end, said first end being connected to a water filter, said second end being adapted to be placed in water to be filtered;

a weight coupled to a second end of said inlet conduit, the weight being adapted to maintain the second end below the surface of the water; and

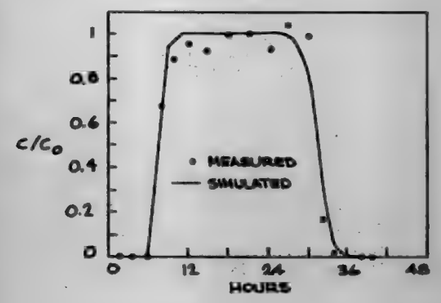
at least one float slidably coupled to the inlet conduit at a position downstream of the second end, said float maintaining the second end off the bottom of the water source, said float being slidably positioned such that a distance between said float and said second end can be varied, thereby positioning said second end at a preferred position between the top surface of the water and the bottom of the water source from which the water is to be drawn into the conduit.

5,487,834

METHODS FOR MICROBIAL FILTRATION OF FLUIDS

Margaret L. Carman, San Ramon; Kenneth J. Jackson, San Leandro; Richard B. Knapp, Danville; John P. Knezovich, Stockton; Nilesh N. Shah, and Robert T. Taylor, both of Livermore, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Feb. 9, 1993, Ser. No. 15,237
Int. Cl.[6] C02F *3/34*
U.S. Cl. 210—606 **43 Claims**



1. A method for purifying subsurface groundwater to remove certain enzymatically degradable contaminants therefrom, comprising the sequential step of:

(A) providing a microorganism capable of producing an enzyme which allows the intact resting-state cells to degrade the contaminants;

(B) growing the microorganisms under conditions which increase the amount and intracellular longevity of the enzyme, to produce an enzyme-enriched intracellular enzyme longevity-enhanced microorganism composition; and

(C) contacting the subsurface groundwater with the enzyme-enriched, intracellular enzyme longevity-enhanced microorganism composition in a resting state;

wherein the microorganism composition having increased whole-cell contaminant-degrading activity is prepared by the process comprising:

(a) providing a microorganism capable of producing an enzyme which allows the microorganism in a resting state to enzymatically degrade organic materials;

(b) providing a cell culture medium by modifying Higgin's minimal nitrate salts medium by omitting $CuSO_4.5H_2O$ therefrom and adding approximately 2× $FeSO_4.7H_2O$ and approximately 2× $NaNO_3$ thereto;

(c) batch cultivating said microorganism in said cell culture medium in a stirred bioreactor at a pH in the range of about 6.8 to 7.2 in an atmosphere containing air, methane and CO_2, to increase the amount of said enzyme produced by the microorganism; and

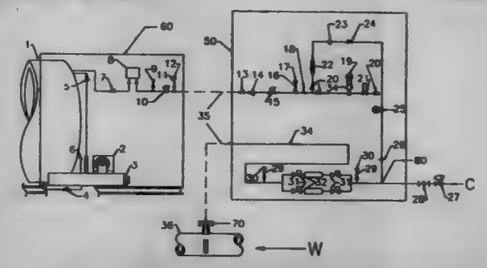
(d) harvesting the enzyme-enriched microorganism composition provided in step (c).

5,487,835

PRESSURIZED SOLUTION FEED SYSTEM FOR PH CONTROL

Tommy J. Shane, Loganville, Ga., assignor to Tomco$_2$ Equipment Co., Loganville, Ga.

Filed Jan. 14, 1994, Ser. No. 182,766
Int. Cl.[6] C02F *1/66*
U.S. Cl. 210—74.9 **7 Claims**



1. A continuous-flow method for introducing a pressurized solution feed into a liquid stream flowing through a pipe for controlling the pH of the liquid stream, comprising the steps of:

a. providing a gas comprising carbon dioxide at a first pressure between about 30 and 300 psig;

b. providing a first liquid comprising water at a second pressure which is a minimum of 50 psig;

c. mixing said gas with said first liquid to form a supersaturated carbon dioxide-water solution at a third pressure and having a first pH;

d. providing said liquid stream comprising a second liquid at a pressure less than said first, second and third pressures and having a second pH greater than said first pH;

e. maintaining said solution at said third pressure until introduced into said liquid stream; and

f. introducing said solution continuously into said liquid stream, releasing excess carbon dioxide from said solution into said liquid stream, to reduce the pH of said liquid stream.

5,487,836

METHOD OF CLEANING A SINTERED POWDERED METAL FILTER

Charles M. Mason, Clyde, and Ted L. Sutton, Enka, both of N.C., assignors to BASF Corporation, Mt. Olive, N.J.

Continuation of Ser. No. 81,575, Jun. 23, 1993, abandoned. This application Jan. 11, 1995, Ser. No. 371,495
Int. Cl.[6] B01D *29/62*
U.S. Cl. 210—791 **24 Claims**



14. A method of cleaning polymer residue from a filter element contaminated by the same from filtration of a polymer melt flow, said method comprising the steps of:

(a) pyrolyzing the polymer residue-contaminated filter element within a chamber heated to a temperature within the range of from about 400° to about 600° C. and for a time sufficient to pyrolyze substantially all of the polymer residue while simultaneously flushing the chamber with steam to prevent combustion of the polymer residue;

b) treating the pyrolyzed filter element obtained from step (a) with a solvent; and

(c) back-flushing the filter element with a pressurized fluid stream by passing the fluid stream through the filter element in a direction opposite to the polymer melt flow therethrough.

5,487,837

GREASE COMPOSITION FOR CONSTANT VELOCITY JOINT

Takahiro Ozaki; Tomoo Munakata; Fumio Goto, and Tetsuo Tsuchiya, all of Tokyo, Japan, assignors to Showa Shell Sekiyu K. K., Tokyo, Japan

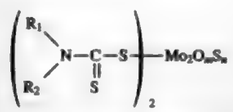
Filed Dec. 29, 1994, Ser. No. 366,119

Claims priority, application Japan, Dec. 29, 1993, 5-353700

Int. Cl.[6] C10M *141/02;141/06*

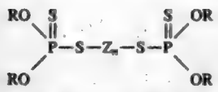
U.S. Cl. 252—25 **1 Claim**

1. A grease composition consisting essentially of a grease containing, in a base oil thereof, from 2 to 40% by weight, based on the total composition, of tricalcium phosphate $Ca_3(PO_4)_2$, the grease further containing (A) from 0.5 to 10% by weight, based on the total composition, of a molybdenum dialkyldithiocarbamate sulfide represented by formula (I):



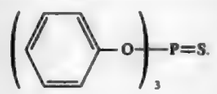
(I)

wherein R_1 and R_2 each represent an alkyl group having 1 to 24 carbon atoms; m represents an integer of 0 to 3; and n represents an integer of 1 to 4; provided that the sum of m and n is 4;
and (B) from 0.1 to 5% by weight, based on the total composition, of at least one of (B-1) a zinc dialkyldithiophosphate represented by formula (II):



(II)

wherein R represents a primary or secondary alkyl group; and (B-2) triphenyl phosphorothionate represented by formula (III)



(III)

5,487,838

REACTION PRODUCTS OF A BORON COMPOUND AND A PHOSPHOLIPID, AND LUBRICANT AND AQUEOUS FLUIDS CONTAINING SAME

Carmen V. Luciani, Wickliffe, and Syed Q. A. Rizvi, Painesville, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 687,271, Apr. 18, 1991, abandoned. This application Mar. 28, 1994, Ser. No. 218,860

Int. Cl.[6] C10M *139/00;* C07F *9/02*

U.S. Cl. 252—49.9 **38 Claims**

1. A composition, prepared by reacting a combination consisting essentially of

(A) at least one boron compound selected from the group consisting of boron oxide, boron oxide hydrate, boron trioxide, boron trifluoride, boron tribromide, boron trichloride, boron acids, boric acid, tetraboric acid, metaboric acid, boron anhydride, boron amide, esters of boron acids and complexes of boron trihalide and

(B) at least one phospholipid.

5,487,839

GREASE COMPOSITIONS

James N. Vinci, Mayfield Heights; Syed Q. A. Rizvi, Painesville, and Carmen V. Luciani, Wickliffe, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 975,362, Nov. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 687,271, Apr. 18, 1991, abandoned. This application Aug. 18, 1994, Ser. No. 292,552

Int. Cl.[6] C10M *139/00;137/00*

U.S. Cl. 252—49.9 **36 Claims**

1. An improved grease composition comprising a major amount of an oil based simple metal soap thickened base grease and a minor amount of at least one phosphorus and boron containing composition, said phosphorus and boron containing composition prepared by reacting a combination of (A) at least one boron compound selected from the group consisting of boron oxide, boron oxide hydrate, boron trioxide, boron trifluoride, boron tribromide, boron trichloride, boron acids, boric acid, tetraboric acid, metaboric acid, boron anhydride, boron amide, esters of boron acids and complexes of boron trihalide and (B) at least one phospholipid.

5,487,840

MAGNETIC FLUID COMPOSITION

Toshikazu Yabe; Atsuhiro Yamamoto, both of Saitama; Atsushi Yokouchi, Kanagawa, and Kunio Esumi, Chiba, all of, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Jan. 5, 1994, Ser. No. 177,471

Claims priority, application Japan, Jan. 20, 1993, 5-007729

Int. Cl.[6] H01F *1/44*

U.S. Cl. 252—62.51 **2 Claims**

1. A magnetic fluid composition comprising a low-volatile organic solvent as a carrier having dispersed therein ferromagnetic fine particles coated with a surface active agent having a lipophilic group having affinity to said low-volatile organic solvent, and a thixotropy-imparting agent, wherein the amount of ferromagnetic fine particles is 10 to 40% by weight based on the magnetic fluid composition,

wherein said thixotropy-imparting agent is selected from the group consisting of at least one of organic modified bentonite, lipophilic smectite, organic surface-modified precipitated calcium carbonate of calcite structure, hydrogenated castor oil, a fatty acid amide, and a swelling mica-organic substance complex.

5,487,841

MAGNETIC COMPOSITIONS WITH SURFACE ADDITIVES

Eugene F. Young, Rochester, and Dennis J. O'Keefe, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 299,875, Sep. 1, 1994. This application Jun. 5, 1995, Ser. No. 464,920

Int. Cl.[6] C04B *35/47;* C01G *49/06*

U.S. Cl. 252—62.59 **2 Claims**

2. A composition comprised consisting essentially of resin particles, magnetite treated, or coated with a phosphate titanium coupling component, wax component, a charge additive, and surface additives comprised of a mixture of colloidal silica and strontium titanate, and wherein said magnetite particles are present in an amount of from about 15 to about 50 weight percent.

5,487,842

METAL EXTRACTANT SOLUTION COMPRISING N-ETHYL HYDROXAMIC ACID CHELANTS AND KEROSENE SOLVENT

Bruce F. Monzyk, Maryland Heights, Mo., assignor to Met-Tech Systems Limited, Burlington, Canada

Continuation-in-part of Ser. No. 890,882, May 29, 1992, Pat. No. 5,328,626, which is a continuation-in-part of Ser. No. 732,989, Jul. 19, 1991, Pat. No. 5,174,917. This application Jul. 11, 1994, Ser. No. 272,834

The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.

Int. Cl.[6] C09K *3/00;* C22B *3/00;* C21B *3/00*

U.S. Cl. 252—60 **3 Claims**

1. An organic metal extractant solution comprising a kerosene solvent and at least about 5 weight percent N-ethyl alkanohydroxamic acid of the formula $RC(O)N(OH)CH_2CH_3$, wherein R is a straight chain alkyl group of 8 to 10 carbon atoms or a branched alkyl group of 8 to 30 carbon atoms, provided said alkyl group is not a cycloalkyl group and wherein said solution has a kinematic viscosity at 23° C. of less than 20 mm^2/s.

5,487,843

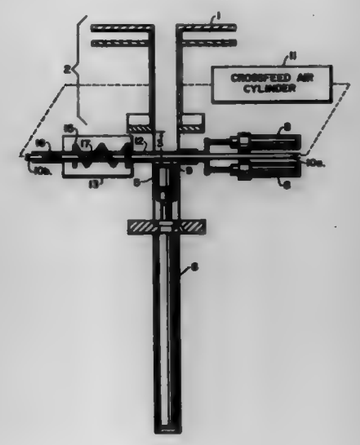
PROCESS FOR ACCURATELY CONTROLLING MOISTURE LEVELS OF AQUEOUS SURFACTANT COMPOSITIONS DURING ON LINE PROCESSING

Laurie Coyle, North Arlington; Kevin M. Finucane, Saddle Brook; Alan P. Greene, Flemington, all of N.J., and Robert E. Moran, Wappingers Falls, N.Y., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Sep. 8, 1994, Ser. No. 303,119

Int. Cl.[6] C11D *1/00;11/00*

U.S. Cl. 252—89.1 **3 Claims**



1. A process for preparing an aqueous surfactant composition or slurry comprising:

(i) mixing components comprising

(a) 5% to 95% by wt. of a surfactant selected from the group consisting of anionic surfactants, nonionic surfactants, cationic surfactants, amphoteric and zwitterionic surfactants and mixtures thereof; and

(b) 5% to 95% by wt. water;

(ii) heating and/or mixing the component mixture;

(iii) removing a sample amount of the component mixture from a mixer or container while holding or processing the mixture, which sample amount is to be sampled by a device containing a nuclear magnetic resonance (NMR) sensor;

(iv) submitting the sample to an NMR sensor and measuring on-line NMR parameters of the sample and comparing the parameters to a preset calibration curve to obtain desired moisture levels; and repeating the NMR evaluation until the desired moisture level is obtained

(v) releasing the mixture for further processing upon reaching desired moisture level.

5,487,844

FLOCCULATING AGENT FOR THE PURIFICATION OF FLUIDS

Sanai Fujita, nO. 2256-13 kITATOKOROZAWA-CHO, Tokorozawa-Shi, Saitama-Ken, Japan

Division of Ser. No. 88,160, Jul. 7, 1993, Pat. No. 5,397,499, which is a division of Ser. No. 756,809, Sep. 9, 1991, Pat. No. 5,254,285, which is a continuation of Ser. No. 276,265, Nov. 25, 1988, Pat. No. 5,047,255. This application Jan. 17, 1995, Ser. No. 373,004

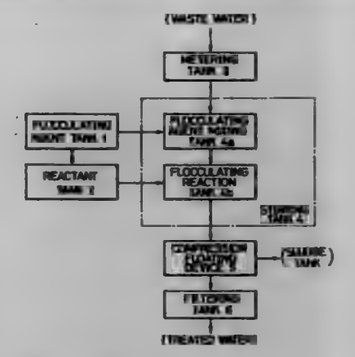
Claims priority, application Japan, Apr. 28, 1988, 63-105579; Apr. 28, 1988, 63-105580

The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.

Int. Cl.[6] C02F *5/00;1/52*

U.S. Cl. 252—175 **5 Claims**

1. A flocculating agent for purification of fluids, said flocculating



agent comprising a mixture of:

a first liquid and a second liquid;

said first liquid comprising calcined animal bone dissolved in at least one acid for dissolving said calcined animal bone, said at least one acid of said first liquid consists essentially of at least one member of the group consisting of:

hydrochloric acid and sulfuric acid;

said second liquid comprising at least one metal dissolved in at least one acid for dissolving said at least one metal, said at least one metal consists essentially of at least one member of the group consisting of:

copper, iron, and zinc, and said at least one acid of said second liquid consists essentially of at least one member of the group consisting of:

hydrochloric acid and sulfuric acid; and

said calcined animal bone and said at least one metal being present in quantities sufficient to promote coagulation and solidification of organic substances present in a liquid containing said mixture.

5,487,845

FLUOROBENZENE DERIVATIVES AND LIQUID-CRYSTALLINE MEDIUM

Volker Reiffenrath, Rossdorf; Hans A. Kurmeier, Seeheim-Jugenheim; Eike Poetsch, Mühltal; Herbert Plach, Darmstadt; Ulrich Finkenzeller, Plankstadt; Ekkehard Bartmann, Erzhausen; Joachim Krause, Dieburg, and Bernhard Scheuble, Seeheim-Jugenheim, all of, Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

PCT No. PCT/EP90/01471, § 371 Date Nov. 19, 1990, § 102(e) Date Nov. 19, 1990, PCT Pub. No. WO91/03449, PCT Pub. Date Mar. 21, 1991

Continuation of Ser. No. 623,385, Nov. 19, 1990, abandoned. This PCT application Sep. 3, 1990, Ser. No. 229,842

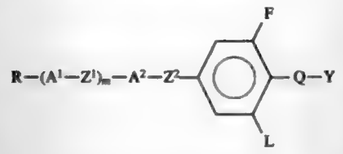
Claims priority, application Germany, Sep. 6, 1989, 39 29 525.7; Sep. 6, 1989, 39 29 526.5; Sep. 7, 1989, 39 29 764.0; Mar. 28, 1990, 40 09 907.5

The portion of the term of this patent subsequent to Oct. 10, 2012, has been disclaimed.

Int. Cl.[6] C09K *19/30;19/12*

U.S. Cl. 252—299.63 **36 Claims**

1. A liquid-crystals medium comprising at least two liquid-crystalline components, wherein at least one component is a fluorobenzene compound of the formula I,



in which

R is H or allyl or 1 to 15 carbon atoms which is unsubstituted or monosubstituted by CN or CF_3 and in which one or more CH_2 groups can be replaced, in each case independently of one another, by



in such a manner that O atoms are not linked directly to one another,

A^1 and A^2, in each case independently of one another, are a

(a) trans-1,4-cyclohexylene in which one or more non-adjacent CH_2 groups can also be replaced by —O— and/or —S—,

(b) 1,4-phenylene in which one or two CH groups can also be replaced by N,

(c) 1,4-cyclohexenylene, 1,4-bicyclo(2.2.2)octylene, piperidine-1,4-diyl, naphthalene-2,6-diyl, decahydronaphthalene-2,6-diyl or 1,2,3,4-tetrahydronaphthalene- 2,6-diyl,

wherein only one of A^1 and A^2 is Phe in which Phe is 1,4-phenylene which is unsubstituted or mono- or disubstituted by F or Cn, it being possible for the radicals (a) and (b) to be substituted by CN or fluorine,

Z^1 and Z^2, in each case independently of one another, are —CO—O—, —O—CO—, —CH_2O—, —OCH_2—, —CH_2CH_2—, —CH=CH—, —C≡C— or a single bond, one of Z^1 and Z^2 can also be —$(CH_2)_4$— or —CH=CH—CH_2CH_2—,

L is F,

m is 0, 1 or 2,

Y is F or Cl, and

Q is a single bond; and

wherein said medium contains 45–90 wt. % of compounds of formula I.

5,487,846

RUST INHIBITOR

Shigeru Otomo, Abiko, Japan, assignor to Union Chemical Co., Ltd., Tokorozawa, Japan

Continuation of Ser. No. 46,305, Apr. 15, 1993, abandoned. This application Oct. 4, 1994, Ser. No. 317,778

Claims priority, application Japan, May 15, 1992, 4-148837

Int. Cl.[6] C23F *11/00*

U.S. Cl. 252—389.61 **5 Claims**

1. A rust inhibitor composition comprising calcium 3-pentafluoroethyl-6-hydroxybenzoate.

5,487,847

PROCESS FOR THE PREPARATION OF CONDUCTIVE POLYMERIC PARTICLES WITH LINEAR AND CROSSLINKED PORTIONS

Hadi K. Mahabadi, Toronto; Denise Y. Wright, Calgary; Michael F. Cunningham, Georgetown, all of, Canada, and John A. Creatura, Ontario, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 11, 1994, Ser. No. 225,855

Int. Cl.[6] G03G *5/00;9/10;* **C08F** *2/14;2/32*

U.S. Cl. 252—511 **30 Claims**

1. A process for the preparation of conductive polymeric particles with linear and crosslinked portions consisting essentially of:

a) mixing a (co)monomer with at least one conductive filler, solvent, at least one polymerization initiator in the amount of about 0.1 to about 20 weight percent of said (co)monomer, and a chain transfer component in the amount of about 0.01 to about 1 weight percent of said (co)monomer; effecting solution polymerization by heating until from about 80 to about 100 weight percent of the (co)monomer has been polymerized; drying the mixture by removing the solvent to yield an intimate blend of polymer with conductive filler; and

b) dispersing the aforementioned blend of polymer and conductive filler in at least one additional (co)monomer with additional polymerization initiator in an amount of from about 0.1 to about 20 weight percent of said additional (co)monomer, a crosslinking agent in the amount of about 0.1 to about 5 weight percent of said additional (co)monomer, and an additional chain transfer component in an amount of from about 0.01 to about 1 weight percent of said additional (co)monomer to form an organic phase; dispersing the resulting organic phase mixture in water containing a stabilizing component in the amount of about 0.1 to about 5 weight percent of said water to obtain a suspension of particles with an average volume diameter of from about 0.05 to about 5 microns in water; polymerizing the resulting suspension by heating; and subsequently optionally washing and drying the polymeric product to produce conductive polymer particles;

wherein the (co)monomer, polymerization initiator, and chain transfer component in a) is the same as or different from the additional (co)monomer, polymerization initiator, and chain transfer component in b), respectively; and

wherein the total amount of conductive filler is from about 1 to about 50 weight percent, and the total amount of polymer is from about 50 to about 99 weight percent.

5,487,848

PREPARATION OF DIFUNCTIONAL INITIATORS FOR ANIONIC POLYMERIZATION

Timothy J. Fuller, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 25, 1994, Ser. No. 279,610

Int. Cl.[6] C07F *1/02;1/04;1/06*

U.S. Cl. 260—665 R **11 Claims**

1. A process comprising dimerizing a 1-halogen-3,3-diphenylpropane compound to form a 1,1,6,6-tetraphenylhexane compound.

4. A process comprising reacting a 3,3-diphenyl-1-propanol compound with a 1-halogen-3,3-diphenylpropane compound to form a bis(3,3-diphenyl-1-propyl) ether compound, and reacting the bis(3,3-diphenyl-1-propyl) ether compound with an organometallic compound or an alkali metal to form a second polymerization initiator compound.

6. A process comprising reacting a 1-halogen-3,3-diphenylpropane compound with allyl halogen to form a 6,6-diphenyl-1-hexene compound, and reacting the 6,6-diphenyl-1-hexene compound with an organometallic compound to form a third polymerization initiator compound.

5,487,849

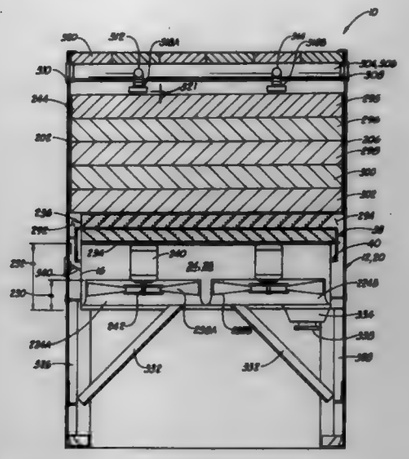
PULTRUDED COOLING TOWER CONSTRUCTION

Harold D. Curtis, Chickasha, Okla., assignor to Tower Tech, Inc., Chickasha, Okla.

Filed Dec. 3, 1993, Ser. No. 161,069

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—30 **19 Claims**



10. A cooling tower, comprising:

a combined basin and supporting frame assembly including four hollow outer beams, said outer beams being structurally connected together at their ends to form a four-sided rectangular supporting frame, said outer beams each having an enclosed interior, said interiors being communicated together to define a basin for collecting liquid, at least one basin inlet defined in said supporting frame assembly, said outer beams defining a generally rectangular plenum space laterally surrounded by said four outer beams;

four walls extending vertically upward from and supported from said four outer beams;

a first air supply duct extending upward into said plenum space, said first air supply duct having an air intake opening defined in a bottom thereof and an air discharge outlet opening into said plenum space;

a first vertical axis fan located in said first air supply duct;

a drainage collection system supported on said supporting frame assembly above said plenum space, said drainage collection system including at least a first layer having a plurality of parallel elongated collection plates having a length, said collection plates being sloped and overlapping in a direction transverse to said length of said collection plates, said drainage collection plates draining through said at least one basin inlet into said basin;

a body of fill material located directly above said drainage collection system and within said four walls; and

a liquid distribution system located above said body of fill material.

5,487,850

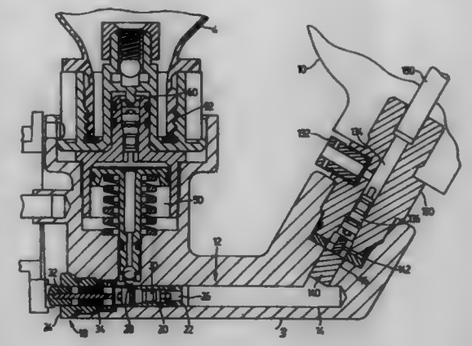
GAS CONTROL VALVE

Richard D. Vanderploeg, 1100 Burloak Drive, Burlington, Ontario, Canada

Filed Aug. 24, 1993, Ser. No. 110,923

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—64.1 **18 Claims**



1. A device for activating the release of pressurized gas through a passage, including:

(a) valve means disposed within said passage, said valve means having an inlet and an outlet, said valve means moveable between an open position to permit communication of said gas with said passage, and said inlet and outlet, and a closed position to stop communication of said gas between said inlet and outlet;

(b) piston means for activating said valve means between said open and closed position where said piston is spaced from said valve;

(c) support means associated with said piston means for slidably supporting said piston means between said open and closed positions.

5,487,851

COMPOSITE GUN PROPELLANT PROCESSING TECHNIQUE

David R. Dillehay; David W. Turner, both of Marshall; Horace L. Wingfield, III, Longview, all of Tex., and James A. Blackwell, Shreveport, La., assignors to Thiokol Corporation, Ogden, Utah

Filed Dec. 20, 1993, Ser. No. 170,391

Int. Cl.[6] C06B *21/00*

U.S. Cl. 264—3.3 **42 Claims**

1. A method of making composite gun propellant comprising the steps of:

(a) introducing a lacquer solution into a twin-screw extruder, said lacquer solution containing a quantity of cellulose ester binder and nitrocellulose;

(b) adding a quantity of dry oxidizer to the twin-screw extruder, said oxidizer having a weight-mean-diameter particle size of less than about 5 microns; and

(c) extruding the composite gun propellant with the twin-screw extruder, said extruding step including the steps of mixing the dry oxidizer and the lacquer solution and removing excess solvent from the oxidizer/lacquer solution mixture.

5,487,852

LASER-MACHINING POLYMERS

Michael J. Ludden, Swindon; Richard J. Penneck, Lechlade, and Nicholas J. G. Smith, Cricklade, all of, England, assignors to Raychem Limited, Swindon, England

PCT No. PCT/GB89/00109, § 371 Date Feb. 26, 1991, § 102(e) Date Feb. 26, 1991, PCT Pub. No. WO89/07337, PCT Pub. Date Aug. 10, 1989

PCT Filed Feb. 3, 1989, Ser. No. 548,962

Claims priority, application United Kingdom, Feb. 5, 1988, 88025685; Dec. 2, 1988, 8828245

Int. Cl.[6] B23K *26/00*

U.S. Cl. 264—400 26 Claims

1. A method of making an article of polymeric material comprising laser-ablation-machining a body of polymeric material at a laser wavelength, power density, and energy fluence sufficient to remove portions of the body, the body comprising low to zero-charring material selected from the group consisting of:

(a) polyamide material which is aromatic or amorphous or both;

(b) polymer having in its polymer backbone aromatic rings and aliphatic chains, the polymer being selected from the group consisting of polyetheresters and polyimides; and

(c) polyester material other than polyetheresters having in its polymer backbone aromatic rings, ester carboxylate groups and aliphatic chains between the carboxylate groups, which chains having at least 4 carbon atoms.

5,487,853

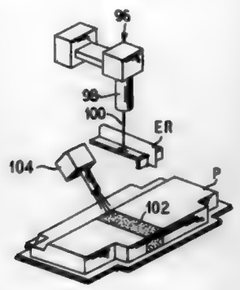
ENERGETIC STITCHING FOR COMPLEX PREFORMS

Daniel T. Buckley, Shrewsbury, Vt., assignor to The C. A. Lawton Company, DePere, Wis.

Continuation-in-part of Ser. No. 22,084, Feb. 25, 1993, Pat. No. 5,364,258, which is a division of Ser. No. 552,253, Jul. 12, 1990, Pat. No. 5,217,656. This application Feb. 14, 1994, Ser. No. 195,175

Int. Cl.[6] B29C *35/08;70/84*

U.S. Cl. 264—496 19 Claims



1. A method of making complex preforms by energetic stitching comprising the steps:

positioning a preform having a preform attachment surface;

positioning a member having a member surface to be placed in surface contact with the preform attachment surface;

applying electromagnetic energy curable binder between said surfaces;

bringing said surfaces together in surface contact; and applying electromagnetic energy to said binder in a manner such that the preform and member will be attached over an area less than the full surfaces where they are in contact.

5,487,854

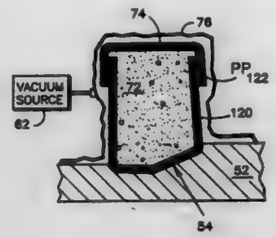
TWO-STATE CO-CURE METHOD FOR FABRICATING A COMPOSITE ARTICLE

Peter B. Leoni, Bethany, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 8, 1994, Ser. No. 302,288

Int. Cl.[6] B29C *44/06*

U.S. Cl. 264—46.4 5 Claims



1. A two-stage co-cure method for fabricating a composite article having a box-beam cross-sectional configuration, comprising the steps of:

setting up a molding assembly that defines an outer mold line surface of an outer shell of the composite article;

laying up prepreg plies that form the outer shell in the molding assembly;

vacuum-bagging the layed-up molding assembly;

subjecting the vacuum-bagged molding assembly to elevated temperature and pressure to cure the layed-up prepreg plies to form the outer shell of the composite article;

de-bagging the vacuum-bagged molding assembly;

reconfiguring the molding assembly as required so that the reconfigured molding assembly and the outer shell in combination define a foam injection cavity;

securing cover plates in combination with the reconfigured molding assembly to close the foam injection cavity;

injecting foam into the foam injection cavity to form an outer shell, cured foam core stabilized combination that defines an inner mold line surface of an inner cap;

removing the cover plates from the reconfigured molding assembly and disassembling the reconfigured molding assembly to expose the outer shell, cured foam core stabilized combination;

applying film adhesive to the exposed outer shell, cured foam core stabilized combination in the disassembled molding assembly;

laying up prepreg plies that form the inner cap of the composite article onto the outer shell, cured foam core stabilized combination in the disassembled molding assembly;

vacuum-bagging the prepreg plies layed up on the outer shell, cured foam core stabilized combination in the disassembled molding assembly; and

subjecting the vacuum-bagged disassembled molding assembly to elevated temperature and pressure to cure the layed-up prepreg plies to form the inner cap of the composite article and to concomitantly cause the applied film adhesive to fuse wherein the inner cap and the outer shell are adhesively bonded in combination to form the composite article.

5,487,855

POLYMERIC BINDERS FOR ENHANCING GREEN STRENGTH OF PRESSED CERAMICS

Kevin J. Moeggenborg, Aurora, and Peter E. Reed, Plainfield, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Sep. 16, 1994, Ser. No. 308,053

Int. Cl.[6] C04B *35/64*

U.S. Cl. 264—63 15 Claims

1. A method for preparing a ceramic material, which comprises:

mixing a ceramic powder with an aqueous solution containing a substantially hydrolyzed copolymer of an ester and an amide to produce a slurry, said ester being of the formula:



wherein R_1 is an unsaturated acyclic hydrocarbon group having about 2 to about 4 carbon atoms, and R_2 is an alkyl group having 1 to about 4 carbon atoms, and said amide being of the formula:



wherein R_3 is hydrogen or an alkyl group having 1 to about 4 carbon atoms, R_4 is an unsaturated acyclic hydrocarbon group having about 2 to about 4 carbon atoms, and R_5 is hydrogen or an alkyl group having 1 to about 4 carbon atoms:

drying the slurry by a process selected from the group consisting of filter pressing, fluidized bed spray drying and tape casting to produce particles which include said copolymer; compacting the particles by a process selected from the group consisting of dry pressing, extrusion, jiggering and slip casting to produce an aggregate structure; and heating the aggregate structure to produce a fired ceramic material.

5,487,856

PROCESS FOR THE MANUFACTURE OF A POST-HEAT SET DYED FABRIC OF POLYAMIDE FIBERS HAVING IMPROVED DYE WASHFASTNESS AND HEAT STABILITY

Anil W. Saraf, Asheville, N.C., assignor to BASF Corporation, Parsippany, N.J.

Continuation of Ser. No. 107,392, Aug. 16, 1993, abandoned. This application Oct. 11, 1994, Ser. No. 321,472

Int. Cl.[6] D01F *1/10;6/60*

U.S. Cl. 264—78 19 Claims

1. A process for the manufacture of a post-heat set dyed fabric consisting essentially of polyamide fibers having improved dye washfastness and heat stability, which comprises:

(a) forming a homogeneous spinnable polyamide mixture by melt-mixing a fiber-forming polyamide having a relative viscosity of between about 2.0 to about 3.2 with

(i) an amine end group-increasing additive selected from the group consisting of water, alcohols, amines and mixtures thereof, said additive being present in said mixture in an amount between about 0.05 to about 5% by weight, based on the total weight of the polyamide fiber, sufficient to increase the amine end group content of said polyamide fiber to between about 15 to about 70 meq/kg; and

(ii) a heat stabilizer selected from the group consisting of phenolic compounds, phosphites containing aryl groups and mixtures thereof, said heat stabilizer being present in said polyamide fiber in an amount between about 0.025 to about 2% by weight, based on the total weight of the polyamide fiber, sufficient to improve heat stability of the polyamide fiber;

(b) melt-spinning the homogeneous mixture obtained according to step (a) through a spinnerette to form polyamide fibers;

(c) quenching the polyamide fibers;

(d) forming the quenched polyamide fibers into a fabric; and

(e) subjecting the fabric formed according to step (d) to the sequential steps of heat-setting and dyeing, said polyamide fibers of said fabric, when dyed, having improved dye washfastness as determined by a cigar bleed test stain rating of at least 3.5 on color matched samples.

5,487,857

Patent Not Issued For This Number

5,487,858

PROCESS OF MAKING SELF-SUPPORTING WOVEN VASCULAR GRAFT

Peter J. Schmitt, Garnerville, N.Y., assignor to Meadox Medicals, Inc., Oakland, N.J.

Division of Ser. No. 49,230, Apr. 19, 1993, Pat. No. 5,282,848, which is a continuation of Ser. No. 573,932, Aug. 28, 1990, abandoned. This application Jan. 31, 1994, Ser. No. 189,305

Int. Cl.[6] B29C *67/00;* B29D *23/00*

U.S. Cl. 264—103 9 Claims

1. A process for preparing a self-supporting woven vascular graft, comprising:

weaving a plurality of warp yarns with a filling yarn including a stiffening component to provide a woven tubular fabric;

scouring said woven tubular fabric; and

heat setting said woven tubular fabric to set said stiffening component in a generally rounded configuration thereby providing radial rigidity with resiliency to said woven tubular fabric without crimping resulting in a self-supporting woven vascular graft.

5,487,859

PROCESS OF MAKING FINE POLYESTER HOLLOW FILAMENTS

Arun P. Anejs, Greenville; David G. Bennie, Rocky Point; Robert J. Collins, Wilmington; Hans Rudolf E. Frankfort, Kinston; Stephen B. Johnson; Benjamin H. Knox, both of Wilmington, and Elmer E. Most, Jr., Kinston, all of N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 925,042, Aug. 5, 1992, abandoned, Ser. No. 925,041, Aug. 5, 1992, abandoned, and Ser. No. 93,156, Jul. 23, 1993, Pat. No. 5,417,902, which is a continuation-in-part of Ser. No. 926,538, Aug. 5, 1992, abandoned, each , Aug. 5, 0which is a continuation-in-part of Ser. No. 647,381, Jan. 29, 1991, abandoned, and Ser. No. 860,776, Mar. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 647,371, Jan. 29, 1991, abandoned, said Ser. No. 93,156is a continuation-in-part of Ser. No. 5,672, Jan. 19, 1993, Pat. No. 5,288,553, and Ser. No. 15,733, Feb. 10, 1993, Pat. No. 5,250,245, which is a continuation-in-part of Ser. No. 860,776, Feb. 10, 0, Ser. No. 5,672, Feb. 10, 0, and Ser. No. 979,776, Nov. 9, 1992, Pat. No. 5,356,582, said Ser. No. 5,672is a continuation-in-part of Ser. No. 647,381, Nov. 9, 0, Ser. No. 860,776, Nov. 9, 0, and Ser. No. 979,776, Nov. 9, 0, which is a continuation-in-part of Ser. No. 753,529, Sep. 3, 1991, Pat. No. 5,229,060, Ser. No. 753,769, Sep. 3, 1991, Pat. No. 5,261,472, Ser. No. 786,582, Nov. 1, 1991, Pat. No. 5,244,616, Ser. No. 786,583, Nov. 1, 1992, Pat. No. 5,145,623, Ser. No. 786,584, Nov. 1, 1991, Pat. No. 5,223,197, and Ser. No. 786,585, Nov. 1, 1991, Pat. No. 5,223,198, said Ser. No. 786,582Ser. No. 786,583, Nov. 1, 0, Ser. No. 786,584, Nov. 1, 0, and Ser. No. 786,585, Nov. 1, 0, each , Nov. 1, 0is a continuation-in-part of Ser. No. 338,251, Apr. 14, 1989, Pat. No. 5,066,447, which is a continuation-in-part of Ser. No. 53,309, May 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 824,363, Jan. 30, 1986. This application Mar. 16, 1994, Ser. No. 214,717

The portion of the term of this patent subsequent to Oct. 18, 2011, has been disclaimed.

Int. Cl.[6] D01D *5/24;5/253;* D02J *1/08;1/22*

U.S. Cl. 264—103 18 Claims

1. A spin-orientation process for preparing a yarn bundle of fine polyester continuous filaments that are hollow, having one or more longitudinal voids, and being of void content (VC) at least about 10%; wherein said hollow filaments are formed by a melt-spinning

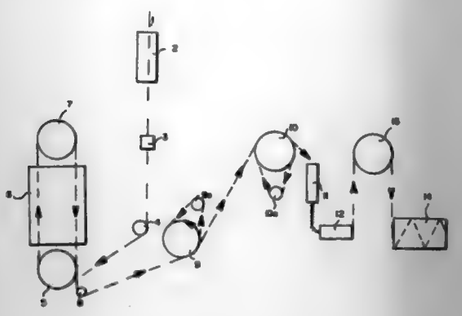
process comprising the steps of: i) melting polyester polymer of about 13 to about 23 LRV and with a zero-shear melting point ($T_M°$) of about 240 to about 265 C., and a glass transition temperature (T_g) of about 40 C. to about 80 C.; (ii) extruding the resulting melted polyester polymer through a plurality of segmented capillaries arranged so as to provide an extrusion void area (EVA) of about 0.025 mm^2 to about 0.45 mm^2, and so that the ratio of EVA to total extrusion area (EA) is about 0.4 to about 0.8, and such that the ratio of EVA to spun filament denier $(dpf)_s$ is about 0.05 to about 0.55; post-coalescing the resulting plurality of polyester melt streams to form uniform hollow filaments; (iii) quenching the hollow filaments using a protective delay shroud of length (L_{DQ}) about 2 cm to about 12 $(dpf)^{1/2}$cm; (iv) converging the quenched hollow filaments into a multi-filament bundle at a distance (L_C) of about 50 cm to about [50+ 90$(dpf)^{1/2}$] cm while applying spin finish; and (v) withdrawing the multi-filament bundle at a withdrawal speed (V_s) in a range of about 2 to about 5 Km/min; such process conditions being selected to provide an as-spun yarn bundle having: a residual elongation of about 40% to about 160%, tenacity-at-7% elongation (T_7) of about 0.5 to about 1.75 g/d, a (1–S/Sm) ratio of at least 0.1 and differential shrinkage (DHS-S) less than about +2%, where S is the boil-off shrinkage, S_m is the maximum shrinkage potential and DHS is the dry heat shrinkage (measured at 180 C.), and a maximum shrinkage tension (ST_{max}) of less than 0.2 g/d at a peak shrinkage tension temperature $T(ST_{max})$ of about 5 to about 30 C. greater than about the polymer glass transition temperature (T_g).

5,487,860

CONTINUOUS PROCESS FOR SPINNING AND DRAWING POLYAMIDE AND APPARATUS THEREOF

George M. Kent, Arden, N.C., and Ardy Armen, Anderson, S.C., assignors to BASF Corporation, Parsippany, N.J.

Continuation of Ser. No. 860,658, Apr. 30, 1992, abandoned. This application Oct. 11, 1994, Ser. No. 321,471
Int. Cl.[6] D01D *10/02*; D01F *6/60*
U.S. Cl. 264—103 31 Claims



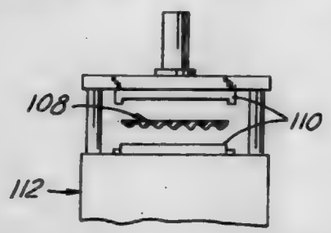
1. A continuous process for spinning and drawing polyamide filaments comprising the steps of:
(a) melting a polyamide and spinning filaments from the molten polyamide through a spinnerette;
(b) quenching the filaments;
(c) applying steam and heat to the filaments in a steam and heat unit by (i) passing the filaments along a looped path over and between a separated pair of godets, (ii) bringing the filaments passing along said looped path into proximity with a steam box positioned at a location between said separated pair of godets, (iii) directing steam from said steam box and onto the filaments in proximity therewith, and (iv) heating at least one of said godets so as to apply heat to the filaments passing thereover; and
(d) drawing the filaments.

5,487,861

METHOD OF MAKING SYNTHETIC COMPOSITE FUEL METERING MEMBRANE

Michael F. Reeder, Cass City, and James E. Van Allen, Kingston, both of Mich., assignors to Walbro Corporation, Cass City, Mich.

Continuation of Ser. No. 116,282, Sep. 3, 1993, abandoned, which is a division of Ser. No. 9,558, Jan. 26, 1993, Pat. No. 5,262,092. This application Feb. 16, 1995, Ser. No. 390,810
Int. Cl.[6] B29B *15/14*; B29C *70/50*
U.S. Cl. 264—134 23 Claims



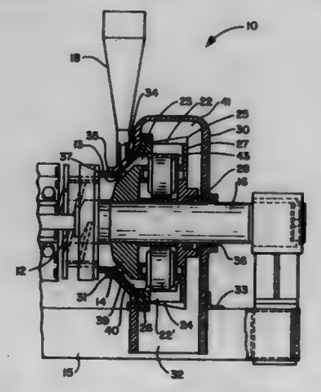
1. A method of making a liquid fuel synthetic composite and flexible carburetor diaphragm comprising the steps of:
providing a sheet of a fabric of warp knitted synthetic fibers having interstices therebetween, and a nominal thickness in the range of about 0.004 to 0.010 of an inch as determined per ASTM procedure D-1777,
tensioning the sheet into a taut condition,
applying a thin layer of an elastomeric polymer to only one side of the taut sheet to produce a coated sheet having a nominal thickness of about 0.012 to 0.018 of an inch,
placing the coated sheet into a mold,
while in the mold applying heat and pressure to the coated sheet to force the elastomeric polymer into the ilnterstices of the fabric, mold only one layer of the sheet to a desired configuration of the diaphragm which in cross section is not planar throughout and fully cure the elastomer to produce a molded diaphragm having a nominal thickness of about 0.007 to 0.010 of an inch, and
removing the molded and cured carburetor diaphragm from the mold.

5,487,862

ANNULAR GAP EXPANDER PELLET FORMER AND PROCESS OF USING SAME

James D. Foresman, Hughesville, Pa., assignor to Andritz Sprout-Bauer, Inc., Muncy, Pa.

Filed May 18, 1994, Ser. No. 245,599
Int. Cl.[6] B29C *47/08*
U.S. Cl. 264—142 29 Claims



1. An annular gap expander with a pellet former, comprising:
a conditioning expander including a compression screw for conditioning feed material and a discharge end in which are situated a compression screw shaft, a first axially adjustable housing coaxially disposed around said compression screw and defining a discharge opening, a rotating member transversely mounted to said screw shaft near said first housing discharge opening thereby defining an annular extrusion gap between the rotating member and the discharge opening;
a second housing having an inlet port coaxially disposed around the discharge opening of said first axially adjustable housing for receiving expanded material from said annular extrusion gap, means for coaxially receiving said screw shaft, and a pellet outlet port;
a pellet die housed within and attached to said second housing, said pellet die being coaxial with said rotating member, and having an interior surface, an exterior surface, and a plurality of die bores extending radially between said surfaces;
a support plate situated in said second housing and rotatable by said screw shaft; and
a plurality of cut-off knives mounted in spaced apart relation on said support plate, said cut-off knives extending over said pellet die exterior surface to cut pellets as material emerges from said die exterior surface.

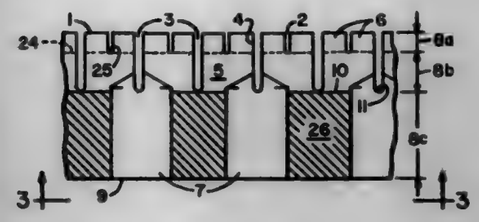
54. Method of forming a honeycomb structure from an extrudable material which comprises the steps
(a) flowing an extrudable material longitudinally through a plurality of feed passageways
(b) delivering such flow of material from said feed passageways directly to portions of a primary grid of interconnected discharge slots having exit apertures of substantially uniform width,
(c) delivering a portion of the flow of the primary grid to a secondary grid of interconnected discharge slots having exit apertures of substantially the same width as those of the primary grid, the slots of the secondary grid receiving extrudable material only from the slots of the primary grid, and
(d) longitudinally discharging said material from the aggregate of said slots to form a continuous thin walled honeycomb mass.

5,487,863

EXTRUSION DIE FOR PROTRUSION AND/OR HIGH CELL DENSITY CERAMIC HONEYCOMB STRUCTURES

George M. Cunningham, Horseheads; Rodney I. Frost, and Irwin M. Lachman, both of Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Continuation of Ser. No. 94,148, Sep. 8, 1987, Pat. No. 4,902,216. This application Jan. 30, 1989, Ser. No. 303,916
Int. Cl.[6] B29C *47/12*
U.S. Cl. 264—177.11 60 Claims



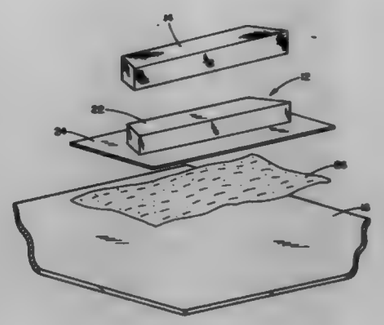
1. An extrusion die for forming honeycomb structures with intersecting cell walls from extrudable material, which comprises
a die body having an inlet face and an outlet face,
a plurality of feed holes extending within the body from the inlet face toward the outlet face,
the feed holes directly communicating only with each of a plurality of transversely crisscrossed primary discharge slots defined by a plurality of primary core members of the body and extending within the body from the outlet face toward the inlet face, with inner end portions of the feed holes communicating longitudinally and transversely in overlapping manner with inner end portions of the primary discharge slots, and
characterized by the improvement comprising secondary discharge slots extending within the primary core members from the outlet face toward the inlet face and into direct transverse communication with the primary discharge slots, the secondary discharge slots dividing the primary core members into secondary core members defining the secondary discharge slots, and said secondary discharge slots not directly communicating with said feed holes.

5,487,864

MOLDING COMPOSITE BY POSITIONING HEAT-CONDUCTIVE MAT BETWEEN PLATEN AND TOOL

Anthony R. Bartilucci, Wantagh; George W. Gilchrist, N. Massapequa, and Richard Yurman, Bethpage, all of N.Y., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Jul. 13, 1994, Ser. No. 274,248
Int. Cl.[6] B29C *33/40;39/20;51/10*; B27N *3/12*
U.S. Cl. 264—219 8 Claims



1. A method of manufacturing a composite article, comprising:
providing an autoclave having a platen;
applying a composite article onto a work tool;
positioning the work tool on the platen;
heating the platen to transfer heat from the platen to the work tool and from the work tool to the composite article to cure said article; and
positioning a heat conductive, flexible mat between the platen and the work tool to maintain a high thermal conductivity between the platen and the work tool during the heating step.

5,487,865

METHOD OF MAKING COMPLEX SHAPED METAL BODIES

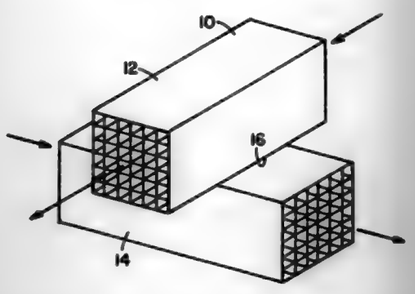
Leslie E. Hampton, Corning, N.Y., and David S. Weiss, Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Division of Ser. No. 45,364, Apr. 8, 1993, abandoned. This application Sep. 2, 1994, Ser. No. 279,533

The portion of the term of this patent subsequent to Apr. 8, 2013, has been disclaimed.

Int. Cl.[6] B22F *3/10;5/10*

U.S. Cl. 419—5 8 Claims



1. A method of making a complex shaped body, said method comprising:

a) providing a plurality of green bodies, composed of one or more component metals, each body having an inlet end and an outlet end and having a multiplicity of cells extending from said inlet end to said outlet end;

b) forming an assembly of said green bodies; and

c) bonding the green bodies by a method consisting essentially of sintering said assembly at a temperature and time sufficient to cause interdiffusion of some of said one or more component metals and form a microscopically indistinguishable bond between the resulting sintered bodies to form a complex body.

5,487,866

Patent Not Issued For This Number

5,487,867

COPPER-BISMUTH CASTING ALLOYS

Akhileshwar R. Singh, Pepper Pike, Ohio, assignor to Federal-loy, Inc., Bedford, Ohio

Continuation-in-part of Ser. No. 63,435, May 18, 1993, Pat. No. 5,330,712, which is a continuation-in-part of Ser. No. 51,161, Apr. 22, 1993, abandoned. This application Feb. 14, 1994, Ser. No. 195,277

The portion of the term of this patent subsequent to Jul. 19, 2011, has been disclaimed.

Int. Cl.[6] C22C *9/02;9/04*

U.S. Cl. 420—471 8 Claims

1. A casting alloy consisting essentially of 75–77% copper, 2–3% tin, 5.5–7% bismuth, 13–17% zinc, 0.5–1% nickel and 0.1–1 mischmetal.

5,487,868

TIN BASED SOLDER ALLOY CONTAINING LEAD, ANTIMONY, AND TELLURIUM

Tetsuro Nishimura, Osaka, Japan, assignor to Nihon Superior Co., Ltd., Osaka, Japan

Filed Apr. 28, 1994, Ser. No. 234,067

Claims priority, application Japan, Mar. 9, 1994, 6-066676

Int. Cl.[6] C22C *13/00*

U.S. Cl. 420—559 2 Claims

1. A solder alloy comprising:

57–65% tin;

0.1 to 0.5% antimony;

0.002 to 0.05% tellurium;

0.001 to 0.05% gallium; and

the balance being lead, wherein all percentages are by weight.

5,487,869

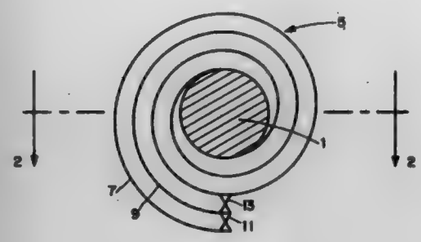
AIR CLEANER CAPABLE OF CATALYTIC REGENERATION

William B. Retallick, 1432 Johnny's Way, West Chester, Pa. 19382

Filed Sep. 24, 1993, Ser. No. 126,183

Int. Cl.[6] A61L *9/16;* B01D *50/00;* F01N *3/10*

U.S. Cl. 422—22 29 Claims



21. A method of removing impurities from air, the method comprising the steps of: a) directing air to be cleaned along a first path which passes through first and second support structures connected fluidly in series, the first support structure bearing a material which absorbs the impurities to be removed from the air, the second support structure bearing a combustion catalyst, wherein the impurities are absorbed by said material at ambient temperature, and

b) periodically regenerating the air cleaner by heating the support structures by passing an electric current through the support structures while directing air through a second path which is different from the first path, the second path extending through the support structures, so as to cause impurities which have been absorbed by said material to be evolved from the first support structure, and to cause catalytic burning of said impurities in said second support structure.

5,487,870

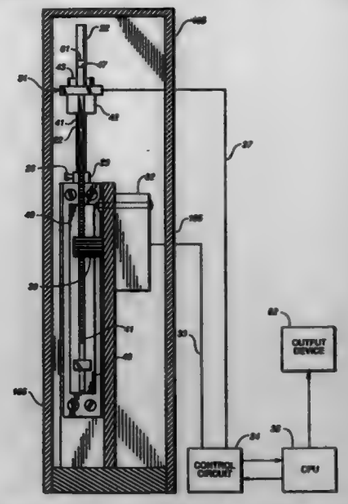
APPARATUS FOR SEDIMENTATION BASED BLOOD ANALYSIS

David K. McKinney; Milton E. Fuller, and Berry V. Carooe, all of Reno, Nev., assignors to Solid State Farms, Inc., Reno, Nev.

Division of Ser. No. 512,845, Apr. 23, 1990, Pat. No. 5,328,822. This application Jun. 13, 1994, Ser. No. 259,018

Int. Cl.[6] G01N *15/05*

U.S. Cl. 422—73 21 Claims



1. In an apparatus for determining the settling of erythrocyte cells from a plasma fluid in a test specimen of blood, said apparatus including a settling tube, sensing means mounted proximate said settling tube and sensing a characteristic of said test specimen during settling, control means responsive to said sensing means to cause said sensing means to follow a separation boundary between said erythrocyte cells and said plasma fluid during settling, and data sampling means responsive to at least one of said sensing means and said control means to sample data being sensed as to the settling of said erythrocyte cells; the improvement in said apparatus comprising:

said sensing means sensing said characteristic at a rate greater than the rate of occurrence of settling of said specimen; and

said data sampling means being responsive to the occurrence of a predetermined change in height of said separation boundary wherein said sensing means includes means for generating and directing a beam of static radiation against said test specimen in a tracking zone located from a position proximate and below said separation boundary to a position up to said separation boundary.

5,487,871

MERCURY ASSAY

Timothy S. McDow, Palm Beach Gardens, and Marlin Bensinger, Lake Worth, both of Fla., assignors to LDC Analytical, Inc., Lake Worth, Fla.

Filed Oct. 30, 1992, Ser. No. 969,080

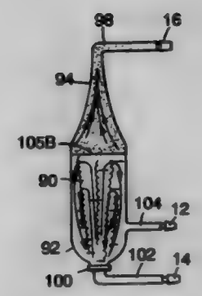
Int. Cl.[6] G01N *21/31*

U.S. Cl. 422—80 18 Claims

17. A cold vapor mercury assay system comprising

storage chamber structure of predetermined volume for storing a sample of material to be analyzed,

reaction chamber structure having first and second inlet ports and an outlet port, said reaction chamber structure including a body portion of cylindrical configuration to which said first inlet port is coupled for introduction of sample material to be an assayed in a direction tangential to the cylindrical inner surface of said body portion, a base portion of hemispherical



configuration to which said second inlet port is coupled, and an upper portion of concave conical configuration to which an outlet port is coupled, and

mercury vapor analyzer apparatus coupled to said outlet port of said reaction chamber structure.

5,487,872

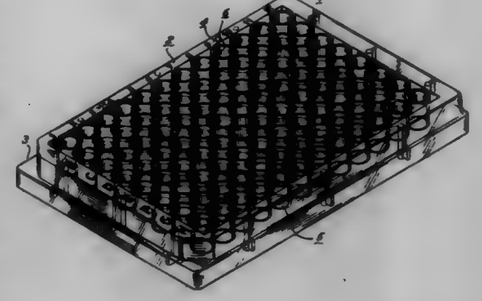
ULTRAVIOLET RADIATION TRANSPARENT MULTI-ASSAY PLATES

Dean G. Hafeman, Hillsborough, and Gillian M. K. Humphries, Los Altos, both of Calif., assignors to Molecular Device Corporation, Sunnyvale, Calif.

Filed Apr. 15, 1994, Ser. No. 228,415

Int. Cl.[6] B01L *3/00;11/00*

U.S. Cl. 422—102 2 Claims



1. A mid-UV transparent microplate comprising a frame with a plurality of parallel cylinders fixed in the frame, each cylinder defining a microplate well having a top and bottom opening, the bottom opening of each cylinder being sealed without leaking for holding liquid to be analyzed, with a portion of a substantially mid-UV transparent sheet material having an optical density of less than 0.4 OD from 250 nm to 750 nm, the mid UV transparent sheet material being selected from the group consisting of polyethylene and4-methylpentene-1 based polymer, the UV transparent material being in the form of a single sheet which is bonded to the bottom of each well, the microplate being characterized by an optical density variation between microplate wells of about a maximum of 0.02 OD (250 nm to 750 nm), the maximum thickness of the bottom being about 0.020 inches and the minimum thickness being about 0.015 inches, a minimum diameter of the cylinder is about 0.18 inches, a high resistivity to organic solvents and a temperature range of 15° to 45° C., with no optical degradation and 15° to 70° C. with no dimensional deformation, whereby said microplate will permit an accurate mid-UV light absorbance measurement of the liquid being analyzed.

5,487,873

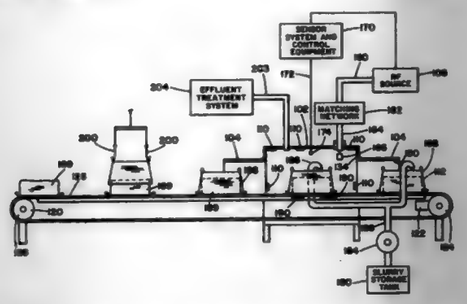
METHOD AND APPARATUS FOR TREATING HAZARDOUS WASTE OR OTHER HYDROCARBONACEOUS MATERIAL

Jack E. Bridges; Guggliam C. Sresty, both of Chicago, and Allen Taflove, Wilmette, all of Ill., assignors to IIT Research Institute, Chicago, Ill.

Continuation of Ser. No. 190,737, Feb. 2, 1994, abandoned, which is a continuation of Ser. No. 66,624, May 24, 1993, abandoned, which is a continuation of Ser. No. 938,304, Aug. 28, 1992, abandoned, which is a continuation of Ser. No. 502,322, Mar. 30, 1990, abandoned. This application Nov. 7, 1994, Ser. No. 335,190

Int. Cl.[6] B09B *3/00*

U.S. Cl. 588—212 10 Claims



10. A method for treating bulk hazardous waste comprising the steps of:

disposing bulk hazardous waste in an atmospheric pressure waste treatment region defined by the interior surface of a wall of a waste treatment chamber;

propagating radio frequency energy having a frequency in the range of about 500 kilohertz to about 100 megahertz through said radio frequency waste region, without ionizing gases within the waste treatment region, in order to heat the bulk hazardous waste by the radio frequency energy to evolve a hazardous vapor and to leave a residue;

maintaining the interior surface of the wall at least substantially as hot as the waste being treated to prevent the evolved hazardous vapor from condensing on said interior surface of said wall and recontaminatinq the residue;

collecting the hazardous vapor; and

storing the hazardous vapor.

5,487,874

AIR INTAKE SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

James W. Gibboney, Jr., Conyers, Ga., assignor to Scientific Products Corporation, Conyers, Ga.

Continuation-in-part of Ser. No. 889,167, May 27, 1992, Pat. No. 5,300,266. This application Mar. 30, 1994, Ser. No. 221,103

Int. Cl.[6] F02B *75/10;* B01J *19/08*

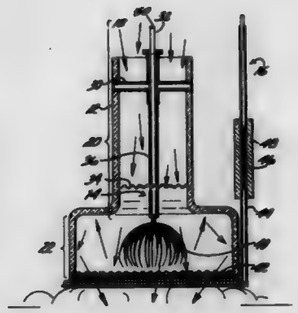
U.S. Cl. 422—186.03 20 Claims

1. Apparatus for supplying a mixture of combustion gas and fuel to an internal combustion engine, said apparatus for use with a source of combustion gas and a source of fuel, said apparatus comprising:

a housing having a first inlet for combustion gas from said source of combustion gas to enter said housing, a second inlet for fuel from said source of fuel to enter said housing, and an outlet in fluid connection with said engine;

means for mixing said combustion gas and said fuel, said mixing means positioned in said housing; and

means for generating negatively-charged molecules having the formula $[MO_x]^-$, where M is a positive ion of said electrically conducting material, O is oxygen, and x is a number ≥ 3, said generating means in fluid connection with said first inlet so that said negatively-charged molecules are mixed with combustion gas supplied to said mixing means.



5,487,875

MICROWAVE INTRODUCING DEVICE PROVIDED WITH AN ENDLESS CIRCULAR WAVEGUIDE AND PLASMA TREATING APPARATUS PROVIDED WITH SAID DEVICE

Nobumasa Suzuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

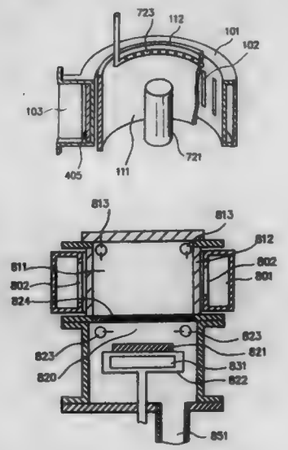
PCT No. PCT/JP92/01430, § 371 Date Jul. 6, 1993, § 102(e) Date Jul. 6, 1993

PCT Filed Nov. 5, 1992, Ser. No. 84,211

Claims priority, application Japan, Nov. 5, 1991, 3-315266; Nov. 8, 1991, 3-293010

Int. Cl.[6] H05H *1/46*

U.S. Cl. 422—186.05 31 Claims



1. A plasma treating apparatus comprising a substantially enclosed plasma generation chamber and a microwave introducing device disposed beside an exterior of said plasma generation chamber, wherein plasma is generated by applying a microwave into said plasma generation chamber through said microwave introducing device to generate plasma whereby treating an object positioned in said plasma generation chamber, wherein said microwave introducing device comprises an endless circular waveguide provided with a plurality of slots, said circular waveguide being provided with a microwave introducing portion connected to a microwave power source, and said plurality of slots being spacedly formed through an inner side of said circular waveguide such that the slots are arranged at said inner side of said circular waveguide at a given interval.

5,487,876

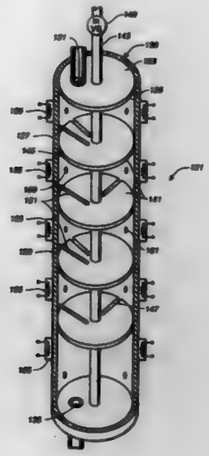
APPARATUS AND METHOD FOR CONTINUOUS SYNTHESIS OF VANADIUM OXIDE

Steven M. Mallinson, 446 Hastinger Rd., San Jose, Calif. 95111, and Michael E. McAleavey, 559 Gettysburg Dr., San Jose, Calif. 95123

Continuation of Ser. No. 104,306, Aug. 9, 1993, abandoned, which is a continuation of Ser. No. 42,356, Apr. 2, 1993, abandoned. This application Sep. 30, 1994, Ser. No. 312,973

Int. Cl.[6] F28D *21/00*

U.S. Cl. 422—205 28 Claims



1. An apparatus for the continuous synthesis of vanadium oxide from ammonium metavanadate, comprising:

one or more chamber wails defining an interior chamber of the apparatus, the interior chamber of the apparatus being sealed from an atmosphere surrounding the apparatus;

a source of ammonium metavanadate means for continuously introducing ammonium metavanadate from said source to the interior chamber of the apparatus through an inlet;

means for heating the interior chamber of the apparatus to a temperature of approximately 440° C.;

means for purging the interior chamber of the apparatus with an inert carrier gas to remove ammonia, water vapor, and oxygen that evolves from heated ammonium metavanadate;

means for continuously agitating ammonium metavanadate in the interior chamber of the apparatus while the interior chamber of the apparatus is heated by the heating means and while ammonia, water vapor, and oxygen are purged by the purging means such that ammonium metavanadate is uniformly exposed to heat and purging gas;

means for continuously removing vanadium oxide from the interior chamber of the apparatus through an outlet; and

means for continuously conveying the ammonium metavanadate and the vanadium oxide through the interior chamber of the apparatus from the introducing means to the removing means, the conveying means including one or more rotary trays that are arranged vertically between the introducing means and the outlet.

5,487,877

RESTROOM ORGANIZER AND STERILIZING APPARATUS

Min K. Choi, 14525 Memorial Dr., Houston, Tex. 77079

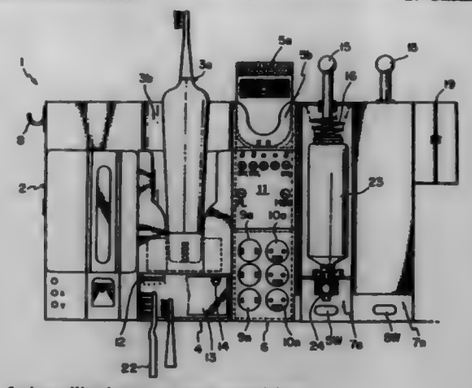
PCT No. PCT/US93/00885, § 371 Date Jul. 29, 1994, § 102(e) Date Jul. 29, 1994, PCT Pub. No. WO93/14668, PCT Pub. Date Aug. 5, 1993

PCT Filed Feb. 1, 1993, Ser. No. 256,990

Claims priority, application Rep. of Korea, Feb. 1, 1992, 1590; Jul. 1, 1992, 11676; Sep. 29, 1992, 18525

Int. Cl.[6] A45D *34/06;* A61L *2/10;2/24*

U.S. Cl. 422—300 17 Claims



1. A sterilization apparatus, comprising:

a main block;

a means for sterilization attached within the main block wherein said sterilization means comprises an ultraviolet light;

a reflection surface connecced within the main block;

a means for controlling said sterilization means; and

a removable storage case mounted within said main block, having a main body which defines at least two storage compartments and having a means for holding water dripping from the storage compartments which fits over said main body.

5,487,878

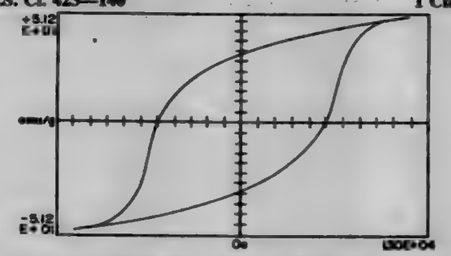
METHOD FOR PREPARING PERPENDICULARLY MAGNETIZABLE MATERIAL USABLE ON MAGNETIC RECORDING MEDIA

Young Jei Oh, 47, Yoido-Dong Hansung Apt. A-905, Yongdungpo-Ku, Seoul; Jin-Ho Choy, Daechi-Dong Mido Apt. 110-202, Kangnam-Ku, Seoul; Hyung Jin Jung, 208-22, Kueui-Dong Kangjeon Villa Na-102, Sangdong-Ku, Seoul; Yang Su Han, 214-192, Sangdo 4-Dong, Dongjak-Ku, Seoul, and Seung Wan Song, 214-6, Shingil 4-Dong, Yongdungpo-Ku, Seoul, all of, Rep. of Korea

Filed Sep. 1, 1994, Ser. No. 299,580

Int. Cl.[6] C01G *1/00*

U.S. Cl. 423—140 1 Claim



1. A method for preparing a perpendicularly magnetizable material usable on magnetic recording media, comprising the steps of:

dissolving at least one member of the group consisting of strontium chloride and strontium nitrate with at least one

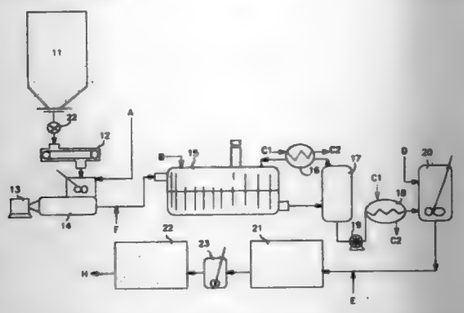
member of the group consisting of iron chloride and iron nitrate in distilled water;
adding citric acid to the resultant solution;
controlling the pH of the solution to a range sufficient to completely dissociate the citric acid;
heating the resultant solution with stirring to yield a gelatinous precursor;
subjecting the precursor to a temperature sufficiently high to remove the organic constituents thereof; and
calcining the precursor under conditions sufficient to provide a perpendicularly magnetizable material.

5,487,879

STABILIZED, PRESSURE-HYDRATED MAGNESIUM HYDROXIDE SLURRY FROM BURNT MAGNESITE AND PROCESS FOR ITS PRODUCTION

Joseph T. Witkowski, Baltimore, Md.; David M. Smith, Kearneysville, W. Va., and Mark T. Wajer, Baltimore, Md., assignors to Martin Marietta Magnesia Specialities Inc., Raleigh, N.C.

Filed Jul. 15, 1994, Ser. No. 275,473
Int. Cl.[6] C01F *5/14*
U.S. Cl. 423—155 **16 Claims**



1. A process for the production of a stabilized magnesium hydroxide slurry comprising the steps of:
pressure hydrating a mixture comprising burnt natural magnesite and water to provide a precursory pressure hydrated magnesium hydroxide slurry;
providing chloride ions and cationic polymer;
deagglomerating said precursory pressure hydrated magnesium hydroxide slurry in the presence of said chloride ions and cationic polymer to provide a deagglomerated and stabilized magnesium hydroxide slurry comprising from 50 to 65 weight % solids.

5,487,880

PRODUCTION OF SODIUM-22 FROM PROTON IRRADIATED ALUMINUM

Wayne A. Taylor; Richard C. Heaton, and David J. Jamriska, all of Los Alamos, N.M., assignors to The Regents of the Unviersity of California Office of Technology Transfer, Alameda, Calif.

Filed Nov. 30, 1993, Ser. No. 160,601
Int. Cl.[6] C01G *57/00*
U.S. Cl. 423—2 **5 Claims**

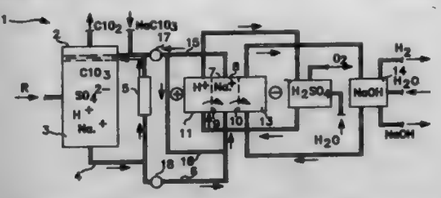
1. A process for selective separation of sodium-22 from a proton irradiated aluminum target comprising:
dissolving a proton irradiated aluminum target to form a first solution including aluminum ions and sodium ions;
separating a portion of the aluminum ions from the first solution by crystallization of an aluminum salt;
contacting the remaining first solution with an anion exchange resin whereby ions selected from the group consisting of iron and copper are selectively absorbed by the anion exchange resin while aluminum ions and sodium ions remain in solution;
contacting the solution with an cation exchange resin whereby aluminum ions and sodium ions are adsorbed by the cation exchange resin; and,
contacting the cation exchange resin with an acid solution capable of selectively separating the adsorbed sodium ions from the cation exchange resin while aluminum ions remain adsorbed on the cation exchange resin.

5,487,881

PROCESS OF PRODUCING CHLORINE DIOXIDE

Helena Falgén; Göran Sundström; Johan Landfors, all of Sundsvall, Sweden, and John C. Sokol, Marietta, Ga., assignors to EKA Nobel Inc., Marietta, Ga.

Continuation-in-part of Ser. No. 23,561, Feb. 26, 1993, Pat. No. 5,380,517. This application Sep. 15, 1993, Ser. No. 120,814
Claims priority, application Sweden, Jul. 2, 1993, 9302279
Int. Cl.[6] C01B *11/02*
U.S. Cl. 423—478 **18 Claims**



1. A process for producing chlorine dioxide, comprising the steps of:
(a) providing a reactor with an aqueous acidic reaction medium containing alkali metal chlorate and sulfate, wherein the concentration of sulfate exceeds about 3 moles/l but is less than saturation;
(b) reducing chlorate ions in said reaction medium to form chlorine dioxide;
(c) withdrawing chlorine dioxide gas from the reaction medium;
(d) withdrawing reaction medium from the reactor and transferring it to an electrochemical cell;
(e) electrolyzing said reaction medium to increase the acidity and decrease the content of alkali metal ions;
(f) recycling the acidified reaction medium to the reactor; and
(g) adding make-up alkali metal chlorate to the reaction medium upstream or downstream of the electrochemical cell;
wherein the process is conducted under non-crystallizing conditions.

5,487,882

PROCESS FOR PREPARATION OF ZEOLITE "X"

Patrick C. Hu, and Eric W. Limatta, both of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Filed Jul. 19, 1994, Ser. No. 275,722
Int. Cl.[6] C01B *39/22*
U.S. Cl. 423—700 **4 Claims**

1. A method for producing a crystalline synthetic faujasite of the zeolite "X" type comprising the steps of:
i) separately preparing a sodium silicate solution and a sodium aluminate solution;
ii) admixing the sodium silicate solution and the sodium aluminate solution at high shear until a mixture results having a ratio of sodium oxide to silica of 0.4:1 to 2:1; silica to alumina of 2.2:1 to 3.5:1; and water to sodium oxide of 20:1 to 70:1;
iii) heating said mixture to a temperature of about 80° to 120° C. in the absence of any further mixing for a period of time sufficient to produce the desired crystalline faujasite of the zeolite "X" type; and

iv) recovering said zeolite "X".

5,487,883

PROCESS FOR PRODUCING MOXAS

Tae W. Yoo, 807, 1-Dong, Hanyang, Apt. 32-5, Banpo-dong, Seocho-ku, Seoul, Rep. of Korea

Filed Oct. 7, 1994, Ser. No. 319,962
Claims priority, application Rep. of Korea, Dec. 8, 1993, 93-26782
Int. Cl.[6] A01N *25/06;25/18;25/20*
U.S. Cl. 424—40 **18 Claims**

1. A process for producing moxas comprising the step of mixing 90 weight % of carbonized wormwood powder with 3–7 weight % of ceramic powder and 3–7 weight % of powder of Sabina Chinensis.

5,487,884

PHOTOPROTECTION COMPOSITIONS COMPRISING CHELATING AGENTS

Donald L. Bissett, Hamilton; Rodney D. Bush, Cincinnati, and Ranjit Chatterjee, Fairfield, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 619,805, Nov. 27, 1990, abandoned, which is a continuation of Ser. No. 251,910, Oct. 4, 1988, abandoned, which is a continuation-in-part of Ser. No. 112,576, Oct. 22, 1987, abandoned. This application Jul. 1, 1993, Ser. No. 86,757
Int. Cl.[6] A61K *7/06;7/42;7/48;7/50*
U.S. Cl. 424—59 **25 Claims**

1. A method of inhibiting the deleterious effects of chronic ultraviolet light exposure to skin, such deleterious effects including one or more of skin cancer or premature aging as characterized by skin wrinkling, skin yellowing, skin cracking, telangiectasis, solar keratoses, ecchymoses, or lack of elasticity, comprising applying to the skin, prior to exposing the skin to ultraviolet light, a safe and photoprotectively effective amount of a nonsunscreen chelating agent selected from the group consisting of 2,2'-dipyridylamine; 1,10-phenanthroline; di-2-pyridylketone; 2-furildioxime; 2,3-bis(2-pyridyl)pyrazine; 1 -hydroxy- 4-methyl-6-(2,4,4-trimethylpentyl)-2(1 H)-pyridone; 2,3-dihydroxybenzoic acid; ethylenediamine-N,N-bis(2-hydroxyphenylacetic acid), dimethyl ester; 1,1'-carbonyldiimidazole; 1,2-dimethyl- 3-hydroxypyrid-4-one; 2,4,6-tri(2-pyridyl)- 1,3,5-triazine; 1-pyrrolidinecarbodithioic acid; diethyldithiocarbamic acid; 6-cyclohexyl-1-hydroxy- 4-methyl-2(1H)-pyridinone; 2,2'-dipyridyl; 1,2-cyclohexanedione dioxime; 3-hydroxy-2-methyl-4-pyrone; 2,3-bis(2-pyridyl)-5,6-dihydropyrazine; 3-(4-phenyl- 2-pyridyl)-5-phenyl-1,2,4-triazine; 5-hydroxy- 2-(hydroxymethyl)-4H-pyran-4-one; 2,3-dihydroxypyridine; 2,2'-biquinoline; 2,2 '-bipyrazine; 3-(2-pyridyl)-5,6-diphenyl-1,2,4-triazine; 4,4'-dimethyl-2,2'-dipyridyl; 4,5-dihydroxy-1,3-benzene-disulfonic acid; phenyl 2-pyridyl ketoxime; desferrioxamine B; 5,7-dichloro-8-hydroxyquinoline; 2,3-dihydroxynaphthalene; 2,3,5,6-tetrakis-(2'-pyridyl)pyrazine; 2,4-bis(5,6-diphenyl-1,2,4-triazine-3-yl)pyridine; di- 2-pyridyl glyoxal; 6-hydroxy-2-phenyl-3(2 H)-pyridazinone; 2,4-pteridinediol; 3-(4-phenyl- 2-pyridyl)-5,6-diphenyl-1,2,4-triazine; N-benzoyl-N-phenylhydroxylamine; 3-amino-5,6-dimethyl-1,2,4-triazine; 2,6-pyridinedicarboxylic acid; 2,4,5-trihydroxypyrimidine; and 4-(2-amino- 1-hydroxyethyl)-1,2-benzenediol.

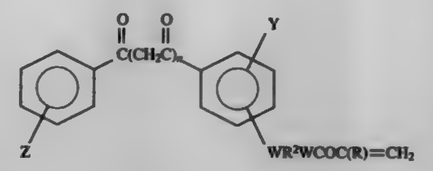
5,487,885

SUNBLOCKING POLYMERS AND THEIR FORMULATION

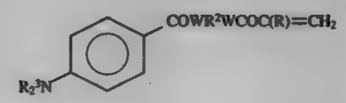
Milos Sovak, La Jolla; Ronald C. Terry; James G. Douglass, III, both of San Diego, and Farid Bakir, Del Mar, all of Calif., assignors to Biophysica, Inc., La Jolla, Calif.

Continuation-in-part of Ser. No. 994,426, Dec. 21, 1992, abandoned. This application Dec. 9, 1993, Ser. No. 164,881
Int. Cl.[6] A61K *31/78;7/42*
U.S. Cl. 424—59 **5 Claims**

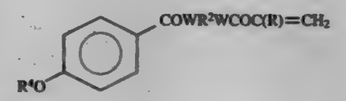
1. A polyacrylic acid based sunscreen composition having as its UV absorbing moieties:
for UV-A, a compound of the formula:



wherein:
n is 0 or 1;
Z is oxy or amino of not more than about than about 12 carbon atoms;
Y is non-oxo carbonyl of not more than about 12 carbon atoms; and
W is oxy or amino;
for UV-B, a compound of the formula:



wherein:
R^2 is hydrogen or alkyl of up to 6 carbon atoms;
R^3 is a divalent hydrocarbylene group;
W and R are as defined above:
for UV-C, a compound of the formula:



wherein:
R^4 is hydrogen or alkyl of from 1 to 6 carbon atoms; and
the other symbols have been defined above; and an oxyaliphatic substituted acrylic acid of the formula:

$$R^5WCOC(R)=CH_2$$

wherein R^5 is an aliphatic group of from 1 to 4 carbon atoms having from 1 to 3 oxy groups, wherein the other symbols have been defined previously; and
the polymer is insoluble in water and swellable in a polyethylene glycol-water composition comprising from about 50– 95% polyethylene glycol.

5,487,886

AMINO ACID β-LYASE ENZYME INHIBITORS AS DEODORANTS

Sue B. Lyon, Bethesda; Clifford O'Neal, Gaithersburg; Hermes Van Der Lee, Olney, all of Md., and Brian Rogers, South Boston, Mass., assignors to The Gillette Company

Division of Ser. No. 985,851, Dec. 4, 1992, which is a continuation of Ser. No. 824,886, Jan. 22, 1992, Pat. No. 5,213,791, which is a continuation of Ser. No. 418,876, Oct. 10, 1989, abandoned. This application Mar. 29, 1994, Ser. No. 219,341

Int. Cl.[6] A61K *7/32;7/34;7/38;9/12*

U.S. Cl. 424—65 **6 Claims**

1. A deodorant composition comprising a body odor suppressing effective amount of an inhibitor of an amino acid β-lyase enzyme containing the cofactor pyridoxal phosphate and which cleaves amino acids with the structure $COOH—CH(NH_2)—CH_2—S—R$ where R is alkyl, wherein the inhibitor is a compound of the formula

$$NH_2—C(CH_3)(COOH)—CH_2SR$$

where R is a hydrogen, phenyl; C_1–C_8 alkyl which is unsubstituted or substituted by a phenyl group, a hydroxy group, a benzyloxy or benzyloxycarbonyl group, a halogen or an amine group, in a dermatologically acceptable vehicle.

5,487,887

CLEAR ANTIPERSPIRANT ROLL-ON COMPOSITIONS

Anthony Benfatto, North Brunswick, N.J., assignor to Bristol-Myers Squibb Company, New York, N.Y.

Filed Oct. 28, 1993, Ser. No. 144,777

Int. Cl.[6] A61K *7/34;7/38;9/10;9/107*

U.S. Cl. 424—66 **26 Claims**

1. A clear, low residue antiperspirant composition comprising on a weight basis from about 5 to about 30% antiperspirant active; from about 5 to about 25% PEG-7-glyceryl cocoate; from about 0.5 to about 3% emollient; from about 3 to about 7% cyclomethicone and from about 35 to 60% water, said antiperspirant composition being in the form of an oil-in-water microemulsion.

5,487,888

IRON-BINDING POLYMERS FOR ORAL ADMINISTRATION

W. Harry Mandeville, III, Lynnfield, and Stephen R. Holmes-Farley, Arlington, all of Mass., assignors to GelTex, Inc., Waltham, Mass.

Filed May 20, 1993, Ser. No. 65,546

Int. Cl.[6] A61K *31/785*

U.S. Cl. 424—78.1 **19 Claims**

1. A method of reducing dietary iron absorption in a patient in need thereof comprising orally administering to said patient a therapeutically effective amount of at least one polymer that binds dietary iron in vivo, said polymer being non-toxic and stable once ingested.

5,487,889

BANDAGE FOR CONTINUOUS APPLICATION OF BIOLOGICALS

Richard L. Eckert, Cleveland Heights; Daniel J. Smith, Stow, and Irwin Schafer, Brutenahl, all of Ohio, assignors to The MetroHealth System, The University of Akron, and Case Western Reserve University, both of Cleveland, Ohio

Continuation-in-part of Ser. No. 893,164, Jun. 3, 1992, abandoned. This application Aug. 13, 1993, Ser. No. 106,165

Int. Cl.[6] A61F *13/00;* **C12N** *15/00;* **A61K** *38/18*

U.S. Cl. 424—93.1 **31 Claims**

1. A kit for forming a bandage, containing cells that secrete a wound healing factor comprising:

a. a container containing cells that secrete a wound healing factor; and

b. a bandage comprising:

i. a first membrane, being gas permeable and fluid impermeable, and

ii. a second membrane, being permeable to the wound healing factor, said first and second membranes each having a perimeter, and being joined at the perimeter so as to define a chamber for receiving said cells.

5,487,890

MAMMALIAN PRIMATE ERYTHROCYTE BOUND HETEROPOLYMERIZED MONOCLONAL ANTIBODIES AND METHODS OF USE THEREOF

Ronald P. Taylor, Charlottesville; William M. Sutherland, Earlysville; Craig Reist, Charlottesville; Eleanor L. Wright, Earlysville; Donna Webb, Charlottesville, and Ronald Labuguen, Charlottesville, all of Va., assignors to University of Virginia Patent Foundation, Charlottesville, Va.

Continuation of Ser. No. 161,812, Dec. 6, 1993, which is a continuation of Ser. No. 592,801, Oct. 4, 1990, abandoned. This application Jan. 24, 1994, Ser. No. 186,136

The portion of the term of this patent subsequent to Nov. 28, 2012, has been disclaimed.

Int. Cl.[6] A61K *39/395;39/40;39/42*

U.S. Cl. 424—136.1 **6 Claims**

1. A method of therapeutically treating a primate individual with a target antigen present in its circulatory system, said target antigen being selected from the group consisting of a virus, a microorganism and a protein, comprising administering to said individual a therapeutically effective amount of a monoclonal antibody heteropolymer comprising a first monoclonal antibody specific for CR1 receptor cites on the surface of erythrocytes of said individual, said first monoclonal antibody being cross-linked to a second monoclonal antibody specific for said target antigen.

5,487,891

HUMAN ANTI-RH(D) MONOCLONAL ANTIBODIES REAGENTS AND HYBRIDOMAS AND METHODS OF RH TYPING USING ANTI-RH(D) MONOCLONAL ANTIBODIES AND REAGENTS

Benjamin A. D. B. Bradley, Winterbourne Down; Alan Doyle, Salisbury, and Belinda M. Kumpel, Bristol, all of, England, assignors to National Blood Authority, Watford, England

Continuation of Ser. No. 469,516, Apr. 3, 1990, abandoned. This application May 6, 1993, Ser. No. 57,560

Claims priority, application United Kingdom, Sep. 18, 1987, 8722018

Int. Cl.[6] A61K *39/395;* **C07K** *16/34;* **C12N** *5/22;* **G01N** *33/53*

U.S. Cl. 424—142.1 **27 Claims**

1. A human monoclonal antibody having the following essential characteristics:

(a) binding to Rh(D) antigen, but not C, c, E or e antigens of the Rh blood group system;

(b) being IgG 1 proteins;

(c) having kappa light chains;

(d) being Glm(3) allotype;

(e) binding to D^u cells by the indirect antiglobulin test;

(f) binding to D^{IV}, D^V and $D^{Tar}(D^{VII})$ variant antigens; and

(g) not binding to D^{VI} or D^B variant antigens, and antigen-binding fragments thereof.

5,487,892

METHOD FOR TREATING THROMBOTIC DISEASE USING A FIBRIN SPECIFIC MONOCLONAL ANTIBODY

Paul E. Gargan, South Bend, Ind., assignor to American Biogenetic Sciences, Inc., Copiague, N.Y.

Filed Feb. 24, 1994, Ser. No. 204,015

Int. Cl.[6] A61K *39/395;* **C07K** *16/18*

U.S. Cl. 424—145.1 **26 Claims**

1. A method for reducing the rate of fibrin deposition in a human, comprising administering to a human in need of said reduction an effective amount of the fibrin-specific monoclonal antibody MH-1 produced by hybridoma ATCC 9739, or an antibody that binds to the same epitope as monoclonal antibody MH-1.

5,487,893

ANTIVIRAL USE OF A 2,6-DI-T-BUTYLPHENOL COMPOUND SUBSTITUTED IN 4 POSITION AGAINST HERPES VIRUSES AND PAPILLOMAVIRUSES

Robert Vachy, Paris, France, assignor to Flieco, Paris, France

PCT No. PCT/FR91/00882, § 371 Date Aug. 2, 1993, § 102(e) Date Aug. 2, 1993, PCT Pub. No. WO92/08450, PCT Pub. Date May 29, 1992

PCT Filed Nov. 12, 1991, Ser. No. 50,279

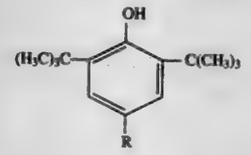
Claims priority, application France, Nov. 12, 1990, 90 13984; Feb. 20, 1991, 91 02028

Int. Cl.[6] A61K *35/78;31/235;31/19;31/11;31/05*

U.S. Cl. 424—195.1 **16 Claims**

1. An antiviral composition comprising a substituted phenol selected from the group consisting of:

(a) phenols having the formula



where R is CH_2OH, CHO, or COOH, and

(b) their corresponding salts and alkyl esters thereof where alkyl is C1–C5 when R is COOH [or A—COOH], wherein the phenol is in an effective antiviral amount, and a physiologically acceptable excipient.

5,487,894

COMPOSITION OF DEHYDRATED POWDERED MUNG BEAN SPROUT AND PLANT FIBER FOR USE AS DIETARY SUPPLEMENT IN HEALTHCARE

Joseph Kovacs, 22 Ch. Du Pommier, 1218 Geneva, Switzerland

Filed Dec. 19, 1994, Ser. No. 358,367

Int. Cl.[6] A61K *35/78*

U.S. Cl. 424—195.1 **33 Claims**

1. A dietary supplement composition comprising dehydrated powdered mung bean sprout and oat groats.

5,487,895

METHOD FOR FORMING CONTROLLED RELEASE POLYMERIC SUBSTRATE

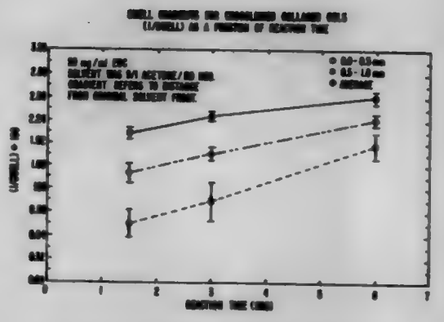
Gregory S. Dapper, Newark, and Ronald K. Yamamoto, San Francisco, both of Calif., assignors to Vitaphore Corporation, Plainsboro, N.J.

Filed Aug. 13, 1993, Ser. No. 106,342

Int. Cl.[6] A61K *39/00;9/52*

U.S. Cl. 424—278.1 **23 Claims**

1. A method of forming a controlled release polymer substrate comprising the steps of:



a) providing a water-swellable polymeric substrate;

b) contacting said substrate, or a portion thereof, with a liquid mixture containing a cross-linking agent which is at least partially soluble in said liquid mixture comprising water and an organic liquid, for a period of time and at a temperature and concentration of said agent sufficient for said agent to penetrate a surface of said substrate in contact with said mixture, to form cross-linking bridges in said substrate in a decreasing concentration gradient beneath said surface;

c) contacting said substrate with a bioactive agent which is absorbed into said substrate.

5,487,896

ANTIMICROBIAL GLOVE COMPRISING A RAPID RELEASE MATRIX SYSTEM FOR ANTIINFECTIVE AGENT DELIVERY

Shanta Modak, River Edge, N.J., and Lester Sampath, Nyack, N.Y., assignors to Trustees of Columbia University In The City of New York, New York, N.Y.

Filed May 12, 1994, Ser. No. 241,474

Int. Cl.[6] A61K *7/043*

U.S. Cl. 424—402 **16 Claims**

1. An antimicrobial glove comprising chlorhexidine in a bilayer which comprises a latex/chlorhexidine matrix layer, and a starch/chlorhexidine matrix layer wherein the starch/chlorhexidine matrix comprises between 200 mg and 500 mg of starch and between 8 and 20 mg of chlorhexidine gluconate, the antimicrobial glove providing effective antimicrobial action which is releasable within between 30 seconds and 1 minute of exposure to liquid.

5,487,897

BIODEGRADABLE IMPLANT PRECURSOR

Alan M. Polson; Deryl D. Swanson; Richard L. Dunn; Charles P. Cox; Richard L. Norton; Bryan K. Lowe, and Kenneth S. Peterson, all of Fort Collins, Colo., assignors to Atrix Laboratories, Inc., Fort Collins, Colo.

Continuation-in-part of Ser. No. 783,512, Oct. 29, 1991, Pat. No. 5,324,519, which is a continuation-in-part of Ser. No. 384,416, Jul. 24, 1989, Pat. No. 5,077,049. This application Sep. 28, 1993, Ser. No. 127,642

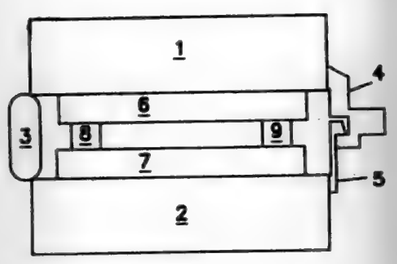
Int. Cl.[6] A61F *2/00*

U.S. Cl. 424—426 **39 Claims**

1. An implant precursor for implantation in a tissue defect in an animal, comprising:

a two-part structure composed of an outer sac and a liquid content; the implant precursor comprising a mixture of a biocompatible, biodegradable, water-coagulable thermoplastic polymer, and a pharmaceutically-acceptable, water-soluble organic solvent;

wherein the implant precursor is capable of reverting to an all liquid form if the implant precursor is not contacted by an aqueous medium.



5,487,898

COMPOSITIONS AND METHOD FOR THE SUBLINGUAL OR BUCCAL ADMINISTRATION THERAPEUTIC AGENTS

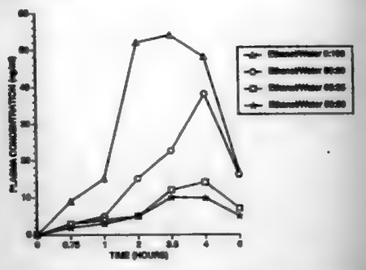
Mou-Ying F. Lu, Lake Bluff, and Thomas L. Reiland, Gages Lake, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 983,111, Nov. 30, 1992, Pat. No. 5,284,657, which is a continuation of Ser. No. 750,843, Aug. 26, 1991, abandoned. This application Feb. 7, 1994, Ser. No. 193,374

The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.

Int. Cl.[6] A61K *38/09*; C07K *7/23*;*17/04*;*17/12*

U.S. Cl. 424—435 **13 Claims**



1. A pharmaceutical composition for the sublingual or buccal administration of a peptide or modified peptide, said modified peptides modified by incorporation of non-naturally occurring amino acid residues, said peptides and modified peptides of twenty amino acids or less, comprising

a) from about 1 to about 100 mg/ml of said peptide or modified peptide,

b) a pharmaceutically acceptable carrier comprising a solvent system comprising from about 20 percent w/v to about 95% w/v of a non-toxic alcohol and from about 0.5% w/v to about 50% w/v of an oral mucosal membrane enhancing agent; said percentages based upon the total volume of career;

with the proviso that said peptide or modified peptide is not leuprolide.

5,487,899

WOUND HEALING

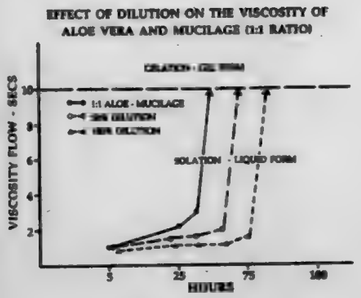
Robert H. Davis, King of Prussia, Pa., assignor to Jess Clarke & Sons, Inc., Westport, Conn.

Filed Jan. 31, 1994, Ser. No. 190,330

Int. Cl.[6] A61K *9/70*

U.S. Cl. 424—443 **8 Claims**

1. A method for the therapeutic treatment of open wounds in animals that comprises: (1) adding a first wound-healing composition to an open wound, and (2) overlaying the first wound-healing composition with a bandaging mixture comprising about a 1:1 ratio of whole leaf Aloe vera and Aloe vera mucilage.



5,487,900

STABILIZED VITAMIN D PREPARATION

Hiroki Itoh, Takarazuka; Tetsuro Tabata, and Jun-Ichi Kikuta, both of Osaka, all of, Japan, assignors to Takeda Chemical Industries, Limited, Osaka, Japan

Continuation of Ser. No. 865,613, Apr. 9, 1992, abandoned. This application Feb. 7, 1994, Ser. No. 193,650

Claims priority, application Japan, Apr. 9, 1991, 3-076210; Feb. 4, 1992, 4-019099

Int. Cl.[6] A61K *9/48*

U.S. Cl. 424—451 **17 Claims**

1. A composition of a heat-labile active vitamin D_2 compound, which comprises an aqueous solution of a heat-labile active vitamin D_2 compound being dispersed in a basic polymer selected from the group consisting of vinyl acetate polymers and acrylic acid copolymers, wherein the aqueous solution has a pH of about 8.0 to 13.0.

5,487,901

PROCESS FOR PREPARING PHARMACEUTICAL TABLET CAPABLE OF RELEASING THE ACTIVE INGREDIENTS CONTAINED THEREIN AT SUBSEQUENT TIMES

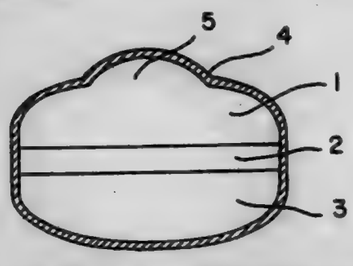
Ubaldo Conte, Busto Arsizio; Aldo La Manna, and Lauretta Maggi, both of Pavia, all of, Italy, assignors to Ekita Investments N.V., Curacao, Netherlands Antilles

Filed May 24, 1994, Ser. No. 248,338

Claims priority, application Italy, May 31, 1993, MI93A1120

Int. Cl.[6] A61K *9/22*

U.S. Cl. 424—472 **10 Claims**



1. Process for the preparation of a pharmaceutical tablet containing one or more drugs, capable of releasing said drugs at subsequent times, said tablet comprising upper, intermediate and lower superposed layers, said upper layer comprising a drug which is formulated to provide for the immediate release of said drug upon contact with aqueous fluids; said intermediate layer being formulated without any drug but being formulated to slowly erode or dissolve upon contact with aqueous fluids; and said lower layer comprising a drug which is the same as the drug in said upper layer or which is different from the drug in said upper layer and is also formulated to provide for the immediate release of said drug upon contact with aqueous fluids, said process comprising:

(a) preparing a tablet having said upper, intermediate and lower layers wherein either of said upper or lower layers has an elevated portion of the outer surface which is elevated with respect with the other portion of said outer surface;

(b) coating the surface of the tablet of step (a) with a polymeric film which is impermeable to aqueous fluids;

(c) removing, by abrasion, said elevated portion of the outer surface of either of said upper or lower layers to allow contact of said upper or lower layer with the environment; and

(d) coating the tablet obtained in step (c) with a polymeric material which is soluble in aqueous fluids.

5,487,902

CHEWING GUM COMPOSITION WITH ACCELERATED, CONTROLLED RELEASE OF ACTIVE AGENTS

Carsten Andersen, Vejle, and Morten Pedersen, Rådovre, both of, Denmark, assignors to Fertin Laboratories Ltd. (Dansk Tyggegummi Fabrik A/S), Vejle, Denmark

Continuation of Ser. No. 820,687, Feb. 12, 1992, abandoned. This application Sep. 19, 1994, Ser. No. 308,620

Claims priority, application Denmark, Jul. 24, 1989, 3653/89

Int. Cl.[6] A23G *3/30*

U.S. Cl. 426—3 **16 Claims**

1. Chewing gum composition with accelerated, controlled release of substantially fat-soluble active agents, produced by combining

i) a chewing gum base having a resin component, wherein said resin component of the chewing gum base comprises at least 25 weight % of a resin selected from the group consisting of terpene resins, glycerol ester of polymerized rosin, pentaerythritol ester of wood or gum rosin, pentaerythritol ester of partially hydrogenated wood or gum rosin, glycerol ester of partially hydrogenated wood or gum rosin, and high molecular weight polyvinyl acetate resins with a molecular weight of at least 30,000, with

ii) one or more substantially fat-soluble active agents, additives, and at least one solubilizer in a quantity of 1–10 weight %, said solubilizer having an HLB value of 14–20.

5,487,903

METHOD FOR IMPROVING THE QUALITIES OF MEAT AND MEAT PIECE TREATED THEREBY

Takaaki Yokoyama; Hirotaka Sasaki; Yumiko Ohno, all of Ibaraki; Kentaro Nakajima, Chiba; Yasuhiro Miura, and Hideki Mori, both of Ibaraki, all of, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 358,308

Claims priority, application Japan, Dec. 17, 1993, 5-343815; Jan. 18, 1994, 6-017932

Int. Cl.[6] A23L *1/318*

U.S. Cl. 426—56 **22 Claims**

1. A method for improving the qualities of meat which comprises treating a meat piece with an ester represented by the following formula (1):



(1)

wherein one of R^1 and R^2 represents a saturated or unsaturated monocarboxylic acid residue having 2 to 24 carbon atoms while the other represents a dicarboxylic acid residue.

5,487,904

BEVERAGE BASE OF COCOA COATED SUGAR GRAINS

William G. Caly, Jougne, France, assignor to Nestec S.A., Vevey, Switzerland

Continuation of Ser. No. 846,595, Mar. 5, 1992, Pat. No. 5,338,555. This application May 24, 1994, Ser. No. 248,323

Claims priority, application European Pat. Off., Mar. 28, 1991, 91104934

The portion of the term of this patent subsequent to Aug. 16, 2011, has been disclaimed.

Int. Cl.[6] A23C *9/156*; A23G *1/00*

U.S. Cl. 426—96 **17 Claims**

1. A particulate beverage base composition comprising particles having a core of an individual crystallized sugar grain having a mean diameter of from 250 μm to 500 μm and a coating of cocoa powder, the composition having a poured apparent voluminal mass (d1) of 630 g/l to 750 g/l, a free apparent voluminal mass (d2) of 750 g/l to 860 g/l and a degree of compressibility (d2-d1)/d2 below 20%.

5,487,905

PROCESS FOR THE PRODUCTION OF CANNELLONI

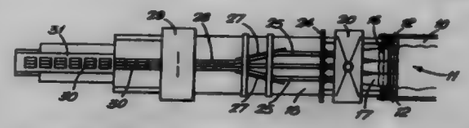
Lars Askman, Billesholm; Werner Leonhardt, Astorp, and Ingemar Svahn, Odakra, all of, Sweden, assignors to Nestec S.A., Vevey, Switzerland

Filed Jul. 5, 1994, Ser. No. 270,938

Claims priority, application European Pat. Off., Jul. 13, 1993, 93111161

Int. Cl.[6] A21C *9/06*

U.S. Cl. 426—297 **11 Claims**



1. A process for the continuous production of cannelloni comprising the steps of:

forming and blanching a longitudinally extending pasta strand to obtain a blanched strand;

cutting the blanched strand along its longitudinal extent into a plurality of strips to obtain longitudinally extending strips positioned side-by-side; and

with respect to each strip:

passing the strip in a direction of its longitudinal extent to and by a roller having a configuration of a curved surface and contacting the strip with the roller surface to curve the strip so that the curved strip has an upper curved surface which is concave in shape and a lower curved surface which is convex in shape, transporting the curved strip on a conveyor belt so that the convex surface is carried by the belt and depositing a filling onto the concave surface and forming the curved strip into a tube for enclosing the filling within the tube and so that the strip overlaps, and then, cutting the tube into tubular pieces.

5,487,906

METHOD OF FORMING STABLE AQUEOUS SOLUTIONS OF STANNOUS COMPOUNDS

Nagaraj Dixit, Plainsboro; Gary Durga, Edison; Michael R. Burke, Somerset; Michael Principe, West Windsor, and Suryakant Patel, Bridgewater, all of N.J., assignors to Colgate-Palmolive Company, Piscataway, N.J.

Filed Dec. 15, 1994, Ser. No. 356,804

Int. Cl.[6] A61K *33/16*;*7/18*

U.S. Cl. 424—673 **11 Claims**

1. A method for the preparation of an aqueous oral care composition containing a stable stannous ion releasing compound which comprises first dissolving the stannous compound in an aqueous

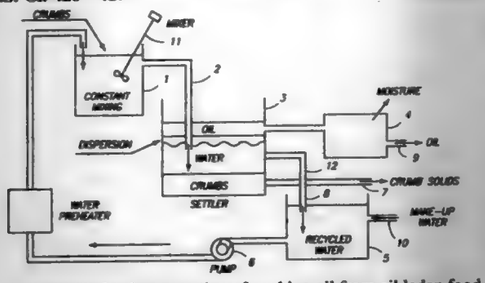
solution of citric acid or its alkali metal salt to prepare a premix and then adding the premix to the vehicle of the oral care composition.

5,487,907

PROCESS TO RECOVER OIL FROM CRUMBS, FOOD PARTICLES AND CARBOHYDRATE MATRICES

David C. Drown, 818 Vista St., Moscow, Id. 83843-9629, and Karen Montez, 1010 Deakin #6, Moscow, Id. 83843

Filed Oct. 14, 1994, Ser. No. 324,170
Int. Cl.[6] C11B *13/00*
U.S. Cl. 426—417 15 Claims



1. A process for the separation of cooking oil from oil laden food crumbs, comprising the steps of:

a. providing food crumbs which contain cooking oil;

b. providing water to the food crumbs, the water being above a minimum temperature sufficient to effect separation of the food crumbs and oil, resulting in a combination of food crumbs, oil and water;

c. agitating the combination of food crumbs, oil and water;

d. placing the combination of food crumbs, oil and water into a non-turbulent settling container where the combination of food crumbs, water and oil is allowed to stratify; and

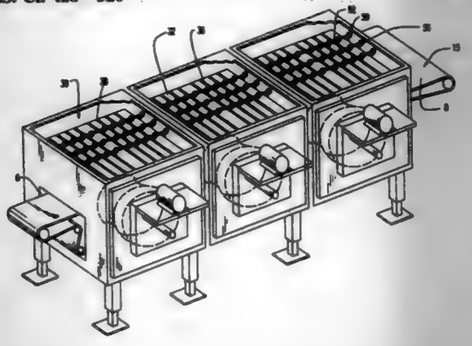
e. removing stratified oil from the upper portion of the settling container.

5,487,908

METHOD AND DEVICE FOR TRANSMITTING HEATING OR COOLING MEDIUM TO A FOOD PRODUCT ON A MOVING SUBSTRATE

Jack Appolonia, Yardley, Pa.; Robert Muscato, Monmouth Junction, and George Wittel, Bridgewater Township, both of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Continuation of Ser. No. 23,299, Feb. 26, 1993, Pat. No. 5,334,406. This application Jul. 28, 1994, Ser. No. 281,938
The portion of the term of this patent subsequent to Aug. 2, 2011, has been disclaimed.
Int. Cl.[6] A23L *1/00;* A21B *1/00;* F25D *17/00*
U.S. Cl. 426—520 27 Claims



26. A method of heating or cooling a food product comprising:

passing a multidirectional flow of the heating or cooling medium into at least one continuous channel traversing at least a major portion of the width of a moving substrate having thereon said food product said channel being in the shape of a paralleliped and having spaced-apart parallel walls, and discharging the heating or cooling medium in a unidirectional flow through a second opening toward the food product on said moving substrate.

5,487,909

PROCESS FOR PREPARING A MEAT EMULSION CONTAINING MEAT BROTH

Dale D. Zabel, Basking Ridge; Charles B. Brown, Rutherford, both of N.J., and James V. Cassetta, Pearl River, N.Y., assignors to Thomas J. Lipton Co., Division of Conopco, Inc., Englewood Cliffs, N.J.

Filed Oct. 18, 1994, Ser. No. 324,551
Int. Cl.[6] A23L *1/317*
U.S. Cl. 426—574 9 Claims

1. A method of preventing excessive cooking yield loss and enhancing the flavor of a ground or chopped meat product by lowering the concentration of auxiliary ingredients necessary to obtain a perceived flavor change in said product after cooking comprising:

(a) comminuting lean meat to prepare a lean meat mixture and controlling said comminuting to form a continuous heat-settable lean meat phase;

(b) adjusting the temperature of said lean meat phase to 30° F. to 40° F.;

(c) preparing a water-in-oil emulsion having a continuous phase containing edible fat and a discontinuous aqueous phase containing a gellable meat broth;

(d) hardening said Water-in-oil emulsion by reducing the temperature thereof to 20° F. to 30° F.; and

(e) mixing the lean meat phase of (b) and the hardened emulsion of (d) at a temperature of 10° F. to 30° F. to produce said ground or chopped meat product.

5,487,910

PROCESS FOR PREPARING A MEAT EMULSION CONTAINING MEAT BROTH AND PRODUCT THEREOF

Dale D. Zabel, Basking Ridge; Charles B. Brown, Rutherford, both of N.J., and James V. Cassetta, Pearl River, N.Y., assignors to Thomas J. Lipton, Co., Division of Conopco, Inc., Englewood Cliffs, N.J.

Filed Nov. 29, 1994, Ser. No. 346,103
Int. Cl.[6] A23L *1/317*
U.S. Cl. 426—574 13 Claims

1. A method of preventing excessive cooking yield loss and enhancing the flavor of a ground or chopped meat product by lowering the concentration of auxiliary ingredients necessary to obtain a perceived flavor change in said products after cooking comprising:

(a) comminuting lean meat to prepare a lean meat mixture and controlling said comminuting to form a continuous heat-settable lean meat phase;

(b) adjusting the temperature of said lean meat phase to 30° F. to 40° F.;

(c) preparing a water-in-oil emulsion having a continuous phase containing edible fat and a discontinuous aqueous phase containing a gellable meat broth;

(d) hardening said water-in-oil emulsion by reducing the temperature thereof to 20° F. to 30° F.;

(e) mixing the lean meat phase of (b) and the hardened emulsion of (d) at a temperature of 10° F. to 30° F. to produce said ground or chopped meat product; and then

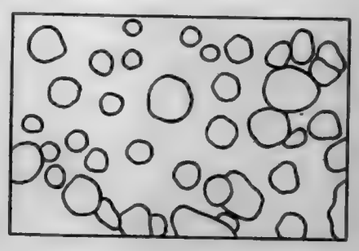
(f) heating said product at a temperature sufficiently high and for a sufficient length of time to achieve an internal temperature of 155° F.–165° F., thereby heat setting said product.

5,487,911

PROCESSED EGG POWDER AND PROCESS FOR PRODUCTION THEREOF

Tsunesuke Ueda, Hino; Tadao Kusama, Fuchu, and Kazuo Honma, Tama, all of, Japan, assignors to Kewpie Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 879,681, May 4, 1992, abandoned, which is a continuation of Ser. No. 606,137, Oct. 31, 1990, abandoned. This application Jul. 22, 1994, Ser. No. 279,085
Claims priority, application Japan, Jan. 31, 1989, 1-283445; Jul. 17, 1990, 2-188353
Int. Cl.[6] A23L *1/32*
U.S. Cl. 426—614 6 Claims



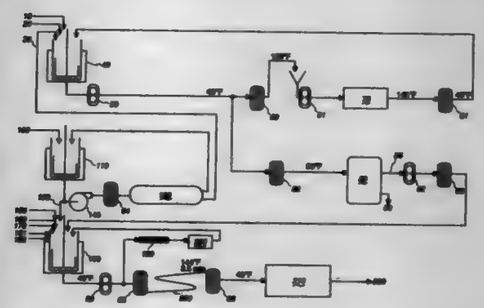
1. A processed egg yolk powder consisting essentially of water-insoluble dry egg yolk particles of substantially spherical shape, wherein the insolubility in water of said processed egg yolk powder corresponds to an NSI Index of about 30 or less.

5,487,912

METHOD OF PRODUCING CHOLESTEROL-REDUCED WHOLE EGG PRODUCTS

Ronald L. Melbach, Deerfield; Pamela S. Hockenberry, Evanston, and Bilal Kaafarani, Hoffman Estates, all of Ill., assignors to Kraft Foods, Inc., Northfield, Ill.

Continuation of Ser. No. 212,276, Mar. 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 102,114, Aug. 4, 1993, abandoned, which is a continuation of Ser. No. 829,398, Feb. 3, 1992, abandoned. This application May 1, 1995, Ser. No. 431,624
Int. Cl.[6] A23L *1/32*
U.S. Cl. 426—614 34 Claims



1. A method of extracting cholesterol from egg yolk, where the method comprises the steps of: combining egg white permeate produced by ultrafiltration, egg yolk and oil to form a mixture containing a ratio of oil to yolk to permeate between about 4:1:0.8 to about 1.5:1.0:0.2; shearing the mixture and recovering a cholesterol-reduced egg yolk and permeate blend by subjecting the sheared mixture to centrifugation so as to separate the oil from the egg yolk.

5,487,913

BUTTER PRODUCTS

Robert N. Fackrell, and Lorenzo P. Griffeth, both of Preston, Id., assignors to Creamery Hollow U.S.A., Inc., Preston, Id.

Filed Mar. 31, 1994, Ser. No. 221,868
Int. Cl.[6] A23C *15/16;15/06;15/18;* A23D *7/015*
U.S. Cl. 426—663 49 Claims

1. A method of making a butter product which comprises the steps of: providing a feedstock comprising sweet cream or whey cream and having a fat content of at least 25 percent and sequentially pasteurizing said feedstock and homogenizing the pasteurized feedstock; the providing, pasteurization, and homogenizing of the feedstock being so carried out as to effect a phase reversal and the formation of an emulsion of feedstock liquid in feedstock fat.

5,487,914

METHOD OF ADDING UV LIGHT ABSORBERS INTO POLYMERIC SURSTRATES

John L. Gerlock, Dearborn, and Mark P. Everson, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 3, 1994, Ser. No. 316,744
Int. Cl.[6] B05D *3/62;3/10;* B32B *35/00*
U.S. Cl. 427—140 6 Claims

1. A method for providing ultraviolet light absorbers into a cured automotive paint, which method comprises the steps of:

providing a coating, on said paint, of a composition comprising ultraviolet light absorber suspended in a non-reactive carrier;

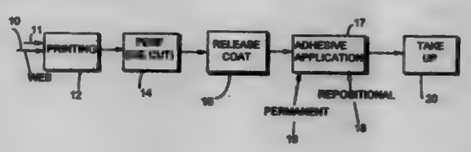
heating said coating to an elevated temperature above about 60° C. for a time sufficient to cause said ultraviolet light absorber to diffuse into said paint.

5,487,915

PERFORATING BLADE/LABEL PERFORATING

Timothy J. Russ, Niagara Falls; Khal M. Khatib, Youngstown, and Jay O. Baker, Grand Island, all of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Division of Ser. No. 321,025, Oct. 6, 1994. This application Jun. 5, 1995, Ser. No. 463,557
Int. Cl.[6] B05D *5/10*
U.S. Cl. 427—208 19 Claims



1. A perforating blade for perforating labels, comprising:

a steel body; and

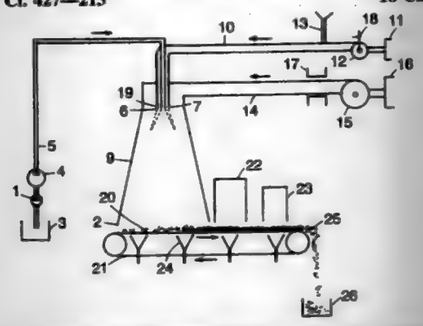
upstanding from said body, a plurality of linearly spaced steel teeth, each tooth having a thickness of about 0.025–0.030 inches, and 30–58 teeth provided per inch, said teeth positioned on said blade so that they provide a cut to tie ratio of 0.018×0.008 to 0.012×0.008;

said body and teeth capable of withstanding thousands of repeated applications of about 500–600 psi without failure during perforation of a label web.

5,487,916
METHOD FOR COATING PARTICLES IN A SPRAY-DRYING PLANT

Børge H. Christensen, Odinshøjvej 116, 3140 Ålsgarde, Denmark

PCT No. PCT/DK92/00384, § 371 Date Jul. 14, 1994, § 102(e) Date Jul. 14, 1994, PCT Pub. No. WO93/11844, PCT Pub. Date Jun. 24, 1993
PCT Filed Dec. 17, 1992, Ser. No. 244,547
Claims priority, application Denmark, Dec. 17, 1991, 2017/91
Int. Cl.[6] B05D *7/00*
U.S. Cl. 427—213 **18 Claims**



1. A method for producing a free-flowing powder comprising particles of a carrier material coated with a coating composition using a spray-drying plant comprising a spray-drying chamber and an atomizing means selected from a high-pressure atomizing nozzle and an atomizing wheel arranged in the spray-drying chamber, the method comprising

supplying the coating composition in liquid form to the atomizing means of the plant and atomizing the liquid coating composition into a flow of droplets,

supplying a flow of transport gas comprising particles of the carrier material dispersed therein to the spray-drying chamber separately from the coating composition,

supplying a flow of drying gas to the chamber, the drying gas being of a temperature selected to solidify the liquid coating composition,

allowing droplets in the flow of liquid droplets of the coating composition to collide with the particles of the carrier material dispersed in the transport gas, the direction and flow rate of the transport gas being adapted to substantially prevent contact between the drying gas and the droplets, so that the liquid coating composition, before any substantial drying thereof, will form a substantially continuous liquid coating layer on the particles, the flow of the transport gas with the particles of the carrier material dispersed therein and the flow of the drying gas being directed substantially parallel to each other and being regulated so that they form a substantially distinct interface of a substantially constant shape in a region upstream of and adjacent to the region where the collision between the liquid droplets and the particles takes place,

then allowing the thus applied continuous coating layer on the particles to at least partially dry by contact with the drying gas, and

withdrawing the coated particles from the spray-drying chamber.

5,487,917
CARBON COATED SUBSTRATES

Kishor P. Gadkaree, Big Flats, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Mar. 16, 1995, Ser. No. 407,522
Int. Cl.[6] B05D *3/02*
U.S. Cl. 427—228 **8 Claims**

1. A method of producing activated carbon supported on a substrate, the method comprising:

a) impregnating a porous substrate with a crosslinking resin curing catalyst;

b) impregnating the catalyst impregnated substrate from step a with a crosslinking thermosetting resin;

c) curing the resin;

d) carbonizing the resin; and

e) activating the carbon by heating the carbon impregnated substrate from step d under oxidizing conditions to remove amorphous carbon and produce molecular size porosity in the carbon thereby producing an activated carbon impregnated substrate.

5,487,918
METHOD OF DEPOSITING METAL OXIDES

Masud Akhtar, 8 Wexford Dr., Lawrenceville, N.J. 08648

Continuation-in-part of Ser. No. 523,326, May 14, 1990, Pat. No. 5,089,248. This application Feb. 18, 1992, Ser. No. 837,216
Int. Cl.[6] C23C *16/40*; B05D *3/02*
U.S. Cl. 427—255.3 **18 Claims**

1. A method of depositing metallic oxides on a substrate, consisting essentially of:

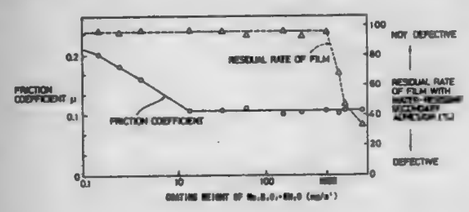
(a) providing a metallic compound in an inert atmosphere, said metallic compound containing a metal selected from the group consisting of Group 1A to Group VIII metals;

(b) reacting said metallic compound with an organosemiconductor oxane to deposit a metallic oxide.

5,487,919
METHOD OF MANUFACTURING OF GALVANIZED STEEL SHEET HAVING HIGH PRESS FORMABILITY

Yoichi Tobiyama; Chiaki Kato; Nobuyuki Morito, and Hajime Kimura, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Continuation-in-part of Ser. No. 71,938, Jun. 3, 1993, abandoned, which is a continuation of Ser. No. 756,528, Sep. 9, 1991, abandoned, which is a division of Ser. No. 636,233, Dec. 31, 1990, abandoned. This application Dec. 29, 1993, Ser. No. 175,682
Claims priority, application Japan, Apr. 9, 1990, 2-93348; Nov. 30, 1990, 2-334296
Int. Cl.[6] B05D *3/00*
U.S. Cl. 427—327 **2 Claims**



1. A method of manufacturing a galvanized steel sheet with high press formability, comprising the steps of:

(a) effecting a galvanization on a steel sheet followed by an alloying treatment;

(b) immersing said galvanized steel sheet in a bath of an aqueous solution containing 0.5 to 2.0 wt % of hydrous borate of an alkali metal;

(c) taking said steel sheet out of said bath and effecting such a control as to make a water-containing borate film on a surface of the steel sheet in a range from 10 to 1,000 mg/m^2;

(d) heating said steel sheet at a temperature ranging from 60° to 100° C. to dry said film and effecting such a control as to make the total water content, including water contained in the water-containing borate film and crystalline water contained in the water-containing borate film, in a range from 20 to 70%.

5,487,920
PROCESS FOR PLASMA-ENHANCED CHEMICAL VAPOR DEPOSITION OF ANTI-FOG AND ANTI-SCRATCH COATINGS ONTO VARIOUS SUBSTRATES

Eugene S. Lopata, and John S. Nakanishi, both of Alameda County, Calif., assignors to The BOC Group, Inc., New Providence, N.J.

Filed Apr. 19, 1994, Ser. No. 230,028
Int. Cl.[6] B05D *3/06*
U.S. Cl. 427—489 **13 Claims**

1. A method for preparing an anti-fog coating, an anti-scratch coating or a combined anti-fog, anti-scratch coating on a surface of a substrate in one or more plasma reaction zones of an evacuated chamber, comprising:

(a) optionally bombarding the surface with plasma species sufficient to clean the surface or to promote adhesion of a coating to be placed thereon;

(b) coating the surface with polymerized silicon by plasma polymerization, the polymerized silicon coating derived from a coating gas stream including a silicon monomer and oxygen, the plasma polymerization being conducted with a power density over a length of time; and,

(c) modifying the coated surface with a plasma composition derived from a surface modifying gas stream, the surface modifying gas stream consisting essentially of from about 80 to 40 mole % N_2O and from about 20 to 60 mole % CO_2.

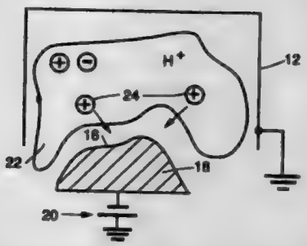
5,487,921

Patent Not Issued For This Number

5,487,922
SURFACE PREPARATION AND DEPOSITION METHOD FOR TITANIUM NITRIDE ONTO CARBON-CONTAINING MATERIALS

Simon K. Nieh, Monrovia; Jesse N. Matossian, Canoga Park; Frans G. Krajenbrink, Newbury Park, and Robert W. Schumacher, Woodland Hills, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 929,970, Aug. 14, 1992, abandoned. This application Jun. 14, 1994, Ser. No. 259,371
Int. Cl.[6] B05D *3/06*; C23C *14/00*; C23F *1/00*
U.S. Cl. 427—528 **24 Claims**



1. A process for depositing a coating of titanium nitride onto a modified surface of a metallic substrate containing greater than 1 wt. % carbon, said carbon comprising graphite, comprising the steps of:

(a) cleaning said surface to remove contaminates from said surface and modifying said surface by exhausting any said graphite from said surface by exposure thereof to a first plasma comprised of ions;

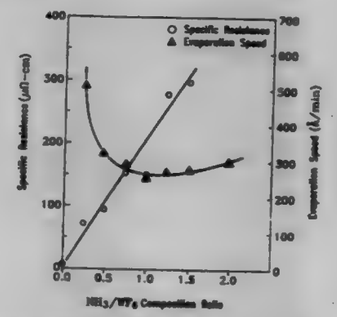
(b) heating said surface with first ions or first electrons from said first plasma to a chosen temperature within the range of about 300° to 600° C.; and

(c) depositing said coating of said titanium nitride onto said modified surface of said substrate in a second plasma which provides second ions while maintaining the temperature of said substrate at said chosen temperature.

5,487,923
METHOD FOR DEPOSITING TUNGSTEN NITRIDE THIN FILMS FOR FORMATION OF METAL WIRINGS OF SILICON SEMICONDUCTOR ELEMENTS

Suk-ki Min, and Yong T. Kim, both of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Continuation of Ser. No. 912,378, Jul. 13, 1992, abandoned. This application Nov. 23, 1993, Ser. No. 155,915
Claims priority, application Rep. of Korea, Jul. 16, 1991, 12125/1991
Int. Cl.[6] C23C *16/00*
U.S. Cl. 427—569 **2 Claims**



1. A method of forming a metallic wiring for a silicon semiconductor device which comprises:

providing a silicon semiconductor substrate;

depositing a layer of tungsten nitride on said silicon semiconductor substrate by a radio frequency plasma enhanced chemical vapor deposition process which utilizes a WF_6-NH_3-H_2 reactant gas mixture and a 13.56 MHz glow discharge; and

depositing a layer of tungsten on said layer of tungsten nitride by a plasma enhanced chemical vapor deposition process which utilizes a WF_6-H_2 reactant gas mixture and a 13.56 MHz glow discharge and produces fluorine atoms from the WF_6,

wherein said tungsten nitride layer prevents corrosion of said silicon semiconductor substrate by said fluorine atoms during the deposition of said tungsten layer.

5,487,924
NAPKIN RING

Dorothy C. Fritze, 6064 Meadowbrook Dr., Morrison, Colo. 80465

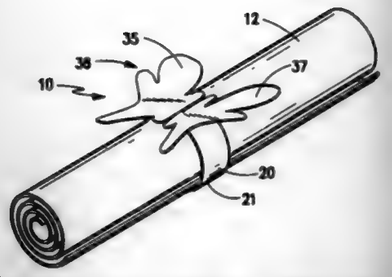
Continuation-in-part of Ser. No. 10,719, Jul. 15, 1993, Pat. No. D. 353,522. This application Nov. 5, 1993, Ser. No. 147,754
Int. Cl.[6] A47G *11/00*; D04D *7/10*
U.S. Cl. 428—5 **21 Claims**

1. A napkin ring adapted to receive a napkin, comprising:

(a) an elongated strip formed of a flexible material, said strip having opposite ends, a pair of lateral side edges extending longitudinally between said ends to define a strip width therebetween, a front surface and a back surface;

(b) a head portion disposed at each opposite end of said strip; and

(c) a pair of cooperating, spaced-apart slots, each of said slots located proximate to a respective one of said head portions, said slots sized and adapted for matable engagement with one another when said strip is configured into a closed loop, said loop to encompass a napkin with said pair of head portions



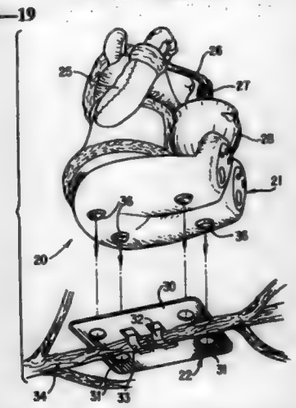
located adjacent to one another in a fastened state, each of said pair of head portions configured to have a perimeter of a selected shape such that said perimeters when said head portions are in the fastened state form a continuous outline of an object.

5,487,925

ORNAMENT/DISPLAY MEMBER

Thomas L. Simmel, Milford; Robert S. McDarren, Ridgefield, both of Conn., and Joseph Truchsess, City Island, N.Y., assignors to Link Group International, Ridgefield, Conn.

Filed Feb. 6, 1995, Ser. No. 384,409
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—19 25 Claims



1. A decorative, exciting ornament/display system constructed for being positioned and securely retained on a conventional support surface and on a branch of a tree, said ornament/display system comprising

A. an attention attracting member

a. constructed to produce at least one function selected from the group consisting of automated visually stimulating movements and presentation of audible and reproducible sounds or messages, and

b. designed for enhancing the appearance and festive decorative effect provided by the member and the area with which the member is associated; and

B. a support plate securely mountable to a limb of a tree and comprising

a. engagement clip means constructed for being removably securely interengaged with a portion of a tree limb for securely affixing the plate to the limb when desired, and

b. securement means formed on the plate for cooperative locking interengagement with the interest generating member for securing the member to the plate when desired;

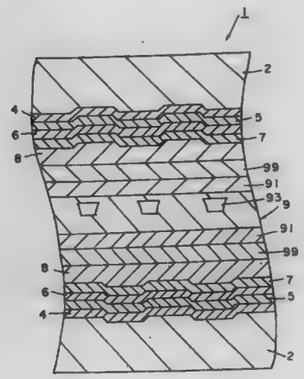
whereby a decorative, exciting ornament/display system is realized which enables an attention attracting member to be quickly and easily mounted to a supporting plate affixed to a tree limb for displaying the member as a part of the tree, as well as enabling the member to be removed from the plate, whenever desired, for displaying the member in any other desired location.

5,487,926

OPTICAL DISK

Isamu Kuribayashi, Saku, and Shin-ichi Tezuka, Nagano, both of, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Nov. 20, 1991, Ser. No. 794,977
Claims priority, application Japan, Nov. 22, 1990, 2-320104; Nov. 22, 1990, 2-320105
Int. Cl.[6] F16B *2/00*; B32B *3/02*; G11B *5/66*
U.S. Cl. 428—33 26 Claims



1. An optical disk comprising:

a pair of disk substrates each having inside and outside surfaces and inner and outer circumferential edges and adapted to be mated such that their inside surfaces face each other;

information carrying means comprising a magneto-optical recording material on at least one disk substrate inside surface;

a pair of self-adheaive layers adjacent each of the respective substrate inside surfaces, a multiplicity of linear channels being formed entirely in at least one self-adhesive layer of said pair of self-adhesive layers and extending from the inner circumferential edge to the outer circumferential edge of said disk substrate joining said at least one self-adhesive layer; and

wherein said self-adhesive layers are bonded together to integrate the pair of disk substrates.

5,487,927

DECORATING METHOD AND PRODUCTS

Melvin E. Kamen, Highlands, and Bhupendra Patel, Edison, both of N.J., assignors to Revlon Consumer Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 824,968, Jan. 24, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 199,415
Int. Cl.[6] B32B *9/00;31/00*
U.S. Cl. 128—34.4 24 Claims

1. A method for decorating a substrate with hot stamping foil comprising the steps of:

a) applying an ink composition comprised of a cationically radiation curable cycloaliphatic epoxide to the substrate in a predetermined design, said ink being operable when cured to bond to the substrate,

b) curing the ink on the substrate by exposing it to the radiation by which it is curable, thereby bonding the ink composition to the substrate,

c) pressing a sheet of hot stamping foil against the substrate with a die heated to a temperature sufficient to cause a portion of the hot stamping foil to adhere to the heated, cured ink design but not to the ink-free areas of the substrate, and

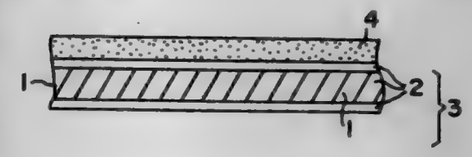
d) removing the die, thereby leaving behind a portion of the foil adhered to the ink design.

5,487,928

FIBER REINFORCED COMPOSITE MATERIAL AND A PROCESS FOR THE PRODUCTION THEREOF

Jun Fujimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 454,266, Dec. 21, 1989, abandoned. This application Jun. 29, 1992, Ser. No. 905,222
Claims priority, application Japan, Dec. 22, 1988, 63-325217; Dec. 22, 1988, 63-325218
Int. Cl.[6] B37B *15/08;27/38;27/06*
U.S. Cl. 428—36.4 5 Claims



1. A prepreg sheet comprising (i) a layer of a composite material for damping vibration prepared by impregnating unidirectionally aligned reinforcing fibers in a matrix resin and semi-hardening the base resin and (ii) a coating thereon of a viscoelastic damping material in a semi-hardened or hardened condition, said viscoelastic damping material having a low Young's modulus with high vibration damping, at room temperature.

5,487,929

REPOSITIONABLE WALL COVERING

George Rusincovitch, Jr., Worthington, and Paul J. Roe, Columbus, both of Ohio, assignors to Borden, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 12,822, Feb. 3, 1993, abandoned. This application Jul. 29, 1994, Ser. No. 282,792
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—40 25 Claims



1. A self-adhesive decorative sheet that is easily repositioned after initial contact with a wall, comprising:

A. a sheet having a decorative front side and a back side;

B. a tacky pressure sensitive adhesive layer applied onto said back side, said layer having gaps lacking adhesive on said back side; and

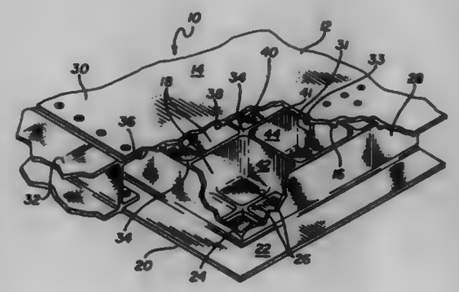
C. projections which are not sticky or tacky rising from said back side within said gaps and having a height at least equal to the thickness of the adhesive, said projections being separated from the adhesive by a portion of said gaps.

5,487,930

THREE STRUCTURE STRUCTURAL ELEMENT WITH INTERLOCKING RIBBING

James J. Lockshaw, Huntington Beach; Stephen Kelly, Yorba Linda; Randall Walker, Santa Ana, and John Kaiser, Jr., Huntington Beach, all of Calif., assignors to Tolo, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 771,009, Oct. 3, 1991, Pat. No. 5,273,806. This application Dec. 27, 1993, Ser. No. 173,611
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—53 33 Claims



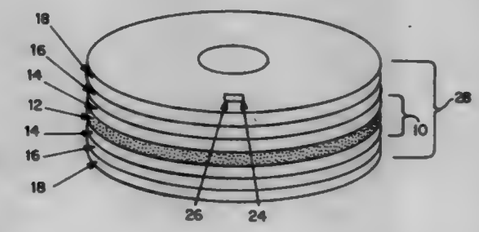
1. Structural element comprising opposed first and second laterally and longitudinally extended surface structures each having a closed figure pattern of ribbing projecting therefrom toward the opposite surface structure, a third structure disposed between said first and second surface structures in ribbing-engaging relation therewith, said opposed ribbing being interlocked across said third structure in registered mating relation.

5,487,931

RIGID DISC SUBSTRATE COMPRISING A CENTRAL HARD CORE SUBSTRATE WITH A HARD, THERMALLY AND MECHANICALLY MATCHED OVERLYING SMOOTHING LAYER AND METHOD FOR MAKING THE SAME

William R. Annacone, 52 Rockview Rd., Southport, Conn. 06490; Kenneth P. Felis, 150 Gay Bowers Rd., Fairfield, Conn. 06430, and Dennis E. Spellotis, 22 Ingleside Rd., Lexington, Mass. 02173

Filed Dec. 2, 1993, Ser. No. 161,233
Int. Cl.[6] B32B *3/02*
U.S. Cl. 428—64.1 23 Claims



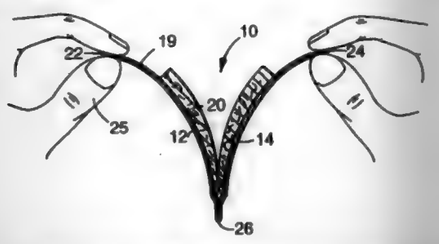
1. A rigid disc substrate capable of supporting a magnetic medium thereon, which comprises a central hard core substrate having a hardness of at least about 1230 Knoop, the hard core substrate consisting of a silicon carbide material having no unbound silicon and having an overlying smoothing layer thereon.

5,487,932

APPLICATOR WIPE FOR VISCOUS FLUIDS

Wayne K. Dunshee, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 898,770, Jun. 12, 1992, abandoned. This application Feb. 1, 1994, Ser. No. 191,050
Int. Cl.[6] A61B 17/20; B65D 75/00
U.S. Cl. 428—68 13 Claims



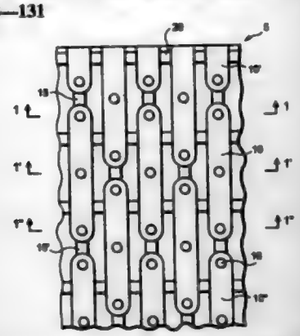
1. A combined fluid storage container and applicator device for viscous fluids, said device comprising a fluid impermeable sheet material having opposed portions positioned in generally flat parallel overlying relation to each other, temporary fluid impermeable seal means sealing said opposed portions to each other along a temporary seal line forming a cavity and enclosing a viscous liquid having a viscosity no less than 250 centipoise between said opposed portions, a low density fluid retaining pad having a density of no more than 0.05 g/cm^3 and a compression resistance of no more than 450 g/cm^2 adhered to each of said opposed portions of said material and disposed in said cavity such that said viscous liquid is generally contained within said pad, and means for opening said temporary seal means along at least a part of the length of said seal line to expose the viscous liquid containing pad that may assume a generally flat configuration while said pad is adhered to each of said opposed portions of said material.

5,487,933

PROSTHETIC ARTICLES AND METHODS FOR PRODUCING SAME

Eugene W. White, Rossiter, Pa., assignor to Interpore International, Irvine, Calif.

Continuation-in-part of Ser. No. 134,260, Oct. 8, 1993, which is a division of Ser. No. 647,999, Jan. 30, 1991, Pat. No. 5,348,788. This application Sep. 19, 1994, Ser. No. 308,762
Int. Cl.[6] B32B 3/24; A61F 2/28
U.S. Cl. 428—131 17 Claims



1. A non-woven porous mesh in sheet form, said mesh comprising:

a continuous sheet having a substantially uniform thickness between opposing sides;

a series of substantially parallel and linked main troughs extending in one horizontal direction along a first side of said sheet, said main troughs having a depth in said sheet that extends substantially into said sheet, said main troughs are spaced from adjacent main troughs by a distance approximately ½ a width of said main trough, said main troughs further linked to co-linear troughs by a first series of secondary shallow troughs;

one or more small openings extending through the bottom of each main trough to a second side of said sheet, said openings having a diameter that is approximately ⅓ the width of said main trough; and

a second series of secondary shallow troughs extending substantially perpendicular to and connecting said main troughs.

5,487,934

Patent Not Issued For This Number

5,487,935

Patent Not Issued For This Number

5,487,936

TEXTILE FABRICS OF DIFFERENTIAL WEAVE COMPRISING MULTIFILAMENT THREADS WHEREIN INDIVIDUAL FILAMENTS HAVE A LINEAR DENSITY OF ONE DECITEX OR LESS

Susan J. Collier, London, United Kingdom, assignor to Collier Campbell Ltd., Northside, England

Filed Mar. 24, 1994, Ser. No. 217,148
Claims priority, application United Kingdom, Mar. 21, 1994, 9405546
Int. Cl.[6] D06P 3/82; B32B 7/00; D03D 15/00
U.S. Cl. 428—229 18 Claims

1. A woven fabric comprising warp threads and weft threads, the fabric exhibiting an iridescent play of color to the eye, wherein the weft threads consist solely of a multifilament microfibre yarn of individual filaments, each filament having a linear density of 1 decitex or less and the warp threads comprise one of cotton or other natural fibres having a bulk similar to the bulk of the microfibre yarn, the warp threads and the weft threads colored together after manufacturing the fabric with dyestuffs specifically directed to the innate structure of the warp threads and the weft threads, thereby producing a harmonious fabric of iridescent color wherein the weft threads have selectively a different color than the warp threads.

5,487,937

METAL-POLYMER COMPOSITE INSULATIVE SPACER FOR GLASS MEMBERS AND INSULATIVE WINDOW CONTAINING SAME

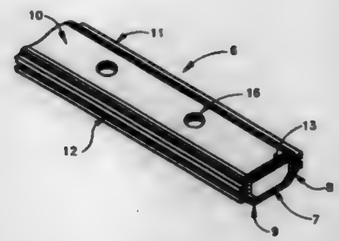
Charles D. Newby, Bexley, Ohio, assignor to Crane Plastics Company Limited Partnership, Columbus, Ohio

Continuation-in-part of Ser. No. 870,018, May 18, 1992, abandoned. This application Jan. 19, 1993, Ser. No. 5,730
Int. Cl.[6] B32B 7/12; E06B 3/24
U.S. Cl. 428—317.1 30 Claims

1. A spacer member for use between two glass members, said spacer member comprising a metal-polymer composite, said composite comprising:

(a) a metal substrate; and

(b) a foamed thermoplastic polymer disposed on said metal substrate and adhered to said metal substrate with a heat activated adhesive so as to form said metal-polymer composite.



5,487,938

SILICA SUPPORTED TRANSITION METAL CATALYST

Lee Spencer, Pearland; Brian W. S. Kolthammer, Lake Jackson; Miriam P. Ripplinger, Lake Jackson; Jeffrey J. Wooster, Lake Jackson; Pak-Wing S. Chum, Lake Jackson, and Jacquelyn A. deGroot, Freeport, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 21,705, Feb. 24, 1993, Pat. No. 5,420,092, which is a division of Ser. No. 854,175, Mar. 20, 1992, Pat. No. 5,231,151, which is a continuation-in-part of Ser. No. 644,053, Jan. 18, 1991, abandoned. This application Nov. 10, 1994, Ser. No. 336,947
Int. Cl.[6] B32B 7/12
U.S. Cl. 428—332 11 Claims

1. In a process for extruding an ethylene/alpha-olefin copolymer into a film, the improvement comprising employing as said ethylene/alpha-olefin copolymer one having greater than about 17 percent high density fraction and a M_w/M_n ratio of less than about 3.6 to form a film having a gauge from about 0.4 to about 1.2 mils, a percent ultimate stretchability of at least about 280, and a puncture resistance of at least about 250 ft-lbs/cm^3.

5,487,939

PROCESS FOR PREPARATION OF COLORED THERMOPLASTIC COMPOSITE SHEETING FOR LAMINATED STRUCTURES

Thomas R. Phillips, Vienna, W. Va., and Siva V. Vallabhaneni, Voorhees, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US91/01586, § 371 Date Sep. 13, 1993, § 102(e) Date Sep. 13, 1993, PCT Pub. No. WO93/16369, PCT Pub. Date Jan. 10, 1992
PCT Filed Mar. 14, 1991, Ser. No. 117,111
Int. Cl.[6] B32B 3/00
U.S. Cl. 428—334 11 Claims



1. A process for preparing colored thermoplastic sheeting for use in laminated structures wherein the thermoplastic sheeting has a roughened surface, the steps comprising

a) coating a layer having a uniform thickness of a non-pigmented binder resin onto a carrier film,

b) coating an ink containing finely divided solid crystalline pigment particles dispersed in a solvent-containing binder resin onto the coated carrier film, to provide a composite coating on said carrier film having a thickness from about 0.2 to 10 microns,

c) drying the said composite coating to remove the solvent and provide a solvent-free coating,

d) bringing the solvent-free composite coating of step c) into contact with the roughened surface of said thermoplastic sheeting,

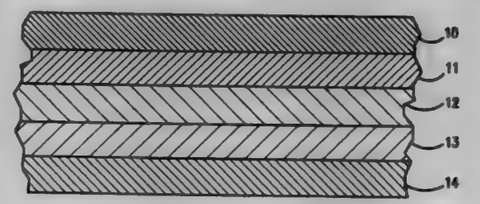
e) separating said carrier film from said composite coating and transferring said composite coating to the surface of said thermoplastic sheeting by applying sufficient heat and pressure to release said composite coating from said carrier film while maintaining the roughened surface of said sheeting.

5,487,940

OXYGEN AND MOISTURE BARRIER METALLIZED FILM STRUCTURE

Eber C. Bianchini, Rochester, N.Y.; Anthony R. Knoerzer, Plano, Tex.; Larry A. Parr, Canandaigua, and Leland W. Reid, Palmyra, both of N.Y., assignors to Mobil Oil Corp., Fairfax, Va.

Continuation-in-part of Ser. No. 80,602, Jun. 24, 1993, Pat. No. 5,380,586, which is a continuation-in-part of Ser. No. 812,493, Dec. 23, 1991, abandoned. This application Aug. 31, 1994, Ser. No. 297,945
Int. Cl.[6] B32B 27/30;33/00
U.S. Cl. 428—349 17 Claims



1. A polymeric film structure which comprises:

(I) a polymeric substrate having at least one treated surface for the receipt of an oxygen barrier coating;

(II) an oxygen barrier coating on said one treated surface of said polymeric substrate, said oxygen barrier coating comprising polyvinyl alcohol cross-linked with an cross-linking agent in the presence of sulfuric acid present in an amount sufficient to catalyze cross-linking of said polyvinyl alcohol, said coating having an outer surface opposite said polymeric substrate; and

(III) a moisture barrier on said outer surface of said oxygen barrier coating, said moisture barrier comprising an oriented polyolefin layer having at least one treated surface and a metal coating thereon whereby said polymeric film structure has enhanced oxygen and moisture barrier properties.

5,487,941

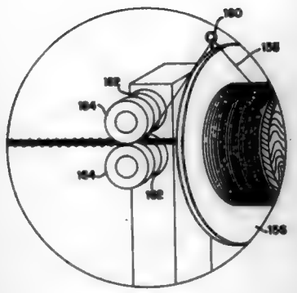
CONTINUOUS/DISCONTINUOUS FILAMENT YARN OR TOW

John N. Pepin, R.R. 1, Box 109N, Alfred, Me. 04002

Continuation-in-part of Ser. No. 98,210, Jul. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 791,071, Nov. 12, 1991, abandoned. This application May 17, 1994, Ser. No. 243,775
Int. Cl.[6] D02G 3/00
U.S. Cl. 428—364 2 Claims

1. A yarn or tow useful in forming molding preforms comprising a single layer of a multiplicity of discontinuous, unentangled filaments 10 in an amount of 40–60% by volume which is sandwiched between a first and second layer of continuous filament bands 14 and 16;

a helical fiber wrap binds said discontinuous filaments 10 together with said first and second continuous filament bands 14 and 16, wherein said helical fiber wrap and said continuous filament bands are formed of a material selected from the group consisting of polyethylene terephthalate, polyphenylene sulfide, polypropylene, polysulfones, polyether ether ketones, polyimides, polyamides, and aluminum.



5,487,942

CARBOXYL GROUP-MODIFIED ACRYLONITRILE FIBER AND PROCESS OF PRODUCING SAME

Reizo Gomibuchi, Uji, Japan, assignor to Nippon Sanmo Senyoku Co., Ltd., Japan

Division of Ser. No. 234,125, Apr. 28, 1994, abandoned. This application Oct. 25, 1994, Ser. No. 329,081
Int. Cl.[6] D02G 3/00
U.S. Cl. 428—364 3 Claims

1. A modified fiber comprising a fiber substrate, said fiber substrate formed of a homopolymer of acrylonitrile or a copolymer of acrylonitrile with a vinyl comonomer, and a graft comonomer graft-copolymerized to said substrate fiber in an amount of 3–60% by weight based on the weight of said substrate fiber, said graft comonomer being at least one member selected from the group consisting of methacrylic acid and hydroxyalkyl methacrylates.

5,487,943

MULTICONSTITUENT FIBERS, AND NONWOVEN STRUCTURES OF SUCH FIBERS

Randall E. Kozulla, Social Circle, Ga., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 47,407, Apr. 19, 1993, abandoned. This application Feb. 27, 1995, Ser. No. 395,484
Int. Cl.[6] D02G 3/00
U.S. Cl. 428—373 24 Claims



1.0 μm

1. A multiconstituent fiber, comprising a dominant continuous linear low density polyethylene phase and at least one discontinuous phase, dispersed through the dominant continuous phase in the form of domains, at least 70 percent by weight of the at least one discontinuous phase comprising domains having a diameter of about 0.05 to about 0.3 microns, the at least one discontinuous phase comprising at least one polymer selected from the group consisting of poly(propylene-co-ethylene) copolymers and polypropylene.

5,487,944

NON-WOVEN FABRIC SHEET SEPARATOR MATERIAL FOR STORAGE BATTERIES AND METHOD FOR MAKING THE SAME

Isao Ikkanzaka, Takarazuka; Kazuhiro Ikeda, Suita, and Yousuke Takai, Hyogo, all of, Japan, assignors to Kansai Juyo Kogyo Co., Ltd., Itami, and Daiwabo Create Co., Ltd., Osaka, both of, Japan

Division of Ser. No. 937,950, Sep. 1, 1992, Pat. No. 5,354,617. This application Oct. 11, 1994, Ser. No. 320,393
Claims priority, application Japan, Jan. 23, 1991, 3-275154
Int. Cl.[6] B05D 3/02
U.S. Cl. 428—374 4 Claims

1. A method of manufacturing an alkaline storage battery separator comprising:

(A) forming a fiber web of conjugate fibers of a thermally bonding type and a polyolefin based fiber, said conjugate fibers comprising a first component having an ethylene based random copolymer of 0.5 to 25% by weight of acrylic acid and/or maleic acid, 0 to 24.5 % by weight of an acrylic acid ester and 99.5 to 75% by weight of ethylene, said copolymer having a melting point Tm_1° C., 70° C.<Tm_1<130° C., and a second component of a polyolefin based resin having a melting point Tm_2° C. of Tm_1+20° C.<Tm_2<250° C., and at least one of said first and second components has a sectional form divided into more than two parts with each component having at least one exposed surface and said first and second components have a weight ratio of 10:90 to 90:10 and an exposure ratio of 95:5 to 50:50;

(B) forming a non-woven fabric sheet by passing said fiber web through thermal press rollers to form a non-woven fabric sheet by melting said first component; and

(C) introducing sulfonic acid groups into tertiary carbon atom locations on the ethylene based random copolymer by contacting the non-woven fabric sheet with a sulfuric acid solution or a SO_3 gas.

5,487,945

DIAMOND FILMS ON NONDIAMOND SUBSTRATES

Peichun Yang; Wei Zhu, both of Raleigh, and Jeffrey T. Glass, Apex, all of N.C., assignors to North Carolina State University, Raleigh, N.C.

Division of Ser. No. 973,633, Nov. 9, 1992, Pat. No. 5,298,286. This application Nov. 5, 1993, Ser. No. 147,594
Int. Cl.[6] B24D 3/02
U.S. Cl. 428—408 18 Claims



1. A structure comprising:

a nondiamond substrate having a face and comprising a transition metal capable of dissolving carbon; and

a plurality of oriented diamond seeds partially dissolved into the face of said substrate and being oriented so that individual diamond seeds are in alignment with a lattice of corresponding adjacent portions of said substrate.

5,487,946

THERMALLY-PROTECTIVE INTUMESCENT COATING

Vincent D. McGinniss, Sunbury; Richard J. Dick, Columbus; Robert E. Russell, III, Newark, all of Ohio, and Stephen D. Rogers, Bowie, Md., assignors to Battelle Memorial Institute, Columbus, Ohio

Filed Aug. 2, 1994, Ser. No. 284,362
Int. Cl.[6] B27N 9/00; B32B 7/02
U.S. Cl. 428—413 18 Claims

1. A coating system for thermally protecting a substrate having a surface exposed to fire conditions comprising:

(a) a first coating layer coated on said surface of said substrate and cured thereon to form a first film layer which layer is thermally decomposable upon exposure to said fire conditions to form a first carbonific char which char intumesces to form a first rigid carbonific char foam; and

(b) a second coating layer coated on said first film layer and cured thereon to form a second film layer which layer is thermally decomposable upon exposure to said fire conditions to form a second carbonific char which char intumesces to form an insulative carbonific char foam having a density about half the density of said first rigid carbonific char foam, said first rigid carbonific char foam forming where said insulative carbonific char foam has broken through to expose said first film layer to said fire conditions; and wherein said coating system has a thickness of less than 50 mils.

5,487,947

WATER SOLUBLE COMPOSITE FILM

Osamu Kakishita; Jun Nishioka, both of Nagahama; Takeshi Fujita, Uji, and Katsuaki Matsuo, Kyoto, all of, Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, and Mitsubishi Plastics, Inc., Tokyo, both of, Japan

Filed Jul. 29, 1994, Ser. No. 282,538
Claims priority, application Japan, Aug. 3, 1993, 5-192439
Int. Cl.[6] B32B 27/30;27/36;27/40
U.S. Cl. 428—424.4 4 Claims

1. Water soluble composite film comprising a polyvinyl alcohol resin film laminated on a layer of a water soluble compound composed of a repetitive unit of the general formula (1):

$$—(A—X—A—R_2)— \quad (1)$$

wherein, A is a unit composed of a repetition of $—(CH_2CH_2O)—$ an

$$—(CH_2\underset{\displaystyle R_1}{\underset{|}{C}}HO)—,$$

provided that the unit $—(CH_2CH_2O)—$ exists at not less than 70% by weight in A, a repetitive number of $—(CH_2CH_2O)—$ is a positive number, and a repetitive number of

$$—(CH_2\underset{\displaystyle R_1}{\underset{|}{C}}HO)—$$

is zero or a positive number, R_1 is a hydrocarbon group, X is an organic residue of an organic compound having two active hydrogen groups and R_2 is a dicarboxylate compound residue or a diisocyanate compound residue, and wherein the weight average molecular weight of —A—X—A— is not less than 1,000.

5,487,948

BIS(BIS-SILYLALKYL) DICARBOXYLATES AS ADHESION PROMOTERS AND COMPOSITIONS CONTAINING THEM

Judith Stein, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 26, 1995, Ser. No. 378,692
Int. Cl.[6] B32B 9/04
U.S. Cl. 428—447 13 Claims

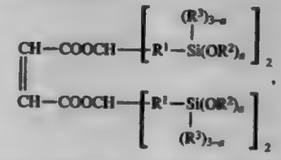
1. An addition curable composition comprising a mixture of:

(reagent A) at least one polyorganosiloxane having alkenyl groups bonded to silicon;

(reagent B) at least one hydride polyorganosiloxane comprising at least one organosiloxane unit having an Si—H moiety;

(reagent C) as a catalyst, at least one platinum group metal compound in an amount effective to cause hydrosilylation of reagent A with reagent B; and

(reagent D) an adhesion promoting proportion of a bis(bis-silylalkyl) dicarboxylate ester having the formula



(I)

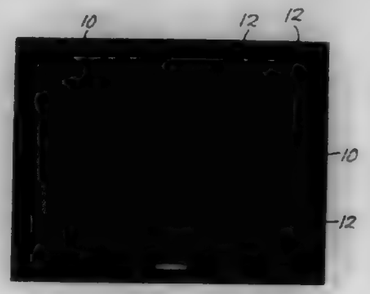
wherein R^1 is C_{2-6} alkylene, each of R^2 and R^3 is independently C_{1-8} alkyl and a is from 1 to 3, said ester being the cis- or trans-isomer or a mixture thereof.

5,487,949

NON-CHROMATED OXIDE COATING FOR ALUMINUM SUBSTRATES

Matthias P. Schriever, 27636 128th Pl. SE., Kent, Wash. 98031

Division of Ser. No. 525,800, May 17, 1990, Pat. No. 5,298,092. This application Dec. 23, 1993, Ser. No. 173,591
Int. Cl.[6] B32B 15/04
U.S. Cl. 428—472.1 5 Claims



2. A coated article exhibiting corrosion resistance and paint adhesion properties, said article comprising:

(a) a substrate, said substrate being aluminum or aluminum alloy; and

(b) a cobalt conversion coating formed on said substrate, said cobalt conversion coating comprising aluminum oxide Al_2O_3 as the largest volume percent, and one or more cobalt oxides from the group consisting of CoO, Co_3O_4, and Co_2O_3.

5,487,950

MULTILAYER LACQUERING OF POLAR FILM SUBSTRATES BY A SINGLE APPLICATION OF MATERIAL

Gunter Weber, Fallingbostel; Ulrich Reiners, Neuenkirchen, and Sebastian Meyer-Stork, Bielefeld, all of, Germany, assignors to Wolff Walsrode Aktiengesellschaft, Walsrode, Germany

Filed Feb. 3, 1994, Ser. No. 191,568

Claims priority, application Germany, Feb. 10, 1993, 43 03 833.6

Int. Cl.[6] B32B *9/04*

U.S. Cl. 428—484 12 Claims

1. A coating system which upon a :single application to a polar film forms a multilayer structure on said film, comprising an aqueous carrier and

A) a wax melting between about 50° and 120° C. and present as particles of a diameter below 1 μm,

B) a copolymeric binder, constituting from about 10 to 60% by weight of the solids in said aqueous carrier and comprising monomeric units of at least two members selected from the group consisting of an acrylate, a methacrylate, vinyl acetate, vinyl alcohol, ethylene, propylene, styrene, acrylic acid, methacrylic acid, acrylamide and acrylonitrile,

C) the wax being present in from about 3 to 50% by weight of the copolymeric binder,

there being a difference of at least about 10 mN/m in surface tension between an otherwise identical system containing

i) said wax but not said copolymeric binder, and

ii) said copolymeric binder but not said wax,

the film having a difference in surface tension of at least about 10 mN/m relative to said coating system.

5,487,951

MAGNETIC RECORDING MEDIUM WITH A BINDER RESIN OF A STARBLOCK COPOLYMER HAVING AT LEAST SIX ARMS

Christopher M. Evans, Walden, and Colin F. W. Norman, Bishop's Stortford, both of, England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

PCT No. PCT/US92/05705, § 371 Date Jan. 7, 1994, § 102(e) Date Jan. 7, 1994, PCT Pub. No. WO93/01592, PCT Pub. Date Jan. 21, 1993

PCT Filed Jul. 7, 1993, Ser. No. 175,439

Claims priority, application United Kingdom, Jul. 8, 1991, 914668

Int. Cl.[6] G11B *5/00*

U.S. Cl. 428—523 7 Claims

1. A magnetic recording medium comprising a magnetic paint coated on a nonmagnetic support, wherein the magnetic paint comprises magnetizable particles dispersed in a polymeric binder, wherein the binder consists essentially of a star block copolymer of general formula (I):

$$(A\text{-}B)_m\text{-}X$$

in which;

X represents a polyfunctional coupling moiety and each (A-B) represents a polymeric arm radiating from the polyfunctional coupling moiety X,

m has a number average value of at least 6,

A represents a polymeric segment having a glass transition temperature of at least 75° C. and B represents a polymeric segment having a glass transition temperature no greater than 25° C., wherein polymeric segment A is incompatible with the polymeric segment B, and wherein each arm (A-B) may comprise one or more polymeric segments A and one or more polymeric segments B with the proviso that the polymeric segments A comprise at least 50% of the total weight of the star block copolymer and the free ends of the arms (A-B) comprise the polymeric segment A.

5,487,952

SINTERED BI2TE3-BASED THERMOELECTRIC MATERIALS PREVENTING P- TO N-TYPE TRANSITION

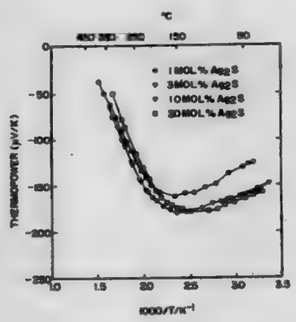
Han-Ill Yoo, 329, Mokdong Apt. 1405-704, Sinjeong-Dong, Yangcheon-Ku, Seoul; Tae Ho Park, 527-3, Somang Villa 201, Wooman-Dong, Paldal-Ku, Suwon; Dae Suk Kang, Garamdongsan Apt. 13-505, Samcheon-Dong, Seo-Ku, Daejon, and Beoung Doo Yoo, 1-38, Munhwa-Dong, Jung-Ku, Daejon, all of, Rep. of Korea

Filed Nov. 18, 1994, Ser. No. 342,356

Claims priority, application Rep. of Korea, Nov. 20, 1993, 1993-24863

Int. Cl.[6] B22F *3/10;7/00*

U.S. Cl. 428—552 4 Claims



1. A Bi_2Te_3-based thermoelectric material that contains Ag_2S, said Ag_2S being present in an amount up to 20 mol % for preventing p- to n-type transition during sintering.

5,487,953

ORGANIC ELECTROLUMINESCENT DEVICE

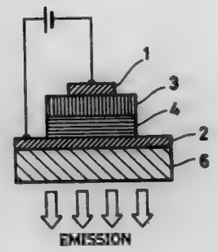
Yasuhiro Shirota, Toyonaka; Hiroshi Inada, Kobe; Yoshinobu Yonemoto, Tsurugashima; Takeo Wakimoto, Tsurugashima, and Kunio Imai, Tsurugashima, all of, Japan, assignors to Pioneer Electronic Corporation, Tokyo, and Bando Chemical Industries, Ltd., Kobe, both of, Japan

Filed Sep. 20, 1994, Ser. No. 309,538

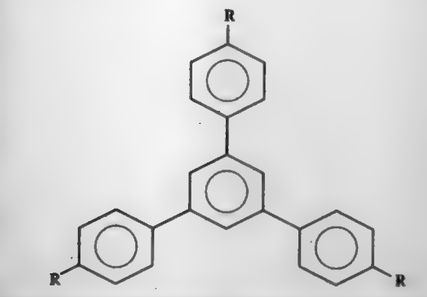
Claims priority, application Japan, Sep. 22, 1993, 5-236729

Int. Cl.[6] H05B *33/20;* H01J *1/62*

U.S. Cl. 428—690 2 Claims



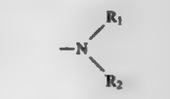
1. An organic electroluminescent device comprising a cathode, an emitting layer of organic compound, a hole transport layer of organic compound and an anode which are laminated in sequence, wherein said hole transport layer is made of a triphenylbenzene derivative represented by the following formula (1):



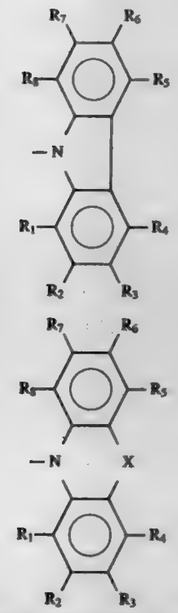
(1)

where R each independently represents one of functional groups represented by (Ra), (Rb) and (Rc):

(Ra)



(Rb)



(Rc)

where R_1–R_8 denote independently a hydrogen atom, an alkyl group, an aryl group, an alkoxy group, an acyl group or an aralkyl group, and X denotes an oxygen atom, a sulfur atom or a selenium atom.

5,487,954

NON-ACICULAR MODIFIED HIGH COERCIVITY IRON OXIDES FOR HIGH DENSITY MAGNETIC RECORDING AND THE PROCESSES OF MAKING THE SAME

Tsung-Shune Chin, and Ming-Cheng Deng, both of Hsinchu, Taiwan, Prov. of China, assignors to National Science Council, Taipei, Taiwan, Prov. of China

Filed Dec. 4, 1991, Ser. No. 802,354

Int. Cl.[6] G11B *5/66;* C04B *35/00;* C01G *49/02*

U.S. Cl. 428—694 B 22 Claims

8. A magnetic recording medium made of non-acicular modified iron oxide having high coercivity and with a general formula of gamma $(Fe,M)_2O_3$, wherein M are doped elements to replace iron and are chosen from the group consisting of manganese, cobalt and zinc wherein the total amount of M-ions is 15 to 40 weight percent, corresponding to 14.5 to 39 atomic percent, of the total cations; wherein said manganese dopant is 4 to 20 weight percent corresponding to 4.1 to 20.5 atomic percent, said cobalt dopant is 4 to 22 weight percent corresponding to 3.5 to 21 atomic percent and said zinc dopant is 0.5 to 4 weight percent corresponding to 0.3 to 3.6 atomic percent.

5,487,955

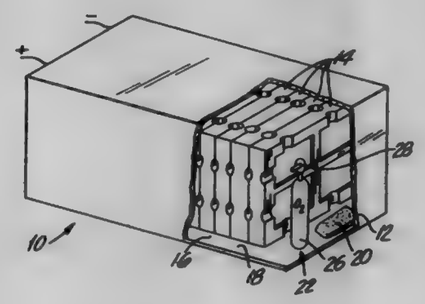
COOLED ZINC-OXYGEN BATTERY

Menachem Korall; Yehuda Harats; Boris Dechovich; Jonathan R. Goldstein, all of Jerusalem, and Binyamin Koretz, Efrat, all of, Israel, assignors to Electric Fuel (E.F.L.) Ltd., Jerusalem, Israel

Continuation-in-part of Ser. No. 286,539, Aug. 5, 1994, Pat. No. 5,445,901, which is a continuation-in-part of Ser. No. 213,674, Mar. 15, 1994, Pat. No. 5,366,822. This application Feb. 13, 1995, Ser. No. 387,277

Int. Cl.[6] H01M *10/50;12/06*

U.S. Cl. 429—26 17 Claims



1. A multi-cell, sealed, cooled, zinc-oxygen battery, comprising a container containing:

a) a plurality of bi-cells, each cell having a housing provided with two major surfaces and accommodating a pair of oppositely-disposed, spaced-apart, air-permeable, liquid-impermeable cathodes in the form of oxygen-reduction electrodes, and defining between themselves a cavity configured to accommodate an anode of said battery and electrolyte, substantial portions of the major surfaces of said housing being removed, thus exposing major portions of said oxygen-reduction electrodes, and wherein two major surfaces are partly recessed in such a way as to form, in conjunction with a similarly-recessed outer surface of a major wall of an adjacent cell housing, an inter-cathode gas space between adjacent cells with a plurality of oxygen access openings leading thereto;

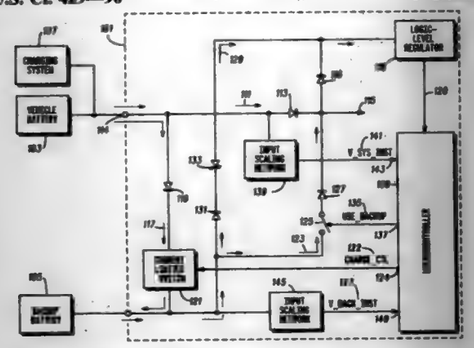
b) an anode positioned within said cavity and comprising an active zinc anode component compacted into a rigid static bed of active anode material of tight interparticulate structure, said anode being provided with at least one internal fluid-carrying passage with inlet and outlet means, for circulating cooling fluid therethrough;
c) a dead space volume between inner surfaces of said housing and said plurality of bi-cells; and
d) pressurized oxygen supply means for feeding oxygen to said dead space volume, for consumption in said inter-cathode gas spaces.

5,487,956

ADAPTIVE BACKUP BATTERY MANAGEMENT FOR VEHICULAR BASED ELECTRONIC MODULES

Steven D. Bromley, 9804 Woodshire Dr., Austin, Tex. 78748; James F. Herrmann, 112 Cedar Dr., Buda, Tex. 78610, and Mark V. Emery, 6115 Oliver Loving Trail, Austin, Tex. 78749

Filed Sep. 16, 1994, Ser. No. 308,014
Int. Cl.[6] H01M *10/48*
U.S. Cl. 429—90 9 Claims



6. A backup battery management apparatus having a backup battery and a charging system driving a vehicle battery, the apparatus comprising:
first averaging means for averaging a voltage derived from the vehicle battery at a first rate and providing a short-term average system voltage in response thereto;
second averaging means for averaging the short-term average system voltage, at a second rate lesser than the first rate, and providing a long-term average voltage in response thereto; and
means for charging the backup battery from the charging system while the short-term average system voltage exceeds the long-term average voltage by a predetermined threshold.

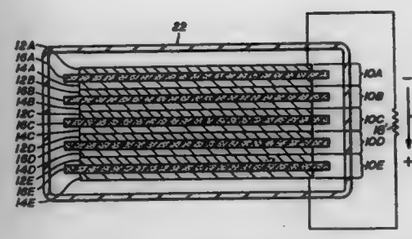
5,487,957

METHOD AND APPARATUS FOR CONVERTING CHEMICAL AND THERMAL ENERGY INTO ELECTRICITY

Meredith Gourdine, Pearland, Tex., assignor to Energy Innovations, Inc., Houston, Tex.

Continuation of Ser. No. 671,097, Mar. 18, 1991, abandoned, which is a continuation of Ser. No. 398,062, Aug. 24, 1989, abandoned, which is a division of Ser. No. 14,442, Feb. 13, 1987, Pat. No. 4,916,033. This application Sep. 2, 1992, Ser. No. 939,854
Int. Cl.[6] H01M *2/14*
U.S. Cl. 429—49 14 Claims

1. A thermovoltaic cell, comprising:
a first electrode made of an electrically conductive material;
a second electrode made of a metal; and
a porous nonmetallic solid separator that readily passes gaseous oxygen ions therethrough located adjacent to and between the first electrode and the second electrode, the first and second electrodes each having a different oxidation-reduction reaction occurring at the interface with the nonmetallic separator.

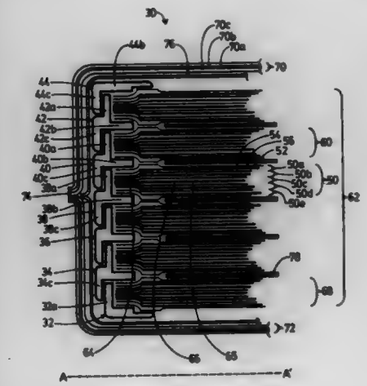


5,487,958

INTERLOCKING FRAME SYSTEM FOR LITHIUM-POLYMER BATTERY CONSTRUCTION

Drew Tura, 1965 Harmil Way, San Jose, Calif. 95125

Filed Dec. 6, 1993, Ser. No. 163,203
Int. Cl.[6] H01M *10/04*
U.S. Cl. 429—151 13 Claims



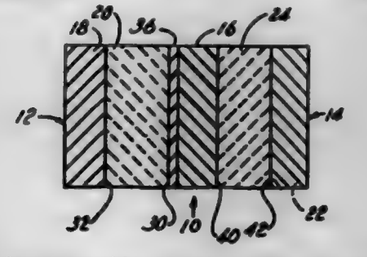
1. A battery comprising:
a stack of planar battery cells; and
a plurality of interlocking frames, said plurality of interlocking frames adapted to restrict the planar battery cells from slipping with respect to each other; the interlocking frames including a first frame with a ledge in a first plane, the first frame including an upwards projection and a downwards projection out of the ledge; the interlocking frames including a second frame with a ledge in a second plane, said second plane being parallel to the first plane, said second frame including an upwards projection and a downwards projection out of the ledge, wherein some of the cells in said stack of cells are located between the ledges of the first and second frames and wherein one of the projections from the first frame is located behind one of the projections of the second frame such that the movement of the first and second frames within the planes of the ledges is restricted, and wherein the thickness of said some of the cells between the ledges is such that the one of the projections from the first frame does not contact the ledge of the second frame and the one of the projections of the second frame does not contact the ledge of the first frame.

5,487,959

LAYER FOR STABILIZATION OF LITHIUM ANODE

Rene Koksbang, 4231 Norwalk Dr., No. EE101, San Jose, Calif. 95129

Continuation of Ser. No. 40,228, Mar. 30, 1993, Pat. No. 5,342,710. This application Jul. 6, 1994, Ser. No. 271,302
The portion of the term of this patent subsequent to Aug. 30, 2011, has been disclaimed.
Int. Cl.[6] H01M *6/18*
U.S. Cl. 429—191 12 Claims



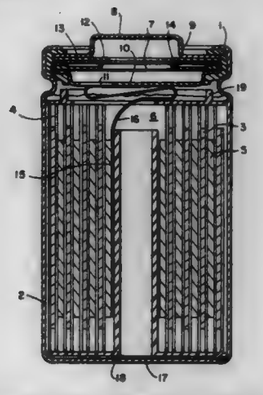
1. In a battery comprising a negative electrode body having an active material which comprises metallic lithium, and an electrolyte separator comprising a solid matrix material and an electrolyte having a salt of lithium, the negative electrode having a major surface facing the matrix material, the improvement comprising a layer disposed between the matrix material and the surface of the negative electrode body facing the matrix material, said layer being electronically conductive and ionically conductive of lithium ions and comprising a polymer and iodine dispersed with said polymer, said polymer having a number of monomers, each of such monomers having an electron donor pyridine-based unit forming a charge transfer complex with said iodine for reducing passivation of said lithium-containing negative electrode, said pyridine-based unit selected from the group consisting of vinylpyridine monomers, vinylpyridine monomers carrying one or more substituents off of the pyridine ring, polycyclics where the vinylpyridine constitutes one of the fused rings, and mixtures thereof.

5,487,960

NONAQUEOUS SECONDARY BATTERY

Mitsutoshi Tanaka, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 3, 1995, Ser. No. 434,052
Claims priority, application Japan, May 12, 1994, 6-098673
Int. Cl.[6] H01M *4/36;4/02*
U.S. Cl. 429—218 12 Claims



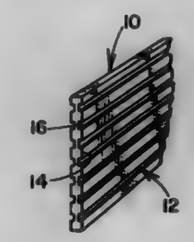
1. A nonaqueous secondary battery comprising a positive electrode, negative electrode and an nonaqueous electrolytic solution, wherein the positive electrode comprises a mixture of active material and an acid containing at least one of P, B, Si, Mo, and W or a salt thereof.

5,487,961

SINTERED METAL ELECTRODE

Bradley D. Strangways, and Dale E. Ritter, both of Gainesville, Fla., assignors to Eveready Battery Company, Inc., St. Louis, Mo.

Continuation of Ser. No. 873,479, Apr. 24, 1992, abandoned.
This application May 24, 1994, Ser. No. 248,590
Int. Cl.[6] H01M *4/36;4/64*
U.S. Cl. 429—223 15 Claims



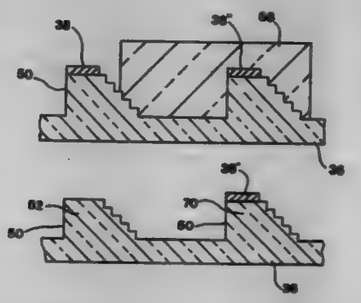
1. A flexible sintered metal electrode for use in a rechargeable cell, comprising:
a) an electrically conductive substrate having a longitudinal axis;
b) a sintered metal plaque deposited on said substrate and transversely scored relative to said substrate's longitudinal axis; and
c) electrochemically active material associated with said plaque.

5,487,962

METHOD OF CHROMELESS PHASE SHIFT MASK FABRICATION SUITABLE FOR AUTO-CAD LAYOUT

J. Brett Rolfson, 6225 HolliLynn, Boise, Id. 83704

Filed May 11, 1994, Ser. No. 240,994
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 20 Claims



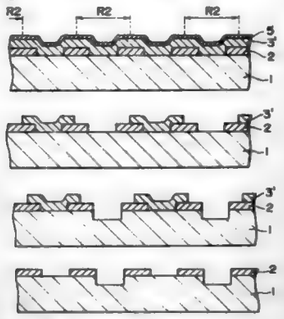
1. A method for forming a chromeless phase shifting photomask comprising:
forming a pattern of features on a transparent substrate said features having sidewalls and a terminating edge;
forming a layer of resist over one sidewall and the terminating edge of the features;
forming a vertical edge in the substrate along one sidewall of each feature to a predetermined depth into the substrate;
forming a tapered edge in the substrate along the sidewall covered with resist and along the terminating edge, said tapered edge extending with a predetermined slope into the substrate to the predetermined depth;
stripping the resist; and
stripping the pattern of features to form raised phase shifters each having a vertical edge on one side and a tapered edge along one side and the terminating edge, with the slope of the tapered edge selected to prevent null formation during a lithographic process utilizing the photomask.

5,487,963

PHASE SHIFTING MASK WHEREIN LIGHT TRANSMITTED THROUGH SECOND TRANSMISSION AREAS INTENSIFIES LIGHT THROUGE FIRST TRANSMISSION AREAS

Minoru Sugawara, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 26, 1994, Ser. No. 296,461
Claims priority, application Japan, Aug. 27, 1993, 5-235561
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 **8 Claims**



1. A phase shifting mask, comprising:
a transparent substrate;
a light shielding area formed on said transparent substrate;
a plurality of first light transmission areas of a rectangular shape patterned on said transparent substrate; and
a plurality of second light transmision areas patterned in an alternate relationship in two perpendicular directions from said first light transmision areas on said transparent substrate, said second light transmission areas being spaced from said first light transmission areas and constructed so that light having transmitted through said second light transmission areas intensifies the intensity of light having transmitted through said first light transmission areas, said second light transmission areas having a substantially same profile as that of said first light transmission areas.

5,487,964

POWDER MIXTURES FOR METALLIZATION OF SUBSTRATE SURFACES

Günther Reichert, Köln; Hans Lietz, Odenthal; Jürgen-Rolf Hassdenteufel, Bergisch Gladbach; Günter Sackmann, and Frank Kobelka, both of Leverkusen, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jun. 8, 1994, Ser. No. 255,506
Claims priority, application Germany, Jun. 15, 1993, 43 19 759.0
Int. Cl.[6] C23C *18/30*
U.S. Cl. 430—16 **13 Claims**

1. A spray powder formulation for direct application to substrate surfaces or for application to substrate surfaces by electrophotographic processes in the form of a thin layer, and stoving of said thin layer by heat treatment or by high-energy radiation, deposition of firmly adhering layers of metal by currentless, wet-chemical metallization, comprising a pulverulent, non-conductive material and a (semi-) noble metal compound in an amount of 0.1–10% by weight, based on the total weight of powder formulation and calculated as the metal, wherein said pulverulent non-conductive material has a size of 5–90 μm and is a mixture comprising
(a) a polymer selected from the group consisting of (meth)acrylate, polyester, epoxide-polyester, epoxy resin, polyurethane, polyethylene, polypropylene and other polyolefins, polyvinyl chloride, polyamide, cellulose ester, (chlorinated) polyether, ethylene/vinyl acetate copolymer and mixtures thereof;
(b) a pigment in an amount of 5–20%,
(c) fillers in an amount of 0–70%,
(d) charge control agents in an amount of 0–5% by weight,
and wherein said (semi-) noble metal compound is selected from the group consisting of complex compounds or inorganic salts of the elements Cu, Au, Ag, Pt, Pd and Ru in amounts of from 0.2 to 8 by weight, all the percentage data being based on the powder formulation and the polymer representing the remainder to make up to 100% by weight, of pulverulent non-conductive material.

5,487,965

PROCESSES FOR THE PREPARATION OF DEVELOPER COMPOSITIONS

Peter G. Odell, Mississauga, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 6, 1994, Ser. No. 300,548
Int. Cl.[6] G03G *9/125*
U.S. Cl. 430—137 **28 Claims**

1. A process for preparing a liquid developer composition comprising:
a) forming a melt mixture comprised of a polymer resin or resins, a colorant, a charge director additive, and a hydrocarbon liquid carrier, to obtain a first suspension of colored polymeric particles with an area average diameter of from about 2 to about 100 microns;
b) dispersing said first suspension in a supercritical fluid medium and thereafter continuously feeding the resultant dispersion to a liquid fluidizing means under pressure to obtain a second suspension comprising a supercritical fluid and liquid developer mixture containing colored polymeric particles with an area average diameter of from about 0.1 to about 10 microns; and
c) reducing the pressure to evaporate, and optionally recovering, the supercritical fluid medium from said second suspension, wherein there results a liquid developer mixture containing colored polymeric particles with an area average diameter of less than about 3.0 microns and a solids content of about 10 to about 90 weight percent.

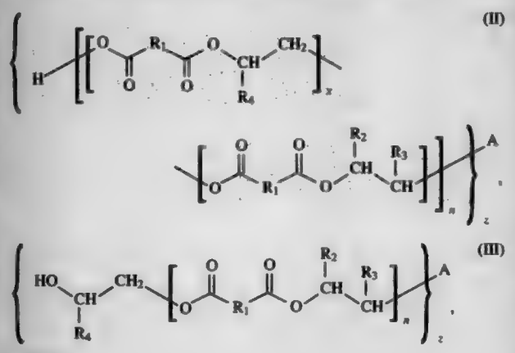
5,487,966

PHOTOSENSITIVE COMPOSITIONS

Bettina Steinmann, Praroman; Adrian Schulthess, Tentlingen, and Max Hunziker, Düdingen, all of, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

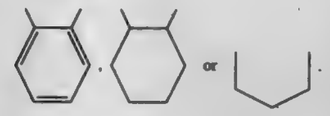
Continuation of Ser. No. 891,540, Jun. 1, 1992, abandoned.
This application Apr. 21, 1994, Ser. No. 231,953
Claims priority, application Switzerland, Jun. 4, 1991, 1667/91
Int. Cl.[6] G03C *5/00;1/492;1/725*
U.S. Cl. 430—269 **15 Claims**

1. A photosensitive composition for production of a three-dimensional object by means of a stereolithographic process comprising
a) 5–95% by weight of a polyester of formula II or III



wherein

R_1 is the radical of a cyclic anhydride of a dicarboxylic acid after removal of the —O—CO—O— grouping, which radical may be substituted by C_1–C_{22}alkyl, C_5–C_{10}cycloalkyl, C_3–C_6alkenyl, C_6–C_{10}aryl, halogen or C_1–C_{22}alkyl which is interrupted by —O— or —CO—O—,
R_2 is hydrogen, unsubstituted or halogen-substituted C_1–C_{22}alkyl, C_5–C_{10}cycloalkyl, C_7–C_{12}aralkyl, C_6–C_{10}aryl or a radical —CH_2—O—R_5 or —CH_2—O—CO—R_5, wherein R_5 is C_1–C_{22}alkyl, C_5–C_6cycloalkyl or C_6–C_{10}aryl,
R_3 is hydrogen, or
R_2 and R_3, together with the linking carbon atoms, are a cyclopentylene or cyclohexylene radical,
R_4 is a radical of 4 to 12 carbon atoms which carries an unsaturated end group and carboxyl or ether groups,
wherein A in formulae II and III is a radical H_3C—$(CH_2)_y$—CO—O—, H_3C—$(CH_2)_y$—O—, —O—CO—$(CH_2)_y$—CO—O—, —O—$(CH_2)_y$—O— or



wherein
R_7 is methyl or hydrogen if m=1 or, if m=2–4, is hydrogen,
n=2–150 and y is an integer from 2–20, or wherein A is derived from a linear or branched polyethylene glycol or polypropylene glycol or a copolymer of these two glycols or a carboxyl-terminated polyester,
x is an integer from 0–100,
n is an integer from 2–150, and
z is an integer from 1–4,
b) 10–90% by weight of a liquid polyfunctional aliphatic, cycloaliphatic or aromatic (meth)acrylate, which is a mixture of a di(meth)acrylate and a tri(meth)acrylate,
c) 0–70% of a mono(meth)acrylate or mono-N-vinyl compound with a molecular weight of not more than 500,
d) 0.1–10% by weight of a photoinitiator, and
e) 0–10% by weight of optional customary additives.

5,487,967

SURFACE-IMAGING TECHNIQUE FOR LITHOGRAPHIC PROCESSES FOR DEVICE FABRICATION

Richard S. Hutton, Summit; Gary N. Taylor, Bridgewater, both of N.J., and David R. Wheeler, Albuquerque, N.M., assignors to AT&T Corp., Murray Hill, N.J.

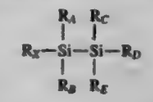
Continuation-in-part of Ser. No. 68,485, May 28, 1993. This application Feb. 17, 1995, Ser. No. 390,733
Int. Cl.[6] G03F *7/38*
U.S. Cl. 430—322 **22 Claims**

1. A process for manufacturing a device comprising: depositing an imaging layer comprising a polymeric resist material on a substrate; exposing a portion of the imaging layer to radiation, thereby forming an exposed region and an unexposed region that together define an image of a pattern in the imaging layer; introducing into the imaging layer a refractory material comprising a silylating reagent that is selectively permeable into one of either the exposed region or the unexposed region of the imaging layer, in combination with about 0.5 volume percent to about 25 volume percent of a silicon-containing cross-linking reagent characterized by the formula:

$$R_m—G—X_m$$

wherein m is greater than or equal to 2, n is greater than or equal to zero, m is at least 2, X is a reactive group that reacts with a functional group pendant to the polymeric resist material, the reaction causing the remaining portion of the cross-linking reagent, R_mG to bind to the polymeric resist material, G is a connecting moiety, and R groups are all selected from the group consisting of H and alkyl, wherein the R groups are the same or different, and developing the pattern in the imaging layer.

16. A process for manufacturing a device comprising: obtaining a substrate; depositing a planarizing layer comprising a polymeric resist material substrate; depositing an imaging layer comprising a polymeric resist material with pendant functional groups on the planarizing layer; exposing a portion of the imaging layer to radiation, thereby forming an exposed region and an unexposed region that together define an image of a pattern in the imaging layer; introducing into the imaging layer a refractory material comprising an organodisilane that is selectively permeable into one of either the exposed region or the unexposed region of the imaging layer, the refractory material characterized by the formula:



wherein R_x is a reactive group that selectively reacts with the functional groups pendant to the polymeric resist material in one of either the exposed region or the unexposed region of the imaging layer, the reaction producing a reactive site with which the remaining portion of the refractory material, $SiR_AR_BSiR_CR_DR_E$, reacts, and groups $R_{(A-E)}$ are all selected from the group consisting of H and CH_3 wherein $R_{(A-E)}$ are the same or different and wherein at least two of $R_{(A-E)}$ are CH_3 and wherein the refractory material is combined with a cross-linker having the general formula

$$R_n—Si_a—X_m$$

wherein a is greater than or equal to 1, n is less than or equal to 2a and m is greater than or equal to 2, X is a reactive group that reacts with functional groups pendant to the polymeric resist material and R is selected from the group consisting of H and alkyl, and wherein the cross-linker cross-links at least some of the polymeric resist material; and developing the pattern in the imaging layer.

5,487,968

SILVER HALIDE PHOTOGRAPHIC MATERIAL

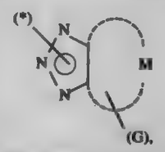
Yuki Mizukawa, and Hidetoshi Kobayashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 12, 1994, Ser. No. 321,980
Claims priority, application Japan, Jan. 12, 1993, 5-277332
Int. Cl.[6] G03C *7/305*
U.S. Cl. 430—544 **10 Claims**

1. A silver halide photographic material having at least one silver halide emulsion layer and at least one compound represented by a general formula (I) on a support:

$$A\text{-}(TIME)_m\text{-}(RED)_n\text{-}Q \qquad (I)$$

wherein A represents a group capable of releasing $(TIME)_m$-$(RED)_n$-Q by a reaction with an oxidation product of an aromatic primary amine developing agent;
TIME represents a timing group capable of releasing $(RED)_n$-Q after having been released from A;
RED represents a group capable of releasing Q by reaction with an oxidation product of an aromatic primary amine developing agent after having been released from TIME;
Q represents a group of the following general formula (II);
m represents 0, 1 or 2;
n represents 0 or 1; and
when m is 2, two TIME groups may be the same or different:



(II)

wherein M has at least one hetero atom selected from the group consisting of oxygen, sulfur and nitrogen atoms and repre-

sents a non-metallic atomic group necessary for forming a 5-membered, 6-membered or 7-membered hetero-ring along with the two carbon atoms in the 1,2,3-triazole ring moiety in the formula; G represents a substituent;

f represents 0 or an integer of from 1 to 5; and when f is 2 or more, two or more G groups may be the same or different; and

(*) indicates the position at which the group bonds to A-(TIME)$_m$-(RED)$_n$-;

wherein the at least one hetero atom in M in formula (II) is (1) at least one nitrogen atom and at least one oxygen or sulfur atom or (2) at least one nitrogen atom;

wherein A is a coupler residue selected from the group consisting of pivaloylacetanilides, benzoylacetanilides, malonic diesters, malondiamides, dibenzoylmethanes, benzothiazolylacetamides, malonic ester monoamides, benzoxazolylacetamides, benzimidazolylacetamides, cylcoalkanoylacetamides, 5 -pyrazolone, pyrazolobenzimidazoles, pyrazolotriazoles, pyrazoloimidazoles, imidazotriazoles, cyanoacetophenones, phenols, naphthols, indanones and acetophenones.

5,487,969

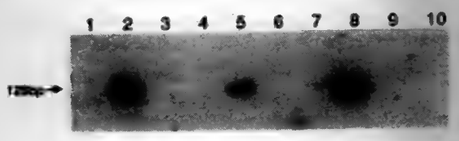
METHOD OF DETECTION OF HERPES B VIRUS

Richard Eberle; Darla Black, both of Stillwater, Okla.; Franco Scinicariello, and Julia Hilliard, both of San Antonio, Tex., assignors to Southwest Foundation for Biomedical Research, San Antonio, Tex.

Filed Apr. 1, 1993, Ser. No. 42,747

Int. Cl.^{6} C12Q *1/70*

U.S. Cl. 435—5 **6 Claims**



1. A method for detecting the presence of herpes B virus in an individual, the method comprising the steps of:

a) obtaining a tissue sample or a culture sample from an individual suspected of being infected with herpes B virus;

b) extracting DNA from the tissue or culture sample;

c) amplifying DNA segments from the extracted DNA by using a sense primer sequence consisting of BV1 (SEQ ID NO:1:) and an anti-sense primer sequence consisting of BV2(SEQ ID NO:2:); and

d) analyzing the amplified DNA segments to detect the presence of the DNA segment (SEQ ID NO:4:), the DNA segment (SEQ ID NO:4:) being detectable either by:

i) digesting the amplified DNA segments with a restriction enzyme, said restriction enzyme being capable of digesting the DNA segment (SEQ ID NO:4:)but not capable of digesting HSV1 or HSV2; separating the digested segments by size; and detecting the presence or absence of digested segments; or

ii) hybridizing the amplified DNA segments with labeled oligonucleotide probe consisting of PB5 (SEQ ID NO:3:) and detecting the presence or absence of hybridized segments;

wherein the presence of the DNA segment (SEQ ID NO:4:)indicates the presence of the virus.

5,487,970

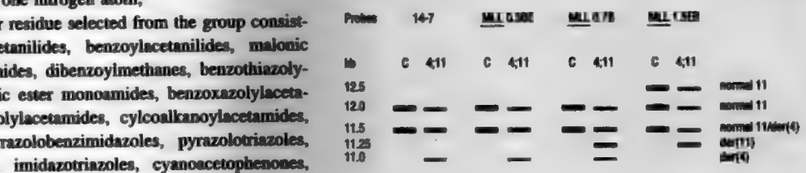
COMPOSITIONS AND METHODS FOR DETECTING GENE REARRANGEMENTS AND TRANSLOCATIONS

Janet D. Rowley, and Manuel O. Diaz, both of Chicago, Ill., assignors to Arch Development Corp., Chicago, Ill.

Continuation-in-part of Ser. No. 991,244, Dec. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 900,689, Jun. 17, 1992, abandoned. This application Jun. 17, 1993, Ser. No. 80,255

Int. Cl.^{6} C12Q *1/68*

U.S. Cl. 435—6 **22 Claims**



1. A method of detecting a 11q23 chromosome translocation in leukemic cells, comprising:

(a) obtaining genomic DNA from leukemic cells suspected of containing a 11q23 chromosomal translocation;

(b) digesting the DNA with one or more restriction enzymes; and

(c) hybridizing the digested DNA with a nucleic acid probe that consists essentially of the sequence of a 0.7 kb BamH1 restriction fragment from the MLL gene wherein hybridization of the probe with aberrant sized DNA segments is indicative of a 11q23 chromosome translocation.

5,487,971

SYNTHETIC, PLASMA-FREE, TRANSFUSIBLE STORAGE MEDIUM FOR RED BLOOD CELLS AND PLATELETS

Stein Holme, Virginia Beach, and William A. L. Heaton, Norfolk, both of Va., assignors to American National Red Cross, Washington, D.C.

Continuation of Ser. No. 593,932, Oct. 5, 1990, Pat. No. 5,248,506, which is a continuation-in-part of Ser. No. 99,012, Sep. 21, 1987, Pat. No. 4,961,928, which is a continuation-in-part of Ser. No. 841,435, Mar. 19, 1986, Pat. No. 4,695,460. This application Sep. 28, 1993, Ser. No. 128,066

Int. Cl.^{6} A61K *35/18;35/14;* A01N *1/02*

U.S. Cl. 435—2 **4 Claims**

1. A process for preserving red blood cells in a sterile, plasma-free red blood cell storage medium comprising:

preparing a physiologically compatible, aqueous electrolyte solution, one liter of said electrolyte solution having:

an effective concentration of adenine:

between about 3.0 grams and about 25.0 grams of dextrose;

between about 3.0 grams and 6.0 grams of sodium citrate; and

between about 2.0 grams and about 4.2 grams of sodium bicarbonate;

suspending red blood cells in said red blood cell storage medium, said red blood cell storage medium being isotonic and having a pH in a range of between about 6.8 and about 7.4, whereby said effective concentration of adenine is sufficient for a substantial concentration of said red blood cells to remain viable for at least about 49 days at a temperature of at least about 4° C.

5,487,972

NUCLEIC ACID DETECTION BY THE 5'-3'EXONUCLEASE ACTIVITY OF POLYMERASES ACTING ON ADJACENTLY HYBRIDIZED OLIGONUCLEOTIDES

David H. Gelfand, Oakland, Calif.; Pamela M. Holland, Seattle, Wash.; Randall K. Saiki, Richmond, and Robert M. Watson, Berkeley, both of Calif., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 563,758, Aug. 6, 1990, Pat. No. 5,210,015. This application Jan. 5, 1993, Ser. No. 961,884 The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.

Int. Cl.^{6} C12Q *1/68;* C12P *19/34*

U.S. Cl. 435—6 **32 Claims**



1. A process for the detection or measurement of a target nucleic acid sequence in a sample, said process comprising:

(a) contacting a sample comprising single-stranded nucleic acids with an oligonucleotide containing a sequence complementary to a region of the target nucleic acid and a labeled oligonucleotide containing a sequence complementary to a second region of the same target nucleic acid sequence strand, but not including the nucleic acid sequence defined by the fast oligonucleotide, to create a mixture of duplexes during hybridization conditions, if the target nucleic acid sequence is present in the sample, wherein the duplexes comprise the target nucleic acid annealed to the fast oligonucleotide and to the labeled oligonucleotide such that the 3' end of the first oligonucleotide is adjacent to the 5' end of the labeled oligonucleotide;

(b) maintaining the mixture of step (a) with a template-dependent nucleic acid polymerase having a 5' to 3' nuclease activity under conditions sufficient to permit the 5' to 3' nuclease activity of the polymerase to cleave the annealed, labeled oligonucleotide and release labeled fragments; and

(c) detecting and/or measuring the release of labeled fragments and thereby detecting and/or measuring the target nucleic acid in the sample.

5,487,973

METHODS FOR DETECTING AND ASSAYING NUCLEIC ACID SEQUENCES

Thor W. Nilsen, Glen Mills, Pa., and Wolf Prensky, Fairlawn, N.J., assignors to PolyProbe, Inc., Media, Pa.

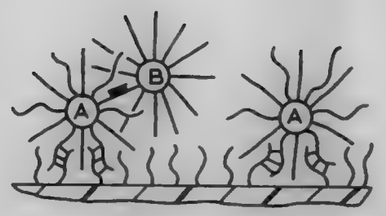
Division of Ser. No. 906,222, Sep. 10, 1986, Pat. No. 5,175,270. This application Oct. 19, 1992, Ser. No. 963,107

Int. Cl.^{6} C12Q *1/68*

U.S. Cl. 435—6 **27 Claims**

1. A method of determining the presence of a specific sequence of nucleotides in a nucleic acid target molecule in a sample by detecting the presence of a hybrid thereof, and not detecting the hybrid in the absence thereof which comprises;

(A) providing a reagent for the detection and assay of the sequence of nucleotides in the nucleic acid target molecule, which comprises;



(a) a plurality of molecules, each of which comprises a first partially double-stranded polynucleotide having a structure comprising a first molecule end, a second molecule end and a double-stranded body portion intermediate of the first and second ends thereof; said first and second ends thereof each having at least one of first and second arms consisting of a single strand of polynucleotide; said single strands being hybridizable with a pre-determined sequence of nucleotides in a nucleic acid; the first and second arms of each of said first and second ends being non-hybridizable with each other;

(b) a plurality of molecules, each of which comprises a second partially double-stranded polynucleotide having a structure comprising a first molecule end, a second molecule end and a double-stranded body portion intermediate of the first and second ends thereof; said first and second ends thereof each having at least one of first and second arms thereof consisting of a single strand of polynucleotide; said single strands being hybridizable with a pre-determined sequence of nucleotides in a nucleic acid; the first and second arms of each of said first and second ends being non-hybridizable with each other;

said plurality of molecules of the first polynucleotide and the second polynucleotide being joined through annealing of one or more arms thereof, to form a matrix; and

at least one non-annealed arm of said plurality of first and second polynucleotide molecules located on the surface of the matrix being free to hybridize and capable of hybridizing with the sequence of nucleotides in the nucleic acid target molecule, the presence of which is to be determined;

(B) contacting the reagent with the sample under hybridization conditions such that the at least one non-annealed arm of the matrix can hybridize with sequence of nucleotides in the nucleic acid target molecule, only if present in the sample to form the hybrid thereof; and

(C) detecting the presence of the hybrid, if present, as indicative of the presence of the specific sequence of nucleotides in a nucleic acid target molecule.

5,487,974

METHOD FOR DETECTING COMPLEXES CONTAINING HUMAN LEUKOCYTE ANTIGEN A2 (HLA-A2) MOLECULES AND A TYROSINASE DRIVED PEPTIDE ON ABNORMAL CELLS

Thierry Boon-Falleur; Vincent Brichard; Aline Van Pel; Etienne De Plaen; Pierre Coulie; Jean-Christope Renauld, all of Brussels; Thomas Wölfel, Mainz, and Bernard Lethé, Brussels, all of, Belgium, assignors to Ludwig Institute for Cancer-Research, New York, N.Y.

Continuation-in-part of Ser. No. 54,714, Apr. 28, 1993, which is a continuation-in-part of Ser. No. 994,928, Dec. 22, 1992, abandoned. This application Jun. 23, 1993, Ser. No. 81,673

Int. Cl.^{6} C12Q *1/68;1/02;* G01N *33/574*

U.S. Cl. 435—6 **6 Claims**

1. Method for determining presence of cytolytic T cells specific

for complexes of an HLA-A2 molecule and the peptide of SEQ ID NO: 3 in a blood sample, comprising contacting a blood sample of interest with cells which present said complexes on their surface, and determining (i) proliferation of cytolytic T cells and (ii) lysis of cells presenting said complexes, as a determination of said cytolytic T cells in said blood sample.

5,487,975

BIOTIN/AVIDIN FORMULATION

Phillip C. Miller; Roberta L. Druyor, and Ralph R. Martel, all of Tucson, Ariz., assignors to Ventana Medical Systems, Inc., Tucson, Ariz.

Filed Nov. 15, 1993, Ser. No. 152,864

Int. Cl.[6] G01N *33/535*

U.S. Cl. 435—7.5 **14 Claims**

1. A biotin-avidin formulation comprising a conjugate selected from the group consisting of a biotinylated antibody conjugate and an avidin-enzyme conjugate in a suitable diluent for immunohistochemical staining, said diluent additionally comprising:

(a) casein in an amount sufficient to prevent charge interactions of the conjugate with a tissue section; and

(b) gamma globulin prepared from nonimmune serum in an amount sufficient to prevent Fc receptor binding and any hydrophobic interaction of the conjugate with a tissue section.

5,487,976

DNA ENCODING AN INSECT GAMMA-AMINOBUTYRIC ACID (GABA) RECEPTOR SUBUNIT CELLS EXPRESSING IT, AND PESTICIDE SCREENING METHODS USING SUCH CELLS

David M. Soderlund; Douglas C. Knipple, both of Geneva, and Joseph E. Henderson, Phelps, all of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Oct. 15, 1993, Ser. No. 137,614

Int. Cl.[6] C12N *15/12;5/00;1/11;* G01N *33/68*

U.S. Cl. 435—7.21 **8 Claims**

2. An isolated DNA molecule encoding a γ-aminobutyric acid receptor subunit, said DNA molecule having the nucleotide sequence shown in SEQ ID NO: 3.

8. A method of screening a chemical agent for effectiveness as a pesticide, comprising:

transforming a host cell with the DNA molecule encoding an γ-aminobutyric acid receptor subunit according to claim 2 and at least one other DNA molecule encoding another γ-aminobutyric acid receptor subunit;

facilitating co-expression of said γ-aminobutyric acid receptor subunit encoded by said DNA molecule and said another γ-aminobutyric acid receptor subunit encoded by said other DNA molecule in the host cell, wherein said co-expression results in the formation and expression of an γ-aminobutyric acid receptor in the cell;

exposing the cell to a chemical agent; and

evaluating the exposed cell to determine if the receptor is the target site for the chemical agent, wherein if said receptor is the target site for said chemical agent, said chemical agent is effective as a pesticide.

5,487,977

METHOD FOR THE DETERMINATION OF SULFIDOLEUKOTRIENES IN TISSUES AND BIOLOGICAL FLUIDS AND ITS APPLICATION IN DIAGNOSIS OF ALLERGIES AND OTHER INFLAMMATORY DISEASES

Alain L. de Weck, 14, Grand Places, 1700 Fribourg, Switzerland

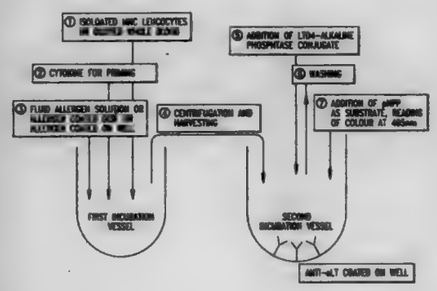
PCT No. PCT/EP92/02238, § 371 Date Jun. 1, 1993, § 102(e) Date Jun. 1, 1993, PCT Pub. No. WO93/07493, PCT Pub. Date Apr. 15, 1993

PCT Filed Sep. 25, 1992, Ser. No. 70,326

Claims priority, application Switzerland, Jan. 1, 1991, 2904/91

Int. Cl.[6] G01N *33/53;33/543*

U.S. Cl. 435—7.24 **22 Claims**



1. A method for assessing cellular hypersensitivity of a human being to a stimulating agent comprising the following steps:

a) contacting a sample derived from the human being comprising one or more of the group consisting of basophils and leukocytes with a cytokine selected from the group consisting of IL3, IL5, GM-CSF and NGF under conditions suitable for said cytokine to prime said basophils or leukocytes, to provide a primed sample;

b) contacting said primed sample with a stimulating agent under conditions suitable for said stimulating agent to challenge said basophils or leukocytes, thereby causing said basophils or leukocytes to release one or more sulfidoleukotrienes (sLT) selected from the group consisting of LTC4, LTD4 and LTE4 if said basophils or leukocytes are sensitive to said stimulating agent, to provide a challenged sample;

c) contacting said challenged sample with a solid phase carrier-bound monoclonal antibody which specifically binds said sLT under conditions suitable for binding between said antibody and said sLT in said challenged sample;

d) adding an enzyme-labeled sulfidoleukotriene selected from the group consisting of LTC4, LTD4 and LTE4 to the challenged sample and said antibody; and

e) evaluating an amount of the enzyme-labeled sulfidoleukotriene bound to the carrier by an immunoenzymatic ELISA assay, and thereby determining the cellular hypersensitivity of the human being to said stimulating agent, said amount being in inverse proportion to an amount of released sLT bound to said carrier.

5,487,978

METHOD, COMPOSITION AND DEVICE FOR THE DETERMINATION OF CHOLESTEROL USING CHOLESTEROL OXIDASE OBTAINED FROM BACTERIAL STRAIN NRRL B-18713

Aurora F. deCastro, Union, Mich., and Surendra K. Gupta, Elkhart, Ind., assignors to GDS Technology, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 266,668, Nov. 3, 1988, abandoned. This application Mar. 5, 1991, Ser. No. 664,716

Int. Cl.[6] C12Q *1/60;1/28;* C12N *9/04*

U.S. Cl. 435—11 **23 Claims**

1. A test composition for the kinetic determination of cholesterol comprising an effective amount of cholesterol oxidase for determining cholesterol in sample obtained from Bacterial strain NRRL B-18713 in a suitable carrier.

5,487,979

DNA ENCODING HUMAN AND MURINE EPS15, A SUBSTRATE FOR THE EPIDERMAL GROWTH FACTOR RECEPTOR

Pier P. DiFiore, Bethesda, Md., and Francesca Fazioli, Ancona, Italy, assignors to The United States of America as represented by the Department of Health and Human Services, Washinton, D.C.

Continuation-in-part of Ser. No. 935,311, Aug. 25, 1992, Pat. No. 5,378,809. This application Jul. 22, 1993, Ser. No. 95,737

Int. Cl.[6] C12N *1/21;5/10;15/12;15/63*

U.S. Cl. 435—240.2 **10 Claims**

1. Isolated or purified polynucleotide operably encoding human eps15, wherein said polynucleotide comprises a sequence encoding the amino acid sequence of SEQ ID NO:2.

5,487,980

METHOD OF DETERMINING PROPENSITY OF DISSOLVED OXYGEN INSTABILITY

James R. Swartz, Menlo Park, Calif., assignor to Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 989,844, Nov. 23, 1992, Pat. No. 5,342,763. This application May 9, 1994, Ser. No. 240,121

Int. Cl.[6] C12Q *1/02*

U.S. Cl. 435—29 **9 Claims**

1. A method for determining the propensity of a bacterial cell culture for sudden changes in dissolved oxygen concentration in the culture medium in a large-scale fermentor comprising (a) culturing the cell culture in the presence of a carbon/energy source introduced at a set feed rate in a small-scale fermentor configured so that the dissolved oxygen concentration throughout the cell culture is not homogeneous during fermentation, (b) after cell mass has been produced in an amount that brings the dissolved oxygen concentration to zero or nearly zero during growth of the cells, increasing the feed rate of the carbon/energy source, and (c) determining if non-linearity occurs in the slope of dissolved oxygen concentration versus time or if oscillations in dissolved oxygen concentration are induced after the feed rate of the carbon/energy source is increased, wherein a propensity for sudden changes in dissolved oxygen concentration is indicated when either (i) a gradual slope is changed to a rapid slope in a graph of dissolved oxygen concentration vs. time or (ii) oscillations in dissolved oxygen concentration occur with increased carbon/energy source feed rate.

5,487,981

APPARATUS FOR AND METHOD OF DETECTING/IDENTIFYING MICROBIAL CONTAMINATION IN ULTRA-PURE WATER SYSTEMS

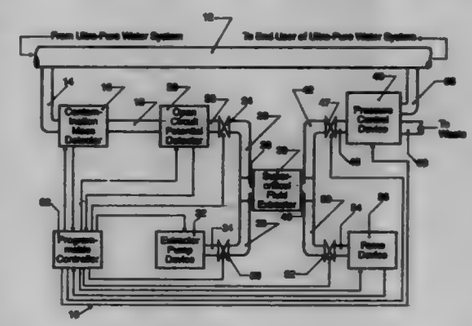
David E. Nivens, Knoxville; James Q. Chambers, Concord, and David C. White, Knoxville, all of Tenn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 30, 1993, Ser. No. 99,384

Int. Cl.[6] C12Q *1/24;* C12M *1/34*

U.S. Cl. 435—30 **13 Claims**

1. A method of on-line detection of the presence of microbial



contamination and quantitatively assessing the microbes in an associated ultra-pure water system comprising the steps of:

monitoring ultra-pure water flowing from said associated ultra-pure water system to detect the presence of microbial contamination;

detecting over time the growth of microbial biofilms which replicate said microbial contamination in said associated ultra-pure water system; and

assessing, in real time, quantitative measures of microbes present in said microbial biofilms indicated by the monitoring step and the detecting step.

5,487,982

METHOD OF OBTAINING IMMUNOGENIC PEPTIDES FROM CELLS EXPRESSING TEMPERATURE-SENSITIVE MUTANTS OF MAJOR HISTOCOMPATIBILITY COMPLEX MOLECULES

Russell D. Salter, Pittsburgh, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.

Filed May 21, 1993, Ser. No. 65,612

Int. Cl.[6] C07K *1/00;2/00;* C12P *21/00*

U.S. Cl. 435—69.1 **6 Claims**

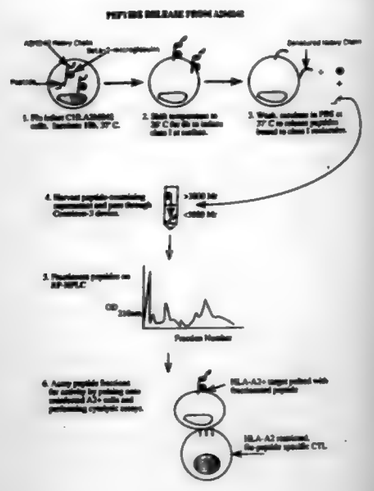
1. A method of obtaining peptides that are bound to class I major histocompatibility complex "MHC" molecules expressed on the cell surfaces of viable cells that have been transfected with genes for temperature-sensitive mutant class I molecules, said genes containing a mutation than codes for lysine instead of glutamine at position 242 of the α_3 domain of the class I heavy chain, comprising the steps of:

incubating said cells at about 37° C. in culture media;

incubating said cells at about 20°–30° C. to allow expression of MHC-peptide complexes on the surfaces of said cells;

incubating said cells at about 37° C. to cause dissociation of said peptides from the MHC-peptide complexes; and

recovering said peptides from the culture media.



5,487,983

EXPRESSION SYSTEMS FOR MAKING SINGLE-CHAIN MONELLIN ANALOGS

Sung-Hou Kim, and Joong M. Cho, both of Moraga, Calif., assignors to The Regents of the University of California, Berkeley, and Lucky, Ltd., Emeryville, both of Calif.

Division of Ser. No. 502,257, Mar. 30, 1990, Pat. No. 5,264,558, which is a continuation-in-part of Ser. No. 465,585, Jan. 18, 1990, abandoned, which is a continuation of Ser. No. 117,124, Nov. 4, 1987, abandoned, and a continuation-in-part of Ser. No. 64,341, Jun. 19, 1987, abandoned, and a continuation-in-part of Ser. No. 64,343, Jun. 19, 1987, abandoned. This application Nov. 2, 1993, Ser. No. 146,326

Int. Cl.[6] C12P *21/06;* C12N *5/06;15/03;* C07H *21/04*

U.S. Cl. 435—69.1 12 Claims

1. A DNA molecule in isolat d and purified form which encodes a protein useful as a sweetener of the formula B-C-A,

wherein B represents an amino acid sequence having at least 90% homology to the amino acid sequence at positions 1–46 of the B chain of native monellin as shown in FIG. 1 wherein corresponding nonidentical positions contain conservative substitutions;

C represents an amino acid sequence selected from the group consisting of

Tyr-Glu-Asn-Glu-Arg-Glu-Ile-Lys;

Tyr-Ala-Ser-Asp-Lys;

Glu-Asp-Asn-Arg-Glu-Asp-Ile-Lys;

Tyr-Lys-Thr-Arg-Glu-Asp-Ile-Lys;

Tyr-Glu-Arg-Glu-Ile-Lys;

Tyr-Glu-Asn-Ile-Lys;

Tyr-Glu-Ile-Lys;

Tyr-Tyr-Ala-Ser-Asp-Lys-Leu-Lys;

Tyr-Ala-Ser-Asp-Lys-Leu'

Tyr-Ser-Asp-Lys;

Glu-Asp-Tyr-Lys-Thr-Arg-Gly-Arg; and

Glu-Asp-Tyr-Thr-Arg, and

A represents an amino acid sequence having at least 90% homology to the amino acid sequence at positions 6–45 of the A chain of native monellin as shown in FIG. 1 wherein corresponding nonidentical positions contain conservative substitutions.

5,487,984

PROCESSES FOR PRODUCING TUMOR NECROSIS FACTOR

Bernard Allet, Onex, and Eric H. Kawashima, Geneva, both of, Switzerland, assignors to Biogen, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 684,595, Dec. 21, 1984, abandoned, and Ser. No. 785,847, Oct. 9, 1985, abandoned. This application Dec. 20, 1985, Ser. No. 811,654

The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.

Int. Cl.[6] C12N *15/00;15/19*

U.S. Cl. 435—69.5 11 Claims

1. A recombinant DNA molecule characterized by a DNA sequence operatively linked to an expression control sequence selected from T4 or λpL-T4, said DNA sequence being selected from the group consisting of:

(a) the DNA insert of p-mTNF-3 (DSM 3159);

(b) the DNA insert of p-hTNF-1 (DSM 3160);

(c) DNA sequences that hybridize to one or both of the foregoing DNA inserts and which code on expression for a tumor necrosis factor; and

(d) DNA sequences that code on expression for a polypeptide coded for on expression by any of the foregoing DNA inserts and sequences.

5,487,985

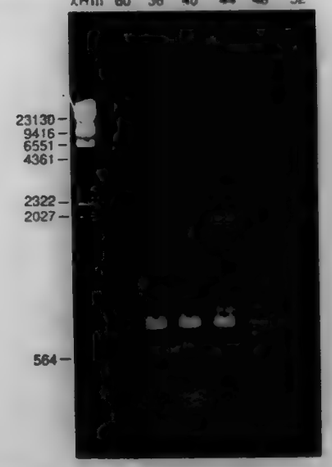
ARBITRARILY PRIMED POLYMERASE CHAIN REACTION METHOD FOR FINGERPRINTING GENOMES

Michael McClelland, Del Mar; John T. Welsh, Leucadia, and Joseph A. Sorge, Rancho Santa Fe, all of Calif., assignors to Stratagene, La Jolla, Calif.

Continuation-in-part of Ser. No. 633,095, Dec. 21, 1990, which is a continuation-in-part of Ser. No. 598,913, Oct. 15, 1990, abandoned. This application Oct. 9, 1992, Ser. No. 959,119

Int. Cl.[6] C12P *19/34;* C12Q *1/68*

U.S. Cl. 435—91.2 14 Claims



1. A method of generating a set of discrete DNA segments characteristic of a genome comprising:

(a) forming a polymerase chain reaction (PCR) admixture by combining, in a PCR buffer, genomic DNA and at least one first polynucleotide primer from about 10 to about 50 nucleotide bases in length;

(b) subjecting said PCR admixture of step (a) to at least one PCR thermocycle, each of said thermocycles comprising hybridization, primer extension and denaturation phases, said hybridization phase comprising hybridization conditions permitting the arbitrary priming of said genomic DNA, thereby producing said set of discrete DNA segments;

(c) contacting, in a PCR buffer, the set of discrete DNA amplification products formed in step (b) with at least one second polynucleotide primer from about 10 to 50 nucleotides in length, wherein said second primer or primers of this step each have nucleotide sequences that match the first primer or primers used in step (a) except that the second primer(s) each have one or more additional nucleotide bases at the 3' terminus of each second primer, wherein the additional nucleotide bases are additional with respect to the 3' terminus of the first primer or primers, to form a second PCR admixture; and

(d) subjecting said second PCR admixture to a plurality of PCR thermocycles, each of said thermocycles including hybridization, primer extension and denaturation phases, said hybridization phase comprising hybridization conditions that do not permit the formation of primer-template duplexes with a substantial degree of mismatching, thereby amplifying a subset of said discrete DNA segments.

5,487,986

METHOD FOR INCREASING PLASMID YIELD

Nick Wan, Newton, and Jason C. Goodrick, Cambridge, both of Mass., assignors to Genzyme Corporation, Cambridge, Mass.

Filed Mar. 10, 1994, Ser. No. 209,581

Int. Cl.[6] C12P *19/34;* C12N *1/20*

U.S. Cl. 435—91.1 3 Claims

1. An aqueous medium formulation for the plasmid production of a Escherichia coil host cell, the medium comprising about:

a) 30.0 grams of glucose;

b) 20.0 grams of yeast extract;

c) 10.0 grams ammonium chloride;

d) 1.5 grams of potassium phosphate;

e) 0.4 grams of magnesium sulfate;

f) 0.2 grams of potassium sulfate;

g) 10.0 grams of a meat digest;

h) 20.0 grams casein enzymatic hydrolysate;

i) 12.7 milligrams of ferrous sulfate;

j) 4.0 milligrams of calcium chloride;

k) 4.0 milligrams of sodium molybdate;

l) 20.0 milligrams of manganese sulfate;

m) 2.0 milligrams of cupric chloride;

n) 8.0 milligrams of cobalt chloride;

o) 1.0 milligrams of boric acid; and

p) 4.0 milligrams of zinc chloride,

per liter of the water component of the medium.

5,487,987

SYNTHESIS OF ADIPIC ACID FROM BIOMASS-DERIVED CARBON SOURCES

John W. Frost, and Karen M. Draths, both of West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Sep. 16, 1993, Ser. No. 122,920

The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.

Int. Cl.[6] C12P *7/44*

U.S. Cl. 435—142 3 Claims

1. A method for producing adipic acid, said method comprising the steps of culturing a bacterial cell, transformed with structural genes from *Klebsiella pneumoniae* which express the enzyme species 3-dehydroshikimate dehydratase and protocatechuate decarboxylase, and a structural gene from *Acinetobacter calcoaceticus* which expresses the enzyme species catechol 1,2-dioxygenase, in a medium containing a carbon source which is converted to 3-dehydroshikimate by the enzymes in the common pathway of aromatic amino acid biosynthesis of said cell, to produce cis, cis-muconic acid at a rate greater than 0.35 millimoles/liter/hour, by the biocatalytic conversion of 3-dehydroshikimate, and reducing the cis, cis-muconic acid to produce adipic acid.

5,487,988

PREPARATION OF PERILLYL COMPOUNDS USING *BACILLUS STEAROTHERMOPHILUS*

Hue C. Chang, Taejeon, Rep. of Korea, and Patrick J. Oriel, Midland, Mich., assignors to Board of Trustees Operating Michigan State University, E. Lansing, Mich.

Filed Aug. 15, 1994, Ser. No. 290,469

Int. Cl.[6] C12P *7/24;7/02;* C12N *1/20*

U.S. Cl. 435—147 10 Claims

1. A process for producing perillyl compounds which comprises:

(a) providing a culture medium containing cells of a strain of *Bacillus stearothermophilus* having all the identifying characteristics of *Bacillus stearothermophilus* ATCC 55596;

(b) incubating the cells in the culture medium with limonene to produce isolatable amounts of the perillyl compounds in the culture medium; and

(c) recovering the perillyl compounds from the culture medium.

5,487,989

ETHANOL PRODUCTION BY RECOMBINANT HOSTS

David E. Fowler; Philip G. Horton, and Arie Ben-Bassat, all of Gainesville, Fla., assignors to Bioenergy International, L.C., Gainesville, Fla.

Continuation-in-part of Ser. No. 846,344, Mar. 6, 1992, which is a continuation-in-part of Ser. No. 670,821, Mar. 18, 1991, abandoned, and a continuation-in-part of Ser. No. 624,277, Dec. 7, 1990, abandoned, each 352,062, May 15, 1989, Pat. No. 5,000,000which is a continuation-in-part of Ser. No. 239,099, Aug. 31, 1988, abandoned. This application Sep. 17, 1992, Ser. No. 946,290

Int. Cl.[6] C12N *1/21;9/42;* C12P *7/10;7/14*

U.S. Cl. 435—165 39 Claims

1. A method for producing ethanol from cellulose-containing biomass, comprising the steps of:

A. contacting, in a first reaction vessel, said biomass with a polysaccharase such that cellulose in said biomass is broken down into simpler oligosaccharides and/or monosaccharides, wherein said contacting is carried out at a temperature of from about 40° C. to about 60° C. and a pH of from about 4.5 to about 5.0;

B. producing from said first reaction vessel a sugar solution comprising said simpler oligosaccharides and/or monosaccharides;

C. introducing said sugar solution into a fermentor which comprises gram-negative enteric recombinant host microorganisms capable of fermenting said simpler oligosaccharides and/or monosaccharides into ethanol; and

D. fermenting said simpler oligosaccharides and/or monosaccharides into ethanol at a temperature of from about 30° C. to about 35° C. and a pH of about 6.0,

wherein said microorganism is capable of fermenting monosaccharides into ethanol, and comprises a recombinant host, other than *Escherichia coli,* comprising a first heterologous DNA coding for alcohol dehydrogenase and pyruvate decarboxylase, wherein said heterologous DNA is from *Zymomonas mobilis* and wherein said host expresses said heterologous DNA at a sufficient functional level so as to facilitate the production of ethanol as the primary fermentation product by said host,

wherein said host also produces a polysaccharase, and said host further comprises a second heterologous DNA segment, the expression product of which is said polysaccharase.

5,487,990

GLUCOSE-REGULATED PROMOTER OF YEAST ACETYL-COA HYDROLASE

John A. Smith, Scotch Plains, N.J.; Fang-Jen S. Lee, and Lee-Wen Lin, both of North Bethesda, Md., assignors to The General Hospital Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 480,452, Feb. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 213,943, Jul. 1, 1988, abandoned, and a continuation-in-part of Ser. No. 297,003, Jan. 13, 1989, abandoned. This application Jul. 30, 1992, Ser. No. 921,796

Int. Cl.[6] C12N *1/19;15/81;15/11*

U.S. Cl. 435—172.3 16 Claims

12. A method of regulating the expression of a protein in a controlled manner, said method comprising:

making a recombinant DNA construct comprised of a glucose-repressible promoter operably joined in a 5' to 3' direction of transcription to a DNA encoding said protein, wherein said glucose-repressible promoter comprises SEQ ID NO: 11 flanked on at least one side by DNA that is not naturally associated with SEQ ID NO: 11;

transforming said recombinant DNA construct into a yeast host cell;

(c) growing said yeast host cell in glucose-containing media sufficient to depress activity of SEQ ID NO: 11;

(d) transferring said yeast host cells to a glucose-free medium; and

(c) expressing said protein under the control of said glucose-repressible promoter.

5,487,991

PROCESS FOR THE PRODUCTION OF BIOLOGICALLY ACTIVE PEPTIDE VIA THE EXPRESSION OF MODIFIED STORAGE SEED PROTEIN GENES IN TRANSGENIC PLANTS

Joël S. Vandekerckhove, Loppem, Belgium; Enno Krebbers, Alhambra, Calif.; John Botterman, Zevergem-de Pinte, and Jan Leemans, Deurle, both of, Belgium, assignors to Plant Genetic Systems N.V., Brussels, Belgium

Continuation of Ser. No. 363,898, Aug. 2, 1989, abandoned. This application Apr. 14, 1993, Ser. No. 45,773

Claims priority, application United Kingdom, Jan. 20, 1987, 87402348

Int. Cl.[6] C12N *15/62;15/29;15/82;* A01H *5/00*

U.S. Cl. 435—172.3 22 Claims

1. A process for producing a polypeptide, which process comprises the steps of:

(a) cultivating a seed-forming plant, said plant comprising in its genome a chimeric DNA construct encoding a precursor of a modified 2S albumin wherein said chimeric DNA construct comprises:

(i) a first DNA sequence encoding a precursor of a 2S albumin which is modified in the hypervariable region encoding the region between a fourth cysteine residue and a fifth cysteine residue of a large subunit of said 2S albumin by replacing all or part of said hypervariable region with a heterologous second DNA sequence encoding said polypeptide, wherein the ends of said second DNA sequence are linked to one or more codons encoding one or more amino acid residues to define first selectively clearable border sites; and

(ii) a seed specific promoter; wherein said modified 2S albumin is expressed and accumulated in the seeds of said plant;

(b) isolating from the seeds of said plant said modified 2S albumin;

(c) cleaving said modified 2S albumin at said cleavable border sites; and

(d) recovering said polypeptide.

5,487,992

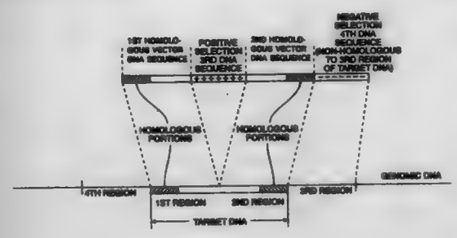
CELLS AND NON-HUMAN ORGANISMS CONTAINING PREDETERMINED GENOMIC MODIFICATIONS AND POSITIVE-NEGATIVE SELECTION METHODS AND VECTORS FOR MAKING SAME

Mario R. Capecchi, and Kirk R. Thomas, both of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Division of Ser. No. 14,083, Feb. 4, 1993, which is a continuation of Ser. No. 397,707, Aug. 22, 1989, abandoned. This application Jun. 28, 1993, Ser. No. 84,741

Int. Cl.[6] A01K *67/00;* C12N *15/63;15/65;15/90*

U.S. Cl. 435—172.3 1 Claim



1. A method of producing a transgenic mouse having a genome comprising a modification of a target DNA sequence, said method comprising:

(a) transforming a population of mouse embryonic stem cells with a PNS vector;

(b) identifying a mouse embryonic stem cell having said genome by selecting :for cells containing said positive selection marker and against cells containing said negative selection marker;

(c) inserting said cell into a mouse embryo; and

(d) propagating a mouse from said embryo; and

(e) breeding the mouse to produce a transgenic mouse; wherein said PNS vector comprises:

(1) a first homologous vector DNA sequence capable of homologous recombination with a first region of said target DNA sequence,

(2) a positive selection marker DNA sequence capable of conferring a positive selection characteristic in said cells,

(3) a second homologous vector DNA sequence capable of homologous recombination with a second region of said target DNA sequence, and

(4) a negative selection marker DNA sequence, capable of conferring a negative selection characteristic in said cells, but substantially incapable of homologous recombination with said target DNA sequence,

wherein the spatial order of said sequences in said PNS vector is: said first homologous vector DNA sequence, said positive selection marker DNA sequence, said second homologous vector DNA sequence and said negative selection marker DNA sequence, as shown in FIG. 1,

wherein the 5'–3' orientation of said first homologous vector sequence relative to said second homologous vector sequence is the same as the 5'–3' orientation of said first region relative to said second region of said target sequence.

5,487,993

DIRECT CLONING OF PCR AMPLIFIED NUCLEIC ACIDS

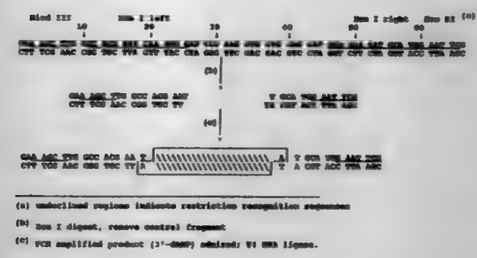
Corlana Herrnstadt, San Diego; Joseph M. Fernandez, Carlsbad, both of Calif.; Lloyd Smith, and David A. Mead, both of Madison, Wis., assignors to Invitrogen Corporation, San Diego, Calif., and Chimer, Milwaukee, Wis.

Continuation of Ser. No. 950,742, Sep. 24, 1992, abandoned, which is a continuation of Ser. No. 589,817, Sep. 27, 1990, abandoned. This application Sep. 9, 1993, Ser. No. 119,313

Int. Cl.[6] C12P *19/34*

U.S. Cl. 435—172.3 20 Claims

1. A method of direct cloning of polymerase chain reaction



(a) underlined regions indicate restriction recognition sequences

(b) Xba I digest, remove central fragment

(c) PCR amplified product (3'-dAMP) ombined/ T4 DNA ligase.

amplified nucleic acids containing a target DNA segment, which method comprises:

(a) subjecting said target DNA segment to polymerase chain reaction amplification to produce a plurality of double-stranded nucleic acids including said DNA segment, each of said nucleic acids having a single, overhanging dAMP residue located at each 3' terminus;

(b) forming a ligation reaction mixture by admixing the plurality of double-stranded nucleic acids with linear double-stranded DNA molecules, said linear DNA molecules each having a single, overhanging (unpaired) dTMP residue at each 3' terminus;

(c) maintaining said mixture under predetermined reaction conditions for a time period sufficient to effect ligation of the nucleic acids to the linear DNA molecules to produce recombinant DNA nucleic acid molecules; and

(d) transforming a compatible host cell line with said recombinant DNA molecules.

5,487,994

INSERTION AND DELETION MUTANTS OF FOKI RESTRICTION ENDONUCLEASE

Srinivasan Chandrasegaran, Baltimore, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Continuation-in-part of Ser. No. 126,564, Sep. 27, 1993, which is a continuation-in-part of Ser. No. 17,493, Feb. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 862,831, Apr. 3, 1992, Pat. No. 5,356,802. This application Nov. 23, 1994, Ser. No. 346,293

Int. Cl.[6] C12N *9/22*

U.S. Cl. 435—199 10 Claims

1. A mutant *FokI* endonuclease having an N-terminal DNA recognition domain and a C-terminal DNA cleavage domain,

wherein said DNA recognition domain binds to a recognition site on a DNA substrate and said cleavage domain cuts at a cleavage site on said DNA substrate,

wherein said recognition site is located at a distance from said cleavage site within said DNA substrate and

wherein the distance between said recognition site and said cleavage site is shifted one base pair away from said recognition site as compared to said distance between said recognition site and said cleavage site recognized by wild-type enzyme.

5,487,995

Patent Not Issued For This Number

5,487,996

GENE CODING FOR ESTERASE AND NOVEL MICROORGANISM CONTAINING SAID GENE

Takeji Shibatani, Kobe; Saburo Komatsubara, Kawaguchi; Kenji Omori, Takatsuki, and Hiroyuki Akatsuka, Moriguchi, all of, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Continuation of Ser. No. 980,516, Nov. 25, 1992, abandoned. This application Jul. 11, 1994, Ser. No. 272,875

Claims priority, application Japan, Nov. 25, 1991, 3-355440; Apr. 13, 1992, 4-137502

Int. Cl.[6] C12N *1/20;1/21*

U.S. Cl. 435—252.1 3 Claims

1. A transformant *Serratia marcescens* which contains a recombinant plasmid comprising a plasmid containing a gene encoding an esterase, wherein said gene has the DNA sequence as shown in SEQ. ID NO: 1 or in SEQ. ID NO: 2.

5,487,997

PIPETTE TIP MOUNTING AND TRANSFER APPARATUS AND METHOD

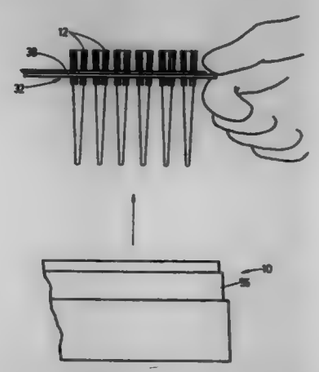
Philip E. Stolp, Kenwood, Calif., assignor to Point Plastics Incorporated, Petaluma, Calif.

Filed Feb. 15, 1994, Ser. No. 196,967

Int. Cl.[6] B01L *3/02*

U.S. Cl. 436—54 30 Claims

16. A pipette tip assembly, comprising:



at least one longitudinally extending pipette tip, the tip having an exterior surface defining a tapered portion, the tapered portion comprising a tapered abutment member which is inwardly tapered from an upper plane towards a lower plane and has a lower end disposed adjacent to the lower plane, wherein the upper and lower planes are transverse to a longitudinal axis of the tip when the tip is vertically oriented and wherein the lower plane is disposed above a lower end of the tip; and,

a tip holder, having at least one tapered holder aperture in which the tip is removably disposed, the tip holder disposed between the upper plane and the lower end of the abutment member, the tip holder selectively movable from an upper position relative to the tip, to a lower position adjacent to the lower end of the abutment member, when in the upper position, the tip holder held above the lower end of the abutment member and rigidly maintaining the tip from wobble in the tip holder until selectively moved from the upper position, when in the lower position, the tip being removable from the tip holder.

5,487,998

TRAPPING OF AFLATOXINS AND PHYTOESTROGENS

Paul P. Umrigar, Kenner, and Shia S. Kuan, Metarie, both of La., assignors to The United States of America as represented by the Secreatry of the Department of Health and Human Services, Washington, D.C.

Filed Jan. 6, 1993, Ser. No. 1,573
Int. Cl.[6] G01N *33/00*
U.S. Cl. 436—93 **16 Claims**

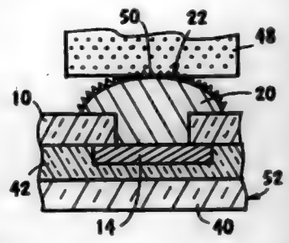
1. A method of removing aflatoxins from a sample, which method comprises:
(a) preparing the sample containing said aflatoxins,
(b) contacting said sample with a compound selected from the group consisting of halo, azido, and amino cyclodextrin/epichlorohydrin copolymers under conditions suitable to effect entrapment of said aflatoxins by said compound, and
(c) removing the entrapped aflatoxins from said sample.

5,487,999

METHOD FOR FABRICATING A PENETRATION LIMITED CONTACT HAVING A ROUGH TEXTURED SURFACE

Warren M. Farnworth, Nampa, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 73,005, Jun. 7, 1993, Pat. No. 5,408,190, which is a continuation-in-part of Ser. No. 709,858, Jun. 4, 1991, abandoned, and Ser. No. 788,065, Nov. 5, 1991, Pat. No. 5,440,240, and Ser. No. 981,956, Nov. 24, 1992. This application Nov. 22, 1994, Ser. No. 343,730
Int. Cl.[6] H01L *21/00*
U.S. Cl. 437—7 **37 Claims**



1. A method for forming a contact structure for forming an electrical connection with a contact location on a semiconductor die, said method comprising:
forming a compliant substrate;
mounting a raised contact on the substrate;
forming a rough textured surface on the raised contact, said rough textured surface including raised asperities adapted to penetrate said contact location to a penetration depth; and
establishing an electrical path on the substrate to the raised contact.

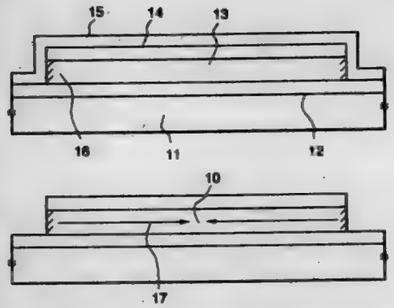
5,488,000

METHOD OF FABRICATING A THIN FILM TRANSISTOR USING A NICKEL SILICIDE LAYER TO PROMOTE CRYSTALLIZATION OF THE AMORPHOUS SILICON LAYER

Hongyong Zhang, and Satoshi Teramoto, both of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Jun. 14, 1994, Ser. No. 260,413
Claims priority, application Japan, Jun. 22, 1993, 5-174736; Jun. 25, 1993, 5-180754
Int. Cl.[6] H01L *21/00;21/336*
U.S. Cl. 437—21 **16 Claims**

1. A method of fabricating a semiconductor device comprising the steps of:



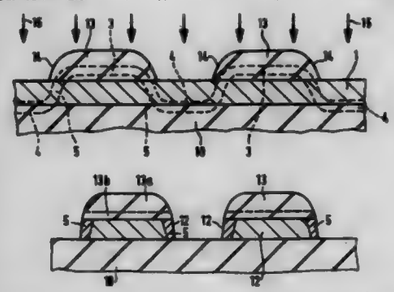
forming a non-single crystal semiconductor film on a substrate;
forming an insulating film on the semiconductor film;
patterning the semiconductor film and the insulating
forming a film containing a metal element for promoting crystallization of the semiconductor film, on the patterned insulating film and in contact with a side of the patterned semiconductor film; and
starting the crystallization from the side of the patterned semiconductor film.

5,488,001

MANUFACTURE OF ELECTRONIC DEVICES COMPRISING THIN-FILM TRANSISTORS USING AN ION IMPLANTATION MASK HAVING BEVELLED EDGES

Stanley D. Brotherton, Forest Row, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 28, 1994, Ser. No. 281,967
Claims priority, application United Kingdom, Jul. 30, 1993, 9315798
Int. Cl.[6] H01L *21/336;21/84*
U.S. Cl. 437—21 **11 Claims**



1. A method of manufacturing an electronic device comprising thin-film transistors formed on a substrate by steps which include: (a) depositing a disordered material on the substrate to provide a semiconductor film in which channel regions of the transistors are to be accommodated, charge-trapping states being present in the semiconductor film, (b) providing a masking pattern on the semiconductor film to mask areas where the thin-film transistors are to be formed, (c) etching away the unmasked areas of the film from the substrate to leave semiconductor film bodies for the transistors, and (d) providing the semiconductor film bodies with electrodes forming a source, a drain and an insulated gate of each transistor, the transistor current flow through the channel region between the source and drain being by charge carriers of a first conductivity type under the control of the insulated gate in operation of the transistor, which method is characterised in that the masking pattern is provided with bevelled edge portions which are present when an implantation step (e) is carried out to implant ions of a second conductivity type dopant into the semiconductor film material, the thickness of the masking pattern in step (c) being sufficiently large as to mask the underlying semiconductor film against

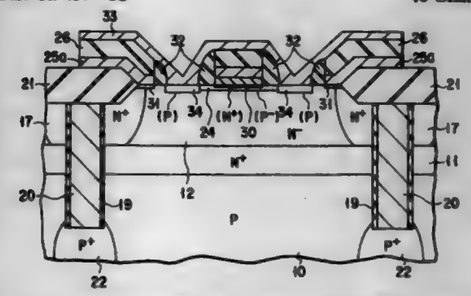
implantation of the ions except below the bevelled edge portions where the ions are implanted through the bevelled edge portions to form a dopant stripe across the thickness of the semiconductor film material, which dopant stripe is at least partly retained in the thin-film transistors as a dopant edge to the channel regions for reducing leakage currents along the edges of the channel region in operation of the transistors.

5,488,002

METHOD FOR MANUFACTURING SELF-ALIGNED BIPOLAR TRANSISTORS USING DOUBLE DIFFUSION

Koji Kimura, Chigasaki, and Shin-ichi Taka, Kitakyushu, both of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 8, 1994, Ser. No. 302,199
Claims priority, application Japan, Sep. 10, 1993, 5-226117
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—31 **40 Claims**



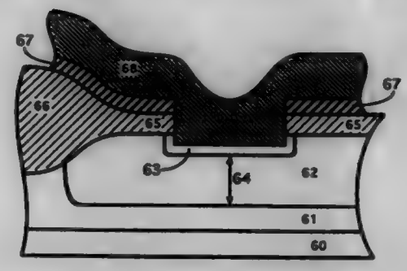
1. A method for manufacturing bipolar transistors, comprising:
a first step of depositing a first polycrystalline semiconductor film containing second impurities of a second conductivity type over a semiconductor substrate containing first impurities of a first conductivity type;
a second step of selectively removing the first polycrystalline semiconductor film such that the first polycrystalline semiconductor film remains in a region where a first semiconductor layer is formed;
a third step of forming a first semiconductor layer of the second conductivity type by diffusing the second impurities from the remaining portion of the first polysilicon semiconductor film into the semiconductor substrate;
a fourth step of depositing a second polycrystalline semiconductor film containing third impurities of the first conductivity type over a resultant structure;
a fifth step of depositing a first insulation film over a resultant structure;
a sixth step of selectively removing a laminated film made up of the first insulating film, the second polycrystalline semiconductor film and the first polycrystalline semiconductor film, such that the laminated film remains in a region where a second semiconductor layer is formed;
a seventh step of forming a second semiconductor layer of the first conductivity type by diffusing the third impurities from the second polycrystalline semiconductor film into the first semiconductor layer through the first polycrystalline semiconductor film;
an eight step of forming a second insulation film on a side wall of the laminated film made up of the first insulation film, second polycrystalline semiconductor film and first polycrystalline semiconductor film;
a ninth step of depositing a third polycrystalline semiconductor film containing the second impurities of the second conductivity type over a resultant structure; and
a tenth step of forming a third semiconductor layer of the second conductivity type by diffusing the second impurities from the third polycrystalline semiconductor film into the semiconductor substrate, said third semiconductor layer being electrically connected to the first semiconductor layer.

5,488,003

METHOD OF MAKING EMITTER TRENCH BICMOS USING INTEGRATED DUAL LAYER EMITTER MASK

Stephen Chambers; Brian J. Brown; Chau-Hong Chera, all of Portland; Robert Chau, Beaverton, and Leopoldo D. Yau, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Mar. 31, 1993, Ser. No. 40,673
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—31 **15 Claims**



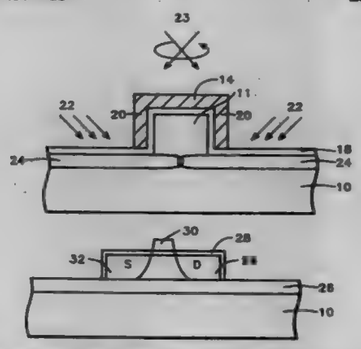
1. A method of maintaining an approximately constant, relative distance between a bottom of a trench etched through a first layer and into a semiconductor substrate and a diffusion depth of a doped region of said semiconductor substrate which has been implanted through said first layer, said distance between said trench bottom and said diffusion depth being constant regardless of variations in thickness of said first layer, said method comprising the steps of:
(a) forming said first layer above said semiconductor substrate;
(b) implanting a dopant material through said first layer and into said semiconductor substrate to create said doped region within said semiconductor substrate; and
(c) forming said trench by etching through said first layer and said semiconductor substrate using an etchant which etches said first layer and said semiconductor substrate with an etch selectivity having an etch ratio of said first layer to said semiconductor substrate approximately equal to a ratio of projected implanted ranges of said dopant material of said first layer to said semiconductor substrate.

5,488,004

SOI BY LARGE ANGLE OXYGEN IMPLANT

Ming-Tzong Yang, Hsin Chu, Taiwan, Prov. of China, assignor to United Microelectronic Corporation, Hsinchu, Taiwan, Prov. of China

Filed Sep. 23, 1994, Ser. No. 311,261
Int. Cl.[6] H01L *21/76;21/265*
U.S. Cl. 437—35 **26 Claims**



1. The method of forming a silicon-on-insulator device in the manufacture of an integrated circuit comprising:
forming a first silicon oxide layer on the surface of a semiconductor substrate;

depositing a first implant-stop layer over said silicon oxide layer and patterning said first implant-stop layer;
etching into said semiconductor substrate where said substrate is not covered by said patterned implant-stop layer to provide a silicon pillar underlying said patterned implant-stop layer;
forming a second silicon oxide layer on all exposed surfaces of said silicon pillar and said silicon semiconductor substrate;
depositing a second implant-stop layer over all surfaces of said substrate;
anisotropically etching said second implant-stop layer to form spacers on the sidewalls of said silicon pillar;
thereafter performing a single oxygen ion implantation using a single energy at a tilt angle to form implanted regions within said semiconductor substrate wherein said implanted regions are formed directly underneath said second silicon oxide layer overlying said semiconductor substrate and wherein said implanted regions extend and intersect under said silicon pillar;
removing said first implant-stop layer and said spacers;
annealing said semiconductor substrate wherein said implanted regions are transformed into silicon dioxide regions; and
removing said first and second silicon oxide layers to complete formation of said silicon-on-insulator device in the manufacture of an integrated circuit.

5,488,005

PROCESS FOR MANUFACTURING AN OFFSET GATE STRUCTURE THIN FILM TRANSISTOR

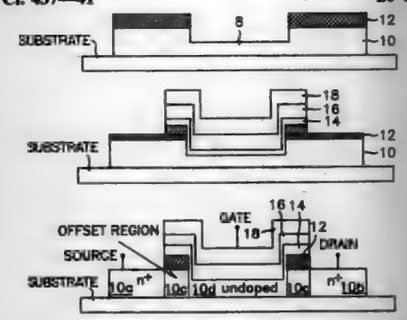
Min-Ku Han, and Byung-Hyuk Min, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 5, 1995, Ser. No. 435,324

Claims priority, application Rep. of Korea, May 6, 1994, 9959/1994

Int. Cl.[6] H01L *21/86*

U.S. Cl. 437—41 **20 Claims**



1. A process for manufacturing an offset gate structure thin film transistor, comprising the steps of:
forming a first semiconductor layer comprised of a first semiconductor material on a major surface of a substrate;
forming a buffer layer on said first semiconductor layer;
etching away a first region of said buffer layer and etching a corresponding region of said first semiconductor layer to a predetermined depth, to thereby form a recess and an underlying thin channel region in said first semiconductor layer, said thin channel region having a thickness less than that of the remainder of said first semiconductor layer;
forming a second semiconductor layer comprised of a second semiconductor material on said buffer layer and exposed portions of said said first semiconductor layer defining said recess;
forming a gate insulating layer on said second semiconductor layer;
forming a conductive layer on said gate insulating layer;
etching said second semiconductor layer, said gate insulating layer, and said conductive layer so as to form a gate electrode structure overlying said thin channel region of said first semiconductor layer and offset resistance regions of said first semiconductor layer disposed on opposite sides of said thin channel region; and,
ion-implanting impurities into said first semiconductor layer through exposed portions of said buffer layer disposed on opposite sides of said gate electrode structure, to thereby form source and drain regions on opposite sides of said offset resistance regions of said first semiconductor layer.

5,488,006

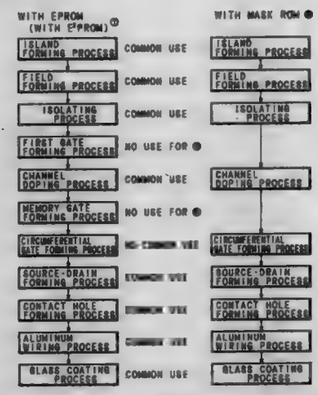
ONE-CHIP MICROCOMPUTER MANUFACTURING METHOD

Shozo Shirota, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 585,539, Sep. 20, 1990, abandoned. This application Jan. 28, 1993, Ser. No. 10,501

Int. Cl.[6] H01L *21/266;21/8247*

U.S. Cl. 437—43 **1 Claim**



1. A method of manufacturing a mask ROM, said method comprising the steps of:
producing EPROM structures on a first semiconductor substrate using a set of EPROM-specific photomasks, said set of EPROM-specific photomasks including an EPROM-specific channel doping mask and wherein said EPROM structures include EPROM-specific memory cells using transistors having a first current-voltage characteristic and including a corresponding EPROM cell sense amplifier coupled to said EPROM-specific memory cells, said corresponding EPROM cell sense amplifier adapted for operation with said EPROM-specific memory cells; and thereafter
forming islands, forming field regions, and isolating a plurality of areas on a second semiconductor substrate by employing a first subset of said set of EPROM-specific photomasks to produce mask ROM-specific memory cells using transistors having a second current-voltage characteristic different from said first current-voltage characteristic and producing a corresponding mask ROM cell sense amplifier coupled to said mask ROM-specific memory cells wherein said corresponding mask ROM cell sense amplifier includes a current detecting transistor adapted for operation with said EPROM-specific memory cells;
doping a channel in a plurality of regions of said second semiconductor substrate by employing said EPROM-specific channel doping mask; and
forming a circumferential gate area and adjusting a geometry of a gate of said current detecting transistor by use of a mask ROM-specific photomask to achieve a particular electrical current-voltage characteristic for said corresponding mask ROM cell sense amplifier adapted for operation with said mask ROM-specific memory cells; and forming sources and drains, forming contact holes, forming aluminum interconnections, and forming glass coating by employing a second subset of said set of EPROM-specific photomasks.

5,488,007

METHOD OF MANUFACTURE OF A SEMICONDUCTOR DEVICE

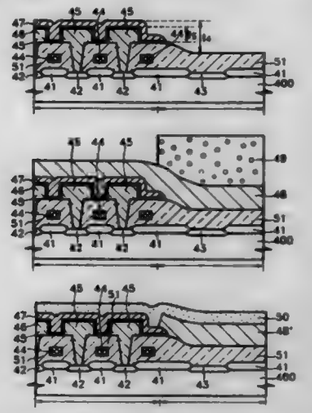
Kyeong-tae Kim, Seoul; Yun-seung Shin, Kyungski-do; Young-hun Park; Won-mo Park, both of Kyungki-do, and Ji-hong Ahn, Seoul, all of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 16, 1993, Ser. No. 42,490

Claims priority, application Rep. of Korea, Apr. 16, 1992, 92-6393; Nov. 10, 1992, 92-20972

Int. Cl.[6] H01L *21/00*

U.S. Cl. 437—47 **10 Claims**



1. A method for manufacturing a semiconductor device having a closed step portion and at least one global step portion, a step difference being defined by the respective surfaces of said closed step portion and said global step portion, comprising the steps of:
forming a first insulating layer, said first insulating layer comprising an inorganic material, on said closed step portion and said global step portion;
forming a photoresist pattern for forming a dummy pattern on said global step portion through a photolithography method;
etching said first insulating layer to form said dummy pattern, using said photoresist pattern as an etching mask;
removing said photoresist pattern;
forming a second insulating layer, said second insulating layer comprising an inorganic material, on said closed step portion and said global step portion.

5,488,008

METHOD OF FABRICATING A STACKED CAPACITOR MEMORY CELL IN A SEMICONDUCTOR MEMORY DEVICE

Koichiro Kawamura, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

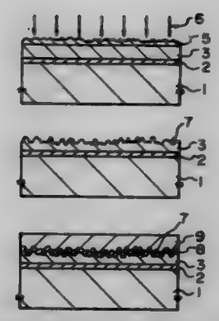
Continuation of Ser. No. 131,609, Oct. 5, 1993, abandoned. This application Feb. 2, 1995, Ser. No. 384,465

Claims priority, application Japan, Jan. 9, 1992, 4-297702

Int. Cl.[6] H01L *21/70;27/00*

U.S. Cl. 437—52 **4 Claims**

1. A method of manufacturing a capacitor, in a semiconductor memory device having memory cells, each having a transistor and a capacitor, comprising the steps of:
depositing an insulating film on a semiconductor substrate;
forming on said insulating film a polycrystalline silicon film serving as a lower electrode of said capacitor;
depositing an oxide film having an uneven surface on said polycrystalline silicon film by exposing said polycrystalline silicon film to an oxidizing atmosphere including N-type impurities; and
etching anisotropically said polycrystalline silicon film and said oxide film until said oxide film is substantially completely removed, said uneven surface of said oxide layer producing an uneven etch rate of said polycrystalline silicon film and a magnification of said uneven surface of said oxide film in said polycrystalline silicon film.



5,488,009

POST-TITANIUM NITRIDR MASK ROM PROGRAMMING METHOD

Chen-Chiu Hsue, Hsin chu; Yi-Chung Shen, Taichung; Shing-Ren Sheu, Tao-Yuan, and Chen-Hui Chung, Hsin-Chu, all of, Taiwan, Prov. of China, assignors to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Filed Nov. 23, 1994, Ser. No. 344,004

Int. Cl.[6] H01L *21/8246*

U.S. Cl. 437—52 **20 Claims**

1. A method of manufacturing a ROM semiconductor device which comprises the steps in the sequential order of:
taking a semiconductor substrate with an array of parallel buried bit lines integral therewith, laid buried bit lines being oriented in a first direction, a gate oxide lays: above said substrate and said buried bit lines, and word lines formed above said gate oxide layer,
forming a dielectric layer over laid word lines and said gate oxide layer,
forming a contact hole in said dielectric layer,
forming a blanket titanium nitride layer over said device extending into said contact hole,
forming a ROM code cask over said device, said ROM code mask having a ROR code opening therethrough, said opening being centered between a pair of said bit lines,
performing etching of said titanium nitride layer through said ROM code mask,
said titanium nitride layer having a stop height over said dielectric layer,
ion implanting a code implant dopant through said ROM code opening down into a doped region in said substrate below said ROM code opening,
removing said ROM code mask,
performing a rapid thermal annealing step,
applying a blanket layer of metal to said device including said contact hole, and patterning said metal.

5,488,010

METHOD OF FABRICATING SIDEWALL CHARGE-COUPLED DEVICE WITH TRENCH ISOLATION

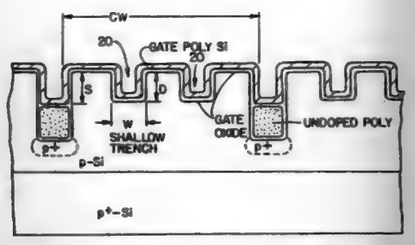
Hon-Sum P. Wong, Peekskill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 57,425, May 5, 1993, Pat. No. 5,334,868, which is a continuation of Ser. No. 652,959, Feb. 8, 1991, abandoned. This application May 10, 1994, Ser. No. 241,137

Int. Cl.[6] H01L *21/70;27/148*

U.S. Cl. 437—53 **4 Claims**

1. A method of fabricating a sidewall charge-coupled device with trench isolation comprising the steps of:
providing a substrate of semiconductor material;



defining a plurality of isolation trenches in a surface of said substrate to form columns of charge coupled cells between the isolation trenches, said plurality of isolation trenches being formed to increase the surface areas of the charge coupled cells therebetween and facilitate transport of charges along the cell sidewalls;

disposing a plurality of alternating first and second sets of substantially parallel surface electrodes arranged in an overlapping electrode configuration over substantially the entire upper surface of the substrate extending substantially perpendicular to the isolation trenches, said plurality of alternating first and second sets of surface electrodes producing, by an applied electric field, an induced potential well in the substrate beneath each of the plurality of alternating first and second sets of surface electrodes, such that substantially the entire upper surface of the substrate and the sidewalls in common with the upper portions of the sidewalls of the isolation trenches produce photon to electron conversion in response to incident light; and

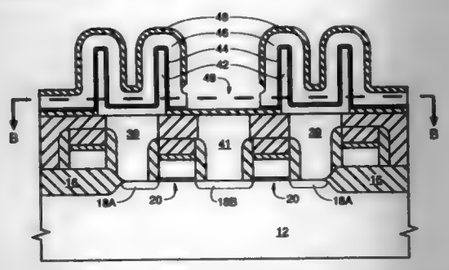
disposing a plurality of shallow trenches, shallow relative to the deeper isolation trenches, under the surface electrodes in each column of cells defined between adjacent isolation trenches to increase the charge carrying surface area and provide better gate control.

5,488,011

METHOD OF FORMING CONTACT AREAS BETWEEN VERTICAL CONDUCTORS

Thomas A. Figura, and Kirk D. Prall, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Nov. 8, 1994, Ser. No. 336,426
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 437—60 **18 Claims**



1. A method of making an integrated circuit device, comprising:

a. forming first and second structures each having a vertical sidewall;

b. forming a first layer of material conforming to, and extending between the vertical sidewalls;

c. forming a mask layer conforming to the first layer, wherein the mask layer has a horizontal region between the vertical sidewalls and vertical regions along the vertical sidewalls;

d. patterning and etching the mask layer to remove the horizontal region of the mask layer, thereby exposing portions of the first layer between the vertical sidewalls, while retaining at least a portion of each vertical region of the mask layer; and

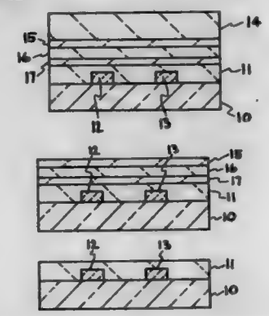
e. using the remaining mask layer as an etch mask, etching away the exposed portions of the first layer.

5,488,012

SILICON ON INSULATOR WITH ACTIVE BURIED REGIONS

Anthony M. McCarthy, Menlo Park, Calif., assignor to Regents of the University of California, Oakland, Calif.

Filed Oct. 18, 1993, Ser. No. 137,412
Int. Cl.[6] H01L *21/76*
U.S. Cl. 437—62 **19 Claims**



1. A method for forming at least one buried region in a silicon-on-insulator member, comprising:

depositing at least one layer of silicon on a substrate;

doping at least a selected area of the layer of silicon to form at least one buried region in an outer surface region of the silicon layer;

bonding the silicon layer to an insulator substrate such that the at least one buried region is directly contiguous with a surface of the insulator substrate; and

totally removing the substrate on which the layer of silicon was deposited;

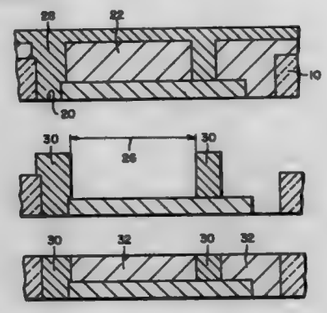
whereby the thus formed buried region is buried beneath an opposite surface of the silicon layer.

5,488,013

METHOD OF FORMING TRANSVERSE DIFFUSION BARRIER INTERCONNECT STRUCTURE

Robert M. Geffken, Burlington, and Matthew J. Rutten, Milton, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 169,787, Dec. 20, 1993. This application Apr. 26, 1995, Ser. No. 428,995
Int. Cl.[6] H01L *21/28*
U.S. Cl. 437—187 **5 Claims**



1. A method of forming an interconnect line in an insulator layer of a semiconductor structure, said method comprising:

forming an insulator layer;

forming a trench in said insulator layer, said trench having a first depth within said insulator layer for an interconnect line and a second depth through said insulator layer for contact of said interconnect line to a layer underlying said insulator layer;

forming a pattern of sections of material transversely and spaced apart within said trench;

forming a layer of diffusion barrier material over said pattern and within said trench;

removing a portion of said diffusion barrier material so as to form a plurality of transverse spaced apart vertical sections of diffusion barrier material within said trench;

removing said pattern of material, so as to leave a plurality of transverse diffusion barriers spaced apart within said trench; and

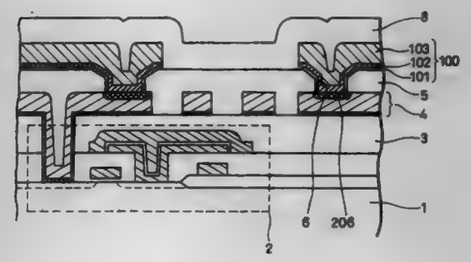
forming a layer of metallization within remaining portions of said trench, said metallization and said plurality of transverse diffusion barriers thereby forming an interconnect line within said insulator layer wherein said interconnect line has a plurality of transverse diffusion barriers spaced apart therein.

5,488,014

INTERCONNECTION STRUCTURE OF SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND MANUFACTURING METHOD THEREFOR

Shigeru Harada; Junichi Arima, and Noriaki Fujiki, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 104,520, Aug. 10, 1993, Pat. No. 5,313,101, which is a continuation of Ser. No. 748,216, Aug. 22, 1991. This application Mar. 15, 1994, Ser. No. 213,417
Claims priority, application Japan, Aug. 28, 1990, 2-227061
Int. Cl.[6] H01L *21/44;21/48*
U.S. Cl. 437—192 **9 Claims**



1. A method for manufacturing an interconnection structure of a semiconductor integrated circuit device comprising the steps of:

forming a first interconnection layer including aluminum on a main surface of a semiconductor substrate;

forming an insulating layer on said first interconnection layer;

selectively removing said insulating layer to form a through hole for exposing a surface of said first interconnection layer;

forming a titanium layer on said insulting layer, said titanium layer being in contact with the surface of said first interconnection layer through said through hole to form an interface between said titanium layer and said first interconnection layer;

forming a titanium compound layer on said titanium layer;

forming a second layer including aluminum on said titanium compound layer; and

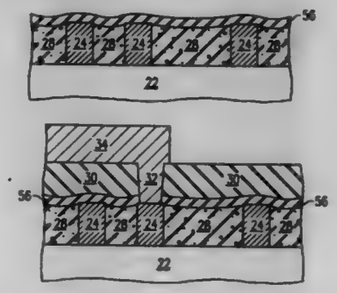
forming a compound layer consisting essentially of titanium and aluminum at the interface between the titanium layer and the first interconnection layer.

5,488,015

METHOD OF MAKING AN INTERCONNECT STRUCTURE WITH AN INTEGRATED LOW DENSITY DIELECTRIC

Robert H. Havemann, Garland; Shin-Puu Jeng, Plano; Bruce E. Gnade, Rowlett, and Chih-Chen Cho, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 20, 1994, Ser. No. 246,432
Int. Cl.[6] H01L *21/441;21/469*
U.S. Cl. 437—195 **9 Claims**



1. A method of constructing a semiconductor device comprising:

providing a layer of patterned conductors formed on a semiconductor substrate;

depositing and gelling a layer of a precursor solution on said substrate, thereby forming a wet gel layer having porous structure;

drying said wet gel layer without substantial densification of said porous structure, thereby forming a porous dielectric layer filling gaps between and covering said patterned conductors, said porous dielectric layer having a dielectric constant of less than 3.0, a porosity between 30% and 95%, and an average pore diameter of less than 80 nm;

removing a top portion of said porous dielectric layer; and

depositing a non-porous dielectric layer over said conductors and said porous dielectric layer to complete an interlayer dielectric, whereby the capacitive coupling between conductors on the same level is substantially reduced compared to a solid silicon dioxide dielectric and the mechanical properties of said interlayer dielectric are essentially the same as that of non-porous silicon dioxide.

5,488,016

CELLULATED BODIES PRODUCED FROM PHOSPHOROUS POLYMERS

Hermann L. Rittler, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Continuation of Ser. No. 86,515, Jul. 1, 1993, Pat. No. 5,403,519, which is a division of Ser. No. 630,544, Dec. 20, 1990, abandoned. This application Dec. 13, 1994, Ser. No. 355,071
Int. Cl.[6] C03C *11/00*
U.S. Cl. 501—39 **12 Claims**

1. A rigid glass or crystalline body that consists essentially of oxides of phosphorous and aluminum, that is thermally vitrified or crystallized from an amorphous, precursor, polymeric material consisting essentially of aluminum, phosphorous and carbon atoms and wherein the body is a cellulated body and has a bulk density no greater than one half that of the precursor polymeric material.

5,488,017

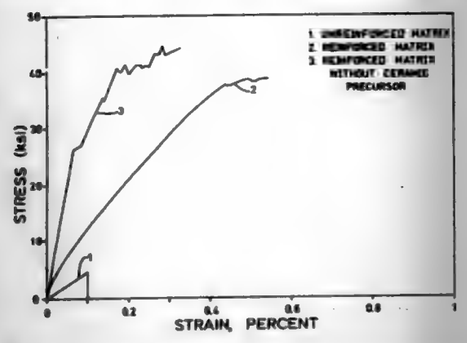
FIBERT REINFORCED CERAMIC MATRIX COMPOSITE MEMBER

Andrew Szweda, Middletown; Michael L. Millard, Sharonville, both of Ohio, and Michael G. Harrison, Bear, Del., assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 129,002, Sep. 28, 1993, abandoned, which is a continuation of Ser. No. 740,549, Aug. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 341,000, Apr. 14, 1989, abandoned. This application Nov. 16, 1994, Ser. No. 341,339

Int. Cl.[6] B32B 5/28

U.S. Cl. 501—95 12 Claims



1. A structural fiber reinforced ceramic matrix composite member consisting essentially of

a plurality of oxidation-stable reinforcing fibers;

a ceramic matrix comprising ceramic particles selected from the group consisting of alumina, zirconia, yttria, silica, hafnia and mixtures thereof and a silicate ceramic bonding phase, the ceramic matrix being interspersed about the reinforcing fibers so as to directly contact the reinforcing fibers;

the ceramic bonding phase being in intimate contact with the ceramic particles and the reinforcing fibers so as to directly bond together the ceramic particles and the reinforcing fibers; and

controlled porosity distributed throughout the ceramic matrix so as to control the strength of the bond between the ceramic bonding phase and the reinforcing fibers;

wherein the ceramic matrix is formed by the ceramic particles and a slurry of a silicon-containing polymer substance selected from the group consisting of polycarbosilanes, vinylic polysilanes, dimethyl siloxane and silicone resins and combinations thereof, the slurry being interspersed about the reinforcing fibers and heated at a sufficient temperature in an oxidizing atmosphere so that the silicon-containing polymer substance is transformed to yield the ceramic bonding phase; and

wherein the fiber reinforced ceramic matrix composite member is characterized by an ultimate tensile strength of greater than about 15 ksi and a percent elongation at failure of greater than about 0.2%.

5,488,018

ULTRA LOW THERMAL EXPANSION, HIGHLY THERMAL SHOCK RESISTANT CERAMIC

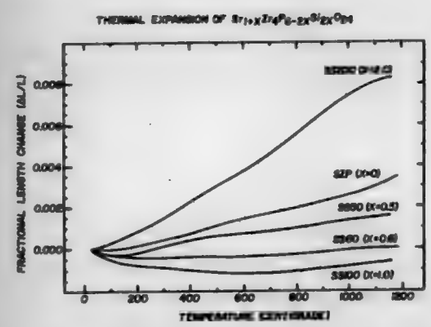
Santosh Y. Limaye, 1440 Sandpiper Clr. #38, Salt Lake City, Utah 84117

Filed Apr. 21, 1989, Ser. No. 341,732

Int. Cl.[6] C04B 35/48

U.S. Cl. 501—104 19 Claims

1. A ceramic having substantially neutral bulk thermal expansion and anisotropy consisting essentially of a substantially single phase composition of $\phi_{1+x}\theta_4P_{6-2x}Si_{2x}O_{24}$ wherein X is a number having a value of between about 0.2 and 0.8, ϕ is either strontium, barium or mixtures thereof, and θ is either zirconium, hafnium, or mixtures thereof; said bulk material thermal expansion being over a temperature of from about 0° C. to about 1200° C.



5,488,019

DIELECTRIC CERAMIC COMPOSITION CONTAINING ZNO-B_2O_3-SIO_2 GLASS, METHOD OF PREPARING THE SAME, AND RESONATOR AND FILTER USING THE DIELECTRIC CERAMIC COMPOSITION

Masahiro Abe; Tsutomu Nanataki, and Shinsuke Yano, all of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 181,423, Jan. 14, 1994, Pat. No. 5,350,721, which is a division of Ser. No. 102,059, Aug. 4, 1993, Pat. No. 5,304,521, which is a division of Ser. No. 948,585, Sep. 23, 1992, Pat. No. 5,264,403. This application May 31, 1994, Ser. No. 251,567

Claims priority, application Japan, Sep. 27, 1991, 3-276587; Mar. 18, 1992, 4-92180; Mar. 18, 1992, 4-92182; Mar. 25, 1992, 4-98862; Sep. 21, 1992, 4-276594; Sep. 21, 1992, 4-276595; Sep. 21, 1992, 4-276596

Int. Cl.[6] C04B 35/40

U.S. Cl. 501—139 4 Claims

1. A method of preparing a dielectric ceramic composition, comprising the steps of:

providing starting materials which give a main ceramic composition containing barium oxide, titanium oxide, rare earth oxide and bismuth oxide as major components, which composition is represented by $xBaO.yTiO_2.z((1-a)RE_2O_3.aBi_2O_3)$, wherein RE represents at least one rare earth metal, $0.10 \leq x \leq 0.20$, $0.60 \leq y \leq 0.75$, $0.10 \leq z \leq 0.25$, $x+y+z=1$ and $0 < a \leq 0.3$;

excluding at least a part of bismuth oxide from said starting materials which give said main ceramic composition;

calcining and pulverizing a mixture of said starting materials to provide a calcined ceramic powder; and

blending said calcined ceramic powder with said at least a part of bismuth oxide and a glass composition containing ZnO, B_2O_3 and SiO_2, which is represented by k(wt. %)ZnO.m(wt. %)B_2O_3.n(wt. %)SiO_2, wherein $30 \leq k \leq 85$, $5 \leq m \leq 50$, $2 \leq n \leq 40$, $k+m+n=100$, said glass composition being contained in an amount of at least 0.1 parts by weight, but not more than (18–62.5a) parts by weight (where $0 < a \leq 0.2$) or not more than 5.5 parts by weight (where $0.2 < a \leq 0.3$), per 100 parts by weight of said main ceramic composition.

5,488,020

COPPER-IMPREGNATED ZEOLITE COMPOSITION

Ronald W. Diesen; Kenneth A. Burdett; Ravi S. Dixit, and Stanley S. T. King, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 954,710, Sep. 30, 1992, Pat. No. 5,329,057, which is a continuation-in-part of Ser. No. 688,808, Apr. 19, 1991, Pat. No. 5,196,621. This application Feb. 23, 1994, Ser. No. 200,258

Int. Cl.[6] C07C 2/50

U.S. Cl. 502—60 17 Claims

1. A catalyst composition comprising a copper(I)-impregnated aluminosilicate zeolite wherein the zeolite is selected from the group consisting of faujasites, zeolite L, and zeolite Ω, and wherein the zeolite is characterized by a silica to bulk alumina molar ratio in the range from about 12 to about 50 and a silica to framework alumina molar ratio of at least about 15, and wherein optionally, the catalyst contains a binder, the composition being prepared by a process comprising (a) drying an aluminosilicate zeolite to remove water, the zeolite being selected form the group consisting faujasites, zeolite L, and zeolite Ω, and being characterized by a silica to bulk alumina molar ratio in the range from about 12 to about 50 and a silica to framework alumina molar ratio of at least about 15, (b) impregnating the dried zeolite with a solution containing a copper(II) salt, (c) calcining the copper(II)-impregnated zeolite under oxygen at a temperature between about 200° C. and about 325° C. under conditions such that the anion of the salt is removed, and (d) reducing the calcined copper(II)-impregnated zeolite with an olefinic hydrocarbon such that a portion of the copper(II) ions are converted to copper(I).

5,488,021

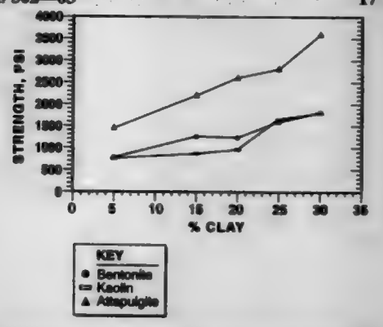
ACTIVATED CARBON BODIES HAVING CLAY BINDER AND METHOD OF MAKING SAME

Evelyn M. DeLiso, and Kenneth E. Zaun, both of Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Dec. 17, 1993, Ser. No. 168,170

Int. Cl.[6] B01J 29/06

U.S. Cl. 502—63 17 Claims



1. A method for making a carbon body, said method consisting essentially of:

a) forming an aqueous mixture comprising about 2% to 30attapulgite clay, about 2% to 12% plasticizing organic binder selected from the group consisting of methylcellulose, ethylhydroxy ethylcellulose, hydroxybutylcellulose, hydroxybutyl methylcellulose, hydroxyethylcellulose, hydroxymethylcellulose, hydroxypropylcellulose, hydroxypropyl methylcellulose, hydroxyethyl methylcellulose, sodium carboxy methylcellulose, and mixtures thereof, and the balance being activated carbon particles;

b) forming said mixture into a body; and

c) drying the formed body.

10. A body comprised of activated carbon particles bonded together with about 2% to 30% by weight attapulgite clay binder and about 2% to 12% plasticizing organic binder selected from the group consisting of methylcellulose, ethylhydroxy ethylcellulose, hydroxybutylcellulose, hydroxybutyl methylcellulose, hydroxyethylcellulose, hydroxymethylcellulose, hydroxypropylcellulose, hydroxypropyl methylcellulose, hydroxyethyl methylcellulose, sodium carboxy methylcellulose, and mixtures thereof.

5,488,022

CATALYST COMPONENT FOR OLEFIN POLYMERIZATION

Tadashi Takahashi; Takashi Fujita; Kazuo Nakamura, and Seiichi Tsukamoto, all of Yokkaichi, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Oct. 22, 1993, Ser. No. 139,805

Claims priority, application Japan, Jan. 28, 1992, 4-290441

Int. Cl.[6] B01J 31/00

U.S. Cl. 502—115 13 Claims

1. A catalyst component for olefin polymerization which comprises an intimate mixture of:

Component (A1) which is a solid component for Ziegler catalysts comprising titanium, magnesium and a halogen as essential components in a particulate form; and

component (A2) which is a compound selected from the group consisting of inorganic oxides, inorganic carbonates, inorganic sulfates and physical or chemical mixtures thereof in a particulate form;

wherein Component (A2) is employed in a weight ratio to Component (A1) from 0.001 to 0.5 and has an average particle diameter smaller than that of Component (A1), and wherein the ratio of the average particle diameter of Component (A2) to that of Component (A1) is in the range of from 0.0001 to 0.5 and wherein the sticky particles of Component (A1) are coated with the particles of Component (A2) in order to avoid clogging of the polymerization bed.

5,488,023

METHOD OF MAKING ACTIVATED CARBON HAVING DISPERSED CATALYST

Kishor P. Gadkaree, Big Flats; Mallanagouda D. Patil, and Steven B. Dawes, both of Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Aug. 12, 1994, Ser. No. 289,434

Int. Cl.[6] B01J 21/18

U.S. Cl. 502—182 22 Claims

1. A method of making an activated carbon supported catalyst, the method comprising:

a) combining a liquid thermosetting resin carbon precursor and a catalyst precursor wherein the catalyst precursor is in a soluble form;

b) curing the thermosetting resin;

c) carbonizing the thermosetting resin; and

d) activating the carbon to produce an activated carbon supported catalyst.

5,488,024

SELECTIVE ACETYLENE HYDROGENATION

Tin-Tack P. Cheung; Marvin M. Johnson; Scott H. Brown; Stan A. Zisman, and James B. Kimble, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 1, 1994, Ser. No. 269,723

Int. Cl.[6] B01J 23/00;23/58

U.S. Cl. 502—325 38 Claims

1. A preparation method which consists essentially of the steps of:

(1) contacting (a) a solid composition comprising palladium, silver and an inorganic support material with (b) a liquid reduction composition comprising (i) at least one reducing agent selected from the group consisting of hydrazine and alkali metal borohydrides and (ii) at least one non-reducing

liquid component, at a temperature of up to about 60° C. for a time period of at least about 1 second, so as to produce a wet-reduced solid composition;

(2) substantially separating said wet-reduced solid composition produced in step (1) from said liquid reduction composition: and

(3) drying the substantially separated, wet-reduced solid composition obtained in step 2.

5,488,025

DYE-RECEIVING ELEMENT CONTAINING ELASTOMERIC BEADS IN OVERCOAT LAYER FOR THERMAL DYE TRANSFER

Thomas W. Martin, Rochester; William H. Simpson, Pittsford, and Jacob J. Hastreiter, Jr., Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 7, 1995, Ser. No. 473,805

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **12 Claims**

5. A process of forming a dye transfer image comprising:

a) imagewise-heating a dye-donor element comprising a support having thereon a dye layer comprising a dye dispersed in a binder, and

b) transferring a dye image to a dye-receiving element comprising a reflective support having thereon a dye image-receiving layer to form said dye transfer image,

wherein said dye image-receiving layer has an overcoat layer thereon containing crosslinked elastomeric beads having a Tg of 45° C. or less, said elastomeric beads being made from an acrylic polymer, an acrylic copolymer or a styrenic copolymer, said elastomeric beads having a particle size of less than about 1 μm and are present at a coverage of from about 0.2 to about 1.0 g/m^2.

5,488,026

THERMAL DYE TRANSFER SYSTEM WITH RECEIVER CONTAINING AN ACID-GENERATING COMPOUND

Leslie Shuttleworth; Helmut Weber, and Franklin D. Saeva, all of Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 6, 1995, Ser. No. 469,972

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **14 Claims**

8. A process of forming a dye transfer image comprising

1) imagewise-heating a dye-donor element comprising a support having thereon a dye layer comprising a dye dispersed in a polymeric binder, said dye being a deprotonated cationic dye which is capable of being reprotonated to a cationic dye having a N-H group which is part of a conjugated system,

2) imagewise transferring said dye to a dye-receiving element, said dye-receiving element comprising a support having thereon a polymeric dye image-receiving layer, said polymeric dye image-receiving layer containing a compound capable of generating an acid upon exposure to UV light, said acid being capable of reprotonating said deprotonated cationic dye, and

3) subjecting said dye-receiving element to UV radiation to generate said acid to reprotonate said deprotonated dye and form said dye transfer image.

5,488,027

HERBICIDE-SAFENER COMBINATIONS CONTAINING SULFONYLUREA OR IMIDAZOLINONE HERBICIDES

Klaus Bauer, Hanau, and Hermann Bieringer, Eppstein/Taunus, both of, Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Dec. 19, 1991, Ser. No. 810,211

Claims priority, application Germany, Dec. 21, 1990, 40 41 120.6

Int. Cl.[6] A01N *25/32;43/42*

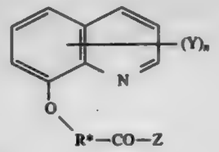
U.S. Cl. 504—105 **11 Claims**

1. A herbicidal composition which comprises an effective amount of

A) one or more herbicides from the group of the sulfonylureas and

B) one or more compounds of the formula B2,

(B2)



in which

Y is 5-Cl

R* is a C_1–C_2-alkylene chain which can additionally be substituted by one or two C_1–C_4-alkyl radicals, and

Z is OR^1,

R^1 independently of R is hydrogen, C_1–C_{16}-alkyl, C_3–C_{12}-cycloalkyl, C_2–C_8-alkenyl or C_2–C_8-alkynyl,

each of the above carbon-containing radicals independently of one another being unsubstituted or monosubstituted or polysubstituted by radicals selected from the group consisting of halogen, hydoxyl, C_1–C_8-alkoxy, C_1–C_8-alkylthio, C_2–C_8-alkenylthio, C_2–C_8-alkynylthio, C_2–C_8-alkenyloxy, C_2–C_8-alkynyloxy, C_3–C_7-cycloalkyl, C_3–C_7-cycloalkoxy, cyano, mono- and di-(C_1–C_4-alkyl)amino, (C_1–C_8-alkoxy)carbonyl, (C_2–C_8-alkenyl-oxy)carbonyl, (C_1–C_8-alkylthio)carbonyl, (C_2–C_8-alkynyloxy)carbonyl, (C_1–C_8-alkyl)carbonyl, (C_2–C_8-alkenyl)carbonyl, (C_2–C_8-alkynyl)carbonyl, 1-(hydroxyimino)-C_1–C_6-alkyl, 1-(C_1–C_4-alkylimino)-C_1–C_6-alkyl, 1-(C_1–C_4-alkoxyimino)-C_1–C_6-alkyl, (C_1–C_8alkyl)carbonylamino, (C_2–C_8-alkenyl)carbonyl-amino, (C_2–C_8-alkynyl)carbonylamino, aminocarbonyl, (C_1–C_8-alkyl)aminocarbonyl, di-(C_1–C_6-alkyl)aminocarbonyl, (C_2–C_6-alkenyl)aminocarbonyl, (C_2–C_6-alkynyl)aminocarbonyl, (C_1–C_8-alkoxy)carbonylamino, (C_1–C_8-alkyl)aminocarbonylamino, C_1–C_6-alkylcarbonyloxy which is unsubstituted or substituted by halogen, NO_2, C_1–C_4-alkoxy or optionally substituted phenyl, (C_2–C_6-alkenyl)carbonyloxy, (C_2–C_6-alkynyl)carbonyloxy, C_1–C_8-alkylsulfonyl, phenyl, phenyl-C_1–C_6-alkoxy, phenyl-(C_1–C_6-alkoxy)carbonyl, phenoxy, phenoxy-C_1–C_6-alkoxy, phenoxy-(C_1–C_6-alkoxy)carbonyl, phenylcarbonyloxy, phenylcarbonylamino, phenyl-(C_1–C_6-alkyl)carbonylamino, where the 9 last-mentioned radicals in the phenyl ring are unsubstituted or monosubstituted or polysubstituted by radicals selected from the group consisting of halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy and nitro, and radicals of the formulae —SiR'$_3$, —OSiR'$_3$, (R')$_3$Si-C_1–C_6-alkoxy, —CO—O—NR'$_2$, —O—N=CR'$_2$, —N=CR'$_2$, —O—NR'$_2$—CH(OR')$_2$ and —O—(CH$_2$)$_m$—CH(OR')2, where the R' radicals in the formulae mentioned independently of each other are hydrogen, C_1–C_4-alkyl or phenyl which is unsubstituted or monosubstituted or polysubstituted by radicals selected from the group consisting of halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy and nitro, or, in pairs, are a C_2–C_6-alkylene chain and m=0 to 6, and an alkoxy radical of the formula R"O—CHR"(OR")-C_1–C_6-alkoxy where the R"

radicals independently of each other are C_1–C_4-alkyl or together are a C_1–C_6-alkylene group, and R^m is hydrogen or C_1–C_4-alkyl, and

n is 1.

5,488,028

HERBICIDAL SULPHONYLAMINOCARBONYLTRIAZOLINONES HAVING TWO SUBSTITUENTS BONDED VIA OXYGEN

Wilhelm Haas, Kerpen; Klaus-Helmut Müller, Duesseldorf; Klaus König, Odenthal; Hans-Joachim Santel, Leverkusen; Klaus Lürssen, and Robert R. Schmidt, both of Bergisch Gladbach, all of, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 945,194, Sep. 15, 1992, Pat. No. 5,300,480, which is a continuation-in-part of Ser. No. 816,365, Dec. 30, 1991, Pat. No. 5,241,074, which is a division of Ser. No. 692,439, Apr. 29, 1991, Pat. No. 5,094,683, which is a division of Ser. No. 556,052, Jul. 20, 1990, Pat. No. 5,057,144, which is a continuation-in-part of Ser. No. 337,775, Apr. 13, 1989, abandoned. This application Dec. 28, 1993, Ser. No. 174,495

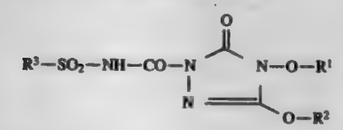
Claims priority, application Germany, Sep. 25, 1991, 41 31 842.0

Int. Cl.[6] A01N *43/80;43/78;* **C07D** *417/12;409/12*

U.S. Cl. 504—193 **8 Claims**

1. A sulphonylaminocarbonyltriazolinone having two substituents bonded via oxygen, of the formula

(I)

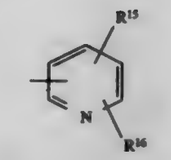


in which

R^1 represents C_1–C_6-alkyl, C_1–C_6-alkyl substituted by one or more members selected from the group consisting of fluorine, chlorine, bromine, cyano, C_1–C_4-alkoxy, C_1–C_4-alkylcarbonyl and C_1–C_4-alkoxycarbonyl, or represents C_3–C_6-alkenyl or C_3–C_6-alkinyl, or represents C_1–C_6-alkenyl or C_1–C_6-alkinyl each of which is substituted by one or more members selected from the group consisting of fluorine, chlorine and bromine, or represents C_3–C_7cycloalkyl or C_6–C_7-cycloalkenyl, or represents C_5–C_7-cycloalkyl or C_4–C_7-cycloalkenyl each of which is substituted by one or more members selected from the group consisting of fluorine, chlorine, bromine and C_1–C_4-alkyl, or represents phenyl-C_1–C_3-alkyl, or phenyl C_1–C_3-alkyl which is substituted by one or more members selected from the group consisting of fluorine, chlorine, bromine, cyano, nitro, C_1–C_4-alkyl, trifluoromethyl, C_1–C_4-alkoxy and C_1–C_4-alkoxy-carbonyl,

R^2 represents C_1–C_6-alkyl or C_1–C_6-alkyl which is substituted by one or more members selected from the group consisting of fluorine, chlorine, bromine, cyano, C_3–C_6-cycloalkyl, C_1–C_4-alkoxy and C_1–C_4-alkoxycarbonyl, or represents C_3–C_6-alkenyl or C_3–C_6-alkinyl, or represents C_3–C_6-alkenyl or C_3–C_6-alkinyl each of which is substituted by one or more members selected from the group consisting of fluorine, chlorine and bromine, or represents C_3–C_6-cycloalkyl, or C_3–C_6-cycloalkyl which is substituted by one or more members selected from the group consisting of fluorine, chlorine, bromine and C_1–C_4-alkyl, or represents cyclohexenyl, or represents phenyl-C_1–C_3-alkyl, or phenyl-C_1–C_3-alkyl which is substituted by one or more members selected from the group consisting of fluorine, chlorine, bromine, cyano, nitro, C_1–C_4-alkyl, trifluoromethyl, C_1–C_6-alkoxy and C_1–C_4-alkoxy-carbonyl,

R^3 represents the radical

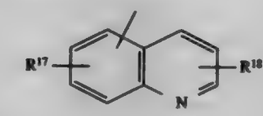


where

R^{15} and R^{16} are identical or different and represent hydrogen, fluorine, chlorine, bromine, nitro, cyano, C_1–C_4-alkyl (which is unsubstituted or substituted by one or more of fluorine and chlorine), C_1–C_4-alkoxy (which is unsubstituted or substituted by one or more of fluorine, and chlorine), or represent C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl or C_1–C_4-alkylsulphonyl (which are unsubstituted or substituted by one or more of fluorine and chlorine), or represent aminosulphonyl, mono-(C_1–C_4-alkyl)-aminosulphonyl, or represent di-(C_1–C_4-alkyl)-aminosulphonyl or C_1–C_4-alkoxycarbonyl or dimethylaminocarbonyl;

furthermore

R^3 represents the radical

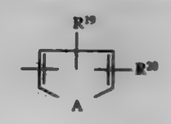


where

R^{17} and R^{18} each independently represents hydrogen, fluorine, chlorine, bromine, C_1–C_4-alkyl (which is unsubstituted or substituted by one or more of fluorine and bromine), C_1–C_4-alkoxy (which is unsubstituted or substituted by fluorine and/or chlorine), or represent C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl or C_1–C_4-alkylsulphonyl (which are unsubstituted or substituted by one or more of fluorine and chlorine), or represent di-(C_1–C_4-alkyl)-amino-sulphonyl;

furthermore

R^3 represents the radical



where

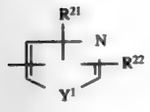
R^{19} and R^{20} each independently represents hydrogen, fluorine, chlorine, bromine, cyano, nitro, C_1–C_4-alkyl (which is unsubstituted or substituted by one or more of fluorine and chlorine), C_1–C_4-alkoxy (which is unsubstituted or substituted by one or more of fluorine and chlorine), C_1–C_4-alkylthio, C_1–C_4-alkylsulphinyl or C_1–C_4-alkylsulphonyl (which is unsubstituted or substituted by one or more of fluorine and chlorine), di-(C_1–C_4-alkyl)-amino-sulphonyl, C_1–C_4-alkoxy-carbonyl or dimethyl-aminocarbonyl, and

A represents oxygen, sulphur or the group N—Z^1, where

Z^1 represents hydrogen, C_1–C_8-alkyl (which is unsubstituted or substituted by fluorine, chlorine, bromine or cyano), C_3–C_6-cycloalkyl, benzyl, phenyl (which is unsubstituted or substituted by fluorine, chlorine, bromine or nitro), C_1–C_4-alkyl-carbonyl, C_1–C_4-alkoxy-carbonyl or di-(C_1–C_4-alkyl)-aminocarbonyl; chlorine, bromine or nitro), C_1–C_4-alkyl-carbonyl, C_1–C_4-alkyl-carboxy-carbonyl or di-(C_1–C_4-alkyl)aminocarbonyl;

furthermore

R^3 represents the radical



where

R^{21} and R^{22} each independently represents hydrogen, C_1–C_4-alkyl, halogen, C_1–C_4-alkoxy-carbonyl, C_1–C_4-alkoxy or C_1–C_4-halogenoalkoxy,

Y^1 represents sulphur or the group N—R^{23}, where

R^{23} represents hydrogen or C_1–C_4-alkyl;

furthermore

R^3 represents the radical



where

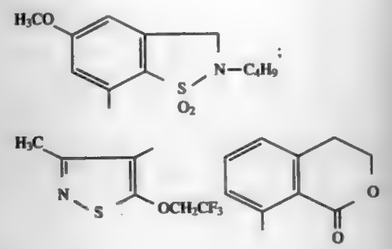
R^{24} represents hydrogen, C_1–C_4-alkyl, benzyl, pyridyl, quinolinyl or phenyl,

R^{25} represents hydrogen, halogen, cyano, nitro, C_1–C_4-alkyl (which is unsubstituted or substituted by one or more of fluorine and chlorine), C_1–C_4-alkoxy (which is unsubstituted or substituted by one or more of fluorine and chlorine), dioxolanyl or C_1–C_4-alkoxy-carbonyl, and

R^{26} represents hydrogen halogen, or C_1–C_4-alkyl;

or

R^3 represents



or a salt thereof.

5,488,029

HERBICIDAL N- [1,3,5-RIAZIN-2-YL)-AMINOCARBONYL]-BENZENESULFONAMIDES

Gerhard Hamprecht, Weinheim; Horst Mayer, Ludwigshafen; Karl-Otto Westphalen, Speyer; Matthias Gerber, Limburgerhof; Uwe Kardorff, Mannheim, and Helmut Walter, Obrigheim, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP93/00364, § 371 Date Jun. 17, 1994, § 102(e) Date Jun. 17, 1994, PCT Pub. No. WO93/17001, PCT Pub. Date Sep. 2, 1993

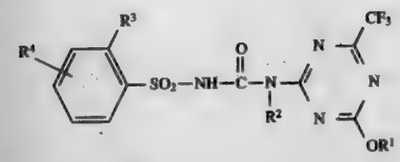
PCT Filed Feb. 16, 1993, Ser. No. 244,945

Claims priority, application Germany, Feb. 28, 1992, 42 06 146.6

Int. Cl.[6] C07D *251/42;* **A01N** *43/66*

U.S. Cl. 504—212 **4 Claims**

1. An N-((1,3,5-triazin-2-yl)-aminocarbonyl)-benzenesulfonamide of the formula I



where

R^1 is methyl or ethyl;

R^2 is hydrogen or methyl;

R^3 is C_2–C_4-haloalkyl; or

R^3 is a group ER^5 in which E is O or S and R^5 is C_1-alkyl which carries from 1 to 3 fluorine atoms or C_2-alkyl which carries form 1 to 5 fluorine atoms, with the exception of difluoromethoxy; and

R^4 is hydrogen, methyl, ethyl, methoxy, ethoxy, methylthio, ethylthio, C_1- or C_2-haloalkoxy, fluorine or chlorine;

and agriculturally useful salts thereof.

5,488,030

SUPERCONDUCTOR JUNCTION STRUCTURE INCLUDING TWO OXIDE SUPERCONDUCTOR LAYERS SEPARATED BY A NON-SUPERCONDUCTING LAYER

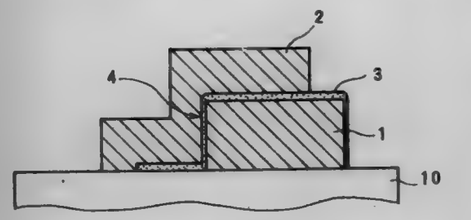
Saburo Tanaka; Takashi Matsuura, and Hideo Itozaki, all of Itami, Japan, assignors to Sumitomo Electric Industries, Inc., Japan

Continuation of Ser. No. 126,753, Sep. 27, 1993, abandoned, which is a continuation of Ser. No. 759,548, Sep. 13, 1991, abandoned. This application Dec. 29, 1994, Ser. No. 366,408

Claims priority, application Japan, Sep. 20, 1990, 2-251620

Int. Cl.[6] H01B *12/00;* **H01L** *29/06;39/22*

U.S. Cl. 505—190 **12 Claims**



1. A superconductor junction structure, comprising:

a first superconducting layer made of an oxide superconductor material formed in a desired pattern on a substrate;

a unitary non-superconducting layer of a non-superconductor material formed on at least a part of a side face of said first superconducting layer and on an upper surface of said first superconducting layer, wherein a portion of a surface of the substrate is near said part, wherein a thickness of said non-superconducting layer on said part of said side face is thinner than a thickness of said non-superconducting layer on said upper surface, wherein the non-superconducting layer extends in a first direction along the surface of the substrate, and wherein the thickness of the non-superconducting layer on the side face is less than a length of the non-superconducting layer extending in the first direction along the surface of the substrate; and

a second superconducting layer made of said oxide superconductor material of said first superconducting layer formed on at least a portion of said non-superconducting layer on said part of said side surface and said upper surface of said first superconducting layer, wherein a c-crystallographic axis of each of said first and second superconducting layers is perpendicular to the surface of the substrate, such that a superconductor junction is formed between said first superconducting layer and said second superconducting layer through said part in a direction parallel with said substrate.

5,488,031

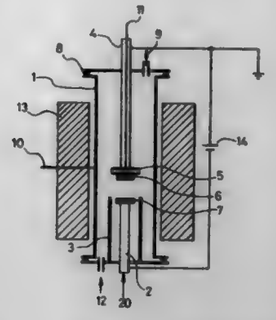
PROCESS FOR MAKING HIGH TEMPERATURE SUPERCONDUCTING OXIDE FILMS

Ran-Jin Lin, Hsinchu, Taiwan, Prov. of China, assignor to Industrial Technology Research Institute, Taipei, Taiwan, Prov. of China

Division of Ser. No. 176,725, Jan. 3, 1994, Pat. No. 5,441,623. This application Apr. 5, 1995, Ser. No. 417,771

Int. Cl.[6] H01L *39/24;* **C23C** *14/34*

U.S. Cl. 505—475 **12 Claims**



1. A process for the preparation of high temperature superconducting oxide films, comprising the following steps:

(a) respectively placing a substrate on an anode and a sintered body of an oxide superconductor on a cathode in a deposition chamber, wherein the sintered body on the cathode is used as a sputtering target;

(b) adjusting the positions of the cathode and the anode so as to control the distance between the surface of the substrate and the surface of the sputtering target;

(c) exhausting gases from the deposition chamber to a pressure below 10^{-5} torr and then introducing pure oxygen to a pressure of 1 atmosphere;

(d) heating the substrate to a desired temperature under said pressure of 1 atmosphere in the deposition chamber;

(e) again exhausting the gases from the deposition chamber and then introducing a mixture of argon and oxygen gases and maintaining a desired gas pressure by an automatic pressure-control valve;

(f) turning on an electric power supply to produce glow discharge between the substrate and the sputtering target so as to grow a superconducting oxide film on the substrate to a desired thickness; and

(g) cooling the coated substrate to a temperature below 100° C. to in-situ obtain the high temperature superconducting oxide film.

5,488,032

METHOD OF USING SOLUBLE HUMAN INTERLEUKIN-1 RECEPTORS TO SUPPRESS INFLAMMATION

Steven K. Dower, Redmond; Carl J. March, Winslow; John E. Sims, and David L. Urdal, both of Seattle, all of Wash., assignors to Immunex Corporation, Seattle, Wash.

Division of Ser. No. 455,488, Dec. 21, 1989, Pat. No. 5,180,812, which is a continuation-in-part of Ser. No. 258,756, Oct. 19, 1988, Pat. No. 5,081,228, which is a continuation-in-part of Ser. No. 160,550, Feb. 25, 1988, Pat. No. 4,968,607, which is a continuation-in-part of Ser. No. 125,627, Nov. 25, 1987, abandoned. This application Jun. 17, 1992, Ser. No. 904,073

Int. Cl.[6] A61K *38/16;* **C07K** *14/705*

U.S. Cl. 514—2 **6 Claims**

1. A method for suppressing IL-1 mediated inflammation in a mammal comprising administering an effective amount of soluble IL-1R.

5,488,033

TREATMENT TO REDUCE EDEMA

Edward T. Wei, Berkeley, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 876,487, Apr. 30, 1992, Pat. No. 5,306,710, which is a division of Ser. No. 386,885, Jul. 28, 1989, Pat. No. 5,137,871. This application Apr. 19, 1994, Ser. No. 229,911

Int. Cl.[6] A61K *38/35*

U.S. Cl. 514—12 **5 Claims**

1. A method of treating a patient suffering from a systemic inflammatory response syndrome characterized by vascular leakage, comprising:

administering to the patient an amount of a corticotropin-releasing factor effective to suppress vascular leakage.

5,488,034

PHARMACEUTICAL COMPOSITION COMPRISING BPI PROTEINS

Weldon C. McGregor, Los Angeles; James Stubstad, Lafayette, and C. Paul Chang, Chatsworth, all of Calif., assignors to XOMA Corporation, Berkeley, Calif.

Continuation-in-part of Ser. No. 12,360, Feb. 2, 1993, abandoned. This application Feb. 2, 1994, Ser. No. 190,869

Int. Cl.[6] A61K *35/14;38/16*

U.S. Cl. 514—12 **6 Claims**

1. A pharmaceutical composition comprising a bactericidal/permeability-increasing (BPI) protein or BPI fragment thereof, or a BPI analog of said bactericidal/permeability-increasing protein or BPI fragment, in combination with a polyoxypropylene-polyoxyethylene block copolymer (poloxamer) surfactant in a solubilizing/stabilizing concentration.

5,488,035

PEPTIDE WITH INHIBITORY ACTIVITY TOWARDS PLANT PATHOGENIC FUNGI

Aragula G. Rao, Polk County, Iowa, assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Dec. 6, 1991, Ser. No. 802,794

Int. Cl.[6] A61K *38/00;38/04;* **C07K** *5/00;7/00*

U.S. Cl. 514—13 **5 Claims**

1. A method for killing and inhibiting plant pathogenic fungi which are susceptible to tachyplesin, comprising introducing into the environment of the pathogenic microorganisms an antimicrobial amount of tachyplesin.

5,488,036

METHOD FOR STERILIZING ANIMALS USING HORMONE-TOXIN CONJUGATE COMPOUNDS

Torrance M. Nett, Ft. Collins, and Leonard M. Glode, Aurora, both of Colo., assignors to Colorado State University Research Foundation, Fort Collins, Colo.

Division of Ser. No. 837,639, Feb. 14, 1992, Pat. No. 5,378,688, which is a continuation-in-part of Ser. No. 314,653, Feb. 23, 1989, abandoned. This application Jul. 20, 1993, Ser. No. 94,625

Int. Cl.[6] A61K *38/00;* **C07K** *5/00;7/00;17/00*

U.S. Cl. 514—15 **18 Claims**

1. A method for using at least one hormone/toxin conjugate to sterilize an animal, said conjugate comprising a peptide hormone capable of binding to a GnRH receptor, conjugated by a linking agent to a toxin group selected from the group consisting of a chemical toxin, a single chain toxin, and a modified toxin having an intrinsic toxic group lacking a functional binding domain, said conjugate capable of selectively binding to a gonadotroph and of substantially precluding said gonadotroph from secreting gonadotropins, said method comprising administering an effective amount

of said conjugate to said animal to substantially preclude secretion of gonadotropins by said animal's gonadotrophs, wherein said conjugate is capable of crossing the cell membrane of a gonadotroph.

5,488,037

ANTITHROMBOTIC AGENTS

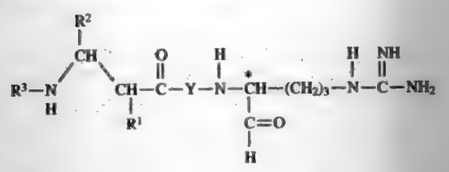
Daniel J. Sall, and Robert T. Shuman, both of Greenwood, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 4, 1994, Ser. No. 206,499

Int. Cl.[6] A61K *38/00;* **C07D** *417/00;279/10;279/12*

U.S. Cl. 514—19 **35 Claims**

1. A compound having the formula



I

wherein

R^1 is hydrogen, C_1–C_4 alkyl, substituted or unsubstituted phenyl, substituted or unsubstituted phen(C_1–C_4)alkyl, cyclopentyl, cyclohexyl, cyclopentyl(C_1–C_4)alkyl, or cyclohexyl(C_1–C_4)alkyl;

R^2 is hydrogen, C_1–C_4 alkyl, substituted or unsubstituted phenyl, substituted or unsubstituted phen(C_1–C_4)alkyl, cyclopentyl, cyclohexyl, cyclopentyl(C_1–C_4)alkyl or cyclohexyl(C_1–C_4)alkyl;

R^3 is hydrogen, C_1–C_4 alkyl or (C_1–C_4 alkyl)$S(O)_n$

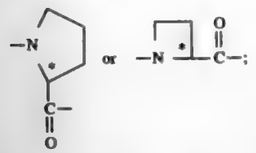
where n is 1 or 2;

R^1 and R^2, with the carbon atoms to which they are bonded, are combined to afford a 5 or 6 membered cycloalkyl group, a phenyl group or norbornanyl group;

R^2 and R^3, with the respective carbon and nitrogen atoms to which they are bonded, are combined to afford an unsubstituted or substituted 5 or 6 membered nitrogen containing heterocyclic ring which may further contain another hetero atom selected from nitrogen, oxygen and sulfur, or unsubstituted or substituted 9 or 10 membered nitrogen containing heterocyclic ring which may further contain another hetero atom selected from nitrogen, oxygen and sulfur;

R^1, R^2 and R^3, with the respective carbon and nitrogen atoms to which they are bonded, are combined to afford an unsubstituted or substituted 5 or 6 membered nitrogen containing heterocyclic ring or an unsubstituted or substituted 9 or 10 membered nitrogen containing heterocyclic ring which may further contain another hetero atom selected from nitrogen, oxygen and sulfur;

Y is



or pharmaceutically acceptable salts and solvates thereof; provided that when Y is prolinyl, R^1 is hydrogen and R^3 is hydrogen, R^2 is not phenyl; and further provided that when Y is prolinyl, R^2 is hydrogen and R^3 is hydrogen, R^1 is not benzyl; and further provided that R^3 is not hydrogen or (C_1–C_4 alkyl)$S(O)_n$ when R_1 and R_2 are each hydrogen.

5,488,038

DIBEKACIN DERIVATIVES AND ARBEKACIN DERIVATIVES ACTIVE AGAINST RESISTANT BACTERIA

Shinichi Kondo, Yokohama; Seiji Shibahara, Machida; Takayuki Usui, Kawasaki; Toshiaki Kudo, Yokohama; Shuichi Gomi, Tokyo; Atsushi Tamura, Yokohama; Yoko Ikeda, Tokyo; Daishiro Ikeda, Tokyo, and Tomio Takeuchi, Tokyo, all of, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

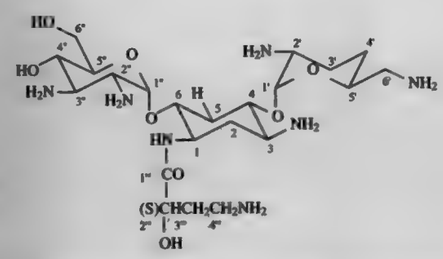
Filed Nov. 18, 1993, Ser. No. 154,002

Claims priority, application Japan, Nov. 27, 1992, 5-341314; Sep. 9, 1993, 5-247327

Int. Cl.[6] A61K *31/70;* **C07H** *15/22*

U.S. Cl. 514—41 **6 Claims**

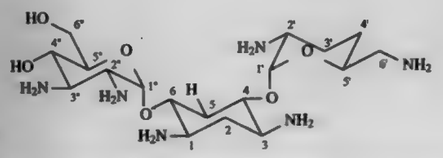
1. 2"-Amino-5,2"-dideoxyarbekacin having the formula



(I-2)

or a pharmaceutically acceptable acid addition salt thereof.

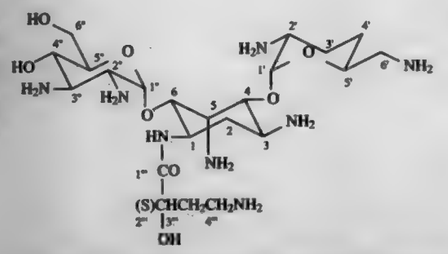
2. 2"-Amino-5,2"-dideoxydibekacin having the formula



(II-2)

or a pharmaceutically acceptable acid addition salt thereof.

3. 2"-Amino-5,2"-dideoxy-5-epi-aminoarbekacin having the formula



(XVI-2)

or a pharmaceutically acceptable acid addition salt thereof.

4. An antibacterial composition comprising an antibacterially effective amount of 2"-amino-5,2"-dideoxyarbekacin according to claim 1 or a pharmaceutically acceptable acid addition salt thereof as active ingredient, in combination with a pharmaceutically acceptable carrier for the active ingredient.

5. An antibacterial composition comprising an antibacterially effective amount of 2"-amino-5,2"-dideoxydibekacin according to claim 2 or a pharmaceutically acceptable acid addition salt thereof as active ingredient, in combination with a pharmaceutically acceptable carrier for the active ingredient.

5,488,039

METHOD FOR THE PRODUCTION OF AN ENTERAL FORMULA CONTAINING RIBO-NUCLEOTIDES

Marc L. Mazor, Worthington; Gary E. Katz, and Douglas G. Bynum, both of Columbus, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jan. 10, 1994, Ser. No. 178,685

Int. Cl.[6] A61K *31/70;* **C07H** *19/00;* **A23J** *1/00;* **A23G** *3/00*

U.S. Cl. 514—43 **8 Claims**

1. A method for manufacturing an infant formula containing nucleotides said method comprising the steps of:

1) dispersing an appropriate quantity of a protein source in water sufficient to solubilize the protein, thereby forming a protein solution;

2) dissolving carbohydrates in water, thereby forming a carbohydrate solution;

3) mixing minerals in water, thereby forming a mineral solution;

4) combining appropriate quantities of said protein solution, said carbohydrate solution, said mineral solution, and a solution of oils containing oil soluble vitamins;

5) heat processing and homogenizing the combined solutions;

6) adding water soluble vitamins to the combined solution;

7) adding water to dilute the combined solution to the desired caloric density; the improvement comprising:

8) adding, subsequent to step 5, from 29 to 39 mg of CMP per liter of formula; 15 to 21 mg of UMP per liter of formula; 10 to 16 mg of AMP per liter of formula and 14 to 20 mg of GMP per liter of formula.

5,488,040

USE OF NEUTRAL SOLUBLE GLUCAN PREPARATIONS TO STIMULATE PLATELET PRODUCTION

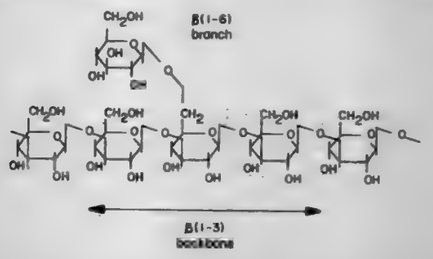
Spiros Jamas, Boston; D. Davidson Easson, Jr., Shrewsbury, and Gary R. Ostroff, Worcester, all of Mass., assignors to Alpha-Beta Technology, Inc., Worcester, Mass.

Continuation-in-part of Ser. No. 934,015, Aug. 21, 1992, and a continuation-in-part of Ser. No. 855,578, Mar. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 838,288, Mar. 5, 1992, which is a continuation-in-part of Ser. No. 404,738, Sep. 8, 1989, abandoned. This application May 11, 1993, Ser. No. 60,418

Claims priority, application WIPO, Sep. 6, 1990, PCT/US90/05041

Int. Cl.[6] A61K *31/715;* **C07H** *1/00;3/00*

U.S. Cl. 514—54 **2 Claims**



1. A method for stimulating platelet proliferation, comprising paraenterally administering to a mammal a platelet stimulating amount of a composition comprising an underivatized, aqueous soluble β(1–3) glucan in a physiologically acceptable vehicle, the underivatized, aqueous soluble β(1–3) glucan preparation being prepared by:

a) contacting β(1–3) glucan particles with an acid solution;

b) contacting the acid-treated particles from step a) with an alkali solution under conditions sufficient to dissolve alkali-soluble glucan;

c) separating alkali-insoluble particulates and glucan aggregates from the solution of step b); and

d) neutralizing the glucan solution obtained from step c).

5,488,041

METHOD OF PROMOTING BONE REPAIR USING TILUDRONIC DISODIUM SALT

Alain Barbier, Saint Clement La Riviere, and Frederic Lacheretz, Pignan, both of, France, assignors to Sanofi, Paris, France

Filed Apr. 4, 1994, Ser. No. 222,240

Claims priority, application France, Apr. 5, 1993, 93 03999

Int. Cl.[6] A61K *31/66;31/675*

U.S. Cl. 514—108 **14 Claims**

1. A method of promoting bone repair in a mammal which comprises administering to a mammal in need thereof a therapeutically effective amount of disodium salt of tiludronic acid.

5,488,042

METHOD FOR PROTECTION AGAINST GENOTOXIC MUTAGENESIS

David J. Grdina, Naperville, Ill., assignor to Arch Development Corporation, Chicago, Ill.

Filed Mar. 13, 1992, Ser. No. 851,210

Int. Cl.[6] A61K *31/66*

U.S. Cl. 514—114 **4 Claims**

1. A method for reducing mammal cell mutations induced by prior irradiation, comprising the step of:

(a) preparing a dosage of at least about 25 mg/kg of mammal body weight of a chemical compound selected from the group consisting of an aminoalkylphosphorothioate and an associated aminoalkylphosphorothioate metabolite; and

(b) administering said dosage to the mammal up to about 3 hours after irradiation of the mammal.

5,488,043

METHOD FOR STABILIZING ACEPHATE AND A DRY PESTICIDAL FORMULATION CONTAINING THE STABILIZED ACEPHATE

Masahiro Yamada, Takarazuka; Yasuyuki Katayama, Toyonaka, and Toshiro Ohtsubo, Sanda, all of, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Dec. 20, 1994, Ser. No. 360,042

Claims priority, application Japan, Dec. 20, 1993, 5-319595; May 9, 1994, 6-094813

Int. Cl.[6] A01N *57/28*

U.S. Cl. 514—120 **13 Claims**

1. A method for stabilizing acephate which comprises adding an effective amount of a sodium salt of condensed phosphate and/or an effective amount of a synthetic silicic acid in which the surface silanol groups being alkylsilylated, to acephate.

5,488,044

METHOD OF TREATING METABOLIC BONE DISEASE WITH (E)-20(22)-DEHYDROVITAMIN D COMPOUNDS

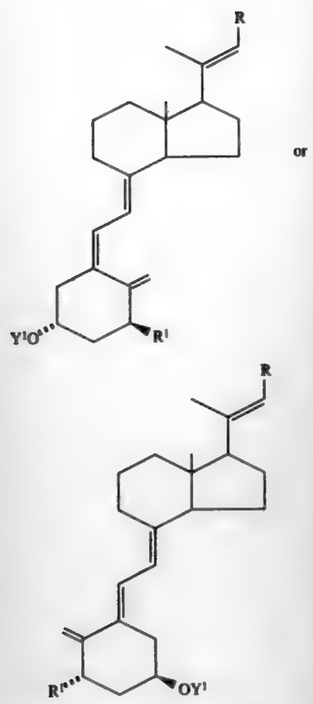
Hector F. DeLuca, Deerfield, Wis., and Rafal R. Sicinski, Warsaw, Poland, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 147,663, Nov. 3, 1993. This application May 16, 1995, Ser. No. 441,775

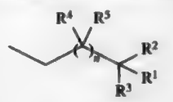
Int. Cl.[6] A61K *31/59;* **C07C** *401/00*

U.S. Cl. 514—167 **8 Claims**

1. A method of treating metabolic bone disease where it is desired to maintain or increase bone mass comprising administering to a patient with said disease a compound having the formula



where Y^1 is hydrogen or a hydroxy-protecting group, R^1 represents hydrogen, hydroxy or protected hydroxy, and where R is hydrogen, aryl, alkyl, hydroxyalkyl or fluoroalkyl group, or R may represent the following side chain fragment:



wherein R^1 is as defined above, R^2 and R^3 are each selected from the group consisting of alkyl, hydroxyalkyl and fluoroalkyl, or, when taken together represent the group $-(CH_2)_m-$ where m is an integer having a value of from 2 to 5, R^4 is selected from the group consisting of hydrogen, hydroxy, fluorine, O-acyl, alkyl, hydroxyalkyl and fluoroalkyl, R^5 is selected from the group consisting of hydrogen, fluorine, alkyl, hydroxyalkyl and fluoroalkyl, and wherein n is an integer having a value of from 1 to 5.

5,488,045

Patent Not Issued For This Number

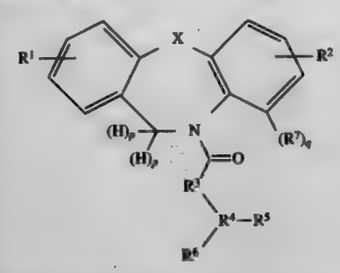
5,488,046

CARBAMIC ACID DERIVATIVES OF SUBSTITUTED DIBENZOXAZEPINE COMPOUNDS, PHARMACEUTICAL COMPOSITIONS AND METHODS OF USE

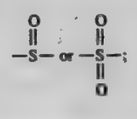
Robert A. Chrusciel, Portage, Mich.; Timothy J. Hagen, Gurnee; E. Ann Hallinan, Evanston, both of Ill.; Jinglin Li, St. Louis, Mo.; Sofya Tsymbalov, Des Plaines, Ill., and David B. Reitz, Chesterfield, Mo., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Nov. 3, 1993, Ser. No. 147,356
Int. Cl.[6] C07D *513/04;498/04;* A61K *31/55*
U.S. Cl. 514—211 **22 Claims**

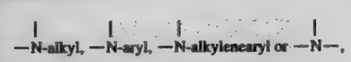
1. A compound having a structure:



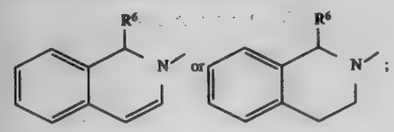
or a pharmaceutically-acceptable salt thereof, wherein:
X is oxygen, sulfur,



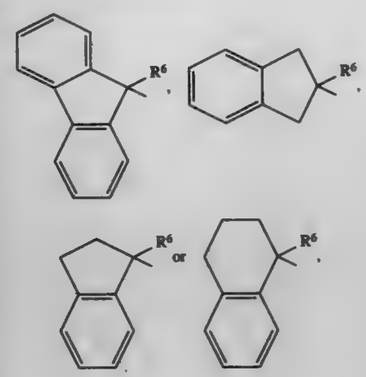
R^1, R^2 and R^7 may be the same or different and are hydrogen or halogen;
R^3 is oxygen, —NH—,



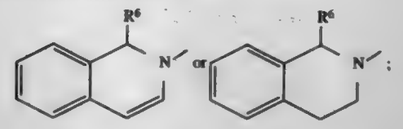
and can combine with R^4 and R^5 to form



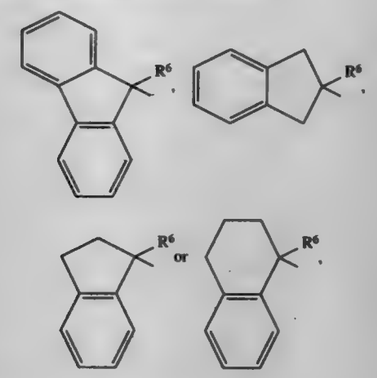
R^4 is carbon or —CH—, and can combine with R^5 to form carbonyl, an unsubstituted 4-, 5- or 6-membered nonaromatic, saturated, single-ring structure,



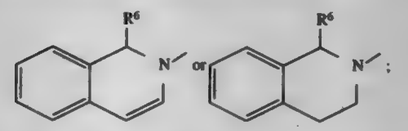
and can combine with R^3 and R^5 to form



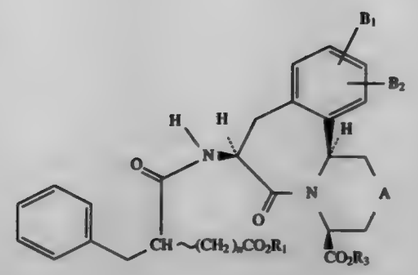
R^5 is $-(CH_2)_m-$, oxygen, aryl, aralkyl, arylcarbonylhydroxy, arylcarbonylalkoxy, a mono- or di-valent alkylenearyl or a mono- or divalent alkenylenearyl, and can combine with R^4 to form carbonyl, an unsubstituted 4-, 5- or 6-membered nonaromatic, saturated, single-ring structure,



and can combine with R^3 and R^4 to form



R^6 is a single covalent bond to the carbon 9 of said compound;
p is 1;
q is 0; and
m is 3, 4 or 5;
with the-proviso that R^2 cannot be at the carbon 9 position of said compound.



wherein
B_1 and B_2 are each independently hydrogen; hydroxy; $—OR_2$ wherein R_2 is a C_1–C_4 alkyl or an Ar-Y group wherein Ar is phenyl or napthyl group unsubstituted or substituted with from one to three substituents selected from the group consisting of methylenedioxy, hydroxy, C_1–C_4 alkoxy, fluoro and chloro and Y is a hydrogen or C_1–C_4 alkyl; or, where B_1 and B_2 are attached to adjacent carbon atoms, B_1 and B_2 can be taken together with said adjacent carbons to form a benzene ring or methylenedioxy;
A is a bond, methylene or oxygen, sulfur or NR_4 or $NCOR_5$ wherein R_4 is hydrogen, a C_1–C_4 alkyl or an Ar-Y- group and R_5 is $—CF_3$, a C_1–C_{10} alkyl or an Ar-Y- group;
R_3 is hydrogen or $—CH_2OC(O)C(CH_3)_3$;
R_1 is hydrogen, C_1–C_4 alkyl or $—CH_2OC(O)—C(CH_3)_3$; and
n is an integer 1 to 3.

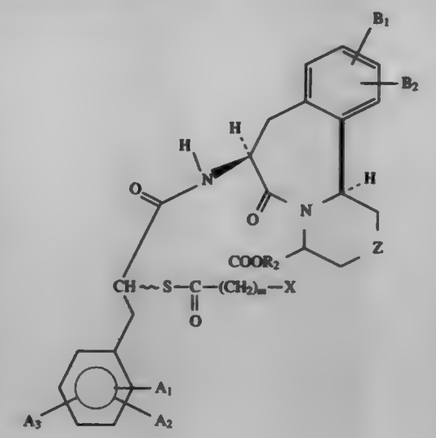
5,488,047

CARBOXYALKYL TRICYLIC DERIVATIVES USEFUL AS INHIBITORS OF ENKEPHALINASE AND ACE

Alan M. Warshawsky, and Gary A. Flynn, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 148,076, Nov. 2, 1993, Pat. No. 5,455,242, which is a continuation-in-part of Ser. No. 993,499, Dec. 18, 1992, abandoned, which is a continuation of Ser. No. 935,672, Aug. 25, 1992, abandoned, which is a continuation of Ser. No. 767,281, Sep. 27, 1991, abandoned. This application Jun. 2, 1995, Ser. No. 460,359
Int. Cl.[6] A61K *31/55;* C07D *495/06*
U.S. Cl. 514—214 **1 Claim**

1. A method of inhibiting smooth cell proliferation in a patient in need thereof comprising administering to said patient an effective smooth cell proliferation inhibitory amount of a compound of the formula



wherein

5,488,048

AMINOACETYLMERCAPTO DERIVATIVES USEFUL AS INHIBITORS OF ENKEPHALINASE AND ACE

Gary A. Flynn, Cincinnati; Robert J. Cregge, Loveland; Thomas L. Fevig, West Chester; Shyam Sunder, Cincinnati, and Patrick W. Shum, West Chester, all of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 119,924, Sep. 10, 1993, Pat. No. 5,424,425, which is a continuation-in-part of Ser. No. 985,678, Dec. 11, 1992, abandoned, which is a continuation-in-part of Ser. No. 836,028, Feb. 14, 1992, abandoned. This application Mar. 1, 1995, Ser. No. 396,999
Int. Cl.[6] C07D *498/04;* A01K *31/55*
U.S. Cl. 514—214 **1 Claim**

1. A composition comprising an assayable amount of a compound of the formula

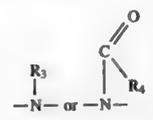
wherein

B_3 and B_2 are each independently hydrogen; hydroxy; —OR_1 wherein R_1 is a C_1–C_4 alkyl or an Ar—Y— group wherein Ar ifs phenyl or naphthyl group unsubstituted or substituted with from one to three substituents selected from the group consisting of methylenedioxy, hydroxy, C_1–C_4 alkoxy, fluoro and chloro and Y is a C_0–C_4 alkyl; or, Where B_1 and B_2 are attached to adjacent carbon atoms, B_1 and B_2 can be taken together with said adjacent carbons to form a benzene ring or methylenedioxy;

A_1, A_2 and A_3 are each independently hydrogen; hydroxy; nitro; amino; fluoro, chloro, —OR_1 of an Ar—Y group; or, where A_1 and A_2 are attached to adjacent carbon atoms, A_1 and A_2 can be taken together with said adjacent carbons to form a benzene ring or methylenedioxy;

R_2 is hydrogen, a C_1–C_4 alkyl, an Ar—Y— qroup or —CH_2O—$C(O)(CH_3)_3$;

Z is —CH_2—, —O—, —S—,



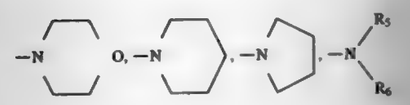
or a bond

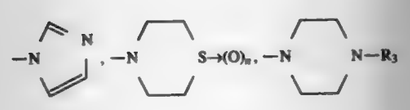
wherein

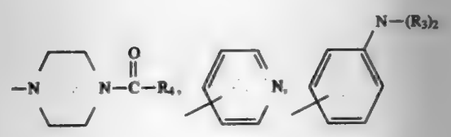
R_3 is hydrogen, a C_1–C_4 alkyl or an Ar—Y— group and R_4 is —CF_3, a C_1–C_{10} alkyl or an Ar—Y— group;

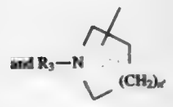
m is an integer 0 to 5;

X is selected from the group consisting of









wherein

R_5 and R_6 are each independently a C_1–C_4 alkyl or an Ar—Y— group and n is an integer 0–2; n' is an integer 1–2; and the pharmaceutically acceptable salts thereof in admixture or otherwise in association with an inert carrier.

5,488,049

METHOD OF TREATING LEARNING AND MEMORY DISORDERS USING BENZOTHIADIAZIDE DERIVATIVES AS NOOTROPIC AGENTS

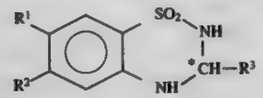
Erminio Costa, Chevy Chase, Md.; Alessandro Guidotti, Washington, D.C.; Mario Baraldi, Modena, Italy; Mariella Bertolino, Washington, D.C.; Maria DiBella, Milan, Italy, and Stefano Vicini, Washington, D.C., assignors to FIDIA - Georgetown Institute for the Neuro-Sciences, Washington, D.C.

Filed Dec. 10, 1993, Ser. No. 164,943

Int. Cl.[6] A61K *31/505*

U.S. Cl. 514—223.2 **13 Claims**

11. A method of treating memory disorders and learning disorders which comprises administering to a mammal a need of treatment an effective amount to treat learning disorders or memory disorders of a (+) enantiomer of a compound having the formula:



wherein * indicates the chiral carbon atom;

R^1 is H or halogen, or SO_2NH_2;

R^2 is H or halogen;

R^3 is C_1–C_8 straight or branched alkyl,

C_2–C_8 straight or branched alkenyl,

C_2–C_8 straight or branched alkynyl,

C_1–C_8 straight or branched alkyl, substituted with a halogen, NH_2, N-C_1–C_4-alkyl substituted amine, N,N'-C_1–C_4-alkyl disubstituted amine, C_1–C_4-alkoxy group, C_1–C_4-thioalkyl group, a C_3–C_6 cycloalkyl group, C_3–C_6 cycloalkenyl group, a C_6–C_8-bicycloalkyl or a C_6–C_8 bicycloalkenyl group,

C_2–C_8 straight or branched alkenyl group substituted with a halogen, NH_2, N-C_1–C_4-alkyl substituted amine, N,N'-C_1–C_4-alkyl disubstituted amine, C_1–C_4-alkoxy group, C_1–C_4-thioalkyl group, a C_3–C_6 cycloalkyl group, C_3–C_6 cycloalkenyl group, a C_6–C_8-bicycloalkyl or a C_6–C_8 bicycloalkenyl group,

C_2–C_8 straight or branched alkynyl group substituted with a halogen, NH_2, N-C_1–C_4-alkyl substituted amine, N,N'-C_1–C_4-alkyl disubstituted amine, C_1–C_4-alkoxy group, C_1–C_4-thioalkyl group, a C_3–C_6 cycloalkyl group, a C_3–C_6 cycloalkenyl group, a C_6–C_8-bicycloalkyl, or a C_6–C_8 bicycloalkenyl group,

C_3–C_6 cycloalkyl,

C_3–C_6 cycloalkenyl,

C_6–C_8 bicycloalkyl, or

C_6–C_8 bicycloalkenyl;

with the proviso that when R^1 is SO_2NH_2 and R^2 is halogen, R^3 is not C_6–C_8 bicycloalkenyl; or a pharmaceutically acceptable salt thereof.

5,488,050

METHODS AND PRODUCTS FOR TREATING PRESBYOPIA

Arthur H. Neufeld, Andover, Mass., assignor to Telor Ophthalmic Pharmaceuticals, Inc., Woburn, Mass.

Continuation of Ser. No. 907,875, Jul. 2, 1992, abandoned. This application Nov. 18, 1993, Ser. No. 154,396

Int. Cl.[6] A61K *31/535;31/47;31/41;31/425*

U.S. Cl. 514—236.2 **64 Claims**

1. A method for increasing the accommodative ability of a presbyopic subject, comprising administering to the subject a beta-adrenergic antagonist in an amount sufficient to increase the accomodative ability of the subject by at least 0.5 diopters.

5,488,051

SUBSTITUTED 5,6-DIHYDRO-5-OXO-1,4-DITHIINO-(2,3-D)-PYRIDAZINE-2,3-DICARBONITRILES, COMPOSITIONS CONTAINING THEM AND THEIR USE AS ANTIMICROBIALS

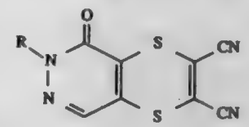
Duane R. Romer; R. Garth Pews; Ravi B. Shankar, all of Midland, and Charles A. Wilson, Skandia, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 21, 1994, Ser. No. 230,590

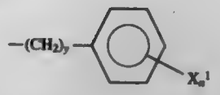
Int. Cl.[6] A61K *31/50;* C07D *495/04*

U.S. Cl. 514—248 **11 Claims**

1. A compound corresponding to the formula:

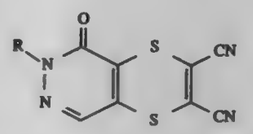


wherein R represents

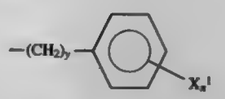


wherein X^1 is Cl, Br, NO_2 or CH_3, y is 0 or 1 and n is 0, 1 or 2.

6. A method for inhibiting microorganisms from the group consisting of bacteria, yeast, fungi, algae, and protozoa in a microbial habitat comprising contacting said microbial habitat with an antimicrobially-effective amount of a compound corresponding to the formula:

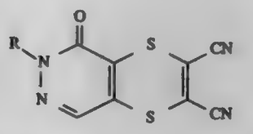


wherein R represents

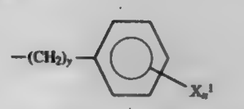


wherein X^1 is Cl, Br, NO_2 or CH_3, y is 0 or 1 and n is 0, 1 or 2.

9. A method for preventing the growth of marine organisms on a surface exposed to a marine environment in which marine organisms grow comprising contacting said surface with a marine antifouling effective amount of a compound corresponding to the formula:



wherein R represents



wherein X^1 is Cl, Br, NO_2 or CH_3, y is 0 or 1 and n is 0, 1 or 2.

5,488,052

AQUEOUS FLOWABLE FENAZAQUIN COMPOSITION COMPRISING SODIUM NAPHTHALENE FORMALDEHYDE CONDENSATES

Larry B. Rowland, New Palestine, and Joseph R. Winkle, Cumberland, both of Ind., assignors to DowElanco, Indianapolis, Ind.

Continuation of Ser. No. 890,506, May 28, 1992. This application Mar. 24, 1995, Ser. No. 410,553

Int. Cl.[6] A01N *43/54;43/78;25/22;25/30*

U.S. Cl. 514—259 **6 Claims**

1. An aqueous flowable composition comprising by % weight:

(a) 15%–20% fenazaquin,

(b) 0.5%–2% one or more surfactants,

(c) 0.02%–1.0% one or more suspending agents,

(d) 0–10% one or more anticaking or flow aids,

(e) 6%–12% one or more dispersants which are sodium naphthalene formaldehyde condensates,

(f) 0–0.5% one or more defoamers,

(g) 4%–8% one or more freeze point depressants,

(h) 0–0.2% one or more antimicrobial agents, and

(i) 50%–80% water.

5,488,053

TETRAHYDRO-PYRIDO-INDOLE

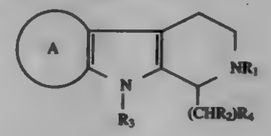
James E. Audia; James J. Droste, both of Indianapolis, Ind., and Deborah A. Evrard, Cambridge, Mass., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 48,392, Apr. 14, 1993, Pat. No. 5,380,645. This application Mar. 11, 1994, Ser. No. 206,830

Int. Cl.[6] A61K *31/44;* C07D *471/04*

U.S. Cl. 514—280 **14 Claims**

1. A compound of the formula (I)



(I)

wherein:

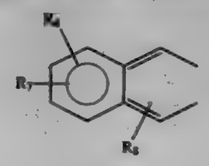
R_1 is hydrogen or C_1–C_3 alkyl;

R_2 is hydrogen or C_1–C_6 alkyl;

R_3 is hydrogen or C_1–C_3 alkyl;

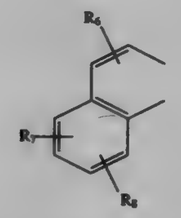
R_4 is an optionally substituted bicyclic hydrocarbon ring system having 7 to 12 carbon atoms and 0, 1, 2 or 4 double bonds;

A is selected from the group consisting of



(II)

and



(III)

wherein

R_8 is independently selected from the group consisting of an R_6 group, substituted C_3–C_8 cycloalkyl, C_3–C_8 cycloalkyl, C_3–C_8

cycloalkyl-(C_1–C_3)alkyl, C_5–C_8 cycloalkenyl, substituted C_5–C_8 cycloalkenyl, C_5–C_8 cycloalkenyl-(C_1–C_3)alkyl, C_7–C_{16} arylalkyl; and

R_6 and R_7 together with the carbon atoms of group A form a 5- to 8-member carbon ring; or

a pharmaceutically acceptable salt or solvate thereof.

5,488,054

CARBAMATES OF RAPAMYCIN

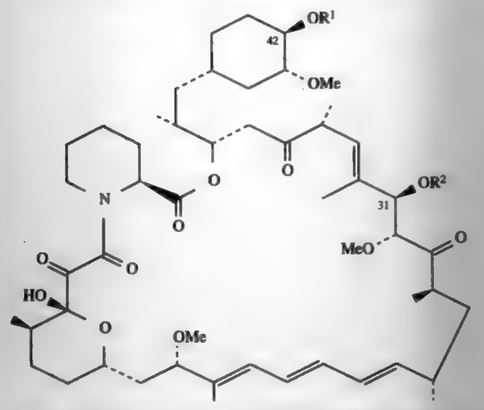
Amedeo A. Failli, Princeton Junction, N.J.; Oleg J. Bleyman, Holland, Pa.; Wenling Kao, Paoli, Pa., and Magid A. Abou-Charbia, Glen Mills, Pa., assignors to American Home Products Corporation, Madison, N.J.

Division of Ser. No. 284,765, Aug. 2, 1994, which is a continuation-in-part of Ser. No. 160,984, Dec. 1, 1993, abandoned, which is a division of Ser. No. 54,655, Apr. 23, 1993, Pat. No. 5,302,584, which is a continuation-in-part of Ser. No. 960,597, Oct. 13, 1992, abandoned. This application May 24, 1995, Ser. No. 448,715

Int. Cl.[6] C02D *49/06*; A61K *31/395*

U.S. Cl. 514—291 **1 Claim**

1. A method of treating restenosis in a mammal in need thereof, which comprises administering to said mammal an antiproliferative effective amount of a compound of the structure



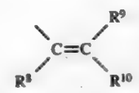
wherein R^1 and R^2 are each, independently, hydrogen, or —CONH—O—$(CR^3R^4)_mZ$;

R^3 and R^4 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, cycloalkyl of 3–8 carbon atoms, —CF_3, or F;

Z is hydrogen, alkyl of 1–6 carbon atoms, —OR^5, —SR^5, —NR^5R^6, —CN, —CF_3, —OAr, —Ar, or R^7;

R^5 and R^6 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, arylalkyl of 4–10 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthioalkyl of 2–12 carbon atoms, alkylaminoalkyl of 2–12 carbon atoms, dialkylaminoalkyl of 3–12 carbon atoms, cycloalkyl of 3–8 carbon atoms, or Ar;

R^7 is



or —C≡C—R^{11};

R^8, R^9, R^{10}, and R^{11} are each, independently, hydrogen, alkyl of 1–6 carbon atoms, halogen, or phenyl, wherein the phenyl group may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1–6 carbon atoms, arylalkyl of 7–10 carbon atoms, alkoxy of 1–6 carbon atoms, cyano, halo, hydroxy, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, trifluoroalkoxy of 2–7 carbon atoms, amino, dialkylamino of 1–6 carbon atoms per alkyl group, dialkylaminoalkyl of 3–12 carbon atoms, hydroxyalkyl of 1–6 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthio of 1–6 carbon atoms, —SO_3H, —PO_3H, and —CO_2H;

Ar is an aryl radical that may be optionally mono-, di-, or tri-substituted with a group selected from alkyl of 1–6 carbon atoms, arylalkyl of 7–10 carbon atoms, alkoxy of 1–6 carbon atoms, cyano, halo, hydroxy, nitro, carbalkoxy of 2–7 carbon atoms, trifluoromethyl, trifluoroalkoxy of 2–7 carbon atoms, amino, dialkylamino of 1–6 carbon atoms per alkyl group, dialkylaminoalkyl of 3–12 carbon atoms, hydroxyalkyl of 1–6 carbon atoms, alkoxyalkyl of 2–12 carbon atoms, alkylthio of 1–6 carbon atoms, —SO_3H, —PO_3H, and —CO_2H; and

m=1–6;

with the proviso that R^1 and R^2 are both not hydrogen, or a pharmaceutically acceptable salt thereof.

5,488,055

SUBSTITUTED N-CYCLOALKYLMETHYL-1H-PYRAZOLO(3,4-B)QUINOLIN-4 AMINES AND COMPOSITIONS AND METHODS OF USE THEREOF

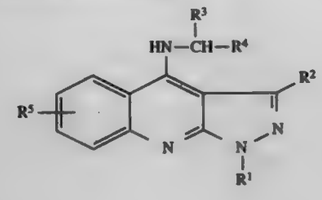
Virendra Kumar, Paoli, Pa., and John A. Dority, Jr., West Haven, Conn., assignors to Sanofi Winthrop Inc., New York, N.Y.

Filed Mar. 10, 1995, Ser. No. 402,269

Int. Cl.[6] C07D *471/04*; A61K *31/47*

U.S. Cl. 514—293 **54 Claims**

1. A compound of the formula:



wherein:

R^1 is lower-alkyl, phenyl-lower-alkyl, or cycloalkyl;

R^2 is hydrogen, or lower-alkyl;

R^3 is hydrogen, lower-alkyl, or hydroxylower-alkyl;

R^4 is cycloalkyl or cylcoalkyl substituted by from one to two, the same or different, substituents selected from the group consisting of lower-alkoxycarbonyl, carboxy, lower-alkylthio-lower-alkoxycarbonyl, hydroxylower-alkyl, hydroxy, oxo, lower-alkoxy, lower-alkyl, and halogen; and

R^5 is from one to three, the same or different, substituents selected from the group consisting of hydrogen, lower-alkoxy, hydroxy, dilower-alkylamino-lower-alkoxy, carboxylower-alkoxy, lower-alkoxycarbonyl-lower-alkoxy, nitro, polyhydroxylower-alkoxy, amino, epoxylower-alkoxy, carboxy, lower-alkanoylamino, lower-alkoxycarbonyl, pyridinyl, 4-morpholinyl-lower-alkoxy, lower-alkylsulfonyl, cyano, 1-imidazolyl, halogen, dilower-alkylaminosulfonyl, oxadiazolyl (or oxadiazolyl substituted on any available carbon atom thereof by lower-alkyl), lower-alkylsulfinyl, 1-pyrazolyl (or 1-pyrazolyl substituted on any available carbon atom thereof by lower-alkyl), trifluoromethylsulfonyl, lower-alkenyl, lower-alkyl, and lower-alkynyl; or a pharmaceutically acceptable acid-addition salt and/or hydrate and/or solvate thereof, or, where applicable, a stereoisomer or a racemic mixture thereof.

5,488,056

METHOD FOR TREATING ANXIETY

Neil C. Bodick, Indianapolis; Franklin P. Bymaster, Brownsburg; Walter W. Offen, Indianapolis, and Harlan E. Shannon, Carmel, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 31, 1994, Ser. No. 332,186

Int. Cl.[6] A61K *31/44*; C07D *453/02*

U.S. Cl. 514—305 **9 Claims**

1. A method for treating anxiety in humans comprising administering to a human in need thereof, an antianxiety dose of a compound selected from the group consisting of:

3-(3-methoxy-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-ethoxy-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-propoxy-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-butoxy-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-isopropoxy-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-cyclopropylmethoxy-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methyl pyridine

3-(3-pentoxy-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-isobutoxy-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(3-butenoxy)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(but-2-ynoxy)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(3-methylbutoxy)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-hexyloxy-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(prop-2-ynoxy)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-benzyloxy-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-chloro-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-chloro-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydropyridine

3-(3-butoxy-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydropyridine

3-(3-ethoxy-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-ethylpyridine

3-(3-chloro-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-ethylpyridine

3-(3-methoxyethoxy-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-heptyloxy-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(3-pentynyloxy)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(4-pentenyloxy)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(2-propenyloxy)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-octyloxy-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(3-hexynyloxy)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(3-butenyl-2-oxy)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methyl-pyridine

3-(3-(4-hexenyloxy(-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(3-hexenyloxy-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(2-pentenyloxy)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(2-hexenyloxy)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(5-hexenyloxy)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(3-hexenyloxy)-1,2,5-thiadiazol-4-yl)-1,2,4,5-tetrahydro-1-methylpyridine

3-(1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(4-methylpiperidino-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-morpholino-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-dimethylamino-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-hexylamino-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-hexyloxy-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-deuteromethylpyridine

1,2,5,6-tetrahydro-3-(3-hexyloxy-1,2,5-thiadiazol-4-yl)-pyridine

3-(3-(2-(2-methoxyethoxy)-ethoxy)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(3-ethoxy-1-propoxy)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(2-ethoxyethoxy)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(2-butoxyethoxy)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(2-(2-butoxyethoxy)-ethoxy)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(2-(2-ethoxyethoxy)-ethoxy)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-butylthio-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-methylthio-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-pentyl-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-propylthio-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-hexylthio-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-pentylthio-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-ethylthio-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-octylthio-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-propyl-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-heptyl-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(5-hexenyl)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-octyl-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(2-methyl)-butyl-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-methylcyclopropyl-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-cyclopentylthio-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(1-ethylthio-2-methoxy)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(3-chloro-1-propylthio)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(2-methoxyethoxy)-ethylthio)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(3-cyano-1-propylthio)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-benzylthio-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(2-ethoxy-1-ethylthio)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(4-pentynylthio)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(2-(2-ethoxymethoxy)-ethylthio)-1,2,5-thiadiazol-4-yl)-1,2,5,6-tetrahydro-1-methylpyridine

3-(3-(5-cyano-1-pentylthio)- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(3-(3-phenyl-1-propylthio)- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(3-(2-phenoxyethylthio)- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(3-(4-cyanobutylthio)- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(3-(2-ethylbutylthio)- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(3-cyclohexylmethylthio- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(3-(8-hydroxyoctylthio)- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(3-(7-octenylthio)- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(3-(cyclopropylmethylthio- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3(3-cyclopropylmethylthio)- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(3-(3-butenylthio)- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(3-(4-pentenylthio)- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(4-isohexyloxy- 1,2,5-thiadiazol-3-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
1-methyl-1,2,5,6-tetrahydro-3-((4 -cyclopentylpropyl)oxy)- 1,2,5-thiadiazol-3-yl)pyridine
1-methyl-1,2,5,6-tetrahydro-3-(4-isoheptyloxy- 1,2,5-thiadiazol-3-yl)pyridine
1-methyl-1,2,5,6-tetrahydro-3-(4((2 -cyclohexylethyl)oxy)- 1,2,5-thiadiazol-3-yl)pyridine maleate
1,2,5,6-tetrahydro-1-methyl-3 -(4-(1-methylhexyloxy)- 1,2,5-thiadiazol-3-yl)pyridine
3-(4-(1-ethylpentyloxy)- 1,2,5-thiadiazol-3-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(4-(1-ethylbutoxy)- 1,2,5-thiadiazol-3-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
1,2,5,6-tetrahydro-1-methyl-3-(4 -(1-methylpentyloxy)- 1,2,5-thiadiazol-3-yl)pyridine
1-methyl-3-(4-(5-hexenyloxy)- 1,2,5-thiadiazol-3-yl)-1,2,5,6 -tetrahydropyridine
1,2,5,6-tetrahydro-1-methyl-3-(4-(2 -methylbutoxy)- 1,2,5-thiadiazol-3-yl)pyridine
1,2,5,6-tetrahydro-1-methyl-3-(4-(2 -methylpentyloxy)- 1,2,5-thiadiazol-3-yl)pyridine
1,2,5,6-tetrahydro-1-methyl-3-(4-(2,2,2 -trifluoroethoxy)- 1,2,5-thiadiazol-3-yl)pyridine
1-methyl-1,2,5,6-tetrahydro-3-(4-(3 -methylpentyloxy)- 1,2,5-thiadiazol-3-yl)pyridine
3-(3-(3-methyl-2-butenyloxy)- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(3-isobutoxy- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
1,2,5,6-tetrahydro-1-methyl-3-(4-(2 -methylbutoxy)- 1,2,5-thiadiazol-3-yl)pyridine
3-(3-chloro- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)octane
6-(3-chloro- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(3.2.1)octane
3-(3-ethoxy- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)octane
3-(3-propoxy- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)octane
3-(3-butylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)octane
3-(3-pentylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)octane
6-(3-ethylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(3.2.1)octane
6-(3-butylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(3.2.1)octane
3-(3-(3-hydroxypropoxy)- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(3-butoxy- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)octane
1,6-dimethyl-3-(3-hexyloxy- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydropyridine
3-(3-(3-phenyl-ethylthio)- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(3-propylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.1)heptane
3-(3-ethylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)octane
3-(3-butylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)heptane
3-(3-butylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)heptane
3-(3-ethylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)octane
3-(3-propylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)octane
4-chloro-3-(3-propyloxy- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(3.3.1)non-2-ene
3-(3-isopentyloxy- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)octane
3-(3-propylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(3.2.1)octane
bis-1,4-(3-(1-methyl-1,2,5,6 -tetrahydropyridin-3-yl)- 1,2,5-thiadiazol-4-yl)butanedithiol
3-(3-propylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(3.2.1)octane
3-(3-(4,4,4-trifluorobutoxy)- 1,2,5-thiadiazol-4-yl)-1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(3-(3,3,3-trifluoropropylthio)- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(3-propylthio- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydropyridine
3-(3-butylthio- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydropyridine
3-(3-butylthio- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1,1-dimethylpyridinium iodide
3-(3-butylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)octane
1,6-dimethyl-3-(3-butoxy- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydropyridine
3-(3-(3-methyl-2-butenyloxy- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methyl pyridine
3-(3-isobutoxy- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
1,2,5,6-tetrahydro-1-methyl-3-(4 -(2-methylbutoxy)- 1,2,5-thiadiazol-3-yl)pyridine
3-(3-chloro- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.1)octane
6-(3-chloro- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(3.2.1)octane
3-(3-ethoxy- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)octane
3-(3-propoxy- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)octane
3-(3-butylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)octane
3-(3-pentylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)octane
6-(3-ethylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(3.2.1)octane
6-(3-butylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(3.2.1)octane
3-(3-(3-hydroxypropoxy)- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(3-(butoxy- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)octane
1,6-dimethyl-3-(3-hexyloxy- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydropyridine
3-(3-(3phenyl-ethylthio- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(3-propylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.1)heptane
3-(3-ethylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)octane
3-(3-butylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.1)heptane
3-(3-butylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.1)heptane
3-(3-ethylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)octane
3-(3-propylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)octane
4-chloro-3-(3-propyloxy- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(3.3.1)non-2-ene
3-(3-isopentyloxy- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2)octane
3-(3-propylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(3.2.1)octane
bis-1,4-(3-(1-methyl-1,2,5,6-tetrahydropyridin- 3-yl)- 1,2,5-thiadiazol-4-yl)butanedithiol
3-(3-propylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(3.2.1)octane
3-(3-(4,4,4-trifluorobutoxy)- 1,2,5-thiadiazol-4-yl)-1,2,5-thiodiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(3-(3,3,3-trifluoropropylthio)- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(3-propylthio- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1-methylpyridine
3-(3-propylthio- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydropyridine
3-(3-butylthio- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydropyridine
3-(3-butylthio- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydro-1,1-dimethylpyridinium iodide
3-(3-butylthio- 1,2,5-thiadiazol-4-yl)-1 -azabicyclo(2.2.2.)octane
1,6-dimethyl-3-(3-butylthio- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydropyridine
1,6-dimethyl-3-(3-butoxy- 1,2,5-thiadiazol-4-yl)-1,2,5,6 -tetrahydropyridine; or a pharmaceutically acceptable salt thereof.

5,483,057

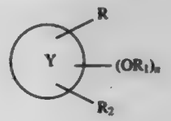
2-OXINDOLE COMPOUNDS WHICH HAVE USEFUL TYROSINE KINASE ACTIVITY

Franco Buzzetti, Monza (Milan); Antonio Longo, Milan, and Maristella Colombo, Cesano Boscone (Milan), all of, Italy, assignors to Farmitalia Carlo Erba S.r.l., Milan, Italy

Division of Ser. No. 126,687, Sep. 27, 1993, Pat. No. 5,374,652, which is a continuation of Ser. No. 768,259, Oct. 28, 1991, abandoned. This application Aug. 23, 1994, Ser. No. 294,350
Claims priority, application United Kingdom, Feb. 28, 1990, 9004483
Int. Cl.[6] C07D 401/06; A61K 31/47;31/405
U.S. Cl. 514—312 **6 Claims**

6. A method of treating a patient in need of a tyrosine kinase inhibitor, comprising the step of:

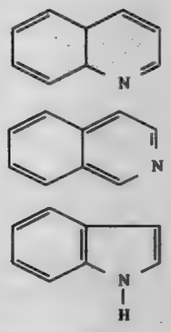
administering to said patient, in an amount effective to inhibit tyrosine kinase, a compound of formula (I)



(I)

wherein

Y is a bicyclic ring system selected from the group consisting of (E), (F) and (G):

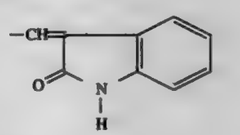


(E)

(F)

(G)

and R is a group of formula (e)

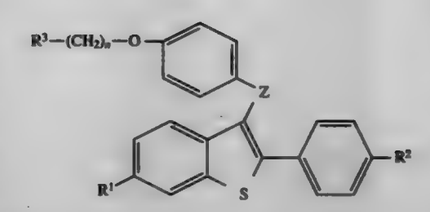


(e)

n is zero, 1 or 2;

R_1 is hydrogen, C_1–C_6 alkyl or C_2–C_{61} alkanoyl;

or a pharmaceutically acceptable salt thereof; and wherein each of the substituents R, OR_1 and R_2 may be on either the aryl or the heteroaryl moiety of the bicyclic ring systems (E), (F) and (G).



(I)

wherein

R^1 is —H, —OH, —O(C_1–C_4 alkyl), —$OCOC_6H_5$, —OCO(C_1–C_6 alkyl), or —OSO_2(C_2–C_6 alkyl);

R^2 is —H, —OH, —O(C_1–C_4 alkyl), —$OCOC_6H_5$, —OCO(C_1–C_6 alkyl), —OSO_2(C_2–C_6 alkyl), or halo, providing when Z is —S—, R^2 is not halo;

R^3 is 1-piperidinyl, 1-pyrrolidinyl, methyl-1-pyrrolidinyl, dimethyl-1-pyrrolidinyl, 4-morpholino, dimethylamino, diethylamino, diisopropylamino, or 1-hexamethyleneimino;

n is 2 or 3; and

z is —O— or —S—;

or a pharmaceutically acceptable salt thereof.

5,488,059

TREATMENT OF ERECTILE DYSFUNCTION

Allen E. Buhl, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 816,700, Dec. 23, 1991, abandoned. This application May 27, 1994, Ser. No. 250,193
Int. Cl.[6] A61K 31/44;31/155
U.S. Cl. 514—349 **2 Claims**

1. A method for inducing or enhancing an erection in mammals comprising the administration of an amount of from 0.5 μg to 1000 μg of N-cyano-N'(1,1-dimethyl propyl)-N"-3-pyridinyl guanidine or a pharmaceutically acceptable salt thereof to the penis of said mammal.

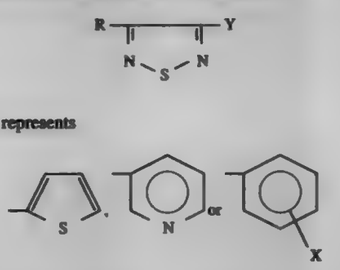
5,488,058

BENZOTHIOPHENE COMPOUNDS, INTERMEDIATES, COMPOSITIONS, AND METHOD FOR INHIBITING RESTENOSIS

Alan D. Palkowitz, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 396,401, Feb. 28, 1995. This application Jun. 6, 1995, Ser. No. 469,983
Int. Cl.[6] A61K 31/445;31/535;31/55;31/40
U.S. Cl. 514—324 **1 Claim**

1. A method for inhibiting restenosis comprising administering to a human in need of treatment an effective amount of a compound of formula I



wherein R represents

X represents H, —Br, —Cl, —F, —CH_3, —OCH_3, —$COOCH_3$, —NO_2, —SCH_3, —SO_2CH_3 or —CF_3 and Y is —SCN or —SCH_2SCN.

5,488,060

SUBSTITUTED THIADIAZOLES, COMPOSITIONS CONTAINING THEM AND THEIR USE AS ANTIMICROBIAL AND MARINE ANTIFOULING AGENTS

Ravi B. Shanker; Duane R. Romer, and R. Garth Pews, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 21, 1994, Ser. No. 360,496
Int. Cl.[6] A61K 31/41; A01N 43/832; C07D 285/10;417/04
U.S. Cl. 514—362 **24 Claims**

1. A compound corresponding to the formula:

5,488,061

1-ALKYL-, 1-ALKENYL-, AND 1-ALKYNYLARYL-2-AMINO-1,3-PROPANEDIOLS AND RELATED COMPOUNDS

John J. Tegeler, Bridgewater; Barbara S. Rauckman, Flemington; Russell R. L. Harmer, Lebanon; Brian S. Freed, Phillipsburg, all of N.J., and Gregory H. Merriman, Fairfield, Ohio, assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 942,908, Sep. 10, 1992, Pat. No. 5,360,811, which is a continuation-in-part of Ser. No. 840,236, Feb. 24, 1992, which is a continuation of Ser. No. 632,910, Dec. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 596,448, Oct. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 492,200, Mar. 13, 1990, abandoned. This application May 23, 1994, Ser. No. 247,739

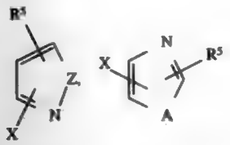
Int. Cl.[6] A61K *31/425;31/42;* **C07D** *277/02;263/02*

U.S. Cl. 514—372 **13 Claims**

1. A compound of the formula

$$RCH(OR^1)CH(NR^2R^3)R^4 \text{ or } RCH_2CR^{35}(NR^2R^3)R^4$$

wherein R is

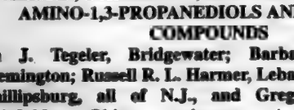


wherein R^5 is $CH_3(CH_2)_mC{\equiv}C$, $CH_3(CH_2)_mCH{=}CH$, $CH_3(CH_2)_mCH_2CH_2$,



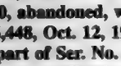


or

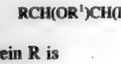


$CH_3(CH_2)_mCH_2C$, $CH_3(CH_2)_mCH_2O$,

or



wherein m is 3 to 15, n is 0 to 12, and W and X are independently hydrogen, hydroxy, loweralkyl, loweralkoxy, halogen, or trifluoromethyl, or

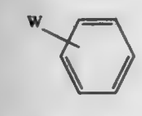


wherein R^{23} is loweralkyl; Z is S, O or C═O; and A is S or O; R^1 is hydrogen, loweralkyl,

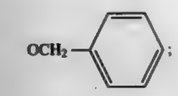
wherein R^{24} is loweralkyl or



wherein R^6 is hydrogen, loweralkyl, loweralkoxy, $N(R^{21})_2$ wherein R^{21} is hydrogen, loweralkyl, or



wherein W is as above, or



R^2 is hydrogen or loweralkyl; R^3 is hydrogen, loweralkyl or



wherein R^6 is as above or NHR^{27} wherein R^{27} is loweralkyl; R^{35} is



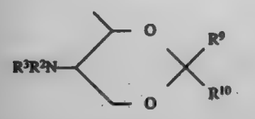
wherein R^{36} is loweralkyl; R^4 is



wherein R^7 is hydrogen or loweralkyl, $C(R^{25})_2OR^8$ wherein R^8 is hydrogen, loweralkyl, or



wherein R^6 is as above and R^{25} is hydrogen or loweralkyl; R^1 and R^8 taken together with the oxygen to which they are attached form a group of the formula



wherein R^9 and R^{10} are independently hydrogen or loweralkyl; or the pharmaceutically acceptable salts thereof.

5,488,062

2-SACCHARINYLMETHYL HETEROCYCLIC CARBOXYLATES USEFUL AS PROTEOLYTIC ENZYME INHIBITORS AND COMPOSITIONS AND METHOD OF USE THEREOF

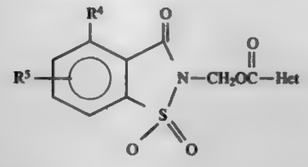
Richard P. Dunlap, Penfield; Dennis J. Hlasta, Clifton Park; Ranjit C. Desai, Colonie; Lee H. Latimer, Brighton; Chakrapani Subramanyam, East Greenbush; John J. Court, Colonie; Malcolm R. Bell, East Greenbush, and Virendra Kumar, Colonie, all of N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.

Division of Ser. No. 109,411, Aug. 19, 1993, Pat. No. 5,376,653, which is a continuation of Ser. No. 816,621, Dec. 30, 1991, abandoned. This application Aug. 9, 1994, Ser. No. 287,681

Int. Cl.[6] A61K *31/425;* **C07D** *417/12*

U.S. Cl. 514—373 **11 Claims**

1. A compound having the formula:



wherein:

Het is thienyl or thienyl substituted by from one to three, the same or different, members of the group consisting of lower-alkyl, perfluorolower-alkyl, lower-alkoxy and halogen;

R^4 is hydrogen, halogen, lower-alkyl, perfluorolower-alkyl, perchlorolower-alkyl, lower-alkenyl, lower-alkynyl, cyano, carboxamido, amino, lower-alkylamino, dilower-alkylamino, lower-alkoxy, benzyloxy, lower-alkoxycarbonyl, hydroxy or phenyl; and

R^5 is hydrogen or from one to two substituents in any of the 5-, 6- or 7-positions selected from halogen, cyano, nitro, N═B', lower-alkyl-2-pyrrolyl, lower-alkylsulfonyl-amino, polyfluorolower-alkylsulfonylamino, polychlorolower-alkylsulfonylamino, aminosulfonyl, lower-alkyl, polyfluoro-lower-alkyl, polychlorolower-alkyl, cycloalkyl, lower-alkoxy, hydroxy, carboxy, carboxamido, hydroxylower-alkyl, methylenedioxy, cycloalkyloxy, formyl, aminomethyl, polyfluorolower-alkylsulfonyl, polychlorolower-alkylsulfonyl, lower-alkylsulfonylaminosulfonyl, di(lower-alkyl)phosphonoxy, lower-alkoxy-poly-lower-alkyleneoxy, hydroxy-lower-alkoxy, polyhydroxy-alkoxy, polyalkoxy-alkoxy, —SR, —SOR, —SO_2R, —OCOR, —O—(C_1–C_{10} alkylene)—COOR, —O—(C_2–C_{10} alkylene)—N═B' where R is lower-alkyl, phenyl, benzyl or naphthyl, or phenyl or naphthyl substituted by from one to two substituents selected from lower-alkyl, lower-alkoxy or halogen and where N═B' is amino, lower-alkylamino, dilower-alkyl-amino, 1-azetidinyl, 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, 1-piperazinyl, 4-lower-alkyl-1-piperazinyl, 4-benzyl-1-piperazinyl, 1-imidazolyl or (carboxy-lower-alkyl)amino; or R^5 is a 5- or 6-membered saturated ring fused to the saccharin ring at the 5,6 or 6,7 positions, said ring containing two heteroatoms chosen from the group consisting of nitrogen, oxygen and sulfur or a methylated derivative of said ring;

or acid-addition salts of basic members thereof or base-addition salts of acidic members thereof.

5,488,063

1-ALKYL-, 1-ALKENYL-, AND 1-ALKYNYLARYL-2-AMINO-1,3-PROPANEDIOLS AND RELATED COMPOUNDS

John J. Tegeler, Bridgewater; Barbara S. Rauckman, Flemington; Russell R. L. Harmer, Lebanon; Brian S. Freed, Phillipsburg, all of N.J., and Gregory H. Merriman, Fairfield, Ohio, assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 942,908, Sep. 10, 1992, Pat. No. 5,360,811, which is a continuation-in-part of Ser. No. 840,236, Feb. 24, 1992, abandoned, which is a continuation of Ser. No. 632,910, Dec. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 596,448, Oct. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 492,200, Mar. 13, 1990, abandoned. This application May 23, 1994, Ser. No. 247,368

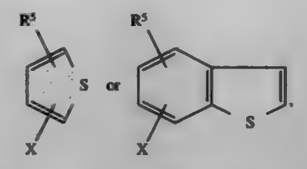
Int. Cl.[6] A61K *31/38;* **C07D** *333/20*

U.S. Cl. 514—438 **93 Claims**

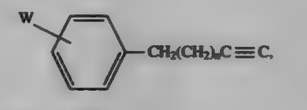
1. A compound of the formula

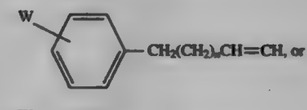
$$RCH(OR^1)CH(NR^2R^3)R^4 \text{ or } RCH_2CR^{35}(NR^2R^3)R^4$$

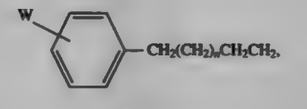
wherein R is



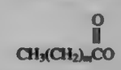
wherein R^5 is $CH_3(CH_2)_mC{\equiv}C$, $CH_3(CH_2)_mCH{=}CH$, $CH_3(CH_2)_mCH_2CH_2$,



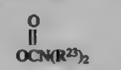




$CH_2(CH_2)_mCH_2C$, $CH_3(CH_2)_mCH_2O$, or



wherein m is 3 to 15, n is 0 to 12, and W and X are independently hydrogen, hydroxy, loweralkyl, loweralkoxy, halogen, or trifluoromethyl, or



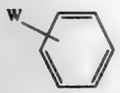
wherein R^{23} is loweralkyl; R^1 is hydrogen, loweralkyl, $Si(R^{23})_2C(R^{23})$, wherein R^{23} is loweralkyl



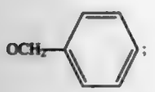
wherein R^{24} is loweralkyl or



wherein R^6 is hydrogen, loweralkyl, loweralkoxy, $N(R^{21})_2$ wherein R^{21} is hydrogen, loweralkyl, or



wherein W is as above, or



R^2 is hydrogen or loweralkyl; R^3 is hydrogen, loweralkyl or



wherein R^6 is as above or NHR^{27} wherein R^{27} is loweralkyl; R^{35} is



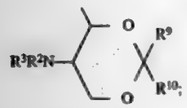
wherein R^{36} is loweralkyl; R^4 is



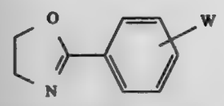
wherein R^7 is hydrogen or loweralkyl, $C(R^{25})_2OR^8$ wherein R^8 is hydrogen, loweralkyl, or



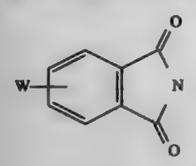
wherein R^6 is as above and R^{25} is hydrogen or loweralkyl; R^1 and R^8 taken together with the oxygen to which they are attached form a group of the formula



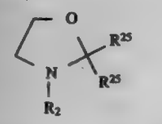
wherein R^9 and R^{10} are independently hydrogen or loweralkyl; R^2, R^3 and R^4 taken together with the nitrogen and oxygen to which they are attached form a group of the formula



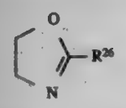
wherein W is as above; R^2 and R^3 taken together with the nitrogen atom to which it is attached form a group of the formula



wherein W is as above; R^3 and R^4 taken together with the nitrogen and oxygen atoms to which they are attached form a group of the formula



wherein R^2 is as above and R^{25} is loweralkyl; R^1, R^2 and R^3 taken together with the nitrogen and oxygen atoms to which they are attached form a group of the formula



wherein R^{26} is loweralkyl; the optical isomers thereof, or the pharmaceutically acceptable salts thereof.

5,488,064

BENZO 1,3 DIOXOLE DERIVATIVES

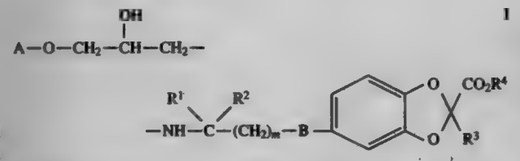
Philip M. Sher, Plainsboro, N.J., assignor to Bristol-Myers Squibb Company, Princeton, N.J.

Filed May 2, 1994, Ser. No. 236,738

Int. Cl.[6] A61K *31/36*; C07D *317/68;405/12*

U.S. Cl. 514—465 **18 Claims**

1. A compound of the formula



I

or pharmaceutically acceptable salts thereof where A is phenyl, naphthyl or dihydro- or tetrahydronaphthyl optionally substituted on the aromatic ring by one to three substituents independently selected from halogen, cyano, trifluoromethyl, nitro, alkoxy, alkylsulfonyl, alkyl, cycloalkyl, aryl or a hydrogen bond donor;

B is a bond or an oxygen atom;

R^1 and R^2 are independently hydrogen or lower alkyl;

R^3 is hydrogen, lower alkyl or CO_2R^4;

R^4 is hydrogen or lower alkyl;

m is an integer of 1 or 2; wherein aryl is phenyl or naphthyl optionally substituted with one to three substituents selected from lower alkyl or halogen and a hydrogen bond donor is

hydroxyl, amino, aminocarbonyl, hydroxymethyl, alkylsulfonylamino, acylamino and divalent substituents that render A a benzoheterocycle selected from indole, benzimidazole, benzotriazole, benzimidazol-2-one, or quinoxaline-2,3-diol.

5,488,065

ANTIMICROBIAL COMPOSITIONS

Willy Roth, 24 Hardstrasse, Strengelbach, Switzerland

Continuation of Ser. No. 670,246, Nov. 13, 1984, abandoned. This application Apr. 28, 1986, Ser. No. 859,189

Claims priority, application Switzerland, Nov. 17, 1983, 6184/83

Int. Cl.[6] A61K *31/285*

U.S. Cl. 514—504 **9 Claims**

1. An antimicrobial composition which is suitable for antimicrobial finishing of synthetic plastic materials, comprising 10,10'-oxybisphenoxarsine as the antimicrobial agent, benzyl alcohol solvent, and a plasticizer comprising an ester of a polybasic acid, wherein Said agent is present in the amount of from about 1% to about 2% by weight of said agent plus said solvent and plasticizer, and from about 10% to about 50% by weight of said agent plus said solvent.

5,488,066

ALKYLAMINOALKYL-TERMINATED SULFIDE/SULFONYL-CONTAINING CYCLOALKYL-ALANINE AMINO-DIOL COMPOUNDS FOR TREATMENT OF HYPERTENSION

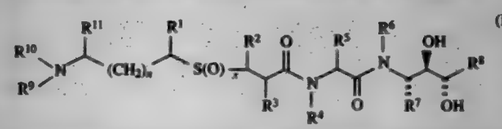
Barbara B. Chen, Glenview; Gunnar J. Hanson, Skokie, and John S. Baran, Winnetka, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 141,771, Oct. 25, 1993, Pat. No. 5,416,119. This application Jan. 23, 1995, Ser. No. 376,617

Int. Cl.[6] A61K *31/16;31/165*

U.S. Cl. 514—618 **8 Claims**

1. A therapeutic method for treating hypertension said method comprising administering to a hypertensive patient a therapeutically-effective amount of a compound of Formula I:



(I)

wherein each of R^1 and R^{11} is a group independently selected from hydrido, alkyl, alkylaminoalkyl and phenyl; wherein n is a number selected from zero through five, inclusive; wherein x is a number selected from zero, one and two; wherein R^2 is selected from hydrido and alkyl; wherein R^3 is a group selected from hydrido, cycloalkylalkyl, aralkyl and haloaralkyl; wherein each of R^4 and R^6 is a group independently selected from hydrido and methyl; wherein R^5 is selected from cycloalkylalkyl groups containing from three to about twelve carbon atoms; wherein R^7 is a group selected from alkyl, cycloalkylalkyl and aralkyl; wherein R^8 is a group selected from hydrido, alkyl, hydroxyalkyl, cycloalkyl, cycloalkylalkyl, alkenyl and haloalkenyl; wherein each of R^9 and R^{10} is a group independently selected from hydrido, alkyl, cycloalkyl, cycloalkylalkyl, alkylacyl, aryl, aralkyl, haloaryl and haloaralkyl; and wherein any one of said R^1 through R^{11} groups having a substitutable position may be substituted with one or more groups selected from alkyl, hydroxy, hydroxyalkyl, halo, alkoxy, alkoxyalkyl and alkenyl; or a pharmaceutically-acceptable salt thereof.

5,488,067

ALKYLAMINOALKYL-TERMINATED SULFIDE/SULFONYL-CONTAINING PROPARGYL AMINO-DIOL COMPOUNDS FOR TREATMENT OF HYPERTENSION

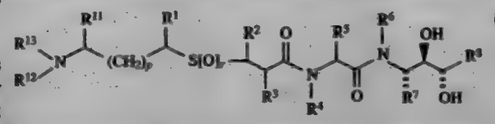
Gunnar J. Hanson, Skokie, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 126,940, Sep. 24, 1993, Pat. No. 5,414,018. This application Jan. 23, 1995, Ser. No. 376,504

Int. Cl.[6] A61K *31/16;31/165*

U.S. Cl. 514—618 **7 Claims**

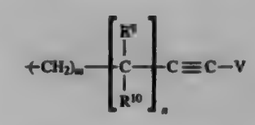
1. A therapeutic method for treating hypertension, said method comprising administering to a hypertensive patient a therapeutically-effective amount of a compound of Formula I:



(I)

wherein each of R^1 and R^{11} is a group independently selected from hydrido, alkyl, alkylaminoalkyl and phenyl; wherein p is a number selected from zero through five, inclusive; wherein r is a number selected from zero, one and two; wherein R^2 is selected from hydrido and alkyl;

wherein R^3 is a group selected from hydrido, cycloalkylalkyl, aralkyl and haloaralkyl; wherein each of R^4 and R^6 is a group independently selected from hydrido and methyl; wherein R^5 is selected from



wherein V is selected from hydrido, alkyl, cycloalkyl, aryl and aralkyl; wherein each of R^9 and R^{10} is a group independently selected from hydrido, alkyl, alkenyl, alkynyl, cycloalkyl and aryl; wherein m is a number selected from zero through three; wherein n is a number selected from zero through three; wherein R^7 is a group selected from alkyl, cycloalkylalkyl and aralkyl; wherein R^8 is a group selected from hydrido, alkyl, hydroxyalkyl, cycloalkyl, cycloalkylalkyl, alkenyl and haloalkenyl; wherein each of R^{12} and R^{13} is a group independently selected from hydrido, alkyl, cycloalkyl, cycloalkylalkyl, alkylacyl, aryl, aralkyl, haloaryl and haloaralkyl; and wherein any one of said R^1 through R^{13} groups having a substitutable position may be substituted with one or more groups selected from alkyl, hydroxy, hydroxyalkyl, halo, alkoxy, alkoxyalkyl and alkenyl; or a pharmaceutically-acceptable salt thereof.

5,488,068

AMINOBIPHENYL-4-OL ANTI-ATHEROSCLEROTIC COMPOUNDS AND METHOD

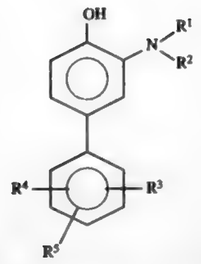
Rex A. Parker, Lawrenceville, and Scott A. Biller, Ewing, both of N.J., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Aug. 18, 1994, Ser. No. 292,671

Int. Cl.[6] A61K *31/135*

U.S. Cl. 514—647 **6 Claims**

1. A method for treating atherosclerosis, which comprises administering to a patient in need of treatment a therapeutically effective amount of a compound having the structure



wherein R^1 and R^2 independently hydrogen, lower alkyl, or arylalkyl, at least one of R^1 and R^2 being other than hydrogen; and R^3, R^4 and R^5 are independently hydrogen, halo, alkoxy, lower alkyl, lower alkenyl, aryl or arylalkyl; or a pharmaceutically acceptable salt thereof, wherein lower alkyl as employed alone or as part of another group includes both straight and branched chain hydrocarbons optionally substituted with 1 to 4 substituents which are halo, CF_3, alkoxy, aryl, aryloxy, aryl(aryl), diaryl, arylalkyl, arylalkyloxy, alkenyl, cycloalkyl, cycloalkylalkyl, cycloalkylalkyloxy, amino, hydroxy, acyl, heteroaryl, heterparyloxy, heteroarylalkyl, heteroarylalkoxy, aryloxyalkyl, aryloxyaryl, alkylamido, alkanoylamino, arylcarbonylamino, nitro, cyano, thiol and/or alkylthio; aryl as employed herein alone or as part of another group refers to monocyclic and bicyclic aromatic groups which optionally include 1 to 3 additional rings fused to Ar which additional rings include aryl, cycloalkyl, heteroaryl or cycloheteroalkyl rings, and aryl may be optionally substituted through available carbon atoms with 1, 2, or 3 groups selected from hydrogen, halo, alkyl, haloalkyl, alkoxy, haioalkoxy, alkenyl, trifluoromethyl, trifluoromethoxy, alkynyl, cycloalkylalkyl, cycloheteroalkyl, cycloheteroalkylalkyl, aryl, heteroaryl, arylalkyl, aryloxy, aryloxyalkyl, arylalkoxy, arylazo, heteroarylalkyl, heteroarylalkenyl, heteroarylheteroaryl, heteroaryloxy, hydroxy, nitro, cyano, amino; substituted amino wherein the amino includes 1 or 2 substituents which are alkyl, aryl or any of the other aryl compounds mentioned above; thiol, alkylthio, arylthio, heteroarylthio, arylthioalkyl, alkoxyarylthio, alkylcarbonyl, arylcarbonyl, arylaminocarbonyl, alkoxycarbonyl, aminocarbonyl, alkylcarbonyloxy, arylcarbonyloxy, alkylcarbonylamino, arylcarbonylamino, arylsulfinyl, arylsulfinylalkyl, arylsulfonylamino or arylsulfonaminocarbonyl.

5,488,069

OPHTHALMIC PHARMACEUTICAL COMPOSITION CONTAINING N-ACETYL-CYSTEINE AND POLYVINYLALCOHOL.

Federico Stroppolo, Pregassona, Switzerland; Daniele Bonadeo, Varese, Italy; Francesco Tocchini, Bissone, Switzerland, and Annibale Gazzaniga, Rescaldina, Italy, assignors to Zambon Group S.p.A., Vicenza, Italy

Continuation of Ser. No. 5,397, Jan. 15, 1993, abandoned. This application Jun. 3, 1994, Ser. No. 253,587

Claims priority, application Italy, Jan. 16, 1992, MI92A0074

Int. Cl.[6] A61K *31/195;31/74*

U.S. Cl. 514—772.4 **7 Claims**

1. An ophthalmic pharmaceutical comprising 3–5% weight per volume of N-acetyl-cysteine, and 1–97% weight per volume polyvinylalcohol.

5,488,070

POLYURETHANE-BASED, COMPACT MOLDINGS OR MOLDINGS HAVING A CELLULAR CORE AND A COMPACTED SURFACE, PROCESS FOR THEIR PRODUCTION, AND THEIR USE AS SHOE OR SHOE SOLE MATERIAL

Peter Falke, Schwarzheide; Holger Seifert, Freital, and Marion Heinz, Senftenberg, all of, Germany, assignors to BASF Schwarzheide GmbH, Germany

Filed Feb. 27, 1995, Ser. No. 394,877

Claims priority, application Germany, Feb. 25, 1994, 44 06 219.2

Int. Cl.[6] C08J *9/34*

U.S. Cl. 521—51 **4 Claims**

1. A method of making a shoe or a shoe sole material having a cellular core and a compacted surface, comprising reacting an organic and/or modified polyisocyanate with a polyhydroxyl compound in the presence of a crosslinked poly(meth) acrylic acid, poly(meth) acrylic acid salt, and/or poly(meth) acrylamide.

5,488,071

POLYOXYALKYLENE POLYETHER MONOOL POLYURETHANE FOAM ADDITIVE

Jimmy L. Patterson, New Boston, Mich., assignor to BASF Corporation, Mt. Olive, N.J.

Division of Ser. No. 427,016, Apr. 24, 1995, Pat. No. 5,464,562. This application Aug. 3, 1995, Ser. No. 510,985

Int. Cl.[6] C08G *18/30;18/34;18/36*

U.S. Cl. 521—114 **18 Claims**

1. A rigid closed cell polyisocyanate based foam comprising the reaction between an organic aromatic polyisocyanate and a polyol composition in the presence of a C_4–C_7 aliphatic or cycloaliphatic hydrocarbon blowing agent, said polyol composition comprising:

a) a compound having polyester linkages;

b) a polyoxyalkylene polyether monool initiated with a C_8–C_{24} fatty hydrocarbon having one alkylene oxide active hydrogen atom.

5,488,072

RIGID CLOSED CELL POLYISOCYANATE BASED FOAMS FOR USE AS POSITIVE FLOTATION MATERIALS IN WATERCRAFT

Todd J. Green, Canton, Mich., assignor to BASF Corporation, Mt. Olive, N.J.

Division of Ser. No. 383,627, Feb. 6, 1995, Pat. No. 5,449,699. This application May 15, 1995, Ser. No. 442,237

Int. Cl.[6] C08J *9/14;* C08G *18/18*

U.S. Cl. 521—129 **14 Claims**

1. A rigid closed cell polyisocyanate-based foam having a density measured as a free rise of 1.7 pcf to 3.0 pcf comprising reacting an organic diisocyanate or polyisocyanate with a formulated polyol composition, said formulated polyol composition comprising:

a) 1,1,1,2-tetrafluoroethane and

b) a polyol composition comprising:

b1) a compound having at least two isocyanate active hydrogens, said compounds having an average hydroxyl number of less than 400 and an average functionality of greater than 4.0;

b2) water; and,

b3) a catalyst;

wherein the formulated polyol composition is under a pressure sufficient to keep 1,1,1,2-tetrafluoroethane in a liquid state.

5,488,073

AZEOTROPIC COMPOSITIONS OF 1,1,1,4,4,4-HEXAFLUOROBUTANE AND N-PENTANE AND THE USE THEREOF IN THE PRODUCTION OF FOAMS

Joachim Werner, Bethel Park, Pa.; Scott A. Kane, Wellsburg, W. Va.; Herman P. Doerge, Pittsburgh, and Eric F. Boonstra, Oakdale, both of Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Division of Ser. No. 410,469, Mar. 24, 1995. This application Jun. 1, 1995, Ser. No. 457,244

Int. Cl.[6] C08J *9/14*

U.S. Cl. 521—131 **3 Claims**

1. A polyurethane foam which has been produced by reacting a polyisocyanate with an isocyanate reactive material in the presence of an azeotropic composition consisting essentially of

a) from about 73 to about 87% by weight of 1,1,1,4,4,4-hexafluorobutane and

b) from about 13 to about 27% by weight of n-pentane.

5,488,074

POLYETHERESTEROLS, THEIR PREPARATION, AND THEIR USE IN POLYURETHANES

Gerd Mueller-Hagen, Ludwigshafen; Horst Heinrich, Ruhland, and Baerbel Meyer, Lauta, all of, Germany, assignors to BASF Schwarzheide GmbH, Germany

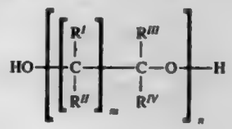
Division of Ser. No. 143,032, Oct. 29, 1993, Pat. No. 5,453,480. This application Jul. 10, 1995, Ser. No. 500,076

Claims priority, application Germany, Dec. 12, 1992, 42 41 415.6

Int. Cl.[6] C08G *18/00*

U.S. Cl. 521—172 **9 Claims**

1. A polyurethane plastic comprising the reaction product of an isocyanate component with a polyetheresterol, said polyetheresterol comprising the condensation product of a polyfunctional carboxylic acid with alkanediols and etherdiols, said etherdiols corresponding to the formula:



where

m=1 to 3

n≧3 and

R^I, R^{II}, R^{III} and R^{IV} are identical or different and, independently of one another, are hydrogen or C_1- to C_4-alkyl,

the ratio between the ether and ester groups in the polyetheresterol being in the range of from 0.3:1 to 1.5:1, and the total amount of —OH groups in the alkanediols and etherdiols to the —COOH groups of the polyfunctional carboxylic acid reacted at a ratio of from 1.01:1 to 1.1:1.

5,488,075

CONTRACEPTIVE FOR USE BY A MALE

Sujoy K. Guha, 9 West Avenue, I.I.T., New Delhi 110016, Ind.

Filed Sep. 20, 1994, Ser. No. 309,135

Int. Cl.[6] C08L *25/08;* C08K *5/41;* A61K *31/74*

U.S. Cl. 522—168 **7 Claims**

1. A contraceptive for use by a male comprising an injectable fluid of a copolymer of styrene with maleic anhydride in a solvent consisting of dimethylsulphoxide characterized in that said copolymer is prepared by subjecting a mixture of styrene and maleic anhydride to the step of irradiation at a dose of 0.2 to 0.24 megarad for every 40 gms. of said mixture.

5,488,076

WATER ABLATIVE COATING FOR DRAG REDUCTION APPLICATIONS

Robert F. Supcoe, Annapolis, Md., and Francis J. Moran, Jr., Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 8, 1973, Ser. No. 386,658

Int. Cl.[6] B05D *5/08;* C09D *5/14;* B63B *1/34*

U.S. Cl. 523—175 **19 Claims**

1. A water ablative paint for application to the exterior surface of a waterborne vehicle to reduce drag by reducing turbulence and promoting laminar flow in the boundary layer immediately adjacent the vehicle surface, said paint comprising:

a drag reducing polymer;

a carrier resin for suspending said drag reducing polymer;

a drier; and

a diluent.

5,488,077

SULFUR CURED RUBBER COMPOSITION CONTAINING EPOXIDIZED NATURAL RUBBER AND CARBOXYLATED NITRILE RUBBER

Paul H. Sandstrom, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 313,954, Sep. 28, 1994. This application May 30, 1995, Ser. No. 452,929

Int. Cl.[6] C08L *9/00;13/00;15/00;* C08K *3/36*

U.S. Cl. 523—438 **7 Claims**

1. A sulfur cured rubber composition composed of, based on 100 parts by weight of rubber (phr);

(a) 1.0 to 15 parts by weight of epoxidized natural rubber, wherein the level of epoxidized modification is in the range of from about 15 to 85 mole percent;

(b) 1.0 to 15 parts by weight of a carboxylic acid group containing nitrile rubber; and

(c) 98 to 70 parts by weight of a rubber selected from the group consisting of medium vinyl polybutadiene, styrene-butadiene rubber, synthetic cis-1,4-polyisoprene, synthetic 3,4-polyisoprene, natural rubber, cis-polybutadiene, styrene-isoprene rubber, styrene-isoprene-butadiene rubber, acrylonitrile-butadiene rubber and mixtures thereof.

5,488,078

COMPOSITIONS FOR CONSTRUCTION MATERIALS

John R. Shutt, Tervuren, Belgium, and Benoit M. F. Touzard, Mont-Saint-Aignan, France, assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Apr. 28, 1994, Ser. No. 234,522

Claims priority, application United Kingdom, Apr. 29, 1993, 9308883

Int. Cl.[6] C08L *95/00;57/02;* C08K *5/01*

U.S. Cl. 524—71 **23 Claims**

1. A composition comprising a two-phase mixture of

(a) a structural bitumen component; and

(b) from 1 to 20 wt % of a thermoplastic polymer derived predominantly of ethylene and at least one other non-cyclic alpha olefin having at least four carbon atoms, said polymer having a crystallinity of less than 18%, and a Solubility Distribution Breadth Index value of less than 28° C., in which the wt % is based on the total weight of the polymer and the bitumen component.

5,488,079

POLYOLEFIN STABILIZATION

Peter Staniek, Kandern, Germany, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 217,164, Mar. 23, 1994, abandoned. This application Oct. 17, 1994, Ser. No. 324,430

Claims priority, application United Kingdom, Mar. 25, 1993, 9306186; Feb. 11, 1994, 9402696

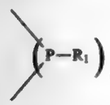
Int. Cl.[6] C08K *5/50*

U.S. Cl. 524—116 **2 Claims**

1. A polyolefinic composition comprising:

Component a) a compound according to formula III

(III)



in which

R_1 independently is C_{1-12}alkyl, cyclohexyl, menthyl, or C_{6-12}aryl; and

m is 4 or 5and;

Component b) a polyolefin which has been produced in the presence of a Ziegler or metallocene type catalyst which has not been removed;

wherein Component a) is present in an amount of 0.005–5% based on the weight of polymer present in the composition.

5,488,080

RUBBER AND PLASTIC BONDING

John D. Osborn, Wortham, Tex., assignor to Encore Technologies, Inc., Houston, Tex.

Continuation of Ser. No. 886,338, May 20, 1992, abandoned. This application Apr. 13, 1994, Ser. No. 227,017

Int. Cl.[6] C08L *23/00;* **C08J** *11/04*

U.S. Cl. 524—270 **21 Claims**

1. A dry liquid concentrate mixture for use with organic compounds in nonvulcanized curing systems for plastics, recycled plastics, thermoplastics, thermoplastic elastomers, polyacrylics, polyurethanes, asphalt, and emulsions thereof, including latex, comprising a uniform mixture of:

a. substantially dry crumb rubber including cured and shaped rubber particles;

b. a liquid agent taken from the group consisting of fatty acids and tall oil pitches within the following ranges of characteristics:

Viscosity, (centistokes at 99° C.)	10 to 1,000
Acid Number (Total)	15 to 330
Saponification Number	10 to 350
Fatty Acids, %	5% to 100%
Rosin Acids, %	0% to 70%
Unsaponifiables	5% to 80%;

wherein the moisture content of said rubber particles and liquid agent is not more than 0.5%.

5,488,081

HIGHLY DAMPED ORGANIC ELASTOMER COMPOSITION

James R. Halladay, Erie, Pa., assignor to Lord Corporation, Cary, N.C.

Filed Nov. 4, 1993, Ser. No. 148,119

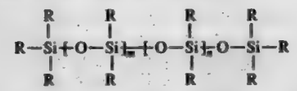
Int. Cl.[6] C08K *5/11*

U.S. Cl. 524—314 **17 Claims**

1. An elastomeric composition consisting essentially of a mixture comprising

(a) a heat-vulcanizable organic elastomer which is selected from the group consisting of natural rubber, polyisoprene, polybutadiene, polychloroprene, acrylonitrile/butadiene copolymer rubber, and mixtures thereof, the heat-vulcanizable organic elastomer being present in an amount ranging from about 20 to 80 percent by weight of total elastomer Composition,

(b) a polyorganosiloxane wherein the polyorganosiloxane is represented by the following formula:



wherein R may be the same or different and is a straight-chain, branched, cyclic, or aromatic hydrocarbon radical, and having from about 1 to 20 carbon atoms and wherein m or n can be zero and the sum of (m+n) is an integer in the range from about 2 to 2000

(c) a polyorganosilsesquioxane, and

(d) a compatibilizer; the compatibilizer being present in an amount ranging from about 1 to 30 percent by weight of the total elastomer composition, and

the combination of the polyorganosiloxane and the polyorganosilsesquioxane being present in an amount ranging from about 3 to 30 percent by weight of the total elastomer composition, wherein the ratio of polyorganosiloxane to polyorganosilsesquioxane in the combination ranges from about 3:1 to 1:3.

5,488,082

POLYMERIC ADHESIVE PASTE

Raymond L. Dietz, Georgetown, and David M. Peck, Beverly, both of Mass., assignors to Diemat, Inc., Topsfield, Mass.

Continuation-in-part of Ser. No. 100,052, Jul. 30, 1993, Pat. No. 5,391,604. This application Feb. 17, 1995, Ser. No. 390,257

Int. Cl.[6] C08K *3/10;3/08*

U.S. Cl. 524—403 **18 Claims**

1. An adhesive paste consisting essentially of:

(A) about 10–50 volume percent at least one organic polymer resin;

(B) up to about 40 volume percent inorganic filler; and

(C) about 30–65 volume percent fugitive liquid;

wherein each of the resin and the filler is present in particulate form of size sufficiently small to pass through a Number 325 mesh screen, and wherein the liquid and organic polymer resin are each substantially insoluble in the other.

5,488,083

METHOD OF GELLING A GUAR OR DERIVATIZED GUAR POLYMER SOLUTION UTILIZED TO PERFORM A HYDRAULIC FRACTURING OPERATION

E. Wayne Kinsey, III, Odessa; Sharif Sharif, and David N. Harry, both of Midland, all of Tex., assignors to Benchmark Research and Technology, Inc., Midland, Tex.

Filed Mar. 16, 1994, Ser. No. 213,868

Int. Cl.[6] C09K *3/00;* **E21B** *43/26*

U.S. Cl. 507—211 **10 Claims**

1. A method of gelling a guar or derivatized guar polymer solution utilized to perform a hydraulic fracturing operation, comprising the steps of:

adjusting the pH of the guar or derivatized guar polymer solution to between about 8.5 and 12.5;

adding to the guar or derivatized guar polymer solution an anhydrous boron compound or a sparingly soluble borate suspended in a solution selected from the group consisting of a mineral spirits-resin solution and an oil-resin solution;

pumping the guar or derivatized guar polymer solution and the anhydrous boron compound or the sparingly soluble borate suspended in a solution selected from the group consisting of a mineral spirits-resin solution and an oil-resin solution into a subterranean formation under sufficient pressure to cause a fracture in the formation rock.

5,488,084

POLYPHENYLENE SULFIDE RESIN COMPOSITION

Sho Kadoi, Ichihara; Hidemi Yabe, and Kazuhiko Kobayashi, both of Nagoya, all of, Japan, assignors to Toray Industries, Inc., Japan

Continuation of Ser. No. 924,424, Jul. 31, 1992, abandoned, which is a continuation of Ser. No. 512,865, Apr. 23, 1990, abandoned. This application Dec. 14, 1993, Ser. No. 166,735

Claims priority, application Japan, Apr. 25, 1989, 1-106197

Int. Cl.[6] C08F *283/06;283/04;* **C08L** *81/04*

U.S. Cl. 524—423 **7 Claims**

1. A polyphenylene sulfide resin composition consisting essentially of (a) 99 to 1 parts by weight of a modified polyphenylene sulfide resin obtained by reacting a polyphenylene sulfide resin with 0.03 to 30% by weight, based on the polyphenylene sulfide resin, of at least one carboxylic acid anhydride selected from the group consisting of maleic, itaconic and succinic anhydrides, and (b) 1 to 99 parts by weight of a polyamide resin, both resins (a) and (b) being melt-kneaded together.

5,488,085

SEMI-BATCH PROCESS FOR PRODUCING POLYMER POLYOLS

John E. Hayes, Wilmington, Del.; Donald W. Simroth, Charleston, W. Va., and Xinhua Zhou, West Chester, Pa., assignors to ARCO Chemical Technology, L.P., Greenville, Del.

Filed Aug. 18, 1994, Ser. No. 292,531

Int. Cl.[6] C08L *25/12;75/00*

U.S. Cl. 525—53 **30 Claims**

1. A semi-batch process for preparing a final polymer polyol comprising the in-situ polymerization in a batch reactor of one or more ethylenically unsaturated monomers in a polyether polyol media in the presence of a seed polymer polyol, wherein from about 0.25 to about 3 weight percent of the polymer solids in the final polymer polyol comes from the seed polymer polyol, and wherein the final polymer polyol has a broader particle size distribution as compared to an identically prepared polymer polyol prepared in the absence of the seed polymer polyol.

5,488,086

POLYCARBONATE RESIN COMPOSITION

Takashi Umeda, and Masaya Okamoto, both of Ichihara, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01755, § 371 Date Jul. 28, 1992, § 102(e) Date Jul. 28, 1992, PCT Pub. No. WO92/12208, PCT Pub. Date Jul. 23, 1992

Continuation of Ser. No. 916,002, Jul. 28, 1992, abandoned. This PCT application Dec. 25, 1991, Ser. No. 209,591

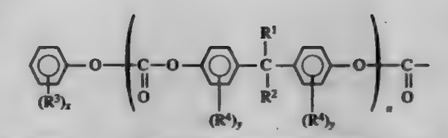
Claims priority, application Japan, Dec. 27, 1990, 2-415108; Dec. 27, 1990, 2-415109; Dec. 27, 1990, 2-415110; Dec. 27, 1990, 2-415111

Int. Cl.[6] C08L *69/00;83/10*

U.S. Cl. 525—92 A **20 Claims**

1. A polycarbonate resin composition which comprises (A) a mixture of polycarbonate and a polycarbonate/polydimethylsiloxane copolymer comprising a polycarbonate block of the formula (a):

(a)



wherein R^1 and R^2 independently are hydrogen, an alkyl group having 1 to 4 carbon atoms,

R^3 and R^4 independently are a halogen, an alkyl group having 1 to 20 carbon atoms or an aryl group,

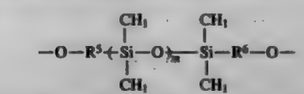
x is an integer of at most 5,

y is an integer of at most 4, and

n is an integer of 1 to 100, and

a polydimethylsiloxane block of the formula (b):

(b)



wherein R^5 and R^6 independently are a 3-(o-hydroxyphenyl)propyl group, a 2-(p-hydroxyphenyl)ethyl group or a group represented by the formula



and m is an integer of more than 100,

said copolymer mixture having 0.5 to 10% by weight of the polydimethylsiloxane block, 1.0% by weight or less of an n-hexane soluble matter content, and a viscosity average molecular weight of 10,000 to 50,000, and

(B) at least one selected from the group consisting of a thermoplastic resin and a rubber elastomer.

5,488,087

PREPARATION OF POLYDIORGANOSILOXANE AND SULFONATED POLYOLEFIN BLENDS

Israel Cabasso, Syracuse, N.Y., and Daniel Graiver, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich., and University of New York, Albany, N.Y.

Filed Jun. 16, 1994, Ser. No. 261,000

Int. Cl.[6] C08L *83/04*

U.S. Cl. 525—100 **16 Claims**

1. A method for preparing a blend comprising a polydiorganosiloxane and a sulfonated polyolefin, the method comprising:

(A) swelling a solid, sulfonated polyolefin with a liquid comprising a diorganosiloxane oligomer and

(B) maintaining the solid, sulfonated polyolefin at a temperature sufficient for sulfonic acid substituents of the solid, sulfonated polyolefin to catalyze the polymerization of the diorganosiloxane oligomers within the solid, sulfonated polyolefin;

where the diorganosiloxane oligomer contains from three to about 40 units of the formula R_2SiO, each R is independently selected from a group consisting of alkyl radicals comprising one to about 12 carbon atoms, alkenyl radicals comprising two to about 12 carbon atoms, aryls, and fluorine substituted alkyl radicals comprising one to about 12 carbon atoms.

5,488,088

PROCESS FOR THE PREPARATION OF COPOLYMERS OF POLYSUCCINIMIDE

Louis L. Wood, Rockville, and Gary J. Calton, Elkridge, both of Md., assignors to Bayer AG, Leverkusen, Germany

Division of Ser. No. 994,922, Dec. 22, 1994, Pat. No. 5,408,028. This application Apr. 13, 1995, Ser. No. 421,614

Int. Cl.[6] C08G *69/10;73/10*

U.S. Cl. 525—432 3 Claims

1. A process for the preparation of copolymers of polysuccinimide comprising reacting maleic acid, a polycarboxylic acid and ammonia at a temperature of 120°–350° C.

5,488,089

CURABLE RESIN COMPOSITION

Koji Yamada, and Motoshi Yabuta, both of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Oct. 17, 1994, Ser. No. 323,767

Claims priority, application Japan, Jan. 15, 1993, 5-280689; Dec. 17, 1993, 5-343264

Int. Cl.[6] C08F *283/02*

U.S. Cl. 525—463 12 Claims

1. A curable resin composition which comprises as main components

(A) a polymer having, in one molecule, epoxy group(s), and functional group(s) in each of which a carbonate ester group (—O—CO—O—) is directly bound to an aromatic ring, and

(B) a curing reaction catalyst.

5,488,090

Patent Not Issued For This Number

5,488,091

HIGH MOLECULAR WEIGHT POLYSTANNANES BY METAL-CATALYZED DEHYDROPOLYMERIZATION

T. Don Tilley, Rancho Penasquitos, Calif., and Toru Imori, Saitama, Japan, assignors to The Regents of the University of California, Oakland, Calif.

Filed Jun. 24, 1994, Ser. No. 265,447

Int. Cl.[6] C08G *79/00*

U.S. Cl. 528—9 33 Claims

1. A method for making a tin compound having at least one tin-tin bond comprising:

combining first and second reactants each containing a tin-hydrogen bond; and

dehydrogenating said reactants in the presence of a tin coupling agent to form hydrogen gas and combine said reactants to form said tin compound having said tin-tin bond.

5,488,092

LOW VOC, PRIMERLESS, POLYURETHANE COMPOSTIONS

Charles M. Kausch, Akron; Earl G. Melby, Uniontown, and Satish C. Sharma, Stow, all of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Filed Apr. 26, 1994, Ser. No. 233,870

Int. Cl.[6] C08G *18/10;18/30*

U.S. Cl. 528—60 16 Claims

1. A heat curable primerless one-part polyurethane composition, comprising:

a blocked polyurethane prepolymer, the precursor polyurethane of said blocked polyurethane prepolymer comprising the reaction product of from about 2 to about 8 isocyanate equivalents of a polyisocyanate for each hydroxyl equivalent of a liquid hydroxyl terminated polyol intermediate, said liquid hydroxyl terminated polyol intermediate comprising poly(1,2-butylene oxide), and

wherein said liquid hydroxyl terminated polyol intermediate has a number average molecular weight from about 400 to about 10,000.

a sufficient amount of a curing agent to cure said blocked polyurethane prepolymer upon heating, and

a sufficient amount of a low friction polymer, or a silicone oil, or mixtures thereof, to impart abrasion resistance to the polyurethane composition when cured,

wherein said polyurethane composition is free of the reaction product of one or more polyisocyanates with hydroxyl terminated hydrocarbon polymers of number average molecular weight of from about 500 to about 15,000 having at least 1.5 hydroxyl groups per molecule, said hydroxyl terminated hydrocarbon polymers consisting of hydrogenated diene polymers and polyolefins.

5,488,093

STIFF-CHAIN POLYESTERS AND A METHOD OF PREPARING THEM

Gerhard Kossmehl, and Bettina Lundt, both of Berlin, Germany, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Mar. 27, 1995, Ser. No. 411,307

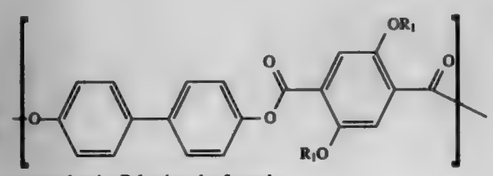
Claims priority, application Germany, Mar. 31, 1994, 44 11 361.7

Int. Cl.[6] C08G *63/18*

U.S. Cl. 528—193 18 Claims

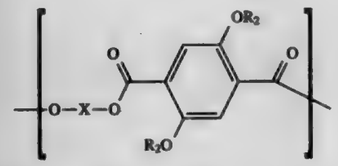
1. A polyester characterized by comprising the following arranged in any desired sequence: repeated units A having the formula:

A (I)



repeated units B having the formula:

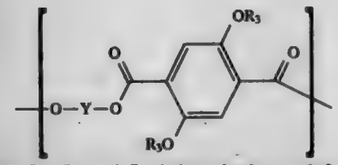
B (II)



and

repeated units C having the formula:

C (III)



in which R_1, R_2 and R_3 independently stand for n-pentyl or 3-methyl butyl, X and Y are the same or different and each stand for a divalent aromatic or alicyclic hydrocarbon group different from 4,4'-biphenyl, and the molar ratio of A: (B+C) is 1:99 to 99:1, the average sum of the repeating units A+B+C in the polymer molecule being in the range from 20 to 200 and one of two terminal repeated units on the oxy group bearing a hydrogen atom and the other of the two terminal repeated units on the carbonyl group bearing a hydroxyl group.

5,488,094

PROCESS FOR THE PREPARATION OF POLYCARBONATE

Tatsuya Kanno, and Yutaka Fududa, both of Hyogo, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 209,820, Mar. 11, 1994, Pat. No. 5,466,775, which is a division of Ser. No. 132,132, Oct. 5, 1993, abandoned. This application Dec. 9, 1994, Ser. No. 353,432

Claims priority, application Japan, Jan. 14, 1992, 4-275720; Dec. 24, 1992, 4-344054; Apr. 16, 1993, 5-89916; Apr. 16, 1993, 5-89918; Jul. 7, 1993, 5-167658; Jul. 7, 1993, 5-167659; Jul. 7, 1993, 5-167660

Int. Cl.[6] C08G *64/00*

U.S. Cl. 528—199 15 Claims

1. A process for preparing a polycarbonate consisting essentially of a step of melt-polycondensing a dihydric phenol with a carbonic diester not containing methyl phenyl carbonate in an amount greater than 50 ppm or tin ion in an amount exceeding 5 ppm, at a ratio of 1.01 to 1.5 mol of carbonic diester per mol of dihydric phenol and a temperature of from 100° to 300° C.

5,488,095

CONDENSATION PRODUCTS THAT CONTAIN N,O-ACETAL OR CARBOXAMIDE STRUCTURES, PREPARATION THEREOF, USE THEREOF, AND CONDENSATION PRODUCTS THAT CONTAIN ACETAL-LACTONE STRUCTURES

Dieter Boeckh, Limburgerhof; Angelika Funhof, Heidelberg; Matthias Kroner, Eisenberg; Heinrich Hartmann, Limburgerhof; Richard Baur, Mutterstadt; Alexander Kud, Eppelsheim, and Volker Schwendemann, Neustadt, all of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jan. 18, 1995, Ser. No. 367,230

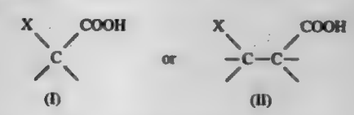
Claims priority, application Germany, Jul. 20, 1992, 42 23 807.2

Int. Cl.[6] C08G *63/06;12/00*

U.S. Cl. 528—361 7 Claims

1. A condensation product that contains an N,O-acetal or carboxamide structure, obtained by condensation of

(a) a compound that contains at least one unit of the structural element



(I) (II)

wherein X is OH or NHR, where R is C_{1-6} alkyl or $—(CH_2)_n—$ COOH wherein n is an integer of 1–4; with

(b) an aldehyde, ketone, aldehyde-carboxylic acid or keto-carboxylic acid to form an acetal-lactone; and subsequent cleavage of said acetal-lactone with

(c) an amine selected from the group consisting of an aminocarboxylic acid, a primary amine, a secondary amine, a polyethyleneimine and a mixture thereof.

5,488,096

COPOLYMERS OF CARBON MONOXIDE AND AN OLEFINICALLY UNSATURATED COMPOUND AND PROCESS FOR THE PREPARATION THEREOF

Eit Drent, and Dennis H. L. Pello, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 9, 1994, Ser. No. 258,406

Claims priority, application European Pat. Off., Jun. 29, 1993, 93201894

Int. Cl.[6] C08G *37/02*

U.S. Cl. 528—392 15 Claims

1. A polymer of carbon monoxide and one or more olefinically unsaturated compounds wherein the polymer chain is linear, and contains units originating from the olefinically unsaturated compounds and monomer units originating from the carbon monoxide in a molar ratio of from 52.5:47 to 80:20, having therein monomer units arranged in a random order, and wherein from about 50 to 95% of the bonds between monomer units comprise olefinically unsaturated monomers bonded to each other.

5,488,097

Patent Not Issued For This Number

5,488,098

MONOAZO COMPOUNDS HAVING VINYLSULFONE TYPE FIBER REACTIVE GROUP AND METHOD FOR DYEING OR PRINTING FIBER MATERIALS USING THE SAME

Masayuki Miki, Ashiya; Kingo Akahori, Toyonaka; Yutaka Kayane, Ikoma, and Takeshi Washimi, Toyonaka, all of, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

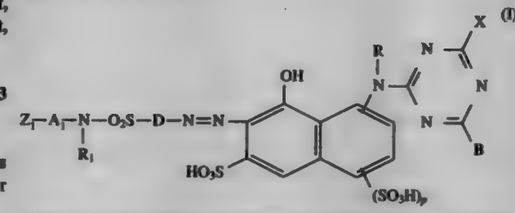
Continuation of Ser. No. 840,560, Feb. 25, 1992, abandoned. This application Feb. 7, 1994, Ser. No. 193,646

Claims priority, application Japan, Feb. 27, 1991, 3-033047; Feb. 28, 1991, 3-034245

Int. Cl.[6] C09B *62/51;62/085;* D06P *1/384*

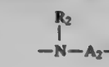
U.S. Cl. 534—605 11 Claims

1. A monoazo compound represented by the following formula (I) in the free acid form,

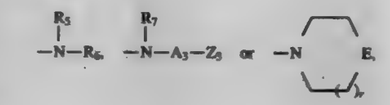


(I)

wherein D is phenylene unsubstituted or substituted once or twice by a substituent selected from the group consisting of methyl, ethyl, methoxy, ethoxy, chloro, bromo and sulfo and naphthylene unsubstituted or substituted by sulfo; X is an unsubstituted or substituted pyridinio group or



B is $—SR_4$,



in which R_4, R_5 and R_6 independently of one another are each hydrogen; alkyl having 1 to 4 carbon atoms unsubstituted or substituted once or twice by a substituent selected from the group consisting of alkoxy having 1 to 4 carbon atoms, sulfo, carboxy, hydroxy, chloro, phenyl, cyano and sulfato; phenyl unsubstituted or substituted once or twice by a substituent selected from the group consisting of alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, sulfo, carboxy, chloro and bromo; naphthyl unsubstituted or substituted once, twice or three times by a substituent selected from the group consisting of hydroxy, carboxy, sulfo, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms and chloro; benzyl unsubstituted or substituted once or twice by a substituent selected from the group consisting of alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, sulfo and chloro, r is 0 or 1, and E is O, SO, SO_2, CH_2 or NR_8, in which R_8 is hydrogen or C_1–C4 alkyl; R, R_1, R_2 and R_7 independently of one another are each hydrogen, an unsubstituted alkyl group or an alkyl group substituted by at least one substituent selected from the group consisting of hydroxy, cyano, alkoxy, halo, carbamoyl, carboxy, alkoxycarbonyl, alkylcarbonyloxy, sulfo and sulfamoyl; A_1, A_2 and A_3 independently of one another are each phenylene unsubstituted or substituted once or twice by a substituent selected from the group consisting of methyl, ethyl, methoxy, ethoxy, chloro, bromo and sulfo and naphthylene unsubstituted or substituted by sulfo; Z_1, Z_2 and Z_3 independently of one another are each $—SO_2CH=CH_2$ or $—SO_2CH_2CH_2Y$, in which Y is a group capable of being split by the action of an alkali; and p is 0 or 1.

5,488,099

MULTIFUNCTIONAL CHIMERIC NEUROTROPHIC FACTORS

Hakan B. Persson, deceased, Vreta Gard, late of S-14743 Tumba, and Carlos F. I. Moliner, Tangvagen 29, S-12638 Hagersten, both of, Sweden

Continuation-in-part of Ser. No. 847,369, Mar. 6, 1992, Pat. No. 5,349,055. This application Nov. 20, 1992, Ser. No. 979,630

Int. Cl.[6] C07K *14/475;14/48*

U.S. Cl. 530—399 **4 Claims**

1. A chimeric neurotrophin comprising a neurotrophin selected from the group consisting of BDNF and NT-3 wherein amino acids 3–9 of said selected neurotrophin are replaced with amino acids 3–9 of NGF.

5,488,100

FORMAZAN-BASED REACTIVE DYES WITH AT LEAST TWO REACTIVE GROUPS, AND AMINOPHENOLS

Claus Marschner, Speyer, and Manfred Patsch, Wachenheim, both of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

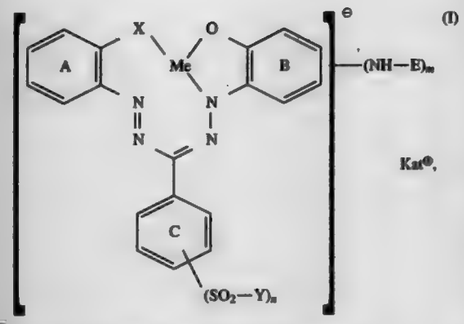
Division of Ser. No. 136,131, Oct. 15, 1993. This application Mar. 22, 1995, Ser. No. 407,955

Claims priority, application Germany, Jan. 16, 1992, 42 34 900.1

Int. Cl.[6] C09B *62/503;62/463;* **D06P** *1/384*

U.S. Cl. 534—618 **7 Claims**

1. A formazan dye of the formula I



(I)

where

m and n are each independently of one another 1 or 2,

$Kat^{\oplus}$ is the equivalent of a cation,

Me is copper or nickel,

X is oxygen or a radical of the formula CO—O or SO_2—O,

Y is vinyl or a radical of the formula C_2H_4—Q, wherein Q is a group that is detachable under alkaline reaction conditions,

E is a heterocyclic fiber-reactive radical selected from the group consisting of 1,3,5-triazine, quinoxaline, phthalazine, pyridiazone and 2-alkylsulfonylbenzothiazole or a fiber-reactive radical of the formula L-W, wherein L is a bridge member and W is a fiber-reactive radical of the aliphatic series,

the rings A and B are each substituted or unsubstituted and may be benzofused, and

the ring C is substituted or unsubstituted.

5,488,101

TRISAZO COMPOUNDS, METHOD FOR DYEING FIBER MATERIALS, PAPER OR LEATHER USING THE SAME AND INKS CONTAINING THE SAME

Kazuya Ogino, Minoo; Kingo Akahori, Toyonaka; Naoki Harada, Ibaraki; Yutaka Kayane, Ikoma; Hideo Kawashita, Minoo, and Mituhiro Ohta, Osaka, all of, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

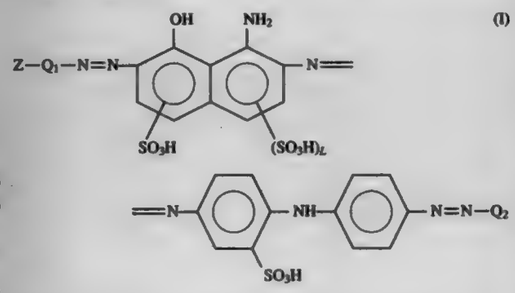
Filed Jun. 5, 1992, Ser. No. 894,561

Claims priority, application Japan, Jun. 10, 1991, 3-138010

Int. Cl.[6] C09B *35/46;62/513;* **C09D** *11/02;* **D06P** *1/384*

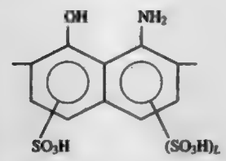
U.S. Cl. 534—680 **17 Claims**

1. A trisazo compound represented by the following formula (I) in the free acid form:



(I)

wherein Q_1 is an unsubstituted or substituted phenylene or naphthylene group, Q_2 is an unsubstituted or substituted phenyl or naphthyl group, Z is $—SO_2CH_2CH_2OH$ or $—SO_2CH_2CH_2SO_3H$ group, and L is 0 or 1, provided that when



Z is $—SO_2CH_2CH_2OH$ group, Q_2 is the naphthyl group as defined above.

5,488,102

POLYMERISABLE CARBOHYDRATE ESTERS, POLYMERS THEREFROM AND THEIR USE

Dirk Vetter, Freiburg, Germany, assignor to Ciba Geigy Corporation, Tarrytown, N.Y.

PCT No. PCT/EP93/03236, § 371 Date Jul. 26, 1994, § 102(e) Date Jul. 26, 1994, PCT Pub. No. WO94/12540, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 19, 1993, Ser. No. 256,828

Claims priority, application Switzerland, Nov. 30, 1992, 3655/92

Int. Cl.[6] C08B *3/00;5/00;7/00;13/00*

U.S. Cl. 536—32 **39 Claims**

1. A compound of formula I or Ia

$$R—Y—CO—R_3—CO—O—A \quad (I),$$

$$R—Y—CO—R_3—CO—O—CH_2—A_1 \quad (Ia),$$

wherein

R is a radically polymerizable hydrocarbon group,

R_3 is a direct bond, linear or branched C_1–C_{22}alkylene, C_3–C_8cycloalkylene or C_6–C_{14}arylene,

A is a radical, reduced by a hydroxy group in a 2- or 3- position, of a cyclic-oligomeric carbohydrate or of a derivative of such a carbohydrate,

A_1 is a radical, reduced by a hydroxymethyl group of a monomeric or linear or branched oligomeric carbohydrate or of a derivative of such a carbohydrate, and

Y is —O—, —NH—, or —N(C_1–C_6alkyl)—.

5,488,103

HYDROGEN SULFIDE CONVERTER

Larry W. Gatlin, Rte. 2, Box 181A, Hwy. 1301, Floresville, Tex. 78114

Continuation of Ser. No. 51,185, Apr. 22, 1993, abandoned, which is a continuation of Ser. No. 728,522, Jul. 11, 1991, abandoned. This application May 15, 1995, Ser. No. 441,354

Int. Cl.[6] C07H *5/04;1/00;* **C07C** *45/00*

U.S. Cl. 536—55.2 **15 Claims**

1. A composition useful for converting hydrogen sulfide and organic sulfides in aqueous or hydrocarbon-containing liquid or gaseous streams to water soluble, nontoxic polymers, the composition comprising the reaction product off

an effective amount of a first component comprising sterically hindered alkyl diamines selected from the group consisting of aminomethylcyclopentylamine; 1,2-cyclohexanediamine; 1,5 -pentanediamine, 2-methyl; 1,6-hexanediamine; 1H-azepine, hexahydro; 1,4-butanediamine; and mixtures thereof; and

an effective amount of a second component selected from the group consisting of monoaldehydes and dialdehydes having from 1 to 6 carbon atoms, and mixtures thereof.

5,488,104

PROCESS FOR COMMINUTING CELLULOSE ETHERS

Gary J. Schulz, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 30, 1994, Ser. No. 268,402

Int. Cl.[6] C08B *11/00;11/02;11/20;11/193*

U.S. Cl. 536—86 **20 Claims**

1. A process for comminuting a water-soluble cellulose ether which comprises:

(a) extruding an aqueous hydrated cellulose ether of water-soluble cellulose ether through a plurality of orifices of cross-sectional area of about 7.5×10^{-9} m^2 to about 1×10^{-6} m^2 to form an elongated cellulose ether extrudate wherein a multiplicity of fibers are lined up parallel to each other and then;

(b) cutting the elongated cellulose ether extrudate.

5,488,105

POLYSACCHARIDES OF HYMENAEA SEEDS

Yoichiro Uno, Kobe; Fumio Takeno, Osaka; Kazuhiko Yamatoya, Izumisano, and Keiji Obtsu, Nishinomiya, all of, Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP92/00502, § 371 Date Oct. 14, 1993, § 102(e) Date Oct. 14, 1993

PCT Filed Apr. 18, 1992, Ser. No. 137,008

Claims priority, application Japan, Apr. 19, 1991, 3-116834

Int. Cl.[6] C07H *1/08;* **A61K** *35/78;* **A23L** *3/00;* **A23B** *7/00*

U.S. Cl. 536—128 **2 Claims**

1. A food additive consisting essentially of a polysaccharide having:

(a) a molecular weight of 5,000 to 2,000,000;

(b) arabinose, xylose, glucose and galactose as constituent sugars;

(c) a main chain β-(1→4)-glucan;

(d) a viscosity of 110–120 cps when in a 0.65% aqueous solution and when said aqueous solution is heated to 75° C. for 15 minutes; and

(e) is extracted from the seeds of a Hymenaea plant from an extraction process comprised of the following steps:

(i) steeping the seeds in water and removing the testae;

(ii) crushing and drying the seeds to form a crude polysaccharide powder;

(iii) suspending the crude polysaccharide in an alkaline-alcohol solution to remove impurities and form a purified polysaccharide; and

(iv) drying and crushing the purified polysaccharide to form a purified polysaccharide powder.

5,488,106

PROCESS FOR PREPARING 6-[(ISOXAZOLINYL)METHYL]PENICILLANIC ACID 1,1-DIOXIDE COMPOUNDS

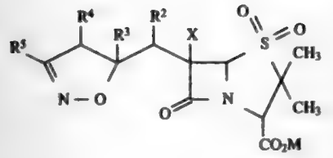
Carl Ziegler; Paul Fabio, both of Pearl River, N.Y.; Karen Bush, Kingston, N.J., and Deborah Steinberg, Pomona, N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Filed Feb. 7, 1994, Ser. No. 193,496

Int. Cl.[6] C07D *499/00;* **A61K** *31/43*

U.S. Cl. 540—310 **2 Claims**

1. A method of producing a compound of the formula:



wherein:

M is H, Na, Li or K;

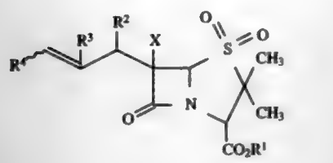
X is OH or Br;

R^2 is H; C_1–C_4 alkyl; C_1–C_4 substituted alkyl with substitution selected from F, Cl, Br, I, OH and NH_2; acetate; benzoate; F; Cl; Br or I;

R^3 is H; C_1–C_4 alkyl; C_1–C_4 substituted alkyl with substitution selected from F, Cl, Br, I, OH and NH_2; OH; NH_2; acetyloxy; benzoate; F, Cl; Br or I;

R^4 is H; C_1–C_4 alkyl; C_1–C_4 substituted alkyl with substitution selected from F, Cl, Br, I, OH and NH_2; acetate; benzoate; F; Cl; Br or I;

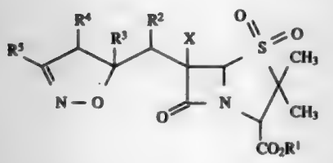
R^5 is H; C_1–C_4 alkyl; C_1–C_4 substituted alkyl with substitution selected from F, Cl, Br, I, OH and NH_2; 2- or 3-thienyl; F; Cl; Br; I; phenyl; substituted phenyl with substitution selected from C_1–C_4 alkyl, F, Cl, Br, I, OH and NH_2; which comprises reacting a compound of the formula:



wherein R^2, R^3, R^4 and X are as defined hereinabove and R^1 is a carboxylic acid protecting group; with a compound of the formula:

$$R^5—C{\equiv}N^+O^-,$$

wherein R^5 is as defined hereinabove; at a temperature of about −78° C. to about 25° C. for a time of about 0.5 to 5 hours, to obtain a compound of the formula:



wherein R^1, R^2, R^3, R^4, R^5, and X are as defined hereinabove; and deprotecting the carboxylic acid group to obtain the desired compound.

5,488,107

Patent Not Issued For This Number

5,488,108

TRIAZINE COMPOUNDS AS UV ABSORBERS FOR PHOTOGRAPHIC MATERIAL

David G. Leppard, Marly; Kurt Burdeska, Basel, and Mario Slongo, Taffers, all of, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

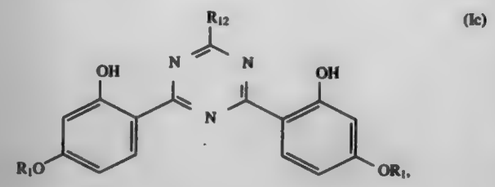
Division of Ser. No. 891,532, Jun. 1, 1992, Pat. No. 5,364,749. This application Aug. 11, 1994, Ser. No. 289,166

Claims priority, application Switzerland, Jun. 3, 1991, 1643/91; Sep. 4, 1991, 2601/91

Int. Cl.[6] C07D *251/24*

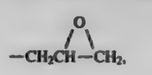
U.S. Cl. 544—216 3 Claims

1. A compound of the formula

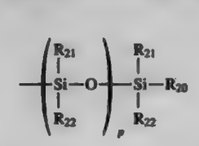


(Ic)

wherein the radicals R_1, independently of one another, are radicals of the formula $—CH_2—CH(OR_x)R_y$, $—CH_2CH(OR_x)CH_2OR_z$,



$—CH_2COR_y$ or $—CH_2COCH_2OR_z$, where R_x is $—COR_v$, $—COOR_w$ or $—SiR_vR_wR_v$, R_y is C_5–C_{18}alkyl or phenyl-C_1–C_4alkyl, R_z is C_1–C_{18}alkyl, C_2–C_{18}alkenyl, phenyl-C_1–C_4alkyl, $—COR_v$ or oxygen-interrupted C_1–C_{24}alkyl or C_2–C_{24}hydroxyalkyl, R_v is C_1–C_{18}alkyl, C_2–C_{18}alkenyl or phenyl, R_w is C_1–C_4alkyl and R_v, R_v and R_v, independently of one another, are C_1–C_6alkyl or phenyl; or the radicals R_1, independently of one another, are G-II groups, where II is a group of the formula

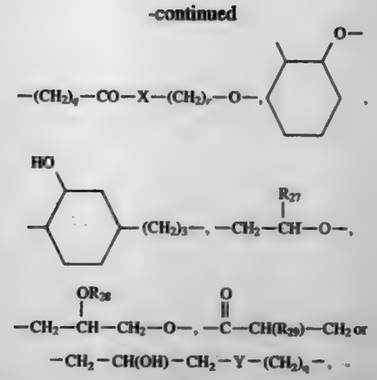


(II)

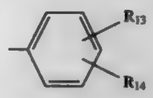
and G is a direct bond or a divalent group of one of the following formulae:

$$—(CH_2)_q—,\ —(CH_2)_q—O—,\ —(CH_2)_q—O—R_{26}—,$$
$$—(CH_2)_q—CO—X—(CH_2)_r—,$$

-continued



in which q and r, independently of one another, are 1–4 and p is 0–50, R_{26} C_1–C_{12}alkylene, cyclohexylene or phenylene, R_{27} is C_1–C_{12}alkyl, C_5–C_6cycloalkyl, phenyl, C_2–C_{13}alkoxymethyl, C_6–C_9cycloalkoxymethyl or phenoxymethyl, R_{28} is a group of the formula G-II, R_{29} is hydrogen or methyl, X is —O— or $—NR_{23}—$, in which R_{23} is hydrogen, C_1–C_{12}alkyl or a $(CH_2)_3$-G-II or $—(CH_2)_3$-O-G-II group, Y is —O— or —NH—, and R_{20}, R_{21} R_{22}, independently of one another, are C_1–C_{18}alkyl, cyclohexyl, phenyl or C_1–C_{18}alkoxy and R_{12} is alkyl having 1 to 12 carbon atoms or a group of the formula



or $—OR_{16}$, in which R_{13} and R_{14}, independently of one another, are hydrogen, C_1–C_4alkyl or chlorine, and R_{16} is alkyl having 1 to 8 carbon atoms or oxygen-interrupted alkyl having 3 to 12 carbon atoms,

with the proviso that R_1 is not $—CH_2CH(OR_x)R_y$ when R_y is $—CH_3$, R_x is $—COR_v$, R_v is C_1–C_6alkyl and R_{12} is chlorophenyl.

5,488,109

5-ALKOXY[1,2,4]TRIAZOLO[1,5-C]PYRIMIDINE-2(3H)—THIONE COMPOUNDS AND THEIR USE IN THE PREPARATION OF AND 2-CHLOROSULFONYL-5-ALKOXY[1,2,4]TRIAZOLO[1,5-C]-PYRIMIDINE COMPOUNDS

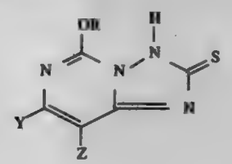
Thomas A. Olmstead, Midland; Michael A. Gouzalez, Sanford; Jon A. Orvik, Midland; Douglas L. Pearson, Midland; James W. Ringer, Midland; Dawn Shiang, Sanford; Jimmy J. Tai, and Anne P. Wallin, both of Midland, all of Mich., assignors to DowElanco, Indianapolis, Ind.

Filed Nov. 5, 1993, Ser. No. 148,790

Int. Cl.[6] C07D *487/04*

U.S. Cl. 544—263 36 Claims

1. A 5 -alkoxy[1,2,4]triazolo[1,5-c]pyrimidine-2(3H)-thione compound of the formula:



wherein

one of Y and Z represents F, Cl, Br, R', or OR' and the other represents H; and

R and R' each independently represents CH_3 or C_2H_5.

5,488,110

HIGHLY WATER SOLUBLE BIS-NAPHTHALIMIDES USEFUL AS ANTICANCER AGENTS

Jung-Hui Sun, Hockessin, Del., assignor to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Continuation-in-part of Ser. No. 885,045, Dec. 11, 1991, abandoned. This application Mar. 29, 1994, Ser. No. 219,596

Int. Cl.[6] C07D *221/14*; A61K *31/47*

U.S. Cl. 546—100 3 Claims

1. A compound which is 2,2'-[1,2-ethanediylbis(methylimino-2,1-ethanediyl)-] -bis[5-nitro-1H-benz[de]isoquinoline-1,3(2H)-dione], and pharmaceutically acceptable salts thereof.

2. A compound which is 2-[2-[N-methyl-N-[2-[[2-(5-nitro-1H-benz[de]isoquinoline-2(3H)-yl)ethyl]amino]ethyl]amino]ethyl]-5-nitro-1H-benz[de]isoquinoline-1,3(2H)-dione, and pharmaceutically acceptable salts thereof.

3. 2,2'-[1,2-ethanediylbis(imino-2,1-ethanediyl)]-bis[5-nitro-1H-benz[de]isoquinoline-1,3(2H)-dione], and pharmaceutically acceptable salts thereof.

5,488,111

8-SULFO-3-QUINOLINE CARBOXYLIC ACID COMPOUNDS

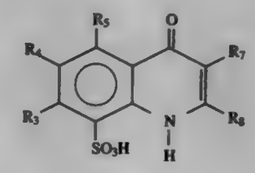
John C. Saukaitis, East Greenwich, R.I., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 288,374, Aug. 10, 1994, Pat. No. 5,466,808, which is a continuation-in-part of Ser. No. 180,593, Jan. 13, 1994, Pat. No. 5,430,152, which is a continuation-in-part of Ser. No. 17,583, Feb. 16, 1993, abandoned. This application May 22, 1995, Ser. No. 446,264

Int. Cl.[6] C07D *215/22*

U.S. Cl. 546—156 4 Claims

1. A compound of the formula:



wherein:

R_3 is hydrogen or chloro;

R_4 is hydrogen, chloro or fluoro;

R_5 is hydrogen, F, Cl, B, I, C_1—C_5 alkyl, a halogen substituted C_1 to C_5 alkyl, C_1 to C_5 alkoxy, NO_2—, R_nN— wherein R is independently hydrogen or C_1 to C_5 alkyl and n=2;

R_7 is carboxy; and

R_8 is hydrogen or C_1—C_5 alkyl.

5,488,112

DIMERIC BENZOTRIAZOLES AS UV ABSORBERS

Dieter Reinehr, Kandern, Germany; Jean-Pierre Bocher, Buschwiller, and André Schmitter, Hegenheim, both of, France, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

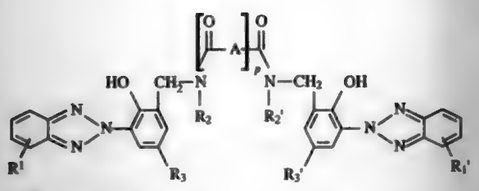
Filed Feb. 22, 1995, Ser. No. 392,638

Claims priority, application Switzerland, Feb. 24, 1994, 554/94

Int. Cl.[6] C07D *403/14*; *249/20*

U.S. Cl. 548—261 5 Claims

1. A compound of the formula I



(I)

in which p is 0 or 1;

A is C_1–C_{12}alkylene;

R_1 and R'_1, independently of one another, are hydrogen, halogen, C_1–C_{18}alkyl, C_1–C_{18}alkoxy or —CN;

R_2 and R'_2, independently of one another, are hydrogen or C_1–C_{18}alkyl or together are C_2–C_{12}alkylene or C_2–C_{12}hydroxyalkylene; and

R_3 and R'_3, independently of one another, are hydrogen, halogen, C_1–C_{18}alkyl or C_1–C_{18}alkoxy.

5,488,113

PROCESS FOR THE PREPARATION OF 1-HYDROXYINDOLE COMPOUNDS

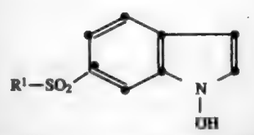
Raymond Fisher, Hyde, United Kingdom, assignor to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 242,821, May 16, 1994, Pat. No. 5,434,271. This application Jan. 27, 1995, Ser. No. 379,042

Int. Cl.[6] C07D *209/10*

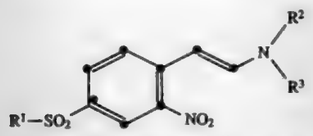
U.S. Cl. 548—508 **3 Claims**

1. Process for the preparation of a compound having the general formula



I

which comprises hydrogenating an enamine having the general formula



(II)

in the presence of tetrahydrofuran solvent and a catalytic amount of a palladium, platinum, rhodium or nickel hydrogenation catalyst under hydrogenation conditions of pressure and temperature, wherein R^1 is an organic radical and R^2 and R^3 each represent alkyl of up to 4 carbon atoms.

5,488,114

LABELLING COLOR, METHOD OF PREPARING THE SAME AND METHOD FOR DETECTING METHAMPHETAMINE WITH THE COLOR

Nobuyuki Shigetoh; Jipoel Miyazaki; Hiroshi Nakayama; Keiko Yugawa, and Tadayasu Mitsumatu, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

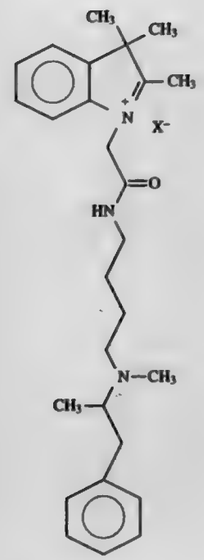
Division of Ser. No. 102,426, Aug. 5, 1993, Pat. No. 5,378,634. This application Sep. 16, 1994, Ser. No. 306,936

Claims priority, application Japan, Aug. 20, 1992, 4-221202; Nov. 16, 1992, 4-305219

Int. Cl.[6] C07D *209/04*

U.S. Cl. 548—510 **1 Claim**

1. A pentamethine intermediate which is a trimethyl indolenium salt of the following Formula:



wherein X is an anion.

5,488,115

ALCOHOLS

Kevin E. B. Parkes, Letchworth; Sally Redshaw, Stevenage, and Gareth J. Thomas, Welwyn, all of, Great Britain, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

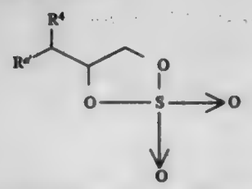
Division of Ser. No. 128,978, Sep. 29, 1993, which is a continuation of Ser. No. 615,204, Nov. 19, 1990, abandoned. This application May 12, 1995, Ser. No. 439,612

Claims priority, application United Kingdom, Dec. 11, 1989, 8927915

Int. Cl.[6] C07D *327/10*

U.S. Cl. 549—34 **2 Claims**

1. A compound of formula



V

wherein $R^{4'}$ is azido and R^4 is alkyl, cycloalkyl, cycloalkylalkyl, aryl or aralkyl.

5,488,116

TOTAL SYNTHESIS OF TAXOL AND ANALOGUES THEREOF

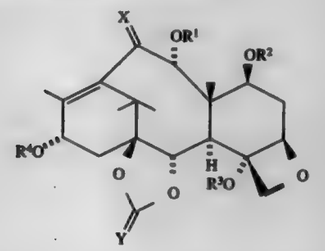
Samuel J. Danishefsky, New Haven, Conn.; William G. Bornmann, New York, N.Y.; Yves Quenean, Boulogne-Billancourt, France; Thomas V. Magee, Mystic, Conn.; Walter J. Krol, Newtown, Pa.; John J. Masters, and David K. Jung, both of New York, N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Continuation-in-part of Ser. No. 860,792, Mar. 30, 1992, Pat. No. 5,416,225. This application Nov. 2, 1993, Ser. No. 146,704

Int. Cl.[6] C07D *305/14;317/70*

U.S. Cl. 549—214 **2 Claims**

1. A compound having the structure:



wherein X is CH_2 or O; wherein Y is O; wherein R^1 is a linear or branched chain alkyl or arylalkyl group, or an aryl group; wherein R^2 is a trimethylsilyl, triethylsilyl, or t-butyldimethylsilyl group, or a linear or branched chain alkyl group; wherein R^3 is a linear or branched chain alkyl or alkylaryl group, or an aryl group; and wherein R^4 is H, a linear or branched chain alkyloxyalkyl group, a linear or branched chain alkyl or arylalkyl group, or an aryl group.

5,488,117

3-(ACYLOXYPHENYL)BENZOFURAN-2-ONE STABILISERS

Peter Nesvadba, Marly, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

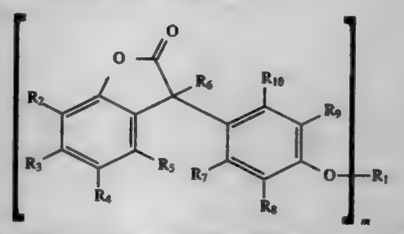
Division of Ser. No. 64,191, May 17, 1993, Pat. No. 5,369,159. This application Jul. 26, 1994, Ser. No. 280,420

Claims priority, application Switzerland, May 22, 1992, 1652/92

Int. Cl.[5] C07D *307/93;307/87;407/00*

U.S. Cl. 549—302 **5 Claims**

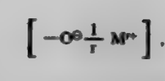
1. A compound of the formula (1)



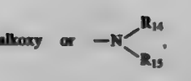
(1)

in which R_2, R_3, R_4 and R_5, independently of one another, are hydrogen, C_1–C_{25}alkyl, C_7–C_9phenylalkyl, unsubstituted or C_1–C_4alkyl-substituted phenyl, unsubstituted or C_1–C_4alkyl-substituted C_5–C_8cycloalkyl; C_1–C_{18}alkoxy, hydroxyl, C_1–C_{25}alkanoyloxy, C_3–C_{25}alkenoyloxy, C_3–C_{25}alkanoyloxy which is interrupted by oxygen, sulfur or >N—R_{16}; C_5–C_9-cycloalkylcarbonyloxy, benzoyloxy or C_1–C_{12}alkyl-substituted benzoyloxy, where R_{16} is hydrogen or C_1–C_8alkyl,

furthermore, the radicals R_2 and R_3 or the radicals R_4 and R_5 together with the carbon atoms to which they are bound form a phenyl ring, R_4 is additionally —$(CH_2)_n$—COR_{11}, in which n is 0, 1 or 2, R_{11} is hydroxyl,

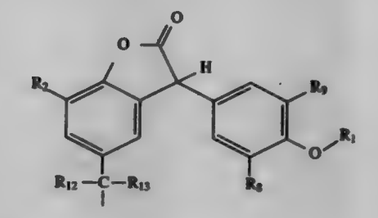


C_1–C_{18}alkoxy or



R_{14} and R_{15}, independently of one another, are hydrogen or C_1–C_{18}alkyl, M is an r-valent metal cation and r is 1,2 or 3,

R_7, R_8, R_9 and R_{10}, independently of one another, are hydrogen, C_1–C_4alkyl or C_1–C_4alkoxy, with the proviso that at least one of the radicals R_7, R_8, R_9 and R_{10} is hydrogen and, in the case where R_3, R_5, R_6, R_7 and R_{10} are hydrogen, R_4 is additionally a radical of the formula (2)

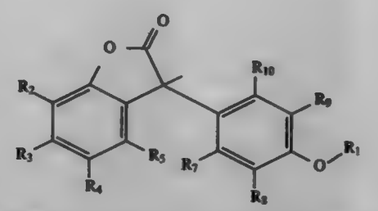


(2)

in which R_2, R_8 and R_9 are as defined above and R_1 is as defined below for when m=1, and R_{12} R_{13}, independently of one another, are hydrogen, C_1–C_{12}alkyl or phenyl,

m is 1 or 2, and,

in the case where m is 1, R_1 hydrogen, C_1–C_{25}alkanoyl, C_3–C_{25}alkenoyl, C_3–C_{25}alkanoyl which is interrupted by oxygen, sulfur or N—R_{16}; C_5–C_8cycloalkylcarbonyl, benzoyl or C_1–C_{12}alkyl-substituted benzoyl, R_{16} is as defined above and R_6 is hydrogen or a radical of the formula (3)



(3)

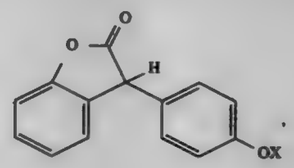
in which R_1, R_2, R_3, R_4, R_5, R_7, R_8, R_9 and R_{10} are as defined above, and,

in the case where m is 2, R_1



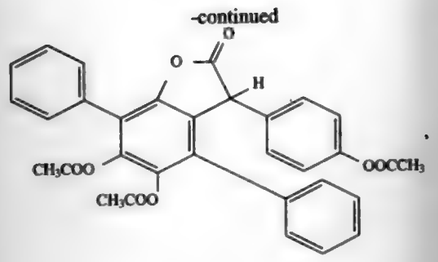
in which R_{17} is a direct bond, C_1–C_{18}alkylene, C_2–C_{18}alkylene which is interrupted by oxygen, sulfur or N—R_{16}; C_2–C_{18}alkenylene, C_2–C_{20}alkylidene, C_7–C_{20}phenylalkylidene, C_5–C_8cycloalkylene, C_7–C_9bicycloalkylene phenylene, R_{16} is as defined above and R_6 is hydrogen;

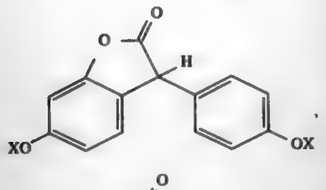
with the exclusion of the compounds of the formula (4) to (8)

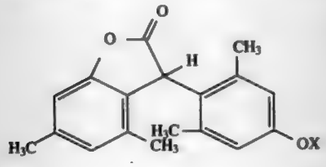


(4)

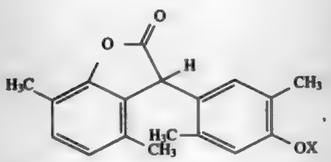
-continued







and



in which X is hydrogen or acetyl.

5,488,118

PROCESS FOR PRODUCING OPTICALLY ACTIVE ERYTHRO-3-AMINO-1,2-EPOXY COMPOUND

Taichi Koshigoe, Higashimatsuyama; Hitoshi Satoh, Saitama, and Kenichi Yamamoto, Yono, all of, Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1994, Ser. No. 345,074

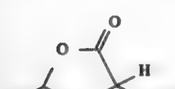
Claims priority, application Japan, Dec. 6, 1993, 5-339158

Int. Cl.[6] C07D *301/00;303/36;* **C07C** *229/34*

U.S. Cl. 549—518 **20 Claims**

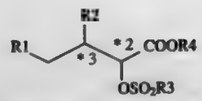
1. A process for producing an optically active erythro-3-amino-1,2-epoxy compound represented by the following general formula (3):

Formula (3)



wherein R1 represents a hydrocarbon residue having 3 to 12 carbon atoms; and R2 represents optionally protected amino, provided that when the carbon atom at the *3-position has an S configuration, then the carbon atom at the *2-position has an S configuration, and when the carbon atom at the *3-position has an R configuration, then the carbon atom at the *2-position has an R configuration, characterized by reducing an optically active threo-3-amino- 2-substituted butyrate derivative represented by the following general formula (1):

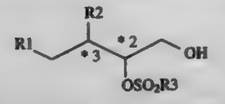
Formula (1)

(5) 

wherein R1 and R2 are each as defined above; R3 represents a hydrocarbon residue having 1 to 12 carbon atoms; and R4 represents an ester residue, provided that when the carbon atom at the *3-position has an S configuration, then the carbon atom at the *2-position has an R configuration, and when the carbon atom at the *3-position has an R configuration, then the carbon atom at the *2-position has an S configuration, and then epoxidizing the obtained optically active threo-3-amino-2-substituted-1-butanol derivative represented by the following general formula (2):

(6)

Formula (2)

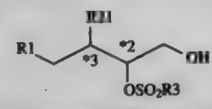


wherein R1, R2, *2 and *3 are each as defined above, in the presence of a base to thereby give the target compound of the

(7) general formula (3).

12. An optically active threo-3-amino-2-substituted- 1-butanol derivative represented by the following general formula (4):

Formula (4)



wherein R1 represents a hydrocarbon residue having 3 to 12

(8) carbon atoms; R21 represents an optionally protected amino except phthalimino; and R3 represents a hydrocarbon residue having 1 to 12 carbon atoms, provided that when the carbon atom at the *3-position has an S configuration, then the carbon atom at the *2-position has an R configuration, and when the carbon atom at the *3-position has an R configuration, then the carbon atom at the *2-position has an S configuration.

5,488,119

POLYMERISABLE PHOTOCHROMIC NAPHTHACENEDIONES, POLYMERS OF THESE MONOMERS, PROCESS FOR THEIR PREPARATION AND THE USE THEREOF

Evelyn Fischer-Reimann, Weil am Rhein, Germany, and Walter Fischer, Reinach, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Oct. 12, 1993, Ser. No. 135,775

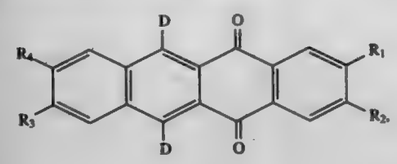
Claims priority, application Switzerland, Jan. 15, 1992, 3216/92

Int. Cl.[6] C07C *50/22;49/617*

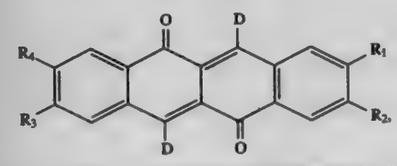
U.S. Cl. 552—201 **20 Claims**

1. A compound of formula I and/or II

(I)



(II)



wherein D is H or —OR R is unsubstituted C_6–C_{14}aryl or C_1–C_{14}aryl which is substituted by C_1–C_{12}alkyl, C_1–C_{12}alkoxy, C_1–C_{12}alkylthio, C_1–C_{12}alkylsulfinyl, C_1–C_{12}alkylsulfonyl, phenyl, benzyl, phenylsulfinyl, benzylsulfinyl, phenylsulfonyl, benzylsulfonyl, —CN, —CF_3, halogen, —SO_3R_7, —CO-R_7, —CO_2R_7, —$CON(R_8)_2$, —$N(R_8)_2$, or a group of formula III, with the proviso that both D are not H; R_1, R_2, R_3 and R_4 are each independently of the other H, C_1–C_{18}alkyl, C_1–C_{18}alkoxy, C_1–C_{18}alkylthio, C_1–C_{18}alkylsulfinyl, C_1–C_{18}alkylsulfonyl, phenyl, benzyl, phenylthio, benzylthio, phenylsulfinyl, benzylsulfinyl, phenylsulfonyl, benzylsulfonyl, —CN, —CF_3, halogen, —SO_3R_7, —CO_2R_7, —CO_2R_7, —$CON(R_8)_2$ —$N(R_8)_2$; or a group of formula III;

R_7 is H, C_1–C_{18}alkyl, cyclohexyl, cyclopentyl, phenyl, C_1–C_{12}alkylphenyl, benzyl or C_1–C_{12}alkylbenzyl; and

the R_8 substituents are each independently of the other H, C_1–C_{18}alkyl, cyclohexyl, cyclopentyl, phenyl, C_1–C_{12}alkylphenyl, benzyl, C_1–C_{12}alkylbenzyl, or one R_8 is H and the other R_8 is the —CO-R_9 group, wherein R_9 independently has the meaning of R_7, or both R_8 substituents, taken together, are tetramethylene, pentamethylene, 3-oxa-1,5-pentylene or the radical of formula —CH_2CH_2-$N(C_1$–C_6alkyl)CH_2CH_2—, with the proviso that one and only one group of formula III

$$E—CR_5=C(R_6)_2 \qquad \text{(III)}$$

is present wherein E is a direct bond or —X-C(O)— wherein X is a linking group, and R_5 and R_6 are each independently of the other H, halogen, C_1–C_{12}alkyl or C_6–C_{10}aryl.

5,488,120

1α-HYDROXY VITAMIN D_4 AND NOVEL INTERMEDIATES AND ANALOGUES

Joyce C. Knutson, Madison; Charles W. Bishop, Verona, both of Wis., and Robert M. Moriarty, Oak Park, Ill., assignors to Lunar Corporation, Madison, Wis.

Continuation of Ser. No. 991,493, Dec. 17, 1992, abandoned, which is a continuation of Ser. No. 800,045, Nov. 29, 1991, abandoned, which is a continuation of Ser. No. 586,854, Sep. 21, 1990, abandoned. This application Aug. 24, 1994, Ser. No. 296,084

Int. Cl.[6] C07C *401/00*

U.S. Cl. 552—653 **1 Claim**

1. 1α-hydroxy Vitamin D_4.

5,488,121

DI-GUERBET ESTERS

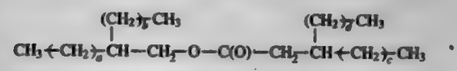
Anthony J. O'Lenick, Jr., Lilburn, Ga., assignor to Siltech Inc., Norcross, Ga.

Filed Oct. 31, 1994, Ser. No. 332,135

Int. Cl.[6] C07C *3/100*

U.S. Cl. 554—167 **10 Claims**

1. A di-guerbet ester conforming to the following structure:



wherein

a, b, c and d are independently integers ranging from 4 to 20.

5,488,112

ALKYL SUBSTITUTED METAL ALKYLALKOXYHYDROBORATE REDUCING AGENTS, AND PROCESSES FOR PRODUCTION AND USE OF THE SAME

Thomas C. Jackson, Seattle, Wash., assignor to Complex Chemicals, Corp., Seattle, Wash.

Filed Apr. 8, 1993, Ser. No. 45,466

Int. Cl.[6] C07F *5/02*

U.S. Cl. 556—8 **8 Claims**

1. A process for producing an alkyl substituted metal hydroborate reducing agent of the formula $X_iM[R_jR_kB(AR_lR_m)_{p+1-r}H_r]_{n-i}$ comprising: reacting an alkylborane having the formula $R_jR_kBH_p$ with greater than 10%, based on the molar content of the alkylborane, of a metal salt of the formula $X_iM(AR_lR_m)_{n-i}$, wherein:

X is a halogen, wherein the halogen is selected from the group consisting of fluorine, chlorine, bromine, iodine, and astatine;

M is a metal;

A is selected from the group consisting of oxygen, sulfur and nitrogen;

R_j, R_k, R_l, and R_m are each hydrocarbons selected from the group consisting of hydrogen, C1–C24 alkyl, aryl, arylalkyl, monocyclic, polycyclic, and heterocyclic radicals, wherein R_j and R_k may share a covalent bond, and R_l and R_m may share a covalent bond;

i equals an integer between 0 and 2;

n equals an integer between 1 and 4, provided that i and n are limited by the valence of the metal;

j and k each equal an integer between 0 and 1, provided that the sum of j and k is at least 1;

l and m each equal an integer between 0 and 1, provided that the sum of l and m is at least 1 when A is oxygen;

p equals 3 minus the sum of i and m; and

r equals an integer between 0 and 3.

2. A process for producing an alkyl substituted metal hydroborate reducing agent of the formula $X_iM[R_jR_kB(AR_lR_m)_{p+1-r}H_r]_{n-i}$ comprising: reacting an alkylborane having the formula $R_jR_kBH_p$ with greater than 10%, based on the molar content of the alkylborane, of a metal salt of the formula $X_iM(AR_lR_m)_{n-i}$, wherein:

X is a halogen;

M is a metal;

A is oxygen;

R_j, R_k, R_l, and R_m are each hydrocarbons selected from the group consisting of hydrogen, C1–C24 alkyl, aryl, arylalkyl, monocyclic, polycyclic, and heterocyclic radicals, wherein R_j and R_k may share a covalent bond, R_l and R_m may share a covalent bond;

i equals an integer between 0 and 2;

n equals an integer between 1 and 4, provided that i and n are limited by the valence of the metal;

j and k each equal an integer between 0 and 1, provided that the sum of j and k is at least 1;

l and m each equal an integer between 0 and 1, provided that the sum of l and m is at least 1 when A is oxygen;

p equals 3 minus the sum of l and m; and

r equals an integer between 0 and 3, wherein the process yields an alkyl substituted metal hydroborate reducing agent selected from the group consisting of lithium 9-boratabicyclo[3.3.1]-nonane, lithium 9,9-dimethoxy-9-boratabicyclo-[3.3.1]-nonane, dichloroaluminum disiamylborohydride, dichloroaluminum disiamyldi-isopropoxyborate, lithium methylborohydride, lithium methyltrimethoxyborate, sodium thexylmonoisopropoxyborohydride, sodium thexyldiisopropoxyborohydride, sodium thexyltriisopropoxyborohydride, sodium thexylborohydride, sodium diisopinocampheyldicycohexoxyborate, sodium diisopinocampheylborohydride, bromomagnesium phenylborohydride, bromomagnesium phenylmonothexoxy-borohydride, bromomagnesium phenyldithexoxyborohydride, bromomagnesium phenyltrithexoxyborate, zinc monoisopinocampheylborohydride, zinc

monoisopinocampheyltriethoxyborate, magnesium dicyclohexylborohydride, and magnesium dicyclohexyldinhexoxyborate.

5,488,123

POLYCONDENSATES CONTAINING POLYSILOXANE GROUPS

Fritz Engelhardt, Frankfurt am Main; Jürgen Kühlwein, Heusenstamm; Wilfried Schuler, Limburg; Ralf Zerrer, Alzenau, and Werner Antwerpen, Schwalbach/Ts., all of, Germany, assignors to Cassella AG, Frankfurt, Germany

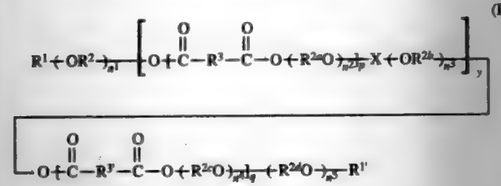
Filed Feb. 6, 1995, Ser. No. 384,404

Claims priority, application Germany, Feb. 11, 1994, 44 04 364.3

Int. Cl.[6] C07F *7/08*

U.S. Cl. 556—428 **15 Claims**

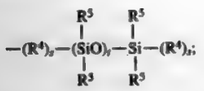
1. Polycondensates of the formula I



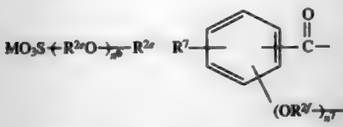
(I)

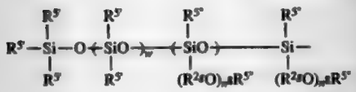
in which

X denotes



R^1 and $R^{1'}$ independently of one another denote hydrogen, (C_1–C_{22})-alkyl, (C_2–C_{22})-alkenyl, (C_3–C_8)cycloalkyl, (C_6–C_{14})-aryl, (C_6–C_{14})-aryl-(C_1–C_8)-alkyl, MO_3S—R^6—, MO_3S—,





R^2 to R^{2a} independently of one another denote (C_1–C_{30})-alkylene, (C_3–C_8)-cycloalkylene and/or (C_2–C_{30})-alkenylene, each of which can be substituted by a radical R^1;

R^3 and $R^{3'}$ independently of one another denote (C_1–C_{22})-alkylene, (C_3–C_8)-cycloalkylene, (C_2–C_{22})-alkylenylene and/or (C_6–C_{14})-arylene, where 0 to 30% of all the radicals R^3 and $R^{3'}$ carry an —SO_3M substituent;

R^4 denotes (C_1–C_{30})-alkylene, (C_3–C_8)-cycloalkylene or (C_2–C_{30})-alkenylene;

R^5, $R^{5'}$ and $R^{5''}$ independently of one another denote hydrogen, (C_1–C_{30})-alkyl, (C_3–C_8)-cycloalkyl or (C_2–C_{30})-alkenyl;

R^6 is defined as R^3, but independently of this;

R^7 denotes (C_1–C_{22})-alkyl, (C_3–C_8)-cycloalkyl or (C_2–C_{22})-alkenyl, where 0 to 30% of all the radicals R^7 carry an —SO_3M substituent;

M is hydrogen, an alkali metal, the ammonium group or a substituted ammonium group;

n^1 to n^8 independently of one another denote an integer from 0 to 40;

p and q independently of one another denote an integer from 2 to 20;

s denotes 0 or 1;

t denotes an integer from 0 to 80;

w denotes an integer from 0 to 80;

v denotes an integer from 0 to 80 and

y denotes an integer from 1 to 20.

5,488,124

ALKYLPOLYETHER SILOXANES

Vicky S. Cobb, Elsie; Beth I. Gutek, Freeland, and Gary E. Le Grow, Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Feb. 13, 1995, Ser. No. 387,515

Int. Cl.[6] C07F *7/08*

U.S. Cl. 556—445 **17 Claims**

1. Compounds selected from the group consisting of $RSi(OSiMe_2Q)_3$ and $(QMe_2SiO)_2$—Si(R)—O—Si(R)—$(OSiMe_2Q)_2$, wherein Me is methyl; R is a C_2 to C_{18} straight-chain or branched-chain alkyl substituent; and Q is a radical containing oxyethylene groups, oxypropylene groups, oxybutylene groups, or combinations of oxyethylene groups, oxypropylene groups, and oxybutylene groups.

5,488,125

METHOD FOR MANUFACTURING ORGANOSILANES HAVING SILANOL GROUPS

Naoki Omura, Akron, Ohio; Minoru Igarashi, Gunma, Japan; Yoshio Inoue, Gunma, Japan, and Masaharu Takahashi, Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1995, Ser. No. 392,116

Claims priority, application Japan, Feb. 23, 1994, 6-049820

Int. Cl.[6] C07F *7/08*

U.S. Cl. 556—463 **17 Claims**

1. A method for manufacturing organosilanes having silanol groups comprising: mixing an organoalkoxy silane, having at most a 20 ppm content of chlorine, expressed by the chemical formula (1) below:

$$Si(R^1)_m(R^2)_n(OR^3)_k \quad (1)$$

wherein each of R^1 and R^2 is independently either a substituted or unsubstituted monovalent hydrocarbon group; R^3 is an alkyl group of 1 to 4 carbon atoms; subscripts m and n are 0, 1, 2, or 3; k is either 1 or 2; and the sum of subscripts m+n+k=4, with ion-exchanged water having an electroconductivity of at least 10^{10}MΩ, then further adding a macro-porous cation-exchange resin, with a pore volume measured by the mercury injection method of at least 0.1 ml/g, to the mixture, stirring the mixture, removing the cation-exchange resin from the mixture and recovering an organosilane with at least one terminal silanol group.

5,488,126

BIFUNCTIONAL CHELATING AGENTS

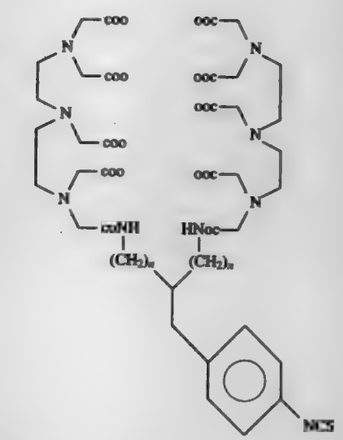
Ramaswamy Subramanian, Frederick, Md., and James L. Colony, Seattle, Wash., assignors to Akzo Nobel N.V., Arnhem, Netherlands

Division of Ser. No. 44,875, Apr. 8, 1993, Pat. No. 5,292,868, which is a continuation of Ser. No. 720,277, Jun. 24, 1991, abandoned, which is a continuation of Ser. No. 438,558, Nov. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 358,917, May 26, 1989, abandoned. This application Feb. 16, 1994, Ser. No. 197,086

Int. Cl.[6] C07C *331/28*

U.S. Cl. 558—17 **3 Claims**

1. A chelating agent having the formula:



wherein n is 1 or 2.

5,488,127

AMINOPHENOLS USEFUL AS INTERMEDIATES FOR FORMAZAN REACTIVE DYES

Claus Marschner, Speyer, and Manfred Patsch, Wachenheim, both of, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

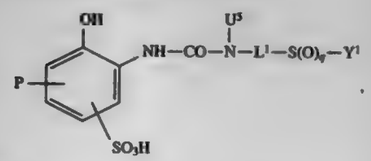
Division of Ser. No. 136,131, Oct. 15, 1993, Pat. No. 5,446,193. This application Mar. 22, 1995, Ser. No. 407,956

Claims priority, application Germany, Jan. 16, 1992, 42 34 900.1

Int. Cl.[6] C07C *317/28*

U.S. Cl. 558—25 **1 Claim**

1. An Aminophenol of the formula II



(II)

where

q is 0 or 2,

Y^1 is vinyl or a radical of the formula C_2H_4—Q^1, wherein Q^1 is a group that is detachable under alkaline reaction conditions or hydroxyl,

L^1 is C_2–C_6-alkylene, which may be substituted by hydroxyl, chlorine, cyano, carboxyl, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkanoyloxy or sulfato and may be interrupted by 1 or 2 oxygen atoms in ether function or by imino or C_1–C_4-alkylimino groups,

U^5 is hydrogen or C_1–C_6-alkyl, which may be substituted by hydroxyl, C_1–C_4-alkoxy, halogen, cyano, hydroxysulfonyl or a radical of the formula —SO_2—Y^1, wherein Y^1 is as defined above, or is substituted or unsubstituted phenyl, and

P is nitro or amino.

5,488,128

MONOMER FOR HIGH REFRACTIVE INDEX PLASTICS

Martina Beder, Griesheim, and Volker Kercher, Reinheim, both of, Germany, assignors to Roehm GmbH Chemische Fabrik, Darmstadt, Germany

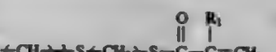
Filed Oct. 12, 1993, Ser. No. 134,738

Claims priority, application Germany, Jan. 10, 1992, 42 34 253.8

Int. Cl.[6] C07C *327/36*

U.S. Cl. 558—251 **6 Claims**

1. A thio(meth)acrylic acid bisester of the formula I



(I)

wherein R_1 represents hydrogen or methyl;

r represents the number 0 or 1; and

s, m, and n each independently represents an integer from 2 to 6, with the proviso that

when r=0, s+n>4; and

when r=1, s+m+n>6.

5,488,129

HYDROCYANATION OF OLEFINICALLY UNSATURATED NITRILES INTO DINITRILE COMPOUNDS

Marc Huser, Villeurbanne, and Robert Perron, Charly, both of, France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

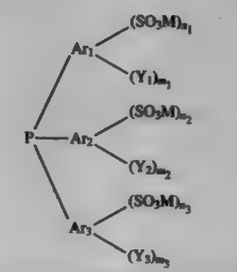
Filed Nov. 3, 1994, Ser. No. 335,349

Claims priority, application France, Nov. 3, 1993, 93 13306

Int. Cl.[6] C07C *253/10*

U.S. Cl. 558—338 **28 Claims**

1. A process for the hydrocyanation of an ethylenically unsaturated aliphatic mono-nitrile comprising contacting at least one such ethylenically unsaturated aliphatic mono-nitrile with hydrogen cyanide, in an aqueous reaction medium which comprises a catalytically effective amount of a three-component catalyst composition comprising (1) a transition metal; (2) a sulfonated phosphine said sulfonated phosphine having the general formula (I):



(I)

in which Ar_1, Ar_2 and Ar_3, which may be identical or different, are each aryl radicals; Y_1, Y_2 and Y_3, which may be identical or different, are each an alkyl radical having from 1 to 4 carbon atoms, an alkoxy radical having from 1 to 4 carbon atoms, a halogen atom, a CN group, an NO_2 group, an OH group, or a radial NR_1R_2 wherein R_1 and R_2, which may be identical or different, are each an alkyl radical having from 1 to 4 carbon atoms; M is an inorganic or organic cation selected such that the compound of formula (I) is water-soluble; m_1, m_2 and m_3 are integers, which may be identical or different, ranging from 0 to 5; and n_1, n_2 and n_3 are integers, which may be identical or different, ranging from 0 to 3, one or more of these being greater than or equal to 1; and (3) one or more Lewis acids, under reaction conditions to form a dinitrile through hydrocyanation of the ethylenically unsaturated aliphatic mono-nitrile, and forming a dinitrile through catalytic hydrocyanation of said ethylenically unsaturated aliphatic mono-nitrile.

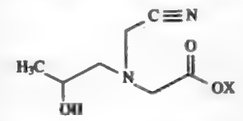
5,488,130

AMINO NITRILE INTERMEDIATE FOR THE PREPARATION OF 2-HYDROXYPROPYL IMINODIACETIC ACID

Phillip S. Athey; Druce K. Crump, both of Lake Jackson, and David A. Wilson, Richwood, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 31, 1995, Ser. No. 414,706
Int. Cl.[6] C07C *255/12;255/20;255/28*
U.S. Cl. 558—441 **1 Claim**

1. A compound represented by the following formula:



wherein X is hydrogen or an alkali or alkaline earth metal.

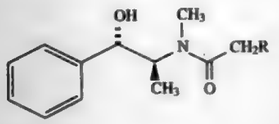
5,488,131

SYNTHESIS OF COMPOUNDS WITH PREDETERMINED CHIRALITY

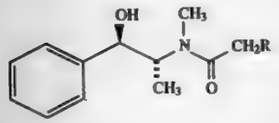
Andrew G. Myers, Pasadena, Calif., assignor to California Institute of Technology

Filed Mar. 23, 1994, Ser. No. 216,926
Int. Cl.[6] C07C *271/00;233/04*
U.S. Cl. 560—3 **3 Claims**

1. A compound of the formula



or



wherein R is a C_1–C_{14} straight or branched-chain alkyl group, a C_2–C_{14} straight or branched-chain alkenyl or alkynyl group, C_1–C_6 alkoxy, C_1–C_6 alkylthio, halo, hydroxy, heteroaryl, C_3–C_8 cycloalkyl, C_9–C_{16} bicycloalkyl, aryl or NR^1R^2 where R^1 and R^2 are each independently selected from the group consisting of hydrogen, C_1–C_6 straight or branched-chain alkyl, C_3–C_8 cycloalkyl, CO_2R^4 and $NHCO_2R^4$ where R^4 is C_1–C_{14} straight or branched-chain alkyl where the alkyl, alkenyl, alkynyl, alkoxy, alkylthio, heteroaryl, cycloalkyl, bicycloalkyl and aryl are optionally substituted with one or more groups independently selected from a C_1–C_{14} straight or branched-chain alkyl group, a C_2–C_{14} straight or branched-chain alkenyl or alkynyl group, halo, C_1–C_6 alkoxy, thio, C_1–C_6 alkylthio, NR^1R^2 where R^1 and R^2 are each independently selected from the group consisting of hydrogen, C_1–C_6 straight or branched-chain alkyl, C_3–C_8 cycloalkyl, CO_2R^6 and $NHCO_2R^4$ where R^4 is C_1–C_{14} straight or branched-chain alkyl, provided that R is not 1-(S)-methylpentyl or (R)-α-methylbenzyl.

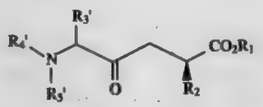
5,488,132

PROCESS FOR MAKING OPTICALLY ACTIVE ALPHA-AMINO KETONES AND SELECTED NOVEL OPTICALLY ACTIVE ALPHA-AMINO KETONES

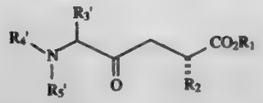
John J. Talley, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 898,853, Jun. 15, 1992, Pat. No. 5,364,961. This application Apr. 22, 1994, Ser. No. 232,786
Int. Cl.[6] C07C *229/00*
U.S. Cl. 560—39 **1 Claim**

1. A process comprising the treatment of a compound of the formula (III or III_1)



III



III_1

wherein

R_1 is hydrogen, alkyl lower cycloalkyl, or an aromatic group;

R_2 is CH_2R_9 wherein R_9 is

(a) hydrogen radical,

(b) alkyl of one to four carbon atoms optionally substituted with one or more substituents selected from the group consisting of hydroxyl, alkoxy of one to four carbon atoms, chloro and fluoro radicals,

(c) phenyl optionally substituted with one to three substituents selected from the group consisting of alkyl of one to four carbon atoms, fluoro, chloro, bromo, iodo, hydroxyl, nitro, alkoxy of one to four carbon atoms, and —CO—$N(R_7)_2$ radicals, wherein R_7 is hydrogen or alkyl radical of one to four carbon atoms,

(d) pyridyl, furyl, indolyl or benzisoxazolyl radical,

(e) cycloalkyl radical of one to seven ring members, or

(f) naphthyl radical;

R_3' is CHR_6R_8', wherein R_6 is

(1) hydrogen radical;

(2) alkyl radical of from one to six carbon atoms optionally substituted by one or two substituents selected from the group consisting of hydroxyl, chloro and fluoro radicals;

(3) cycloalkyl radical of from three to seven ring members;

(4) phenyl radical optionally substituted by one to three substituents selected from the group consisting of

(a) alkyl radical of from one to four carbon atoms,

(b) fluoro, chloro, bromo, and iodo radical,

(c) alkoxy radical of from one to three carbon atoms,

(d) nitro radical,

(e) amido radical,

(f) mono- and dialkyl substituted amido radical, wherein the alkyl group is from one to four carbon atoms, and

(g) hydroxy radical;

(5) tolyl radical;

(6) tolyl radical substituted by one to three substituents selected from the group consisting of

(a) alkyl radical of from one to four carbon atoms,

(b) fluoro, chloro, bromo, and iodo radical,

(c) alkoxy radical of from one to three carbon atoms,

(d) nitro radical,

(e) amido radical,

(f) mono- and dialkyl substituted amido radical, wherein the alkyl group is from one to four carbon atoms, and

(g) hydroxy radical;

(7) naphthyl radical optionally substituted by one to three substituents selected from the group consisting of

(a) alkyl radical of from one to four carbon atoms,

(b) fluoro, chloro, bromo, and iodo,

(c) alkoxy radical of from one to three carbon atoms,

(d) nitro radical,

(e) amido radical,

(f) mono- and dialkyl substituted amido radical, wherein the alkyl group is from one to four carbon atoms, and

(g) hydroxy radical; or

(8) indol-3-yl, indol-2-yl, or imidazol-4-yl, indol-3-ylmethyl, indol-2-ylmethyl or imidazol-4-ylmethyl radical;

(9) NHA wherein A is

(a) trityl radical,

(b) hydrogen radical,

(c) alkyl radical of from one to six carbon atoms,

(d) $R_{10}CO$ wherein R_{10} is (A) hydrogen radical, (B) alkyl radical of from one to six carbon atoms optionally substituted with hydroxyl, chloro, or fluoro radicals, (C) phenyl or naphthyl radical each of which is optionally substituted with one to three substituents selected from the group consisting of (i) alkyl radical of from one to three carbon atoms, (ii) fluoro, chloro, bromo and iodo radical, (iii) hydroxy radical, (iv) nitro radical, (v) alkoxy radical of from one to three carbon atoms, and (vi) $CON(R_{11})_2$ wherein each R_{11} is independently hydrogen or alkyl radical of from one to four carbon atoms, or (D) indolyl, pyridyl, furyl or benzisoxazolyl radical;

(e) phthaloyl radical, wherein the aromatic ring is optionally substituted by one to three substituents selected from the group consisting of (A) alkyl radical of from to three carbon atoms, (B) fluoro, chloro, bromo and iodo radical, (C) hydroxy radical, (D) nitro radical, (E) alkoxy radical of from one to three carbon atoms, and (F) $CON(R_{11})_2$ radical, wherein each R_{11} is independently hydrogen or alkyl radical of from one to four carbon atoms,

(f) $R_{12}(R_{13}R_{14}C)_mCO$ wherein m is one to three and R_{12}, R_{13} and R_{14} are each independently selected from the group consisting of (A) hydrogen radical, (B) chloro and fluoro radical, (C) alkyl radical of from one to three carbon atoms optionally substituted by chloro, fluoro, or hydroxy radicals (D) hydroxy radical, (E) phenyl or naphthyl radical each of which is optionally substituted by one to three substituents selected from the group consisting of (i) alkyl radical of from one to three carbon atoms, (ii) fluoro, chloro, bromo and iodo radical, (iii) hydroxy radical, (iv) nitro radical, (v) alkoxy radical of from one to three carbon atoms, and (vi) $CON(R_{11})_2$ wherein each R_{11} is independently hydrogen or alkyl radical of from one to four carbon atoms, (F) alkoxy radical of from one to three carbon atoms, (G) pyridyl, furyl, and benzisoxazolyl radical, and (H) R_{12}, R_{13} and R_{14} are independently joined to form a monocyclic, bicyclic, or tricycle ring system each ring of which is cycloalkyl of from three to six carbon atoms; except that only one of R_{12}, R_{13} and R_{14} can be hydroxy or alkoxy on the same carbon and are not hydroxy, chloro or fluoro when m is one;

(g) $R_{12}(R_{13}R_{14}C)_mW$ wherein m is one to three and W is OCO or SO_2 and R_{12}, R_{13} and R_{14} are each independently as defined above;

(h) $R_{20}W$ wherein R_{20} is pyridyl, furyl, indolyl or benzisoxazolyl radical;

(i) $R_{21}W$ wherein R_{21} is phenyl or naphthyl radical each of which is optionally substituted by one to three substituents selected from the group consisting of (i) alkyl radical of from one to three carbon atoms, (ii) fluoro, chloro, bromo and iodo radical, (iii) hydroxy radical, (iv) nitro radical, (v) alkoxy radical of from one to three carbon atoms, and (vi) $CON(R_{11})_2$ wherein each R_{11} is independently hydrogen or alkyl radical of from one to four carbon atoms;

(j) $R_{12}(R_{13}R_{14}C)_mP(O)(OR_{22})$ wherein R_{22} is alkyl radical of from one to four carbon atoms or phenyl;

(k) $R_{20}P(O)(OR_{22})$ wherein R_{20} and R_{22} are as defined above; or

(l) $R_{21}P(O)(OR_{22})$ wherein R_{21} and R_{22} are as defined above;

(10)$R_{12}(R_{13}R_{14}C)_mV$ wherein V is O or NH and R_{12}, R_{13} and R_{14} are each independently as defined above;

(11) $N(R_{11})_2$ wherein each R_{11} is independently as defined above;

(12) $NR_{15}R_{16}$ wherein R_{15} and R_{16} are joined to form azetidinyl, pyrrolidinyl , piperidinyl, or morpholinyl radical;

(13) $R_{17}OCH_{20}O$ wherein R_{17} is

(a) alkyl radical of from one to six carbon atoms,

(b) R_{21} wherein R_{21} is as defined above; or

(c) CH_2Q_1 wherein Q_1 is phenyl, naphthyl, pyridyl, furyl, indolyl or benzisoxazolyl radical;

(14) $R_{17}OCH_2CH_{20}OCH_2$ wherein R_{17} is as defined above;

(15) alkynyl radical of from two to six carbon atoms optionally substituted with R_{21} wherein R_{21} is as defined above; or

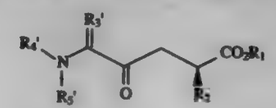
(16) alkenyl radical of from two to six carbon atoms optionally substituted with R_{21} wherein R_{21} is as defined above; and

R_8' is hydrogen, alkyl radical of from one to six carbon atoms or cycloalkyl radical of from one to seven ring members; and

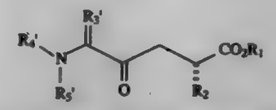
R_4' is alkoxycarbonyl, phenoxycarbonyl, naphthyloxycarbonyl, phenylalkoxycarbonyl, naphthylalkoxycarbonyl, alkanoyl, formyl, phenylalkanoyl, naphthylalkanoyl, benzoyl, or naphthoyl radical, wherein each alkyl radical, alone or in combination, is from one to ten carbon atoms and wherein each phenyl or naphthyl group is optionally substituted by alkyl radicals; and

R_5' is hydrogen;

with tertiary-butyl hypochlorite and 1,4-diazabicyclo[2.2.2] octane to obtain a compound of the formula (II or II_1)



II



II_1

wherein R_1, R_2, R_4' , and R_5' are as defined above and R_3 is CR_6R_8'.

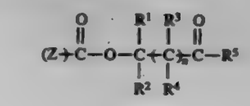
5,488,133

IODINATED AROYLOXY KETONES

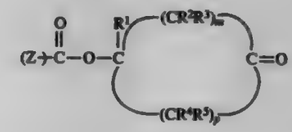
Baldev Singh, Collegeville; Edward R. Bacon, Audubon, and Shanghnessy Robinson, Gilbertsville, all of Pa., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 10, 1994, Ser. No. 209,181
Int. Cl.[6] C07C *229/56;* **A61K** *49/04*
U.S. Cl. 424—9.45 **8 Claims**

1. A compound having the structure



or



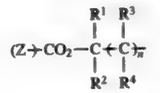
wherein (Z)COO is the residue of a triiodinated aromatic acid;

n is an integer from 0 to 20;

R^1, R^2, R^3 and R^4 are independently H, alkyl, fluoroalkyl, cycloalkyl, aryl, aralkyl, alkoxy, aryloxy, halogen, hydroxy,

acylamino, acetamidoalkyl, acetamidoaryl, —COO-alkyl, —COO-aryl, —COO-aralkyl, —CO-alkyl, —CO-aryl, or cyano;

R^5 is H, alkyl, fluoroalkyl, cycloalkyl, aryl,



aralkyl, alkoxyalkyl, or a group, wherein Z, R^1, R^2, R^3, R^4 and n are as defined above;

m is an integer from 0 to 10;

p is an integer from 0 to 10; and

m+p>1.

5,488,134

PREPARATION OF COMPOUNDS OF LIGNAN SERIES

Sachio Mori, Ashiya; Shozo Takechi, Higashiosaka, and Shiro Kida, Osaka, all of, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

PCT No. PCT/JP94/00612, § 371 Date Dec. 16, 1994, § 102(e) Date Dec. 16, 1994, PCT Pub. No. WO94/24087, PCT Pub. Date Oct. 27, 1994

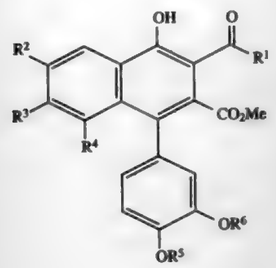
PCT Filed Apr. 12, 1994, Ser. No. 356,199

Claims priority, application Japan, Apr. 16, 1993, 5-089944

Int. Cl.[6] C07L *69/76*

U.S. Cl. 560—53 **9 Claims**

1. A process for preparing a compound represented by the formula (I)



(I)

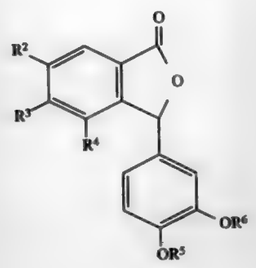
in which R^1 is alkyl, cycloalkyl, cycloalkyl-lower alkyl, aralkyl, or optionally-substituted aryl;

each of R^2 and R^3 is lower alkoxy or R^2 and R^3 are combined together to form an alkylenedioxy;

R^4 is lower alkoxy or hydrogen; and

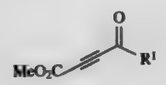
each of R^5 and R^6 is lower alkyl;

which process is characterized by that a lactone compound represented by the formula (II)



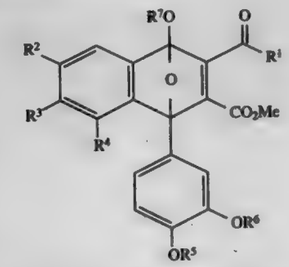
(II)

in which R^2, R^3, R^4, R^5, and R^6 are as defined above, is allowed to react with a compound of the formula: R^7Cl, wherein R^7 is tri (lower alkyl)silyl, in the presence of a base, then the resulting compound is subjected to addition reaction with an acetylenic compound of the formula (III)



(III)

in which R^1 is as defined above, to give a compound represented by the formula (IV)



(IV)

in which R^1, R^2, R^3, R^4, R^5, R^6 and R^7 are as defined above, which is then reduced.

5,488,135

BIS(PHENYL)ETHANE DERIVATIVES

Peter Nussbaumer, Maria Enzersdorf, and Anton Stutz, Vienna, both of, Austria, assignors to Sandoz Ltd., Switzerland

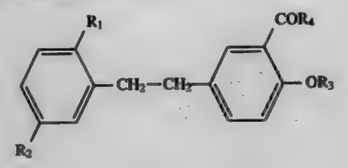
Filed Oct. 16, 1992, Ser. No. 962,370

Claims priority, application Austria, Jan. 16, 1991, 9121943

Int. Cl.[6] C07C *69/76;* **A01N** *37/10*

U.S. Cl. 560—266 **8 Claims**

1. A compound of formula I



I

wherein

R_1 and R_2 independently are alkoxy,

R_3 is hydrogen or acyl, and

R_4 is alkoxy,

in free form or, where such forms exist, in salt form.

5,488,136

PROCESS FOR THE RACEMIZATION OF NONRACEMIC 3-OXYOCYLOPENTANE- OR -HEXANECARBOXYLIC ACIDS OR THEIR ESTERS WITH C_1-C_6-ALCOHOLS

Rainer Sobotta, Ingelheim, Germany, assignor to Boehringer Ingelheim KG, Ingelheim am Rhein, Germany

PCT No. PCT/EP91/01434, § 371 Date Apr. 16, 1993, § 102(e) Date Apr. 16, 1993, PCT Pub. No. WO92/02483, PCT Pub. Date Feb. 29, 1992

PCT Filed Jul. 31, 1991, Ser. No. 971,775

Claims priority, application Germany, Aug. 4, 1990, 40 24 836.4

Int. Cl.[6] C07C *69/74*

U.S. Cl. 560—122 **8 Claims**

1. A process for the racemization of non-racemic 3-oxocyclopentanecarboxylic acid and 3-oxocyclohexanecarboxylic acid and their corresponding esters with C_1–C_6 alcohols which comprises:

a) esterifying starting acid material with an orthoformic acid ester of a C_1–C_6 alcohol in the presence of a catalytical amount of a strong acid;

b) ketalizing the resulting ester with an orthoformic acid ester of a C_1–C_6 alcohol in the presence of a strong acid;

c) racemizing the resulting ketal by means of a sodium or potassium alkoxide of a C_1–C_6 alcohol;

d) hydrolysing the resulting material by treatment with dilute acid to form the racemic acid; and

e) isolating the resulting racemic acid or the resulting racemic ester.

5,488,137

ACRYLIC ACID ESTER DERIVATIVE HAVING A TRIPHENYL AMINE SKELETON

Hiroshi Tamura, Susono; Toshio Fukagai; Naoshi Mishima, both of Numazu, and Masaomi Sasaki, Susono, all of, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

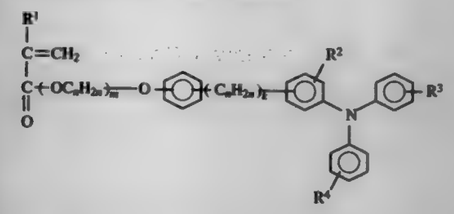
Division of Ser. No. 912,280, Jul. 13, 1992, Pat. No. 5,322,753. This application Mar. 22, 1994, Ser. No. 215,606

Claims priority, application Japan, Jul. 12, 1991, 3-198898

Int. Cl.[6] C07C *69/533*

U.S. Cl. 560—141 **2 Claims**

1. An acrylic acid ester of the formula



wherein R^1 represents hydrogen or a methyl group; R^2, R^3 and R^4 each represent hydrogen, an alkyl group having 1 to 4 carbon atoms, a benzyl group, a phenyl group or chlorine; n is an integer of 1 to 4; m is 0 or 1; and k is 0 or 1.

5,488,138

PROCESS FOR PRODUCING HIGHLY PURE CARBOXYLIC ACID PHENYL ESTERS

Itaru Nitta, Tsukuba, and Kuniaki Asai, Tondabayashi, both of, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

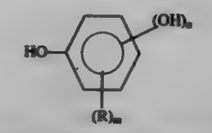
Continuation of Ser. No. 852,210, Jun. 4, 1992, abandoned. This application Aug. 22, 1994, Ser. No. 293,425

Claims priority, application Japan, Jan. 8, 1990, 2-271012

Int. Cl.[6] C07C *69/017*

U.S. Cl. 560—144 **6 Claims**

1. A process for producing a highly pure carboxylic acid phenyl ester by reacting an aromatic hydroxy compound having the formula (I),



(I)

wherein R is halogen, alkyl having 1–5 carbon atoms, or phenyl; and m and n are each an integer of 0–2, provided that when m is 2, two substituents represented by R may be different from each other,

with a carboxylic acid anhydride, characterized by conducting the reaction in the presence of 0.02 to 3 parts by weight of a tertiary amine per 100 parts by weight of the aromatic hydroxy compound.

5,488,139

PAPER OPACIFYING COMPOSITION

Louis R. Dragner, and Bernard F. North, both of Rock Hill, S.C., assignors to Sequa Chemicals, Inc., Chester, S.C.

Filed Jun. 24, 1994, Ser. No. 265,482

Int. Cl.[6] C07C *229/24;67/587*

U.S. Cl. 560—155 **26 Claims**

1. A composition for adding to a pulp slurry of cellulose fibers during a papermaking process for enhancing opaqueness in the paper produced therefrom comprising the reaction products formed from the reaction of a dimerized acid and an alkanol amine and wherein said composition further includes a surfactant wherein the dimerized acid is a dimer of a poly unsaturated acid selected from the group consisting of tall oil acid, soybean oil acid, palm oil acid, linolenic acid, eleostearic acid and mixtures thereof.

5,488,140

4-SUBSTITUTED 2-AMINOALK-3-ENOIC

Christof Angst, Möhlin, Switzerland; Hans Allgeier, Lörrach, Germany; Roland Heckendorn, Arlesheim, and Daniel Wallach, Basel, both of, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

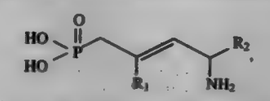
Continuation of Ser. No. 169,687, Dec. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 851,437, Mar. 16, 1992, Pat. No. 5,294,734, which is a continuation-in-part of Ser. No. 586,352, Sep. 21, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 483,628

Claims priority, application Switzerland, Sep. 26, 1989, 3479-89

Int. Cl.[6] C07C *229/30;* **C07F** *9/38;* **A61K** *31/66*

U.S. Cl. 560—170 **20 Claims**

1. A substituted 2-aminoalk-3-enoic acid derivative of formula I



(I)

wherein R_1 is an aliphatic hydrocarbon radical that is substituted by hydroxy, and R_2 is free or esterified carboxy, or a salt thereof.

5,488,141

REMOVAL OF CARBONYL IMPURITIES FROM αβ UNSATURATED CARBOXYLIC ACID ESTERS

William Bauer, Jr., Huntingdon Valley; Nelson I. Quiros, Telford, and Rita K. Upmacis, North Wales, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jun. 10, 1994, Ser. No. 258,011
Int. Cl.[6] C07C 69/74
U.S. Cl. 560—218 12 Claims

1. A process for removing carbonyl-containing impurities from an α,β-unsaturated carboxylic acid ester comprising the steps of:
a. effectively admixing the ester and an aqueous solution of a salt selected from bisulfites and dithionites; and
b. separating the ester from the aqueous solution.

5,488,142

FLUORINATION IN TUBULAR REACTOR SYSTEM

David J. Fall, Croix, Wis., and Miguel A. Guerra, Washington, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 4, 1993, Ser. No. 130,764
Int. Cl.[6] C07C 69/63
U.S. Cl. 560—227 13 Claims

1. A process for making fluorinated organic substances which comprises:
(A) providing a reaction system comprising a reactor consisting essentially of a tubular reactor and a means for conveying fluids through the reactor;
(B) adding to the reaction system upstream of the tubular reactor an organic feed which can be fluorinated;
(C) conveying through the tubular reactor a fluid stream comprising the organic feed and an inert liquid medium;
(D) introducing into the fluid stream of C fluorine gas, the ratio of organic feed to fluorine being sufficient to obtain a chemical reaction between them; and
(E) fluorinating the organic feed in turbulent flow conditions in which the Reynolds number of the fluid stream is at least 3,000 and for a time sufficient to yield fluorinated product.

5,488,143

PROCESSES FOR THE CARBONYLATION OF METHANOL TO FORM ACETIC ACID, METHYL ACETATE AND ACETIC ANHYDRIDE

Sung J. Uhm, Seoul; Sung H. Han, Seongnam-shi; Jun W. Oh, and Oh S. Joo, both of Seoul, all of, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Continuation-in-part of Ser. No. 175,577, Dec. 30, 1993, abandoned, which is a division of Ser. No. 81,107, Jun. 25, 1993, abandoned, and Ser. No. 174,263, Dec. 28, 1993. This application Jan. 19, 1994, Ser. No. 183,344
Claims priority, application Rep. of Korea, Jun. 30, 1992, 92-11524; Jan. 30, 1992, 92-20188; Dec. 23, 1992, 92-25281; Jul. 27, 1993, 92-14265
Int. Cl.[6] C07C 67/36;53/08;51/12
U.S. Cl. 560—232 52 Claims

1. A process for treating an industrial gas containing metallic carbonyl compounds which comprises contacting said industrial gas with iodine vapor to thereby convert the metallic carbonyl compounds to one or more than one metallic iodide.

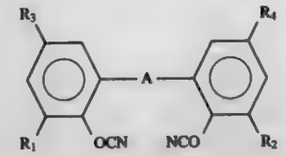
5,488,144

BIFUNCTIONAL AROMATIC CYANATES, PREPOLYMERS AND ELECTRICAL LAMINATES MADE THEREFROM

Hidenari Tsunemi, Adogawacho, and Toshinobu Nakata, Otsu, both of, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 996,754, Dec. 24, 1992, abandoned. This application Apr. 15, 1994, Ser. No. 228,170
Claims priority, application Japan, Dec. 27, 1991, 3-359938; Feb. 26, 1992, 4-075148
Int. Cl.[6] C07C 261/02
U.S. Cl. 560—301 4 Claims

1. A dicyanate ester of the formula:



wherein R_1, R_2, R_3 and R_4 are the same or different and each is hydrogen, alkyl, perfluoroalkyl, aryl or halogen;
and A is a methylene, mono- or dialkyl substituted methylene, or oxy, bridge,
with the proviso that when A is methylene, R_1, R_2, R_3 and R_4 are not simultaneously hydrogen.

5,488,145

2,4-DISULFONYL PHENYL BUTYL NITRONE, ITS SALTS, AND THEIR USE AS PHARMACEUTICAL FREE RADICAL TRAPS

John M. Carney, Lexington, Ky., assignor to Oklahoma Medical Research Foundation, Oklahoma City, Okla., and University of Kentucky Research Foundation, Lexington, Ky.

Filed Dec. 23, 1993, Ser. No. 173,579
Int. Cl.[6] A61K 31/185
U.S. Cl. 562—62 12 Claims

1. 2,4-disulfonyl α-phenyl tertiary butyl nitrone.

5,488,146

PROCESS FOR THE PREPARATION OF SULFO CARBOXYMETHYLOXYSUCCINIC ACID AND ITS SALTS

Eddie N. Gutierrez, Midland Park, and Shang-Ren Wu, Mahwah, both of N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Dec. 22, 1994, Ser. No. 362,357
Int. Cl.[6] C07C 303/32
U.S. Cl. 562—109 8 Claims

1. A process for preparing SCMOS acid comprising:
(i) reacting
(a) maleic anhydride with;
(b) SO_3 in a ratio of 1.1 to 1.3 moles of SO_3 to 1.0 moles of said maleic anhydride species to form a sulfo malic anhydride mixture;
maintaining the temperature of said mixture at C. to 80° C. and adding cold water and ice to a temperature of 25° C. to 30° C. to form sulfomaleic acid;
(iii) adding glycolic acid to said sulfomaleic acid to form an acid mixture;
(iv) adding an alkaline earth metal hydroxide or a mixture of alkaline earth metal and alkali metal hydroxides to a pH of about 11 and at a temperature of about 25° C to 50° C. to form sulfocarboxymethyloxy succinic acid (SCMOS) alkaline earth metal salts;

(v) precipitating out said salts and recovering said salts as the pH drops to 10.2–10.5;
(vi) washing said salts with water to solubilize impurities; and
(vii) converting said salts to sodium salts by the use of a material selected from the group consisting of ion exchange resin, sodium carbonate and mixtures thereof.

5,488,147

DIARYLIODONIUM FLUOROALKYL SULFONATE SALTS AND A METHOD OF MAKING

Dennis E. Vogel, and Kim M. Vogel, both of Lake Elmo, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jul. 21, 1994, Ser. No. 278,139
Int. Cl.[6] C07C 303/32
U.S. Cl. 562—113 16 Claims

1. A method of making a diaryliodonium fluoroalkyl sulfonate salt consisting essentially of the steps of:
(a) forming a mixture consisting essentially of
(i) an aromatic compound which is optionally substituted with one or more groups selected from the groups consisting of electron-neutral groups, electron-donating groups, and combinations thereof, wherein the aromatic compound has at least one pendant —H, and wherein said aromatic compound is unreactive with a fluoroalkyl sulfonic acid(s) of element (b);
(ii) an anhydride selected from the group compsisting of aliphatic anhydrides, alicyclic anhydrides, and mixtures thereof, wherein the anhydride is optionally substituted with one or more groups unreactive with the fluoroalkyl sulfonic acid(s) of element (b), and wherein the anhydride is derived from an acid having a pka of greater than about 4.2;
(iii) an alkali metal salt of iodic acid; and
(iv) optionally, a solvent which is unreactive with elements (i) to (iii);
(b) adding to the mixture, with agitation, the fluoroalkyl sulfonic acid of the formula $R^{11}—CF_2—SO_3H$, wherein R^{11} is selected from the group consisting of alkyl groups, chlorofluoroalkyl groups, chlorinated alkyl groups, and fluorinated alkyl groups, wherein the fluoroalkyl sulfonic acid is optionally dissolved in a solvent which is unreactive with the fluoroalkyl sulfonic acid, such that reaction occurs but at a rate and a temperature selected to prevent an uncontrolled exothermic reaction;
(c) allowing the reaction to continue, with agitation, at a temperature selected to prevent uncontrolled exothermic reaction, to form diaryliodonium fluoroalkyl sulfonate salt.

5,488,148

PROCESS FOR SULFONATING INTERNAL OLEFINS

Upali Weerasooriya, Austin; John Lin, Cedar Park; K. Lee Matheson, Austin; Donald T. Robertson, Austin; Janet L. Watson, Austin, and LeAnn M. Rowe, Pflugerville, all of Tex., assignors to Vista Chemical Company, Houston, Tex.

Filed Sep. 1, 1993, Ser. No. 115,313
Int. Cl.[6] C07C 309/20
U.S. Cl. 562—123 9 Claims

1. A process for sulfonating internal olefins comprising:
sulfonating a solution of internal olefins having the general formula:

$$R_1—CH=CH—R_2$$

wherein R_1 and R_2 may be the same or different and are each an alkyl group containing from about 1 to about 30 carbon atoms with a sulfonating agent in a hydrocarbon solvent that is substantially inert under sulfonation conditions and does not deleteriously affect sulfonation of said internal olefins to produce a reaction mixture containing intermediate sulfonated compounds, said internal olefins being present in said solvent in an amount of from about 5 to about 40% by weight;
neutralizing said intermediate sulfonated compounds in said reaction mixture under conditions to form neutralized sulfonated compounds;
hydrolyzing said neutralized sulfonated compounds in said reaction mixture under conditions to form a product mixture containing hydroxy alkane sulfonates and alkene sulfonates; and
recovering said product mixture from said solution.

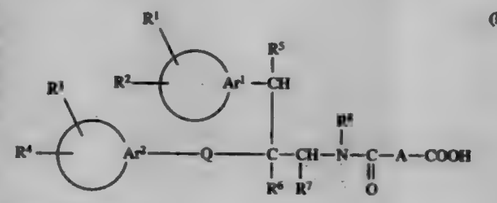
5,488,149

SUBSTITUTED AMIC ACID DERIVATIVES

Takashi Nomoto; Masahiro Hayashi; Jun Shibata; Yoshikazu Iwasawa; Morihiro Mitsuya; Yoshiaki Iida; Katsumasa Nonoshita, and Yasufumi Nagata, all of Tsukuba, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 193,850, Feb. 9, 1994, abandoned.
This application Jun. 6, 1995, Ser. No. 471,081
Claims priority, application Japan, Feb. 12, 1993, 5-047364; Sep. 24, 1993, 5-261713; Sep. 24, 1993, 5-261714
Int. Cl.[6] C07C 235/72
U.S. Cl. 562—449 19 Claims

1. A compound of the formula (I) or its pharmaceutically acceptable salt or ester:



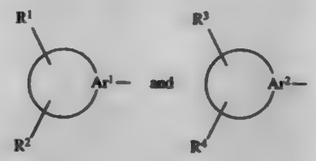
(I)

wherein each of



and

which are the same or different, is an aryl group or a heteroaromatic ring group; A is a C_{2-8} linear saturated or unsaturated aliphatic hydrocarbon group which may have substituent(s) selected from the group consisting of a lower alkyl group, a hydroxyl group, a lower alkoxy group, a carboxyl group, an aryl group and an aralkyl group; Q is a single bond or a group of the formula —CO—O—, —O—CO—, $—CH_2CH_2—$, —CH=CH—, $—OCH_2—$, $—SCH_2—$, $—CH_2O—$ or $—CH_2S—$; each of R^1, R^2, R^3 and R^4 which are the same or different, is a hydrogen atom, a halogen atom, a lower alkyl group, a hydroxyl group, a lower alkoxy group, or an aryl or heteroaromatic ring group which may have substituent(s) selected from the group consisting of a halogen atom, a lower alkyl group and a lower alkoxy group; each of R^5, R^6 and R^7 which are the same or different, is a hydrogen atom or a lower alkyl group; and R^8 is a hydrogen atom a lower alkyl group, a lower alkenyl group, a lower alkynyl group or an aralkyl group, provided that when Q is a single bond,



and

are not simultaneously 4-chlorophenyl groups.

5,488,150

CRYSTALS OF N-(TRANS-4-ISOPROPYLCYCLOHEXYCARBONYL)-D-PHENYLALANINE AND METHODS FOR PREPARING THEM

Michito Sumikawa; Yoshibito Koguchi; Takao Ohgane; Yasuo Irie, all of Kawasaki, and Satoji Takahashi, Yottukaichi, all of, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation of Ser. No. 921,224, Jul. 29, 1992, abandoned. This application Dec. 14, 1993, Ser. No. 166,144

Claims priority, application Japan, Jul. 30, 1991, 3-189696; Aug. 8, 1991, 3-199453

Int. Cl.[6] C07C *239/00*

U.S. Cl. 562—450 **13 Claims**

1. A method for the production of crystals of N-(trans-4-isopropylcyclohexylcarbonyl)-D-phenylalanine having at least one of the following properties:

(a) a melting point in the range of 136°–142° C.;

(b) a powder X-ray diffraction pattern with reflection maxima at 2θ of about 8.1°, 13.1°, 19.6° and 19.9°; comprising dissolving or suspending N-(trans-4-isopropylcyclohexylcarbonyl)-D-phenylalanine in a solvent in which it is completely or incompletely soluble at a temperature of at least 10° C. and up to the boiling point of the solvent and permitting said crystals to crystallize from or form in said solvent at a temperature of 10° C. or in excess thereof.

5,488,151

{(7S)-7-[(2R)-2-(3-CHLOROPHENYL)-2-HYDROXYETHYLAMINO)-2-HYDROXYETHYLAMINO]05,6,7,8-TETRAHYDRONAPHTHALEN-2-YLOXY} ACETIC ACID AND ITS PHARMACEUTICALLY ACCEPTABLE SALTS

Marco Baroni, Vanzago; Roberto Cecchi, Lodi, and Tiziano Crocl, Milan, all of, Italy, assignors to Sanofi, Paris, France

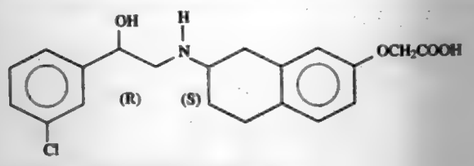
Filed May 31, 1994, Ser. No. 250,830

Claims priority, application European Pat. Off., May 28, 1993, 93401375

Int. Cl.[6] C07C *229/40*

U.S. Cl. 562—452 **11 Claims**

1. {(7S)-7-[(2R)-2-(3-Chlorophenyl)-2-hydroxyethylamino]-5,6,7,8-tetrahydronaphthalen-2-yloxy}acetic acid of formula (I):



(I)

and its pharmaceutically acceptable salts.

5,488,152

PROCESS FOR THE PREPARATION OF 4-ALKOXY-3,5,6-TRIFLUORO-PHTHALIC ACIDS AND 3-ALKOXY-2,4,5-TRIFLUOROBENZOIC ACIDS

Ralf Pfirmann, Griesheim, and Theodor Papenfuhs, Frankfurt, both of, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

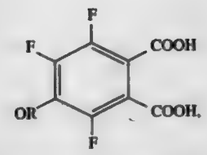
Filed Feb. 9, 1995, Ser. No. 386,292

Claims priority, application Germany, Feb. 12, 1994, 44 04 519.0

Int. Cl.[6] C07C *65/00*

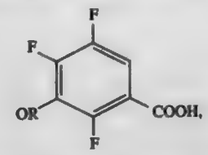
U.S. Cl. 562—474 **30 Claims**

1. A process for the preparation of a 4-alkoxy-3,5,6-trifluorophthalic acid of the formula



(1)

in which R is an alkyl radical having 1 to 5 carbon atoms which may be monofluorinated or polyfluorinated, a cycloalkyl radical having 3 to 5 carbon atoms in the ring which may be monofluorinated or polyfluorinated, or an araliphatic radical which may be monofluorinated or polyfluorinated,



(2)

which comprises reacting tetrafluorophthalic acid or tetrafluorophthalic anhydride with an alcohol of the formula ROH in which R is as defined above and with a water-soluble base in water at elevated temperature, and isolating the 4-alkoxy-3,5,6-trifluorophthalic acid formed.

5,488,153

PROCESS FOR THE CARBONYLATION OF METHANOL OR A REACTIVE DERIVATIVE THEREOF

Michael J. Baker, Twickenham; Jonathan R. Dilworth, Colchester; John G. Sunley, Cottingham, and Nigel Wheatley, Colchester, all of, England, assignors to BP Chemicals Limited, London, England

Filed Jun. 21, 1994, Ser. No. 262,955

Claims priority, application United Kingdom, Jun. 30, 1993, 9313514; Apr. 14, 1994, 9407363

Int. Cl.[6] C07C *51/12;67/36;* C07F *15/00;* B01J *31/00*

U.S. Cl. 562—519 **15 Claims**

1. A process for the liquid phase carbonylation of methanol or a reactive derivative thereof which process comprises contacting carbon monoxide with a liquid reaction composition comprising methanol or a reactive derivative thereof, a halogen promoter and a rhodium catalyst system comprising a rhodium component and a bidentate phosphorus-sulphur ligand, the ligand comprising a phosphorus dative center linked to a sulphur dative or anionic center by a substantially unreactive backbone structure comprising two connecting carbon atoms or a connecting carbon and a connecting phosphorus atom.

11. A process for the production of acetic acid which process comprises contacting carbon monoxide with a liquid reaction composition comprising methanol or a reactive derivative thereof, a halogen promoter and a rhodium component and a bidentate phosphorus-sulphur ligand, the ligand comprising a phosphorus dative center linked to a sulphur dative or anionic center by a substantially unreactive backbone structure comprising two connecting carbon atoms or a connecting carbon and a connecting phosphorus atom.

5,488,154

PROCESS FOR THE PREPARATION OF ALKOXYALKANOIC ACIDS

Herbert E. Fried, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 13, 1994, Ser. No. 322,642

Int. Cl.[6] C07C *51/27*

U.S. Cl. 562—540 **19 Claims**

1. A process for the preparation of an alkoxyalkanoic acid of the formula $RO(CH_2CHR'O)_nCH_2CO_2H$ wherein R is an alkyl group

of from about 1 to about 1000 carbon atoms, R' is hydrogen or alkyl or mixtures thereof (on the individual molecule) and n is an integer of from about 1 to about 1000, which comprises reacting the corresponding alkoxyalkanol with a stable free radical nitroxide having the formula:



wherein (1) (a) each of R_1, R_2, R_3 and R_4 is an alkyl, aryl or substituted alkyl group having 1 to about 15 carbon atoms, and (b) R_5 and R_6 (i) each is an alkyl group having 1 to about 15 carbon atoms provided that R_1–R_6 are not all alkyl groups, or a substituted alkyl group having 1 to about 15 carbon atoms wherein the substituent is hydrogen, cyano, —$CONH_2$, —$OCOCH_3$, $OCOC_2H_5$, carbonyl, alkenyl wherein the double bond is not conjugated with the nitroxide moiety, or —COOR wherein R of the —COOR group is alkyl or aryl, or (ii) together form part of a ring that contains at least 3 carbon atoms and up to two heteroatoms of O or N, (2) the



moiety and the



moiety individually are aryl, or (3) the



moiety and the



moiety together form a bicyclic ring with the proviso that the group directly adjacent to the N—O moiety is a bridgehead C—H, or a fully alkylated carbon, in the presence of a chromium (II) salt, a nitrite compound, a highly polar solvent, an oxidant and water, at a temperature in the range of from about 0° C. to about 100° C. and thereafter separating out the alkoxyalkanoic acid.

5,488,155

PREPARATION OF L-ASPARTIC ACID

Daniel Brun, Charly; Pierre-Yves Lahary, Lyons, and Jean-Francois Thierry, Francheville, all of, France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Continuation of Ser. No. 120,751, Sep. 15, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 456,375

Claims priority, application France, Sep. 15, 1992, 92 10954

Int. Cl.[6] C07C *227/00*

U.S. Cl. 562—554 **8 Claims**

1. A process for the preparation of L-aspartic acid, comprising treating ammonium aspartate with an effective,, aspartic acid-precipitating amount of fumaric acid in a heterogeneous reaction medium having solid fumaric acid present in the reaction medium at the outset of the treatment and at a temperature up to 100° C.

5,488,156

PREPARATION OF A HEAT-STABLE LACTIC ACID

Santi Kulprathipanja, Inverness; Gregory F. Maher, Aurora, and Thomas W. Lorsbach, La Grange, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed Dec. 23, 1994, Ser. No. 363,662

Int. Cl.[6] C07C *51/42*

U.S. Cl. 562—580 **12 Claims**

1. A process for obtaining heat stable lactic acid from a lactic acid-producing fermentation broth comprising:

a. filtering and ion-exchanging said fermentation broth;

b. heating said filtered, ion-exchanged fermentation broth at a pH less than 3 or greater than 8.5 to a temperature between about 180° and 230° C. for a time sufficient to carbonize any dissolved carbohydrates to afford a heat-treated broth;

c. filtering the heat-treated broth and subjecting the filtrate therefrom to ion-exchange and decolorization to afford an aqueous solution of heat-stable lactic acid; and

d. isolating the heat-stable lactic acid from said aqueous solution.

5,488,157

β-AMINOALKYL AND β-N-PEPTIDYLAMINOALKYL BORONIC ACIDS

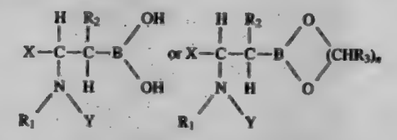
David W. Bjorkquist, Wyoming, and Rajan K. Panandiker, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 931,809, Aug. 14, 1992, Pat. No. 5,442,100. This application May 4, 1995, Ser. No. 434,901

Int. Cl.[6] C07F *5/02*

U.S. Cl. 562—7 **10 Claims**

1. A composition which has serine protease reversible inhibition properties and which is useful for incorporation into enzyme-containing liquid detergent products, which composition comprises a serine protease and an effective amount of a protease inhibitor compound having the formula:



where R_1, R_2, and R_3 are independently hydrogen or C_1–C_6 alkyl; n is 2–4; X is phenyl or C_1–C_6 alkyl; and Y is selected from the group consisting of

(a) hydrogen;

(b) an amine protecting group selected from the group consisting of

i) t-butoxycarbonyl,

ii) methoxycarbonyl,

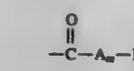
iii) benzyloxycarbonyl, and



wherein R_5 is phenyl or C_1–C_4 alkyl; and

iv)

(c)



wherein A is independently selected from naturally occurring amino acids; m is 1 to 3; and P is selected from the protecting groups of Component (b).

5,488,158

PRODUCTION IN CONTINUOUS OF OXAMIDE FOR THE CATALYTIC OXIDATION OF HCN

Giuseppe Messina, Alghero; Giovanni M. Sechi, Ozieri, and Silvio De Michell, Milanese, all of, Italy, assignors to Enichem S.p.A., Milan, Italy

Continuation of Ser. No. 62,535, May 18, 1993, abandoned. This application Feb. 10, 1995, Ser. No. 386,599

Claims priority, application Italy, May 22, 1992, MI92A0248

Int. Cl.[6] C07C *231/00*

U.S. Cl. 564—125 **12 Claims**

1. A continuous process for the preparation of oxamide, by the oxidation of HCN with oxygen or air in the presence of an acid aqueous solution of copper nitrate, $Cu(NO_3)_2$, according to the following reaction:

$$2HCN+\tfrac{1}{2}O_2+H_2O \rightarrow H_2N—OC—CO—NH_2,$$

comprising:

(i) feeding continuously into a vertical tubular reactor, said vertical tubular reactor having a bottom and a head:

(a) an aqueous catalyst solution comprising acetic acid, nitric acid and copper nitrate $Cu(NO_3)_2$,

(b) hydrogen cyanide, HCN; and

(c) oxygen or air, to obtain a suspension comprising oxamide;

(ii) continuously removing the suspension of oxamide from the bottom of the tubular reactor and the quantity of oxygen in excess of the stoichiometric quantity from the head of the reactor together with any other gases produced in secondary reactions,

(iii) continuously separating said oxamide from a part of the suspension removed from the bottom of the reactor; and

(iv) recycling the catalyst solution, comprising copper nitrate, acetic acid and nitric acid, after adding the stoichiometric quantity of water consumed in the synthesis reaction, wherein:

(a) said suspension of oxamide is continuously removed from the lowest point of the reactor;

(b) a quantity of the suspension of oxamide removed from the lowest point of the reactor is recycled, re-introducing it into the highest part of the reactor, after cooling it in a heat exchanger at a temperature which is sufficient to maintain the established reaction temperature inside the reactor;

(c) an amount of the suspension of oxamide continuously removed from the lowest point of the reactor is not recycled but is rapidly treated in a battery with two cyclones placed in series, to separate the oxamide from the majority of the acid catalyst solution;

(d) oxygen or air in an excess of 40 to 60% of the stoichiometric quantity is fed to the base of the reactor,

(e) HCN under pressure and in a liquid phase is fed into the highest part of the tubular reactor, at a height which is never less than ⅘ of the height of the aerated liquid inside the column and never more than ⅘ of the same height; and

(f) the aqueous catalytic solution, before being charged into the reactor, is added to the recycled suspension of oxamide, and is then introduced with the same suspension into the upper part of the tubular reactor, and at a height which is never lower than that at which said HCN is introduced.

5,488,159

PROCESS FOR PRODUCING METHOXYIMINOACETAMIDE COMPOUNDS AND INTERMEDIATES

Akira Takase, Otsu; Hiroyuki Kai, Koriyama; Kuniyoshi Nishida, Koga; Shoji Shinomoto, Matsubara, and Masahiko Nagai, Amagasaki, all of, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

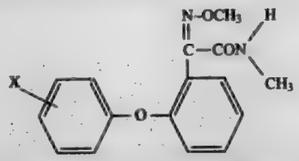
Division of Ser. No. 120,392, Sep. 14, 1993, Pat. No. 5,380,913, which is a continuation-in-part of Ser. No. 964,842, Oct. 21, 1992, abandoned, which is a division of Ser. No. 733,303, Jul. 22, 1991, Pat. No. 5,183,921. This application Aug. 25, 1994, Ser. No. 295,458

Claims priority, application Japan, Jul. 26, 1990, 2-200696

Int. Cl.[6] C07C *239/20*

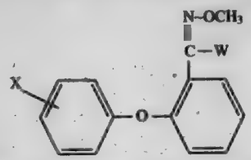
U.S. Cl. 564—164 **7 Claims**

1. A process for producing a compound of the formula [I]



[I]

wherein X is hydrogen, lower alkyl, lower alkoxy or halogen; and ~ is any configuration of E-isomer, Z-isomer or a mixture thereof, which comprises reacting a compound of the formula [II]:



[II]

wherein X and ~ are as defined above with methylamine in the presence of methanol.

5,488,160

AMIDINO COMPOUNDS, THEIR MANUFACTURE AND METHOD OF TREATMENT

Michael M. Morrissey, Danville, Calif., assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

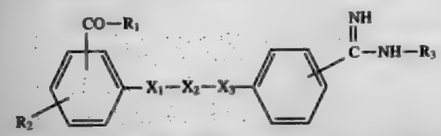
Continuation-in-part of Ser. No. 978,004, Nov. 18, 1992, which is a continuation-in-part of Ser. No. 960,211, Oct. 13, 1992, abandoned, which is a continuation of Ser. No. 714,108, Jun. 11, 1991, abandoned. This application Dec. 9, 1993, Ser. No. 164,176

The portion of the term of this patent subsequent to Sep. 19, 2012, has been disclaimed.

Int. Cl.[6] C07C *233/65;235/44;237/30;* A61K *31/165*

U.S. Cl. 564—165 **16 Claims**

1. A compound of the formula



(I)

wherein the C(=NH)—NHR_3 group may be in tautomeric or isomeric form,

R_1 is amino which is mono- or disubstituted by a substituent selected from an aliphatic hydrocarbon radical, an araliphatic hydrocarbon radical, an aromatic radical, and a cycloaliphatic hydrocarbon radical, or is amino which is disubstituted by a divalent aliphatic hydrocarbon radical or a said radical interrupted by oxygen;

R_2 is hydrogen, halogen, trifluoromethyl, an aliphatic hydrocarbon radical, or is hydroxy which is etherified by an aliphatic alcohol, araliphatic alcohol, or aromatic alcohol or which is esterified by an aliphatic or araliphatic carboxylic acid; or R_2 is hydroxy;

R_3 is hydrogen or an acyl radical which is derived from an organic carbonic acid, an organic carboxylic acid, a sulfonic acid, or a carbamic acid;

X_1 and X_3, independently of one another, are oxygen (—O—) or sulphur (—S—); and

X_2 is a divalent aliphatic hydrocarbon radical which may be interrupted by an aromatic radical;

wherein the phenyl rings of formula I may be, independently of one another, further substituted by one or more substituents selected from halogen, trifluoromethyl, an aliphatic hydrocarbon radical, hydroxy, and hydroxy which is etherified by an aliphatic alcohol or which is esterified by an aliphatic or araliphatic carboxylic acid;

wherein aryl in the above definitions may be, independently of one another, further substituted by one or more substituents selected from halogen, trifluoromethyl, an aliphatic hydrocarbon radical, hydroxy, and hydroxy which is etherified by an aliphatic alcohol or which is esterified by an aliphatic or araliphatic carboxylic acid;

wherein a cycloaliphatic hydrocarbon radical may be substituted by an aliphatic radical; or a pharmaceutically acceptable salt thereof.

5,488,161

OXIMATION PROCESS

Leroy O. Krbechek, Santa Rosa, Calif., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 854,522, Mar. 20, 1992, Pat. No. 5,300,689, and a continuation-in-part of Ser. No. 87,828, Jul. 7, 1993, Pat. No. 5,349,088. This application Mar. 30, 1994, Ser. No. 220,130

The portion of the term of this patent subsequent to Sep. 20, 2011, has been disclaimed.

Int. Cl.[6] C07C *249/08*

U.S. Cl. 564—259 **21 Claims**

1. In a method of preparing aromatic oximes by reaction of a aromatic ketone or aldehyde carbonyl compound with hydroxylamine the improvement which comprises conducting the reaction in the presence of a catalytic amount of a phase transfer catalyst compound comprising a mixture of an alkyl phenol and an organic carboxylic acid, and an alkali metal or alkaline earth metal hydroxide, carbonate or bicarbonate, the catalyst mixture being present in an amount effective to act as a phase transfer catalyst.

5,488,162

PROCESS FOR PREPARING O-ALKYLHYDROXYLAMINE SALTS WITHOUT THE ISOLATION OF INTERMEDIATES

Paul R. Buckland, 1 Lawton Dr., Rochester, N.Y. 14534

Filed Jan. 3, 1994, Ser. No. 176,985

Int. Cl.[6] C07C *209/00*

U.S. Cl. 564—301 **2 Claims**

2. A process for preparing O-alkylhydroxylamines without isolation of intermediates, said process comprising the following steps:

(I) neutralizing an aqueous solution of a hydroxylamine salt to produce hydroxylamine;

(II) reacting an aliphatic ketone having 3 to 10 carbon atoms with hydroxylamine formed in Step (I) to produce a two phase system comprising an upper layer of ketoxime and a lower layer of inorganic salt solution;

(III) adding an alkylating agent to the ketoxime formed in Step (II) to form a alkylating agent/ketoxime mixture;

(IV) removing the inorganic salt solution;

(V) adding the alkylating agent/ketoxime mixture to a suspension of an alkali metal hydride in a water miscible amide solvent to form an O-alkylketoxime;

(VI) adding water and an alkane solvent to the O-alkylketoxime formed in Step (V) to give a two phase mixture comprising an upper layer of the O-alkylketoxime in the alkane solvent and a lower aqueous layer containing the amide solvent;

(VII) removing the aqueous solution;

(VIII) adding a concentrated mineral acid to the alkane solution formed in Step (VI) to give a two phase mixture comprising a lower layer of the O-alkylketoxime in mineral acid and an upper layer of the alkane solvent solution;

(IX) removing the alkane solution;

(X) heating the mineral acid solution of O-alkylketoxime formed in Step (VIII) and removing by distillation the ketone formed, to give an aqueous solution of O-alkylhydroxylamine.

5,488,163

PROCESS FOR THE PRODUCTION OF 4, 4'-(PHENYLENE-DIISOPROPYL)-BIS(2, 6-DIALKYLANILINES)

Peter Hardt, Visp; Ulrich Daum, Hohtetten, and Theodor Völker, Marly, all of, Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

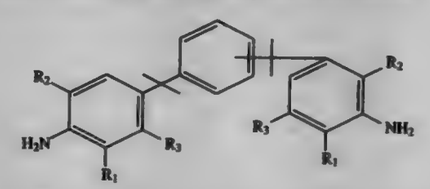
Division of Ser. No. 137,972, Oct. 19, 1993, abandoned. This application Dec. 20, 1994, Ser. No. 360,882

Claims priority, application Switzerland, Jan. 21, 1992, 3264/92

Int. Cl.[6] C07C *209/68*

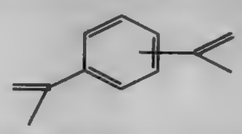
U.S. Cl. 564—315 **4 Claims**

1. Process for the production of 4,4'-(phenylenediisopropyl)bis(2,6-dialkylanilines) of formula:



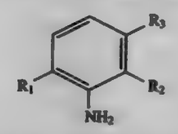
I

wherein R_1 and R_2 are the same or different and each is a (C_1–C_4)-alkyl group, R_3 is a hydrogen or halogen atom, and the central phenylene function is substituted in the 1,3 or 1,4 position, comprising reacting a diisopropenyl benzene of formula:



II

wherein the isopropenyl groups on the aromatic nucleus are in the 1,4 or 1,3 position to one another, in the presence of aluminum chloride as a catalyst is reacted with an aniline of formula:



III

wherein R_1, R_2 and R_3 have the above-mentioned meanings, the reaction is carried out with exclusion of water at a temperature between 120° and 200° C., the aluminum chloride is used in an amount of 0.02 to 0.3 mol, relative to 1 mol of the aniline of formula III, and the diisopropenyl benzene of formula II, relative to the aniline of formula III, is used in an excess of 10 to 100 percent.

5,488,164

ELECTROPHOTOGRAPHIC PHOTOCONDUCTORS AND TERTIARY AMINE COMPOUNDS HAVING CONDENSED POLYCYCLIC GROUP FOR USE IN THE SAME

Tomoyuki Shimada, Numazu; Masaomi Sasaki, Susono, and Tamotsu Aruga, Mishima, all of, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

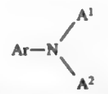
Division of Ser. No. 15,339, Feb. 9, 1993, Pat. No. 5,382,692, which is a division of Ser. No. 490,468, Mar. 8, 1990, Pat. No. 5,219,692. This application Aug. 15, 1994, Ser. No. 290,094

Claims priority, application Japan, Mar. 29, 1989, 1-077839; Jun. 14, 1989, 1-151605; Jul. 25, 1989, 1-191640

Int. Cl.[6] C07C *211/54*; G03G *5/14*

U.S. Cl. 564—426 **17 Claims**

1. A charge transporting material comprising a tertiary amine compound having a condensed polycyclic hydrocarbon group of formula (I):



(I)

wherein A^1 or A^2 is a linear or branched alkyl group having 1 to 12 carbon atoms, which may have a substituent and Ar represents an unsubstituted or substituted condensed polycyclic hydrocarbon group selected from the group consisting of a pentalenyl group, an indenyl group, an azulenyl group, a heptalenyl group, a biphenylenyl group, an as-indacenyl group, an s-indacenyl group, an acenaphthenyl group, a pleiadenyl group, an acenaphthenyl group, a phenalenyl group, a phenanthryl group, a 1-anthryl group, a 2-anthryl group, a 2-naphthyl group, a fluoranthenyl group, an acephenanthrylenyl group, an aceanthrylenyl group, a triphenylenyl group, a chrysenyl group and a naphthacenyl group wherein said substituent on Ar is selected from the group consisting of halogen, a cyano group, a nitro group, a linear or branched C_{1-12} alkyl group which may have a substituent selected from a fluorine group, a hydroxyl group, a cyano group, a C_{1-4} alkoxy or a phenyl group which may be substituted by halogen, a C_{1-14} alkyl group or a C_{1-4} alkoxy group.

5,488,165

PROCESS FOR THE PRODUCTION OF METHYL AMINES

Graham J. Hutchin, Osmotherley, England; Themistocles Themistocleous, Bryanston, and Richard G. Copperthwaite, Johannesburg, both of, South Africa, assignors to Zeofuels Research (Proprietary) Limited, Transvaal, South Africa

Division of Ser. No. 683,412, Apr. 10, 1991, abandoned. This application Dec. 30, 1991, Ser. No. 815,626

Claims priority, application South Africa, Apr. 10, 1990, 90/2721

Int. Cl.[6] C07C *209/16*

U.S. Cl. 564—479 **6 Claims**

1. A process for the conversion of methanol and ammonia to give a product containing at least 70% by weight of monomethylamine in a reactor in the presence of a modified natural clinoptilolite catalyst produced by treating a natural clinoptilolite with either (1) a mineral acid at a concentration of greater than 1M for a treatment time of longer than 24 hours and at a treatment temperature of from 40° C. to 80° C. inclusive; or (2) an alkali at a concentration greater than 0.5M for a treatment time of longer than 1 hour at a treatment temperature of from 30° C. to 80° C. inclusive, washing the resulting product, and treating the resulting product with a mineral acid at a concentration of greater than 0.1M for a treatment time of longer than 1 hour and at a treatment temperature of from 40° C. to 80° C. inclusive which includes the steps of:

(a) feeding the methanol and ammonia to the reactor containing the catalyst;

(b) converting the methanol and the ammonia in the reactor in the presence of the catalyst at a temperature of from 300° C. to 500° C. inclusive, and at a pressure of from 1 to 20 atmospheres inclusive; and

(c) recovering the product.

5,488,166

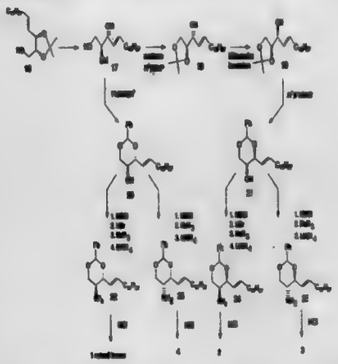
SYNTHESIS OF SPHINGOSINES

Tomas Hudlicky, Blacksburg, Va., assignor to Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.

Division of Ser. No. 137,346, Oct. 18, 1993, abandoned. This application Jan. 23, 1995, Ser. No. 377,095

Int. Cl.[6] C07C *209/42*

U.S. Cl. 564—487 **4 Claims**



1. A method for the synthesis of D-erythro-sphingosine comprising:

a. treating (+)-cis-2,3-dihydroxy-1-chlorocyclohexa- 4,6-diene with p-toluenesulfonic acid in the presence of 2,2-dimethoxypropane to form (2R,3S)-2,3-O-isopropylidene-1-chlorocyclohexa-4,6-diene;

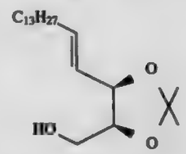
b. subjecting said (2R,3S)-2,3-O-isopropylidene-1-chlorocyclohexa-4,6-diene to ozonolysis followed by cyclization of the product of said ozonolysis to form 2,3-O-isopropylidene-D-erythruronolactone;

c. reducing said 2,3-O-isopropylidene-D-erythruronolactone in the presence of sodium borohydride to produce sodium (S,S)-2,3-O-isopropylidene-4-hydroxybutanoate;

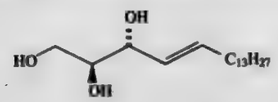
d. cyclizing said sodium (S,S)-2,3-O-isoproplidene-4-hydroxybutanoate in the presence of iodomethane to form 2,3-O-isopropylidene-L-erythrono-1,4-lactone;

e. treating said 2,3-O-isopropylidene-L-erythrono-1,4-lactone with DIBAL solution to form 2,3-O-isopropylidene-L-erythrose;

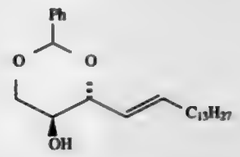
f. subjecting said 2,3-O-isopropylidene-L-erythrose to Wittig olefination to obtain a product with the following formula:



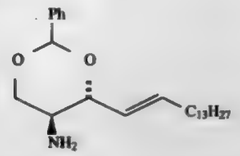
g. subjecting the product of step f to catalytic deprotection with H^+ to obtain a product with the following formula:



h. reacting the product of step g with benzaldehyde in the presence of H^+ to obtain a product with the following formula:



i. reacting the product of step h with methanesulfonyl chloride, lithium bromide, sodium azide and lithium aluminum hydride in a four step sequential reaction to obtain a product with the following formula:



j. reacting the product of step i with hydrogen chloride to obtain D-erythro-sphingosine.

5,488,167

SYNTHESIS OF SPHINGOSINES

Tomas Hudlicky, Blacksburg, Va., assignor to Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.

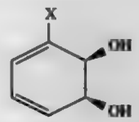
Continuation of Ser. No. 137,346, Oct. 18, 1993, abandoned. This application Feb. 21, 1995, Ser. No. 389,622

Int. Cl.[6] C07C *209/42*

U.S. Cl. 564—489 **14 Claims**

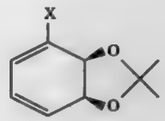
1. A process for the synthesis of a stereospecific sphingosine comprising

a. providing an arene diol of the formula:

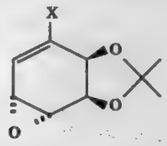


wherein X is H, halogen, OH, OR, phenyl, acetylene, NH_2, N_3, NR_2, NRH, NO_2, CO_2H, or CN and R is lower alkyl or lower alkenyl;

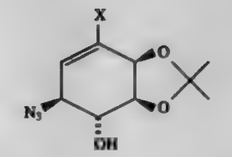
b. protecting the diol as its acetonide with the following formula:



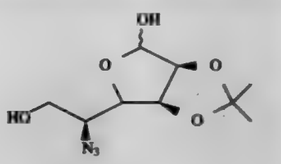
c. converting the acetonide to an epoxide having the formula:



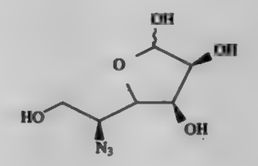
d. reacting the epoxide with an effective amount of an azide salt to stereospecifically open the epoxide and obtain an azido alcohol with the formula:



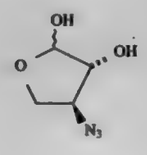
e. reacting the azido alcohol with excess ozone and then with excess borohydride to give a first lactol with the formula:



f. reacting the first lactol with an acidic ion exchange resin to deprotect the first lactol and obtain a second lactol of the formula:



g. reacting the second lactol with an effective amount of an alkali periodate to obtain a third lactol with the formula:



h. subjecting the third lactol to Wittig olefination to give azidosphingosine; and

i. reducing the azidosphingosine to an amine to obtain the desired sphingosine.

5,488,168

TERTIARY AMINO ALCOHOL AND METHOD OF PRODUCING THE SAME

Kohshiro Sotoya; Hiroshi Abe; Jun Aikawa; Hideki Taniguchi, and Uichiro Nishimoto, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 563,712, Aug. 7, 1990, abandoned. This application Apr. 14, 1993, Ser. No. 46,924

Claims priority, application Japan, Aug. 25, 1989, 1-219046

Int. Cl.[6] C07C *215/08*

U.S. Cl. 564—506 **2 Claims**

1. A tertiary amino alcohol of the formula



wherein R is a C_6–C_9 alkylene chain; R^1 is methyl, and n j.s from 2.7 to 18.2.

5,488,169

METHOD OF PRODUCING TETRAKIS(PENTAFLUOROPHENYL)BORATE DERIVATIVES USING PENTAFLUOROPHENYLMAGNESIUM DERIVATIVES

Yoshihiko Ikeda, Shinnanyo; Takeo Yamane, Ogori; Eiichi Kaji, and Kenji Ishimaru, both of Shinnanyo, all of, Japan, assignors to Tosoh Akzo Corporation, Tokyo, Japan

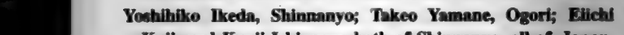
Filed Dec. 21, 1993, Ser. No. 170,762

Claims priority, application Japan, Dec. 28, 1992, 4-361480; Dec. 1, 1993, 5-329960

Int. Cl.[6] C07F 5/02;9/02

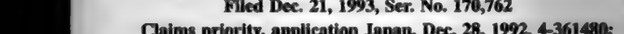
U.S. Cl. 568—3 **2 Claims**

1. A process for producing a tetrakis(pentafluorophenyl)borate compound of the formula V



V

comprising; mixing in a mixture of diethylether and other chain ether solvent having a boiling point of 50° C. or higher, or in a mixture of diethylether and a hydrocarbon solvent having a boiling point of 50° C. or higher, one equivalent weight of a boron compound of the formula I



I

wherein X denotes a moiety selected from the group consisting of a halogen atom, a substituent represented by the formula II



II

wherein R denotes a hydrocarbon group of 1 to 10 carbon atoms, a hydrocarbon group of 1 to 10 carbon atoms containing functional groups having no influence on the reaction, or a substituent represented by the formula III



III

wherein R' and R" are the same or different and may be a hydrogen atom, a hydrocarbon group of 1 to 20 hydrocarbons or a hydrocarbon group of 1 to 20 hydrocarbons having a functional group having no influence on the reaction, or R' and R" are linked to one another to form a ring structure, said boron compound being either in the form of a 1:1 complex with an ether type solvent or in non-complexed form;

with 3.7 equivalents or more of a pentafluorophenylmagnesium compound of the formula IV



IV

wherein n denotes an integer of 0 or 1 and X denotes a halogen atom; and reacting said mixture at a temperature in the range of 69° to 200° C.

5,488,170

PROCESS FOR PRODUCING 3-METHYL-1-PHENYLPHOSPHOLENE OXIDE

Yasuo Imashiro; Naofumi Horie, and Takeshi Yamane, all of Tokyo, Japan, assignors to Nishinbo Industries, Inc., Tokyo, Japan

Filed Jun. 28, 1994, Ser. No. 266,552

Claims priority, application Japan, Jul. 2, 1993, 5-190831

Int. Cl.[6] C07F 9/53

U.S. Cl. 568—12 **4 Claims**

1. A process for producing 3-methyl-1-phenylphospholene oxide by subjecting dichlorophenylphosphine and isoprene to an addition reaction and then subjecting the resulting adduct to hydrolysis or alcoholysis, wherein the addition reaction between dichlorophenylphosphine and isoprene is conducted in a solvent containing no active hydrogen to obtain an adduct in the form of a slurry or solution and the slurry or solution is subjected to hydrolysis or alcoholysis, wherein isoprene is used in an amount of at least 1 mole per mole of dichlorophenylphosphine, wherein the solvent is used in an amount of 200–400 ml per mole of dichlorophenylphosphine and the addition reaction is performed at 65°–70° C. for 24 hours or less when conducted in a heterogeneous system and the solvent is used in an amount of 100–200 ml per mole of dichlorophenylphosphine and the addition reaction is performed at 65°–80° C. for 24 hours or less when conducted in a homogeneous system, and wherein said solvent is at least one member selected from the group consisting of an aromatic hydrocarbon, an aliphatic hydrocarbon, a halogen-containing hydrocarbon and a nitrogen-containing hydrocarbon.

5,488,171

PHOSPHINATE ESTERS

Eric K. Baylis, Stockport, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

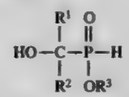
Filed Feb. 28, 1994, Ser. No. 203,961

Claims priority, application United Kingdom, Mar. 6, 1993, 9304619

Int. Cl.[6] C07F 9/02

U.S. Cl. 568—8 **17 Claims**

1. A compound of the formula



I

where R^1 and R^2 are independently a C_1–C_{10} aliphatic radical, or R^1 is C_1–C_{10} alkyl or halogen-substituted C_1–C_{10} alkyl and R^2 is a C_6–C_{10} aromatic radical, and R^3 is a C_1–C_8 aliphatic radical, a C_3–C_8 cycloaliphatic radical, a C_6–C_{15} aromatic radical or a C_7–C_{13} araliphatic radical, provided that R^3 is not methyl when R^1 and R^2 are each methyl, that R^3 is not ethyl when R^1 and R^2 are each methyl, and that R^2 is not p-aminophenyl when R^1 is methyl and R^3 is ethyl.

5,488,172

CHIRAL PHOSPHORUS COMPOUNDS

Marco Cereghetti, Basel, Switzerland; Joseph Foricher, Mulhouse, France; Bernd Heiser, Inzlingen, Germany, and Rudolf Schmid, Münchenstein, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

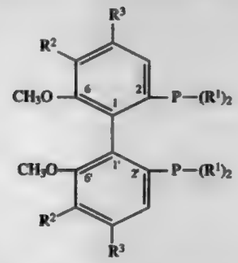
Continuation of Ser. No. 152,932, Nov. 15, 1993, abandoned, which is a continuation of Ser. No. 884,628, May 15, 1992, abandoned, which is a continuation of Ser. No. 521,498, May 10, 1990, abandoned. This application Aug. 23, 1994, Ser. No. 294,895

Claims priority, application Switzerland, May 18, 1989, 1905/89; Mar. 16, 1990, 880/90

Int. Cl.[6] C07F 9/50

U.S. Cl. 568—13 **15 Claims**

1. A chiral phosphorous compound of the formula:



wherein R^1 is phenyl or lower alkyl-substituted phenyl, and R^2 and R^3 are hydrogen or methoxy;
which compound are in the (R)- or (S)-form.

5,488,173

PROCESS FOR SELECTIVE ORTHO-METHYLATION OF CYCLOHEXANONES IN THE VAPOR PHASE

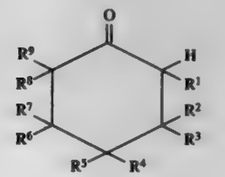
Fey-Long Wang, Department of Applied Chemistry, Providence University, Shu-Lu, Taichung Hsien, 43301, Taiwan, Prov. of China

Filed Aug. 3, 1994, Ser. No. 285,152

Int. Cl.[6] C07C 45/68

U.S. Cl. 568—347 **12 Claims**

1. A process for selectively methylating a cyclohexanone in the ortho-position to produce orthomethylated cyclohexanones and ortho-methylated phenols, which comprises reacting methanol with the cyclohexanone in the vapor phase in the presence of a metal oxide catalyst,
wherein the cyclohexanone has the general formula



wherein R^1, is one member selected from the group consisting of hydrogen and methyl, wherein R^2, R^3, R^4, R^5, R^6, R^7, R^8, and R^9 each are hydrogen and wherein the metal oxide catalyst is at least one member selected from the group consisting of titanium oxide, alumina, zirconium oxide, silicon oxide, magnesium oxide, zinc oxide, lead oxide, and iron oxide.

5,488,174

HYDROFORMYLATION PROCESS

Eit Drent; Dennis H. L. Pelle, and Jacoba C. L. J. Suykerbuyk, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 12, 1994, Ser. No. 289,714

Claims priority, application European Pat. Off., Aug. 19, 1993, 93202447

Int. Cl.[6] C07C 45/50

U.S. Cl. 568—454 **24 Claims**

1. A process for the hydroformylation of ethylenically unsaturated compounds to produce aldehydes and/or alcohols by reaction of said ethylenically unsaturated compounds with carbon monoxide and hydrogen in the presence of a catalyst system comprising:

a) a source of a metal of the platinum group;

b) a source of anions; and

c) a source of bidentate ligands of the formula



(I)

wherein M^1 and M^2 independently represent a phosphorus, arsenic or antimony atom, R represents a bivalent organic bridging group containing from 1 to 4 atoms in the bridge, R^1 and R^2 together represent a bivalent substituted or non-substituted cyclic group wherein the two free valencies are linked to M^1, and wherein R^3 and R^4 either independently represent a substituted or non-substituted hydrocarbyl group, or together have the same meaning as R^1 and R^2.

5,488,175

HYDROFORMYLATION PROCESS

Eit Drent, and Willem W. Jager, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

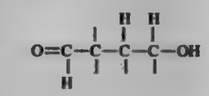
Filed Sep. 12, 1994, Ser. No. 304,716

Claims priority, application European Pat. Off., Sep. 16, 1993, 93202688

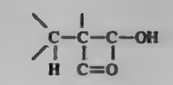
Int. Cl.[6] C07C 45/50

U.S. Cl. 568—454.000 **21 Claims**

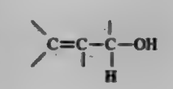
1. A process for the hydroformylation of unsaturated compounds to produce compounds containing a group



and compounds containing a group



which comprises contacting and reacting a compound containing a group



with carbon monoxide and hydrogen in the presence of a catalyst system comprising:

a) a source of rhodium and

b) a ligand of the formula

$$R^1R^2P—R—NR^3R^4 \quad (I)$$

wherein each of R^1, R^2, R^3, and R^4 independently represents a substituted or unsubstituted hydrocarbyl group and R represents a bivalent organic bridging group containing from 1 to 5 atoms in the bridge.

5,488,176

PREPARATION OF DIALKYL PEROXIDES

Mahmoud K. Faraj, Newtown Square, Pa., assignor to Arco Chemical Technology, Greenville, Del.

Continuation-in-part of Ser. No. 61,408, May 13, 1993, abandoned. This application Jan. 13, 1995, Ser. No. 373,671

Int. Cl.[6] C07C *409/16*

U.S. Cl. 568—558.000 **7 Claims**

1. A process for the selective preparation of a dialkyl peroxide which comprises reacting an alcohol and/or olefin with hydrogen peroxide at 70°–120° C. in the presence of an effective amount of an inorganic heteropoly or isopoly acid catalyst, the mol ratio of alcohol and/or olefin to hydrogen peroxide being at least 1, the catalyst being employed in amount of at least 1 mol catalyst per 250 mols of alcohol and/or olefin.

5,488,177

METHOD FOR THE PREPARATION OF ALKYL HYDROPEROXIDE SOLUTIONS CONTAINING LITTLE OR NO WATER

Hans Appel, Hollriegelskreuth, and Fritz Diem, Munich, both of, Germany, assignors to Peroxid-Chemie GmbH, Hollriegelskreuth, Germany

PCT No. PCT/EP93/02620, § 371 Date Nov. 1, 1994, § 102(e) Date Nov. 1, 1994, PCT Pub. No. WO94/07854, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 27, 1993, Ser. No. 331,593

Claims priority, application Germany, Sep. 28, 1992, 42 32 500.5

Int. Cl.[6] C07C *409/00*

U.S. Cl. 568—576 **23 Claims**

1. Method for the preparation of solutions of tert.-alkyl hydroperoxides in inert solvents with little or no water content by dewatering with H_2SO_4, which comprises adding to an aqueous solution of the tert.-alkyl hydroperoxide, one or more inert organic solvents as well as sulfuric acid in an amount and concentration such that, in the aqueous phase forming after the mixing and subsequent separation of the phases, there is at least 49% of H_2SO_4 and the water content in the organic phase amounts to no more than 2.5%.

5,488,178

DITERTIARY BUTYL PEROXIDE PREPARATION FROM TERTIARY BUTYL HYDROPEROXIDE

John F. Knifton; Edward T. Marquis, both of Austin, and Pei-Shing E. Dai, Port Arthur, all of Tex., assignors to Texaco Chemical Inc., White Plains, N.Y.

Filed Mar. 8, 1995, Ser. No. 401,107

Int. Cl.[6] C07C *409/16*

U.S. Cl. 568—578 **20 Claims**

1. A method for selectively generating ditertiary butyl peroxide which comprises bringing a solution of tertiary butyl hydroperoxide charge stock in tertiary butyl alcohol into contact with a catalytically effective amount of a solid acid catalyst comprising an acidic montmorillonite clay in a reaction zone in a liquid phase under hydroperoxide conversion conditions including a temperature within the range of about 20° C. to 160° C. and a pressure of about atm to 10,000 psig, selectively generating ditertiary butyl peroxide, along with t-butanol, from tertiary butyl hydroperoxide, and recovering said ditertiary butyl peroxide product.

5,488,179

DITERTIARY BUTYL PEROXIDE PREPARATION FROM TERTIARY BUTYL HYDROPEROXIDE

John F. Knifton; Edward T. Marquis, both of Austin, and Pei-Shing E. Dai, Port Arthur, all of Tex., assignors to Texaco Chemical Inc., White Plains, N.Y.

Filed Mar. 8, 1995, Ser. No. 401,108

Int. Cl.[6] C07C *409/16*

U.S. Cl. 568—578 **6 Claims**

1. A method for selectively generating ditertiary butyl peroxide which comprises bringing a solution of tertiary butyl hydroperoxide charge stock in tertiary butyl alcohol into contact with a catalytically effective amount of an acidic Beta zeolite catalyst in a reaction zone in a liquid phase under hydroperoxide conversion conditions including a temperature within the range of about 20° C. to 160° C. and a pressure of about ATM to 10,000 psig selectively generate ditertiary butyl peroxide, along with t-butanol, from tertiary butyl hydroperoxide, and recovering said ditertiary butyl peroxide product.

5,488,180

COMPLEX HYDROPHOBE COMPOUNDS

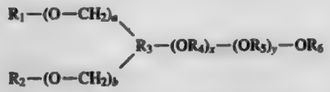
Richard D. Jenkins, Hurricane; David R. Bassett, Charleston; Danny E. Smith, Cross Lanes; John N. Argyropoulos, Scott Depot; James E. Loftus, Hurricane, all of W. Va., and Gregory D. Shay, Cary, N.C., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed May 29, 1992, Ser. No. 887,648

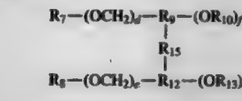
Int. Cl.[6] C07C *43/13;43/205;43/164;43/19*

U.S. Cl. 568—609 **10 Claims**

1. A compound represented by the formula selected from the group consisting of:



wherein R_1 and R_2 are the same or different and are hydrogen or a substituted or unsubstituted monovalent hydrocarbon residue, R_3 is a substituted or unsubstituted divalent or trivalent hydrocarbon residue, each R_4 is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, each R_5 is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, R_6 is hydrogen, a substituted or unsubstituted monovalent hydrocarbon residue or an ionic substituent, a and b are the same or different and are a value of 0 or 1, and x and y are the same or different and are a value of 0 or greater; provided (i) at least two of R_1, R_2, R_3, R_4, R_5 and R_6 are a hydrocarbon residue having greater than 2 carbon atoms in the case of R_1, R_2 and R_6 or having greater than 2 pendant carbon atoms in the case of R_3, R_4 and R_5, (ii) at least one of R_4 and R_5 is other than $—CH_2CH_2—$ when R_1 and R_2 are nonylphenyl, R_3 is >CH—, R_6 is hydrogen or SO_3, a is a value of 1, b is a value of 1, and at least one of x and y is a value of I or greater, (iii) R_4 is $—CH_2CH_2—$ and x is a value of at least 2 when R_1 is hexadecyl, R_2 is tetradecyl, R_3 is >CH—, at least one R_5 is $—CH_2CH(tetradecyl)—$, R_6 is hydrogen, y is a value of 1 or greater, a is a value of 1, and b is a value of 0; (iv) at least one of R_1 and R_2 is other than $CH_3(CH_2)_{1-5}OCH_2CH(OH)CH_2—$ when R_6 is $CH_3(CH_2)_{1-5}—$, a is a value of 1, b is a value of 1, y is a value of 0, x is a value of 1, R_4 is $—CH_2CH(OH)CH_2—$ and R_3 is >CH—; (v) R_1 is other than $CH_3(CH_2)_{1-5}OCH_2CH(OH)CH_2—$ when a is a value of 1, b is a value of 0 and R_6 is $CH_3(CH_2)_{1-5}—$; (vi) at least one of R_1 and R_2 is other than $CH_3(CH_2)_{1-5}OCH_2CH(OH)CH_2—$ when R_6 is $CH_3(CH_2)_2CH_2CH(OH)CH_2—$, a is a value of 1, b is a value of 1, x is a value of 0, y is a value of 0 and R_3 is >CH—; and (vii) at least one of R_4 and R_5 is other than $—CH_2CH_2—$ when R_1 and R_2 are the same and are an aromatic hydrocarbon residue, R_3 is >CH—, R_6 is hydrogen, a is a value of 1, b is a value of 1 and at least one of x and y is a value of 1 or greater; and



wherein R_7 and R_8 are the same or different and are hydrogen or a substituted or unsubstituted monovalent hydrocarbon residue, R_9 and R_{12} are the same or different and are a substituted or unsubstituted divalent or trivalent hydrocarbon residue, each R_{10} is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, each R_{13} is the same or different and is a substituted or unsubstituted divalent hydrocarbon residue, R_{11} and R_{14} are the same or different and are hydrogen, a substituted or unsubstituted monovalent hydrocarbon residue or an ionic substituent, R_{15} is a substituted or unsubstituted divalent hydrocarbon residue, d and e are the same or different and are a value of 0 or 1, and f and g are the same or different and are a value of 0 or greater; provided at least two of R_7, R_8, R_9, R_{10}, R_{11}, R_{12}, R_{13}, R_{14} and R_{15} are a hydrocarbon residue having greater than 2 carbon atoms in the case of R_7, R_8, R_{11} an R_{14} or having greater than 2 pendant carbon atoms in the case of R_9, R_{10}, R_{12}, R_{13} and R_{15}.

5,488,181

PROCESS FOR PREPARING PERFLUOROPOLYETHERS

Giuseppe Marchionni, Milan; Pier A. Guarda, Nole, and Maurizio Paganin, Cassina de'Pecchi, all of, Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Nov. 16, 1994, Ser. No. 341,150

Claims priority, application Italy, Nov. 17, 1993, MI93A2443

Int. Cl.[6] C07C *43/30*

U.S. Cl. 568—615 **12 Claims**

1. Process for preparing peroxidic perfluoropolyethers, having molecular weight M higher than 5000 and content by weight of peroxidic oxygen lower than 4% of the total weight, consisting of reacting tetrafluoroethylene with oxygen in liquid phase comprising a solvent, at temperature from −100° C. to 20° C. and in the presence of a chemical initiator selected from the group consisting of fluorine and perfluoroalkyl hypofluorites containing from 1 to 3 carbon atoms, characterized in that the molar ratio of the tetrafluoroethylene to the chemical initiator is from 35 to 150 and the total pressure is in the range from 2 to 15 absolute atm.

5,488,182

PHENOL COMPOUNDS CONTAINING METHOXYMETHYL GROUP OR HYDROXYMETHYL GROUP

Fumikazu Kobayashi; Kazuyoshi Mizutani, and Kazuo Maemoto, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

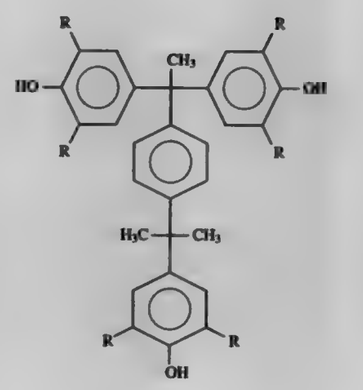
Filed Jun. 30, 1994, Ser. No. 269,040

Claims priority, application Japan, Jun. 30, 1993, 5-161256; Aug. 9, 1993, 5-197474; Aug. 24, 1993, 5-209170

Int. Cl.[6] C07C *39/16*

U.S. Cl. 568—660 **5 Claims**

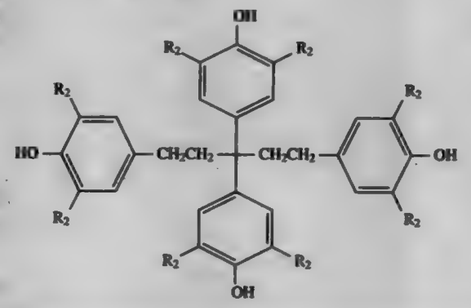
1. A methoxymethyl-containing phenol compound represented by the following formula (I):



(I)

wherein each R represents CH_2OCH_3, CH_2OH, or H, provided that at least three of the R's are CH_2OCH_3 or CH_2OH, with at least one thereof being CH_2OCH_3.

4. A hydroxymethyl-containing phenol compound represented by the following formula (IV):



(IV)

wherein each R_2 represents CH_2OCH_3, CH_2OH or H, provided that at least two of the R_2's are CH_2OH.

5,488,183

ACETYLENIC CYCLOHEXANE TRIOL DERIVATIVES

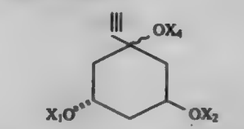
Hector F. DeLuca, Deerfield; Heinrich K. Schnoes, and Fariba Aria, both of Madison, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 410,858, Mar. 27, 1995, which is a division of Ser. No. 302,399, Sep. 8, 1994, Pat. No. 5,430,196, which is a continuation of Ser. No. 926,829, Aug. 7, 1992, abandoned. This application May 23, 1995, Ser. No. 448,105

Int. Cl.[6] C07C *35/08;* C07F *7/08*

U.S. Cl. 568—828 **1 Claim**

1. Compounds of the formula,



where X_1, X_2 and X_4 each represent, independently, hydrogen or a hydroxy-protecting group.

5,488,184

PROCESS FOR THE PREPARATION OF ALKKYLENE GLYCOLS

Willem G. Reman, and Eugene M. G. A. Van Kruchten, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 31, 1995, Ser. No. 381,452

Claims priority, application European Pat. Off., Jan. 31, 1994, 94200255

Int. Cl.[6] C07C *29/00;31/20;31/22*

U.S. Cl. 568—867 **10 Claims**

1. A process for the preparation of alkylene glycols which comprises reacting an alkylene oxide with water in the presence of a catalyst composition comprising a solid material having one or more electropositive sites, which are coordinated with one or more anions other than metalate or halogen anions, with the proviso that when the solid material is an anionic exchange resin of the quaternary ammonium type and the anion is bicarbonate, the process is performed in the substantial absence of carbon dioxide.

5,488,185

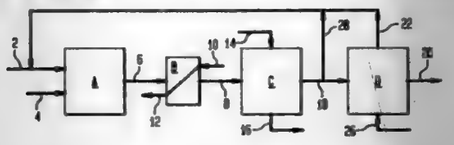
PROCESS FOR THE PRODUCTION OF ETHANOL AND ISOPROPANOL

Ramakrishnan Ramachandran, Allendale, and Loc H. Dao, Bound Brook, both of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Continuation-in-part of Ser. No. 129,637, Sep. 30, 1993, abandoned. This application Apr. 22, 1994, Ser. No. 231,560

Int. Cl.[6] C07C *29/04;31/08;31/10;7/12*

U.S. Cl. 568—896 **15 Claims**



1. A process for the production of ethanol comprising the steps:
(a) contacting an ethene-ethane mixture and water with a hydration catalyst in a reaction zone under conditions which result in the production of a gaseous product containing ethanol, unreacted ethene and ethane;
(b) recovering said ethanol from said gaseous product;
(c) selectively adsorbing ethene from the substantially ethanol-free gaseous product by passing at least part of the substantially ethanol-free gaseous product through an adsorption zone containing 4A zeolite adsorbent at a temperature above about 50° C.;
(d) regenerating said adsorbent, thereby producing an ethene-enriched gas stream; and
(e) recycling said ethene-enriched gas stream to said reaction zone.

5,488,186

GAS PHASE PROCESS FOR THE HYDRATION OF PROPYLENE

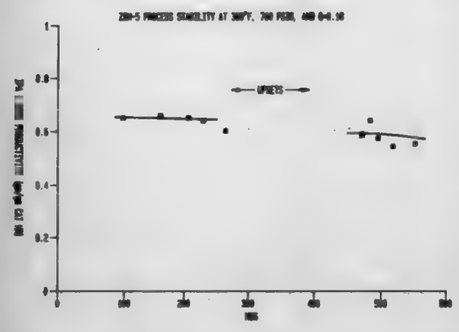
Stephen H. Brown, Princeton, N.J., and Jeffrey C. Trewella, Kennett Square, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Mar. 22, 1995, Ser. No. 408,244

Int. Cl.[6] C07C *29/04;31/10*

U.S. Cl. 568—897 **10 Claims**

1. A process for the production of isopropanol with high selectivity, high catalyst productivity and long catalyst life comprising:
contacting water and a feedstream comprising propylene in the gas phase with acidic medium pore, shape selective metallo-silicate catalyst particles under propylene hydration conditions at a water:propylene mole ratio between 0.05 and



0.499, whereby said isopropanol is produced at a selectivity of at least 70 weight percent and catalyst productivity is at least 0.1 unit weight of oxygenates comprising isopropanol/unit weight of catalyst per hour.

5,488,187

PROCESS FOR THE PRODUCTION OF DINITROBENZENE AND MONONITROBENZENE

Robert W. Mason, Lake Charles, La., assignor to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 108,035, Aug. 17, 1993, Pat. No. 5,354,924, which is a continuation-in-part of Ser. No. 210,549, Jun. 22, 1988, abandoned. This application Aug. 15, 1994, Ser. No. 290,575

Int. Cl.[6] C07C *205/06*

U.S. Cl. 568—932 **12 Claims**

1. A process for nitrating benzene to produce dinitrobenzene by a liquid phase nitration reaction of anhydrous nitric acid with benzene in a reactor at a reaction temperature of between 30° C. and 70° C., and a reaction pressure not exceeding atmospheric pressure, said reaction employing a molar ratio of nitric acid plus any water to benzene of between 15:1 and 25:1, said reaction being conducted in the absence of sulfuric acid, and in the absence of any aprotic dipolar solvent during the reaction and in the absence of any aprotic dipolar solvent to halt the reaction, to produce said dinitrobenzene in a product mixture, followed by vacuum distillation of the product mixture, in the absence of any aprotic dipolar solvent, to remove unreacted nitric acid from said product mixture thereby providing a dinitrobenzene product.

5,488,188

PROCESS FOR THE PREPARATION OF (E)-1-AMINO-2-(FLUOROMETHYLENE)-4-(P-FLUOROPHENYL)BUTANE, NOVEL PROCESSES FOR PREPARING AN INTERMEDIATE THEREOF, AND NOVEL INTERMEDIATES THEREOF

Jonathan C. Evans; Christian T. Goralski, both of Midland; Cynthia L. Rand, Sanford, and Paul C. Vosejpka, Midland, all of Mich., assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Sep. 29, 1994, Ser. No. 315,041

Int. Cl.[6] C07C *25/13;19/08;21/18*

U.S. Cl. 570—128.000 **2 Claims**

1. The compound (E)-1-chloro-2-(fluoromethylene)-4-(p-fluorophenyl)butane.

5,488,189

PROCESS FOR FLUORINATED PROPANES AND PENTANES

Allen C. Sievert, Elkton, Md., and Mario J. Nappa, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 14, 1993, Ser. No. 166,431

Int. Cl.[6] C07C *21/18;19/08*

U.S. Cl. 570—172 **28 Claims**

1. A process for making halopropanes and pentanes which comprises:
(i) contacting
(a) a dihalodifluoromethane, $CXYF_2$, where X and Y are independently Cl or Br, with
(b) a fluoroolefin which is at least one of tetrafluoroethylene and chlorotrifluoroethylene, wherein the molar ratio of dihalodifluoromethane to fluoroolefin is at least 1:1, in the presence of
(c) a modified aluminum chloride catalyst under conditions sufficient to produce at least one of a perhalofluoropropane having 5 to 6 fluorine and 2 to 3 nonfluorohalogen substituents totaling 8 halogens and at least one perhalo fluoropentane having 8 to 10 fluorine and 2 to 4 nonfluorohalogen substituents totaling 12 halogen substituents, the fluorine content of said propanes and pentanes being the sum of the fluorine contents of the (a) and (b) reactants; and
(ii) recovering at least one of said perhalopropanes and pentanes.

5,488,190

PREPARTION OF VINYL CHLORIDE BY ULTRAPYROLYSIS OF 1,2-DICHLOROETHANE

Jean-Marc Le Blevec, Port Louis; Yves Correia, Chateau Arnoux; Jean-Jacques Masini, Chaponost; Jacques Bousquet, Irigny, all of, France, and Maurice A. Bergougnou, London, Canada, assignors to Elf Atochem S.A., Puteaux, France

Filed Apr. 21, 1993, Ser. No. 49,498

Claims priority, application France, Apr. 21, 1992, 92 04853

Int. Cl.[6] C09C *17/25*

U.S. Cl. 570—226 **15 Claims**

1. A process for the preparation of vinyl chloride, comprising intimately contacting, in the absence of steam, a feedstream of 1,2-dichloroethane with a heated flow of solid particulates capable of providing sufficient heat exchange to flash transfer a dehydrochlorinating amount of thermal energy to said 1,2-dichloroethane and thereby ultrapyrolyzing at least a fraction of same into vinyl chloride and HCl, and recovering said vinyl chloride from the medium of ultrapyrolysis, wherein said heated flow of fluid or solid particulates is heated before coming into contact with said feedstream of 1,2-dichloroethane where said solid particulates are silica, corundum-type alumina or attapulgite silicoaluminates.

5,488,191

HYDROCARBON LUBE AND DISTILLATE FUEL ADDITIVE

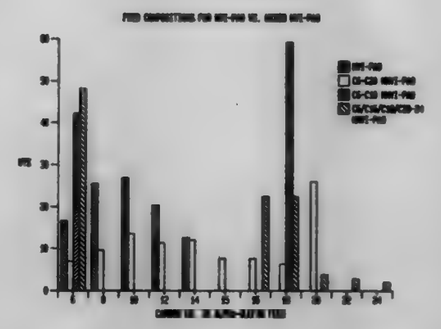
Alice S. Chu, Spotswood; Andrew Jackson, Pennington, and Margaret M. Wu, Skillman, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jan. 6, 1994, Ser. No. 178,152

Int. Cl.[6] C10M *143/06*

U.S. Cl. 585—10 **20 Claims**

1. A hydrocarbon lubricant additive suitable as a pour point depressant, cloud point depressant and viscosity index improver, said additive comprising the copolymer residue of a mixture of 1-alkene comonomers selected from the group consisting of C_3-C_{28} 1-alkenes, wherein said copolymer contains at least 10 weight percent of recurring monomeric units of C_{14}-C_{24} 1-alkenes;



has a number average molecular weight between 5,000 and 60,000; and a molecular weight distribution between 1 and 10; said additive containing a bimodal distribution of said 1-alkenes in said residue, said distribution having a first maximum between C_3 and C_{14} 1-alkenes and a second maximum between C_{14} and C_{26} 1-alkenes.

5,488,192

METHOD FOR INHIBITING THE POLYMERIZATION OF STYRENE

Vladimir A. Kourbatov, Moscow; Nataljya P. Boreyko; Valerii P. Zouev, both of Nischnekamsk; and Alexandr G. Liakumovich, Kazan, all of, Russian Federation, assignors to Kourbatov, Moscow, Russian Federation

Filed May 5, 1994, Ser. No. 238,670

Int. Cl.[6] C07C *5/333*

U.S. Cl. 585—435 **8 Claims**

1. In a process for the preparation of styrene, a method for preventing the spontaneous polymerization of styrene wherein an inhibiting composition of 3,5-di-tert-butyl-4-hydroxy-N,N-dimethylbenzyl amine and a carboxylic acid, or an anhydride of said carboxylic acid, in an organic solvent, is added to a styrene-containing mixture, the improvement comprising:
a) supplying air simultaneously with the inhibiting composition in a weight ratio of 3,5-di-tert-butyl-4-hydroxy-N,N-dimethylbenzyl amine to carboxylic acid to air, said ratio being 1:1–0.05:0.05–15.

5,488,193

PROCESS FOR REDUCING POLYNUCLEAR AROMATIC MUTAGENICITY BY ALKYLATION

Carl R. Mackerer, Pennington; Timothy A. Roy, Hopewell, both of N.J., and Gary R. Blackburn, Washington Crossing, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 202,720, Feb. 23, 1994, abandoned, which is a continuation of Ser. No. 972,398, Nov. 6, 1992, abandoned. This application Jan. 25, 1995, Ser. No. 378,308

Int. Cl.[6] C07C *2/66*

U.S. Cl. 585—455 **8 Claims**

1. A process for reducing the mutagenicity of a hydrocarbonaceous refinery stream containing polynuclear aromatic compounds having three to seven fused aromatic rings, the stream having an initial mutagenicity index value greater than about 0.0, comprising the step of:
(a) contacting the polynuclear aromatic containing refinery stream in the presence of an alkylating agent having from three to five carbon atoms with an acid catalyst under alkylation conditions sufficient to monoalkylate or dialkylate the polynuclear aromatic compounds of the refinery stream with a branched chain alkyl group of three to five carbon atoms to reduce the mutagenicity of the alkylated polynuclear aromatic containing refinery stream to a level less than the initial mutagenicity index value.

5,488,194

SELECTIVE PRODUCTION OF PARA-DIALKYL SUBSTITUTED BENZENES AND CATALYST THEREFOR

Jeffrey S. Beck, Princeton, and Ralph M. Dessau, Edison, both of N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Filed May 16, 1994, Ser. No. 242,828
Int. Cl.[6] C07C *5/52;2/66*
U.S. Cl. 585—475 **17 Claims**

1. A process for selective production of para-dialkyl substituted benzene which comprises converting a feedstock comprising

(1) mono-alkyl substituted benzene having an alkyl group of from 1 to 4 carbon atoms, or

(2) a mixture of said mono-alkyl substituted benzene or benzene with an alkylating agent containing from 1 to 4 carbon atoms,

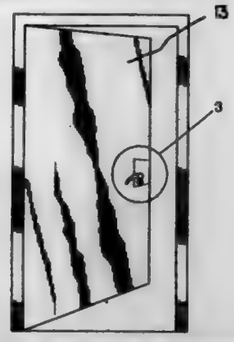
to product comprising para-dialkyl substituted benzene containing alkyl groups of 1 to 4 carbons at conversion conditions with a catalyst comprising a porous crystalline material having the structure of MCM-49, said crystalline material having been treated with one or a combination of selectivating agent compounds selected from the group consisting of silicones, Siloxanes having at least two siloxane units, and silanes, whereby the treated crystalline material has an Alpha Value of from about 10 to about 2000, a p-xylene sorption capacity greater than about 1 gram/100 grams of crystalline material, said sorption capacity being measured at 120° C. and a p-xylene pressure of 4.5±0.8 mm of mercury.

5,488,195

AUTOMATICALLY ACTUATED SOUND APPARATUS

Thattil J. Mickel, Thattil House, P.O. Valapad, Trichur Kerala, Ind.

Filed Feb. 18, 1994, Ser. No. 199,009
Int. Cl.[6] G06F *7/04;* G10H *1/26*
U.S. Cl. 84—609 **11 Claims**



1. A new and improved automatically actuated sound apparatus, comprising:

a wave transmitter unit mounted on a door,

a sound generating unit which includes a wave receiver assembly for receiving wave energy from said door-mounted wave transmitter unit and a sound generating assembly which is activated by said wave receiver assembly,

a door lock assembly mounted on the door, and

a transmitter actuator assembly, attached to a portion of said door lock assembly, for actuating said door-mounted wave transmitter unit,

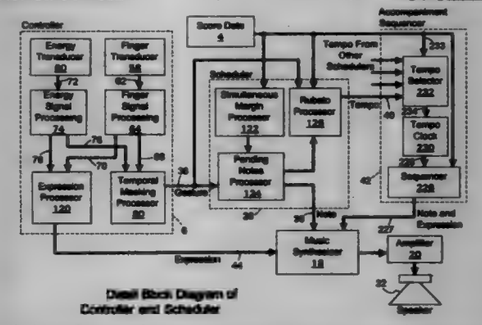
wherein said door lock assembly is mounted in a first housing portion, said door-mounted wave transmitter unit is mounted in a second housing portion, a slot is provided between said first housing portion and said second housing portion, and said transmitter actuator assembly projects from said first housing portion through said slot into said second housing portion for actuating said door-mounted wave transmitter unit.

5,488,196

ELECTRONIC MUSICAL RE-PERFORMANCE AND EDITING SYSTEM

Thomas G. Zimmerman, 7611 Hollanderry Pl., Cupertino, Calif. 95014, and Samuel P. Wantman, 1124 Page St. Apt. #3, San Francisco, Calif. 94117

Filed Jan. 19, 1994, Ser. No. 183,489
Int. Cl.[6] G10H *1/02;1/42;1/46*
U.S. Cl. 84—612 **34 Claims**



1. A music re-performance system to generate music in response to musical gestures of a player comprising;

(a) storage means for storing information defining at least note pitch and note timing in at least one preprogrammed musical channel;

(b) finger transducer means for receiving finger manipulations from a player and for generating and for outputting a finger signal in response to said finger manipulations;

(c) energy transducer means for receiving energy applied by a player and for generating and outputting an energy signal in response to said energy applied to said energy transducer means by the player;

(d) signal processing means connected to said finger transducer means and to said energy transducer means for receiving said finger signal and said energy signal and for generating at least one gesture signal in response to said finger signal and to said energy signal;

(e) scheduling means connected to said storage means and to said signal processing means, for sequentially selecting at least one note from said storage means and for transmitting the selected note in response to said gesture signal; and

(f) sound generator means connected to said scheduling means for receiving the transmitted selected note and for producing sound in response to said selected notes.

5,488,197

METHOD OF SPACING TRANSMISSION LINE SUBCONDUCTORS

Albert S. Richardson, Jr., 3 Wingate Rd., Lexington, Mass. 02173

Continuation of Ser. No. 61,183, May 13, 1993, Pat. No. 5,362,920. This application Jul. 14, 1994, Ser. No. 274,954
The portion of the term of this patent subsequent to May 13, 2013, has been disclaimed.
Int. Cl.[6] H02G *7/12;7/14*
U.S. Cl. 174—42 **6 Claims**



1. A method of spacing multiple subconductors relative to each other while allowing the subconductors to vibrate without causing damage to the subconductors, the method comprising the steps of:

gripping each subconductor with a corresponding clamp, each clamp being secured about a rigid hoop in a manner such that each clamp is capable of sliding along the hoop and rotating about the hoop; and

separating the clamps from each other along the hoop with springs which are positioned about the hoop and spaced between the clamps.

5,488,198

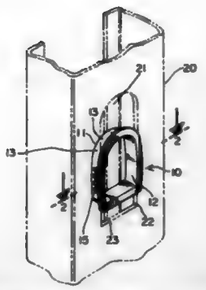
PROTECTION DEVICE FOR APERTURES IN METAL STUDS OR PANELS

Hy Kramer, 50 Carter Dr., Stamford, Conn. 06902

Filed Sep. 1, 1994, Ser. No. 299,590
Int. Cl.[6] H02G *3/26*
U.S. Cl. 174—48 **5 Claims**

1. A protection device for wires and tubes which is attached along the opposing rims of an aperture in metal studs or the like comprising:

a body made of a flexible plastic material defined by a wall having opposing sides and having an inner and outer wall surface said opposing sides being bowed outwardly so that the device can be pinched into attachment with the opposing rims of an aperture in a metal stud;



a flange, said flange is formed around the periphery of said wall;

one or more male nubs protrude from each of the opposing sides of the outer wall surface of said body at an angle of less than 90 degrees, in the gap facing the flange, thereby defining a gap between said nubs and said flange for receiving, therebetween, the opposing rims of the aperture in a metal stud.

5,488,199

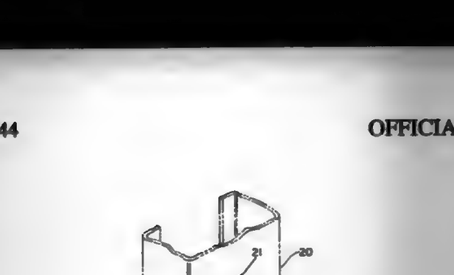
ELECTRICAL-STRESS-CONTROLLED SOLID DIELECTRIC CABLE TERMINATION ASSEMBLY

Jorgen Selsing, Oak Forest, and Mac A. Thompson, Frankfort, both of Ill., assignors to G & W Electric Company, Blue Island, Ill.

Filed Sep. 20, 1991, Ser. No. 763,187

Int. Cl.[6] H02G *15/103*

U.S. Cl. 174—73.1 **16 Claims**



1. An electrical-stress-controlled solid dielectric cable termination assembly comprising:

an electrical cable;

said electrical cable including a center conductor, a solid dielectric insulating layer arranged concentrically around said conductor, a partially conductive layer arranged concentrically around said solid dielectric insulating layer, and a shield conductor arranged concentrically around said partially conductive layer;

a substantially cylindrical electrically conductive wall;

said conductive wall forming a central bore for receiving said center conductor;

said conductive wall being electrically connected to said shield conductor;

and an insulating coating applied to said conductive wall;

said conductive wall having a thickness and said insulating coating having a thickness which is substantially consistent and substantially smaller than said conductive wall thickness;

said conductive wall having a central longitudinal axis;

said wall having a first portion having inner and outer walls substantially parallel to said axis; and

said wall having a second portion attached to said first portion, said second portion having at least one wall inclined to said axis.

5,488,200

INTERCONNECT STRUCTURE WITH REPLACED SEMICONDUCTOR CHIPS

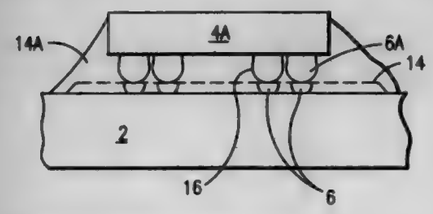
Yutaka Tsukada, Shiga, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 976,619, Nov. 16, 1992, Pat. No. 5,355,580. This application Jun. 8, 1994, Ser. No. 255,596

Claims priority, application Japan, Dec. 26, 1991, 3-3448221

Int. Cl.[6] H05K *1/18*

U.S. Cl. 174—261 **30 Claims**



1. An interconnect structure, comprising:

a first substrate with a surface;

a pattern of multiple conductive pads defining an area on the surface of the first substrate;

conductive bumps with first ends positioned on the conductive pads, and second ends of the bumps defined by a second surface approximately parallel to and above the surface of the first substrate and which defines the flat, distal ends of the bumps wherein the second surface is mountable to an electronic device having additional conductive bumps; and a first layer of an encapsulant filing around the bumps in the volume defined by the area of the pattern of conductive pads and between the first substrate surface and the defining second surface.

5,488,201

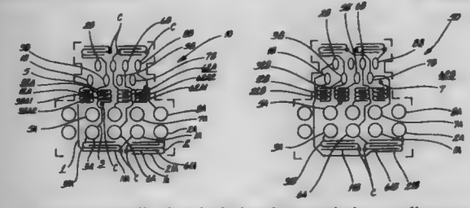
LOW CROSSTALK ELECTRICAL SIGNAL TRANSMISSION MEDIUM

Danny Liu, Taipei, Taiwan, Prov. of China, assignor to Dan-Chief Enterprise Co., Ltd., Taipei, Taiwan, Prov. of China

Filed Dec. 16, 1994, Ser. No. 357,390

Int. Cl.[6] H05K *1/02*

U.S. Cl. 174—262 **14 Claims**



1. A low crosstalk electrical signal transmission medium comprising:

a plurality of input ends for inputting therethrough signals;

a plurality of signal transmission lines respectively electrically connected to said plurality of input ends and being folded into bends and electrically coupled to form a mutually corresponding capacitive arrangement for restoring an electric balance of said signal transmission lines in order to reduce a crosstalk between said signal transmission lines; and

a plurality of output ends respectively electrically connected to said signal transmission lines for outputting therethrough signals.

5,488,202

WEIGHING DEVICE FOR THE REGISTRATION OF GOODS IN STORES

Günter Baitz, and Rainer Ihlenburg, both of Berlin, Germany, assignors to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Paderborn, Germany

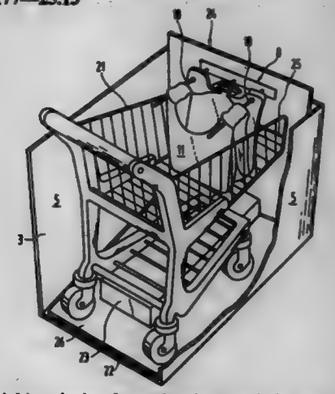
PCT No. PCT/EP91/02368, § 371 Date Jun. 9, 1993, § 102(e) Date Jun. 9, 1993, PCT Pub. No. WO92/10122, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 10, 1991, Ser. No. 74,843

Claims priority, application Germany, Dec. 10, 1990, 40 39 377.1

Int. Cl.[6] G01G *19/40*

U.S. Cl. 177—25.15 **14 Claims**



1. A weighing device for registering goods in stores, in which each purchased article is identified and then weighed for weight-registration purposes, comprising:

a floor scale operable to weigh articles placed on a weighing portion,

a support mounted on said weighing portion of said floor scale and projecting upwardly approximately to waist level,

a suspension means mounted on said support close to an upper end of said support for suspending at least one carrying container which is removable from said suspension means,

a standing container having upwardly extending walls, said standing container extending at least partly about said floor scale and being free of said weighing portion of said floor scale,

a weighing receptacle resting on said weighing portion and including a receiving container in an interior of said standing container and being free of said standing container to permit weighing movement between said weighing receptacle and said standing container, said weighing receptacle being a shopping container which can be pushed into said interior of said standing container and onto said weighing portion of said floor scale, said suspension means being disposed above said shopping container.

5,488,203

FORCE COMPENSATOR FOR INERTIAL MASS MEASUREMENT INSTRUMENT

David R. Hassel, Wynantskill, and Lauren R. Basch, East Greenbush, both of N.Y., assignors to Rupprecht & Patashnick Company, Inc., Albany, N.Y.

Filed Nov. 5, 1993, Ser. No. 147,852

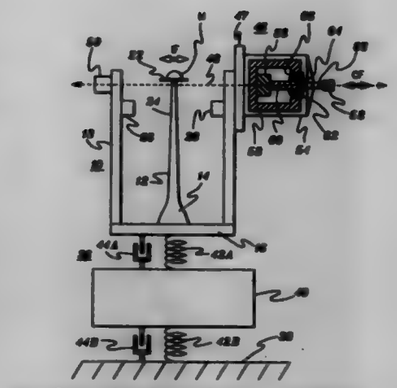
Int. Cl.[6] G01G *21/10;3/14;* **G01N** *29/00*

U.S. Cl. 177—184 **19 Claims**

1. An inertial mass measurement instrument exhibiting enhanced accuracy, comprising:

an elastic element having a first portion for supporting matter to be measured and a second portion secured to a primary support;

means for driving the elastic element into oscillation at a resonant frequency which varies with mass loading;



means for sensing changes in resonant frequency as a measure of mass loading; and

electrically driven compensating force applying means acting on the primary support for actively compensating for inertial forces resulting from oscillation of the elastic element so that energy transfer and dissipation out of the oscillating elastic element through the primary support into a secondary support supporting the primary support, including any suspension system of the secondary support suspending the primary support, is minimized in order to avoid secondary support property changes from compromising mass measurements.

5,488,204

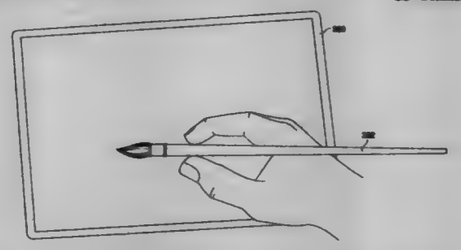
PAINTBRUSH STYLUS FOR CAPACITIVE TOUCH SENSOR PAD

Carver A. Mead, Pasadena; Ralph Wolf, Palo Alto, and Timothy P. Allen, Los Gatos, all of Calif., assignors to Synaptics, Incorporated, San Jose, Calif.

Continuation-in-part of Ser. No. 308,630, Sep. 2, 1994, which is a continuation-in-part of Ser. No. 300,387, Sep. 2, 1994, which is a continuation-in-part of Ser. No. 115,743, Aug. 31, 1993, Pat. No. 5,374,787, which is a continuation-in-part of Ser. No. 895,934, Jun. 8, 1992, abandoned. This application Oct. 17, 1994, Ser. No. 324,438

Int. Cl.[6] G08C *21/00*

U.S. Cl. 178—18 **11 Claims**



1. A conductive paintbrush stylus for use with a capacitive touch sensor pad comprising:

an electrically conductive handle;

a plurality of electrically conductive bristles affixed to said handle;

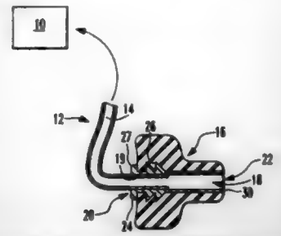
wherein the total resistance of said handle and said bristles is no more than the skin resistance of a human finger.

5,488,205

HEARING AID TUBING CONNECTOR

Miklos Major, Ambridge, Pa., assignor to Microsonic, Inc., Ambridge, Pa.

Continuation of Ser. No. 115,905, Sep. 1, 1993, abandoned.
This application Feb. 6, 1995, Ser. No. 384,697
Int. Cl.[6] H04R 25/00
U.S. Cl. 181—129 16 Claims



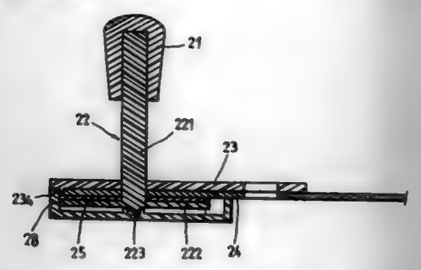
1. A connector for connecting sound conduction tubing from a hearing aid to a sound conduction bore of an earmold, comprising:
a body member having an outer surface and having a bore therethrough with a first end and a second end, said bore being sized to allow said sound conduction tubing to pass through said bore from said first end to said second end and be snugly received in said bore; and
retaining means formed on said outer surface of said body member for engaging said bore of said earmold and retaining said connector therein.

5,488,206

JOYSTICK SWITCH ASSEMBLY

Donald Wu, 12F., No. 59, Chang Chun Road, Taipei, Taiwan, Prov. of China

Continuation-in-part of Ser. No. 188,808, Jan. 31, 1994. This application Dec. 22, 1994, Ser. No. 361,487
Int. Cl.[6] H01H 25/04
U.S. Cl. 200—6 A 6 Claims



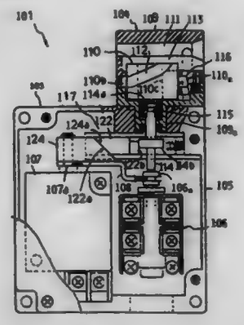
1. A joystick switch assembly comprising:
a housing with an open-top defining a storage chamber, said housing comprising a recessed bearing block located on the inside bottom of said housing;
a cover shell covered on said housing, said cover shell comprising a center through hole, and an annular bottom flange located on one side of said cover shell;
a stick, said stick comprising a contact plate received within the storage chamber of said housing, a stick body raised from one side of said contact plate at the center and extended out of the center through hole on said cover shell, and a stub rod raised from an opposite side of said contact plate at the center and supported on said recessed bearing block;
a membrane circuit mounted around said stick body and disposed between said cover shell and the contact plate of said stick, said membrane circuit having a through hole, through which said stick body of said stick passes, and an extension portion having conductor lines, wherein the extension portion extends out of said housing; and
a circular conductive rubber mounted around said stick body and disposed between said membrane circuit and the contact plate of said stick and received within said annular flange of said cover shell, having a through hole through which said stick body of said stick passes;
wherein when said stick is moved within said housing, said contact plate is forced to press said conductive rubber and said membrane circuit, causing said membrane circuit to produce a location signal output corresponding to the direction of the movement of said stick such that the location signal output is transmitted along the extension portion by the conductor lines.

5,488,207

KEY SWITCH WITH A LOCKING ARRANGEMENT ON A ROTATING ELEMENT

Takashi Niwa, 403, Shatoumeda, 6-1, Minamigobanochyou Sagahirosawa, Ukyoku, Kyoto Si; Kenji Shinohara, 201, Newshatou Nagaoka No. 2, 2 Chyoume, Kugai, Nagaokakyoshi, Kyoto Fu, and Makito Morii, Takatsuki Dobashi Ryo 3-10, Dobashi Chyou Takatsukishi, Osaka Fu, all of, Japan

Filed Feb. 1, 1993, Ser. No. 11,628
Claims priority, application Japan, Jan. 31, 1992, 4-016127; Apr. 10, 1992, 4-090744
Int. Cl.[6] H01H 27/00
U.S. Cl. 200—43.04 6 Claims



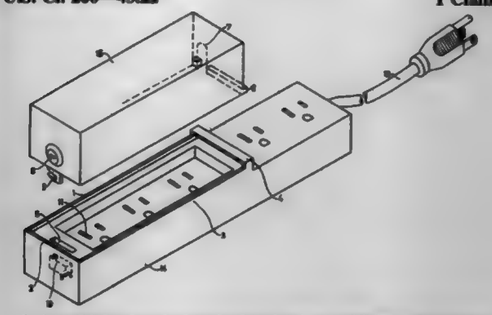
1. A key switch, comprising:
a switching element to control an electric status of an external device;
a first actuator having a changeable position to actuate said switching element;
a rotating element, with a guide to control its rotation, which changes the position of said first actuator;
a first locking mechanism having means to immobilize said rotating element;
a key;
a means, responsive to said key, for disengaging said first locking mechanism and rotating said rotating element;
an electromagnetic solenoid activated in response to an external signal;
a second locking mechanism mechanically connected with said electromagnetic solenoid having means to prevent said key from being removed;
a second actuator for said switching element which is mechanically connected with said electromagnetic solenoid; and
a housing to enclose said switching element, said first actuator, said rotating element, said first locking mechanism, said electromagnetic solenoid, said second locking mechanism, and said second actuator, with an opening into which said key can go.

5,488,208

MULTIPLE ELECTRICAL OUTLET BOX WITH LOCKING COVER AND POWER INTERRUPT SWITCH

Gerhard Seewald, Moosaecker 14, Eckental, Germany

Filed Sep. 23, 1994, Ser. No. 310,563
Claims priority, application Germany, Jan. 5, 1993, 9315854 U
Int. Cl.[6] H01H 9/28
U.S. Cl. 200—43.22 1 Claim



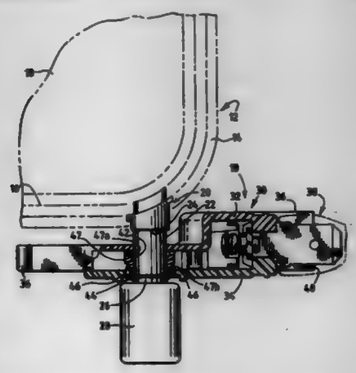
1. A multiple electrical outlet box having multiple outlets and an attached power cable for supplying power to said outlets, wherein at least one electrical plug adapted to be connected to one of said outlets is secured against removal from said electrical outlet box by a locking cover positioned on said outlet box and which encloses said multiple outlets and said plug when said plug is attached to one of said outlets, said cover including a keylock wherein a key for activating said keylock moves a mechanical latch in a locking position to thereby lock said cover to said outlet box and also disables an electrical switch wherein said switch enables electric power from the power cable to reach said outlets when said switch is enabled and prevents power from said power cable from reaching said outlets when said switch is disabled and whereby at least one of said outlets is not covered by said cover when said cover is locked to said outlet box.

5,488,209

HINGE OPERATED SWITCH ASSEMBLY

Mario M. V. Orrico, Chicago; William J. Olson, Barrington; James S. Zielinski, Schaumburg, and Randall M. Crippen, Chicago, all of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Dec. 29, 1994, Ser. No. 368,153
Int. Cl.[6] H01H 3/16
U.S. Cl. 200—61.7 20 Claims



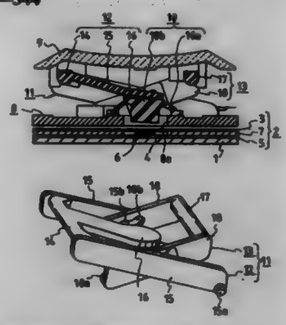
1. A switch assembly for activation by a shaft of a hinge mechanism operatively connected to a first component, which is rotatable with respect to a second component, such that an electrical switch of an electrical circuit is controlled in response to rotatable movement of said first component and said shaft of said hinge mechanism with respect to said second component, comprising:
a cam member connected to said shaft of said hinge mechanism for rotation along with said shaft of said hinge mechanism;
an electrical switch for controlling an electrical circuit;
a lever having a first portion mounted within said switch assembly such that said lever is movable with respect to said electrical switch, and a second portion in operable communication with said electrical switch; and
actuating means having a first portion operably connected to said cam member for rotation along with said cam member and said shaft of said hinge mechanism, and a second portion for engagement with a third portion of said lever such that upon rotation of said cam member and said shaft of said hinge mechanism between a first rotary position of said first component with respect to said second component and a second rotary position of said first component with respect to said second component, said second engagement portion of said actuating means will cause said lever to move to a first position at which said electrical switch is closed, and will permit said lever to move to a second position at which said electrical switch is opened.

5,488,210

PUSH BUTTON SWITCH

Hiroshi Shigetaka, and Yasuhide Orita, both of Iwaki, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 69,891, Jun. 1, 1993, abandoned.
This application Feb. 16, 1995, Ser. No. 390,266
Claims priority, application Japan, Jun. 11, 1992, 4-152163; Jul. 16, 1992, 4-189444; Aug. 4, 1992, 4-208116; Sep. 1, 1992, 4-233792
Int. Cl.[6] H01H 3/12
U.S. Cl. 200—344 9 Claims



1. A push button switch comprising:
a key top having front and rear surfaces, and first and second shafting support parts formed on the rear surface;
a baseplate formed with third and fourth shafting part receiving slots;
a switch element made electrically conductive with up-and-down motions of said key top;
an elastic member, located between said key top and said baseplate, for biasing said key top away from said baseplate;
a first arm member including a first shafting part provided at a first end thereof, the first shafting part being rotatably connected to said first shafting support part of said key top, the first arm member also including a third shafting part provided at a second end thereof and slidably rotatably received in said third shafting part receiving slot, and a first joint part located between the first end and the second end; and
a second arm member including a second shafting part provided at a third end thereof, the second shafting part being rotatably connected to said second shafting support part of said key top, the second arm member also including a fourth shafting part provided at a fourth end thereof and slidably rotatably received in said fourth shafting part receiving slot, and a

second joint part located between the third end and the fourth end and rotatably slidably joined to said first joint part, said second arm member being connected crosswise to said first arm member at said second joint part;

wherein one of said first joint part and said second joint part includes a protrusion and the other of the first joint part and the second joint part includes a curved slot receiving said protrusion.

5,488,211

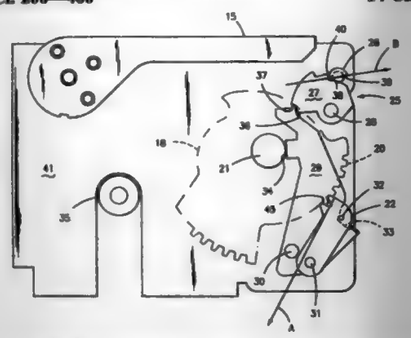
LATCHING ARRANGEMENT FOR HIGH AMPERE-RATED CIRCUIT BREAKER OPERATING SPRINGS

Roger N. Castonguay, 5 Ellen Dr., Terryville, Conn. 06786; James L. Rosen, 478 Fern St., West Hartford, Conn. 06107, and Mark A. Zaffetti, 10 Town Line Rd., Windsor Locks, Conn. 06096

Filed Mar. 28, 1994, Ser. No. 218,287

Int. Cl.[6] H01H *3/30*

U.S. Cl. 200—400 **14 Claims**



1. An industrial-rated circuit breaker for high level overcurrent protection comprising:

an insulative base **11**;

an insulative cover **13** above said base, said cover enclosing a closing shaft **21** and a drive shaft **35** extending between a pair of operating mechanism sideframes **41,42**;

a closing spring **43** connecting with said closing shaft, said closing spring receiving forces for moving said spring into a charged condition;

a handle **15** interacting with said closing shaft through a handle drive gear **18** allowing an operator to provide said forces; and

a closing latch arrangement operatively connecting a locking pawl with said handle drive gear when said operating spring is receiving said forces and releasing said locking pawl from said handle drive gear when said spring becomes fully charged.

5,488,212

SWITCHING DEVICE FOR AN ON-LOAD TAP CHANGER

Akira Fukushi, and Tomio Yamaguchi, both of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Oct. 19, 1994, Ser. No. 326,098

Claims priority, application Japan, Jan. 19, 1993, 5-268292

Int. Cl.[5] H01H *5/08*

U.S. Cl. 200—400 **10 Claims**

1. A switching device for a tap changer comprising:

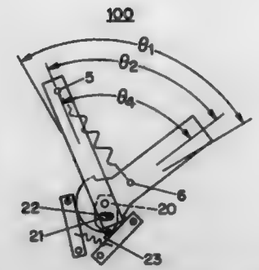
a shaft;

an input lever rotatably mounted on to the shaft;

a clutch, rotatably attached to the shaft, having a slot;

a latching apparatus for engaging the clutch;

an output lever, rotatably attached to the shaft, for making contact with a selected one of a first tap and a second tap, said output lever having a cammed surface at a base thereof for



securing a position of said output lever to make contact with the first tap and for engaging the latching apparatus to prevent said output lever from rotating about the shaft;

a spring for pulling the output lever toward the input lever; and

a pin, fixedly attached to the input lever and disposed within the slot, for driving the clutch to engage the latching apparatus;

whereby when the input lever is pulled away from the output lever by a predetermined angle, said pin drives the clutch against the latching apparatus to free the cammed surface from the latching apparatus, allowing the output lever to rotate about the shaft, and the output lever is then pulled by the spring toward the input lever to make contact with the second tap.

5,488,213

LOW-PROFILE KEYBOARD KEY

Jörg Dittrich, Ammerthal, Germany, assignor to Cherry Mikroschalter GmbH, Auerbach, Germany

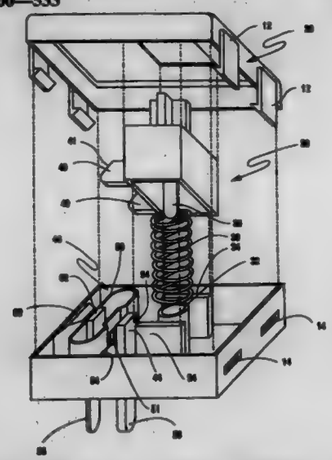
PCT No. PCT/EP92/02285, § 371 Date Jun. 15, 1994, § 102(e) Date Jun. 15, 1994, PCT Pub. No. WO93/10546, PCT Pub. Date May 27, 1993

PCT Filed Sep. 23, 1992, Ser. No. 232,205

Claims priority, application Germany, Nov. 21, 1991, 41 38 339.7; Feb. 4, 1992, 42 03 120.6

Int. Cl.[5] H01H *3/42*

U.S. Cl. 200—533 **12 Claims**



1. A mechanically operable electrical switch element comprising a plunger supported in a housing so movable in a predetermined direction for opening or closing an electrical contact formed between a stationary contact element and a movable contactor, said plunger comprising two trigger cams projecting therefrom perpendicularly to the direction of movement of the plunger for actuating the electrical contact with a movement of the contact portion of the contactor in a direction perpendicularly to the direction of movement of the plunger, said contactor consisting of a sheet metal part bent to an elongate oval shape having essentially flat opposite sides

and bent opposite ends at the greatest extent thereof, said sheet metal part being disposed in a plane normal to the direction of movement of said plunger, and arranged in the switch element in such a manner that its greatest extent is also perpendicular to the direction of movement of the contact portion, and said contact element and said movable contact portion being disposed between said two trigger cams.

5,488,214

INDUCTIVE COOKING POINT HEATING SYSTEM

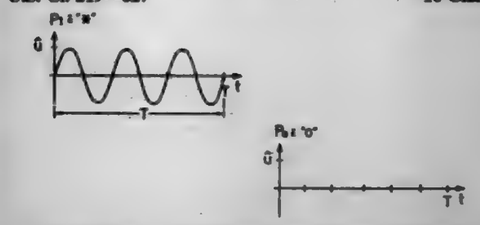
Guenter Fettig, Karlsruhe-Groetzingen; Juergen Horn, Krailchtal; Franz Bogdanski, Oberderdingen, and Willi Essig, Boeblingen, all of, Germany, assignors to E.G.O. Elektro-Gerate Blanc u. Fischer, Germany

Continuation of Ser. No. 30,858, Mar. 12, 1993, abandoned. This application May 4, 1995, Ser. No. 435,002

Claims priority, application Germany, Mar. 14, 1992, 42 08 252.8

Int. Cl.[6] H05B *6/08;6/12*

U.S. Cl. 219—627 **10 Claims**



1. An induction cooker heating system having induction coil means and high frequency oscillating current generating means for energizing said coil means and having electronic control means for controlling the oscillating current generating means, the electronic control means comprising means for controlling oscillation packets for generating different power stages by different switch-on patterns, each switch-on pattern comprising a combination of basic patterns, each basic pattern consisting of complete AC voltage half-waves within a specific constant time interval, said time interval being defined by an integral multiple of said AC voltage waves, each switch-on pattern containing the same number of positive and negative AC voltage half-waves.

5,488,215

SWIVEL CONNECTION

Joachim Aronsson, Hönö, Sweden, assignor to Rotech Tooling, Sweden

PCT No. PCT/SE92/00730, § 371 Date Apr. 21, 1994, § 102(e) Date Apr. 21, 1994, PCT Pub. No. WO93/07986, PCT Pub. Date Apr. 29, 1993

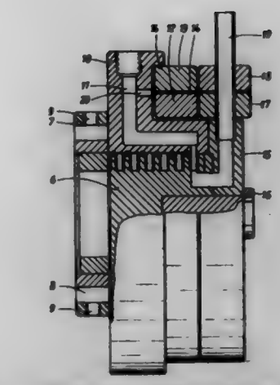
PCT Filed Oct. 20, 1992, Ser. No. 211,958

Claims priority, application Sweden, Jan. 21, 1991, 9103051

Int. Cl.[6] B23K *11/36*

U.S. Cl. 219—86.25 **12 Claims**

1. A swivel connection for attachment to a robot arm for the supply of a fluid therethrough to associated tool means comprising a rotatable, cylindrical hub having a first transverse surface, a second transverse surface and an outer cylindrical surface, and attachment means on said first transverse surface for attachment to said robot arm, a non-rotatable coupling member having an inner surface surrounding said outer surface of said cylindrical hub, first and second concentric contact members juxtaposed with said coupling member and electrically isolated from each other and from said coupling member, a cover member on said second transverse surface of said cylindrical hub and rotatable therewith, first and second concentric ring members surrounding said cover member, said first concentric ring member juxtaposed with said first concentric contact member and said second concentric ring member juxtaposed with said second concentric contact member, said first



and second concentric ring members being electrically isolated from each other and from said cover member, said coupling member including coupling member channel means extending therethrough including a first externally accessible end and a second end on said inner surface of said coupling member proximate to said outer cylindrical surface of said cylindrical hub, said cylindrical hub including hub channel means extending therethrough including a first end proximate to said second end of said coupling member channel means and a second end proximate to said cover member, said cover member including cover member channel means extending therethrough including a first end proximate to said second end of said hub channel means and a second end proximate to said first and second concentric ring members, and said first and second concentric ring members including ring member channel means extending therethrough, including a first end proximate to said second end of said cover member channel means and a second end for attachment to said tool means associated with said robot, whereby said fluid can be supplied from said first end of said coupling member channel means to said second end of said ring member channel means during rotation of said swivel connection.

5,488,216

PROTECTIVE GAS FOR THE LASER WELDING OF ALUMINUM

Alfward Farwer, Meerbusch, Germany, assignor to Messer Griesheim GmbH, Germany

Filed Aug. 10, 1994, Ser. No. 288,081

Claims priority, application Germany, Aug. 30, 1993, 43 29 127.9

Int. Cl.[6] B23K *26/14*

U.S. Cl. 219—121.64 **8 Claims**

1. A protective gas for the laser welding of aluminum, comprising a primary gas selected from the group consisting of argon, helium and argon/helium mixtures, said primary gas having an addition of 80 vpm to 250 vpm of an additive gas selected from the group consisting of N_2, N_2O and N_2/N_2O mixture.

5,488,217

HIGH CURRENT CONTINUOUS WELDING DEVICE

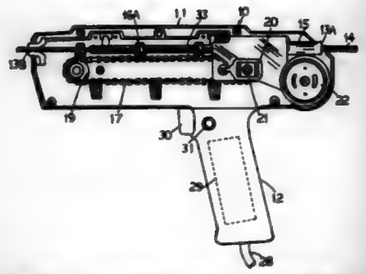
Jian M. Ni, 75 Springbrook Drive, Richmond Hill, Ontario, Canada

Filed Sep. 12, 1994, Ser. No. 343,021

Int. Cl.[6] B23K *9/133*

U.S. Cl. 219—137.31 **8 Claims**

1. A portable continuous welding apparatus for use with an



elongated welding electrode having a welding flux coating provided in equal length sections over a metal core wherein adjacent sections are spaced from each other by a gap exposing a portion of said metal core therein, comprising

a portable housing having an inlet means for receiving said welding electrode to be inserted therein, and an outlet means for directing said welding electrode exiting from said housing towards a welding area,

a drive wheel means rotatably mounted in said housing,

a free wheel means rotatably mounted in said housing,

a continuous drive chain means mounted over said drive wheel means and said free wheel means,

a drive motor means coupled to said drive wheel means and being operative to rotate said drive wheel means for driving said drive chain means,

a plurality of pairs of carrier means mounted at equal intervals on said drive chain means, each pair of carrier means comprising a first carrier means mounted on one side of said drive chain means and a second carrier means mounted on a second side of said drive chain means and located directly opposite to said one side, and said first carrier means and second carrier means having inner surfaces facing each other, a first brush means mounted on said first carrier means and a second brush means mounted on said second carrier means, said first brush means and second brush means extending outwards from said inner surfaces towards each other and being spaced from each other at a distance substantially equal to the diameter of said metal core of said welding electrode, said first carrier means having a rear surface therein and a first horizontal V-shaped channel formed in said rear surface of said first carrier means, said second carrier means having a rear surface therein and a second horizontal V-shaped channel formed in said rear surface of said second carrier means,

a first elongated bus bar means disposed in a spaced manner along one side of said drive chain means, said first elongated bus bar means having a front surface therein disposed parallel to and facing said welding electrode, a first V-shaped ridge formed on said front surface, said first horizontal V-shaped channel of said first carrier means being slidably engageable with said first V-shaped ridge on said first elongated bus bar means,

a second elongated bus bar means disposed in a spaced manner along a second side of said drive chain means, said second elongated bus bar means having a front surface therein disposed parallel to and facing said welding electrode, a second V-shaped ridge formed on said front surface, said second horizontal V-shaped channel of said second carrier means being slidably engageable with said second V-shaped ridge on said second elongated bus bar means,

said first elongated bus bar means and second elongated bus bar means being connected to a source of welding current supply whereby the welding current is supplied to said welding electrode through said first brush means and second brush means operatively in contact with said metal core.

5,488,218

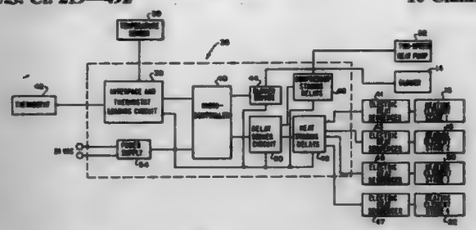
ELECTRIC HEAT CONTROL APPARATUS AND METHOD

Mark W. Olsen, Carrollton; Joe R. Powell, Garland; Russell C. Tharp, Ft. Worth, and Stephen A. Walter, Flower Mound, all of Tex., assignors to Lennox Industries Inc., Dallas, Tex.

Filed Feb. 12, 1993, Ser. No. 17,689

Int. Cl.[6] H05B 1/02

U.S. Cl. 219—492 **10 Claims**



1. In a heating system having a supply air duct in communication with an enclosure, an air mover for moving air in a predetermined direction within the duct to provide a supply air stream to the enclosure, a plurality of heaters located in the duct for heating the supply air stream and a thermostat for providing a demand for heat signal in response to the enclosure temperature being less than a predetermined temperature setting, apparatus for controlling the heaters, said apparatus comprising:

temperature sensing means at a selected location in the duct downstream from the heaters in the predetermined direction for sensing temperature of the supply air stream at said selected location and for providing an indication of sensed temperature; and

control means responsive only to the demand for heat signal and to an indication that the sensed temperature is less than a predetermined first temperature for sequentially activating one or more heaters until the sensed temperature is greater than or equal to said first temperature, said control means being further responsive only to the demand for heat signal and to an indication that the sensed temperature is greater than a predetermined second temperature which is greater than said first temperature for sequentially deactivating one or more of the activated heaters until the sensed temperature is less than or equal to said second temperature, said control means being responsive to cessation of the demand for heat signal for deactivating all of the activated heaters.

5,488,219

INDUCTION HEATING COIL ASSEMBLY AND METHOD FOR HARDENING INNER SURFACE OF CYLINDER BY USING THE SAME

Yoshimasa Tanaka, and Hisashi Tabuchi, both of Hiratsuka, Japan, assignors to Neturen Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1994, Ser. No. 341,872

Claims priority, application Japan, Dec. 13, 1993, 5-311941; Mar. 29, 1994, 6-059229

Int. Cl.[6] H05B 6/38

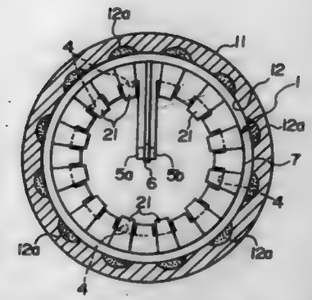
U.S. Cl. 219—644 **16 Claims**

1. A method of hardening an inner surface of a cylinder by using an induction heating coil assembly which comprises a conductive induction member having a substantially cylindrical shape, for forming a hardened layer in the inner wall of an external cylindrical member to be heated which is provided apart from the conductive induction member, by generating an induced current in the inner wall of the external cylindrical member, wherein a plurality of recess portions are formed on the inner wall of the conductive induction member at predetermined spaces circumferentially; comprising the steps of:

flowing high frequency current through said conductive induction member at a first position thereof with respect to said external cylindrical member, to heat separate portions on a first circumferential line of the inner wall of said external cylindrical member which correspond to the plurality of recess portions of said conductive induction member by generation of induced currents in the inner wall of said external cylindrical member, and thereby to form a plurality of hardened layers at said separate portions on said first circumferential line;

transferring said conductive induction member to a second position with respect to said external cylindrical member along the central axis of said external cylindrical member; and thereafter,

flowing high frequency current through said conductive induction member at the second position thereof with respect to said external cylindrical member, to heat separate portions on a second circumferential line of the inner wall of said external cylindrical member which correspond to the plurality of recess portions of said conductive induction member by generation of induced currents in the inner wall of said external cylindrical member, and thereby to form a plurality of hardened layers at said separate portions on the second circumferential line.



5,488,220

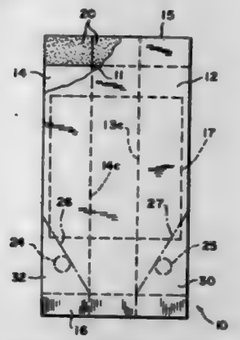
BAG FOR MICROWAVE COOKING

Randall C. Freerks, Little Rock, and Marvin A. Strouth, Ashton, both of Iowa, assignors to Union Camp Corporation, Princeton, N.J.

Filed Jul. 29, 1994, Ser. No. 282,647

Int. Cl.[6] H05B 6/80

U.S. Cl. 219—727 **18 Claims**



1. A bag for popping popcorn in a microwave oven, comprising:

a pair of substantially rectangularly shaped front and back face panels having top and bottom ends and opposite side edges;

a pair of opposite side panels coterminous in length with the face panels and joining the opposite side edges of the front and back face panels, said side panels each having a longitudinal accordion pleat therein defining longitudinally extending gusset folds in the side panels;

bag closure means securing the top and bottom ends of the front and back face panels and the gusseted side panels together to close and seal the top and bottom ends of the bag, forming a cooking chamber inside the bag;

said gusseted side panels being expandable about the folds therein during cooking of food in the bag to enlarge the interior volume of the bag, and when unfolded to the expanded position, forming triangularly shaped corner flaps at the junctures of the gusseted side panels and the front and back face panels, respectively, said corner flaps each having a folded edge extending diagonally from the respective side panel toward the adjacent closed end of the bag, and having confronting, contiguous, triangularly shaped surface portions between the respective side panel and the adjoining front and back face panels; and

attachment means joining the confronting surface portions between the side panels and at least one of the front and back face panels at least at one end of the bag immediately adjacent the diagonal folded edge and spaced from the adjacent bag closure means to hold the confronting surface portions in contiguous relationship when the bag is fully expanded, thereby preventing the formation of pockets or spaces between the confronting surface portions in which food might otherwise collect.

5,488,221

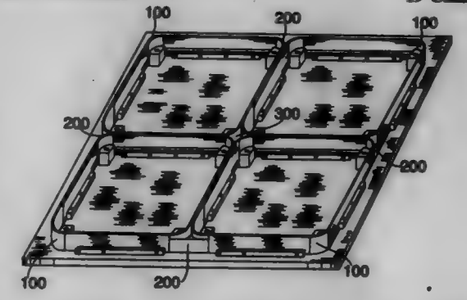
SLOT INTERLOCK CONNECTORS FOR RF WELDING ELECTRODES

Louis Amabile, and Andrew L. Amabile, both of 582 Grand Ave., Lindenhurst, N.Y. 11757

Filed Jan. 18, 1995, Ser. No. 374,115

Int. Cl.[6] H05B 6/54

U.S. Cl. 219—765 **19 Claims**



1. A connector for connecting a first high frequency welding electrode to a second high frequency welding electrode on a backing plate, said connector comprising:

a connector electrode having a first upper working edge and first and second end edges which are substantially orthogonal to said first upper working edge; and

a first integral mounting block for mounting said connector on the backing plate, said first integral mounting block having a first upper surface which is lower than said first upper working edge and first and second end surfaces, each of said first and second end surfaces overshadowing a respective end edge of said connector electrode and providing a substantially flat alignment surface adjacent to said respective end edge of said connector electrode, whereby,

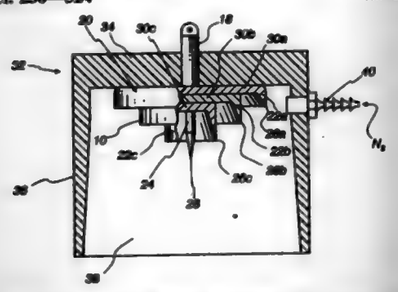
an end of the first high frequency welding electrode is aligned with said first end edge of said connector electrode by said first end surface of said first integral mounting block and an end of the second high frequency welding electrode is aligned with said second end edge of said connector electrode by said second end surface of said first integral mounting block.

5,488,222

ELECTRODE ARRANGEMENT FOR CREATING CORONA AND METHOD OF TREATING ELECTRICALLY-CONDUCTIVE SURFACES

Michael J. Gault, 4618 Compass Rose, #21, Vermilion, Ohio 44089, and Ernest H. Pfaff, 1549 Woodvale Ave., Deerfield, Ill. 60015

Filed Sep. 16, 1994, Ser. No. 307,198
Int. Cl.[6] H01T *19/00*
U.S. Cl. 250—324 20 Claims



1. An electrode arrangement for creation of a corona over an area for surface treatment of an article with the corona, the electrode arrangement being configured for attachment to a high frequency corona generator and having an electrode made of an electrically conductive material, comprising

a. a stem for attachment to the corona generator,

b. a corona driving portion mounted on said stem,

c. a corona emitting portion in electrical contact with said corona driving portion,

d. said corona driving portion being configured in relation to said corona emitting portion such that corona from the electrode arrangement is emitted essentially from said corona emitting portion in a direction away from said corona driving portion,

e. an electrically insulative shroud for said electrode, said shroud including means for attachment of said shroud to said electrode and having a corona guide spaced from said electrode and extending essentially in the direction that corona is emitted, creating a corona cavity in said shroud, and

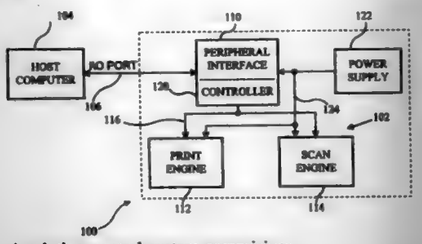
f. means for introducing a gas into said corona cavity, said gas enveloping said electrode and a surface of an article to be treated.

5,488,223

SYSTEM AND METHOD FOR AUTOMATIC SELECTION OF PRINTER CONTROL PARAMETERS

Pixie A. Austin, Everett; Duane M. Fox, Snohomish, and Christopher A. Wiklof, Everett, all of Wash., assignors to Intermec Corporation, Everett, Wash.

Filed Sep. 13, 1994, Ser. No. 305,204
Int. Cl.[6] G06F *15/20*
U.S. Cl. 235—375 24 Claims



1. A printing control system comprising:

a print medium on which an output image can be printed, said print medium including a symbology containing a print characteristic of said print medium;

a reader to read said symbology and generate control signals representative of said print characteristic;

a printer to print said output image on said print medium, said printer having an adjustable printer operating parameter which controls the printing of a first output image;

a controller responsive to said control signals to selectively adjust said printer operating parameter of said printer to control the printing of said first output image on said print medium by said printer; and

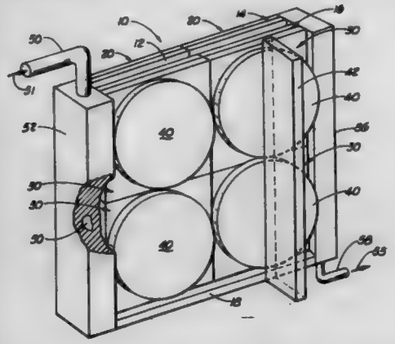
an analyzer to monitor said first output image and determine a quality value for said first output image, said analyzer dynamically altering said printer operating parameter in response to said quality value to alter the printing of a second output image printed subsequent to said first output image.

5,488,224

SYSTEM FOR CHARACTERIZING FLOW PATTERN, PRESSURE AND MOVEMENT OF A FLUID

John E. Fagan; James J. Sluss, Jr.; John W. Hassell; R. Brian Mears; Ronnie B. Beason; Sonja R. Wilkinson; Tommy Lear, and Kok S. Tan, all of Norman, Okla., assignors to Gas Research Institute, Chicago, Ill.

Continuation of Ser. No. 125,946, Sep. 21, 1993, Pat. No. 5,326,969, which is a division of Ser. No. 965,828, Oct. 22, 1992, Pat. No. 5,271,675. This application Mar. 31, 1994, Ser. No. 221,322
The portion of the term of this patent subsequent to Jul. 5, 2011, has been disclaimed.
Int. Cl.[6] H01J *5/16*; G01K *1/14*
U.S. Cl. 250—227.16 84 Claims



1. An apparatus for viewing a flow of a fluid disposed between two facings used for testing the fluid, the apparatus comprising:

a first facing having a front surface and a rear surface;

a second facing having a front surface and a rear surface, the second facing disposable opposite and spaceable apart from the first facing wherein a gap is formed therebetween for containing the fluid;

a light source for providing light;

a plurality of transmitting fiber optic members at least partially disposed within the first facing;

a plurality of receiving fiber optic members at least partially disposed within the second facing for receiving light transmitted from the plurality of transmitting fiber optic members; and

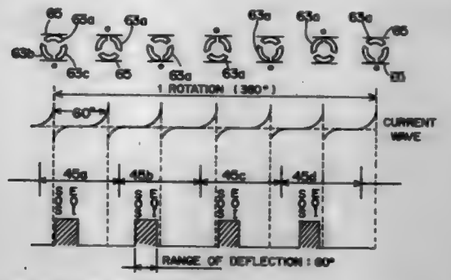
means for converting light received by the receiving fiber optic member into an image of the flow of the fluid.

5,488,225

ROTARY SCANNER AND LIGHT BEAM SCANNING SYSTEM HAVING A SPECIFIED RELATIONSHIP BETWEEN THE FACETS OF THE SCANNING MIRROR AND THE COMMUTER SEGMENTS OF THE MOTOR

Koji Hiramatsu, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 3, 1994, Ser. No. 253,341
Claims priority, application Japan, Jun. 7, 1993, 5-136259; Jul. 27, 1993, 5-185038
Int. Cl.[6] H01J *3/14*
U.S. Cl. 250—236 17 Claims



1. A rotary scanner comprising:

a mirror with at least one deflecting facet for deflecting a light beam; and

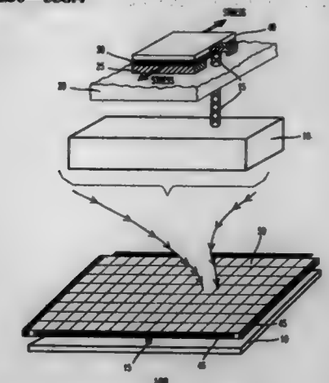
a motor for rotating the mirror, the motor having a plurality of commutator segments and brushes, at least one commutation position, where a brush is released from contact with a commutator segment and comes into contact with another commutator segment, being visible from outside.

5,488,226

INFRARED IMAGING ARRAY BASED ON TEMPERATURE DRIVEN ANISOTROPIC OPTICAL ABSORPTION

Gerald J. Iafrate, Raleigh, N.C.; Mitra Dutta, Tinton Falls; Paul H. Shen, Howell, both of N.J., and Michael A. Stroscio, Durham, N.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 18, 1994, Ser. No. 341,774
Int. Cl.[6] H01L *31/06*
U.S. Cl. 250—338.4 28 Claims



1. A thermal imaging device comprising:

a substrate having an anisotropic thermal expansion coefficient;

bottom contact means bonded to the substrate, said bottom contact means having a lengthwise axis;

a multiple quantum well epilayer displaced on the bottom contacts, said multiple quantum well epilayer having a thermal expansion coefficient; and

means to electrically contact the multiple quantum well epilayer without contacting the substrate;

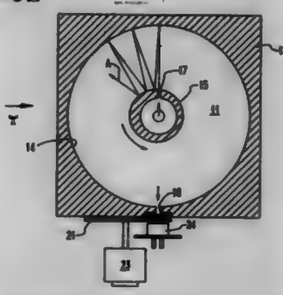
wherein the substrate is formed such that thermal expansion coefficient of the substrate is matched to that of the MQW epilayer in the direction parallel to the lengthwise axis of the bottom contact means and so that the thermal expansion coefficient of the substrate normal to the lengthwise axis of the bottom contact means is not matched, and wherein when thermal radiation is incident to the multiple quantum well epilayer, an anisotropic strain is displaced along the multiple quantum well epilayer due to the difference of the thermal expansion coefficients of the multiple quantum well epilayer and the substrate whereby an anisotropic absorption is induced in said multiple quantum well epilayer by the uniaxial strain.

5,488,227

GAS ANALYZER

Christopher R. Sweet, Leicestershire, England, assignor to Geotechnical Instruments (UK) Limited, United Kingdom

Filed Oct. 11, 1994, Ser. No. 320,674
Claims priority, application United Kingdom, Jan. 8, 1993, 9320756
Int. Cl.[6] G01N *21/61*
U.S. Cl. 250—343 19 Claims



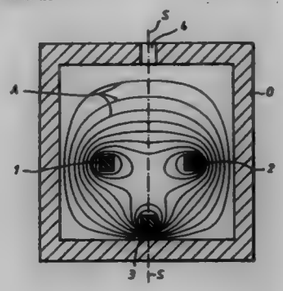
1. A sample chamber for a gas detector, the chamber having a gas sample inlet, and defining an inlet path for a beam of energy, an exit path for said beam of energy and reflector means whereby said beam of energy is in use reflected from said inlet path to said exit path, said reflector means including a concave reflector surface and a convex reflector surface.

5,488,228

SADDLE FIELD SOURCE

Hermann Dobler, Aalen, Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Germany

Filed Oct. 11, 1994, Ser. No. 321,325
Claims priority, application Germany, Jan. 8, 1993, 43 34 357.0
Int. Cl.[6] H01J *37/08*; H05H *3/00*
U.S. Cl. 250—423 R 16 Claims



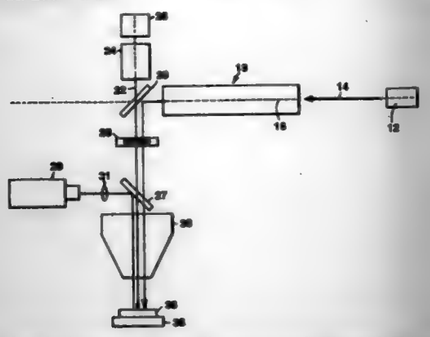
1. An electrostatic saddle field source comprising:
a chamber having an exit opening defining a preferred direction and said chamber defining a center plane perpendicular to said preferred direction;
a plurality of electrodes mounted in said chamber to produce an electric field defining a saddle when voltage is applied to said electrodes;
gas supply means for supplying a gas to said chamber which is ionized to produce particles of which a portion passes from said chamber through said exit opening in said direction as a particle beam when said voltage is applied; and,
said electrodes being disposed in said chamber so as to define an arrangement of said electrodes which is asymmetrical with respect to said center plane and said electric field likewise being asymmetrical with respect to said center plane.

5,488,229

DEEP ULTRAVIOLET MICROLITHOGRAPHY SYSTEM

David J. Elliott, Wayland, Mass., and David Shafer, Fairfield, Conn., assignors to Excimer Laser Systems, Inc., Wayland, Mass.

Filed Oct. 4, 1994, Ser. No. 317,314
Int. Cl.[6] G21K 5/04
U.S. Cl. 250—492.2 19 Claims



1. A high resolution, deep UV beam photolithography system comprising a deep UV radiation source for generating a beam of deep ultraviolet radiation along a path, mask receiving structure in said path, a first optical system in said path for homogenizing and shaping the deep UV energy in said path; and a second optical system in said path for directing radiation energy onto the surface of a substrate to be processed, said second optical system including large area mirror structure having a numerical aperture of at least 0.3 and a plurality of refractive elements disposed between said mask receiving structure and said substrate for compensating (reducing) image curvature introduced into the system by said large area mirror structure, said second optical system providing a focal point outside any one of said refractive elements.

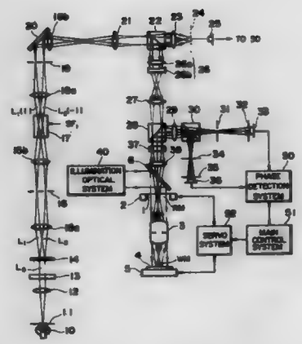
5,488,230

DOUBLE-BEAM LIGHT SOURCE APPARATUS, POSITION DETECTING APPARATUS AND ALIGNING APPARATUS

Hideo Mizutani, Yokohama, and Kazuya Ota, Tokyo, both of, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jul. 14, 1993, Ser. No. 91,501
Claims priority, application Japan, Jul. 15, 1992, 4-187198; Feb. 12, 1993, 5-024441; Feb. 19, 1993, 5-029530; Feb. 19, 1993, 5-029531
Int. Cl.[6] G01N 21/86; H04N 1/00
U.S. Cl. 250—548 29 Claims

28. A double-beam light source apparatus comprising:
a light source system for supplying a beam, said light source system having a light source for generating a beam including



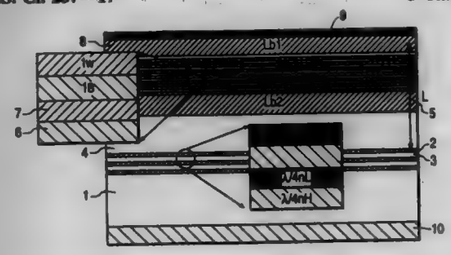
light of plural wavelengths and a collimating optical system for condensing the beam from said light source; and
frequency difference producing means for receiving the beam outgoing from said light source means to split it into two beams and producing a predetermined frequency difference between said two beams to output said two beams radially spreading;
wherein transmission optical path lengths of the two beams are identical to each other and the two beams having said predetermined frequency difference are made separately outgoing.

5,488,231

METAL/SEMICONDUCTOR JUNCTION SCHOTTKY DIODE OPTICAL DEVICE USING A DISTORTION GROWN LAYER

O-Kyun Kwon, Daejeon; Young-Wan Choi, Seoul, and El-Hang Lee, Daejeon, all of, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon-shi, Rep. of Korea

Filed Dec. 9, 1994, Ser. No. 352,628
Claims priority, application Rep. of Korea, Nov. 23, 1994, 94-30898
Int. Cl.[6] H01L 27/14; 31/00
U.S. Cl. 257—17 3 Claims



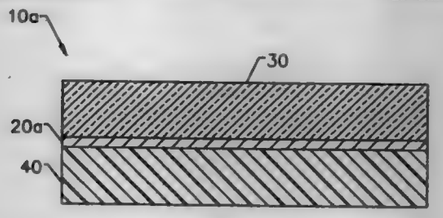
1. A metal/semiconductor junction Schottky diode optical device formed on a structure comprising:
a plurality of GaAs mirror and AlAs mirror layers grown on a semi-insulating GaAs substrate, one of an n+ and a p+ semiconductor layer formed on said GaAs mirror and AlAs mirror layers, a GaAs buffer layer formed on said one of said n+ and p+ semiconductor layer providing a Schottky metal layer serving as an electrode and a mirror, and a multiple quantum well structure having an electro-optical absorption characteristic, formed between said one of said n+ and p+ semiconductor layer and Schottky metal layer, to provide a diode with said multiple quantum well structure.

5,488,232

ORIENTED DIAMOND FILM STRUCTURES ON NON-DIAMOND SUBSTRATES

Jeffrey T. Glass, Apex; Denise T. Simendinger, and Peter T. Goeller, both of Raleigh, all of N.C., assignors to North Carolina State University, Raleigh, N.C.

Filed Sep. 28, 1993, Ser. No. 128,365
Int. Cl.[6] H01L 29/161; 29/20; 29/22
U.S. Cl. 257—77 15 Claims



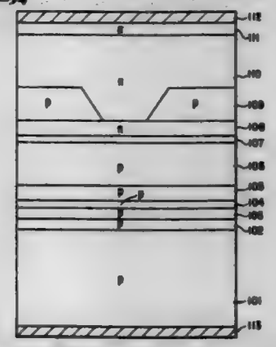
8. A semiconductor device comprising:
a non-diamond substrate;
a first layer on the non-diamond substrate, the first layer comprising a metal silicide; and
a second layer on the first metal silicide layer, the second layer comprising a semiconducting oriented diamond wherein portions of said oriented diamond layer are in alignment with a lattice of corresponding portions of said non-diamond substrate.

5,488,233

SEMICONDUCTOR LIGHT-EMITTING DEVICE WITH COMPOUND SEMICONDUCTOR LAYER

Masayuki Ishikawa, Yokohama; Yukie Nishikawa, Narashino; Shinji Saito; Peter J. Parbrook, both of Kawasaki; Masaaki Onomura, Tokyo; Koichi Nitta, and Genichi Hatakoshi, both of Yokohama, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 11, 1994, Ser. No. 208,850
Claims priority, application Japan, Mar. 11, 1993, 5-051102; Jun. 25, 1993, 5-154691; Sep. 10, 1993, 5-225362
Int. Cl.[6] H01L 33/00
U.S. Cl. 257—94 24 Claims



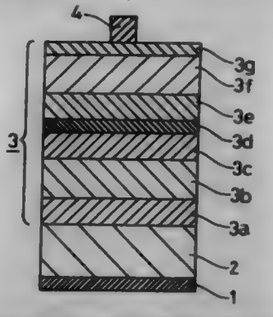
1. A semiconductor light-emitting device comprising:
a semiconductor substrate consisting of a compound semiconductor of elements in the third and fifth groups of the periodic table;
a first compound semiconductor layer formed directly on at least a portion of said semiconductor substrate and consisting of a compound semiconductor containing at least In and P; and
a second compound semiconductor formed directly on said first compound semiconductor layer and consisting of a compound semiconductor of elements in the second and sixth groups of the periodic table.

5,488,234

SEMICONDUCTOR ELEMENT HAVING BIVALENT AND VI GROUP ELEMENT AND AN INSULATING LAYER

Shigeo Yoshii, Nagaokakyo; Kazuhiro Ohawa, Moriguchi; Ayumi Tsujimura, Takatsuki, and Tsuneo Mitsuyu, Hirakata, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 17, 1994, Ser. No. 214,281
Claims priority, application Japan, Mar. 18, 1993, 5-058241; Mar. 25, 1993, 5-066569
Int. Cl.[6] H01L 33/00; 29/22; 31/0256; 31/0296
U.S. Cl. 257—94 10 Claims



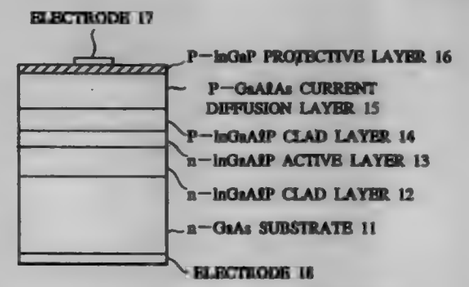
1. A semiconductor element comprising a compound of at least one bivalent element and at least one VI group element, wherein said semiconductor element has an insulating layer, said insulating layer comprising ions implanted on at least one n-type semiconductor layer of the semiconductor element in an amount from 10^{12} ions/cm^2 to 10^{18} ions/cm^2, wherein said implanted ions are at least one element selected from the group the consisting of I group and V group.

5,488,235

SEMICONDUCTOR LIGHT-EMITTING ELEMENT AND METHOD FOR MANUFACTURING THEREFOR

Hideki Nozaki, Kawasaki, and Kazumi Ueno, Yokohama, both of, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 209,731, Mar. 14, 1994, abandoned.
This application Jun. 1, 1995, Ser. No. 456,609
Claims priority, application Japan, Mar. 15, 1993, 5-053539; Sep. 29, 1993, 5-242914
Int. Cl.[6] H01L 33/00; 27/15; 31/12
U.S. Cl. 257—94 10 Claims



1. A semiconductor light-emitting element comprising:
an active layer;

a high aluminum crystal layer formed on said active layer and formed from aluminum of a high mol ratio ≧60%; and

a conductive crystal layer formed on a light producing surface of said high aluminum crystal layer, said conductive crystal layer containing aluminum of a mol ratio ≦50%,

wherein said conductive crystal layer fully covers the light producing surface of said high aluminum crystal layer.

5,488,236

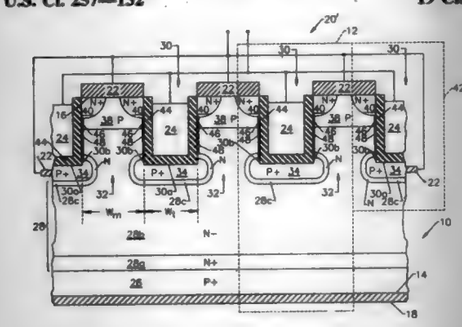
LATCH-UP RESISTANT BIPOLAR TRANSISTOR WITH TRENCH IGFET AND BURIED COLLECTOR

B. Jayant Baliga, Raleigh, N.C., and Jacek Korec, Mörfelden-Walldorf, Germany, assignors to North Carolina State University, Raleigh, N.C.

Filed May 26, 1994, Ser. No. 249,449

Int. Cl.[6] H01L *29/74;31/111*

U.S. Cl. 257—132 **19 Claims**



1. A semiconductor switching device comprising:

a semiconductor substrate having first and second opposing faces;

an anode contact on the first face;

a cathode contact of the second face;

an anode region in said substrate, ohmically contacting said anode contact at the first face;

a first conductivity type region in said substrate and on said anode region, opposite the first face, said first conductivity type region comprising a buffer region, which forms a first P—N junction with said anode region, and a drift region on said buffer region, said drift region having a doping concentration below that of said buffer region;

a second conductivity type region in said substrate and on said first conductivity type region, opposite said anode region, said second conductivity type region being of same conductivity type as said anode region and forming a second P—N junction with said drift region at a position intermediate the first and second faces;

a cathode region of first conductivity type in said substrate and ohmically contacting said cathode contact, said cathode region forming a third P—N junction with said second conductivity type region;

a buried collector region of second conductivity type in the first conductivity type region and electrically connected to said cathode contact, said buried collector region forming a fourth P—N junction with said drift region at a position intermediate the first face and the second P—N junction; and

means adjacent said second conductivity type region for electrically connecting said cathode region to said first conductivity type region in response to a first bias signal.

5,488,237

SEMICONDUCTOR DEVICE WITH DELTA-DOPED LAYER IN CHANNEL REGION

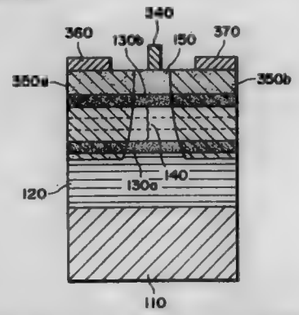
Nobuhiro Kuwata, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan

Filed Feb. 11, 1993, Ser. No. 16,263

Claims priority, application Japan, Feb. 14, 1992, 4-028301; Feb. 24, 1992, 4-036411

Int. Cl.[6] H01L *27/12;29/267;29/80*

U.S. Cl. 257—194 **20 Claims**



1. A field effect transistor in which a current flowing between a drain region and a source region is controlled by a voltage applied to a gate electrode, comprising:

a channel region having a multi-layer structure, said multi-layer structure including:

a lower semiconductor layer including a first compound semiconductor,

an electron supply semiconductor layer including a second compound semiconductor and located on said lower semiconductor layer, and

an upper semiconductor layer including said first compound semiconductor and located on said electron supply semiconductor layer, said electron supply semiconductor layer being sandwiched between said lower and upper semiconductor layers,

whereby, when a predetermined threshold voltage is supplied to said gate electrode, a first channel is formed at an interface between said electron supply semiconductor layer and said lower semiconductor layer, and a second channel is formed by electrons falling into a quantum well at an interface between said electron supply semiconductor layer and said upper semiconductor layer, said electrons falling into said well including a first electron which has made a real space transition from said first channel and a second electron which has been supplied from said electron supply semiconductor layer.

5,488,238

ARRANGEMENT OF POWER SUPPLY LINES USED IN A UNIT FUNCTIONAL BLOCK

Motohiro Enraku, and Yutaka Tanaka, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 20,459, Feb. 22, 1993, abandoned, which is a continuation of Ser. No. 720,700, Jun. 25, 1991, abandoned. This application Apr. 18, 1995, Ser. No. 425,333

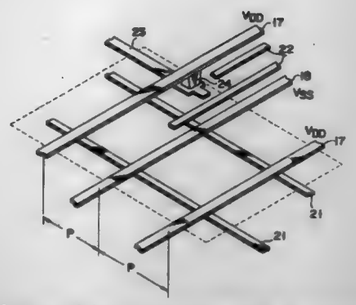
Claims priority, application Japan, Jun. 25, 1990, 2-164321

Int. Cl.[6] H01L *27/10*

U.S. Cl. 257—207 **6 Claims**

1. A semiconductor integrated circuit device having a multilayer structure, comprising:

a pattern arranged in a first direction, said pattern forming at least two circuit blocks having semiconductor elements and having different functions, said pattern being arranged repeatedly in a second direction, said second direction being substantially perpendicular to the first direction, wherein each set of two adjacent patterns are line-symmetric with respect to a corresponding boundary line thereof;



means for transmitting a signal sequentially on said two circuit blocks;

a control signal line pattern formed on a first layer and supplying a common control signal to circuit blocks having an identical circuit structure, said control signal line pattern being arranged along said second directional;

a main power-supply line pattern formed on a second layer and arranged along said first direction on the boundary line of said two patterns arranged in the first direction, said main power-supply line pattern including a pattern of voltage supply lines, each of said voltage supply lines supplying power to two adjacent circuit blocks on either side of said each voltage supply, said each voltage supply line supplying power to said at least two different circuit blocks having different functions arranged in said first direction, said second layer disposed above said first layer; and

a branch power-supply line pattern for electrically connecting said main power-supply line pattern to the semiconductor elements of said circuit blocks, and for actuating said circuit blocks by supplying said semiconductor elements with the power supplied by said main power-supply line pattern.

5,488,239

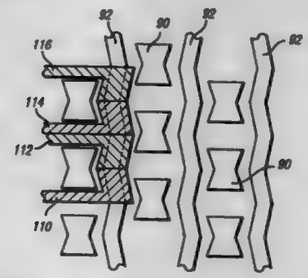
SOLID STATE IMAGE SENSOR WITH SHAPED PHOTODIODES

Hun J. Jung, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Rep. of Korea

Filed Jul. 14, 1994, Ser. No. 275,908

Int. Cl.[6] H01L *27/14;31/00*

U.S. Cl. 257—231 **2 Claims**



1. A solid state image sensor comprising:

(a) a plurality of photodiodes arranged such that the photodiodes in odd number columns and the photodiodes in even number columns straddle each other, for generating image signal charges by converting light signals into electrical signals, wherein each of the photodiodes is shaped like a peanut shell having a narrower middle part;

(b) vertical charge coupled devices each formed between the photodiode columns for transmitting the image signal charges generated in each of the photodiodes, vertically; and

(c) a plurality of microlenses each arranged matched with each of the plurality of photodiodes over each of the photodiodes.

5,488,240

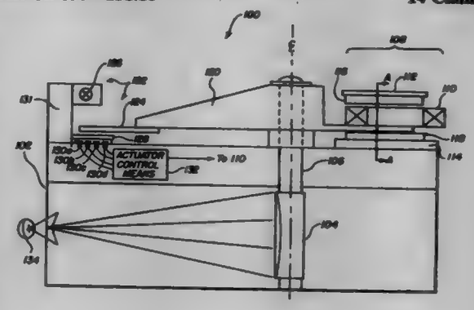
APPARATUS AND METHOD FOR ROTATING AN OPTICAL ELEMENT USING A MOVING COIL IN A CONSTANT MAGNETIC FIELD

Louis Hlousek; K. C. Odencrantz; Richard K. Oswald; Donald W. Dahlin; Saied Motael; Paul W. Siggins; Kenny Weng; Ronald A. Smith, and Philip M. Scheinert, all of c/o Thermo Separation Products (California) Inc., P.O. Box 5116, 45757 Northport Loop West, Fremont, Calif. 94537

Filed Dec. 27, 1993, Ser. No. 172,899

Int. Cl.[6] H01J *31/50*

U.S. Cl. 250—231.16 **14 Claims**



1. An apparatus for rotating an optical element in response to a light control signal indicative of a desired rotation of said optical element, said apparatus comprising:

a moving coil actuator, coupled to said optical element, for rotating said element;

sensor means for detecting rotation of said optical element, for generating a plurality of rotation signals representative thereof, and for providing said rotation signals to an actuator control means to control rotation of said optical element; and

actuator control means, responsive to said light control signal, for providing an actuation signal to said moving coil actuator to control rotation of said optical element, said actuator control means comprising a microprocessor and logic circuit, responsive to said plurality of rotation signals and said light control signal, for generating a phase shift control signal, for generating a reference signal and for generating a distance-to-go signal indicative of distance of rotation of said element remaining to produce said desired rotation;

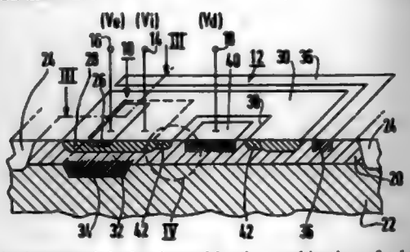
error means for phase shifting said plurality of rotation signals and for comparing said phase shifted rotation signals to said reference signal to produce a position error signal and a velocity error signal, said position error signal being provided to said moving coil actuator when said apparatus is in a track follow mode; and deceleration means, responsive to said position and velocity signals, for generating an optimal velocity signal to control said rotation of said element when said apparatus is in an optimal seek mode, said error means comprising a sine table, responsive to said phase shift control signal, for providing a phase shift signal; a phase shifter, responsive to said plurality of rotation signals and said phase shift signal, for generating a plurality of phase shifted signals, said plurality of phase shifted signals being said plurality of rotation signals phase shifted by a phase angle determined by said phase shift signal; and quadrant selector means for comparing said plurality of phase shifted signals and said reference signal, for generating a position error signal based on said comparison and for differentiating said position error signal to produce a velocity error signal.

5,488,241

INTEGRATED DEVICE COMBINING A BIPOLAR TRANSISTOR AND A FIELD EFFECT TRANSISTOR

Jacques Journeau, Colomby, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 20, 1994, Ser. No. 278,481
Claims priority, application France, Jul. 22, 1993, 93 09053
Int. Cl.[6] H01L 29/80;29/808
U.S. Cl. 257—273 6 Claims



1. An integrated device formed by the combination of a bipolar transistor (**10**) and a junction field effect transistor (**12**), comprising:

a heavily doped emitter zone (**26**) of a first conductivity type;

a base zone (**28**) which is less heavily doped than the emitter zone, which is of a second conductivity type opposed to the first type, in which the emitter zone (**26**) is included, and which comprises a lateral extension (**30**) forming a gate for the field effect transistor;

a collector zone formed by a portion (**32**) of a weakly doped epitaxial layer (**20**) of the first conductivity type on a weakly doped substrate (**22**) of the second conductivity type, and by a heavily doped buried layer region (**34**) of the first conductivity type extending below the emitter zone (**26**); which device in addition comprises a heavily doped peripheral region (**36**) of the first conductivity type which surrounds the base zone (**28**) and its lateral extension (**30**) at least partly and at a selected distance;

characterized in that the lateral extension (**30**) of the base zone comprises an opening (**38**) in which a drain region (**40**) of the first conductivity type for the field effect transistor is situated, said drain region being heavily doped, completely surrounded by said lateral extension (**30**) and separated therefrom by a given lateral distance (w), and in that the buried layer region (**34**), which is of an elongate shape, extends in a longitudinal direction to beyond the base zone and its lateral extension so as to be covered by said peripheral region (**36**), said peripheral region forming together with the buried layer region (**34**) the source of the field effect transistor (**12**).

5,488,242

SEMICONDUCTOR MEMORY DEVICE

Kazumasa Sunouchi, Yokohama; Hiroshi Takato, Kawasaki; Tohru Ozaki; Naoko Okabe, both of Tokyo; Katsuhiko Hieda, Yokohama; Fumio Horiguchi, Tokyo; Akihiro Nitayama; Takashi Yamada, both of Kawasaki; Kouji Hasimoto, Yokohama, and Satosi Inoue, Suwa, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

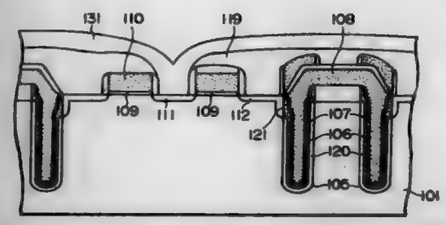
Continuation of Ser. No. 620,482, Nov. 29, 1990, abandoned.
This application Nov. 24, 1993, Ser. No. 156,931
Claims priority, application Japan, Nov. 30, 1989, 1-312192
Int. Cl.[6] H01L 29/78;29/92;27/02;29/68
U.S. Cl. 257—301 11 Claims

1. A semiconductor memory device comprising a plurality of memory cells, each comprising:

a MOSFET element region including a source region, and a drain region, and a gate, the source region and the drain region being of a first conductivity type and formed in a surface of a substrate of a second conductivity type at positions aligned with a longitudinal centerline of the element region that is parallel to a centerline of a bit line, the gate being formed between the source region and the drain region;

a trench having an inside wall and formed in the substrate at a position centered in deviated relation to the longitudinal centerline of the element region; and

a capacitor including a storage node electrode, a capacitor insulator film, and a plate electrode, the storage node electrode being formed on an insulation film provided on the inside wall of the trench and in contact with the source region or the drain region through a storage node contact formed in the insulation film, the capacitor insulator film and the plate electrode being successively laminated on the storage node electrode.

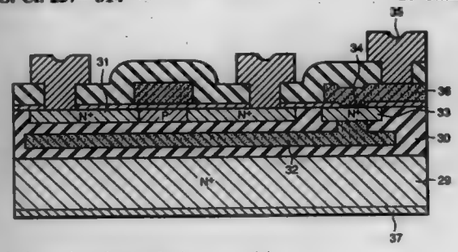


5,488,243

SOI MOSFET WITH FLOATING GATE

Kazuhiro Tsuruta, Obu; Hiroaki Himi, Nagoya; Akiyoshi Asai, Aichi, and Seiji Fujino, Toyota, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 3, 1993, Ser. No. 160,885
Claims priority, application Japan, Dec. 4, 1992, 4-325783; Jun. 2, 1993, 5-131864
Int. Cl.[6] H01L 29/78
U.S. Cl. 257—314 10 Claims



1. A semiconductor device comprising

a semiconductor substrate,

a thin film single-crystalline semiconductor layer with an insulating layer interposed therebetween, the insulating layer containing a floating electroconductive layer buried therein,

a MOSFET comprising source and drain regions in the thin film single-crystalline semiconductor layer,

a gate insulating film on the thin film single-crystalline semiconductor layer,

a polysilicon gate on the gate insulating film,

a second thin film single-crystalline semiconductor layer on the insulating layer and insulated from the MOSFET,

a tunnel insulating film on the second thin film single-crystalline semiconductor layer,

a doped polysilicon layer on the tunnel insulating layer,

a second metal electrode layer on the doped polysilicon layer, and

a metal electrode layer connected to the semiconductor substrate acting as an electrode for applying a voltage to store electric charges in the floating electroconductive layer,

the thin film single-crystalline semiconductor layer having a channel region at a portion corresponding to the polysilicon gate,

the floating electroconductive layer being located at least at a position corresponding to the channel region of the MOSFET and being electrically insulated,

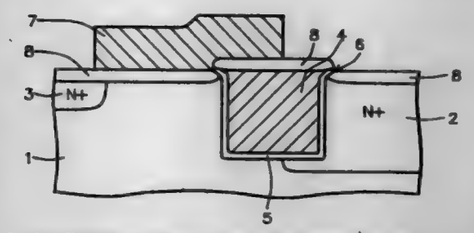
wherein the second thin film single-crystalline semiconductor layer is connected to the floating electroconductive layer, whereby the electric charge is introduced in the floating electroconductive layer by applying a voltage between the metal electrode layer and the second metal electrode layer so that electrons are injected from the doped polysilicon layer into the floating electroconductive layer through the tunnel insulating film.

5,488,244

ELECTRICALLY ERASABLE AND PROGRAMMABLE READ ONLY MEMORY CELL

Elgin K. B. Quek, Singapore, Singapore; Brian E. Cronquist, San Jose, Calif., and Che C. Wei, Singapore, Singapore, assignors to Chartered SimiConductor Manufacturing PTE Ltd., Singapore

Filed Feb. 27, 1995, Ser. No. 394,786
Int. Cl.[6] H01L 29/76;21/265
U.S. Cl. 257—314 24 Claims



1. An Electrically Erasable and Programmable Read Only Memory device, formed within a semiconductor body, comprising:

an N type source region;

an N type floating gate region, located adjacent to said source region, extending below the surface to approximately the same depth as said source region and partially overlapping it, but being electrically isolated from it by a layer of insulating material that surrounds the floating gate, and extending above the surface by an amount sufficient to allow its exposed rim to have the shape of a lip that overhangs the surrounding surface;

a layer of silicon nitride located between the surface of the semiconductor body and the underside of said overhanging lip;

an N type drain region adjacent to, but not overlapping, said floating gate and located on that side of said floating gate that does not overlap said source region; and

a control gate located above, and overlapping, both said drain region and said floating gate but separated from them by a layer of insulating material.

5,488,245

SEMICONDUCTOR MEMORY DEVICE CAPABLE OF ELECTRICALLY ERASING AND WRITING INFORMATION

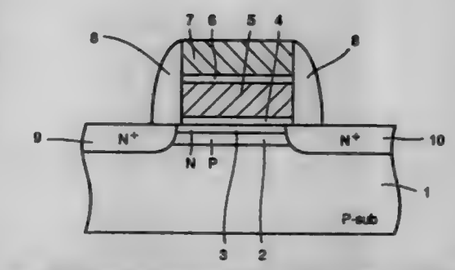
Masahiro Shimizu; Masayoshi Shirahata; Takashi Kurol, and Takehisa Yamaguchi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 126,160, Sep. 24, 1993, abandoned.
This application Oct. 5, 1994, Ser. No. 318,482
Claims priority, application Japan, Mar. 19, 1993, 5-060369; Apr. 23, 1993, 5-097852
Int. Cl.[6] H01L 29/788
U.S. Cl. 257—316 16 Claims

1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type having a main surface; and

a memory cell transistor formed on said main surface and comprising:



first and second source/drain regions of a second conductivity type formed on said main surface on opposite sides of a channel region;

a charge storage electrode located on the channel region with a first dielectric layer therebetween;

a control gate electrode located on said charge storage electrode with a second dielectric layer therebetween, wherein at least one of said first and second source/drain regions does not overlap said charge storage electrode and said control gate electrode; and

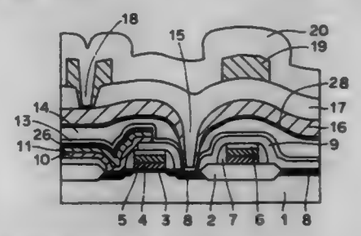
a first impurity region of the second conductivity type formed on said main surface in said channel region.

5,488,246

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

Yoshio Hayashide, and Kouichiroo Tsujita, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1994, Ser. No. 229,273
Claims priority, application Japan, Apr. 16, 1993, 5-089770; Apr. 8, 1994, 6-070467
Int. Cl.[6] H01L 27/12
U.S. Cl. 257—336 6 Claims



1. A semiconductor device, comprising:

a semiconductor substrate on a main surface of which an element isolating region and an active region are formed;

a MOS field effect transistor formed on said active region and having a pair of impurity diffused layers;

a conductive layer electrically connected to one of said pair of impurity diffused layers;

a first anti-reflection film formed of plasma silicon nitride film including more silicon than a stoichiometrical silicon nitride (Si_3N_4) formed on said conductive layer;

an interlayer insulating film having a contact hole reaching the other one of said pair of impurity diffused layers and covering said first anti-reflection film and said MOS field effect transistor;

a second anti-reflection film formed of a plasma silicon nitride film including more silicon than the stoichiometrical silicon nitride (Si_3N_4) formed on said interlayer insulating film; and

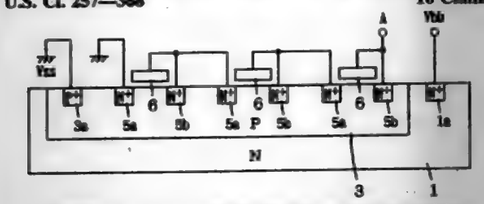
an interconnection layer electrically connected to the other one of said pair of impurity diffused layers formed on said second anti-reflection film.

5,488,247

MOS-TYPE SEMICONDUCTOR CLAMPING CIRCUIT

Mikio Sakurai, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 20, 1994, Ser. No. 277,817
Claims priority, application Japan, Sep. 21, 1993, 5-234554
Int. Cl.[6] H01L 29/78; H02B 1/24; H01H 35/00
U.S. Cl. 257—368 10 Claims



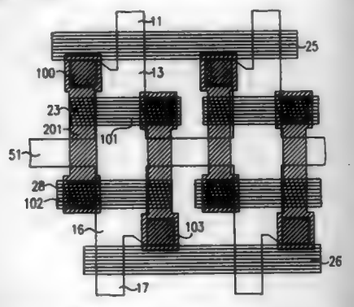
1. A MOS-type semiconductor clamping circuit, comprising:
a semiconductor substrate receiving a substrate potential;
at least one well of first conductivity type formed in said semiconductor substrate and isolated electrically from said substrate potential; and
a plurality of MOS-type transistors each having a source and a drain of second conductivity type formed in said well,
each of said plurality of transistors having its gate connected to its drain, those transistors being connected in series with each other, and a stable potential, different from said substrate potential, being applied to said well, providing a constant backgate potential for each of said plurality of MOS-type transistors.

5,488,248

MEMORY INTEGRATED CIRCUIT

Kuo-Hua Lee, and Janmye Sung, both of Lower Macungie Township, Lehigh County, Pa., assignors to AT&T Corp., Murray Hill, N.J.

Continuation of Ser. No. 358,664, Dec. 19, 1994, abandoned, which is a continuation of Ser. No. 178,598, Jan. 7, 1994, abandoned, which is a continuation of Ser. No. 997,152, Dec. 24, 1992, abandoned, which is a continuation of Ser. No. 813,188, Dec. 30, 1991, abandoned. This application May 19, 1995, Ser. No. 446,091
Int. Cl.[6] H01L 27/085;27/11
U.S. Cl. 257—38.2 3 Claims



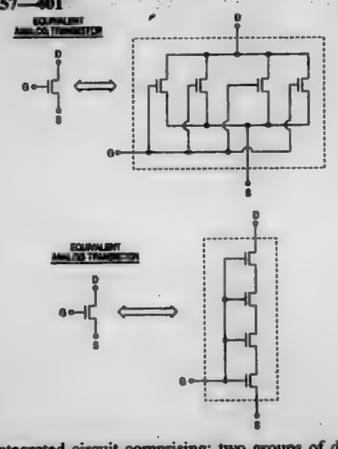
1. An SRAM semiconductor integrated circuit comprising:
a substrate having a doped region, said region having first and second electrically connected portions;
first and second gates overlying a substrate, said first gate having a first width and said second gate having a second width, both said first and second gate having their entire respective widths extending in the same direction, said gates defining between them a current path through said first portion of said substrate and not defining between them a current path through said second portion of said substrate;
a silicide covering said second portion of said substrate; a dielectric overlying said substrate and said gates, said dielectric having an opening exposing said silicide; and a resistive load material extending through said opening and directly contacting said silicide.

5,488,249

DIFFERENTIAL ANALOG TRANSISTORS CONSTRUCTED FROM DIGITAL TRANSISTORS

Harold S. Crafts, Colorado Springs, Colo., assignor to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, Milpitas, Calif., and Symbios Logic Inc., Fort Collins, Colo.

Continuation of Ser. No. 996,534, Dec. 24, 1992, abandoned. This application May 6, 1994, Ser. No. 239,166
Int. Cl.[6] H01L 27/105;27/085
U.S. Cl. 257—401 6 Claims



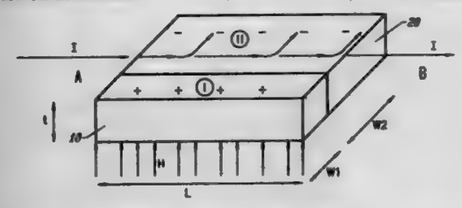
1. An integrated circuit comprising: two groups of digital transistors, having channel lengths not exceeding about 1.5 microns, connected together to form two compound transistors, and physically arranged on said integrated circuit such that the members of each group are symmetrical about respective centroids, wherein at least one of said two compound transistors comprises a plurality of FET devices serially connected together, such that a source of one of the plurality of FET devices is coupled to a drain of another of the plurality of FET devices.

5,488,250

HALL EFFECT MODULATION OF RESISTOR VALUES

Falke Hennig, 10149 Adriana Ave., Cupertino, Calif. 95014, assignor to Falke Hennig, Cupertino, Calif.

Filed Jun. 1, 1994, Ser. No. 252,479
Int. Cl.[6] H01L 29/82;43/04;43/08; G11C 11/18
U.S. Cl. 257—421 15 Claims



1. Apparatus including a structure comprising:
a first region of silicon material having a selected electron mobility;
a second region of silicon material having a different electron mobility than the first region of silicon material, the second region of silicon material being disposed adjacent the first region along a boundary region and in direct contact with the second region of silicon material;

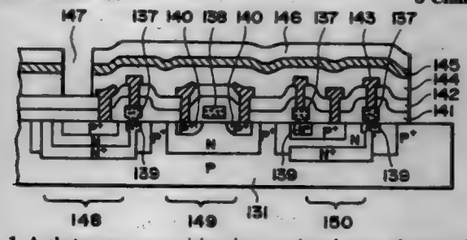
means for applying a magnetic field to both the first the second regions of silicon material in a direction perpendicular to the boundary region to thereby create a Hall voltage across the boundary region and modify the resistance of the first and second regions of silicon material; and
means for detecting the change in resistance caused by the magnetic field.

5,488,251

SEMICONDUCTOR DEVICE AND PROCESS FOR PRODUCING THE SAME

Hidemasa Mizutani, Sagamihara, and Shigeki Kondo, Hiratsuka, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 150,247, Nov. 9, 1993, abandoned, which is a continuation of Ser. No. 824,573, Jan. 23, 1992, abandoned, which is a division of Ser. No. 501,968, Mar. 29, 1990, Pat. No. 5,106,765, which is a continuation of Ser. No. 358,515, May 30, 1989, abandoned, which is a continuation of Ser. No. 240,485, Sep. 6, 1988, abandoned, which is a continuation of Ser. No. 18,457, Feb. 25, 1987, abandoned. This application Aug. 3, 1994, Ser. No. 285,765
Claims priority, application Japan, Feb. 28, 1986, 61-044790; Feb. 28, 1986, 61-044791
Int. Cl.[6] H01L 27/14;27/02
U.S. Cl. 257—557 8 Claims



1. A photosensor comprising, in a semiconductor substrate of a first conductivity type, a photodiode composed of a semiconductor domain of a conductivity type opposite of the first conductivity type, all of a lower surface and sides of said photodiode being surrounded by a semiconductor domain of the conductivity type opposite of the first conductivity type and of a high impurity concentration, and a semiconductor domain of the first conductivity type forming a junction with said semiconductor domain of the conductivity type opposite of the first conductivity type, wherein said photodiode is separated from other semiconductor elements by a separating domain composed of a semiconductor of the first conductivity type,
wherein said other semiconductor elements include a transistor adjacent to said photodiode, with said transistor comprising a buried region and a diffusion region extending from a surface of said substrate to the buried region, and the diffusion region being arranged at one side of a base region, with said photodiode being arranged at the opposite side of said base region.

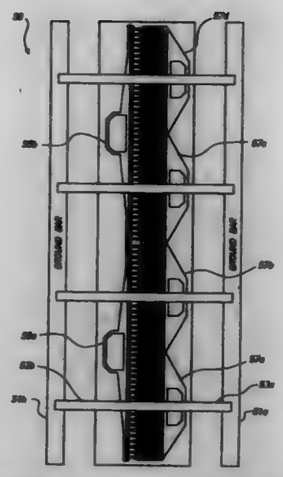
5,488,252

LAYOUT FOR RADIO FREQUENCY POWER TRANSISTORS

Ted Johansson, Hagersten, Sweden; Larry Leighton, Santa Cruz, Calif., and Ivar Hamberg, Stockholm, Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Aug. 16, 1994, Ser. No. 291,427
Int. Cl.[6] H01L 27/095;23/58
U.S. Cl. 257—579 8 Claims

1. An RF power transistor comprising:
a silicon die;



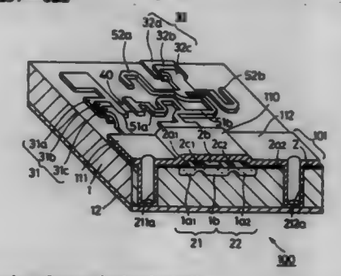
a pair of interdigitated electrodes formed on the silicon die, each electrode having a multiplicity of parallel electrode fingers and each including at least one bond pad;
regions of a first type of diffusion formed beneath electrode fingers of one electrode of the pair of interdigitated electrodes, and regions of a second type of diffusion formed beneath electrode fingers of another electrode of the pair of interdigitated electrodes;
a first wire connected to a bond pad of said one electrode and extending in a direction predominantly parallel to the electrode fingers of the one electrode;
and a second wire connected to a bond pad of said another electrode and extending in a direction predominantly parallel to the electrode fingers of said another electrode;
wherein the silicon die is substantially rectangular and has a least dimension in a direction substantially parallel to the electrode fingers of the pair of interdigitated electrodes, and wherein at least one of the pair interdigitated electrodes includes a plurality of bonds pads, the apparatus further comprising at least one additional wire such that one wire is connected to each of said bond pads of each electrode.

5,488,253

SEMICONDUCTOR DEVICE

Hiroshi Matsuoka, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1994, Ser. No. 336,059
Claims priority, application Japan, Nov. 10, 1993, 5-280765
Int. Cl.[6] H01L 29/06;23/48;23/52;29/40
U.S. Cl. 257—622 5 Claims



1. A semiconductor device including:
a semiconductor substrate having opposite front and rear surfaces;
a plurality of lower electrodes disposed on the front surface of the substrate and a rear electrode disposed on the rear surface of the substrate;

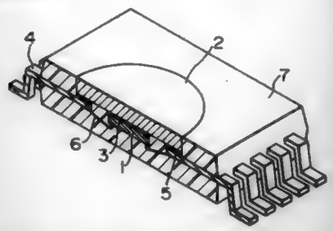
an air-bridge wiring disposed on the front surface of the substrate connecting two of the lower electrodes;
a via-hole penetrating through the semiconductor substrate proximate the two lower electrodes connected by the air-bridge wiring; and
a via-hole wiring disposed in the via-hole and connecting the two lower electrodes connected by the air-bridge wiring to the rear electrode wherein the air-bridge wiring and the via-hole wiring are a continuous, unitary electroplated metal film.

5,488,254

PLASTIC-MOLDED-TYPE SEMICONDUCTOR DEVICE

Asao Nishimura, Ushiku; Makoto Kitano, Tsuchiura, and Ichio Shimizu, Gunma, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 924,449, Aug. 4, 1992. This application Mar. 29, 1994, Ser. No. 219,742
Claims priority, application Japan, Aug. 5, 1991, 3-195505
Int. Cl.[6] H01L *23/48;23/02*
U.S. Cl. 257—707 **21 Claims**



1. A plastic-molded-type semiconductor device of a resin sealing type comprising:
a heat conductive member for heat radiation thermally connected to a semiconductor chip, the thermal connection being effected by securely fixing a surface corresponding to one main side of the chip directly to a surface of a side of said heat conductive member facing said one main side of the chip; and
a resin for encapsulating the whole chip and the entirety of or part of side surfaces of said heat conductive member while a surface at a side of said heat conductive member opposite the side thereof securely fixed to the chip being exposed,
wherein a portion of said heat conductive member which is encapsulated with said resin has a cross-section, substantially in parallel to said one main side of the chip, whose configuration is a polygon in which all corner portions thereof form internal angles of less than 180 degrees and which are dull angles.

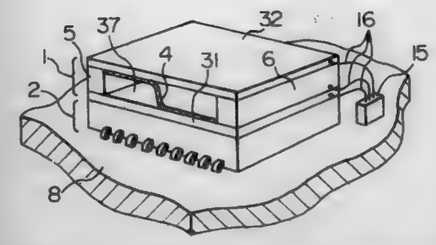
5,488,255

COOLING DEVICE FOR SEMICONDUCTOR PACKAGES, HAVING FLEXIBLE FILM HEAT EXPULSION MEANS

Kazuo Sato, Tokyo; Mitsuhiro Shikida, Tsuchiura; Shigeo Ohashi, Tsuchiura; Toshio Hatada, Tsuchiura; Noriyuki Ashiwake, Tsuchiura; Shinji Tanaka, Ushiku; Takeshi Harada, Abiko, and Yukio Honda, Fuchu, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 7, 1993, Ser. No. 162,265
Claims priority, application Japan, Dec. 7, 1992, 4-326422; Feb. 17, 1993, 5-027763
Int. Cl.[6] H01L *23/34*
U.S. Cl. 257—718 **10 Claims**

1. A semiconductor package, comprising:
a substrate, on which a semiconductor chip including an electronic circuit is mounted, having an I/O portion for inputting and outputting electric signals to and from said semiconductor chip; and



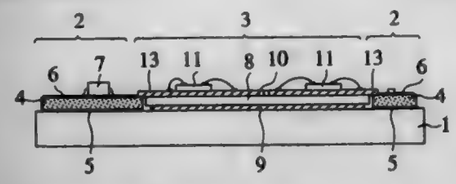
a heat dissipation part which is disposed on said substrate to expel heat generated from said semiconductor chip, said heat dissipation part being a cooling device,
said cooling device, comprising:
a pair of flat plates which face each other with a gap therebetween, either of said flat plates being connected to a heat generating member,
a pair of side plates which are disposed on both ends of said flat plates and are connected so as to define a space between said pair of flat plates, and
a flexible film disposed within said space, both ends of said flexible film being fastened near different side plates on opposite ones of said flat plates so that the shape of said flexible film is changeable within said space to expel heat from within said space.

5,488,256

SEMICONDUCTOR DEVICE WITH INTERCONNECT SUBSTRATES

Tetsujiro Tsunoda, Fujisawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 2, 1994, Ser. No. 299,964
Claims priority, application Japan, Sep. 3, 1993, 5-219580
Int. Cl.[6] H01L *23/48;29/44;29/52;29/60*
U.S. Cl. 257—723 **5 Claims**



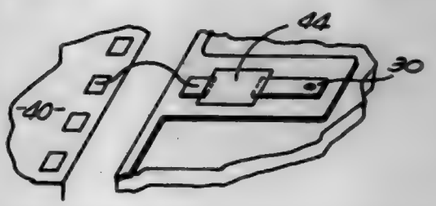
1. A semiconductor device comprising:
(a) a first insulating interconnect substrate for packaging power semiconductor elements;
(b) a second insulating interconnect substrate for packaging control elements for controlling the power semiconductor elements; and
(c) a metal base for supporting said first and second insulating interconnect substrates, wherein:
the top surfaces of said first and second insulating interconnect substrate are provided each with a conductive wiring pattern, the conductive wiring patterns on said first and second interconnect substrates are electrically connected to each other through extensions protruding from the wiring pattern of one of said first and second interconnect substrates and said extensions are part of the wiring pattern and formed as one body.

5,488,257

MULTILAYER MOLDED PLASTIC PACKAGE USING MESIC TECHNOLOGY

Bidyut Bhattacharyya, and Debendra Mallik, both of Chandler, Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 108,766, Aug. 18, 1993, abandoned, which is a continuation of Ser. No. 837,285, Feb. 18, 1992, abandoned. This application Feb. 6, 1995, Ser. No. 384,629
Int. Cl.[6] H01L *23/48;29/44;29/52*
U.S. Cl. 257—774 **10 Claims**



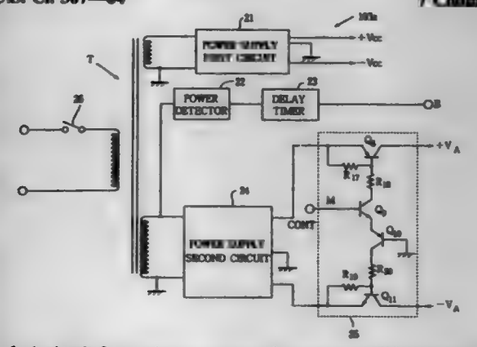
1. An integrated circuit package that houses an integrated circuit, comprising:
a conductive plate;
a first insulative layer that is adjacent to said conductive plate;
a first conductive layer that is adjacent to said first insulative layer;
a lead frame having a plurality of conductive leads;
a layer of polyimide located between said first conductive layer and said lead frame;
a via that extends through said lead frame and said polyimide layer said via containing an electrically conductive material which electrically connects said lead frame to said first conductive layer;
a passive element located on said first insulative layer and coupled to said first conductive layer; and,
first connector means for electrically coupling said conductive plate with said lead frame.

5,488,258

CIRCUIT FOR MUTING NOISES IN A POWER AMPLIFIER

Jun Honda, Tokyo, Japan, assignor to Pioneer Electric Corporation, Tokyo, Japan

Filed Mar. 3, 1994, Ser. No. 205,257
Claims priority, application Japan, Mar. 5, 1993, 5-045569
Int. Cl.[6] H03F *1/26*
U.S. Cl. 307—64 **7 Claims**



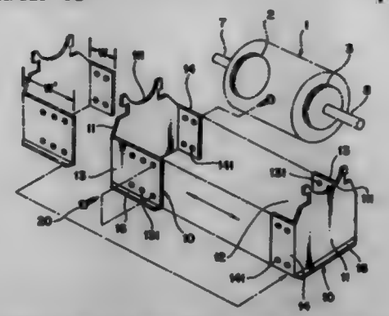
1. A circuit for muting an output of a power amplifier having a power supply, comprising:
a power switch provided in an input side of the power supply for turning on the power supply;
power detector means for detecting closing of the power switch and for producing a power-on signal after a predetermined time from detection of the closing of the power switch;
abnormality detector means for detecting an abnormal voltage produced in a circuit of the power amplifier and for producing an abnormality signal when detected;
a power control circuit responsive to the power-on signal for activating at least an output stage of the power amplifier after the predetermined time, and for cutting off the output stage in response to the abnormality signal.

5,488,259

MOTOR MOUNT FOR AN ELECTRICAL MOTOR

Nam-Sik Cho, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 4, 1994, Ser. No. 334,077
Claims priority, application Rep. of Korea, Dec. 11, 1993, 93-23770
Int. Cl.[5] H02K *15/14*
U.S. Cl. 310—91 **7 Claims**



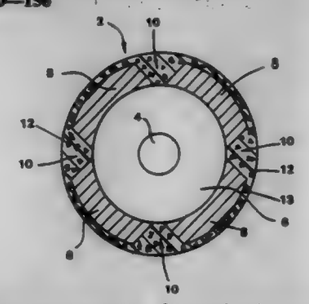
1. A motor mount for supporting a motor, comprising a pair of support members each having a contact face for supporting a portion of a motor; said support members being movable relative to one another to adjust a distance between said contact faces to adapt the motor mount to different-size motors; and fastening means for holding said support members in their adjusted positions; each support member comprising an upright wall having opposite sides thereof bent to a parallel relationship such that each upright wall includes an upright support portion, and two upright parallel side portions extending from said support portion; said support portion defining said contact face; said pair of support members being of identical construction to one another.

5,488,260

ENCAPSULATED MAGNETS IN A PERMANENT MAGNET ROTOR

Marc A. Heyraud, La Chaux de Fonds, Switzerland, assignor to Johnson Electric S.A., Switzerland

Filed Oct. 15, 1993, Ser. No. 138,249
Int. Cl.[6] H02K *21/12*
U.S. Cl. 310—156 **12 Claims**



1. A permanent magnet rotor for an electric motor, the rotor comprising:
a cylindrical rotor base;

a plurality of permanent magnets located circumferentially around said rotor base with a respective circumferential gap located between adjacent permanent magnets;

a binder located in each of said gaps and having a magnetic material dispersed therein, said magnetic material in each said circumferential gap being magnetized with a radial magnetic flux which varies circumferentially across said gap.

5,488,261

CARBON BRUSH AND FASTENING A BRAIDED INDICATOR WIRE THEREIN

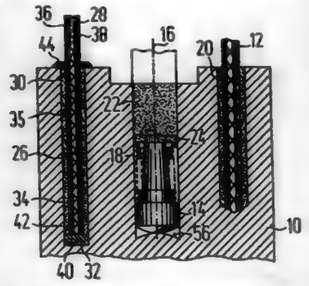
Anton Swoboda; Edmund Kubler, both of Vienna, Austria; Horst Ulm, Huttenberg, and Gunter Schardt, Giessen-Klein-Linden, both of, Germany, assignors to Schunk Kohlenstofftechnik GmbH, Heuchelheim, Germany

Filed May 11, 1994, Ser. No. 241,363

Claims priority, application Germany, May 11, 1993, 43 15 622.3

Int. Cl.[6] H02K *13/00*

U.S. Cl. 310—249 **11 Claims**



1. A carbon brush (**10**) extending in a longitudinal direction (**16**) from a contact surface with an indicator wire (**28**) for indicating a predetermined amount of wear of the carbon brush, a recess (**30**) is formed in the carbon brush, a portion (**26**) of the indicator wire is embedded in the recess which is in the form of a blind bore extending in the longitudinal direction of the carbon brush,

said indicator wire comprising a braided conductive core (**36**) surrounded by an insulating sheath (**38**) and having a free conductive end (**42**),

said portion (**26**) being spaced apart from flat bottom (**32**) of the recess, and insulating material disposed on the bottom,

said insulating material forming an inherently rigid insulating layer (**40**) covering the bottom.

5,488,262

SPARK ELECTRODE HAVING LOW THERMAL STRESS

Kozo Takamura, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 11, 1992, Ser. No. 987,951

Claims priority, application Japan, Dec. 13, 1991, 3-330630

Int. Cl.[6] H01T *13/20*

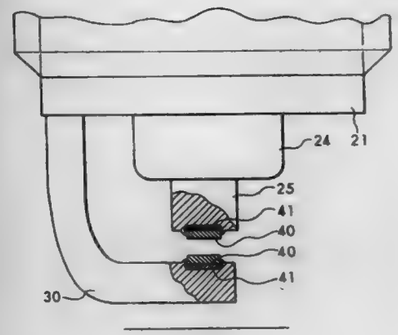
U.S. Cl. 313—141 **23 Claims**

1. A spark electrode comprising:

a base metal having at least a portion thereof proximate a spark gap;

a thermal stress relieving layer for reducing thermal stress welded to said base metal at said portion proximate said spark gap; and

a corrosion resistant discharge layer bonded to a side of said thermal stress relieving layer opposite said base metal and including portions surrounding at least a portion of peripheral edges of said thermal stress relieving layer.



5,488,263

COLOR SELECTING ELECTRODE FOR CATHODE-RAY TUBE

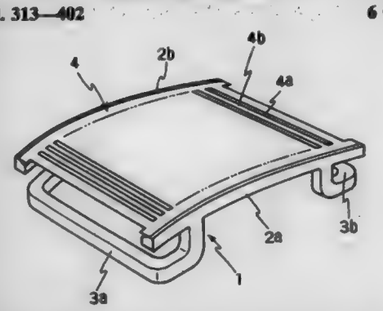
Taketoshi Takemura; Makoto Sakuwa, and Haruo Watanuki, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, and Sony Corporation, both of Tokyo, Japan

Filed Jun. 23, 1994, Ser. No. 264,293

Claims priority, application Japan, Feb. 17, 1994, 6-020277

Int. Cl.[6] H01J *29/80*

U.S. Cl. 313—402 **6 Claims**



1. A color selecting electrode for use in a cathode-ray tube, comprising a frame having a pair of opposed first supports and a pair of opposed second supports extending in a direction such as to cross the pair of first supports, and grid elements arranged on the pair of first supports at a fixed pitch and stretchedly bridging the pair of first supports,

wherein the pair of second supports and the grid elements are, respectively, made of materials selected such that a mean coefficient of thermal expansion in a temperature range from 0° C. to 470° C. of the pair of second supports is not greater than 85% of that of the grid elements over the same temperature range.

5,488,264

ELECTRON GUN FOR COLOR CATHODE-RAY TUBE

Yutaka Ota; Yukinobu Iguchi, and Yoshifumi Nakayama, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 24, 1993, Ser. No. 80,776

Claims priority, application Japan, Jun. 29, 1992, 4-170321

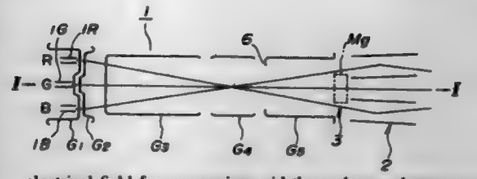
Int. Cl.[6] H01J *29/51*

U.S. Cl. 313—412 **7 Claims**

1. An electron gun for a color cathode-ray tube, comprising:

first, second and third cathodes arranged horizontally parallel with each other, each of said cathodes emitting an electron beam modulated by a signal;

a plurality of axially aligned electrodes, each of which is supplied with a predetermined voltage, forming a predetermined



electrical field for converging said three electron beams to a converging spot and then diverging said three beams;

a convergence plate member for converging said diverged three beams;

quadruple magnetic field generating means arranged between said electrodes and said convergence plate member for effecting an astigmatic lens action to a center beam of said three beams without substantially effecting side beams of said three beams; and

astigmatic canceling means arranged at or near said converging spot along said electrodes for canceling astigmatism imparted to said side beams of said three beams by said electrical field.

5,488,265

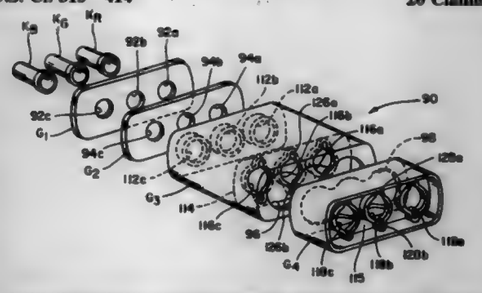
ELECTRON GUN WITH CHAIN-LINK MAIN LENS FOR STATIC CORRECTION OF ELECTRON BEAM ASTIGMATISM

Hsing-Yao Chen, Barrington, Ill., assignor to Chunghwa Picture Tubes, Ltd., Taoyuan, Taiwan, Prov. of China

Continuation of Ser. No. 140,311, Oct. 22, 1993, abandoned. This application Aug. 7, 1995, Ser. No. 511,722

Int. Cl.[6] H01J *29/50*

U.S. Cl. 313—414 **20 Claims**



1. An electrode in an electron gun for directing a center and two outer inline electron beams along respective parallel axes onto a display screen of a color cathode ray tube (CRT) in forming a video image on said screen, said electrode comprising:

a hollow housing open at a first end and including means disposed on a second, opposed end thereof for defining three inline end apertures at a second opposed end and a thin lateral wall forming side portions of said housing, wherein each of said inline end apertures is aligned with a respective one of said axes for passing a respective one of said beams and wherein said first open end includes a single common aperture having a longitudinal axis aligned generally transverse to said inline electron beams for passing said center and two outer electron beams;

wall means disposed in said hollow housing for defining circular portions of three inline auxiliary apertures disposed intermediate said first and second ends of said housing, wherein each of said auxiliary apertures is aligned with a respective one of said axes for passing a respective one of said beams and wherein said circular portions of each of said auxiliary apertures are adapted to receive in tight-fitting engagement an elongated support rod having a generally circular cross section for aligning the electrode during electron gun assembly, and wherein said wall means and said first and second ends of said hollow housing are maintained at the same fixed voltage; and

an upper and lower pair of slots disposed in each of said auxiliary apertures and aligned generally transverse to said longitudinal axis for providing a static correction for electron beam astigmatism, wherein said static correction is of substantially fixed magnitude over the entire display screen.

5,488,266

ELECTRO-LUMINESCENCE DEVICE

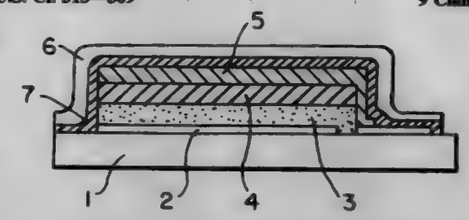
Masaaki Aoki; Isao Yokotsuka, both of Tokyo, and Yoshihiro Ogata, Yamagata, all of, Japan, assignors to Showa Shell Sekiyu K. K., Tokyo, Japan

Filed Dec. 28, 1993, Ser. No. 174,254

Claims priority, application Japan, Dec. 28, 1992, 4-347584

Int. Cl.[6] H01J *1/64*

U.S. Cl. 313—509 **9 Claims**



1. An electro-luminescence device comprising a laminate composed of a transparent substrate having successively laminated thereon a transparent electrode, a luminous layer, a dielectric layer, and a back electrode, with a back protective material being adhered to the back electrode through an adhesive resin film, wherein the back protective material is a moisture impermeable protective material and the adhesive resin film is a thermoplastic resin film having a thickness of from 10 to 200 μm.

5,488,267

XENON LAMP SYSTEM FOR MATERIALS TESTING APPARATUS

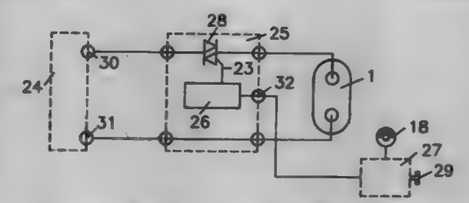
Bernd Rudolph, Alzenau; Klaus J. Dietz, Wiesbaden, and Klaus Oostlander, Hanau, all of, Germany, assignors to Heraeus Xenotest GmbH, Hanau, Germany

Filed Jul. 26, 1994, Ser. No. 280,311

Claims priority, application Germany, Aug. 2, 1993, 43 25 718.6

Int. Cl.[6] H01J *7/44*

U.S. Cl. 315—63 **9 Claims**



1. In and for combination with a test instrument which tests materials with respect to weathering and fading when exposed to light,

an illumination system for said weathering and fading resistance test instrument comprising

means for generating said light with a predetermined ratio of ultraviolet (UV) to infrared (IR) radiation,

said light generating means including

a xenon gas discharge lamp (**1**) having an elongated lamp bulb (**2**) that has one electrode (**4**) at each of its two ends, between which electrodes (**4**) an arc discharge forms, and a fill including Xenon within said bulb (**2**) and

an electronic control unit (25) that has a controllable switch (28), connected to and applying pulses of current across said electrodes (4), thereby creating said arc discharge,

wherein

the spacing of said electrodes (4) in the lamp defines an arc length which is in the range from 10 to 50 cm; the inside diameter of the bulb (2) is in the range from 5 to 15 mm at said range of the arc length;

the cold fill pressure of said xenon inside said bulb (2) is less than 400 mbar;

the duty factor of the pulses provided by said control unit (25) is in a range from 1:1 to 1:100; and

the amplitude values of the discharge current of the pulses are in the range between 15 and 100 A.

5,488,268

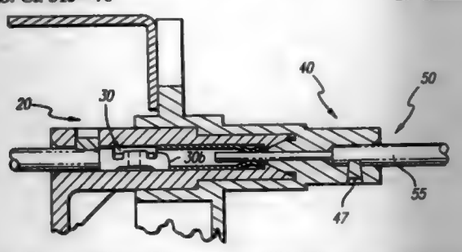
ELECTRICAL CONNECTOR WITH IMPROVED CENTERING OF MATING TERMINAL PINS, FOR A FLUORESCENT-LIGHTING BALLAST

Fred P. Bauer, Mendenhall; Stuart E. Sanders, Brandon, both of Miss.; Raymond H. Van Wagener, Darien, Conn., and Mark R. Opperthauser, Jackson, Miss., assignors to Magnetek, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 9,645, May 14, 1993, Pat. No. 5,350,316, and a continuation-in-part of Ser. No. 680,699, Apr. 4, 1991, Pat. No. 5,260,678. This application Apr. 8, 1994, Ser. No. 224,811

Int. Cl.[6] H01J *7/44*

U.S. Cl. 315—70 **29 Claims**



1. In combination, a ballast and connecting apparatus for use in a fluorescent-lamp fixture having lamp sockets; said combination comprising:

at least one electrical winding mounted within the ballast;

two pluralities of electrical leads within the fluorescent-lamp fixture:

one plurality of electrical leads within the ballast and operatively connected to the winding, for carrying electrical power to and from the winding, and

another plurality of electrical leads extending through such fixture substantially outside the ballast, at least some of these leads being operatively connected with lamp sockets of such fixture for carrying electrical power to the sockets;

two mutually matable electrical half-connectors, one for terminating said one plurality of leads and another for terminating said other plurality of leads;

a plurality of individual electrical male contacts, formed from or operatively connected to one of the two pluralities of electrical leads respectively, and fixed within a first of the two half-connectors;

a plurality of individual electrical female contacts, operatively connected to the other of the two pluralities of electrical leads respectively, and fixed within a second of the two half-connectors;

a plurality of through-holes defined within the second half-connector, each said through-hole holding a respective one of the female contacts, and each through-hole having:

a rearward end for receiving insertion of one female contact,

a forward end for receiving insertion of a part of one male contact, extending from the first half-connector, into the female contact to complete connections from the ballast winding to the lamp sockets,

a necked-down section, forward from a forward tip of the female contact in that hole, and

a preformed bore whose transverse preformed dimensions along the entire length of the bore rearward from the necked-down forward section are at least as great as its transverse dimensions immediately rearward from the necked-down forward section; and

means for retaining each female contact in its respective bore.

5,488,269

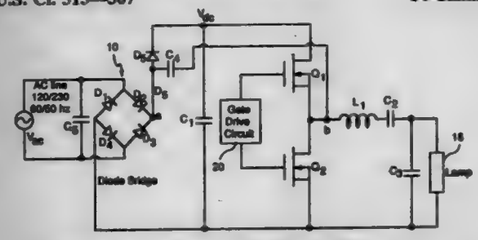
MULTI-RESONANT BOOST HIGH POWER FACTOR CIRCUIT

Sayed-Amr El-Hamamsy; Mustansir H. Kheraluwala, both of Schenectady, N.Y., and David J. Kachmarik, North Olmsted, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 10, 1995, Ser. No. 386,572

Int. Cl.[6] G05F *1/00*

U.S. Cl. 315—307 **14 Claims**



1. A power factor correction circuit, comprising:

a rectifier for receiving an ac line current and supplying a dc bus voltage on a dc bus from an ac line voltage, said rectifier having an input and an output;

a high frequency filter coupled at the input of said rectifier, said high frequency filter comprising a filter capacitance;

a half-bridge converter for providing a voltage which pulsates between a reference potential and said dc bus voltage, said half-bridge converter comprising a pair of switching devices connected in series with a junction therebetween;

a one-way electrical valve connected between the output of said rectifier and said dc bus for allowing current flow from said rectifier to said dc bus;

an energy storage capacitance coupled between said dc bus and said reference potential;

a capacitance coupled between the output of said rectifier and the junction between said switching devices;

a resonant load circuit connected to the junction between said switching devices, said resonant load circuit comprising a resonant inductance, a resonant capacitance and a load; and

a driver circuit for alternately switching said switching devices, said driver circuit comprising a dead time control circuit for selecting a predetermined dead time after one of said devices switches off and the other of said devices switches on.

5,488,270

COLOR CRT DISPLAY APPARATUS

Hidenori Takita, and Tatsuhiro Hirakawa, both of Nagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1994, Ser. No. 230,550

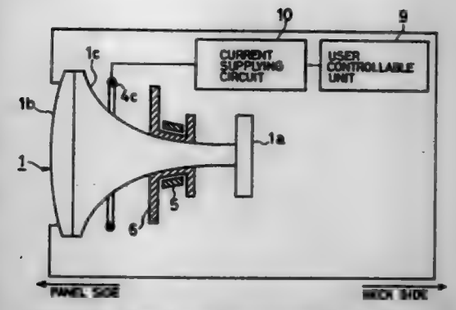
Claims priority, application Japan, Dec. 10, 1993, 5-310887

Int. Cl.[6] H01J *29/56*

U.S. Cl. 315—370 **10 Claims**

1. A color CRT display apparatus comprising:

a color CRT having an electron gun, a deflection yoke, and a display panel, for displaying, on said display panel, an image



created by electron beams emitted from said electron gun and deflected by said deflection yoke;

signal outputting means for outputting a signal to be used to compensate an external magnetic field in a tube axis direction, said signal having an amount and a direction;

a current supplying circuit for supplying a current proportional to the amount of said signal outputted from said signal outputting means and flowing in a direction corresponding to the direction of said signal; and

a compensating coil, disposed in a plane substantially perpendicular to said tube axis-direction, for generating a compensating magnetic field in response to the current from said current supplying circuit, said compensating coil being wound around a tunnel portion of the color CRT between said display panel and said deflection yoke at a position along said tube axis direction substantially closer to said display, panel than a first location at which a compensating magnetic field compensates primarily for raster rotation and substantially closer to said deflection yoke than a second location at which a compensating magnetic field compensates primarily for purity rotation.

5,488,271

DEFLECTION REGULATING METHOD AND DEVICE

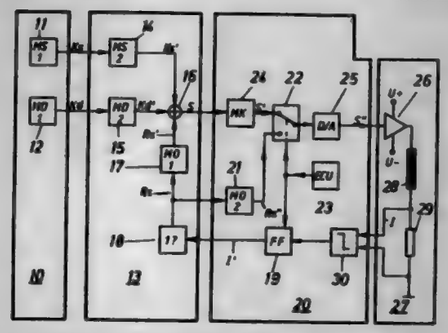
Günter Gleim, Villingen, Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

Continuation of Ser. No. 55,108, May 3, 1993, abandoned. This application Apr. 14, 1995, Ser. No. 422,741

Claims priority, application Germany, May 4, 1992, 42 14 317.9

Int. Cl.[6] G09G *1/04;1/28;* **H04N** *3/22*

U.S. Cl. 315—370 **20 Claims**



1. A method of deflection current regulation in a deflection amplifier coupled to a deflection coil, comprising the steps of:

(a) measuring a deflection current value during a first mode of operation;

(b) comparing said measured value with a predetermined value to produce a first correction signal;

(c) applying said first correction signal to said deflection amplifier to provide corrective regulation during said first mode of operation;

(d) combining a predetermined correction signal, comprising a static error correction component and a dynamic error correction component with said first correction signal to produce a second correction signal; and,

(e) applying said second correction signal to said deflection amplifier to provide corrective regulation during a second mode of operation.

5,488,272

DEFLECTION SYSTEM

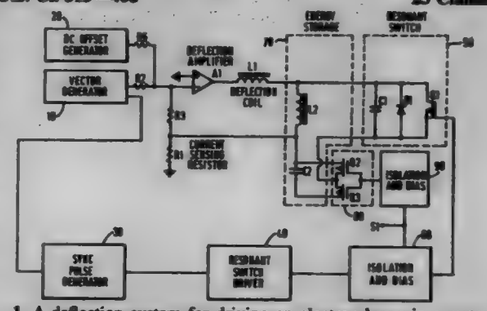
John R. Cotton, Nr. Sheffield, United Kingdom, assignor to Rank Brimar Limited, United Kingdom

Filed Feb. 9, 1993, Ser. No. 15,571

Claims priority, application United Kingdom, Feb. 12, 1992, 9202961; May 8, 1992, 9211341

Int. Cl.[6] H01J *29/70;29/76*

U.S. Cl. 315—408 **23 Claims**



1. A deflection system for driving an electron beam in a raster scan comprising:

a deflection coil;

a flyback capacitance arranged to resonate with the deflection coil;

means for switchably bypassing the flyback capacitance to prevent said resonance, and

means for energizing the deflection coil with a scanning signal;

the system being characterized in that it comprises scan shift means for shifting the raster scan comprising;

means for supplying a DC offset current through said coil; and

means for decoupling the DC offset current from the flyback capacitance during flyback,

whereby the resonance current produced during flyback is superimposed on the offset current so as to offset the scan and flyback positions on the CRT.

5,488,273

CEILING FAN AND LIGHT ASSEMBLY CONTROL METHOD AND THE CONTROL CIRCUIT THEREFOR

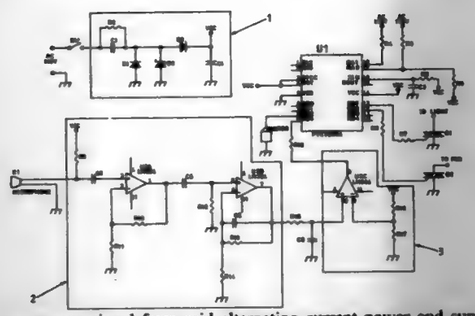
Chin-Hsiung Chang, No. 192, Shu Jen Rd., Ban Tan Chun, Wu Fong Hsiang, Taichung Hsien, Taiwan, Prov. of China

Filed Nov. 18, 1994, Ser. No. 341,117

Int. Cl.[6] H04Q *7/02;* **A63H** *30/04*

U.S. Cl. 318—16 **2 Claims**

1. A ceiling fan and light assembly control circuit comprising a direct current power supply circuit, an audio amplifier circuit, a microphone, a low pass filter circuit, a comparator, and a microprocessor; said direct current power supply circuit receiving alternating current power through a single-throw switch, converting said alternating current into low voltage direct current power when said single-throw switch is on and supplying said low voltage direct current power to said audio amplifier circuit, said comparator and said microprocessor; said direct current supply circuit containing a filter capacitor for supplying direct current to said microprocessor when said single-throw switch is turned off after said capacitor is charged; resisters arranged between said single-throw switch and inputs of said microprocessor for creating a



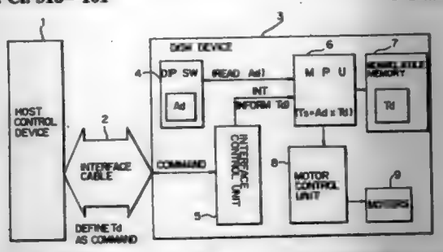
square wave signal from said alternating current power and supplying said square wave signal to said microprocessor only when said single-throw switch is on; said microphone connected to said audio amplifier circuit, and said low-pass filter connected in series between said audio amplifier circuit and said comparator for amplifying signals received by said microphone, filtering the amplified signals, comparing the filtered signals and producing pulse wave signals based thereon; said microprocessor having an input terminal connected to said comparator and receiving said pulse wave signals, an output terminal connected to a fan speed control circuit and a light intensity control circuit of a ceiling fan and light assembly and an internal program; said internal program monitoring said square wave signal and, when said square wave signal is interrupted by turning said single-throw switch off and on while said microprocessor receives power from said filter capacitor, changing fan speed or light intensity; said internal program also monitoring said pulse wave signals received from said comparator and changing fan speed or light intensity based on number of said pulse wave signals received and a time interval between said pulse wave signals.

5,488,274

METHOD FOR CONTROLLING ACTIVATION OF DISK DRIVE MOTORS

Masafumi Satoh, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 28, 1993, Ser. No. 98,704
Claims priority, application Japan, Jul. 28, 1992, 4-200810
Int. Cl.[6] H02P *1/54*; G05B *11/01*
U.S. Cl. 318—101 **6 Claims**



1. A method for controlling the activation of a plurality of disk devices, wherein each disk device has a motor, the method comprising the steps of:

determining a device number set value (A_d) determined exclusively for the disk device;

determining a motor activation start time delay (T_d) which is designated by a host control device;

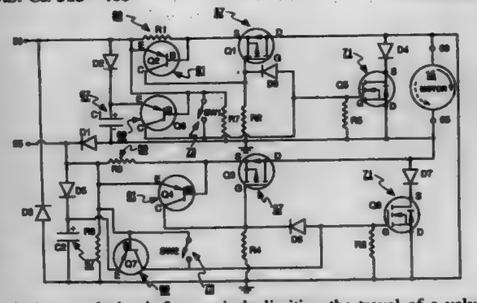
determining a motor activation start time (T_s) which corresponds to the device number set value (A_d) to thereby control activation of the motor, wherein the motor activation start time delay (T_d) is set in the form of a command in an interface between the disk device and the host control device.

5,488,275

CONTROL CIRCUIT FOR FEEDBACK, MOTOR-OPERATED VALVE

Bill Tice, Carlsbad, Calif., assignor to ETI Systems, Carlsbad, Calif.

Division of Ser. No. 177,062, Jan. 3, 1994, Pat. No. 5,461,290.
This application Mar. 16, 1995, Ser. No. 405,369
Int. Cl.[6] F16K *31/04*
U.S. Cl. 318—468 **20 Claims**



1. A control circuit for precisely limiting the travel of a valve driven by a reversible motor comprising:

a) voltage-regulated, current-passing means for passing current from a direct voltage source to the motor, said current-passing means having a default configuration such as to permit full current flow there-across when said voltage source is initially applied;

b) normally-open, voltage-actuated switch means interconnecting the motor to ground; and,

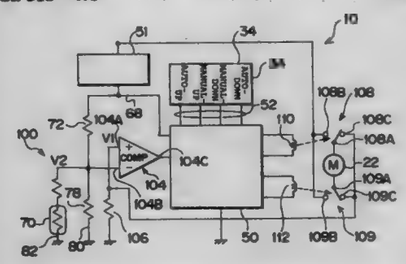
c) normally-open, physically-activated, limit-switch means interconnected the voltage source, said current-passing means and said voltage-actuated switch means that remains open during travel of the valve between limits physically established in said circuit so that, upon reaching one of said limits, said limit-switch means is closed to provide immediate voltage to turn off said current-passing means and to close said switch means to immediately drain all forward and reverse EMF to ground and stop rotation of the motor.

5,488,276

APPARATUS FOR DRIVING AND CONTROLLING MOTOR

Yasushi Nishibe, Niwa, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Dec. 21, 1993, Ser. No. 170,817
Claims priority, application Japan, Dec. 25, 1992, 4-346987
Int. Cl.[6] G05B *5/00*
U.S. Cl. 318—473 **9 Claims**



1. An apparatus for controlling a motor that moves a movable window portion of a vehicle, the apparatus comprising:

current detection means for detecting a value of current flowing through said motor when said motor is moving said movable portion;

control means for comparing the current value detected by said current detection means with a comparison current value, and for controlling said motor based on the comparison of the detected current value with said comparison current value;

temperature sensing means for sensing a temperature of an environment of said movable portion; and

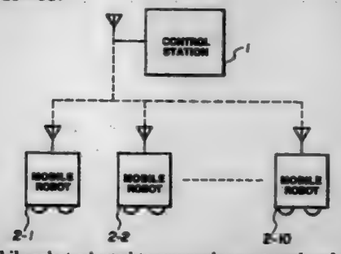
comparison current varying means for varying said comparison current value based on the temperature sensed by said temperature sensing means.

5,488,277

TRAVEL CONTROL METHOD, TRAVEL CONTROL DEVICE, AND MOBILE ROBOT FOR MOBILE ROBOT SYSTEMS

Yuji Nishikawa, and Masanori Onishi, both of Ise, Japan, assignors to Shinki Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 513,546, Apr. 24, 1990, Pat. No. 5,179,329. This application Jul. 8, 1992, Ser. No. 912,977
Claims priority, application Japan, Apr. 25, 1989, 1-105491; May 30, 1989, 1-137290; May 30, 1989, 1-137291; May 30, 1989, 1-137292; May 30, 1989, 1-137293; May 31, 1989, 1-138219; May 24, 1989, 1-130959; May 29, 1989, 1-134883; May 29, 1989, 1-134884; Jun. 20, 1989, 1-157838; Jun. 20, 1989, 1-157839
Int. Cl.[6] H02J *7/00*; G05B *1/00*; G06F *15/50*
U.S. Cl. 318—587 **1 Claim**



1. A mobile robot adapted to move along a travel path, said path having sections and having associated therewith a path indicia means, said robot including:

a first sensor for detecting and measuring distances to surfaces along said path;

a first memory means for storing data corresponding to distances from the travel path to said surfaces;

first means for controlling the travel of the mobile robot so that the distances measured by said first sensor agree with the data stored in said first memory means;

a second sensor for detecting said indicia means associated with the travel path;

a second means fos controlling the travel of said mobile robot so that said second sensor moves along said indicia means according to the output of said second sensor;

a second memory means for storing data indicating which of said first and second travel controlling means is used for every section of the travel path; and

means for reading the data in said second memory means and activating the travel controlling means indicated by the data.

5,488,278

LOAD LIMIT SYSTEM FOR MECHANICAL LINEAR ACTUATOR

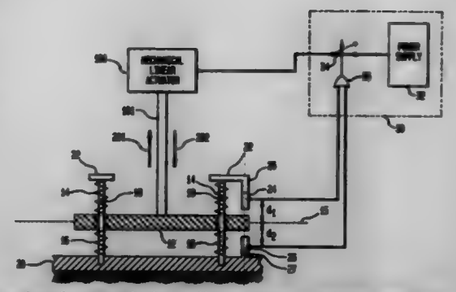
Peter S. McGraw, Severna Park, and Charles M. Kelly, Annapolis, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 23, 1994, Ser. No. 311,633
Int. Cl.[6] G05G *5/00*
U.S. Cl. 318—626 **8 Claims**

1. A load limit system for a linear actuator, comprising:

first spring means;

second spring means;



an interface attached to a linear actuator and disposed between said first spring means and said second spring means, said interface imparting a load force to one of said first spring means and said second spring means when said interface is moved in one of two opposing directions by said linear actuator; and

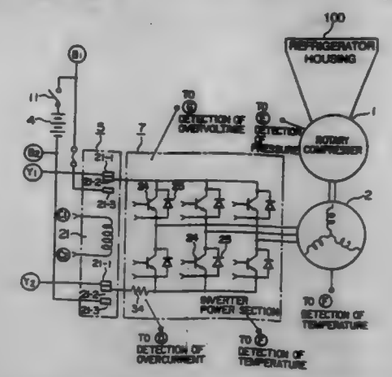
sensing means for sensing a first amount of linear compression of said first spring means when said interface imparts a load force to compress said first spring means, and for sensing a second amount of linear compression of said second spring means when said interface imparts a load force to compress said second spring means, wherein said interface ceases to impart a load force whenever one of said first amount of linear compression and said second amount of linear compresion is sensed.

5,488,279

DUAL POWER REFRIGERATOR

Takato Kawamoto; Makoto Gezima, and Eiichi Furuse, all of Gunma, Japan, assignors to Sawafuji Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 812,710, Dec. 23, 1991, abandoned.
This application Dec. 27, 1993, Ser. No. 174,164
Claims priority, application Japan, Dec. 28, 1990, 2-416906; Apr. 12, 1991, 3-79664
Int. Cl.[6] H02S *9/00*; H02P *1/00*
U.S. Cl. 318—801 **9 Claims**



1. A rotary-compressor control system for electric refrigerators having rotary compressors to cool the inside of the electric refrigerator, characterized in that said rotary-compressor control system comprises

a battery for supplying a battery voltage less than or equal to approximately 24 volts,

a switching power section having a rectifying section and an inverter section for rectifying commercial a-c power with said rectifying section, reducing a voltage of said commercial a-c power to a substantially same voltage of said battery in said inverter section,

an automatic changeover means for changing over from d-c voltage from said battery to d-c voltage from said switching power section and vice versa,

an inverter power section receiving d-c power supplied from said battery or said switching power section via said automatic changeover means and converting said d-c power into a three-phase a-c voltage,

a three-phase induction motor for driving said rotary compressor with said three-phase a-c voltage generated in said inverter power section;

control means for changing said automatic changeover means preferentially to the side of said switching power section when commercial a-c power is used, and producing a control signal for controlling said inverter power section on the basis of a pressure detection signal provided from the rotary compressor; said rotary compressor being driven by said three-phase induction motor operating with a motor voltage having a magnitude substantially similar to said battery voltage;

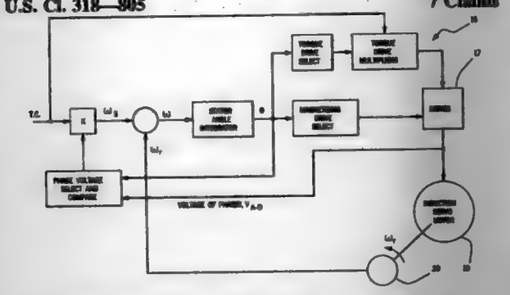
a delta-Y connection changing means for changing over a connection of said three-phase induction motor from a delta connection to a Y connection and vice versa, said changing means causing said three-phase induction motor to be driven in the delta connection when battery voltage is approximately 12 V, and in the Y connection when battery voltage is approximately 24 V.

5,488,280

ADAPTIVE CONTROL OF A MULTIPHASE INDUCTION MOTOR HAVING CONCENTRATED PHASE WINDINGS

Gerald K. Langreck, Phillips, Wis., assignor to Marquip, Inc., Phillips, Wis.

Filed Apr. 26, 1994, Ser. No. 233,119
Int. Cl.[6] H02P *5/40*
U.S. Cl. 318—805 **7 Claims**



1. A multiphase servomotor system for an induction motor having concentrated stator windings of more than three phases comprising:

means for directing commutated magnetizing current into selected stator phase windings to create a commutated magnetic field within a given peripheral portion of the air gap between the stator and a rotor operating therein;

means for directing commutated torque currents into the stator phase windings corresponding to the position of the commutated magnetic field;

means for non-invasively measuring variations in the magnetic field density over said given peripheral portion; and,

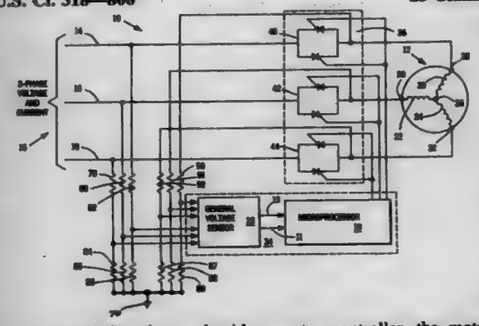
means for adjusting a slip speed between the commutated magnetic field and rotor speed in response to the magnetic field density measurements to maintain a uniform commutated magnetic field.

5,488,281

METHOD AND APPARATUS FOR PREDICTING WINDING FAILURE USING ZERO CROSSING TIMES

Peter J. Unsworth, Lewes, England, and Yuan Wang, Jiading, China, assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Sep. 28, 1994, Ser. No. 314,472
Int. Cl.[6] H02P *7/36*
U.S. Cl. 318—806 **23 Claims**



1. A method to be used with a motor controller, the motor controller providing stator winding currents at a frequency of X cycles per second and indicating zero crossing times when each current is zero, a set of ideal rotor signal data, an acceptable rotor error value, and a sampling period, the motor being of a design having p poles, the method predicting rotor winding failure, the method comprising the steps of:

generating a sequence of error signals over the sampling period, each error signal indicating the period between consecutive current zero crossings, the plurality of error signals together forming an error signal spectrum; analyzing the error signal spectrum to determine a signal amplitude of a rotor component within a region of interest, the region of interest being frequencies between K((2X/p)−n) and K(2X/p) Hz, where n is less than 2x/p and K is an integer;

determining a slip value indicating the difference in stator current frequency and the rotor frequency;

multiplying the signal amplitude by the slip value to produce a rotor signal; and

comparing the rotor signal to the ideal rotor signal data to produce a rotor error signal indicative of the degree of rotor failure.

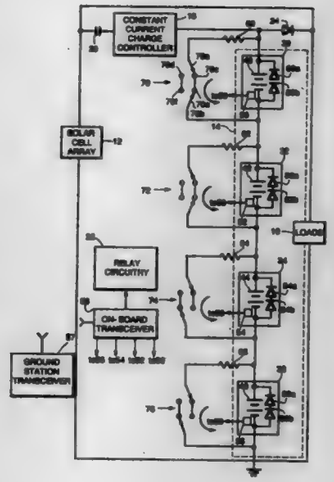
5,488,282

SYSTEM AND METHOD FOR RECONDITIONING SPACECRAFT BATTERY

Joseph H. Hayden, Rancho Palos Verdes, and Steven J. Stadnick, Lakewood, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 23, 1993, Ser. No. 81,503
Int. Cl.[5] H01M *10/44*; H02J *7/00*
U.S. Cl. 320—14 **9 Claims**

1. A battery reconditioning system for a spacecraft having a single battery serving as a secondary source of electrical energy to support spacecraft electrical loads, said battery including a plurality of serially connected packs each comprising a plurality of cells, the system comprising: sensor means for sensing the state of charge of each of said packs, reconditioning load means associated with each of said packs, battery charging means, switch means for connecting a reconditioning load means across its associated pack, switch control means responsive to the state of charge of said packs for controlling said switch means and said charging means to selectively and sequentially recondition each of said packs while said packs remain serially connected.

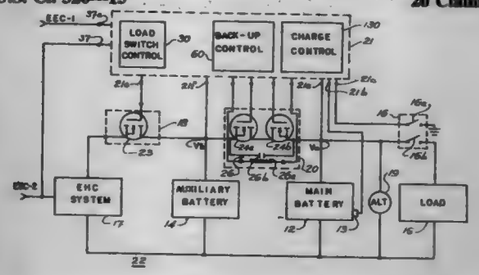


5,488,283

VEHICLE BATTERY SYSTEM PROVIDING BATTERY BACK-UP AND OPPORTUNITY CHARGING

Thomas J. Dougherty, Waukesha; William J. Wruck, Shorewood, and Richard J. Johnson, Hubertus, all of Wis., assignors to Globe-Union, Inc., Milwaukee, Wis.

Filed Sep. 28, 1993, Ser. No. 128,453
Int. Cl.[6] H01M *10/44*; H02J *7/14;7/34*; B60L *1/02*
U.S. Cl. 320—15 **20 Claims**



1. In a power supply system for a motor vehicle including a first storage battery for supplying electrical power to a primary load of the vehicle, said primary load including at least the starter motor and the ignition circuit Of the vehicle, the improvement comprising:

a second storage battery for supplying electrical power to an electrically heated catalytic converter system of the vehicle;

first switching means for connecting said electrically heated catalytic converter system to said second storage battery;

second switching means for connecting said second storage battery in parallel with said first storage battery;

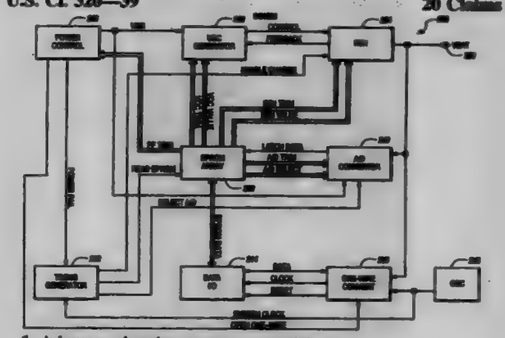
and control means including means responsive to operation of an ignition switch of the vehicle to cause said first switching means to operate and connect said catalytic converter system to said second storage battery, and said control means including inhibit means for preventing said second switching means from connecting said second storage battery in parallel with said first storage battery when said catalytic converter system is connected to said second storage battery by said first switching means.

5,488,284

BATTERY CHARGER SYSTEMS AND METHODS

Donald R. Dias, Carrollton, and Eric W. Mumper, Dallas, both of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Filed Sep. 30, 1992, Ser. No. 953,906
Int. Cl.[5] H01M *10/42*; H02J *7/00*
U.S. Cl. 320—39 **20 Claims**



1. A battery charging system, comprising:

(a) a charging current output terminal having a voltage;

(b) a variable-voltage generator with an output node;

(c) a variable resistor; and

(d) a controller electrically coupled to said variable-voltage generator, to said variable resistor, and to said charging current output terminal, said controller comprising at least one memory for storing $(V_1, R_1, BP_1), (V_2, R_2, BP_2), \ldots (V_N, R_N, BP_N)$ where V_j is an output voltage, R_j is a resistance, and BP_j is a breakpoint voltage, wherein j is an index between 1 and n;

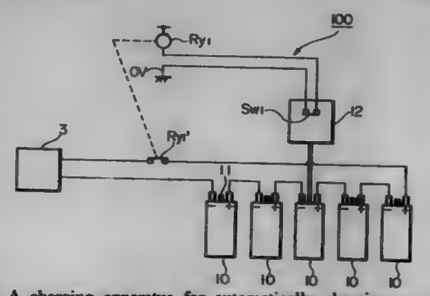
(e) wherein said controller can compare said voltage at said charging current output terminal to said BP_js and when said voltage at said charging current output terminal lies between BP_{j-1} and BP_j, said controller can drive said variable-voltage generator to provide said output voltage of V_j at said output node and can drive said variable resistor to provide said resistance of R_j between said output node and said charging current output terminal.

5,488,285

GAS-CONTROLLED BATTERY CHARGING DEVICE FOR A DRIVERLESS TRANSPORT VEHICLE

Eiji Hosobuchi, Ise, Japan, assignor to Shinko Electric Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1993, Ser. No. 114,137
Claims priority, application Japan, Aug. 31, 1992, 4-232397
Int. Cl.[6] H02J *7/02*
U.S. Cl. 320—46 **4 Claims**



4. A charging apparatus for automatically charging a sealed alkaline battery providing a motive power for a driverless transport vehicle, said apparatus comprising:

a charging station device having a power source for charging said sealed alkaline battery, a controller for controlling charging of said battery, data communication means, including electro-optical devices, for communicating data with said

driverless transport vehicle, and switching means for disconnecting said power source from said sealed alkaline battery when receiving a stopping signal through said data communication means; and

communication means, including electro-optical devices, disposed in said driverless transport vehicle device for communicating data with said data communication means disposed in said charging station device, wherein said communications means monitor an interior pressure of said sealed alkaline battery through a pressure sensor, generate said stopping signal and transmit said stopping signal to said switching means for disconnecting said power source from said sealed alkaline battery disposed in said charging station to prevent excessive pressure build up in the battery interior, thereby preventing release of damaging gases and corrosive vapors from an over-charged battery to an outside environment.

5,488,286

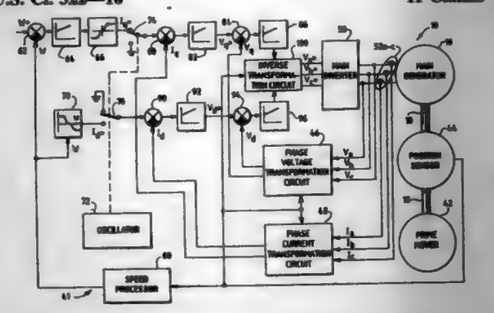
METHOD AND APPARATUS FOR STARTING A SYNCHRONOUS MACHINE

Gregory I. Rozman, Rockford; Albert L. Markunas, Roscoe; Michael J. Hanson, Loves Park, and Leland E. Weber, Rockford, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed May 12, 1993, Ser. No. 61,497

Int. Cl.[6] F02N *11/04*

U.S. Cl. 322—10 **11 Claims**



1. A method of starting a synchronous generator having a main generator portion with an armature winding and a field winding rotatable with respect to said armature winding and an exciter portion with a field winding and an armature winding rotatable with respect to said field winding, said method comprising the steps of:

(a) converting a parameter of power applied to the main generator portion armature winding to generate sensed direct and quadrature power components;

(b) comparing said sensed direct and quadrature power components with desired direct and quadrature power components to generate direct and quadrature power commands;

(c) applying power to said main generator portion armature winding based upon said direct power command during a first period of time;

(d) applying power to said main generator portion armature winding based upon said quadrature power command during a second period of time exclusive of said first period of time; and

(e) repeating said steps (c) and (d) a plurality of times in order to accelerate said synchronous generator to a threshold speed.

5,488,287

METHOD OF PRODUCING ELECTRICAL ENERGY BY MEANS OF GENERATORS AND USE OF THE METHOD IN VEHICLES WITH ANTI-SKID SYSTEMS

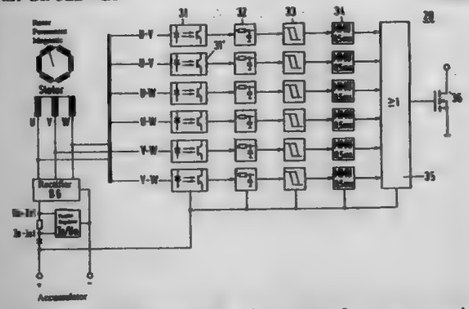
Axel Kemner, Isernhagen; Mahmud Keschwari, Barsinghausen, and Peter K. Zeller, Heubach, all of, Germany, assignors to Mannesmann Aktiengesellschaft A corporation of Germany, Dusseldorf, Germany

Filed Jun. 12, 1992, Ser. No. 898,904

Claims priority, application Germany, Jun. 12, 1991, 41 19 834.4

Int. Cl.[6] H02P *9/00*

U.S. Cl. 322—20 **7 Claims**



1. A method of producing electrical energy from rotary motion of an axle of a vehicle, by means of a generator assembly including a generator coupled to the axle, comprising determining the rate of rotation of the axle, carrying out the electrical energy production by the generator producing an induced electrical voltage pattern having upper and lower half-waves, each of which having a respective pulse parameter, carrying out the determination of the rate of rotation exclusively from the generator by evaluating the pulse parameters of the upper and lower half-waves of the induced electrical voltage pattern.

5,488,288

CIRCUIT ARRANGEMENT INTEGRATED IN A SEMICONDUCTOR CIRCUIT

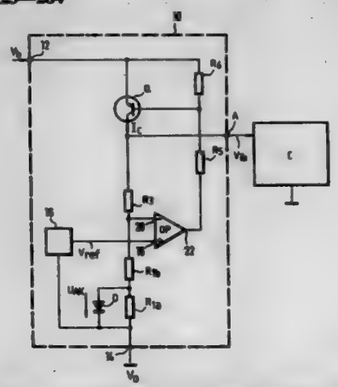
Werner Elmer, Moosburg, Germany, assignor to Texas Instruments Deutschland GmbH, Germany

Filed Nov. 12, 1992, Ser. No. 974,869

Claims priority, application Germany, Nov. 15, 1991, 41 37 730.3

Int. Cl.[6] G05F *1/46*

U.S. Cl. 323—284 **11 Claims**



1. A voltage control circuit for generating an internal adjustable operating voltage from an external supply voltage and maintaining the internal operating voltage at a substantially constant magnitude subject to adjustment, said voltage control circuit comprising:

an input terminal for receiving an external supply voltage;

an operational amplifier having inverting and non-inverting inputs and an output, the inverting input of said operational amplifier being connected to said input terminal;

a bipolar transistor having base, emitter and collector electrodes interconnected between said input terminal and the inverting input of said operational amplifier, the emitter electrode of said bipolar transistor being connected to said input terminal and the collector electrode of said bipolar tranaistor being connected to the inverting input of said operational amplifier;

a feed-back loop interconnecting the output of said operational amplifier and the base electrode of said bipolar transistor;

a reference voltage source for providing a reference voltage connected to the non-inverting input of said operational amplifier;

an output terminal connected to the collector electrode of said bipolar transistor at which the internal operating voltage for use by a digital circuit is produced;

a voltage divider having first and second serially connected resistors, the distal ends of said first and second resistors being respectively connected to the collector electrode of said bipolar transistor and to ground;

the inverting input of said operational amplifier being connected to a first node located between said first and second resistors;

said reference voltage source also being connected to ground;

said voltage divider including a third resistor connected in series to said first and second resistors and being interposed between said second resistor and ground;

a diode connected in parallel to said third resistor and having its anode connected to a second node located between said second and third resistors and its cathode connected between said reference voltage source and ground; and

said diode having a temperature sensing characteristic effective to adjust the internal operating voltage produced at said output terminal by providing a diode voltage inversely related to changes in temperature.

5,488,289

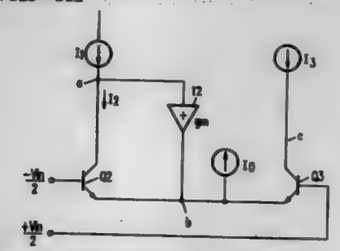
VOLTAGE TO CURRENT CONVERTER HAVING FEEDBACK FOR PROVIDING AN EXPONENTIAL CURRENT OUTPUT

Pak-Ho Yeung, San Jose, Calif., assignor to National Semiconductor Corp., Del.

Filed Nov. 18, 1993, Ser. No. 154,180

Int. Cl.[6] G05F *3/04;3/16;* G06G *7/10;7/12*

U.S. Cl. 323—312 **11 Claims**



1. A voltage to current converter comprising:

first and second input bipolar transistors, each having an emitter, a base, and a collector, said first and second input bipolar transistors being coupled at said emitters and accepting a selectable differential input voltage at said bases;

a reference current source connected to said collector of said first input bipolar transistor;

an output current source connected to said collector of said second input bipolar transistor, an output current of said output current source dependent on a current through said second input bipolar transistor; and

a feedback element connected between said coupled emitters and said collector of said first input bipolar transistor, and that senses a voltage at said collector of said first input bipolar transistor and regulates a voltage at said coupled emitters to maintain a constant current through said first input bipolar transistor

whereby an output current at said collector of said second input bipolar transistor varies exponentially with said differential input voltage.

5,488,290

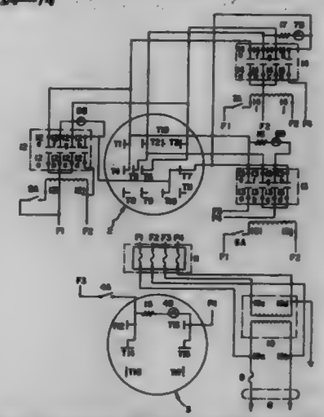
ENERGIZING DEVICES FOR KILOWATT HOUR METER DISPLAYS

Billie E. Black, 256 Sonser Dr., Eight Mile, Ala. 36613, assignor to Billie Eugene Black, Eight Mile, Ala.

Filed Sep. 3, 1993, Ser. No. 115,596

Int. Cl.[6] G01R *35/04*

U.S. Cl. 324—74 **15 Claims**



1. A kilowatt hour meter display energizing device for energizing digital displays of different types of kilowatt hour meters, the device comprising:

a first female multi-terminal socket means formed so as to accommodate at least a first type of kilowatt hour meter, said first socket means including a first plurality of female electrical sockets;

a second female multi-terminal socket means formed so as to accommodate at least a second type of kilowatt hour meter, said second socket means including a second plurality of female electrical sockets;

a first energizing circuit means operatively connected to said first socket means, for energizing a digital display of the first type of kilowatt hour meter;

a second energizing circuit means operatively connected to said second socket means, for energizing a digital display of the second type of kilowatt hour meter; and

a third energizing circuit means operatively connected to said first socket means, for energizing a digital display of third type of kilowatt hour meter;

voltage supply means connected to said first and second energizing circuits, for supplying a voltage thereto.

5,488,291

OPTICAL CURRENT TRANSFORMER

Hidenobu Koide, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

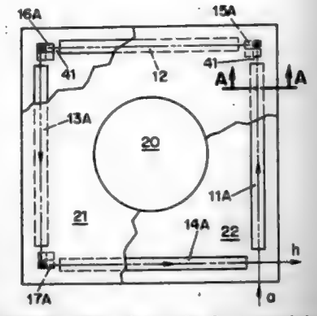
Filed Oct. 28, 1994, Ser. No. 326,584

Claims priority, application Japan, Jan. 21, 1993, 5-262833; Apr. 25, 1994, 6-086126

Int. Cl.[6] G01R *33/032;19/00;* G02B *6/42*

U.S. Cl. 324—96 **29 Claims**

1. An optical current transformer for measuring a current flowing through a conductor by transmitting a light beam about said current-carrying conductor, comprising:



(a) four Faraday effect glass rods, for transmitting said light beam, arranged in a rectangle to thereby form a through hole for said conductor;

(b) three optical path changing pieces, each for redirecting said light beam from one of said glass rods to a different one of said glass rods, and each being positioned at a different corner of said glass rod rectangle;

(c) two substrate plates, each having a through hole for said conductor, positioned at opposite sides of said glass rod rectangle to sandwich said glass rods and said optical path changing pieces therebetween; and

(d) means for substantially fixing the relative positions of said glass rods while allowing for thermal expansion and contraction of said glass rods.

5,488,292

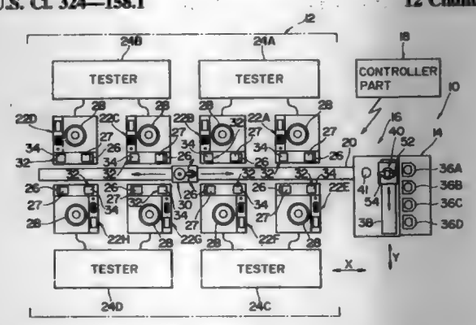
WAFER INSPECTING SYSTEM

Kiyoaki Tsuta, Mitaka, Japan, assignor to Tokyo Seimitsu Co., Ltd., Tokyo, Japan

Filed Oct. 4, 1993, Ser. No. 130,831

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—158.1 **12 Claims**



1. A wafer inspecting system, comprising:

a cassette storage device capable of storing a plurality of cassettes each cassette containing a plurality of wafers to be inspected;

a plurality of wafer probing devices arranged at predetermined intervals;

wafer conveying means for sequentially removing at least one of the plurality of wafers from one of the plurality of cassettes, moving each removed wafer to at least one of said plurality of wafer probing devices and returning each removed wafer which has been inspected by the at least one wafer probing device to the one of the plurality of cassettes from which the wafer was taken; and

control means for controlling the wafer conveying means.

5,488,293

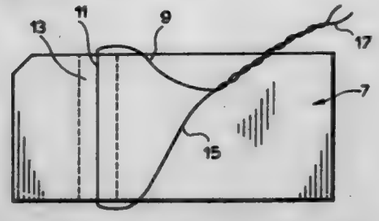
METHOD OF CALIBRATING A MAGNETIC CHARACTER BEARING DOCUMENT

Paul D. Ross, 1107 Birchmount Road, Scarborough, Ontario, Canada

Continuation of Ser. No. 973,410, Nov. 9, 1992, abandoned. This application May 4, 1994, Ser. No. 237,901

Int. Cl.[6] G01R *35/00;* **B07C** *5/344;* **G06K** *9/00*

U.S. Cl. 324—202 **4 Claims**



1. A method of calibrating a document having a magnetic character on said document, said method comprising measuring by testing equipment magnetic flux level of a known current passed through a specified conductor to establish a first signal having a first signal strength represented by a unit value, passing said document through said testing equipment to provide a second signal having a second signal strength produced by magnetic flux of said character and assigning a value to said second signal strength in comparison to and shown in units as a percentage of the unit value of the first signal strength.

5,488,294

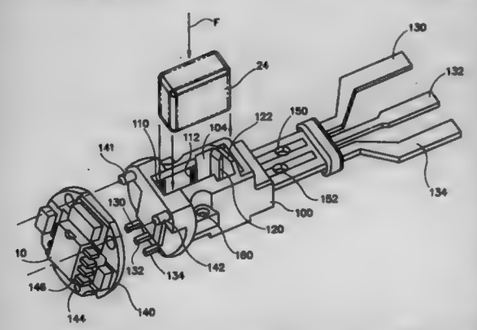
MAGNETIC SENSOR WITH MEANS FOR RETAINING A MAGNET AT A PRECISE CALIBRATED POSITION

Peter A. Liddell; Douglas L. Mueller, both of Freeport, and Gary L. Wohlers, Cedarville, all of Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 18, 1995, Ser. No. 374,020

Int. Cl.[6] G01B *7/14;* **G01R** *35/00*

U.S. Cl. 324—207.21 **20 Claims**



1. A magnetic sensor with adjustable magnet position for use during calibration of the magnetic sensor, comprising:

a carrier having a cavity formed therein;

a plurality of electrical leads molded into said carrier;

a magnet, said cavity being shaped to receive said magnet therein, said magnet being shaped to slide into said cavity in response to an external force;

means associated with said cavity for guiding said magnet along a preselected axis as said magnet slides into said cavity in response to said external force;

means associated with said cavity for resisting the movement of said magnet as said magnet slides into said cavity in response to said external force, said resisting means being deformable in response to forcible contact with said magnet as said magnet slides into said cavity in response to said external force, said resisting means being shaped to retain said magnet in position within said cavity when said external force is not exerted against said magnet;

a magnetically sensitive component; and

a substrate, said magnetically sensitive component being attached to said substrate, said substrate being attached to said carrier.

5,488,295

METHOD AND APPARATUS FOR CANCELLING NOISE OF A LOW-NOISE SENSOR

Heikki Seppä, Helsinki, Finland, assignor to Valtion Teknillinen Tutkimuskeskus, Espoo, Finland

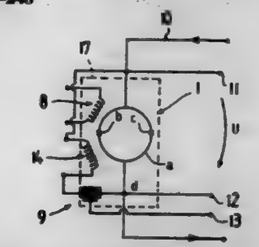
PCT No. PCT/FI91/00154, § 371 Date Nov. 12, 1992, § 102(e) Date Nov. 12, 1992, PCT Pub. No. WO91/18298, PCT Pub. Date Nov. 28, 1991

PCT Filed May 15, 1991, Ser. No. 952,885

Claims priority, application Finland, May 15, 1990, 902424

Int. Cl.[6] G01R *33/035*

U.S. Cl. 324—248 **7 Claims**



1. A method for processing an output signal of a low-noise sensor, particularly a sensor based on at least one Josephson junction, such as a SQUID, comprising the steps of:

connecting an adjustable resistor between an output port and an input port of the sensor to create a positive feedback from the output port to the input port;

feeding the output signal of the low-noise sensor at the output port back to the input port of the sensor; and

regulating resistance of the resistor by adjusting means so that an amplification of the sensor is set to be suitable.

5,488,296

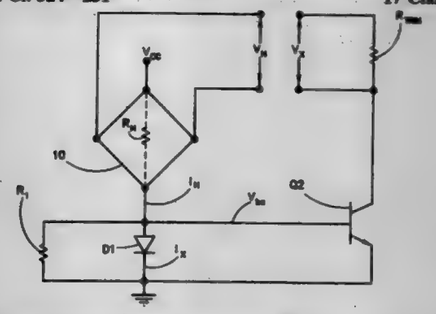
TEMPERATURE COMPENSATED MAGNETICALLY SENSITIVE CIRCUIT

Peter G. Hancock, Plano, Tex., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 25, 1995, Ser. No. 378,294

Int. Cl.[6] G01R *33/07;* **H01L** *43/06;* **H03K** *17/90*

U.S. Cl. 324—251 **17 Claims**



1. A magnetic sensing circuit, comprising:

a magnetically sensitive device;

first means, connected in electrical communication with said magnetically sensitive device, for providing an output signal that is representative of the strength of a magnetic field in a predetermined direction relative to said magnetically sensitive device;

second means for providing a reference signal;

means for comparing said output signal to said reference signal, said second providing means comprising a means for causing said reference signal to change as a function of temperature in a manner generally similar to the way that said output signal changes as a function of temperature; and

a diode is connected in series with said magnetically sensitive device between a power source and a point of ground potential, said causing means comprising a first resistor connected in parallel with said diode.

5,488,297

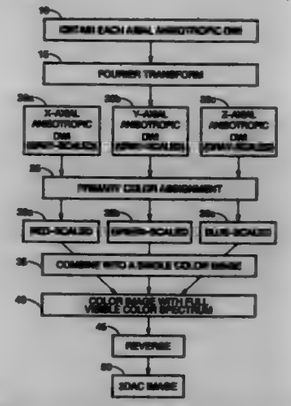
THREE DIMENSIONAL ANISOTROPY CONTRAST MAGNETIC RESONANCE IMAGING

Tsutomu Nakada, San Francisco, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Jul. 19, 1994, Ser. No. 277,670

Int. Cl.[6] G01V *3/14*

U.S. Cl. 324—309 **29 Claims**



1. A method for contrast imaging anisotropic motion of water molecules in an object, comprising the steps of:

(a) obtaining a plurality of gray-scaled diffusion weighted images of an identical slice of an object using magnetic resonance imaging, each said image being obtained by applying a diffusion gradient pulse in a single direction along a corresponding axis, each said axis being orthogonal in relation to each other axis;

(b) color scaling each said gray-scaled diffusion weighted image with a different primary color; and

(c) combining each said color-scaled diffusion weighted image to produce a single image.

5,488,298

APPARATUS AND METHOD FOR DECREASING MAGNETIC FIELD SENSITIVITY OF LONG RF PULSES

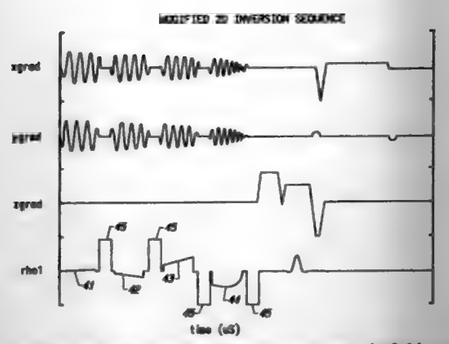
Graham Wright, Toronto, Canada, and John M. Pauly, San Francisco, Calif., assignors to Board of Trustees of the Leland Stanford University, Stanford, Calif.

Continuation of Ser. No. 101,148, Aug. 2, 1993, abandoned. This application Dec. 6, 1994, Ser. No. 351,572

Int. Cl.[6] G01R *33/48*

U.S. Cl. 324—309 **29 Claims**

1. In a method of multidimensional magnet resonance signal detection, the combination of steps including



a) placing an object in an inhomogeneous magnetic field, and

b) perturbing nuclei in said object with a multidimensional RF pulse, said RF pulse including a plurality of spaced apart RF signal segments with a plurality of refocusing pulses associated with segments for refocusing spins including a refocusing pulse between each adjacent pair of spaced apart segments.

5,488,299

NUCLEAR MAGNETIC RESONANCE IMAGING WITH IMPROVED IMAGE QUALITY AND OPERATION EFFICIENCY

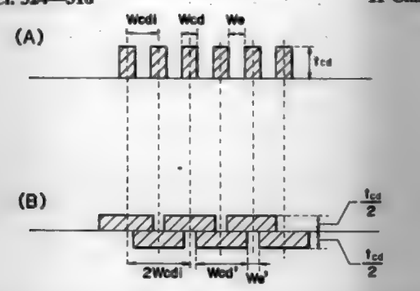
Masafumi Kondo, and Hiromi Kawamoto, both of Tochigi, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 12, 1993, Ser. No. 31,185

Claims priority, application Japan, Mar. 13, 1992, 4-055648; Mar. 31, 1992, 4-106198; Sep. 11, 1992, 4-243759; Feb. 25, 1993, 5-035982

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—318 **11 Claims**



1. An active shield gradient coil to be used in nuclear magnetic resonance imaging, comprising:

inner primary coil means for generating a desired gradient magnetic field within a desired imaging space; and

outer shielding coil means, provided in a vicinity of the inner primary coil means, for shielding the gradient magnetic field generated by the inner primary coil means outside of the desired imaging space;

wherein at least one of the inner primary coil means and the outer shielding coil means has coil members provided on a plurality of separate layers, one different coil member in each layer, mutually connected electrically.

5,488,300

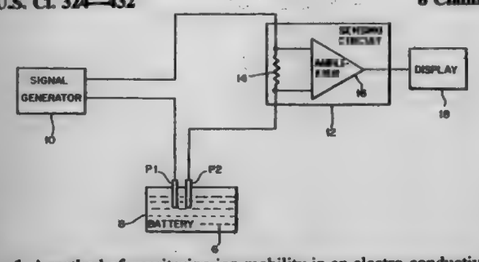
METHOD AND APPARATUS FOR MONITORING THE STATE OF CHARGE OF A BATTERY

Robert S. Jamieson, 40 Misty Meadow Dr., Boynton Beach, Fla. 33462

Filed Oct. 21, 1994, Ser. No. 327,350

Int. Cl.[6] G01N *27/416*

U.S. Cl. 324—432 **8 Claims**



1. A method of monitoring ion mobility in an electro-conductive fluid, which comprises the steps of:

immersing at least one pair of test electrodes at least partially in the electro-conductive fluid;

generating a test signal having a pulsed waveform, the pulsed waveform of the test signal having an amplitude which remains constant for a predetermined time sufficient to ensure that ion mobility in the electro-conductive fluid has reached a steady state velocity;

applying the test signal to the at least one pair of test electrodes to cause a current to flow through the test electrodes and the electro-conductive fluid; and

sensing the current flow through the test electrodes and the electro-conductive fluid caused by the test signal, the sensed current being indicative of ion mobility in the electro-conductive fluid.

5,488,301

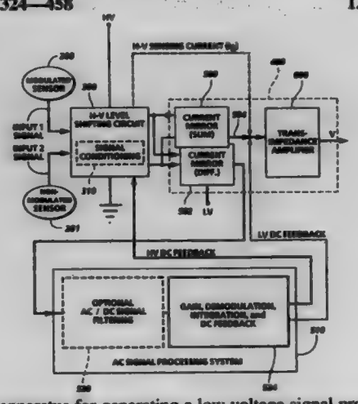
ELECTROSTATIC VOLTMETER EMPLOYING A DIFFERENTIAL CASCODE

Alan J. Werner, Jr., Rochester, N.Y.; Mohamad M. Mojaradi, Los Angeles, Calif.; Mehrdad Zomorrodi, West Hills, Calif.; Steven A. Buhler, Redondo Beach, Calif., and Tuan A. Vo, Hawthorne, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 19, 1994, Ser. No. 359,170

Int. Cl.[6] G01R *21/12*

U.S. Cl. 324—458 **12 Claims**



1. An apparatus for generating a low voltage signal proportional to an electrostatic potential on a surface, comprising:

a non-contacting sensor for producing an input signal representative of the electrostatic potential on the surface;

a high-voltage source adapted to produce a first potential of first polarity;

a high-voltage level shifting circuit, powered by said high-voltage source and including an input conditioning circuit for reducing transient variations in the input signal produced by said sensor, said high-voltage level shifting means generating a first signal referenced to ground in response to the conditioned input signal output from the input signal conditioning circuit; and

a circuit, connected to receive the first signal from said high-voltage level shifting means, for converting the first signal to a low voltage signal, said low voltage signal being referenced to ground potential.

5,488,302

Patent Not Issued For This Number

5,488,303

GFCI WITH AUXILIARY COIL CURRENT BLOCKING MEANS AND IMPROVED TEST BUTTON CONFIGURATION

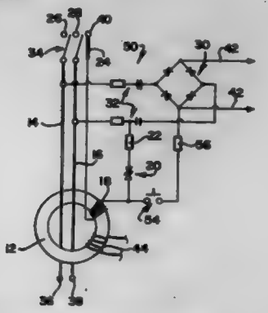
Dante Bagalini, Johannesburg, South Africa, assignor to Circuit Breakers Industries Ltd., Johannesburg, South Africa

Continuation of Ser. No. 120,669, Sep. 13, 1993, abandoned. This application May 31, 1995, Ser. No. 455,597

Claims priority, application South Africa, Jul. 9, 1993, 93/4962

Int. Cl.[6] H02H *3/26*

U.S. Cl. 324—509 **11 Claims**



1. A ground fault interrupter comprising:

a core;

a plurality of wires including at least two load current carrying wires, said load current carrying wires passing through the core, said load current carrying wires being connectable between electrical supply means and a load for supplying current to said load;

a primary coil on the core for detecting a current imbalance in said load current carrying wires;

an auxiliary coil on the core;

an electrical circuit connecting said auxiliary coil to first and second wires selected from said plurality of wires, said electrical circuit being operable to carry current to said auxiliary coil when a voltage exists between said first and second wires, and a current blocking means in said circuit to provide current flow to said auxiliary coil only when the voltage between said first and second wires exceeds a predetermined value, said current blocking means being connected in said circuit in series with said auxiliary coil between said first and second wires to be responsive to a voltage difference between said first and second wires;

a DC supply arrangement connected between a selected pair of said plurality of wires for supplying power to the DC supply arrangement; and

a test button,

said auxiliary coil having one end connected via said current blocking means to the first said wire and an opposite end connected to the second said wire,

said second wire being a ground wire and said opposite end of the auxiliary coil being directly connected to said second wire; and

said test button being connected between said one end of said auxiliary coil and said DC supply arrangement.

5,488,304

METHOD AND APPARATUS FOR JUDGING ACTIVE/DEAD STATUS OF COMMUNICATION CABLE

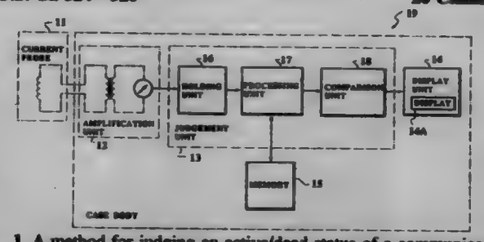
Toshiharu Hamada, Toyamaken; Masaichi Shiotani, Ishikawaken; Yukio Shimo, Ishikawaken, and Munehiko Higashikata, Ishikawaken, all of, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Jun. 2, 1994, Ser. No. 252,950

Claims priority, application Japan, Jun. 2, 1993, 5-131613

Int. Cl.[6] G01R *31/12*

U.S. Cl. 324—520 **20 Claims**



1. A method for judging an active/dead status of a communication cable, comprising the steps of:

storing in advance data representing a frequency spectrum of signals on a communication cable measured in a state in which the communication cable is known to be active/dead;

measuring the data representing the frequency spectrum of the signals on a communication cable to be judged by detecting signals on the communication cable to be judged while electromagnetically coupling a probe to the communication cable to be judged; and

judging the active/dead status of the communication cable to be judged according to a result of comparing a prescribed threshold with a difference of the data representing the frequency spectrum stored at the storing step and the data representing the frequency spectrum measured at the measuring step.

5,488,305

SYSTEM AND METHOD FOR HIGH-SPEED POTENTIOMETRY USING SCANNING PROBE MICROSCOPE

David M. Bloom, Portola Valley; Francis Ho, Stanford, and Alfred S. Hou, Menlo Park, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Division of Ser. No. 984,891, Dec. 2, 1992, Pat. No. 5,381,101. This application Sep. 28, 1994, Ser. No. 313,758

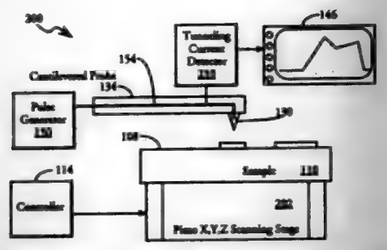
Int. Cl.[6] G01B *5/28*

U.S. Cl. 324—537 **15 Claims**

1. An apparatus for measuring an electrical waveform existing at the surface of a sample, said periodic waveform being of a predefined frequency, comprising:

a sampling signal generator that generates a sampling signal having a sample signal repetition frequency offset from said predefined repetition frequency by a difference frequency;

a probe coupled to said sampling signal generator for carrying said sampling signal to a position proximate and surface of said sample with a gap separating said probe from said surface so as to assert a time varying gap voltage across said gap, said time varying gap voltage generating a corresponding



tunneling current through the gap between said probe and said surface of said sample; wherein said tunneling current is a nonlinear function of said gap voltage such that said tunneling current includes a mixing component that replicates said electrical waveform at a repetition rate equal to said difference frequency; and

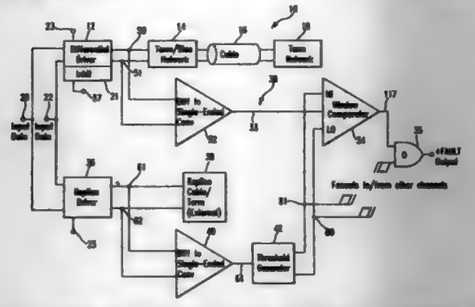
a current detection circuit coupled to said probe that senses said mixing component of said tunneling current.

5,488,306

OPEN AND SHORT FAULT DETECTOR FOR A DIFFERENTIAL INTERFACE

Anthony R. Bonaccio, Shelburne, Vt., assignor to International Business Machines Corp., Armonk, N.Y.

Filed May 31, 1994, Ser. No. 250,963
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—539 **9 Claims**



2. A cable fault detection system in which the detection is independent of the ground shift comprising:

means for applying differential voltages to said cable;

means for sensing said differential voltages applied to said cable; and

means for generating a threshold window that defines the acceptable range for the differential voltages applied to said cable said threshold window being independent of any ground shifts in said cable;

means for detecting if said sensed differential voltages in said cable are within or outside said threshold window.

5,488,307

SENSOR INTERFACE METHOD AND APPARATUS

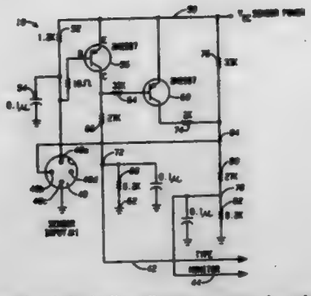
Robert J. Plott, Mentor, Ohio, assignor to Namco Controls Corporation, Highland Hts., Ohio

Filed Dec. 22, 1993, Ser. No. 172,571
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—555 **7 Claims**

1. Sensor interface apparatus that can be coupled to a cable for conducting signals to a sensor comprising:

a) an electrical connector having three conductive contacts for mating with either a two-wire or three-wire cable connected to a sensor;

b) an interface circuit including a power conductor coupled to a first of the three conductive contacts of the connector; said



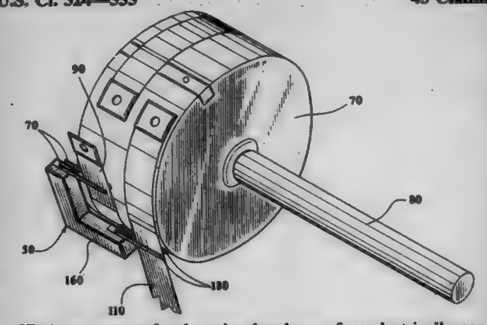
interface circuit including: i) a current sensing circuit coupled to said first of the said three conductive contacts for sensing current flowing through said first contact to distinguish between a three-wire and two-wire cable connected to the sensor; ii) a sensor status monitoring circuit connected to another of said three contacts for monitoring a status of said sensor and iii) an output circuit for providing one output signal related to a type of sensor and a second output signal related to a status of the sensor as determined by the current sensing and status monitoring circuits.

5,488,308

APPARATUS AND METHOD FOR DETECTING BREAKAGE OF A DRIVE BAND IN A PACKAGING MACHINE

Arde Kirka, 1100 Tanglewood, Algonquin, Ill. 60102; David Persells, 613 Torrey Pines, Twin Lakes, Wis. 53181; Roland Andersson, 2786 Old Buffalo Grove Rd., Arlington Heights, Ill. 60004, and Shigehiro Kinoshita, 1124 Johnson Dr., Apt. 3536, Buffalo Grove, Ill. 60089

Filed Jul. 20, 1994, Ser. No. 277,614
Int. Cl.[6] G01R *31/00*
U.S. Cl. 324—555 **45 Claims**



37. An apparatus for detecting breakage of an electrically conductive band, the apparatus comprising:

a) an electrically conductive probe disposed proximate the electrically conductive band and spaced from the electrically conductive band to facilitate electrical contact between the probe and the electrically conductive band upon breakage of the electrically conductive band, the electrically conductive band being connected to ground;

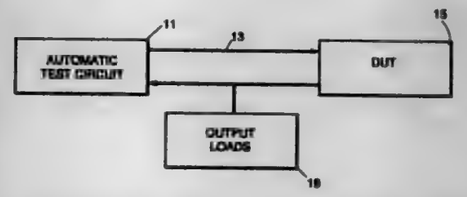
b) a continuity checking circuit connected to the electrically conductive band and the electrically conductive probe, contact between the electrically conductive probe and the electrically conductive band resulting in electrical continuity therebetween, the electrical continuity being detected by the continuity checking circuit to provide a signal output indicative of the breakage of the electrically conductive band.

5,488,309

METHOD OF TESTING THE OUTPUT PROPAGATION DELAY OF DIGITAL DEVICES

William D. Farwell, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 1, 1993, Ser. No. 143,957
Int. Cl.[6] G01R *15/12*
U.S. Cl. 324—617 **3 Claims**



1. A test system for testing output propagation delays of selected outputs of a digital integrated circuit having inputs and wherein each output has a specified internal propagation delay, comprising:

a test circuit for applying input signals to selected inputs of the digital integrated circuit and for sampling selected outputs of the digital integrated circuit; and

respective loads for each of the selected outputs, each load having an impedance that is configured such that the sum of the specified internal delay for such output and a load dependent delay for such output comprises a total test propagation delay that is substantially identical for all of the selected outputs;

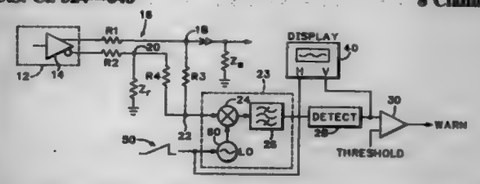
said test circuit further sampling all of the selected outputs simultaneously and comparing the sampled outputs with expected output values.

5,488,310

RETURN-LOSS DETECTION FOR SERIAL DIGITAL SOURCE

Daniel G. Baker, Aloha; Robert W. Parish, Gaston, and Scott E. Zink, Portland, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Aug. 22, 1994, Ser. No. 294,274
Int. Cl.[6] G01R *17/00*
U.S. Cl. 324—648 **8 Claims**



1. A return-loss detector for a serial digital signal source comprising:

means for generating a differential pair of serial digital signals from a serial digital signal output by the serial digital signal source;

a bridge circuit having as inputs the differential pair of serial digital signals and having a reference output terminal and a system output terminal, the system output terminal being coupled to a system being driven by the serial digital signal;

a detector coupled to the output terminals of the bridge circuit; and

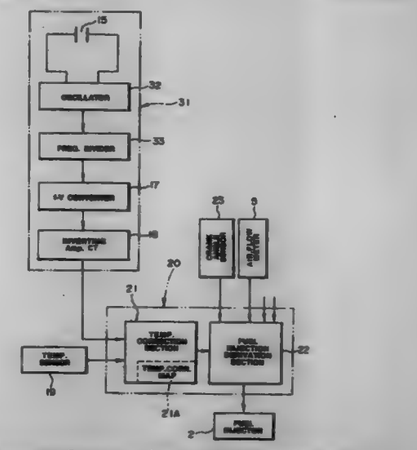
means for indicating from the output from the detector when a termination mismatch at the system output terminal occurs.

5,488,311

APPARATUS AND METHOD FOR MEASURING ALCOHOL CONCENTRATION OF LIQUID BLENDED WITH ALCOHOL APPLICABLE TO AN AUTOMOTIVE VEHICLE MOUNTED INTERNAL COMBUSTION ENGINE

Hideki Kamioka; Kazunaitsu Kobayashi; Masahiko Shimamura, all of Isezaki, and Kiyoshi Takeuchi, Yokohama, all of, Japan, assignors to Japan Electronic Control Systems Co., Ltd., Isezaki, and Nissan Motor Company, Limited, Yokohama, both of, Japan

Continuation of Ser. No. 862,646, Apr. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 705,617, May 29, 1991, abandoned. This application Aug. 10, 1994, Ser. No. 288,427
Claims priority, application Japan, May 30, 1990, 2-140327
Int. Cl.[6] G01N *27/22*
U.S. Cl. 324—674 **11 Claims**



1. An apparatus for measuring an alcohol concentration of a liquid blended with alcohol, comprising:

a) an electrostatic capacitance detector, having electrodes immersed in said liquid, for detecting an electrostatic capacitance between said electrodes;

b) an oscillator coupled to said electrostatic capacitance detector and configured to oscillate at a frequency based on an amount of said electrostatic capacitance detected by said electrostatic capacitance detector, said oscillator oscillates at said frequency in a frequency range of 10 Mhz or more dependent on said alcohol concentration;

c) a frequency divider coupled to said oscillator and configured to divide said frequency from said oscillator and to output a divided frequency indicative thereof; and

d) a frequency-to-voltage converter coupled to said frequency divider and configured to convert said divided frequency into a corresponding voltage.

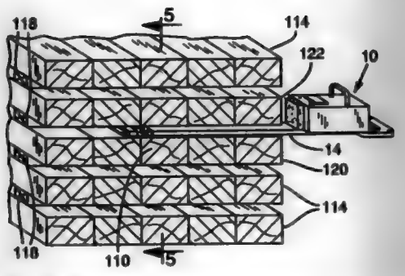
5,488,312

METER WITH PROBE FOR MEASURING THE MOISTURE CONTENT OF STACKED WOOD

Robert T. Havener, Grants Pass, and Edward D. Wagner, Rogue River, both of Oreg., assignors to Wagner Electronic Products, Inc., Rogue River, Oreg.

Division of Ser. No. 992,733, Dec. 18, 1992, Pat. No. 5,402,076. This application Dec. 2, 1994, Ser. No. 348,457
Int. Cl.[6] G01R *27/26*
U.S. Cl. 324—689 **19 Claims**

19. A method of measuring the moisture content of stacked wood using a probe having an elongated body and an extendable member, the method comprising:



inserting the probe between a first and a second layer of stacked wood; and

moving the extendable member relative to the body of the probe and against wood of the first layer to urge the body away from the first layer and towards the second layer.

5,488,313

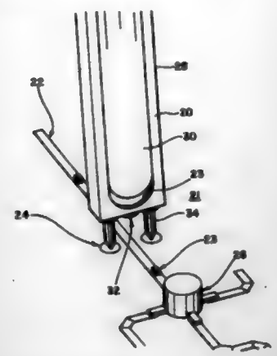
TEST PROBE AND CIRCUIT BOARD ARRANGEMENT FOR THE CIRCUIT UNDER TEST FOR MICROSTRIP CIRCUITRY

Stanley J. Gourse, Highland; Eugene Fischer, Upper Marlboro, and George A. Harrison, Pasadena, all of Md., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Filed Jul. 16, 1993, Ser. No. 92,616

Int. Cl.[6] G01R *1/06*

U.S. Cl. 324—754 **2 Claims**



1. An arrangement for sensing the electrical characteristics of a signal being carried on a microstrip circuit, wherein the microstrip circuit is mounted on a dielectric substrate having a ground plane on one surface thereof and a microstrip electrical circuit on the other, the arrangement comprising:

at least one electrically conductive test point extending from and electrically connected to said ground plane through said substrate to said other surface adjacent said microstrip circuit at a point thereon where it is desired that electrical measurements be made,

a probe housing having a length of microstrip line extending from an end thereof the length of the probe housing to a connector means connectable to an external measuring device,

a contact element carried on said end of said probe housing and adapted to be placed in contact with and electrically coupled to said length of microstrip line for engaging with the microstrip circuit and

ground contact means carried on said probe housing for engagement with said test point and electrically connected through said probe housing to said connector means.

5,488,314

BUCKLING BEAM TEST PROBE ASSEMBLY

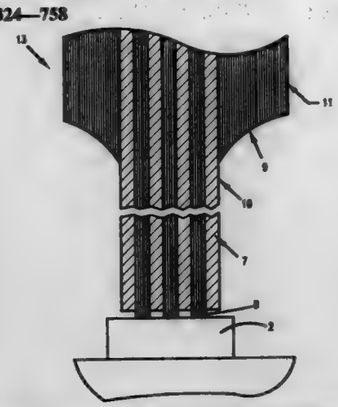
Wolfram Brandt, Sindelfingen; Bernd Marquart, Weil im Schoenbuch, and Roland R. Stoehr, Nufringen, all of, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 10, 1994, Ser. No. 209,577

Claims priority, application European Pat. Off., Jul. 23, 1993, 93111786

Int. Cl.[6] G01R *1/04;1/073*

U.S. Cl. 324—758 **18 Claims**



1. A buckling beam test probe assembly for electrically testing a device provided with a plurality of contact pads, comprising:

current carrying electrically conductive contact probes, each of said probes including an inner core surrounded by an outer sheath, each of said probes comprising a plurality of fibers protruding from said core;

a stack of perforated plates, wherein each of said probes passes through one perforation in each of said perforated plates; and

a stripper plate positioned under said perforated plates, comprised of sections that are offset with respect to each other, said stripper plate being further provided with guiding channels so that probes passing through said guiding channels are deflected laterally by an amount determined by said offset and by the diameter of said channels, thereby providing each of said probes with controllable wiping of said contact pads.

5,488,315

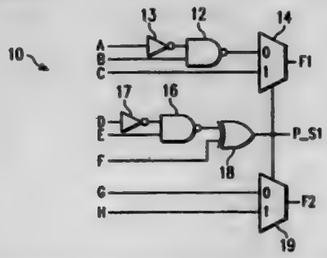
ADDER-BASED BASE CELL FOR FIELD PROGRAMMABLE GATE ARRAYS

Shivaling S. Mahant-Shetti; Manisha Agarwala, both of Richardson, Tex.; Mahesh M. Mehendale, Bangalore, Ind.; Robert J. Landers, Plano, and Mark G. Harward, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 5, 1995, Ser. No. 369,060

Int. Cl.[6] H03K *19/173;19/177*

U.S. Cl. 326—37 **15 Claims**



1. A base cell for a field programmable gate array, comprising:

a first inverter having an input and an output, the input of the first inverter operable to receive a first input signal to the base cell;

a first NAND gate having a first input, a second input and an output, the first input of the first NAND gate coupled to the output of the first inverter and the second input of the first NAND gate operable to receive a second input signal to the base cell;

a first 2:1 multiplexer having a "0" input, a "1" input, a "select" input and an output, the "0" input of the first 2:1 multiplexer coupled to the output of the first NAND gate and the "1" input of the first 2:1 multiplexer operable to receive a third input signal to the base cell, such that the output of the first 2:1 multiplexer represents a first function;

a second inverter having an input and an output, the input of the second inverter operable to receive a fourth input signal to the base cell;

a second NAND gate having a first input, a second input and an output, the first input of the second NAND gate coupled to the output of the second inverter and the second input of the second NAND gate operable to receive a fifth input signal to the base cell;

an XOR gate having a first input, a second input and an output, the first input of the XOR gate coupled to the output of the second NAND gate, the second input of the XOR gate operable to receive a sixth input signal to the base cell, and the output of the XOR gate coupled to the "select" input of the first 2:1 multiplexer, such that the output of the XOR gate represents a partial sum function;

a second 2:1 multiplexer having a "0" input, a "1" input, a "select" input and an output, the "0" input of the second 2:1 multiplexer operable to receive a seventh input signal to the base cell, the "1" input of the second 2:1 multiplexer operable to receive an eighth input signal to the base cell and the "select" input of the second 2:1 multiplexer coupled to the output of the XOR gate, such that the output of the second 2:1 multiplexer represents a second function.

5,488,316

CIRCUIT FOR SELECTING A BIT IN A LOOK-UP TABLE

Ross H. Freeman, San Jose, and Hung-Cheng Hsieh, Sunnyvale, both of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Division of Ser. No. 284,935, Aug. 1, 1994, Pat. No. 5,432,719, which is a division of Ser. No. 387,566, Jul. 28, 1989, Pat. No. 5,343,406. This application Apr. 26, 1995, Ser. No. 429,434

Int. Cl.[6] H03K *19/173*

U.S. Cl. 326—41 **3 Claims**

1. A structure for selecting a bit in a look-up table including a first input line for receiving a first input signal and a second input line for receiving a second input signal, said structure comprising:

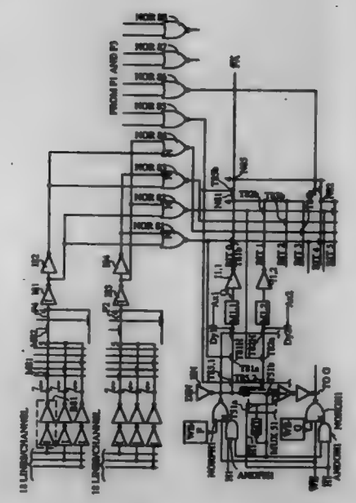
a first inverter coupled to said first input line for providing the complement of said first input signal;

a second inverter coupled to said first inverter for providing the logic state of said first input signal;

a third inverter coupled to said second input line for providing the complement of said second input signal; and

a fourth inverter coupled to said third inverter for providing the logic state of said second input signal;

a first, second, third, and fourth logic gate, wherein said first inverter is coupled to said first and second logic gates, said second inverter is coupled to said third and fourth logic gates, said third inverter is coupled to said second and fourth logic gates, and said fourth inverter is coupled to said first and third logic gates, wherein each of said logic gates controls the transfer of a bit in said look-up table.



5,488,317

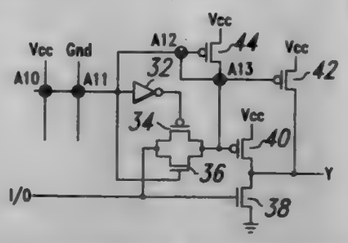
WIRED LOGIC FUNCTIONS ON FPGA'S

William S. Webster, Dallas, and David D. Wilmoth, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 22, 1993, Ser. No. 141,339

Int. Cl.[6] H03K *19/0948;19/094*

U.S. Cl. 326—45 **14 Claims**



1. A field programmable logic array having a plurality of logic modules, comprising:

a configurable output driver in each of said plurality of logic modules that enables a plurality of output nodes of said plurality of logic modules to be connected together for a wired logic function and that enables each of said plurality of output nodes to be connected separately to one of a plurality of output lines, wherein said configurable output driver comprises:

a p-channel driver transistor connected to one of said output nodes;

a n-channel driver transistor connected between said one of said output nodes and ground; and

driver disable circuitry operable to disable said p-channel driver transistor when said plurality of output nodes are to be connected together, said driver disable circuitry comprising:

a first programmable element connected between said driver disable circuitry and logic signal in order to provide a high logic signal to a gate of said p-channel driver transistor; and

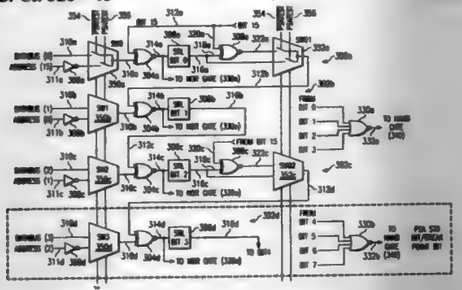
a second programmable element connected between said driver disable circuitry and a second logic signal in order to supply an internal logic signal to said gate of said p-channel driver transistor.

5,488,318

MULTIFUNCTION REGISTER

Sridhar Vajapey, Sugarland; Paul W. Krause, Sugar Land, and John M. Bach, Stafford, all of Tex., assignors to Texas Instruments, Dallas, Tex.

Filed Oct. 4, 1994, Ser. No. 317,953
Int. Cl.[6] H03K 21/00;19/20
U.S. Cl. 326—46 11 Claims



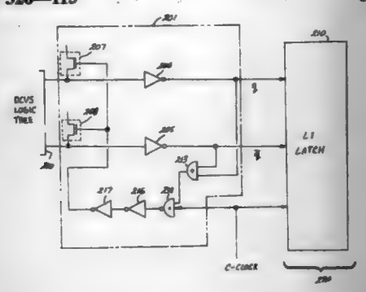
11. A register cell for a multifunctional register, comprising:
an input multiplexer for selecting between two input signals responsive to one or more control signals and having a first output signal,
an input exclusive not OR circuit having a first input connected to said first output signal and a second input connected to a cell output signal and having a second output signal, and
a shift register latch having an input connected to said second output signal and having a cell output signal.

5,488,319

LATCH INTERFACE FOR SELF-RESET LOGIC

Tin-chee Lo, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 18, 1994, Ser. No. 292,673
Int. Cl.[6] H03K 19/0948
U.S. Cl. 326—115 5 Claims



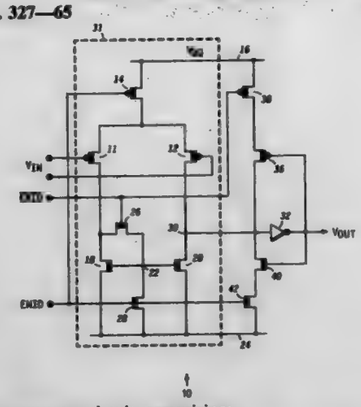
1. In combination, a logic circuit having an output terminal and including a logic tree and a reset circuit operative to reset the logic tree and a latch having an input terminal connected to the output terminal of the logic circuit, the latch responsive to a clock signal for periodically latching the output of the logic circuit, the reset circuit connected to the output terminal of the logic circuit and to the input terminal of the latch and responsive to a signal on the input terminal of the latch and the clock signal to reset the logic tree.

5,488,320

COMPARATOR HAVING LATCHED OUTPUT WHEN DISABLED FROM THE POWER SUPPLY

James S. Carvella, and John H. Quigley, both of Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 4, 1994, Ser. No. 223,400
Int. Cl.[6] H03K 3/289;5/22
U.S. Cl. 327—65 9 Claims



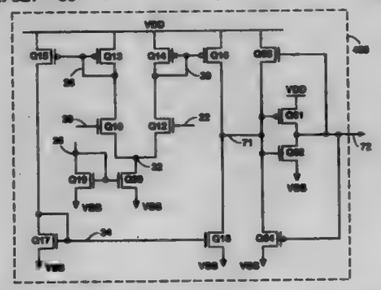
1. A comparator circuit, comprising:
an input stage coupled for receiving a differential input signal and providing a single-ended output signal at a first node;
first means for enabling and disabling a power supply to said input stage in response to a control signal;
an inverting buffer having an input coupled to said first node and having an output for providing an output signal of the comparator circuit; and
second means coupled between said output of said buffer in said first node for feeding back said output signal of the comparator circuit to said first node to latch said output signal of the comparator, said second means including,
(a) a first transistor having a gate, a drain and a source, said gate being coupled for receiving an inverted control signal, said source being coupled to a first power supply conductor, and
(b) a second transistor having a gate, a drain and a source, said source being coupled to said drain of said first transistor, said gate being coupled to said output of said inverting buffer, said drain being coupled to said first node.

5,488,321

STATIC HIGH SPEED COMPARATOR

Mark G. Johnson, Los Altos, Calif., assignor to Rambus, Inc., Mountain View, Calif.

Continuation of Ser. No. 45,324, Apr. 7, 1993, abandoned.
This application May 16, 1995, Ser. No. 441,956
Int. Cl.[6] H03K 5/22;5/08
U.S. Cl. 327—66 4 Claims



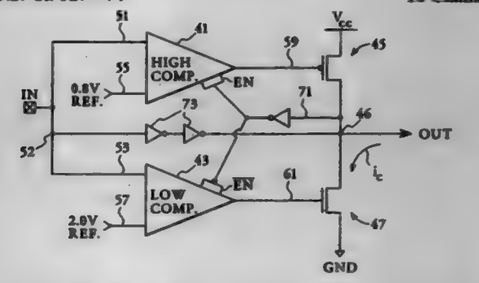
3. A comparator circuit, comprising:
a transconductance stage for sensing a first input voltage on a first input node and a second input voltage on a second input node, the transconductance stage generating a first current into a feedback node, the first current indicating whether the first or the second input voltage has a greater magnitude;
a transresistance stage coupled to the feedback node, the transresistance stage sensing the first current while providing negative feedback that limits a voltage swing at the feedback node, the transresistance stage generating an output voltage at an output node that indicates whether the first or the second input voltage has a greater magnitude, wherein the transresistance stage comprises:
an inverter circuit coupled between the feedback node and the output node;
a first transistor configured to function as a first diode coupled between the feedback node and the output node, the first transistor configured to function as the first diode having a source coupled to the feedback node and having a gate and a drain each coupled to the output node;
a second transistor configured to function as a second diode coupled between the feedback node and the output node, the second transistor configured to function as the second diode having a source coupled to the feedback node and having a gate and a drain each coupled to the output node.

5,488,322

DIGITAL INTERFACE CIRCUIT WITH DUAL SWITCHING POINTS FOR INCREASED SPEED

Cecil H. Kaplinsky, 140 Melville Ave., Palo Alto, Calif. 94301

Filed Aug. 29, 1994, Ser. No. 297,641
Int. Cl.[6] H03K 5/153
U.S. Cl. 327—74 10 Claims



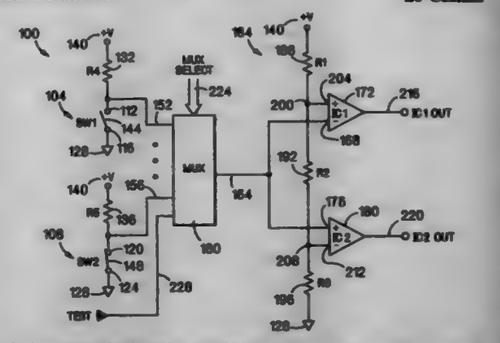
1. A circuit, comprising
a pull-up transistor and a pull-down transistor connected in series between a pair of power supply terminals, a node between said pull-up and pull-down transistors constituting a circuit output,
means, connected to a circuit input and to a control terminal of said pull-up transistor, for effecting pull-up operation of said pull-up transistor whenever an input signal received from said circuit input exceeds a first reference voltage less than a nominal transition voltage,
means, connected to said circuit input and to a control terminal of said pull-down transistor, for effecting pull-down operation of said pull-down transistor whenever said input signal received from said circuit input falls below a second reference voltage greater than said nominal transition voltage,
means for disabling said means for effecting pull-up operation whenever a voltage at said circuit output is greater than said nominal transition voltage and for disabling said means for effecting pull-down operation whenever said voltage at said circuit output is less than said nominal transition voltage, and
a low-conductance antidrift buffer connected between said circuit input and said circuit output.

5,488,323

TRUE HYSTERESIS WINDOW COMPARATOR FOR USE IN MONITORING CHANGES IN SWITCH RESISTANCE

William H. Beacham, Jr., Enfield, Conn., and Erik C. Lillestolen, Colorado Springs, Colo., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 14, 1994, Ser. No. 355,482
Int. Cl.[6] H03K 5/153
U.S. Cl. 327—74 20 Claims



1. Apparatus for interfacing with at least one two-position switch that is operative between an opened position in which there is no physical contact between two terminals of the switch, thereby defining an opened circuit and an infinite impedance of the switch between the two terminals, and a closed position in which the two terminals are physically shorted together, thereby defining a closed circuit and zero impedance between the two terminals, the apparatus being operative to indicate when the switch is in the opened and closed positions, the apparatus also operative to indicate a faulty condition of the switch in which the switch has a finite impedance value that is between a predetermined impedance range, the apparatus comprising:
a. a resistor connected at one end to a first predetermined voltage value and connected at a second opposite end to the first terminal of the: switch, the second terminal of the switch being operable to be connected to a second predetermined voltage value that is different than the first predetermined voltage value; and
b. means, connected with the first terminal of the switch, for determining when the switch is closed by determining when the switch has an impedance value that is less than a predetermined low impedance value, for determining when the switch is opened by determining when the switch has an impedance value that is greater than a predetermined high impedance value, and for determining when the switch is faulty by determining when the switch has an impedance value that is in between the predetermined high impedance value and the predetermined low impedance value.

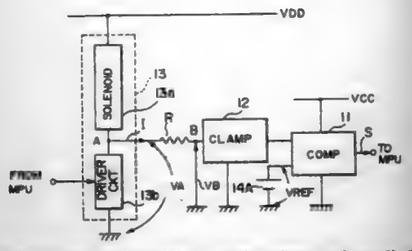
5,488,324

DETECTION CIRCUIT FOR DETECTING A STATE OF A CONTROL SYSTEM WITH IMPROVED ACCURACY

Satoru Mizuta, and Katsuya Shimizu, both of Kasugai, Japan, assignors to Fujitsu Limited, Kawasaki, and Fujitsu VLSI Limited, Kasugai, both of, Japan

Continuation of Ser. No. 880,026, May 8, 1992, abandoned.
This application Sep. 6, 1994, Ser. No. 300,939
Claims priority, application Japan, May 8, 1991, 3-102874
Int. Cl.[6] H03K 19/08
U.S. Cl. 327—77 9 Claims

1. A detection circuit for detecting a state of an object circuit comprising:
voltage-current conversion means, supplied with a first voltage signal indicative of the state of said object circuit, for producing an output current having a magnitude indicative of said state in response to said first voltage signal;



detection means, activated by a supply voltage and supplied with a second voltage signal, for detecting said state of said object circuit in response to said second voltage signal; and

clamping means, having an input terminal to which said output current of said voltage-current conversion means is supplied, for clamping a voltage of said input terminal at a predetermined level and producing said second voltage signal in response to said output current, such that said second voltage signal has a magnitude proportional to said first voltage signal and such that said magnitude of said second voltage signal is smaller than said supply voltage, said clamping means supplying said second voltage signal to said detection means, said second voltage comprising the voltage produced across said second resistor, said clamping means comprising:

a first bipolar transistor having an emitter supplied with said output current, a base supplied with a predetermined fixed bias voltage and a collector connected to ground via a second resistor and controlling a current flow through, and corresponding voltage produced across, the second resistor, and;

a bias voltage source which supplies said predetermined, fixed bias voltage to said base of said first bipolar transistor,

said detection means comprising:

a comparator circuit supplied with, and comparing, said second voltage signal and a reference voltage signal and producing an output voltage signal as a result of the comparison of said second voltage signal with said reference voltage; and

a reference circuit which produces said reference voltage, said reference circuit comprising a second bipolar transistor having an emitter supplied with said supply voltage via a third resistor, a base supplied with said predetermined, fixed bias voltage, and a collector connected to ground via a fourth resistor.

5,488,325

TIMING GENERATOR INTENDED FOR SEMICONDUCTOR TESTING APPARATUS

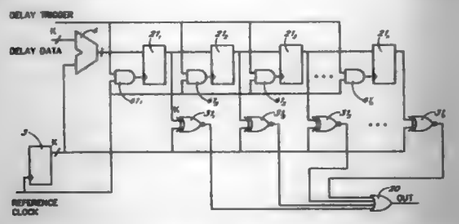
Masatoshi Sato, Gyoda, and Noriyuki Masuda, Ageo, both of, Japan, assignors to Advantest Corporation, Tokyo, Japan

Filed Oct. 18, 1994, Ser. No. 324,684

Claims priority, application Japan, Jan. 18, 1993, 5-061023 U

Int. Cl.[6] H03K *5/135*

U.S. Cl. 327—286 **1 Claim**



1. A timing generator used in a semiconductor testing apparatus for generating delay timing signals which delay up to n-times of a period of a reference clock, comprising:

a counter for counting the reference clock:

an adder for adding the output of said counter to delay data;

a series of registers for storing the output of said adder and shifting said output of said adder in synchronism with a delay trigger signal;

a series of exclusive OR gates for comparing each output of said registers with the output of said counter and generating coincidence signals when said output from said register and said counter coincide with each other; and

an OR gate for receiving the outputs of said exclusive OR gates and generating a signal which is combined of said outputs from said exclusive OR gates.

5,488,326

DATA OUTPUT CIRCUIT FOR SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE WHICH PREVENTS CURRENT FLOW FROM THE OUTPUT TO SUPPLY VOLTAGE

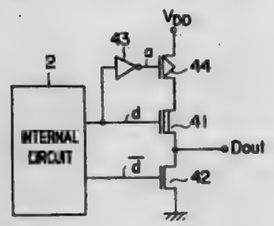
Sumako Shiraishi, Kawasaki; Masami Masuda, and Kazutaka Nogami, both of Yokohama, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Apr. 6, 1994, Ser. No. 223,648

Claims priority, application Japan, Apr. 7, 1993, 5-080867

Int. Cl.[6] H03K *19/0185;17/687*

U.S. Cl. 327—408 **3 Claims**



1. A data output circuit, comprising:

an internal circuit for outputting a first drive signal and a second drive signal;

a P-channel transistor having a first end connected to a first supply voltage terminal and a gate receiving a signal obtained by inverting the first drive signal;

a first N-channel transistor having a first end connected to a second end of said P-channel transistor, a second end connected to an external output terminal, and a gate receiving the first drive signal; and

a second N-channel transistor having a first end connected to the external output terminal, a second end connected to a second supply voltage terminal, and a gate receiving the second drive signal,

wherein a threshold voltage of said first N-channel transistor is lower than that of said second N-channel transistor, and when the first drive signal becomes high level and the second drive signal becomes low level, said P-channel transistor and said first N-channel transistor are turned on and said second N-channel transistor is turned off, so that a high-level voltage supplied from the first supply voltage terminal is outputted to the external output terminal through said P-channel transistor and said first N-channel transistor.

5,488,327

SUPPLY VOLTAGE GENERATOR

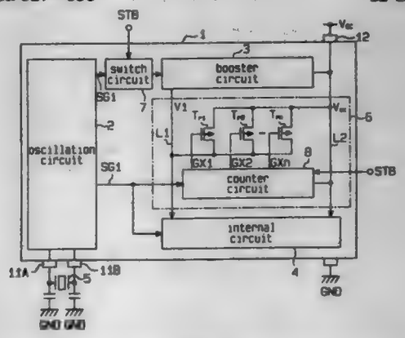
Masaki Okada, Kasugai, Japan, assignor to Fujitsu Limited, Kanagawa, and Fujitsu VLSI Limited, Aichi, both of, Japan

Filed Dec. 28, 1994, Ser. No. 365,432

Claims priority, application Japan, Dec. 28, 1993, 5-334973

Int. Cl.[6] G05F *1/10;3/02*

U.S. Cl. 327—536 **12 Claims**



1. A circuit for receiving a supply voltage from a power supply and generating an output voltage having a desired voltage level that is different from the supply voltage, said circuit comprising:

an oscillator for generating an oscillator output signal;

a supply voltage generator for generating an output voltage having a predetermined level that is different than said supply voltage in response to said oscillator output signal;

a first interconnection for connecting said supply voltage generator to a circuit to be supplied with said output voltage, said circuit being connected to the power supply via a second interconnection; and

a potential difference control circuit provided between said first interconnection and said second interconnection, the control circuit being responsive to said oscillator output signal to gradually reduce a potential difference between said first interconnection and said second interconnection in synchronism with a change in the output voltage.

5,488,328

CONSTANT CURRENT SOURCE

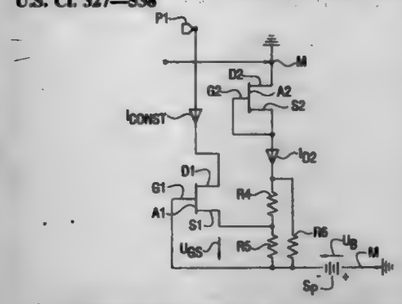
Michael Ludwig; Rolf Reber, both of Ulm, and Heinz-Peter Feldle, Senden, all of, Germany, assignors to Deutsche Aerospace AG, Munich, Germany

Filed Oct. 20, 1994, Ser. No. 326,497

Claims priority, application Germany, Jan. 20, 1993, 43 35 683.4

Int. Cl.[6] G05F *1/10;3/04;* **H01L** *35/00*

U.S. Cl. 327—538 **11 Claims**



1. A constant-current source with an adjustable constant current comprising, in combination:

first and second field effect transistors having the same electrical behavior, and in which the saturation current (I_{DSS}) is proportional to the pinch-off voltage (U_p), each field effect transistor having a respective source, drain and gate;

a voltage divider circuit including a series connection of said first field effect transistor, having its drain connected to one pole of a voltage source and which is connected as a current source with its source and gate connected together, and at least one ohmic resistance connected between said source of said first field effect transistor and the other pole of said voltage source; and,

said second field effect transistor has its gate connected to said other pole of said voltage source, its source connected to said resistance such that a portion of said resistance is present between its said gate and its said source and with said resistance portion being a function of the constant current (I_{const}) to be adjusted and which is to flow via said drain of said second field effect transistor to a component meant for the constant current (I_{const}) to be connected to said drain of said second field effect transistor.

5,488,329

STABILIZED VOLTAGE GENERATOR CIRCUIT OF THE BAND-GAP TYPE

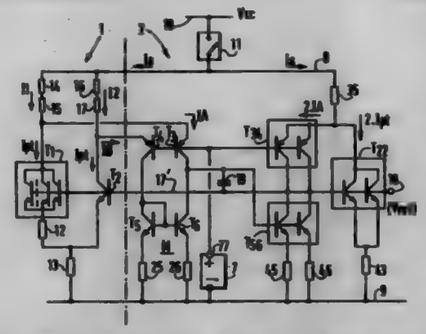
Timothy Ridgers, Bretteville L'Orgueilleuse, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 7, 1994, Ser. No. 319,899

Claims priority, application France, Jan. 13, 1993, 93 12187

Int. Cl.[6] G05F *1/10*

U.S. Cl. 327—539 **9 Claims**



1. A voltage generator circuit comprising: a cell of the band-gap type, in which a plurality of m parallel-connected transistors form a compound first transistor of a first conductivity type, whose emitter is connected to one end of a first emitter resistor, an other end of said resistor being connected to an emitter of a second transistor of the same conductivity type whose emitter area is equal to an emitter area of one of the m transistors forming the compound first transistor, the second transistor having its base coupled to a base of the first transistor to form an output node, a first node between the emitter of the second transistor and the first emitter resistor being coupled to a first supply terminal via a second emitter resistor, an amplifier acting upon the base of the first and of the second transistor to assure equality of currents flowing through the first and the second transistor, respectively, wherein collectors of the first and second transistors are each coupled to a second supply terminal by a first and a second current source, respectively, supplying a current of the same value, wherein the amplifier has an input stage comprising two transistors of a second conductivity type opposite to that of the first and second transistors and having emitters, of equivalent area, connected to the collectors of the first and second transistors, respectively, having their bases interconnected and coupled to the first supply terminal via a circuit with a given voltage drop, and having their collectors connected to, respectively, the input and the output of a current mirror of unity ratio, comprising transistors of said first conductivity type and having their emitters coupled to the first supply terminal, in that the amplifier comprises an output stage comprising an error-amplifier transistor of the first conductivity type, a bias transistor of the second conductivity type, and a compensation transistor of the first conductivity type, wherein the error-amplifier transistor has an

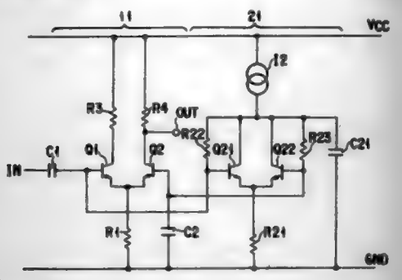
emitter area equal to twice an emitter area of each of the transistors forming the current mirror, a base connected to an output of the current mirror, its emitter coupled to the first supply terminal, and its collector connected to the output node which forms the output of the amplifier and supplies the stabilized output voltage (Vref) of the circuit, in that the bias transistor has an emitter area equivalent to that of the two transistors of the input stage together, has its emitter coupled to the second supply terminal via a third current source supplying a current equal in value to a sum of currents of the first and the second current source, has its base connected to the bases of the two transistors of the input stage, and has its collector connected to the output node, and in that the compensation transistor has an emitter area equal to twice that of the second transistor, has its base connected to the output node, has its emitter coupled to the first supply terminal via a resistor of a value equal to a resistance value of the second emitter resistor of the cell, and has its collector connected to the emitter of the bias transistor.

5,488,330

BIAS CIRCUIT FOR CONTROLLING BIAS VOLTAGE OF DIFFERENTIAL AMPLIFIER

Hideaki Masuoka, Yokohama, and Akio Kuroda, Atsugi, both of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 22, 1994, Ser. No. 361,583
Claims priority, application Japan, Dec. 22, 1993, 5-323480
Int. Cl.[6] H03F *3/45*; H04B *1/26*
U.S. Cl. 330—261 **15 Claims**



1. A bias circuit of a differential amplifier, comprising:

first and second transistors constituting a first differential amplifier and each having a current path one end of which is grounded via a resistor and another end of which is connected to a power source, said first transistor having a base supplied with an input signal;

third and fourth transistors constituting a second differential amplifier and each having a current path one end of which is grounded via a resistor, said third transistor having a base connected to the base of said first transistor, and said fourth transistor having a base connected to a base of said second transistor;

a constant-current source connected between said power source and another end of the current path of each of said third and fourth transistors, said constant-current source supplying a constant current to said third and fourth transistors; and

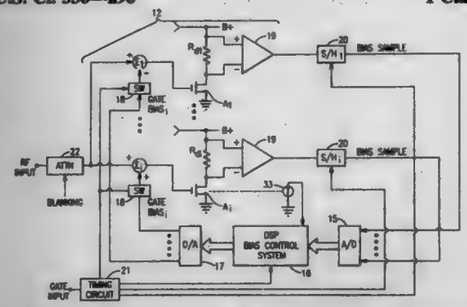
a capacitor one end of which is connected to a connection node between said constant-current source and said another end of the current path of each of said third and fourth transistors, and another end of which is grounded, said capacitor being discharged when a high-level signal is input to the bases of said first and third transistors, thereby to drop a base potential of said first and second transistors.

5,488,331

ACTIVE BIAS FOR A PULSED POWER AMPLIFIER

Anthony R. A. Kenne, Webster, and Bart C. Vandebroek, Penfield, both of N.Y., assignors to ENI, A Div. of Astec America, Inc., Rochester, N.Y.

Continuation of Ser. No. 243,161, May 16, 1994. This application Apr. 7, 1995, Ser. No. 418,182
Int. Cl.[6] H03G *3/30*
U.S. Cl. 330—296 **1 Claim**



1. A bias control circuit for adjusting an input bias voltage for each of a plurality of amplifying devices comprising:

a digital control circuit for converting a plurality of analog output current bias signals into a plurality of equivalent digital output current bias signals, for generating a plurality of digital input bias levels for each one of the amplifying devices based on the associated digital output current bias signal from each of the amplifying devices, and for converting the digital input bias levels into a plurality of equivalent analog input bias levels;

a plurality of bias current sample means, each one of said bias current sample means being associated with one of the amplifying devices for periodically gating the analog output current bias signal to said digital control circuit;

a plurality of input bias means, each one of said bias means being associated with one of the amplifying devices for periodically biasing an input with the associated analog input bias level generated by said digital control circuit, whereby the amplifying devices are maintained at a desired operating point; and

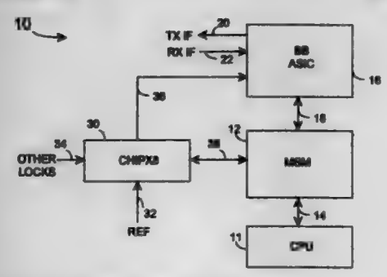
a timing circuit means for periodically gating said digital control circuit, said plurality of bias current sample means, and said plurality of input bias means.

5,488,332

REVERSED PHASE-LOCKED LOOP

John P. De Loe, Jr., Decatur, Ga., assignor to Oki Telecom, Suwanee, Ga.

Filed Jun. 10, 1994, Ser. No. 258,347
Int. Cl.[6] H03L *7/08*; *7/085*; *7/18*
U.S. Cl. 331—25 **31 Claims**



1. A phase-locked loop circuit comprising:

means responsive to a control signal for oscillating to produce a loop signal at a first frequency with a phase controlled by said control signal;

means connected to said oscillating means responsive to said loop signal and a reference signal for generating said control signal and for buffering said loop signal to produce a controlled buffered output signal; and

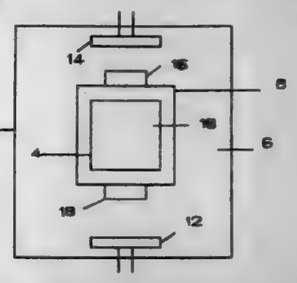
means for selectively grounding said loop signal to reduce power consumption of said generating buffering means.

5,488,333

WIRELESS THERMALLY INSULATED CRYSTAL OSCILLATOR HAVING POWER AND SIGNALS COUPLED THROUGH TRANSCEIVERS

John R. Vig, Colts Neck, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 7, 1995, Ser. No. 418,979
Int. Cl.[6] H03B *5/32*; H03L *1/04*
U.S. Cl. 331—66 **20 Claims**



1. A wireless oscillator device which comprises an oscillator, first wireless transceiver means cooperating with the oscillator and being capable of wireless reception of power and wireless reception and transmission of signals through a thermally insulating medium; said oscillator and first wireless transceiver means being in an enclosure and surrounded on all sides with a thermally insulating medium sufficient to provide thermal insulation of the oscillator from ambient surroundings; and second wireless transceiver means positioned spaced from the first wireless transceiver means and being capable of the wireless transmission of power and wireless reception and transmission of signals through the thermally insulating medium to the first wireless transceiver means.

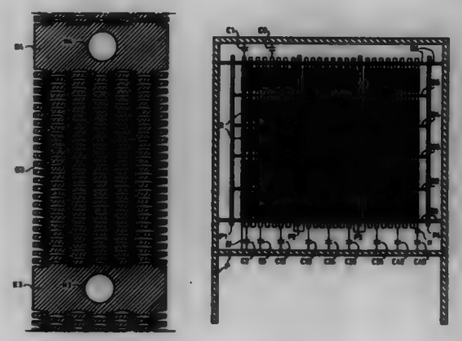
5,488,334

AIR-COOLED POWER LOAD

Ivan Wolk, Arnouville les Gonesse, France, assignor to Thomcast, Conflans Ste Honorine, France

Filed Apr. 6, 1995, Ser. No. 417,767
Claims priority, application France, Apr. 8, 1994, 94 04169
Int. Cl.[6] H01P *1/26*; H01C *3/12*
U.S. Cl. 333—22 F **6 Claims**

1. An air-cooled power load usable in radiofrequencies, comprising a series-connected assembly of resistor modules, each of these modules being substantially plane, made of expanded metal and having two ends, a metal support structure, insulator elements to hold the assembly and frequency compensation means, these compensation means comprising capacitive links, each of the capacitive links connecting one of the ends of one among certain of the modules to the support structure.

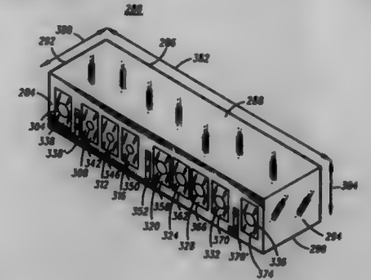


5,488,335

MULTI-PASSBAND DIELECTRIC FILTER CONSTRUCTION HAVING A FILTER PORTION INCLUDING AT LEAST A PAIR OF DISSIMILARLY-SIZED RESONATORS

Darioush Agahi-Kesheh, Buffalo Grove; Zdravko M. Zakman, Schaumburg, and Robert Kenoun, Prospect Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 888,089, May 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 823,227, Jan. 21, 1992, Pat. No. 5,208,566, and Ser. No. 876,607, Apr. 30, 1992, Pat. No. 5,250,916. This application Oct. 12, 1994, Ser. No. 322,111
Int. Cl.[6] H01P *1/20*
U.S. Cl. 333—206 **24 Claims**



1. A multi-passband filter construction formed of a dielectric block defining top, bottom, and at least first and second side surfaces, said surfaces being metalized, said filter construction comprising:

a first filter circuit portion formed of a first portion of the dielectric block for generating a first filtered signal responsive to application of a first input signal thereto, the first filter circuit portion having at least two resonators, each of the at least two resonators being defined by metalized sidewalls of cavities formed to extend essentially longitudinally along longitudinal axes thereof between the top and bottom surfaces of the dielectric block, wherein a first of the at least two resonators is of a first cross-sectional area of a predetermined configuration and a second of the at least two resonators is of a second cross-sectional area of the same predetermined configuration wherein the first cross-sectional area is dissimilar in area with that of the second cross-sectional area; and

a second filter circuit portion formed of a second portion of the dielectric block located adjacent to the first portion of the dielectric block of which the first filter circuit is formed, said second filter circuit portion for generating a second filtered signal responsive to application of a second input signal thereto, the second filter circuit portion having at least one resonator defined by metalized sidewalls of at least one cavity

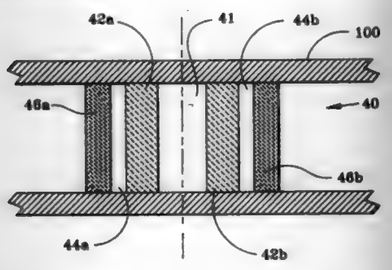
formed to extend essentially longitudinally along a longitudinal axis thereof between the top and bottom surfaces of the dielectric block.

5,488,336

BROADBAND WAVEGUIDE PRESSURE WINDOW

David F. Rivera, Westerly, R.I.; Thomas R. Floyd, Waterford, and Michael J. Josypenko, Norwich, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 8, 1994, Ser. No. 287,026
Int. Cl.[6] H01P *1/08*
U.S. Cl. 333—252 3 Claims



1. A broad passband pressure barrier arrangement for insertion in a circular waveguide between a source and a receiver of radio frequency (RF) energy with a spatially circumferential electric field, comprising:

a solid cylindrical plug region pair sealed in a cross-section of the waveguide for blocking the passage of a predetermined pressure load, the diameter of said plug region pair being equal to the inside diameter of said waveguide, said plug region pair centered on a radial plane of the waveguide, said radial plane passing through free air, said plug region pair consisting of identically sized cylindrical plugs formed of a dielectric material having a unique permittivity, said identical cylindrical plugs having a unique longitudinal thickness;

at least one solid cylindrical barrier region pair sealed in said cross-section of the waveguide, the diameter of said at least one barrier region pair being equal to the inside diameter of said waveguide, said at least one barrier region pair centered on and disposed symmetrically about said radial plane, said plug region pair being disposed between said radial plane and said at least one barrier region pair, said at least one barrier region pair consisting of identically sized cylindrical barriers formed of a dielectric material having a unique permittivity, said identical cylindrical barriers having a unique longitudinal thickness;

each of said plugs and barriers defined by a characteristic impedance at opposing end faces thereof and by a characteristic impedance between said opposing end faces; and

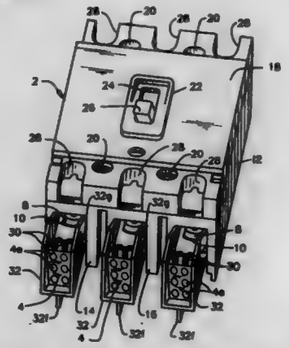
each permittivity and longitudinal thickness being optimized across the passband so that an input impedance of the barrier arrangement as seen from the source is equal to a characteristic impedance of the circular waveguide.

5,488,337

CIRCUIT BREAKER WITH DISTRIBUTION LUG TERMINAL HAVING TRAPPED INSULATOR

Dean A. Hubbard, N70 W23395 Prides Rd., Sussex, Wis. 53089; Donald A. Link, 1155 Hubertus, Hubertus, Wis. 53033, and David S. Hunter, 11907 W. Appleton Ave., Milwaukee, Wis. 53224

Filed Aug. 5, 1993, Ser. No. 102,190
Int. Cl.[6] H01H *67/02*
U.S. Cl. 335—202 24 Claims



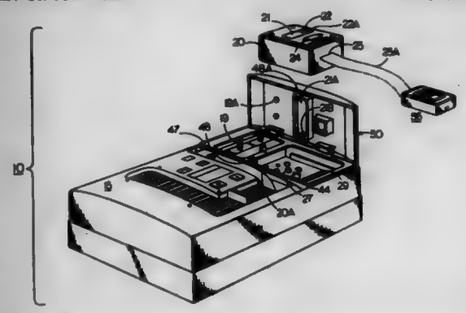
1. A molded case circuit breaker comprising a molded case, a terminal and a wiring lug attached to said terminal, said lug projecting outwardly from said circuit breaker molded case, and an insulator discrete from said molded case disposed around said lug and trapped into said circuit breaker molded case by attachment of said lug to said terminal.

5,488,338

ELECTRONIC TRIP ASSEMBLY FOR HIGH AMPERE-RATED CIRCUIT BREAKER

Raymond K. Seymour; Paul T. Rajotte, both of Plainville, and Elaine B. Bogue, Stonington, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed May 25, 1994, Ser. No. 248,908
Int. Cl.[6] H01M *9/02*
U.S. Cl. 335—202 19 Claims



1. An industrial-rated circuit breaker for high level overcurrent protection comprising:

an insulative circuit breaker cover **15** arranged on an insulative base **11**;

an electronic trip unit **20** within a trip unit recess **20A** in said circuit breaker cover for interrupting circuit current upon occurrence of an overcurrent condition, said trip unit including a keypad **22** and display **21** for entering and displaying overcurrent set points, said trip unit defining a trip unit cover **37** attached to a trip unit case **36**, said keypad and display being arranged under said trip unit cover; and

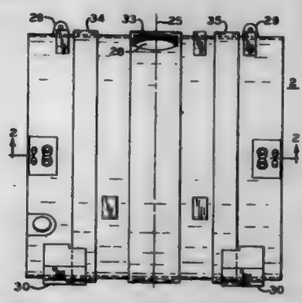
an additional trip unit cover **50** hinged to said circuit breaker cover, said additional trip unit cover including an access slot **21A** over said keypad and display, said access slot including means for preventing access to an entry key **22A** on said keypad.

5,488,339

PASSIVE SHIELDING OF MOBILE MAGNETIC RESONANCE IMAGING MAGNET

Timothy J. Havens; Yulan Tan, and John Scaturro, Jr., all of Florence, S.C., assignors to General Electric Company, Milwaukee, Wis.

Filed Nov. 23, 1993, Ser. No. 156,605
Int. Cl.[6] H01F *1/00*
U.S. Cl. 335—216 18 Claims



1. A passive magnetic field shielding system for a magnetic resonance imaging magnet including an outer vessel and superconducting magnet coils within an inner vessel and capable of transportation while in superconducting operation comprising:

a plurality of arcuate ferromagnetic shielding bands surrounding and spaced along the axis of said magnetic resonance imaging magnet;

at least some of said arcuate bands being secured about said outer vessel proximate to areas of maximum magnetization of said outer vessel in the absence of said bands; and

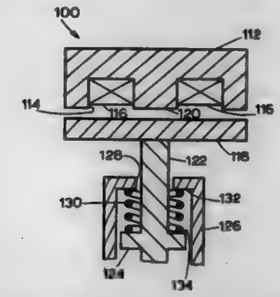
said ferromagnetic shielding bands covering a minor portion of the axial length of said magnetic resonance imaging magnet.

5,488,340

HARD MAGNETIC VALVE ACTUATOR ADAPTED FOR A FUEL INJECTOR

Dale C. Maley, Fairbury, and Dwayne E. Tharp, Peoria, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed May 20, 1994, Ser. No. 247,150
Int. Cl.[6] H01F *7/08*
U.S. Cl. 335—253 22 Claims



1. A solenoid actuator having a pole member and an armature associated therewith, said solenoid actuator being latchable by residual magnetism between said pole member and said armature without the aid of a permanent magnet, said solenoid actuator comprising:

a pole member comprising steel having a carbon content of between about 0.8% and 1.2% and an RC hardness of between about 40 and 60;

an electrically energizable electromagnetic device associated with said pole member; and

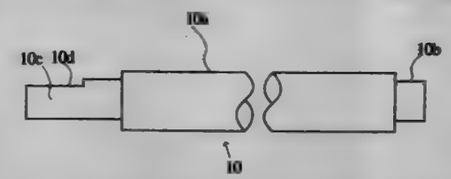
an armature associated with said pole member and comprising steel having a carbon content of between about 0.8% and 1.2% and an RC hardness of between about 40 and 60, said armature being reciprocable between a first position in which said armature makes physical contact with said pole member and a second position in which said armature is spaced from said pole member, said armature occupying said first position upon said electromagnetic device being electrically energized, said armature being held in said first position by residual magnetism between said pole member and said armature when said electromagnetic device is electrically deenergized after being initially electrically energized.

5,488,341

PERMANENT MAGNET MEMBER AND METHOD OF PRODUCING SAME

Mikio Yamamoto, Fukaya; Keitaro Yamashita, Saitama, and Katsunobu Kiriyama, Kumagaya, all of, Japan, assignors to Hitachi Metals, Ltd., Japan

Filed Jun. 6, 1994, Ser. No. 254,877
Claims priority, application Japan, Jun. 8, 1993, 5-137153
Int. Cl.[6] H01F *7/02;3/00;* G03G *15/09*
U.S. Cl. 335—302 12 Claims



1. A permanent magnet member comprising an integral sintered body made of a ferrite magnet material, said integral sintered body including a cylindrical center portion and shaft portions formed at the opposite ends of said cylindrical center portion and each having a smaller diameter than that of the cylindrical center portion, said cylindrical center portion being provided with a plurality of magnetic poles extending axially and arranged circumferentially on an outer surface of said cylindrical center portion.

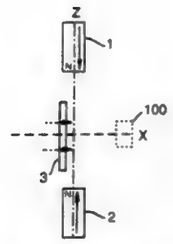
5,488,342

MAGNET ASSEMBLY FOR NMR

Peter Hanley, Forest of Dean, United Kingdom, assignor to Oxford Instruments Limited, Oxford, United Kingdom

PCT No. PCT/GB94/00226, § 371 Date Oct. 12, 1994, § 102(e) Date Oct. 12, 1994, PCT Pub. No. WO94/18577, PCT Pub. Date Aug. 18, 1994
PCT Filed Feb. 7, 1994, Ser. No. 318,824
Claims priority, application United Kingdom, Feb. 12, 1993, 9302837
Int. Cl.[6] G01V *3/00;* G01R *33/20;* H01F *7/02*
U.S. Cl. 335—306 19 Claims

1. A magnet assembly comprising a pair of substantially aligned, spaced apart first magnets having like poles facing each other; and at least one second magnet positioned adjacent the space between the first magnets, the at least one second magnet being laterally offset from the alignment axis of the first magnet and being arranged asymmetrically with respect to said alignment axis, the at least one second magnet having a magnetic axis transverse to the alignment axis of the first magnet; whereby a magnetic field of sufficient homogeneity to perform a nuclear magnetic resonance (NMR) process is generated in a working region laterally offset



from the first and second magnets, the magnetic field being asymmetrically positioned with respect to the alignment axis of the first magnets.

5,488,343

HIGH-TENSION CURRENT TRANSFORMER, WITH STORAGE PRODUCTION BY MEANS OF THE AUTOMATIZATION OF THE INSULATION THEREOF

Mario A. Taddei, via Paolo Frisi, 24, Rome, Italy

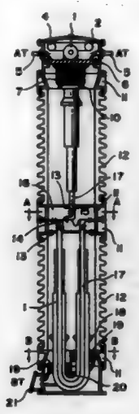
PCT No. PCT/IT92/00041, § 371 Date Nov. 2, 1993, § 102(e) Date Nov. 2, 1993, PCT Pub. No. WO93/18529, PCT Pub. Date Sep. 16, 1993

PCT Filed Apr. 14, 1992, Ser. No. 140,117

Claims priority, application Italy, Mar. 4, 1992, RM92A0143

Int. Cl.[6] H01F *27/28;15/04*

U.S. Cl. 336—229 **16 Claims**



1. A transformer comprising:

a primary core with a primary winding wrapped thereon;

at least one secondary core with a secondary winding wrapped thereon; and

an insulated connection winding for electrically connecting the primary winding with the secondary winding, the connection winding having an upper U-shaped portion and a lower U-shaped portion, the primary core being located at the upper U-shaped portion and the at least one secondary core being located at the lower U-shaped portion of the connection winding.

5,488,344

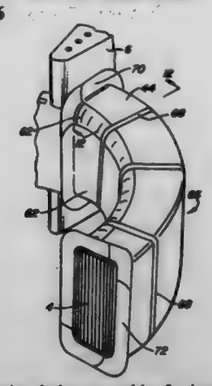
TOROIDAL TRANSFORMER INSULATION PREFORMS

Philip L. Bisbee, 527 Meadow La., Versailles, Ky. 40383; James D. Richerson, 534 Sheffield Dr., Versailles, Ky. 40383; Stephen D. Smith, 107 Shady La., Lawrenceburg, Ky. 40342, and Eric S. Richardson, 300 Scotts Ferry Rd. East, Versailles, Ky. 40383

Filed Nov. 3, 1992, Ser. No. 971,000

Int. Cl.[6] H01F *27/32*

U.S. Cl. 336—206 **25 Claims**



1. A transformer insulation assembly, for insulating one layer of windings from an adjacent layer of winding, comprising a tubular member defining a central axis and having an outer wall that defines a central opening extending the length of said member, said outer wall being formed by preformed sections of electrical insulating material, said preformed sections having overlapping surfaces that are slidably positioned relative to one another such that the extent of said surfaces that overlap can be changed to vary the size of said opening, each preformed section comprising a plurality of sheets of stretchable material, each preformed section including at least two side walls and a corner that forms a junction therebetween said corner extending generally parallel to the center axis of said tubular member and having a substantially uniform thickness along its length, the thickness of said corner being substantially greater than the average thickness of said side walls.

5,488,345

DISCONNECTION MECHANISM FOR A DARK CURRENT FUSE

Yoshinobu Seki; Kenichiro Kawaguchi; Gen Oozono; Akio Sugiyama, and Ryuetsu Oikawa, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jul. 1, 1994, Ser. No. 269,674

Claims priority, application Japan, Jul. 2, 1993, 5-164368; Jan. 19, 1993, 5-260567; Feb. 2, 1994, 6-010830

Int. Cl.[6] H01H *85/02;85/52;* **H01R** *13/64;13/68*

U.S. Cl. 337—186 **4 Claims**

1. A disconnection mechanism for a dark current fuse, comprising:

a connecting terminal connecting the dark current fuse;

a fuse block body receiving said connecting terminal;

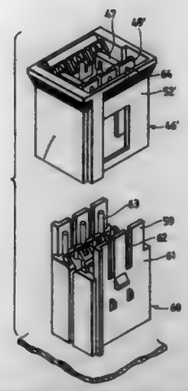
a fuse holder slidably engaged with said fuse block body in a direction of connecting the dark current fuse; and

a pair of flexible engaging arms disposed inside said fuse holder opposite to each other, each of said flexible engaging arms including an engaging projection for engaging a head of the dark current fuse, wherein said fuse block body includes an ingress wall portion for entering an arm deflection space between an inner side wall of said fuse holder and said flexible engaging arms.

3. A disconnection mechanism for a dark current fuse, comprising:

a connecting terminal connecting the dark current fuse;

a fuse block body receiving said connecting terminal;



a fuse holder slidably engaged with said fuse block body in a direction of connecting the dark current fuse;

a pair of flexible engaging arms disposed inside said fuse holder opposite to each other, each of said flexible engaging arms including an engaging projection for engaging a head of the dark current fuse; and

a pair of contact projections respectively disposed and inclined at a side of said engaging projections of said respective flexible engaging arms and being connected thereto, said contact projections projecting beyond said engaging projections, wherein a tool is insertable into said fuse holder for grasping and removing said fuse, said tool contacting said contact projections so as to deflect said contact projections and, attendantly, said engaging arms away from said fuse so that said fuse is disengaged from said fuse holder.

5,488,346

CONNECTION TERMINAL FOR FUSE

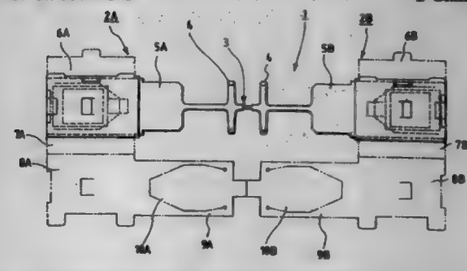
Hiroki Kondo; Mitsuhiko Totsuka, and Toshiharu Kudo, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jun. 21, 1994, Ser. No. 262,865

Claims priority, application Japan, Jun. 21, 1993, 5-172050

Int. Cl.[6] H01H *85/02;85/52;69/02;* **H01R** *4/48*

U.S. Cl. 337—198 **2 Claims**



1. A connection terminal for a fuse comprising:

a unitary structure including a pair of connection members interconnected through a fusion portion, each of said connection members including a bottom plate, opposite side plates formed respectively on opposite sides of said bottom plate, a top plate extended continuously from one of opposite side plates and a spring member disposed within the top plate and extending from a front side thereof so as to hold a terminal between said spring portion and said bottom plate.

5,488,347

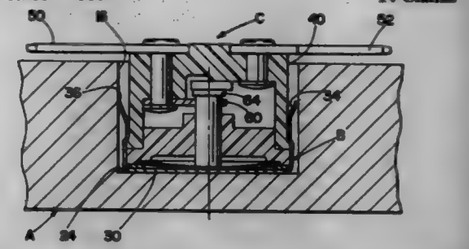
THERMOSTAT ASSEMBLY WITH FLANGED DISC CUP

Michael T. Gurski, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed May 31, 1994, Ser. No. 251,117

Int. Cl.[6] H01H *37/04;37/36;37/54;* **G05D** *23/10*

U.S. Cl. 337—380 **14 Claims**



1. A thermostat assembly including a switch housing having a metal disc cup attached thereto, said disc cup having a substantially flat circular cup bottom wall and a cylindrical peripheral wall, an inclined flange extending outwardly from said peripheral wall and upwardly in a direction away from said bottom wall, said flange having a sharp terminal end that faces outwardly away from said bottom wall, said terminal end having a larger diameter than any other portion of said disc cup and said flange having a sufficient length and being free of engagement with said switch housing or with any other part of said thermostat assembly for allowing inward bending deformation thereof without interference from any part of said thermostat assembly.

5,488,348

PTC THERMISTOR

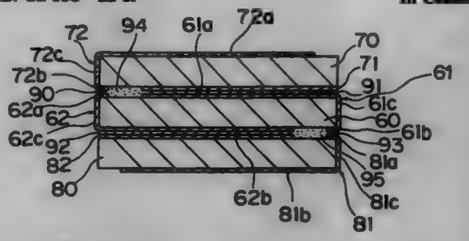
Shyoji Asida; Haruo Takahata, and Takayo Katsuki, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Mar. 8, 1994, Ser. No. 207,754

Claims priority, application Japan, Mar. 9, 1993, 5-049823 U; Mar. 15, 1993, 5-053458

Int. Cl.[6] H01C *7/10;1/14*

U.S. Cl. 338—22 R **18 Claims**



1. A PTC thermistor comprising:

a ceramic body having a positive temperature coefficient of resistivity and a pair of major surfaces that are on opposite sides of said ceramic body;

a pair of electrode layers provided on both major surfaces of the ceramic body, respectively, so as to be opposed to each other with said ceramic body interposed therebetween;

a ceramic reinforcing plate provided on at least one major surface of said ceramic body, and having an inner major surface and an outer major surface; and

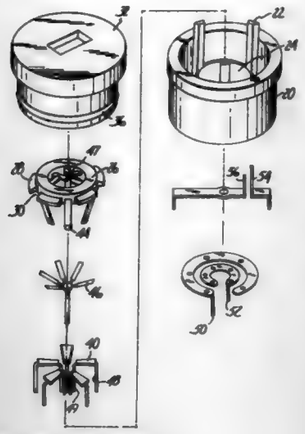
an input/output electrode having a connecting portion for making electrical connection with one of said electrode layers, said connecting portion being disposed on said inner major surface of said ceramic reinforcing plate and said input/output electrode including a portion that extends to said outer major surface of the ceramic reinforcing plate from the connecting portion.

5,488,349

MULTIPLE RANGE VARIABLE RESISTOR

Bruce L. Erickson, 11732 Winnetka Ave., North, Champlin, Minn. 55316

Filed Dec. 2, 1993, Ser. No. 161,656
Int. Cl.[6] H01C *10/32*
U.S. Cl. 338—171 19 Claims



1. A variable resistor comprising:
a housing;
a plurality of elongated resistive elements affixed to said housing, said resistive elements each having a first end and a second end;
means for connecting the first ends of each of said resistive elements to an electrical circuit;
means for selectably connecting the second ends of each of said resistive elements to an electrical circuit;
a plurality of contacts which can be moved between the end portions of said resistive elements while maintaining electrical connection with the surfaces of said resistive elements;
means for connecting said contacts to an electrical circuit;
means for moving said contacts between the first and second ends of said resistive elements comprised of:
a rotatable portion having threads;
a non-rotatable portion having corresponding threads, said non-rotatable portion disposed to move linearly along the axis of rotation of said rotaatable portion in response to rotation thereof;
means for connecting said contacts to said non-rotatable portion and;
retaining means for retaining said rotatable portion proximate to said housing and said resistive elements.

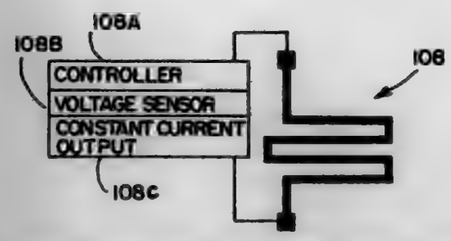
5,488,350

DIAMOND FILM STRUCTURES AND METHODS RELATED TO SAME

Mohammad Aslam, and James V. Beck, both of Okemos, Mich., assignors to Michigan State University, East Lansing, Mich.

Filed Jan. 7, 1994, Ser. No. 178,784
Int. Cl.[6] H01L *21/265*
U.S. Cl. 338—225 D 11 Claims

1. A method of heating and sensing temperature comprising steps of:
providing a substrate including a surface and a temperature-sensitive structure attached to said surface, said temperature-sensitive structure including an electrically conductive diamond film having an electrical resistivity that characteristically changes in response to temperature change;
applying an electrical source having a voltage to said temperature-sensitive structure in order to induce a current



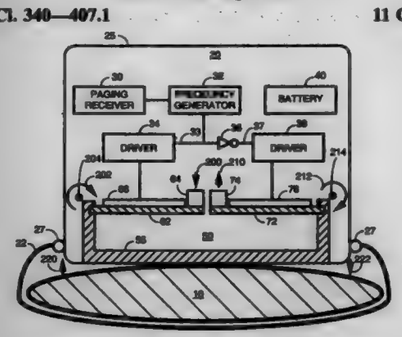
through said conductive diamond film to thereby heat said temperature-sensitive structure and the substrate surface to an elevated operating temperature; and
determining one of an actual temperature and a relative temperature change based on said characteristic electrical resistivity of said conductive diamond film by sensing a change in one or both of said voltage and said current.

5,488,351

ROCKING VIBRATOR ALERT APPARATUS DRIVEN BY OPPOSITE PHASES OF A FREQUENCY GENERATOR

Mostafa Hedayatnia, and Margaret Graham-Meighan, both of Boynton Beach, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 2, 1993, Ser. No. 100,813
Int. Cl.[6] H04Q *1/30*
U.S. Cl. 340—407.1 11 Claims



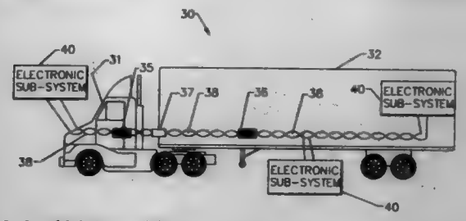
1. A vibrator for generating a vibratory alert, the vibrator comprising:
a first vibrating member oscillating at a first frequency and at a first phase and producing a first oscillating moment upon a housing, the first oscillating moment having a first magnitude orientated along a first axis; and
a second vibrating member oscillating at the first frequency and at a second phase and producing a second oscillating moment upon the housing, the second oscillating moment having a second magnitude orientated along a second axis, wherein
the second phase is substantially inverted from the first phase,
the second axis is substantially parallel to the first axis, and
the first oscillating moment and the second oscillating moment combine to produce a total oscillating moment having a magnitude greater than either the first magnitude or the second magnitude.

5,488,352

COMMUNICATIONS AND CONTROL SYSTEM FOR TRACTOR/TRAILER AND ASSOCIATED METHOD

Kenneth O. Jasper, Charlotte, N.C., assignor to Vehicle Enhancement Systems, Inc., Rockhill, S.C.

Continuation-in-part of Ser. No. 899,617, Jun. 16, 1992, abandoned. This application Nov. 1, 1993, Ser. No. 147,043
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—431 60 Claims



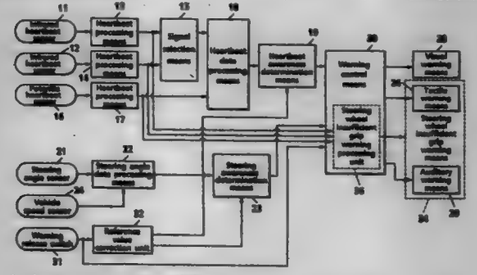
1. A vehicle comprising:
a tractor and a trailer connected thereto;
a plurality of electrical conductors extending between said tractor and said trailer;
a connector electrically connected in series with said plurality of electrical conductors, said connector including disengageable first and second connector portions to facilitate disconnecting said tractor and said trailer, a plurality of electrically conducting pins carried by said first connector portion, and mating electrically conductive contacts carried by said second connector portion;
first and second controllers carried by said tractor and said trailer respectively; and
a communications channel interconnecting said first and second controllers, said communications channel comprising inductive coupling means carried by said connector for inductively coupling thereacross, said inductive coupling means comprising first and second portions inductively coupled together and respectively carried by said disengageable first and second connector portions of said connector.

5,488,353

APPARATUS AND METHOD FOR IMPROVING THE AWARENESS OF VEHICLE DRIVERS

Yoshinaka Kawakami, Kariya; Yoshiharu Takigawa, Okazaki; Arihiro Isomura, Kariya; Kouichi Kamiya, Anjo, and Katsunori Hamatani, Okazaki, all of, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 4, 1994, Ser. No. 177,863
Claims priority, application Japan, Jan. 6, 1993, 5-000785
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—576 12 Claims



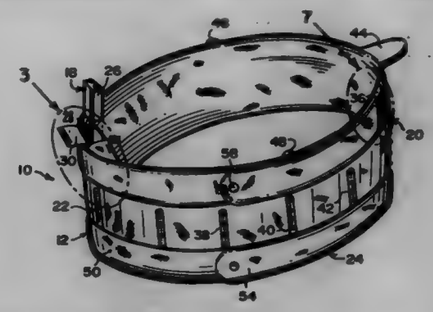
1. An apparatus comprising:
awareness determination means for determining a level of awareness of a vehicle driver and comparing the level of awareness with a reference value to determine a decrease in awareness,
at least one warning means for generating a warning to the vehicle driver when the decrease in awareness is detected,
warning termination means for terminating the warning upon operation by the vehicle driver, and
reference value correction means for measuring a response time from the generation to the termination of said warning and for correcting the reference value of said awareness determination means according to said response time for subsequent comparison and warning generation.

5,488,354

SNOOZE ALERT DEVICE

Colvin Bobby, 306 23rd St. North, Columbus, Miss. 39701

Filed Dec. 2, 1994, Ser. No. 349,017
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—576 9 Claims



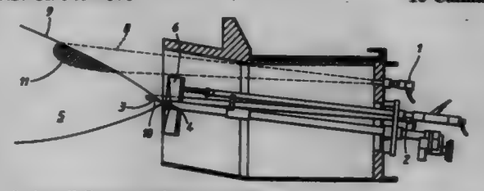
1. A snooze alert device comprising:
a) a flexible collar to be worn about a neck of a person, said flexible collar including a pair of adjustable connector straps, so that said flexible collar can properly fit about different sized necks;
b) a portable power source carried in said flexible collar, said portable power source being a battery;
c) an audible alarm unit carried in said flexible collar;
d) a plurality of alarm actuating switches disposed about the periphery of said collar, each said alarm actuating switch electrically connected between said portable power source and said audible alarm unit, so that if the person tries to fall asleep and tilts the neck, said flexible collar will collapse and one said alarm actuating switch will close, causing said audible alarm unit to sound off and wake up the person;
e) a holder pocket to retain said battery therein; and
f) a flap over said holder pocket to seal said battery within said holder pocket.

5,488,355

INTEGRATED SPECTRAL FLAME MONITOR

David Tindall, and Malcolm Sarjeant, both of Berkshire, England, assignors to Spectas Limited, Berkshire, England

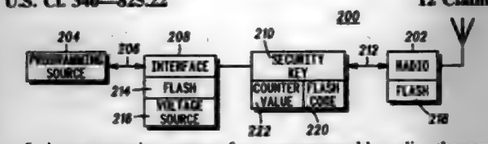
Filed Oct. 17, 1994, Ser. No. 325,109
Claims priority, application United Kingdom, Jan. 22, 1993, 9321810
Int. Cl.[6] G08B *17/12*
U.S. Cl. 340—578 10 Claims



1. An oil flame monitor, comprising:
(a) a first flame detector for viewing a first region of a flame produced by an oil atomizer,

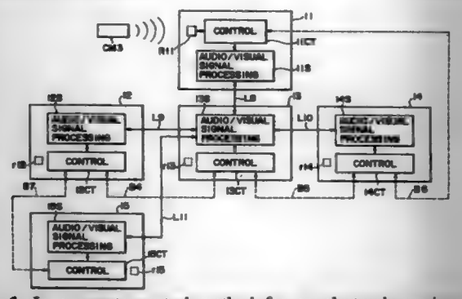
(b) a second flame detector for viewing a second region of the same flame,
(c) said first and second flame detectors monitoring different characteristics of the flame for deriving qualitative information about the flame, and
(d) means for processing the outputs of said first and second flame detectors to provide information about the position of the flame front and the quality of the flame.

5,488,356
METHOD AND APPARATUS FOR SECURE PROGRAMMING OF COMMUNICATION RADIOS
Krsman Martinovich, 52 N. Walnut Ct., Streamwood, Ill. 60107, and Donald R. Beyer, 310 Terrace Dr., Bartlett, Ill. 60103
Filed Mar. 30, 1994, Ser. No. 220,128
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.22 **12 Claims**



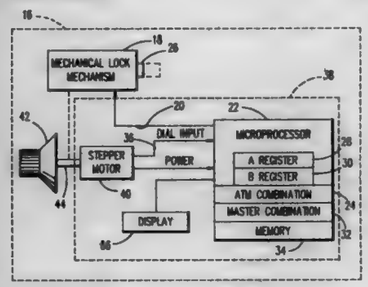
6. A programming system for a programmable radio, the programming system including a programming source, comprising:
first programmable memory means, residing in the programmable radio, for storing at least an operable feature set;
interface means for providing access to the programmable radio by the programming source, the interface means comprising second programmable memory means for storing operating software to be used by the programmable radio;
energy means for programming the first programmable memory means; and
a security key, operably coupled to the interface means, that retains at least an indication of the operable feature set.

5,488,357
REMOTE CONTROLLING METHOD AND SYSTEM FEATURE STARTING METHOD AND CONTROLLING METHOD FOR AUDIO/VISUAL SYSTEM
Makoto Sato; Hiroshi Yamazaki, both of Kanagawa; Noriko Kotabe, Chiba; Yoshio Osakabe, Kanagawa; Yasuo Kusagaya; Shigeo Tanaka, both of Tokyo; Kouich Sugiyama, and Akira Katsuyama, both of Kanagawa, all of, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Dec. 21, 1993, Ser. No. 170,798
Claims priority, application Japan, Jan. 6, 1993, 5-016727; Jan. 12, 1993, 5-019578
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.25 **12 Claims**



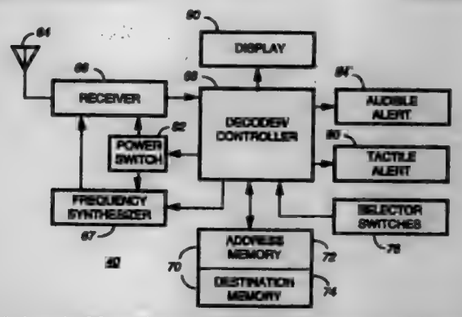
1. In a remote control method for an electronic equipment system which includes a plurality of units of electronic equipment each including a remote control reception center and a microcomputer for controlling operation of the respective electronic equipment, the microcomputers of said electronic equipment being connected to each other by way of a bus system, and at least one remote control transmission unit, the improvement comprising the steps of: providing an electronic center equipment to control said electronic equipment system in a concentrated manner; causing said electronic center equipment to receive at the respective remote control reception section remote control signals in a concentrated manner without causing the remote control signal reception sections of said electronic equipment other than said electronic center equipment to function; transferring a command from said electronic center equipment to said electronic equipment; and wherein, upon initialization when each unit of said electronic equipment is connected by way of said bus system, said electronic center equipment inhibits functioning of the respective remote control signal reception sections of the other units of electronic equipment.

5,488,358
ELECTRONIC COMBINATION LOCK WITH CLOSURE AND LOCKING VERIFICATION
James E. Hamilton; Gerald L. Dawson, both of Lexington, and Daniel L. Thompson, Paris, all of Ky., assignors to Mas-Hamilton Group, Lexington, Ky.
Filed Feb. 18, 1994, Ser. No. 198,835
Int. Cl.[6] E05B *49/00*; G06F *7/04*; H04L *9/12*
U.S. Cl. 340—825.31 **11 Claims**



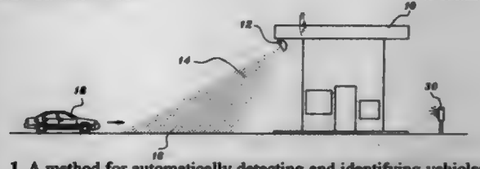
1. An electronic combination lock comprising:
a dial;
a generator connected to said dial for generating electrical power for powering said lock and for entering a first combination into said lock;
electronic controls comprising a program controlled microprocessor for receiving said first combination and said power and for comparing said first combination with an authorized combination and for controlling opening of said lock;
said electronic controls further comprising a memory for storing said combination and at least one additional multiple digit number associated with said lock;
said electronic controls further responsive to said dial and said electrical power to encrypt at least portions of two numerical values including said first combination and one of said at least one additional multiple digit numbers stored in said memory to produce an encrypted number upon powering of said lock;
a display responsive to said electronic controls to display said encrypted number;
whereby said number may be observed and reported for comparison to a similarly encrypted number to verify said lock as locked.

5,488,359
METHOD AND APPARATUS FOR SETTING A MEMORY FULL CONDITION IN A SELECTIVE CALL RECEIVER
Randi W. Faris, Boca Raton, and Christopher Heaz, Lake Worth, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 19, 1994, Ser. No. 308,851
Int. Cl.[6] H04Q *7/14*
U.S. Cl. 340—825.44 **16 Claims**



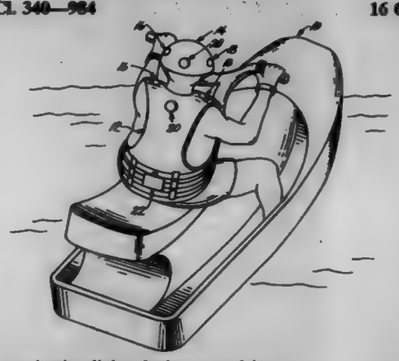
1. A method for optimizing utilization of a memory which stores messages received in a portable communication device comprising steps of:
providing an adjustable memory full threshold for indicating a memory full condition of the memory;
receiving input from a user of the portable communication device for setting the adjustable memory full threshold;
determining an amount of space available in the memory of the portable communication device;
comparing the amount of space available in the memory with the adjustable memory full threshold;
issuing an indication of a memory full condition if the amount of space available in the memory is less than or equal to the adjustable memory full threshold;
receiving a new message in the portable communication device;
determining the amount of space available in the memory of the portable communication device in response to receiving the new message and determining a size of the new message;
deleting a previously stored message from the memory if the amount of space available in the memory is less than the size of the new message and storing the new message in the memory; and
if the amount of space available in the memory is greater than or equal to the size of the new message, then storing the new message in the memory without deleting a previously stored message.

5,488,360
VEHICLE DETECTION AND IDENTIFICATION SYSTEM
Jimmy C. Ray, 3355 Juanita, Denison, Tex. 75020
Filed Aug. 29, 1994, Ser. No. 298,218
Int. Cl.[6] G08G *1/01*
U.S. Cl. 340—933 **1 Claim**



1. A method for automatically detecting and identifying vehicles having cellular telephone equipment, comprising the following steps:
a) receiving a cellular-frequency signal from a vehicle to detect an approach of said vehicle to a restricted-access facility, said restricted-access facility including a toll-road booth, and said signal being received by an antenna having a restricted zone of transmission and reception,
b) receiving said signal by an antenna in which said restricted zone of reception is further limited by a downward orientation of said antenna, so that reception by said antenna is restricted to an area proximate said antenna,
c) transmitting a query to the cellular telephone equipment aboard the vehicle, said vehicle being within a vehicle identification zone,
d) transmitting responsive to said query an identification number from said cellular telephone equipment,
e) receiving said identification number by said antenna, including said identification number transmitted responsive to a command entered by a user of said cellular telephone equipment,
f) transmitting said identification number to a computer controller,
g) repeating, responsive to a request by said computer controller, a transmission of said identification number from a short-term memory to said computer controller,
h) processing said identification number within the computer controller to determine whether said identification number matches a number on a list of j) valid identification numbers,
transmitting a traffic-control command from the computer controller to said restricted-access facility,
k) activating by said traffic-control command a traffic control signal for a traffic lane through said restricted-access facility,
l) activating by said traffic-control command a visual signal for use by an operator of said restricted-access facility,
m) recording a predetermined user fee together with date and time-of-use information, and
p) billing said user fee to a cellular telephone subscriber whose telephone number corresponds to said identification number.

5,488,361
NAVIGATION LIGHTS FOR PERSONAL WATERCRAFT OPERATOR
Joseph W. Perry, 1560 Amante, La Habra Heights, Calif. 90631
Filed Aug. 16, 1994, Ser. No. 291,604
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—984 **16 Claims**



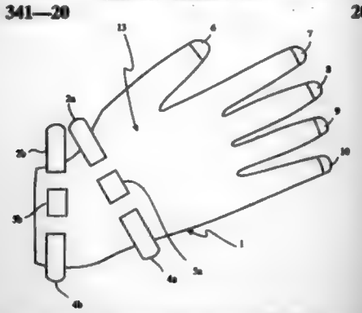
1. A navigation lights device comprising:
a buoyant vest adapted to be worn by a person on a personal watercraft;
a red colored navigation light attached to an upper left shoulder portion of the vest; and
a green colored navigation light attached to an upper right shoulder portion of the vest; and
a white or clear colored navigation light attached to an upper back side surface of the vest between the first and second navigation lights, wherein an observer located behind a person wearing the vest is able to ascertain from the position of the navigation lights with respect to each other the direction of movement of the watercraft.

5,488,362

APPARATUS FOR CONTROLLING A VIDEO GAME

Noah T. Ullman, and Adam N. Ullman, both of Glen Cove, N.Y., assignors to Anaphase Unlimited, Inc., Glen Cove, N.Y.

Filed Oct. 1, 1993, Ser. No. 131,094
Int. Cl.[6] H03K 17/94
U.S. Cl. 341—20 20 Claims



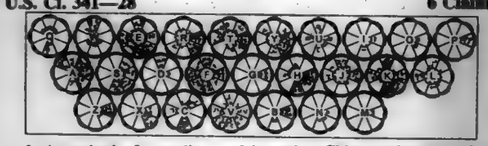
1. An apparatus for providing command signals for controlling at least one video element on a video display, comprising:
a hand attachment;
a plurality of detectors disposed at spaced apart locations of said hand attachment for detecting directional movement;
each of said plurality of detectors for detecting a specific relative directional movement of an arm and hand thereof in a plane relative to said arm; and
means for converting said detected movement to command signals for controlling the movement of said at least one video element in directions corresponding to said relative movement on said video display.

5,488,363

DIRECTION CODE FOR ENCODING CHINESE CHARACTERS USING ENGLISH ALPHABET AND INPUTTING METHOD THEREOF

Jingmin Peng, 18 Dagaoshan Road, Chengnan, Changde City, Hunan Province, China

Filed Feb. 9, 1994, Ser. No. 195,342
Claims priority, application China, Mar. 3, 1993, 93 1 10607.9; Aug. 30, 1993, 93 1 16696.9; Dec. 15, 1993, 93 1 20028.8
Int. Cl.[6] H03K 17/94
U.S. Cl. 341—28 6 Claims



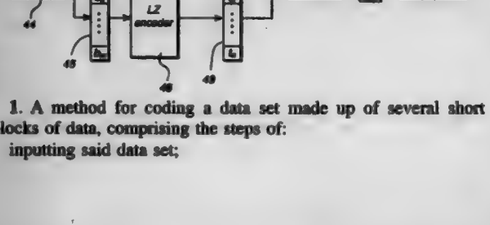
1. A method of encoding and inputting Chinese characters into computers, through a standard English keyboard, each Chinese character being composed of one or more strokes written in an order of traditional Chinese calligraphy wherein initial strokes are classified into four types of horizontal stroke —, vertical stroke |, left-slanting stroke /, and right-slanting stroke \, said method comprising the steps of:
(A) constructing predetermined English letters with the initial strokes;
(B) decomposing Chinese characters into combinations of the predetermined English letters and inverted English letters which are respectively allocated on each key of the keyboard in eight positional directions of EAST, SOUTHEAST, SOUTH, SOUTHWEST, WEST, NORTHWEST, NORTH, and NORTHEAST, and posted respectively thereon as being spun about the center of the key, said predetermined English letters and inverted English letters including twenty-six capital English letters, eight small English letters of b, f, g, h, i, r, t, and y, four inverted capital letters of ⊥, ↻, ↺, and ∑ inverted respectfully from F, G, Q and S, and four inverted small letters of ᵽ, ᴗ, ⌊ and ⟩ inverted respectively from h, n, r, and y;
(C) denoting each of said posted letters in said combinations composing said Chinese characters with a corresponding English letter, thereby forming codes of said Chinese characters; and
(D) inputting said codes of said Chinese characters into the computer through the keyboard.

5,488,364

RECURSIVE DATA COMPRESSION

Michael L. Cole, San Diego, Calif., assignor to Sam H. Eulmi, San Diego, Calif.

Filed Feb. 28, 1994, Ser. No. 203,998
Int. Cl.[5] H02M 7/30
U.S. Cl. 341—50 14 Claims



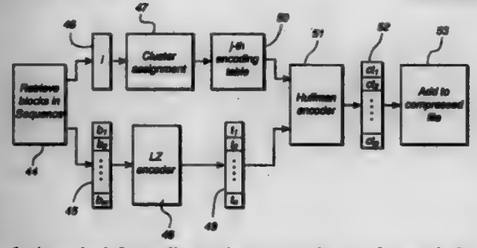
1. A method for compressing data, comprising the steps of:
receiving a plurality of input data words, each consisting of a plurality of bits located in a plurality of positions;
compressing said plurality of input data words to form a plurality of compressed data words using a run-length based compression method;
forming a plurality of reconfigured data words in response to said plurality of compressed data words, said plurality of reconfigured data words having an average frequency of occurrence of adjacent bits of the same binary state that is greater than the average frequency of occurrence of adjacent bits of the same binary state in said plurality of compressed data words; and
compressing said plurality of reconfigured data words using said run-length based compression method.

5,488,365

METHOD AND APPARATUS FOR COMPRESSING AND DECOMPRESSING SHORT BLOCKS OF DATA

Gadiel Seroussi, Cupertino, Calif., and Abraham Lempel, Haifa, Israel, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 1, 1994, Ser. No. 204,712
Int. Cl.[6] H03M 7/30
U.S. Cl. 341—51 20 Claims



1. A method for coding a data set made up of several short blocks of data, comprising the steps of:
inputting said data set;

partitioning said data set such that each data block is assigned to a specific cluster of data blocks;
generating a set of encoding tables for each cluster that specify a translation of said data blocks into binary codes, said table generating step further comprising the steps of:
grouping said data blocks according to a selected common characteristic to produce a number of data clusters: and
assigning said data blocks to said data clusters such that the sum:

$$S=S_T+S_E$$

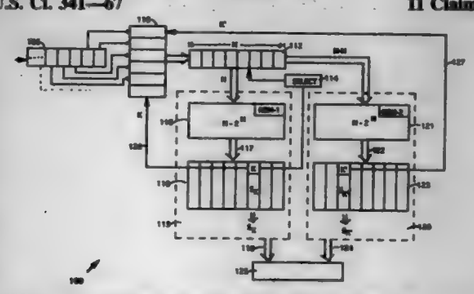
is minimized, where S_T denotes the size of the encoding tables that are stored together with the encoded data blocks, S_E denotes the size of the encoded data blocks, and S denotes the total size of the compressed data set;
encoding said data blocks by applying the translation contained in said encoding tables to said data blocks;
generating an index table that references each data block to a corresponding encoding table;
translating said encoding table into a decoding table;
producing a compressed file including said index table, said decoding tables, and said encoded data blocks; and
storing said file on a storage medium.

5,488,366

SEGMENTED VARIABLE LENGTH DECODING APPARATUS FOR SEQUENTIALLY DECODING SINGLE CODE-WORD WITHIN A FIXED NUMBER OF DECODING CYCLES

Druong-Yow Wu, Hsingchu, Taiwan, Prov. of China, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed Oct. 12, 1993, Ser. No. 134,067
Int. Cl.[6] H03M 7/40
U.S. Cl. 341—67 11 Claims



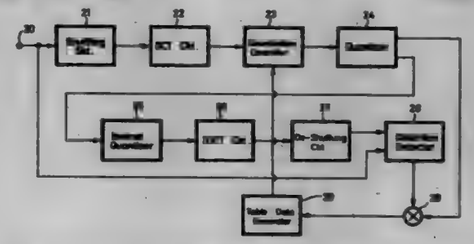
1. A segmented variable length decoding apparatus for sequentially decoding a single codeword with a maximum codeword length of M within a fixed number of decoding operations, said decoding apparatus comprising:
a serial to parallel converting and shifting means for receiving N bits, where N being an integer and N≦M, from a serial bit stream and for receiving a shift-count S_C for shifting said bit stream by S_C bits for discarding the rightmost S_C bits and receiving S_C new bits from said bit stream, and converting said N bits from said serial bit stream to a parallel data record;
L segmented decoding means, where L being an integer, wherein each segmented decoding means including a segmented codeword dictionary table of bit length J_i, where J, and i being integers and i ranging from 1 to L and where $M=J_1+J_2+\ldots+J_L$,
each of said segmented decoding means receiving and decoding said parallel data record of J_i bits by comparing said Ji bits with said segmented codeword dictionary table for generating an segmented output codeword of K_i bits and outputting said K_i bits to said parallel converting and shifting means as said shift-count; and
an output symbol means for receiving said shift count and processing said segmented output codewords from said L segmented decoding means for generating an output symbol thus decoding a single codeword within L decoding operations.

5,488,367

METHOD OF AND APPARATUS FOR GENERATING VARIABLE LENGTH CODE TABLE

Takuya Kitamura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 13, 1994, Ser. No. 226,839
Claims priority, application Japan, Apr. 16, 1993, 5-090263
Int. Cl.[6] H04N 7/24
U.S. Cl. 341—106 8 Claims



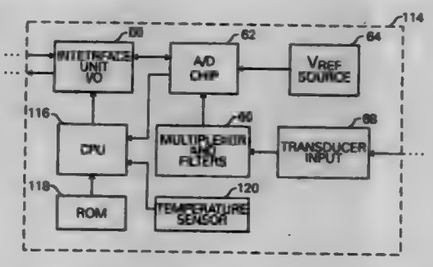
1. An apparatus for generating a variable length coding comprising:
compressing means for variable-length-code compressing input data and outputting statistic data representing an occurrence probability corresponding to a compressed code value obtained when input data is variable-length-coded;
expanding means for expanding data compressed by said compressing means;
distortion amount detecting means for detecting a distortion amount of output data from said expanding means by comparing the output data from said expanding means and said input data; and
variable length code table generating means for generating a variable length code table on the basis of statistic data outputted from said compressing means and a distortion amount outputted from said distortion amount detecting means.

5,488,368

A/D CONVERTER SYSTEM AND METHOD WITH TEMPERATURE COMPENSATION

Eric W. Brown, Newport Beach, Calif., and Littlefield, James A., Boston, Mass., assignors to TechnoView Inc., Newport Beach, Calif.

Continuation-in-part of Ser. No. 69,029, May 28, 1993, Pat. No. 5,359,327. This application Jan. 13, 1994, Ser. No. 181,605
Int. Cl.[6] H03M 1/06
U.S. Cl. 341—119 14 Claims



1. An A/D convertor circuit having low noise for converting an analog signal having a full scale input range into a digital signal, the circuit comprising:

an analog-to-digital conversion circuit that produces an uncompensated digital signal;

temperature compensation means for adjusting the uncompensated digital signal from the analog-to-digital conversion circuit to produce the digital signal; and

wherein the uncompensated digital signal is adjusted to compensate for variances due to the operating temperature of the A/D circuit; and

a voltage reference source having a diode with two terminals and a passive attenuation circuit coupled in parallel between the two terminals to provide a voltage reference signal, wherein the analog-to-digital circuit further includes a voltage reference input, wherein the voltage reference source is coupled to the voltage reference input of the analog-to-digital circuit, wherein the voltage reference signal is attenuated by the passive attenuation circuit to approximate the full scale input range of the analog signal.

5,488,369

HIGH SPEED SAMPLING APPARATUS AND METHOD FOR CALIBRATING THE SAME

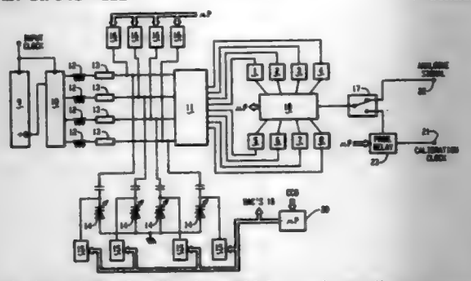
Allen Miller, Llandudno, United Kingdom, assignor to Gould Electronics, Ltd., London, United Kingdom

Filed Jul. 15, 1988, Ser. No. 220,215

Claims priority, application United Kingdom, Nov. 18, 1986, 8627533

Int. Cl.[6] H03M *1/10*

U.S. Cl. 341—122 **7 Claims**



1. A method of calibrating a high speed sampling apparatus comprising the steps of applying respective clock signals to each of a plurality of time multiplexed sampling devices, applying a timing reference signal to said multiplexed devices, comparing the results of the application of the clock and reference signals, adjusting the timing of at least one of the respective clock signals whereby to calibrate the devices, and wherein the step of adjusting the timing of at least one of the respective clock signals comprises the step of adjusting the mark/space ratio of said at least one respective clock signal.

5,488,370

ANALOG-TO-DIGITAL CONVERTER

Hirotaka Harada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

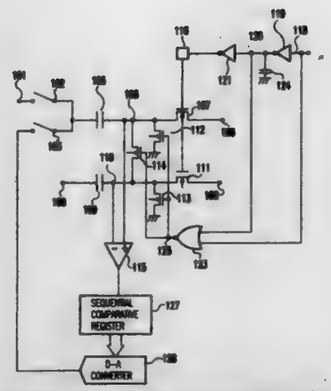
Filed Jul. 8, 1994, Ser. No. 272,679

Claims priority, application Japan, Aug. 23, 1993, 5-207457

Int. Cl.[6] H03M *1/42*

U.S. Cl. 341—161 **6 Claims**

1. An analog-to-digital converter which includes a differential amplifier having a first input terminal to which an analog signal to be converted into a digital signal is inputted by way of a first capacitive element and a second input terminal to which a reference voltage of a voltage source is inputted by way of a second capacitive element for differentially amplifying a voltage inputted thereto from said two input terminals and outputting an amplified voltage, a sequential comparing register for outputting a digital signal in response to an output signal of said differential amplifier,



a digital-to-analog converter for outputting an analog signal in response to the digital signal outputted from said sequential comparing register, and an inputting circuit for switching the signal to be supplied to said first input terminal of said differential amplifier between the output signal of said digital-to-analog converter and the analog input signal to be converted into a digital signal, comprising:

short-circuiting means for intermittently short-circuiting said first and second input terminals;

grounding means for grounding said first and second input terminals; and

driving means for driving said short-circuiting means and said grounding means.

5,488,371

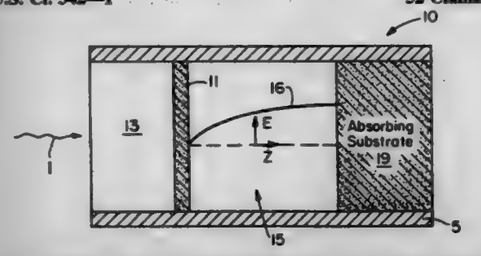
RADIO FREQUENCY ABSORBING WINDOWS

James D. Targove, Sudbury, Mass., assignor to Litton Systems, Inc., Lexington, Mass.

Filed Apr. 29, 1994, Ser. No. 236,500

Int. Cl.[6] H01Q *17/00*

U.S. Cl. 342—1 **52 Claims**



1. A radio frequency absorbing panel having a front side adapted to be exposed to an external environment including electromagnetic energy and a back side opposite the external environment, the panel comprising:

a series of parallel light transparent electrically conductive sheets, each conductive sheet spaced apart from an adjacent conductive sheet by a respective intermediate spacing distance, the spacing distance determined as a function of a predetermined radio frequency such that the conductive sheets absorbs substantially all electromagnetic energy at the predetermined radio frequency; and

a light transparent dielectric material disposed in the spacing between each conductive sheet to create an interference cavity between each conductive sheet.

5,488,372

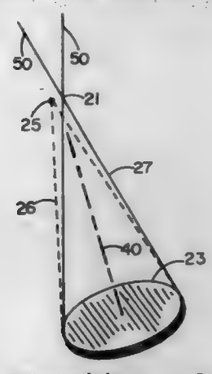
ELECTRONIC AVOIDANCE CONFIGURATIONS

Kenneth E. Fischer, 510 E. Main St., Box 327, Somerset, Pa. 15501

Continuation-in-part of Ser. No. 236,459, Jan. 28, 1981, abandoned, and a continuation-in-part of Ser. No. 972,527, Sep. 6, 1979, abandoned, which is a continuation-in-part of Ser. No. 675,602, Apr. 9, 1976, Pat. No. 4,066,226. This application Aug. 2, 1992, Ser. No. 404,308

Int. Cl.[6] H01Q *15/16*; B64C *1/00*; B64G *1/00*

U.S. Cl. 342—5 **32 Claims**



10. Aircraft having structural elements configured to avoid electronic tracking and sustained weapon system lock-on; said structural elements comprising, fuselage, lifting means, propulsion means, and empennage, elements:

(a) the structural elements having a plurality of faceted exterior reflecting surfaces;

(b) said facet surfaces being concave;

(c) a substantial number of said concave surfaces having a spherical surface figure with a radius of curvature greater than 20 miles;

(d) the concave surfaces being metallic, highly polished, and of high precision extending to razor sharp edges;

(e) the structural elements having substantially rectilinear polygonal cross sections formed by the concave surfaces;

(f) wherein at least one of the concave surfaces has a radius of curvature less than 1000 miles;

wherein said aircraft has functional components being positioned substantially within the structural elements.

5,488,373

SIGNAL PROCESSING APPARATUS FOR SYNTHETIC APERTURE RADAR

Hans Hellsten, Palmaers gata 6, S-582 49 Linköping, Sweden

PCT No. PCT/SE92/00184, § 371 Date Sep. 27, 1993, § 102(e) Date Sep. 27, 1993, PCT Pub. No. WO92/16856, PCT Pub. Date Oct. 1, 1992

PCT Filed Mar. 23, 1993, Ser. No. 122,482

Claims priority, application Sweden, Mar. 25, 1991, 9100896

Int. Cl.[6] G01S *13/90*

U.S. Cl. 342—25 **20 Claims**

1. A Signal processing apparatus for use in SAR radar having a radar transmitter, an antenna system for transmission and reception and a radar receiver, said signal processing apparatus being adapted for recursive computation of SAR images and comprising:

A) at least one memory, in which an SAR image with respect to a certain aircraft position of an aircraft along a flight path, is represented in the form of a coefficient matrix, an element of which are complex frequency components with respect to radial and angular frequency of the SAR image;

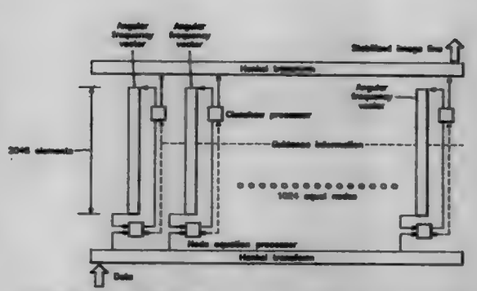
B) a first at least one computation unit, in which radar data as a function of range, are transformed to a data vector with respect to different radial frequencies;

C) a second at least one computation unit for computing, based on the coefficient matrix of said at least one memory, the data vector from the first at least one computation unit and information about a speed of the aircraft, and also based on a node equation, a second coefficient matrix with respect to a new aircraft position of said aircraft that is different from said certain aircraft position by a translation, free from rotation, of a distance that is smaller than a radar resolution and is a basis for a resolution in an image that represents radar data;

D) a third at least one computation unit for rotating said second coefficient matrix obtained as output from said second at least one computation unit based on a turning of the aircraft during the translation, if any, to produce a rotated coefficient matrix and for storing said rotated coefficient matrix in said at least one memory;

E) a fourth at least one computation unit, which, upon computation of said rotated coefficient matrix, by an inverse transformation from angular frequency to angular dependence, compresses all angular frequency terms for a given radial frequency to one number and thereby the rotated coefficient matrix to a line vector that defines the spectrum of the SAR image along an image line in a direction to a side of the aircraft;

F) an additional computation unit, which, by an inverse transformation from radial frequency to radial dependence, transforms the line vector to the SAR image along the image line.



5,488,374

MULTI-SCALE ADAPTIVE FILTER FOR INTERFEROMETRIC SAR DATA

Robert T. Frankot, Van Nuys; Ralph E. Hudson, and George H. Senge, both of Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 14, 1994, Ser. No. 323,414

Int. Cl.[6] G01S *13/90*

U.S. Cl. 342—25 **5 Claims**



1. Apparatus for use with a synthetic aperture radar for processing interferometric synthetic aperture radar data comprising complex images, said apparatus comprising:

a conjugate product processor which is adapted to receive complex images and produce a complex interferogram;

a multi-scale adaptive filter coupled to the conjugate product processor for processing the complex interferogram to produce a filtered interferogram; and

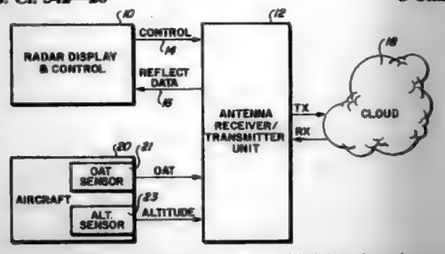
an information extraction processor coupled to the multi-scale adaptive filter that produces a predetermined data product.

5,488,375

AIRBORNE WEATHER RADAR SYSTEM WITH ICING DETECTION CAPABILIY

Terry K. Michie, Olathe, Kans., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Sep. 28, 1994, Ser. No. 314,555
Int. Cl.[6] G01S 13/95
U.S. Cl. 342—26 8 Claims



1. An airborne weather radar system with icing detection capability, comprising:

display and control means;

antenna/receiver/transmitter (ART) means;

means connected to the display and control means and to the ART means for applying control data from said display and control means to said ART means;

temperature sensor means and altitude sensor means mounted on an aircraft carrying the airborne weather radar system and connected to the ART means fop applying outside temperature and aircraft altitude signals to said ART means;

said ART means transmitting pulses into space and receiving reflection pulses when said transmitted pulses are intercepted by super-cooled liquid water (SLW) and rainfall weather formations, Said ART means including a central processing unit (CPU), receiver means fop receiving the reflection pulses, the CPU connected to the receiver means for applying frequency control and sensitivity control signals thereto, whereby the receiver means provides signals tuned to a predetermined frequency, and at a predetermined sensitivity level, depending on which mode of a rainfall mode and an icing mode the radar system is in, and means connected to the receiver means and to the CPU and responsive to the signals from the receiver means, and to a mode signal and a temperature enable signal from the CPU for detecting and separating the signals from the receiver means into rainfall levels and icing levels, with the icing level being detected only if the temperature is below a predetermined level, and for averaging the levels of the detected signals, and for temporarily storing the average signals; and

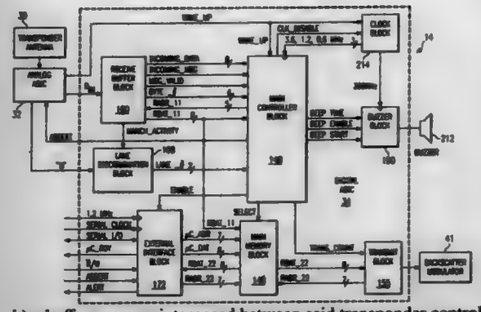
means connected to the display and control means and to the ART means for applying SLW and rainfall data from said ART means to said display and control means which displays the SLW data and the rainfall data so that the rainfall conditions and SLW conditions are distinguished from each other, whereby a pilot of the aircraft is provided with information for avoiding icing caused by SLW conditions.

5,488,376

TRANSPONDER INTERFACE CIRCUIT

Dwaine S. Hurta, Garland, Tex., and Guenther Froschermeier, Abensberg, Germany, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 26, 1994, Ser. No. 233,871
Int. Cl.[6] G01S 13/76
U.S. Cl. 342—42 19 Claims



1. A transponder interface circuit interposed between a transponder controller and an external interface, said external interface being in electrical communication with circuitry that is external to said transponder, said transponder interface circuit comprising:

a) an interface controller operable to communicate with said transponder controller;

b) a buffer memory interposed between said transponder controller and said external interface; and

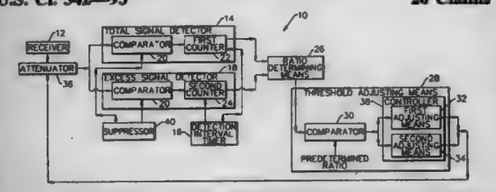
a clock selection multiplexer for passing a data clocking signal to said buffer memory from one of at least two sources, the first source being said the signal derived from the transponder: clock, and the second source being the clock signal originating in said external circuitry, the appropriate source being chosen by a signal to the multiplexer from said interface controller and chosen to correspond with whichever of the transponder and the external circuitry is accessing buffer memory.

5,488,377

METHOD AND APPARATUS FOR CONTROLLING THE FALSE ALARM RATE OF A RECEIVER

Albert H. Reynolds, III, St. Louis; Rand E. Boettger, Florissant, both of Mo., and Steven W. Pauly, St. Petersburg, Fla., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Mar. 28, 1995, Ser. No. 412,418
Int. Cl.[6] G01S 7/34;15/00
U.S. Cl. 342—93 20 Claims



1. An apparatus for controlling the false alarm rate of a receiver wherein the receiver is adapted to receive signals in response to source signals which are transmitted at a predetermined transmission frequency, thereby defining a predetermined transmission period between source signals, the apparatus comprising:

total signal detecting means for detecting each received signal which has a power level greater than a predetermined threshold level and which is received within a predetermined detection interval, wherein the predetermined detection interval includes at least one predetermined transmission period, and wherein the signals received within a predetermined transmission period can include an initial signal which has a power level greater than the predetermined threshold level and a plurality of excess signals received subsequent to the initial signal which also have a power level greater than the predetermined threshold level;

excess signal detecting means for detecting each excess signal which is received within the predetermined detection interval;

ratio determining means, responsive to said total signal detecting means and said excess signal detecting means, for determining a ratio of the total number of received signals detected by said total signal detecting means within the predetermined detection interval to the total number of excess signals detected by said excess signal detecting means within the predetermined detection interval; and

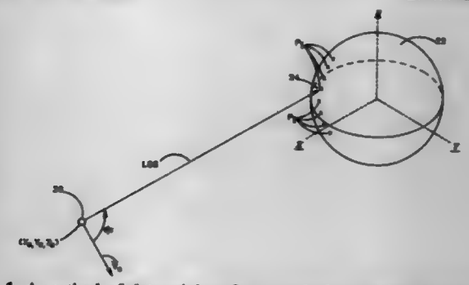
threshold adjusting means, responsive to said ratio determining means, for adjusting the threshold level in response to the ratio determined by said ratio determining means such that the false alarm rate of the receiver is thereby controlled.

5,488,378

METHOD AND APPARATUS FOR DETERMINING POSITIONS ON THE EARTH CORRESPONDING TO AN OBSERVED RATE OF CHANGE OF SATELLITE RANGE

Jaime B. Colley, Laguna Nignel, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Dec. 28, 1993, Ser. No. 174,085
Int. Cl.[6] G01S 5/02; H04B 7/185
U.S. Cl. 342—357 17 Claims



1. A method of determining, for a particular position, location coordinates for the particular position, the method comprising the steps of:

receiving, at a receiver located at the particular position, signals from at least one earth-orbiting satellite, the signals including orbital information indicating the general location of the at least one satellite with respect to an earth-centered, earth-fixed (ECEF) coordinate system;

measuring the rate of change of the range from the satellite to the receiver; and

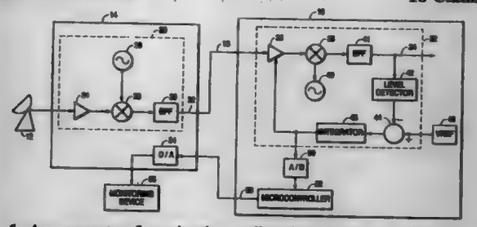
calculating, based upon the satellite orbital information and measured rate of change of the range from the satellite to the receiver, a first plurality of points representing a first line on the earth's surface along which the rate of change of range of the satellite is constant, such that the location of the receiver at the particular position is near the first line.

5,488,379

APPARATUS AND METHOD FOR POSITIONING AN ANTENNA IN A REMOTE GROUND TERMINAL

Thomas Jackson, and Mark Murr, both of Frederick, Md., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 5, 1995, Ser. No. 369,040
Int. Cl.[6] H01Q 3/00
U.S. Cl. 342—359 16 Claims



1. An apparatus for orienting a directional antenna of a remote ground terminal which receives a signal from a satellite, said apparatus comprising:

a down-converter for demodulating said signal to an intermediate frequency signal, said down-converter comprising an automatic gain control loop for maintaining said intermediate frequency signal at a predetermined power level;

a controller coupled to said down-converter so as to monitor a voltage level of said automatic gain control loop, said controller operative to generate a difference signal corresponding to the difference of said voltage level when said signal from said satellite is being received by said down-converter from when said signal from said satellite is not received by said down-converter,

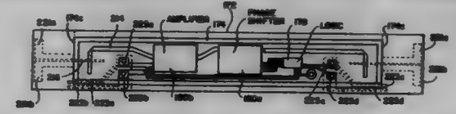
wherein said difference signal varies proportionally with the amplitude of said signal from said satellite received by said down-converter, said difference signal used for orienting said directional antenna.

5,488,380

PACKAGING ARCHITECTURE FOR PHASED ARRAYS

Donn T. Harvey, Issaquah, and George W. Fitzsimmons, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 705,816, May 24, 1991, Pat. No. 5,276,455. This application Sep. 20, 1993, Ser. No. 123,006
Int. Cl.[6] H01Q 3/22;13/00;21/00; H01P 1/00
U.S. Cl. 342—368 19 Claims



1. An apparatus for coupling electro-magnetic (EM) energy between a waveguide through which said EM energy propagates and an electronics unit, comprising:

a printed dipole antenna;

a coupled coplanar strip transmission line connected to said printed dipole antenna;

a slotline connected to said coupled coplanar strip transmission line, said EM energy being transferred between said waveguide and said slotline via said printed dipole antenna; and

a microstrip transmission line integral to said electronics unit and physically isolated from said slotline, said EM energy being coupled between said slotline and said microstrip transmission line,

wherein said printed dipole antenna and said electronic unit are disposed within said waveguide.

5,488,381

METHOD FOR THE MANAGEMENT OF THE BEAM OF AN ELECTRONICALLY SCANNED ROTATING ANTENNA

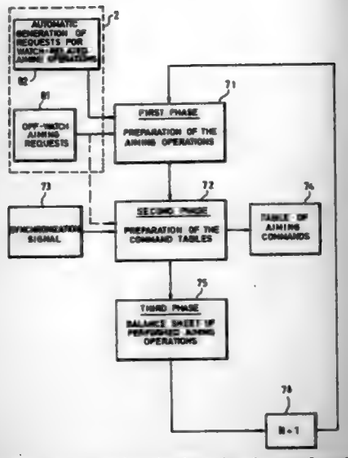
Marie-Claude Bardy, Massy, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 28, 1994, Ser. No. 313,907
Claims priority, application France, Sep. 28, 1993, 93 11503
Int. Cl.[6] H01Q 3/22; G01S 13/00
U.S. Cl. 342—372 10 Claims

1. A method for the management of the beam of an electronically scanned rotating antenna on the basis of requests for the aiming of the beam, said method organizing the sequencing or succession of the aiming commands given to a system for the formation of the beam by means of a table of commands comprising the parameters needed to carry out the aiming operations, the antenna having a visibility cone in which the electronic scanning enables the aiming operations to be performed, the position of the antenna being identified according to an angular step, the passage from one step another generating a synchronization signal, for each antenna rotation, the sequencing of the commands is organized in three phases, each associated with one zone of the space:

a first phase of preparation of the requested aiming operations before their entry into the visibility cone, said phase consisting in defining the parameters of the table of the commands associated with each requested aiming operation;

a second phase of carrying out the requested aiming operations present in the visibility cone, a new table of commands being



sent from each synchronization signal as a function of the aiming operations that have not yet been carried out;

a third phase of identifying the requested aiming operations that have come out from the visibility cone and have not been carried out, these aiming operations being memorized and carried out in a following rotation, it being possible for a non-performed aiming operation to be relinquished.

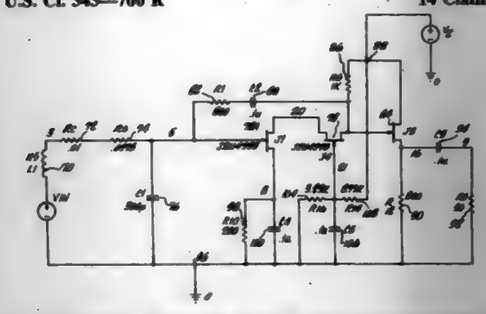
5,488,382

LOW NOISE AMPLIFIER

Neal O. Fenzi, and Stephen I. Long, both of Santa Barbara, Calif., assignors to Superconductor Technolgies Inc., Santa Barbara, Calif.

Continuation of Ser. No. 37,598, Mar. 26, 1993, abandoned.
This application May 10, 1995, Ser. No. 438,522
Int. Cl.[6] H01Q *1/26*

U.S. Cl. 343—700 R **14 Claims**



1. A detection circuit for detecting electromagnetic radiation comprising:

a low loss antenna having a characteristic impedance and an output,

a semiconductor Field Effect Transistor (FET) amplifier having an input and an output, said output of said low loss antenna being connected directly to said input of said semiconductor amplifier, and

an impedance connected to said semiconductor amplifier between said input of said semiconductor FET amplifier and said output of said semiconductor FET amplifier, said impedance and said semiconductor FET amplifier having an optimum noise impedance substantially equal to said characteristic impedance of said low loss antenna.

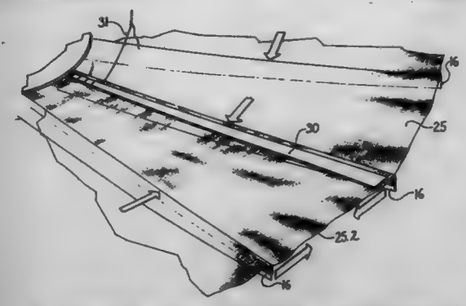
5,488,383

METHOD FOR ACCURIZING MESH FABRIC REFLECTOR PANELS OF A DEPLOYABLE REFLECTOR

Arnold Friedman, Redwood City; William Ribble, San Jose, and William D. Wade, Los Gatos, all of Calif., assignors to Lockheed Missiles & Space Co., Inc., Sunnyvale, Calif.

Filed Jan. 21, 1994, Ser. No. 181,747
Int. Cl.[6] H01Q *15/14*

U.S. Cl. 343—912 **6 Claims**



1. In a deployable reflector of the kind which includes a hub assembly, a plurality of radially extendable ribs members spaced about a periphery of said hub assembly for supporting a plurality of gore-shaped metalized mesh fabric reflector panels stretched thereacross and attached thereto so that a dish-shaped reflective surface is formed when said reflector is deployed, a method for accurizing the mesh fabric reflector panels comprising:

a) placing at least one wedge-shaped tool on a first slack gore-shaped mesh fabric reflector panel adjacent a seam which joins a long side edge of said first gore-shaped mesh fabric reflector panel to an adjacent long side edge of a second gore-shaped mesh fabric reflector panel;

b) lacing a chord through the strands of said first gore-shaped mesh fabric reflector panel and back and forth over said wedge-shaped tool along its length;

c) withdrawing said wedge-shaped tool from said first gore-shaped mesh fabric reflector panel; and

d) pulling taut opposite ends of said chord to remove the slack from the reflector panels.

5,488,384

DISPLAY CONTROL SYSTEM FOR DETERMINING CONNECTION OF OPTIONAL DISPLAY UNIT BY USING PALETTE

Kelichi Uehara, and Tooru Hanada, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 221,455, Apr. 1, 1994, abandoned, which is a continuation of Ser. No. 904,021, Jun. 25, 1992, abandoned. This application Dec. 28, 1994, Ser. No. 365,175
Claims priority, application Japan, Jun. 26, 1991, 3-154677
Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—1 **6 Claims**

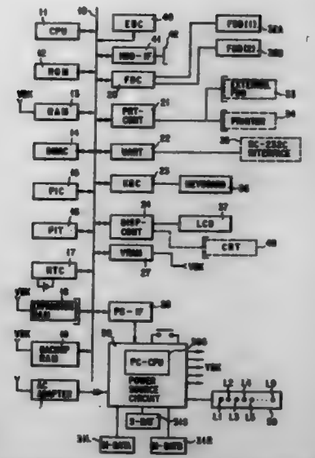
1. A display control system in a computer system having a flat panel display unit as a standard display unit, and allowing a CRT display unit as an optional display unit to be connected thereto, comprising:

a video memory for storing display data;

a graphic subsystem for writing and reading display data in and from said video memory, and for displaying display data on one of the flat panel display unit and the CRT display unit connected to said display control system;

means, having a plurality of color registers, for converting digital R, G, and B signal output from said graphic subsystem into R, G, and B display analog signal levels, and outputting the display analog signal levels as a video signal to the CRT display unit;

means for writing first test data in said plurality of color registers;



means for producing a reference level and comparing the R, G and B display analog signal levels which are output from said plurality of color registers as a video signal, with the produced reference level;

first determining means for determining whether a color CRT is connected in accordance with the result of the comparing means; and

means for initializing the color CRT, when the first determining means determines that the color CRT is connected.

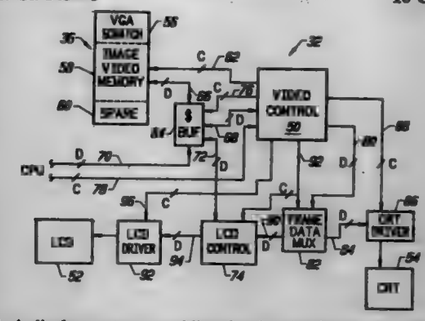
5,488,385

MULTIPLE CONCURRENT DISPLAY SYSTEM

Dave M. Singhal, San Jose, and Sidong Li, Sunnyvale, both of Calif., assignors to Trident MicroSystems, Inc., Mountain View, Calif.

Filed Mar. 3, 1994, Ser. No. 206,010
Int. Cl.[6] G09G *5/12*

U.S. Cl. 345—3 **10 Claims**



1. A display system providing for the simultaneous accelerated generation of independent video information for presentation on multiple independent displays, said display system comprising:

a) a video memory having a plurality of addressable storage locations, each storage location providing for the storage of data representing a component of an independent displayable image, said video memory providing for accelerated accessing of said addressable storage locations within pages of said addressable storage locations;

b) a data buffer having a first data interface coupled to said video memory and a second interface data interface coupleable to an external host computer system to provide a direct data transfer path to said video memory; and

c) a video controller, coupled to said video memory, to provide a plurality of sets of output display control and data signals coupleable to a respective plurality of video displays, said video controller including means for accessing said video memory in a predetermined addressing pattern to access a sequence of said components corresponding to a plurality of said independent displayable images where said components of a first independent displayable image are interleaved with said components of a second independent displayable image in predetermined ones of said pages of said addressable storage locations, said video controller further including control means, responsive to said accessed sequence of said components, for generating said plurality of sets of output display control and data signals where each said set of said plurality of said output display control and data signals corresponds to a respective one of said independent displayable images.

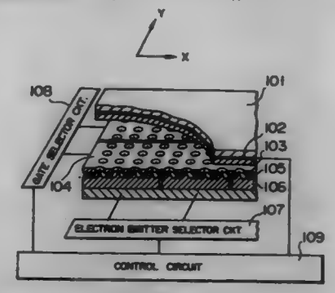
5,488,386

IMAGING APPARATUS AND OPERATION METHOD OF THE SAME

Toshio Yamagishi, Kawasaki; Masakazu Naoba; Norifumi Egami, both of Tokyo; Kunkichi Tanioka, Tama; Mitsuhiro Kurashige, Yone; Kazutaka Tsuji, Hachioji; Yoshiyuki Kaneko, Hachioji; Tatsuo Makishima, Tokyo; Kazuyuki Nagatsuma, Hachioji; Tetsuya Ohshima, Kokubunji, and Yasushi Nakano, Tokyo, all of, Japan, assignors to Hitachi, Ltd., and Nippon Hoso Kyokai, both of Tokyo, Japan

Filed Dec. 2, 1993, Ser. No. 160,655
Claims priority, application Japan, Dec. 2, 1992, 4-322911
Int. Cl.[6] G09G *3/22*

U.S. Cl. 345—74 **17 Claims**



1. An imaging apparatus comprising:

a photoconductive target including a transparent electrode layer for transmitting incident light from outside and a photoconductive layer for generating and storing a signal charge in response to the incident light;

a plurality of electron beam emitters disposed adjacent said photoconductive layer of said photoconductive target, each electron beam emitter capable of assuming alternatively an activated state, in which the electron beam emitter emits electrons, and an inactivated state;

control means for temporarily changing over the state of said electron beam emitters to change the emitters which are emitting electrons from among said electron beam emitters;

means for reading a signal charge stored in a portion of said photoconductive layer; and

gate electrodes for accelerating the emitted electrons from the activated electron beam emitters to transfer the electrons to said photoconductive target.

5,488,387

METHOD FOR DRIVING DISPLAY DEVICE

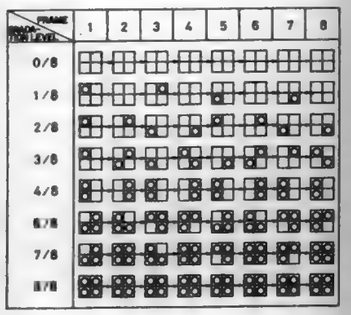
Hiroshi Maeda, Yamatokooriyama, and Takuro Omori, Nara, both of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 884,229, May 11, 1992, abandoned, which is a continuation of Ser. No. 489,206, Mar. 6, 1990, abandoned. This application Feb. 28, 1994, Ser. No. 203,617

Claims priority, application Japan, Mar. 7, 1989, 1-54377; Apr. 28, 1989, 1-109973

Int. Cl.[6] G09G 1/14

U.S. Cl. 345—89 **12 Claims**



1. A method for driving a display device to create a gradationally toned display of at least one of a plurality of brightness levels by setting a plurality of sequential frame time periods, during which each of a plurality of pixels on a screen of the display device is controlled to display an image, as one integration time period and by turning on pixels for a number of specified frame time periods corresponding to display data of the image within the integration time period, the method comprising the steps of:

grouping the plurality of pixels of the display device into a plurality of groups, each composed of a plurality of contiguous pixels;

selecting a number of pixels to be turned on for one integration time period corresponding to specified gradation data, for each of the plurality of groups; and

setting a number of pixels to be turned on for each of the sequential frame time periods within each integration time period, such that a minimum and a maximum number of pixels turned on within each integration time period is established by at least the second sequential frame time period, for each of the plurality of brightness levels, to thereby reduce display flicker, wherein the difference between the minimum and maximum number of pixels turned on within each integration time period, at each brightness level, is, at most, one pixel.

5,488,388

LIQUID CRYSTAL APPARATUS

Osamu Taniguchi, Chigasaki; Hiroshi Inoue, Yokohama; Atsushi Mizutome, Fujisawa; Tadashi Mihara, Atsugi; Yoshihiro Onitsuka, Yokohama, and Masahiro Terada, Atsugi, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

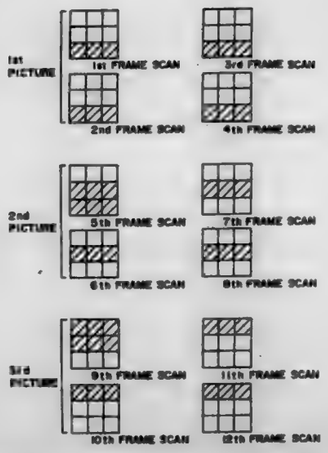
Continuation of Ser. No. 898,941, Jun. 15, 1992, which is a division of Ser. No. 164,504, Mar. 4, 1988, Pat. No. 5,182,549. This application Jul. 14, 1994, Ser. No. 274,155

Claims priority, application Japan, Mar. 5, 1987, 62-051775; Mar. 31, 1987, 62-078003; Jun. 8, 1987, 62-143874; Jul. 27, 1987, 62-188298

Int. Cl.[6] G09G 3/36

U.S. Cl. 345—97 **5 Claims**

1. A liquid crystal display apparatus, comprising scanning lines and data lines intersecting each other, with ferroelectric liquid



crystal material having a memory property disposed therebetween, to form an electrode matrix and a pixel at each intersection, and adapted to display a motion picture by consecutively displaying a plurality of different pictures on the electrode matrix, each said pixel showing different display states corresponding to different polarities of voltages applied thereto, said display apparatus comprising:

scanning means for applying scanning selection signals to the scanning lines, said scanning means comprising:

first scanning means for sequentially applying a first scanning selection signal, comprising a voltage of one polarity, to the scanning lines to effect odd-numbered frame scanning operations; and

second scanning means for sequentially applying a second scanning selection signal, comprising a voltage of another polarity opposite to the one polarity, to effect even-numbered frame scanning operations, wherein the one polarity and the other polarity are defined with respect to a voltage level applied to a non-selected scanning line which does not receive any of the first and second scanning selection signals; and

data signal output means for supplying data signals to the data lines in synchronism with each of the first and second scanning selection signals, said data signal output means supplying identical data signals to the data lines for at least three consecutive frame scanning operations and for displaying an identical picture for at least two consecutive frame scanning operations of the at least three consecutive frame scanning operations.

5,488,389

DISPLAY DEVICE

Kaoru Nakanishi, Izumisano; Shinji Horino, Nara; Kiyoshi Shiono, Osaka; Hiroshi Tanaka, Higashiosaka, and Kunihiro Terada, Tenri, all of, Japan, assignors to Sharp Kabushiki Kaisha, Japan

Filed Sep. 21, 1992, Ser. No. 948,297

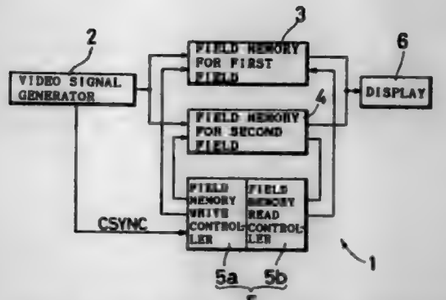
Claims priority, application Japan, Sep. 25, 1991, 3-245904; Sep. 27, 1991, 3-249737; Feb. 19, 1992, 4-032080; May 26, 1992, 4-133930

Int. Cl.[6] G09G 5/00

U.S. Cl. 345—131 **6 Claims**

1. A display device for display video signals where interlaced video signals are converted into non-interlaced video signals by dividing the interlaced video signals into a first field composed of odd-numbered horizontal scanning lines and a second field composed of even-numbered horizontal scanning lines, comprising:

a display having fewer horizontal display lines than a predetermined number of horizontal scanning lines for composing one screen of video information,



a memory for storing interlaced video signals, each interlaced video signal corresponding to a portion of one display line, and

a memory controller for writing the video signals into the memory in synchronism with a horizontal synchronizing signal provided with the interlaced video signals, dividing the horizontal scanning lines into consecutive groups, selecting one scanning line to be thinned from every group, and consecutively reading out from the memory the same video signal twice in synchronism with a read-out signal having a frequency twice that of the horizontal synchronizing signal but reading the video signal corresponding to the selected scanning line to be thinned from every group only once in accordance with the horizontal synchronizing signal, and applying the read out video signals to the display.

5,488,390

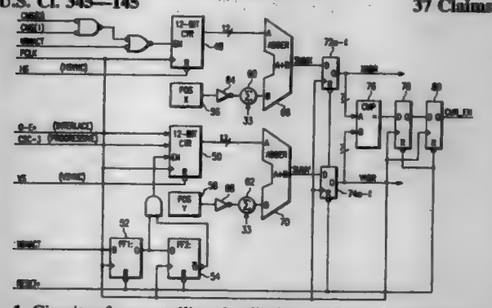
APPARATUS, SYSTEMS AND METHODS FOR DISPLAYING A CURSOR ON A DISPLAY SCREEN

Christopher L. Reinert, and Sudhir Sharma, both of Plano, Tex., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Jul. 29, 1993, Ser. No. 98,844

Int. Cl.[6] G09G 3/02

U.S. Cl. 345—145 **37 Claims**



1. Circuitry for controlling the display position of a cursor on a display operable to display information as at least one field of a plurality of lines of pixels, comprising:

first counter circuitry operable to increment with each of a plurality of selected pixels of a said line;

first storage circuitry operable to store position data representing a first coordinate of a reference pixel in said field, said reference pixel associated with an area of said field in which said cursor is to be displayed;

first adding circuitry operable to add a count corresponding to a current pixel output from said first counter to said position data in said first storage circuitry;

second counter circuitry operable to increment with each line of said field;

second storage circuitry operable to store position data representing a second coordinate of said reference pixel;

second adding circuitry operable to add a count corresponding to said current pixel output from said second counter to said position data in said second storage circuitry; and

comparator circuitry operable to compare an output of said first adding circuitry and an output of said second adding circuitry to a predetermined value and in response output an enable signal when said current pixel is within said area of said field in which said cursor is to be displayed.

5,488,391

METHOD AND DEVICE FOR THE OPTIMIZING OF THE PERFORMANCE CHARACTERISTICS OF A LIQUID CRYSTAL DISPLAY MATRIX SCREEN AS A FUNCTION OF THE ANGLE OF OBSERVATION

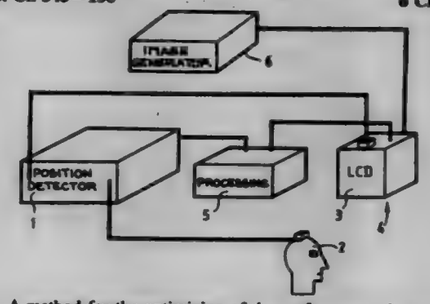
Jean-Jacques Favot, Martignas/Jalles; Jean-Pierre Fontan, Cadaujac, and Jean-Noël Perbet, Eysines, all of, France, assignors to Sextant Avionique, Meudon La Foret, France

Filed Oct. 19, 1992, Ser. No. 962,702

Claims priority, application France, Jan. 22, 1991, 91 13011

Int. Cl.[6] G09G 5/00; 3/36

U.S. Cl. 345—156 **6 Claims**



1. A method for the optimizing of the performance characteristics of a liquid crystal display matrix screen as a function of an angle of observation of an image on the screen by an observer, comprising the steps of:

representing the observation space before the screen as a hemisphere and dividing the observation space into elementary zones corresponding to different angular positions, relative to the screen, in which the observer may be placed in order to look at the image,

associating a particular processing operation of the image to be shown on the screen with each zone;

determining, for each zone, a set of micro-zones that are each formed by several pixels of the screen;

determining, for elementary zones, a luminance level of each pixel and a chrominance level of each micro-zone of the screen

memorizing the determined values; then,

detecting a position of the observer with respect to the screen; and

modifying at least one of the parameters of the processing of the image to be presented on the screen as a function of the values that are memorized and that correspond to the detected angle of observation.

5,488,392

PRECISION, ABSOLUTE MAPPING COMPUTER POINTING DEVICE AND VERSATILE ACCESSORIES

Thomas S. Harris, 10863 W. Fuller Pl., Baton Rouge, La. 70816

Filed Apr. 28, 1994, Ser. No. 234,841

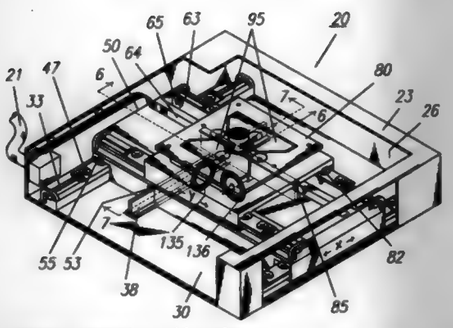
Int. Cl.[6] G09G 3/02

U.S. Cl. 345—157 **19 Claims**

1. A manually operable signal generating device that generates signals suitable for controlling objects on a display device, said signal generating device comprising:

a base having a first axis, and having a second axis substantially perpendicular to said first axis;

a carriage mounted to said base;



a pointer mounted to said carriage;

a first ball bearing mounting means for guiding uniaxial movement of the carriage along the direction of the first axis and for inhibiting said carriage of movement that is perpendicular to said first axis;

a second ball bearing mounting means for guiding uniaxial movement of the pointer along the direction of the second axis and for inhibiting said pointer of movement relative to the carriage that is perpendicular to said second axis;

movement detection means for generating signals indicative of the direction and the magnitude of movement of the carriage along the first axis and for generating signals indicative of the direction and the magnitude of movement of the pointer along the second axis; and

electrical circuitry coupling said movement detection means to a microprocessor that generates signals and sends said signals to said display device translated as commands.

5,488,393

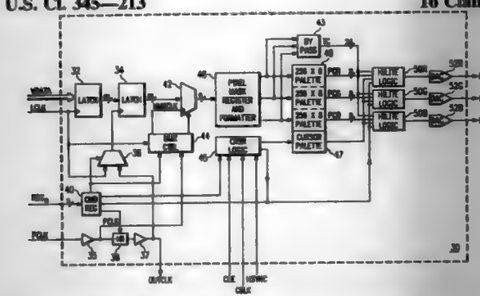
HIGH-SPEED VIDEO DISPLAY SYSTEM

Paul B. Wood, Spring, and Brian F. Bounds, Cypress, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 695,963, May 6, 1991, Pat. No. 5,291,187. This application Jun. 23, 1993, Ser. No. 81,794

Int. Cl.[6] G09G *5/06*

U.S. Cl. 345—213 **16 Claims**



1. A computer system for processing data comprising video data, said computer system comprising:

a processor;

a video controller;

a first bus coupled between said processor and said video controller;

a memory for storing video data;

a second bus coupled between said video controller and said memory, wherein said video controller is operable to provide said video data to said memory; and

a video display driver circuit for driving a display device, comprising:

a first clock terminal for receiving a pixel clock signal;

a second clock terminal for receiving a latch clock signal;

an output clock terminal;

a frequency divider circuit, for receiving the pixel clock signal from said first clock terminal, and for presenting, at said output clock terminal, an output clock signal having a period which is a multiple of the period of said pixel clock signal;

a plurality of data terminals for receiving said pixel data from said memory;

a latch, coupled to said data terminals and to said second clock terminal, for storing pixel data received at said data terminals responsive to said latch clock signal;

a multiplexer, having a data input coupled to said latch for receiving said pixel data, having a clock input coupled to receive said pixel clock signal, and having an output, said multiplexer for applying a selected portion of said pixel data to its output responsive to said pixel clock signal; and

output circuitry coupled to the output of said multiplexer, for presenting said pixel data to said display device.

5,488,394

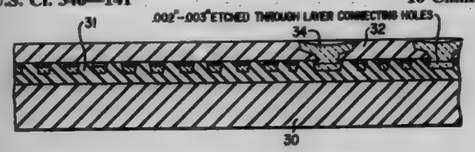
PRINT HEAD AND METHOD OF MAKING SAME

Donald C. Sedberry, Gwynedd, Pa., assignor to Max Levy Autograph, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 195,030, Feb. 14, 1994, Pat. No. 5,416,502, which is a division of Ser. No. 928,352, Aug. 12, 1992, Pat. No. 5,317,342, which is a division of Ser. No. 408,529, Sep. 18, 1989, Pat. No. 5,162,191, which is a division of Ser. No. 141,113, Jan. 5, 1988, Pat. No. 4,897,676. This application Aug. 8, 1994, Ser. No. 286,967

Int. Cl.[6] B41J *2/395*

U.S. Cl. 346—141 **10 Claims**



4. A print head made by the method comprising the steps of:

a) providing a smooth substrate material, at least the surface of the substrate comprising a dielectric material,

b) applying a layer of material capable of selectively resisting etchants, to the surface of the dielectric,

c) coating the etchant-resistive layer of material with a photoresist,

d) exposing the photoresist to light, the light being directed through a phototool comprising a pattern representing a desired pattern of conductors forming the print head,

e) developing the photoresist to expose the etchant-resistive layer of material in those locations corresponding to elements of the desired pattern of conductors,

f) removing the exposed portions of said etchant-resistive layer of material,

g) etching into the dielectric material, in those locations where the etchant-resistive layer of material has been removed, to form grooves in the dielectric material,

h) removing residual photoresist and etchant-resistive material,

i) filling the grooves with a cermet material capable of bonding to the dielectric substrate upon the application of heat, and

j) firing the substrate to a temperature sufficient to bond the cermet material to the grooves in the dielectric material,

wherein the print head is free of organic materials.

5,488,395

LIQUID JET RECORDING APPARATUS

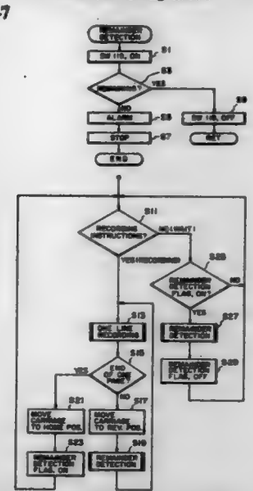
Yoshiaki Takayanagi; Asao Saito, and Ryoichi Koizumi, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 707,945, May 28, 1991, abandoned, which is a continuation of Ser. No. 452,499, Dec. 19, 1989, abandoned. This application Sep. 12, 1994, Ser. No. 304,205

Claims priority, application Japan, Dec. 20, 1988, 63-321505

Int. Cl.[6] B41J *2/195*

U.S. Cl. 347—7 **48 Claims**



1. An ink jet recording apparatus, comprising:

a recording head having ejection outlets for ejecting ink;

ink supply means for supplying the ink to said recording head;

an element for receiving electrical power when detecting a remaining amount of the ink in said ink supply means;

control means for supplying electrical power to said element to detect the ink remaining in said ink supply means, wherein said control means permits supply of electrical power to said element when a remainder detection instruction is set, and prevents supply of electrical power to said element when said remainder detection instruction is not set;

setting means for setting the remainder detection instruction to permit an ink remainder detecting operation in a stand-by state; and

resetting means for resetting the remainder detection instruction ill response to execution of the ink remainder detecting operation in the stand-by state so that the remainder detection instruction is not set.

5,488,396

PRINTER PRINT HEAD POSITIONING APPARATUS AND METHOD

Edward F. Burke, Lake Oswego, and Randy C. Karambelas, Milwaukie, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

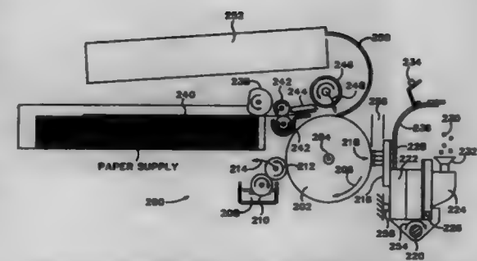
Filed Mar. 7, 1994, Ser. No. 206,998

Int. Cl.[6] B41J *11/20*

U.S. Cl. 347—37 **21 Claims**

1. An improved print head positioner in a printer of a type in which a print medium scans in a first direction and a print head has an array of marking means uniformly spaced apart in a second direction for printing correspondingly spaced apart indicia on the print medium, and in which the print head is moved a predetermined distance in the second direction by a print head positioner for each of a predetermined number of print medium scans to print the print medium, the improved print head positioner comprising:

an input motion means for imparting a first amount of motion to the print head positioner for each scan of the print medium;



an adjustable scale factor means for providing a scale factor to move the print head in adjustably changeable lateral movements the predetermined distance, the scale factor means being coupled by a first coupling means to the input motion means; and

an output motion means coupled by a second coupling means to the adjustable scale factor means for imparting the predetermined distance to the print head;

whereby the scale factor is adjustable to accurately convert the first amount of motion into the predetermined distance such that the indicia are uniformly spaced apart in the second direction on the print medium after the predetermined number of print medium scans.

5,488,397

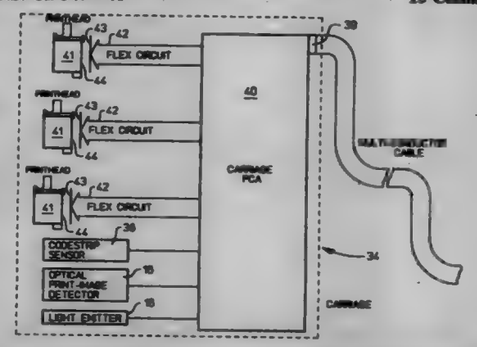
WIDE-SWATH PRINTER/PLOTTER USING MULTIPLE PRINTHEADS

Michael A. Nguyen, Singapore, Singapore; Lowell J. Stewart, Poway, Calif.; Daniel S. Kline, Carlsbad, Calif.; Robert A. Boeller, Poway, Calif.; Chuong C. Ta, and Robert D. Haselby, both of San Diego, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 786,146, Oct. 31, 1991, Pat. No. 5,241,325. This application Nov. 4, 1991, Ser. No. 787,297

Int. Cl.[6] B41J *2/01;2/07*

U.S. Cl. 347—40 **15 Claims**



1. A printer/plotter having multiple printheads which move in a given scan direction to apply a swath of images to media which is periodically advanced in a media feed direction, comprising:

carriage means for holding multiple printheads which are separately mountable on said carriage means;

first mounting means on said carriage means for holding a first printhead a predetermined distance from the media;

second mounting means on said carriage means for holding a second printhead a predetermined distance from the media, said second mounting means holding said second printhead in a position displaced from said first printhead in the media feed direction such that a width of a swath printed by both said first and second printheads in a single traverse of said carriage means is greater than a swath printed by only one of said first and second printheads;.

multiple printing elements on each of said first and second printheads;

adjustment means operatively connected to said second printhead for changing the relative position of active printing elements on said second printhead with respect to active printing elements on said first printhead, said adjustment means including selection means for turning off certain of said active printing elements on said second printhead which overlap active printing elements on said first printhead.

5,488,398

INK JET RECORDING APPARATUS CAPABLE OF EMPHASIZING THE DENSITY OF BLACK

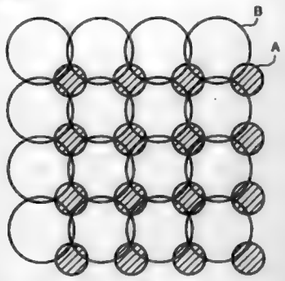
Miyuki Matsubara, Tokyo; Hiromitsu Hirabayashi, Yokohama; Hitoshi Sugimoto, Kawasaki, and Kiichiro Takahashi, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1992, Ser. No. 923,390

Claims priority, application Japan, Aug. 1, 1991, 3-193189

Int. Cl.[6] B41J 2/01

U.S. Cl. 347—43 **31 Claims**



1. An ink jet recording apparatus for discharging a plurality of different colored inks, to thereby record color images on a recording medium, comprising:

a plurality of recording heads having a number of discharge ports through which the inks are discharged therefrom, and a number of discharge means for discharging corresponding to said number of discharge ports, said recording heads including a recording head for discharging black ink ;and

discharge amount control means for controlling an amount of ink discharged from each of said recording heads;

wherein, for a recording portion to be printed in black, the black ink and at least one color ink other than black are discharged and said discharge amount control means makes an amount of the black ink discharged greater than the amount of the ink other than black.

5,488,399

BELT DRIVING APPARATUS AND IMAGE RECORDING APPARATUS USING THE SAME

Tatsuo Mitomi; Tomohiro Aoki, both of Yokohama; Yasushi Murayama, Tokyo; Takashi Uchida, Yokohama; Toru Kobayashi, Tokyo; Masatoshi Ikkatai, Kawasaki, and Masaharu Nemura, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

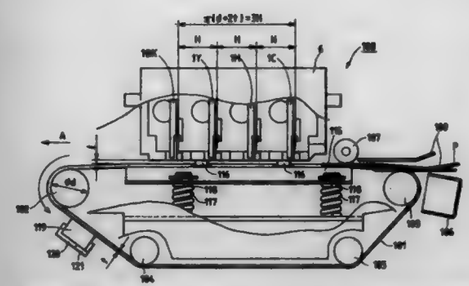
Continuation of Ser. No. 347,175, Nov. 22, 1994, abandoned, which is a continuation of Ser. No. 225,002, Apr. 7, 1994, abandoned, which is a continuation of Ser. No. 774,355, Oct. 10, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 497,999

Claims priority, application Japan, Jan. 12, 1990, 2-273818

Int. Cl.[6] B41J 2/21;2/385; G03G 15/01

U.S. Cl. 347—43 **27 Claims**

24. A recording medium conveying apparatus for use in an image recording apparatus for recording an image on a conveying recording medium by a plurality of image recording mechanisms disposed at an image recording area, said apparatus comprising:



an endless recording medium conveying member for conveying the recording medium, said conveying member having a surface for mounting the recording medium and a thickness t;

a first image recording position disposed at an image recording area;

a second image recording position disposed at the image recording area; and

a drive roller member for driving said endless recording medium conveying member, said drive roller member having a diameter D,

wherein a distance between the first and second image recording positions is equal to $\pi(D+2t)$.

5,488,400

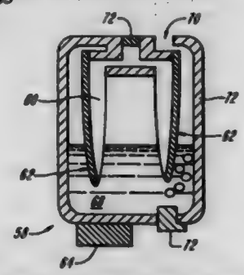
METHOD FOR REFILLING INK JET CARTRIDGES

Richard G. Crystal, Los Altos, Calif.; Raymond Geffre, Fort Fairfield, Me., and Sven Karlsson, San Jose, Calif., assignors to Graphic Utilities, Inc., Concord, Mass.

Continuation of Ser. No. 86,620, Jul. 1, 1993, abandoned, which is a continuation of Ser. No. 975,477, Nov. 12, 1992, abandoned. This application Jul. 7, 1994, Ser. No. 271,185

Int. Cl.[6] B41J 2/175

U.S. Cl. 347—85 **17 Claims**



1. The method of re-filling with ink an at least partially depleted ink jet cartridge, said cartridge having a top end and a bottom end including:

(a) a housing enclosing an internal ink reservoir extending between said top end and said bottom end,

(b) a bubble generator affixed to the housing,

(c) an ink fill aperture extending through said housing near said top end and coupling said reservoir to a region exterior to said cartridge,

(d) a means for sealing said ink fill aperture,

(e) a negative pressure assembly including:

i. a bladder disposed within said reservoir,

ii. an air port affixed to the top of said housing including means for coupling a region interior to said bladder to said region exterior to said cartridge,

iii. spring means for biasing said bladder toward a minimum volume state, comprising the steps of:

A. positioning said cartridge with said top end above said bottom end,

B. unsealing said ink fill aperture,

C. sealing said air port and then inflating said bladder to establish an internal volume thereof in a predetermined range,

D. injecting ink into said reservoir through said ink fill aperture,

E. sealing said ink fill aperture, and

F. unsealing said air port.

5,488,401

INK-JET RECORDING APPARATUS AND INK TANK CARTRIDGE THEREOF

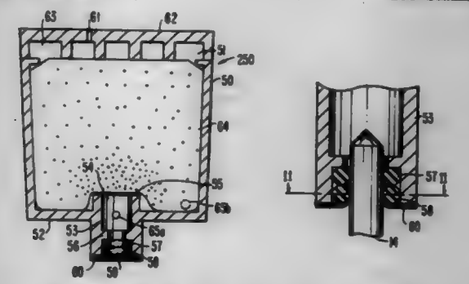
Seiji Mochizuki; Kazuhisa Kawakami; Masahiro Nakamura; Kelichi Ohshima, and Masanori Yoshida, all of Suwa, Japan, assignors to Seiko Epson Corporation, Japan

Continuation-in-part of Ser. No. 742,529, Aug. 7, 1991, Pat. No. 5,255,019, which is a continuation of Ser. No. 642,761, Jan. 18, 1991, Pat. No. 5,070,346. This application Aug. 11, 1992, Ser. No. 928,936

Claims priority, application Japan, Jan. 28, 1992, 4-012834; Feb. 19, 1992, 4-83226; Mar. 16, 1992, 4-058151

Int. Cl.[6] B41J 2/175

U.S. Cl. 347—86 **106 Claims**



32. An ink tank cartridge for an ink-jet type recording apparatus being removably mountable onto an ink supply needle of a recording apparatus body, said ink supply needle having at least one throughhole to allow ink to pass therethrough, the ink tank cartridge comprising:

a housing formed with a chamber therein;

an ink supply port extending through and projecting from a wall of said housing, said ink supply port having a first opening directed towards said chamber of said housing and a second opening directed away from said wall of said housing;

at least one porous member accommodated in said chamber of said housing for having ink impregnated therein, said porous member resiliently abutting against said first opening of said ink supply port;

a packing member provided within said ink supply port towards said second opening, said packing member being formed with a hole therethrough dimensioned to receive said ink supply needle and to resiliently abut against an outer periphery of said ink supply needle of said ink-jet type recording apparatus, said packing member preventing the flow of ink through said ink supply port other than through said ink supply needle when said needle is positioned in said ink supply port;

a sealing member separate from said packing member positioned to seal said second opening of said ink supply port before said ink tank cartridge is mounted on said ink supply needle and to be penetrated by said ink supply needle when said ink tank cartridge is mounted on said ink supply needle; and

a stopping member provided between said packing member and said sealing member positioned and dimentioned to prevent pieces of said sealing member produced when said ink supply needle penetrates said sealing member from entering said ink supply port past said sealing member.

5,488,402

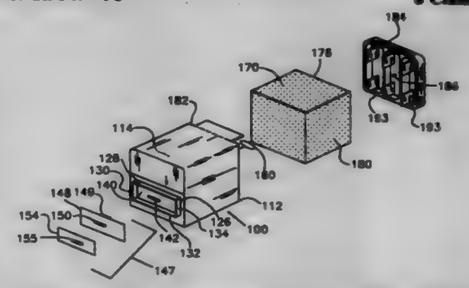
METHOD AND APPARATUS FOR PREVENTING COLOR BLEED IN A MULTI-INK PRINTING SYSTEM

James P. Shields, and Gerald E. Radke, both of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 926,259, Aug. 5, 1992, Pat. No. 5,428,383. This application Mar. 10, 1995, Ser. No. 401,534

Int. Cl.[6] C09D 11/02

U.S. Cl. 347—96 **8 Claims**



1. An inkjet ink set for use in printing multi-colored images while controlling color bleed between adjacent printed regions comprising:

a first ink composition, said first ink composition comprising a first coloring agent; and

a second ink composition, said second ink composition comprising a second coloring agent and a precipitating agent which will react with said first coloring agent in said first ink composition in order to form a precipitate therefrom.

5,488,403

PRINTING ELEMENT DRIVE DEVICE HAVING SEPARATELY OPERATING SHIFT REGISTERS

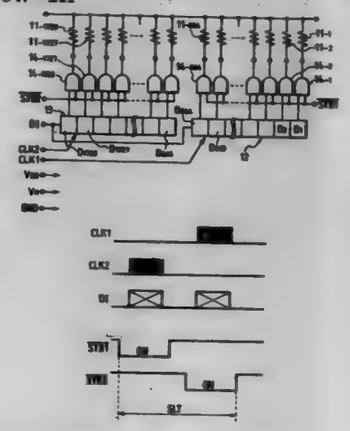
Takaya Nagahata, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jul. 1, 1993, Ser. No. 86,501

Claims priority, application Japan, Jul. 31, 1992, 4-204841

Int. Cl.[6] B41J 2/355

U.S. Cl. 347—211 **5 Claims**



1. A printing element drive circuit comprising:

n printing elements;

first and second shift registers each having at least n/2 memory cells, the first and second shift registers receiving common bit-serial printing data and receiving first and second clock pulse signals respectively, wherein in a first period the first shift register stores a first part of the printing data of n/2 bits during application of the first clock signal and in a second

period the second shift register stores a second part of the printing data of n/2 bits during application of the second clock signal; and

at least n drive elements for driving the n printing elements in accordance with the printing data stored in the first and second shift registers, the printing elements being in one-to-one correspondence with the memory cells of the first and second shift registers.

5,488,404

OPTICAL CHARACTER GENERATOR FOR AN ELECTRO PHOTOGRAPHIC PRINTER

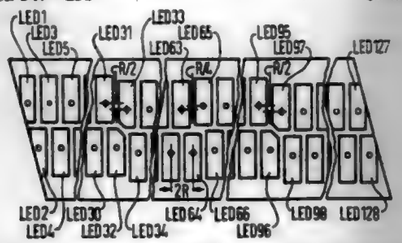
Friedrich Fleck, Munich, and Klaus-Dieter Jörgens, Baldham, both of, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 576,394, Sep. 26, 1990, abandoned. This application May 23, 1994, Ser. No. 247,507

Claims priority, application Germany, Mar. 11, 1988, 38 08 219.5

Int. Cl.[6] B41J 2/45

U.S. Cl. 347—238 **17 Claims**



1. An optical character generator of an electro photographic printer for generating a charge image on a revolving charge storage drum, the charge image being composed of micro-image lines each generated continuously during one printing cycle, the optical character generator receiving printing information that is transmitted over a bus system by a printer control, the bus system operatively connecting the printer control to the optical character generator, comprising:

a plurality of character generator modules arranged in a row, each of the modules having a plurality i of light-emitting diode means for emitting light, each of the light-emitting diode means having a plurality of light-emitting diodes arranged in k rows extending in a longitudinal direction where k is a finite whole number greater than one, light-emitting diodes of a respective row of said k rows having a predetermined offset in said longitudinal direction with respect to light-emitting diodes of other rows of said k rows;

the light-emitting diodes of each light-emitting diode means being subdivided along the longitudinal direction into n multi-row light-emitting diode groups where n is a finite whole number greater than one, the diode groups being distributed without overlap in a direction parallel to said longitudinal direction and being geometrically offset with respect to one another in a direction lateral to said longitudinal direction of the rows of light-emitting diodes;

each of the character generator modules further having a plurality of kxi control means for controlling the light-emitting diodes, each of the control means of the plurality of kxi control means having inputs connected to the bus system for selectively receiving printing information serially supplied by the printer control and having parallel outputs respectively connected to light-emitting diodes of a respective row of the k rows of the light-emitting diode means;

each of the control means of the plurality of kxi control means having a processing unit for converting the received printing information into n groups of drive control signals for selectively activating the light-emitting diodes and a switching unit, each said processing unit having n part-circuits associated respectively with the n multi-row light-emitting diode groups, each part-circuit of the n part-circuits of each processing unit of each of the control means of the plurality of kxi control means respectively generating from said printing information a respective one of the n groups of drive control signals such that the n groups of drive control signals, for compensating for said offset of each of the multi-row light-emitting diode groups, are temporally staggered with respect to each other;

each said processing unit further having driver means connected to respective part-circuits of the n part-circuits for receiving the n groups of drive control signals from the respective part-circuits of the n part-circuits associated therewith and for outputting individual drive signals to the light-emitting diodes connected to the respective control means of the plurality of kxi control means;

the switching unit of each of the control means of the plurality of kxi control means being connected to the respective n part-circuits and generating timing control signals that are temporally staggered and input to the respective n part-circuits to effect said temporal staggering of the drive control signals;

wherein staggering of the drive control signals occurs in a predetermined timing pattern of the printing cycle and is dependent on the respective offset of an associated light-emitting diode group, so that a straight micro-image line, which is linearly assembled section by section, is generated on the charge storage drum.

5,488,405

VIDEO PRINTER HAVING A FRAME MEMORY CONFIGURED TO EFFECTIVELY UTILIZE A DOUBLE-DENSITY PRINTING HEAD WHEN PRINTING REDUCED-SIZE IMAGES

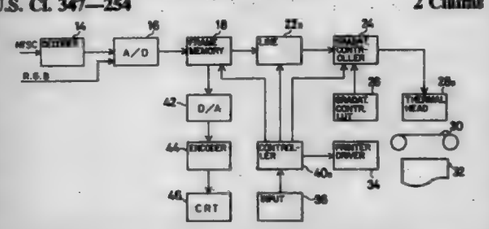
Yoshiki Kawaoka, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 29, 1993, Ser. No. 83,254

Claims priority, application Japan, Jun. 29, 1992, 4-170384

Int. Cl.[6] H04N 1/21

U.S. Cl. 347—254 **2 Claims**



1. A video printer for printing a plurality of reduced images on one recording paper, the reduced images being arranged on the one recording paper in columns, the reduced images corresponding, respectively, to a plurality of received images, each of the received images having, in a vertical direction, a number of effective scan lines, and having, in a horizontal direction, a number of pixels, said video printer comprising:

a frame memory which stores columns and rows of pixels, said frame memory having a capacity to store in a column a number of pixels that is approximately equal to the number of effective scan lines, and having a capacity to store in a row a number of pixels that is approximately twice the number of pixels of each of the received images in the horizontal direction;

a printing head comprising a number of printing elements that is approximately twice the number of pixels stored in a column of said frame memory, said printing elements being disposed to print vertical lines of pixels; and

controller means which reduces image data of said received images and which writes into the frame memory the reduced image data of the reduced images which form one of said columns of images, such that the reduced image data which is used to print one of said vertical lines of pixels is stored in two columns of the frame memory, said controller supplying the reduced image data stored in the frame memory to said printing head in order to prim one of the columns of images.

5,488,406

METHOD AND APPARATUS FOR THE EXPOSING OF LIGHT-SENSITIVE MATERIAL TO BE EXPOSED

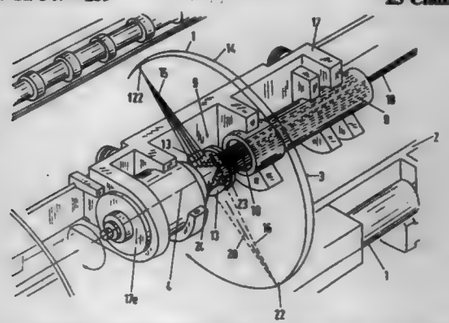
Horst Rubi, Kassel-Baunatal, Germany, assignor to Scangraphic PrePress Technology GmbH, Wedel, Germany

Filed May 21, 1993, Ser. No. 65,606

Claims priority, application Germany, May 21, 1992, 42 17 238.1

Int. Cl.[6] B41J 2/47

U.S. Cl. 347—259 **23 Claims**



1. A method for exposing a photo-sensitive material to be exposed comprising

placing the photosensitive material to be exposed into a casing defining an inner circular arc-shaped cylinder and sealed against entry of light from external light sources, wherein the material to be exposed is disposed in the circular arc-shaped cylinder and is thereby disposed at a uniform spacing from a center longitudinal axis of the arc-shaped cylinder;

generating a laser beam with a laser generator;

modulating the laser beam in a laser modulator;

deflecting the modulated laser beam into a collimator;

directing the collimated laser beam, aligned parallel to the center longitudinal axis, onto a rotatable mirror having two mirror faces, wherein each one of the two mirror faces is disposed at an angle relative to the center longitudinal axis; focusing a laser beam reflected on one of the mirror faces with an optical system;

directing the focused laser beam radially onto a focusing surface, where focal points of the reflected and focused laser beam are rotary circulating on the surface of the material to be exposed;

exposing the material to be exposed with signals, providing point-shaped exposure spots on the material to be exposed, with the laser beam coming from the rotatable mirror and from the optical system.

5,488,407

IMAGE RECORDING APPARATUS

Shunichi Tachibana, Urayasu, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

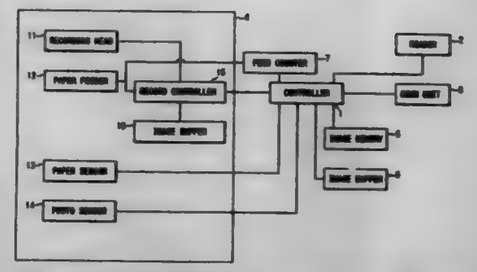
Continuation of Ser. No. 320,553, Oct. 11, 1994, which is a continuation of Ser. No. 212,649, Mar. 14, 1994, abandoned, which is a continuation of Ser. No. 97,227, Jul. 27, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 419,529

Claims priority, application Japan, Jul. 28, 1992, 4-201159; Jul. 9, 1993, 5-170027

Int. Cl.[6] H04N 1/21

U.S. Cl. 347—264 **31 Claims**

1. An image recording apparatus comprising:



print data generation means for generating print data, including first control means for controlling a process relating to the generation of the print data;

recording means for recording an image on a recording medium in accordance with the print data generated by said print data generation means;

feed means for feeding the recording medium to a recording position of said recording means;

second control means for controlling operations of said recording means and said feed means;

detection means for detecting the recording medium upstream of the recording position along the feed direction of the recording medium; and

count means for counting a feed amount of the recording medium by said feed means;

said first control means determining whether remaining print data can be printed or not at the detection of a trailing edge of the recording medium by said detection means based on the count of said count means and outputting a control signal to renew a page to said second control means when a decision not to permit the recording is made.

5,488,408

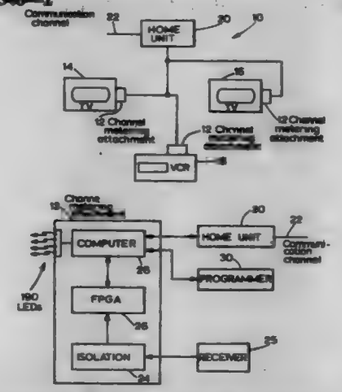
SERIAL DATA CHANNEL METERING ATTACHMENT FOR METERING CHANNELS TO WHICH A RECEIVER IS TUNED

Kenneth S. Maduzia, Holiday; Kenneth J. Frett, Crystal Beach, and James J. Vitt, Dunedin, all of Fla., assignors to A.C. Nielsen Company, Northbrook, Ill.

Filed Mar. 22, 1994, Ser. No. 215,899

Int. Cl.[6] H04N 7/10

U.S. Cl. 348—2 **36 Claims**



1. An attachment for metering channels to which a receiver is tuned, the receiver having a serial data communication bus for carrying serial data between components of the receiver, the attachment comprising:

channel determining means for determining a channel to which the receiver is tuned, the channel determining means determining the channel in response to the serial data;

connecting means for connecting the channel determining means to the serial data communication bus of the receiver; and,

means connected to the channel determining means for carrying an output identifying the channel to which the receiver is tuned.

5,488,409

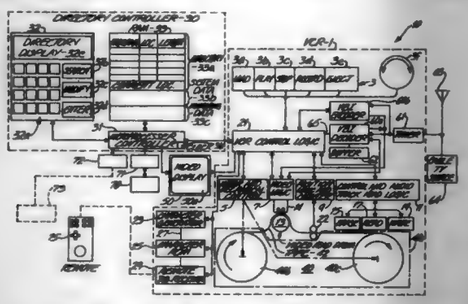
APPARATUS AND METHOD FOR TRACKING THE PLAYING OF VCR PROGRAMS

Henry C. Yuen, P.O. Box 1159, Redondo Beach, Calif. 90278, and Daniel S. Kwoh, 3975 Hampstead Rd., La Canada, Flintridge, Calif. 91011

Continuation-in-part of Ser. No. 66,666, May 27, 1993, which is a continuation-in-part of Ser. No. 14,541, Feb. 8, 1993, which is a continuation-in-part of Ser. No. 1,125, Jan. 5, 1993, which is a continuation-in-part of Ser. No. 883,607, May 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 817,723, Jan. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 805,844, Dec. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 747,127, Aug. 19, 1991, abandoned. This application Sep. 16, 1993, Ser. No. 122,794

Int. Cl.[6] H04N *5/782;5/91*

U.S. Cl. 348—5 **14 Claims**



1. A video tape player for monitoring user selection habits of a plurality of video tapes, each video tape containing a plurality of programs, a first type of video tapes having a title information symbol on a predetermined interval of the tape for each program on the tape, the video tape player comprising:

a clock for providing a time;

means for moving the video tape;

a magnetic head for detecting the plurality of programs recorded on the video tape and the title information symbols on the first type of video tape and a plurality of programs recorded on a second type of video tape;

a detector for receiving user inputted commands for controlling the movement of the video tape, the user inputted commands comprising a start play command to start moving, in a longitudinal direction, the video tape proximate to the magnetic head so that the magnetic head can detect said programs on the video tape and a stop play command to stop moving the tape;

a controller coupled to said detector for commanding the moving means in response to said detected user inputted commands and reading the time of occurrence of said detected user inputted commands;

a first memory for storing a title information symbol for each program on the second type of video tape;

a second memory for storing the title information symbol and the time of occurrence of said detected user inputted commands; and

means for providing the contents of the second memory to an external analyzer in response to a download command.

5,488,410

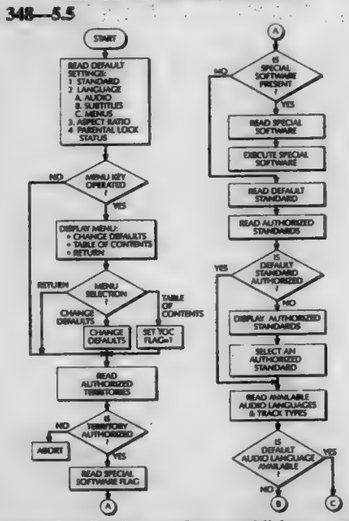
SYSTEM AND METHOD FOR DISK SOFTWARE PUBLISHERS TO CONTROL DISK DISTRIBUTION

Warren N. Lieberfarb; Christopher J. Cookson, and Lewis S. Ostrover, all of Los Angeles, Calif., assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Oct. 29, 1993, Ser. No. 145,979

Int. Cl.[6] H04N *7/01;7/16;7/167*

U.S. Cl. 348—5.5 **8 Claims**



1. A system for allowing a software publisher to control which video standards can be recovered from digital software carriers comprising a plurality of players each for playing a digital software carrier and deriving therefrom video source information, each player being adapted to generate from the same video source information a video signal in accordance with a selected video standard; and a plurality of digital software carriers each having (i) a lead-in section including a code indicative of the video standards which have been authorized for that carrier by the software publisher and (ii) in a section following said lead-in section, separate video source information; each of said players including means for reading the lead-in section of any software carrier being played, independent of said code; and means for enabling generation of a video signal in accordance with the selected video standard only if it is included among the video standards which have been authorized by said code in the lead-in section of the digital software carrier being played, and for inhibiting the generation of a video signal in a video standard which has not been authorized in the lead-in section of the digital software carrier.

5,488,411

INTERACTIVE SYSTEM FOR A CLOSED CABLE NETWORK

Scott W. Lewis, Saratoga, Calif., assignor to Multimedia Systems Corporation, San Jose, Calif.

Filed Mar. 14, 1994, Ser. No. 212,353

Int. Cl.[6] H04N *7/173*

U.S. Cl. 348—8 **12 Claims**

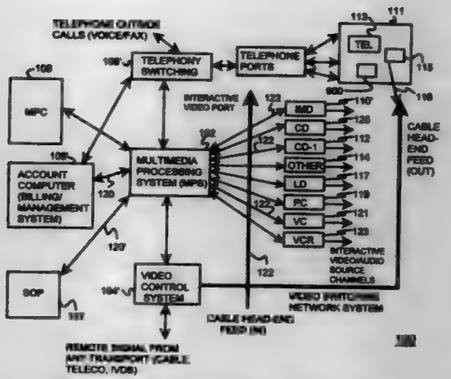
1. An interactive system for a closed cable network comprising:

means for processing multimedia information;

means coupled to the multimedia processing means for receiving telephone messages from and transmitting telephone messages to the multimedia processing means;

means coupled to the mutimedia processing means for receiving account information from and transmitting account information to the multimedia processing means;

means coupled to the multimedia processing means for receiving control information from and transmitting control information to the multimedia processing means;



a plurality of multimedia devices coupled to the multimedia processing means to provide updatable multimedia information and;

multiplexer means coupled to an Interactive Multimedia Decoder (IMD), the multiplexer means for receiving inputs from the plurality of multimedia devices and for selecting from the plurality of multimedia devices to provide a multimedia output signal to the IMD.

5,488,412

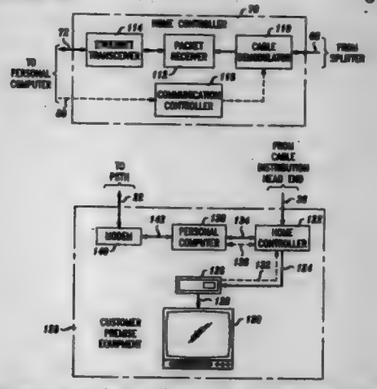
CUSTOMER PREMISES EQUIPMENT RECEIVES HIGH-SPEED DOWNSTREAM DATA OVER A CABLE TELEVISION SYSTEM AND TRANSMITS LOWER SPEED UPSTREAM SIGNALING ON A SEPARATE CHANNEL

Venkata C. Majeti; Mowaffak T. Midani, both of Naperville, Ill.; Richard J. Watson, Catawissa, Mo., and Kenneth A. Zabriskie, Indianapolis, Ind., assignors to AT&T Corp., Murray Hill, N.J.

Filed Mar. 31, 1994, Ser. No. 221,336

Int. Cl.[6] H04N *7/173*

U.S. Cl. 348—10 **6 Claims**



3. A customer premises equipment which supports communications between a user and information providers, said equipment connected to a television system cable that supports high speed communication channels carrying information sent from the information providers and a lower speed transmission channel that carries user generated requests transmitted to the information providers, the lower speed transmission channel being a transmission medium physically separate from the transmission medium that transports the high speed cable transmission channel, the customer premises equipment comprising:

a tunable demodulator that demodulates radio frequency (RF) signals carried by said high speed cable channel, said demodulator translating encoded packets of data carded as said RF signals into digitally formatted packets;

receiver means coupled to said demodulator for identifying ones of said digitally formatted packets having a predetermined address associated with a user;

a modem coupled to said lower speed transmission channel for transmitting requests and receiving control signals that identify one of said high speed channels which carry said ones of said digitally formatted packets;

a personal computer means, coupled to said modem and operating under the control of a program, for effecting communications between the user and the information providers;

means coupled to said receiver means for transmitting data derived from said ones of digitally formatted packets to said personal computer;

said personal computer coupled to said demodulator and transmitting channel selection signals based on said control signals to said demodulator to control the RF channel to which said tunable demodulator is tuned, thus enabling reception of said ones of encoded packets over an RF channel determined by the control signals.

5,488,413

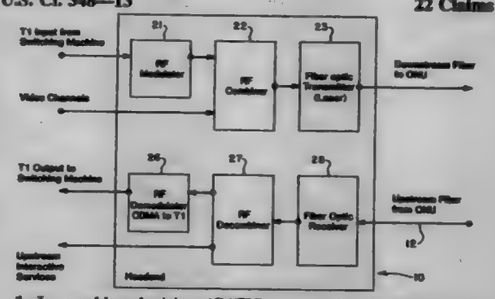
CATV TELEPHONY SYSTEM USING SUBSPLIT BAND FOR BOTH DIRECTIONS OF TRANSMISSION

Joseph M. Elder, Boulder; Donald L. Bise, Parker; Terry D. Bolinger, Aurora, and Peter Ruether, Longmont, all of Colo., assignors to XEL Communications, Inc., Aurora, Colo.

Filed Jun. 14, 1994, Ser. No. 259,479

Int. Cl.[6] H04N *7/173*

U.S. Cl. 348—13 **22 Claims**



1. In a cable television (CATV) system for distribution of a video signal and for two-way telephone communications, having a headend, a plurality of optical network units (ONU's) connected to said headend by fiber optics, a plurality of coaxial cables extending from each ONU to a plurality of subscriber units, and a number of line amplifiers located at intervals along said coaxial cables between said ONU's and said subscriber units, the improvement comprising:

said headend having a downstream path for distribution of video and telephone signals to said ONU's and an upstream path for receiving telephone signals from said ONU's, said headend downstream path including:

(a) means for modulating said downstream telephone signal to a first frequency band below said video signal;

(b) means for combining said modulated downstream telephone signal with said video signal; and

(c) means for transmitting said combined telephone and video signals over said fiber optics to said ONU's;

said ONU's having a downstream path for distribution of said combined telephone and video signals from said headend to said subscriber units and an upstream path for relaying telephone signals from said subscriber units to said headend;

said subscriber units having:

(a) means for receiving said downstream telephone signal transmitted by said ONU's;

(b) means for modulating said upstream telephone signal to a second frequency band below said video signal; and

(c) means for transmitting said modulated upstream telephone signal over said coaxial cable to said ONU's; and

said line amplifiers having means for maintaining a signal path through said line amplifiers for said telephone signals in the event of failure of said line amplifiers.

5,488,414

VIDEO CAMERA APPARATUS HAVING MODE SELECTION DISPLAY ON ELECTRONIC VIEWFINDER SCREEN

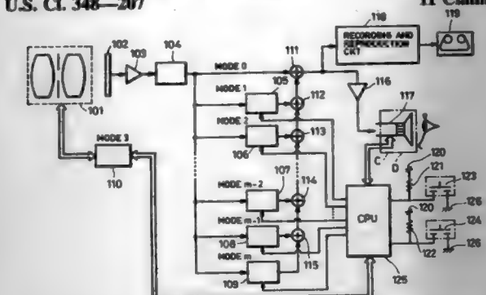
Masahide Hirasawa, Sagamihara, and Kohji Takahashi, Yokohama, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 844,777, Mar. 2, 1992, abandoned. This application May 20, 1994, Ser. No. 247,117

Claims priority, application Japan, Mar. 12, 1991, 3-046564

Int. Cl.[6] H04N *5/225*

U.S. Cl. 348—207 **11 Claims**



1. A video camera apparatus having a plurality of functions, comprising:

(a) function selecting means for performing a selection operation to choose at least two functions to be executed from the plurality of functions;

(b) common function executing means for executing the at least two functions selected through said function selecting means;

(c) an image monitor for displaying a representation of the at least two functions selected as well as a picture being taken by said video camera apparatus; and

(d) control means for controlling the display of said image monitor to indicate the at least two functions selected through said function selecting means on said image monitor prior to the execution of the at least two functions through said function executing means.

5,488,415

SOLID-STATE IMAGE PICKUP DEVICE HAVING A PHOTOELECTRIC CONVERSION DETECTION CELL WITH HIGH SENSITIVITY

Masayuki Uno, Ina, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 15, 1994, Ser. No. 260,345

Claims priority, application Japan, Jul. 9, 1993, 5-193009; Dec. 28, 1993, 5-349012

Int. Cl.[6] H04N *3/14*

U.S. Cl. 348—241 **11 Claims**

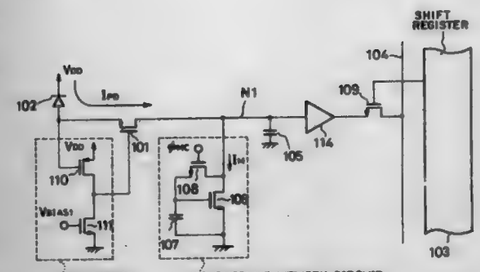
1. A solid-state image pickup device comprising a detection cell, said detection cell comprising:

a photodiode;

a storage capacitor for storing a photo-induced charge induced in said photodiode;

a transfer transistor, the source of said transfer transistor being connected to said photodiode, the drain of said transfer transistor being connected to said storage capacitor;

an inverter, the input of said inverter being connected to said photodiode, the output of said inverter being connected to the gate of said transfer transistor; and



a current memory circuit, said current memory circuit being connected in parallel to said storage capacitor, said current memory circuit being capable of maintaining a current at a value corresponding to a current flowing out via said transfer transistor.

5,488,416

IMAGE SENSING METHOD AND APPARATUS IN WHICH THE EXPOSURE TIME MAY BE VARIED

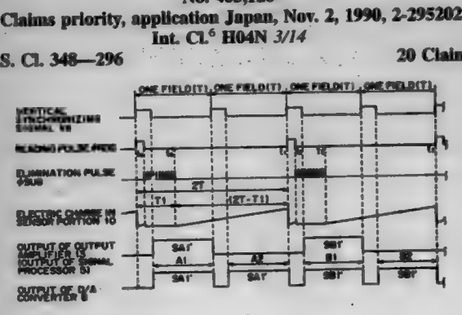
Kenji Kyuma, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 313,399, Sep. 27, 1994, abandoned, which is a continuation of Ser. No. 2,277, Jan. 8, 1993, abandoned, which is a continuation of Ser. No. 783,214, Oct. 28, 1991, Pat. No. 5,194,957. This application Mar. 13, 1995, Ser. No. 403,120

Claims priority, application Japan, Nov. 2, 1990, 2-295202

Int. Cl.[6] H04N *3/14*

U.S. Cl. 348—296 **20 Claims**



1. A camera comprising:

sensing means for receiving a light signal, performing a photoelectric conversion, and storing information;

reading means for reading the information from said sensing means once each reading period nT (where n is an integer equal to or greater than 2 and T is a field period of a standard television signal);

eliminating means for eliminating information from said sensing means, the eliminated information corresponding to a partial interval T1 within the reading period nT;

altering means for altering the width of the partial interval T1;

memory means for storing information outputted from said sensing means at a reading period nT; and

memory control means for controlling said memory means in such a manner that the information stored in said memory means, is outputted at a field period T.

5,488,417

AUTOMATIC KINESCOPE BIAS CONTROL SYSTEM

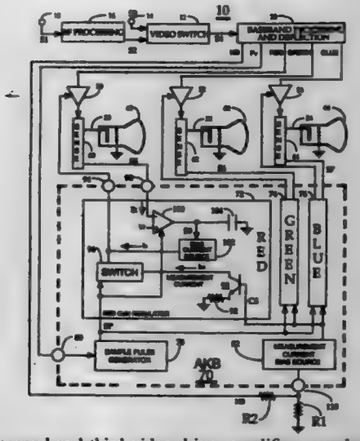
Dal F. Griepentrog, Indianapolis, Ind., assignor to Thomson Consumer Electronics, In., Indianapolis, Ind.

Filed May 19, 1994, Ser. No. 246,067

Int. Cl.[6] H04N *5/68*

U.S. Cl. 348—379 **1 Claim**

1. Color television display apparatus, comprising:



first, second and third video driver amplifiers coupled to apply respective ones of first second and third component video signals to respective ones of first second and third kinescope cathodes;

first, second and third current sensors coupled to respective ones of said cathodes for providing respective first second and third cathode current indicating signals;

an AKB system including first, second and third AKB regulators, each having an input for receiving a respective cathode current indicating signal and an output coupled to supply a respective black level control current to a respective one of said kinescope drivers, each said black level control current including a black level bias component, Ia, and a black level measurement current component, Im; and

means responsive to an analog voltage provided by a heater of one of said cathodes for controlling the magnitudes of said black level measurement currents during horizontal trace intervals and for suppressing said black level measurement currents during horizontal retrace intervals.

5,488,418

ENCODER AND DECODER

Hidetoshi Mishima, and Takashi Itow, both of Kyoto, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

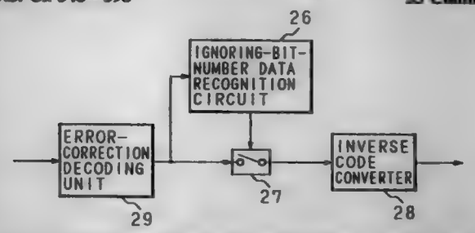
PCT No. PCT/JP92/00432, § 371 Date Dec. 3, 1992, § 102(e) Date Dec. 3, 1992, PCT Pub. No. WO92/19074, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 7, 1992, Ser. No. 938,231

Claims priority, application Japan, Apr. 10, 1991, 3-077686; Mar. 6, 1992, 4-049483; Mar. 10, 1992, 4-051466

Int. Cl.[6] H04N *7/30;7/64*

U.S. Cl. 348—398 **23 Claims**



1. An encoder which encodes a digital data by the variable-length encoding and the error-correction encoding, characterized in that said encoder comprises: means for converting a digital data to a variable length encoded data; means for partitioning a data string including the variable-length encoded data by a fixed length and adding an error-correcting code; means for obtaining an ignoring-bit-number data which is information of the number of bits after a partition used in the error-correction encoding to the initial bit of the variable-length encoded data; and means for time-axis multiplexing the obtained ignoring-bit-number data to the variable-length encoded data.

5,488,419

VIDEO COMPRESSION CODING AND DECODING WITH AUTOMATIC SUB-PIXEL FRAME/FIELD MOTION COMPENSATION

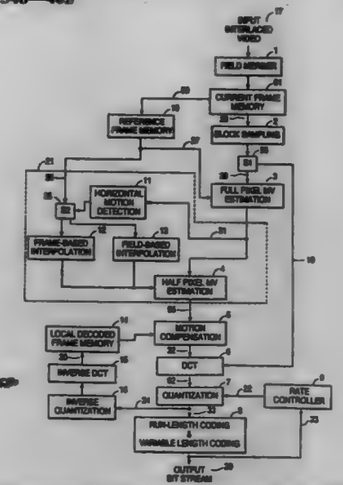
Lucas Y. W. Hui, and Siew-Tan Chong, both of Singapore, Singapore, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 15, 1993, Ser. No. 31,495

Claims priority, application Japan, Mar. 13, 1992, 4-054935

Int. Cl.[6] H04N *7/133;7/137*

U.S. Cl. 348—402 **16 Claims**



10. An apparatus for coding an interlaced scan digital video signal comprising:

block sampling means for partitioning each frame of an input of said interlaced scan digital video signal into blocks of pixel data;

switch means for designating each frame as a frame to be intra-coded or a frame to be predictive-coded;

motion vector estimation means for producing a full-pixel resolution motion vector of a block of a first frame which has been determined to be predictive-coded with reference to a reference frame;

detection means for checking the full-pixel resolution motion vector to determine whether said block of said first frame is to be compensated using a frame-based interpolation process or a field-based interpolation process;

interpolation means for subjecting said block of said first frame to only one of said frame-based interpolation process or said field-based interpolation process in accordance with whether said block is determined by said detection means to be compensated using said frame-based interpolation process or said field-based interpolation process respectively to obtain a sub-pixel resolution block;

motion compensation means for subjecting said sub-pixel resolution block to motion estimation and compensation to obtain a predicted block; and

coding means for coding each block of a second frame which has been determined to be intra-coded and said predicted block to obtain a coded bit stream;

wherein said detection means includes means for checking a magnitude of a horizontal component of said full-pixel resolution motion vector and determining that said block is to be compensated using said frame-based interpolation process if said magnitude is less than a predetermined threshold and that

said block is to be compensated using said field-based interpolation process if said magnitude is greater than said predetermined threshold.

5,488,420

COSMETICS FILTER FOR SMOOTHING REGENERATED PICTURES, E.G. AFTER SIGNAL COMPRESSING FOR TRANSMISSION IN A NARROWBAND NETWORK

Gisle Bjontegaard, Myrvoll, Norway, assignor to Teledirektoratets Forskningsavdeling, Norway

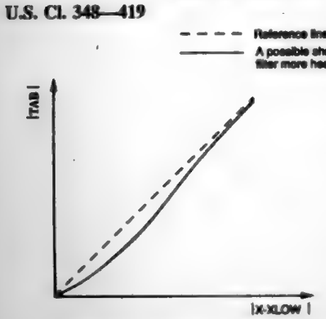
PCT No. PCT/NO92/00144, § 371 Date Apr. 20, 1994, § 102(e) Date Apr. 20, 1994, PCT Pub. No. WO93/05612, PCT Pub. Date Mar. 18, 1993

PCT Filed Sep. 8, 1992, Ser. No. 204,256

Claims priority, application Norway, Sep. 9, 1991, 91 3536

Int. Cl.[6] H04N *7/12*

U.S. Cl. 348—419 **17 Claims**



1. A cosmetics filter for use in smoothing pictures which are regenerated after signal compression and coding in connection with e.g. transmission of live pictures via a narrowband transmission medium, where picture signals are described by digitalized samples constituting picture points, said cosmetics filter comprising:

a digital lowpass filter having an input coupled to the input signal X and an output providing a lowpass-filtered signal XLOW;

a means for delaying having an input coupled to the input signal X and an output providing a delayed signal X;

a means of subtracting signals having a first input coupled to the lowpass filter, a second input coupled to the delay means and an output providing a difference signal (X−XLOW);

a table means having an address input coupled to the output of the signal subtracting means and an output providing a corresponding address content TAB(X−XLOW); and

an adder having a first input coupled to the table means, a second input coupled to said lowpass filter, and an output, whereby a total-filtered signal Y=XLOW+TAB(X−XLOW) is provided at the output from said adder.

5,488,421

INTERLACED-TO-PROGRESSIVE SCANNING CONVERTER WITH A DOUBLE-SMOOTHER AND A METHOD THEREFOR

Humor Hwang, and Myeong-hwan Lee, both of Kyungki, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

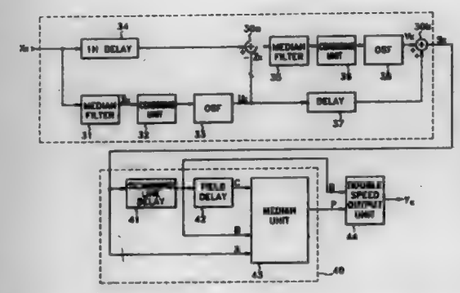
Filed Jun. 3, 1994, Ser. No. 253,856

Claims priority, application Rep. of Korea, Jun. 5, 1993, 1993-10176

Int. Cl.[6] H04N *7/01*

U.S. Cl. 348—448 **32 Claims**

1. An interlaced-to-progressive scanning converting apparatus for double-smoothing, wherein an interlaced scanning television signal is converted into a progressive scanning television signal, said apparatus comprising:



means for median-filtering an input interlaced scanning signal;

means for censoring a signal beyond a predetermined bias value by receiving the signal median-filtered by said median-filtering means;

order statistics filtering (OSF) means for receiving the censored signal, setting weighing coefficients according to the received signal, filtering the censored signal, and outputting the result;

interpolation signal generating means for generating a line delayed signal and interpolation scanning line signal from the output signal of said OSF means; and

means for generating a progressive scanning signal from the signals generated by said interpolation signal generating means.

5,488,422

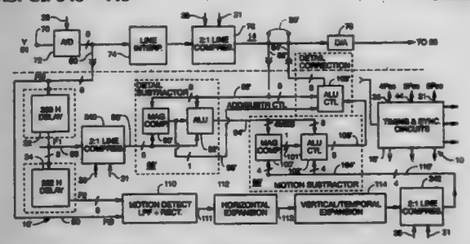
VIDEO SCAN CONVERTER INCLUDING THE MODIFICATION OF SPATIALLY INTERPOLATED PIXELS AS A FUNCTION OF TEMPORAL DETAIL AND MOTION

Yves C. Faroudja, 26595 Anacapa Dr., Los Altos Hills, Calif. 94022, and Charles A. Bialo, San Jose, Calif., assignors to Yves C. Faroudja, Los Altos Hills, Calif.

Continuation-in-part of Ser. No. 954,382, Sep. 30, 1992, Pat. No. 5,347,314, which is a continuation-in-part of Ser. No. 671,478, Mar. 19, 1991, Pat. No. 5,159,451. This application Jun. 17, 1994, Ser. No. 261,481

Int. Cl.[6] H04N *7/01;7/12*

U.S. Cl. 348—448 **9 Claims**



1. An expansible video scan converter comprising:

input means for receiving a video signal at a first scan rate,

output means for providing said video signal at a second scan rate,

a main signal path coupling said input means and said output means, said main signal path including

line interpolation means for interpolating pixels in original scan lines of said video signal and for putting out interpolated scan lines comprised of pixels interpolated in the spatial domain,

time scale modification means for combining original and interpolated scan lines into a video signal at the second scan rate, and

first optional further path insertion means between the line interpolation means and the time scale modification means, and

first removable connecting path means bypassing the first optional further path insertion means,

second optional further path insertion means between the input means and the line interpolation means,

second removable connecting path means bypassing the second optional further path insertion means, wherein said first and second removable connecting path means are opened, and

means for selectively modifying said spatial domain interpolated pixels as a function of temporal detail in said video signal coupled to said first and second optional further path insertion means, whereby said interpolated scan lines are both spatially and temporally interpolated.

5,488,423

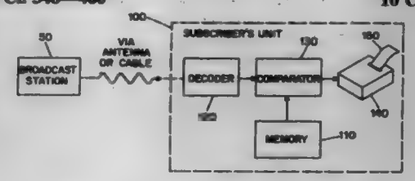
HOME COMMUNICATION METHOD AND APPARATUS

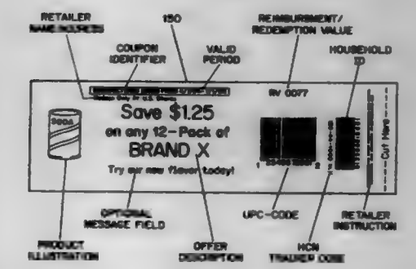
M. Jay Walkingshaw, Wainscott, N.Y.; Lorne R. Somerville, London, Great Britain; Anthony R. Esdaile, Selsdon, Great Britain, and David J. Stuart, East Grinstead, Great Britain, assignors to U.S. Narrow Networks, Inc., New York, N.Y.

Filed Nov. 17, 1994, Ser. No. 341,589

Int. Cl.[6] H04N *7/08*

U.S. Cl. 348—460 **10 Claims**





1. A non-interactive method for providing coupon and information printouts to a consumer in the consumer's premises wherein either or both coupon and information data is embedded in program broadcast signals, said method comprising the steps of

providing a consumer with means for detecting coupon and information data embedded in received broadcast signals, means for storing data identifying selected product and information categories desired by the consumer, and printing means,

receiving broadcast signals with embedded coupon and information data at said consumer's location,

detecting said coupon and information data from said received broadcast signals,

comparing the detected coupon and information data with data identifying selected product and information categories previously stored at the consumer's location, and

actuating said printing means to provide printouts of coupons and information upon correspondence of said selected product and information categories with the product and information categories of the detected coupon and information data.

5,488,424

Patent Not Issued For This Number

5,488,425

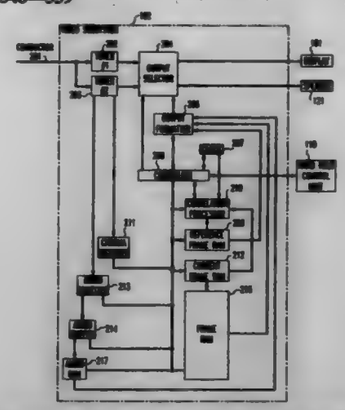
APPARATUS FOR STORING VIDEO INFORMATION BY RECOGNIZING VIDEO FRAMES

Gary J. Grimes, Thornton, Colo., assignor to AT&T Corp., Murray Hill, N.J.

Filed Dec. 22, 1993, Ser. No. 171,952

Int. Cl.[6] H04N *5/44*

U.S. Cl. 348—559 **21 Claims**



1. An apparatus for obtaining and displaying individual video frames from video programming material, comprising: means for designating a reference frame of the type of video frame to be obtained from the video programming material;

means for detecting and storing video frames that are substantially similar to the reference frame;

the means for detecting and storing comprises means for only storing one video frame of a program segment of the video programming material in which the reference frame is continuously detected;

means for displaying the stored video frames;

the means for designating comprises means for interacting with a user of the apparatus to detect the user designating the reference frame as a video frame from other video programming material which is displayed to the user is to be the reference frame where the other video programming material is similar to the video programming material; and

means for interacting with a user of the apparatus so that the user designates when the stored video frames are to be displayed.

5,488,426

CLOCK-SETTING APPARATUS AND METHOD UTILIZING BROADCASTING CHARACTER RECOGNITION

Bok H. Pack, Kyunggi-do, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed May 13, 1993, Ser. No. 61,663

Claims priority, application Rep. of Korea, May 15, 1992, 1992-8218

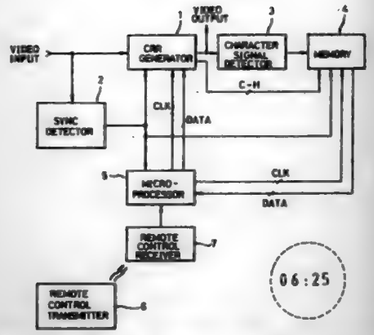
Int. Cl.[6] H04N *5/445;5/44*

U.S. Cl. 348—569 **3 Claims**

3. A clock-setting method comprising the steps of:

a) detecting if a synchronous signal separated from an inputted video signal is entered and then a clock-setting control signal is entered;

b) detecting if a position movement control signal of a character recognition region is entered within a preset time in order to



display the character recognition region as superimposed on the position of clock-displaying characters on a television screen when the clock-setting control signal is entered, and then moving the position of the character recognition region according to the inputted position movement control signal;

c) obtaining a character signal information in the character recognition region by sampling when the character recognition region is superimposed on the clock-displaying character position;

d) recognizing a clock-displaying numeral corresponding to the sampled character signal information by comparing the sampled character signal information with numerical data on a data base; and

e) setting a timer by a clock of the recognized numeral.

5,488,427

TELEVISION SYSTEM INCLUDING TELEVISION SET, AND ACCESSORY DEVICES CONTROLLED BY A SINGLE REMOTE CONTROL DEVICE

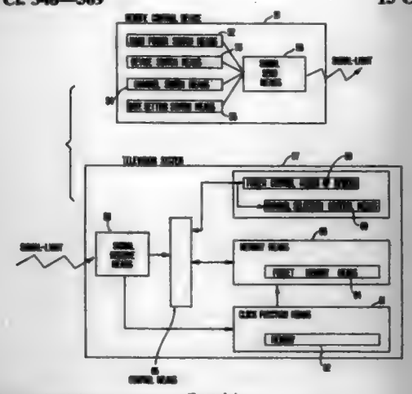
Kazuhiro Kayashima, Hirakata; Toshihiko Kurosaki, Kobe; Yo Egusa, Kyoto; Hiroshi Atuta, and Hiroshi Yamamoto, both of Katano, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 18, 1994, Ser. No. 229,455

Claims priority, application Japan, Apr. 16, 1993, 5-090111; Apr. 22, 1993, 5-095803

Int. Cl.[6] H04N *5/50;5/268*

U.S. Cl. 348—569 **15 Claims**



12. A television system comprising:

a television set having display means, a television tuner and a main power source,

a remote control device for sending a control signal to said television set, wherein said remote control device comprises:

main power switch means for turning on and off said main power source of said television set,

a channel switch means for generating a channel selection signal corresponding to channel selection information to select a channel on said television set and,

signal send means for coding and sending signals from said channel switch means,

said television system further comprising:

signal receive means for receiving and decoding said coded signals from said remote control device,

power control means for turning on and off said main power source responsive to said channel selection signal,

clock function means having a memory for storing calendar information and having a clock for providing a date and time,

memory means for storing said channel selection information in relation to the date and time, and

control means for controlling the power control means and channel switch means on the basis of said channel selection information corresponding to said date and time stored in said memory means.

5,488,428

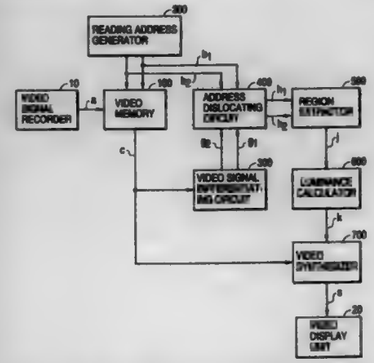
VIDEO SPECIAL EFFECT GENERATING APPARATUS

Tomoko Akashi, Moriguchi, and Norio Suzuki, Neyagawa, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 6, 1994, Ser. No. 319,007

Int. Cl.[6] H04N *5/262*

U.S. Cl. 348—578 **20 Claims**



1. A video special effect generating apparatus for processing an input video signal to generate a video special effect, comprising:

a video memory for storing therein the input video signal,

reading address generating means for generating a reading address composed of an x-direction component and a y-direction component for specifying a pixel of the input video signal, and for feeding the reading address to the video memory to read out a video signal from the video memory;

video signal differentiating means for calculating a differential value of the video signal read out from the video memory, and for outputting the differential value as a dislocation quantity;

address dislocating means for dislocating the reading address by an operation of the reading address and the dislocation quantity to produce a dislocation address;

region extracting means for generating a region signal showing a positional relation of a pixel specified by the dislocation address and a predetermined specific region on the basis of the dislocation address produced by the address dislocating means;

luminance calculating means for calculating a luminance correction value for correcting a luminance component of the video signal on the basis of the region signal; and

video synthesizing means for synthesizing the luminance correction value and the video signal read out from the video memory to obtain an output video signal.

5,488,429

VIDEO SIGNAL PROCESSOR FOR DETECTING FLESH TONES IN AM IMAGE

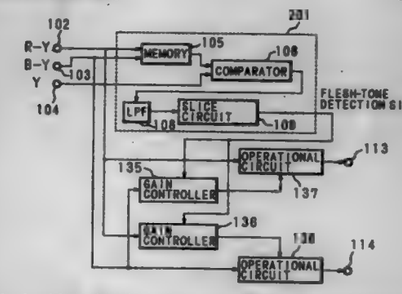
Kazuaki Kojima; Tetsuya Kuno; Hiroaki Sugiura, and Takeshi Yamada, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 31, 1992, Ser. No. 999,741

Claims priority, application Japan, Jan. 13, 1992, 4-003917; Jan. 14, 1992, 4-004453; Mar. 2, 1992, 4-044581; Apr. 27, 1992, 4-107451; Jun. 19, 1992, 4-161057; Jun. 19, 1992, 4-161058; Aug. 5, 1992, 4-208929; Aug. 5, 1992, 4-208930; Aug. 21, 1992, 4-222698; Aug. 21, 1992, 4-222699

Int. Cl.[6] H04N *9/68*

U.S. Cl. 348—653 **11 Claims**



1. A video signal processor receiving a luminance signal and color-difference signals as video signals, comprising:

first means for outputting a value based upon the received color-difference signals by referencing a predetermined table;

second means for comparing the output value with the luminance signal and outputting a result of the comparison as a flesh-tone detection signal; and

third means for controlling gains of the plurality of color-difference signals, independently, in accordance with the presence or absence of the flesh-tone detection signal.

5,488,430

MOTION DETECTION AND ESTIMATION APPARATUS AND METHOD THEREOF

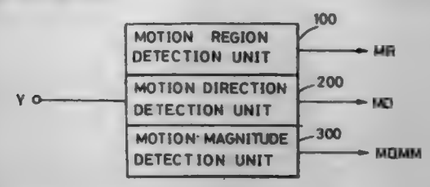
Sung H. Hong, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 22, 1992, Ser. No. 995,032

Claims priority, application Rep. of Korea, Dec. 23, 1991, 23998/1991

Int. Cl.[6] H04N *7/36*

U.S. Cl. 348—699 **27 Claims**



1. Motion detection apparatus, comprising:

motion region detection means for comparing absolute values of horizontal and vertical difference signal sums with respect to repective incoming signals and 1 frame-delayed signals and certain critical values with frame difference signals in order to detect a motion region;

motion direction detection means for performig an exclusive OR of frame difference signal sign bits and sum signal sign bits of horizontal and vertical difference signals with respect to respective incoming signals and 1 frame-delayed signals in order to detect left/right motion direction and up/down motion direction; and

motion magnitude detection means for detecting a horizontal motion magnitude and a vertical motion magnitude by ratios of frame difference signal absolute value sums and horizontal/vertical difference signal absolute value sums.

5,488,431

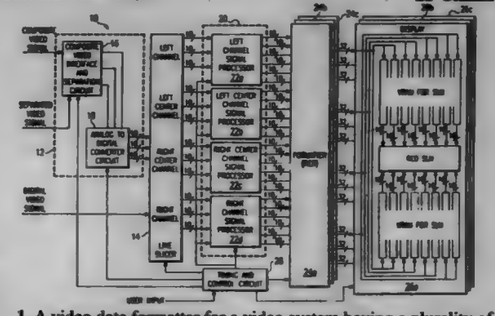
VIDEO DATA FORMATTER FOR A MULTI-CHANNEL DIGITAL TELEVISION SYSTEM WITHOUT OVERLAP

Robert J. Gove, Plano; Donald B. Doherty, Richardson; Scott D. Heimbuch; Paul M. Urbanus, both of Dallas, and Stephen W. Marshall, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 148,768, Nov. 4, 1993, abandoned. This application Mar. 20, 1995, Ser. No. 407,788

Int. Cl.[6] H04N *9/64*

U.S. Cl. 348—716 **21 Claims**



1. A video data formatter for a video system having a plurality of processing channels, comprising:

a line segment mapper responsive to the plurality of processing channels and operable to remove pixels from adjacent processing channels that are common to both channels, such that data for said common pixels is not repeated when said data is displayed, said line segment mapper further operable to divide each of said processing channels into two or more segments; and

a data format unit responsive to said line segment mapper and operable to coupled said segment so as to create at least one stream of video data for display.

5,488,432

VIDEO SIGNAL PROCESSING METHOD FOR CHANGING A VIDEO SIGNAL DISPLAY FORMAT

Jean-Claude Guillon, Gustheim, and Laurent Perdrieau, Illkirch, both of, France, assignors to Laboratoire Europeen de Recherches Electroniques Avancees Societe en Nom Collectif, Courbevoie, France

Continuation of Ser. No. 130,412, Oct. 1, 1993, abandoned, which is a continuation of Ser. No. 726,336, Jul. 5, 1991, abandoned. This application Dec. 21, 1994, Ser. No. 361,172

Claims priority, application France, Jul. 13, 1990, 90 08951

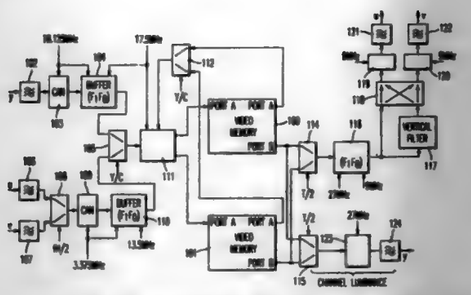
Int. Cl.[6] H04N *5/907;9/64*

U.S. Cl. 348—717 **16 Claims**

1. A processing method for a video signal coded in a form of K words, the video signal being written into and read from first and second frame memories each including an input port, and low and high speed output ports, comprising the steps of:

forming an input digital video signal from sets of M blocks with N blocks containing luminance data and M–N blocks containing corresponding chrominance data;

sequentially writing the blocks of luminance and chrominance data of the input digital video signal to the frame memories, wherein for a first frame the luminance data is written to the first frame memory and the corresponding chrominance data is written to the second frame memory, and for a next frame the luminance data is alternately written to the second frame memory and the corresponding chrominance data is alternatively written to the first frame memory, and for further



frames further sequentially alternating to which frame memory the luminance data and corresponding chrominance is written; and

reading from the output ports of the frame memories blocks containing the luminance data and corresponding chrominance data.

5,488,433

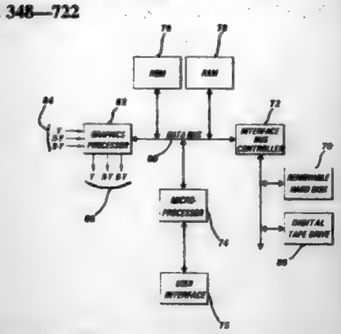
DUAL COMPRESSION FORMAT DIGITAL VIDEO PRODUCTION SYSTEM

Kinya Washino, 80 Hamilton Ave., Dunmont, N.J. 07624, and Barry H. Schwab, West Bloomfield, Mich., assignors to Kinya Washino, Mahwah, N.J.

Continuation-in-part of Ser. No. 298,104, Aug. 30, 1994, and Ser. No. 50,861, Apr. 21, 1993, Pat. No. 5,450,140. This application Mar. 1, 1995, Ser. No. 396,574

Int. Cl.[6] H04N *5/76*

U.S. Cl. 348—722 **39 Claims**



1. A digital audio/video production system adapted for use with an on-line video editing facility, the production system comprising:

a digital video recorder capable of simultaneously recording information representative of the same program source material, including correlated edit-time-code information, onto first and second removable storage media in first and second formats, respectively, the information in the first format being data-compressed relative to the information in the second format;

a programmed personal computer configured to receive the first removable storage medium, enabling an operator to edit the information representative of the program source material in the first format in off-line fashion so as to develop an edit decision list; and

means to transfer the edit decision list to an on-line video editing facility, the on-line editing facility being further configured to receive the second removable storage medium, whereby an operator of the on-line facility may edit the program source material in the second format using the edit decision list to create a final video production.

5,488,434

PICTURE ADJUSTING METHOD OF A COLOR TELEVISION AND ITS CIRCUIT

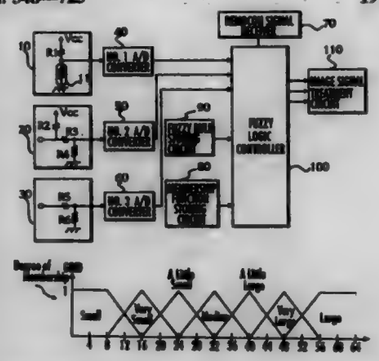
Tae-Hong Jung, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 14, 1992, Ser. No. 882,864

Claims priority, application Rep. of Korea, May 16, 1991, 91-7983

Int. Cl.[6] H04N *5/44;5/58;5/235*

U.S. Cl. 348—725 **19 Claims**



18. A picture adjusting method of a television, comprising the steps of:

providing sensed signals varying in dependence upon values obtained by sensing an ambient brightness in an environment surrounding the television, sensing a picture brightness of a visual display provided on a display screen of the television, and sensing a magnitude of video signals representative of an image within said visual display;

generating, in response to reception of a remote control signal from a remote controller, a detected distance signal upon detection of a viewing distance between said remote controller and said television;

determining adjusted values selected from a plurality of fuzzy, inference rules and membership functions representative of different levels of contrast, brightness and sharpness of the image in dependence upon the sensed signals representative of the ambient brightness, the picture brightness, the magnitude of said video signals and the detected distance signal; and

adjusting the contrast, the brightness and the sharpness of the image according to said adjusted values.

5,488,435

Patent Not Issued For This Number

5,488,436

LIQUID CRYSTAL PROJECTOR

Soon C. Chol, Kyonggi, and Ki U. Jeon, Seoul, both of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki, Japan

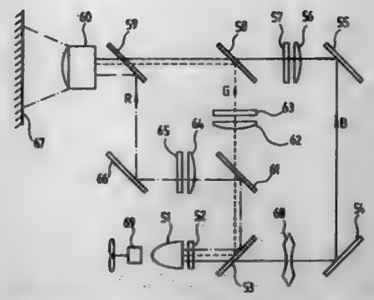
Filed Apr. 20, 1993, Ser. No. 49,448

Claims priority, application Rep. of Korea, Apr. 21, 1992, 92-6651; Sep. 15, 1992, 92-16760; Nov. 30, 1992, 92-22788

Int. Cl.[6] H04N *9/31*

U.S. Cl. 348—751 **15 Claims**

1. A liquid crystal projector which splits white light projected from a light source into first, second, and third color light components, light-intensity modulates said color light components, and synthesizes the light components to project the synthesized light components onto a screen, comprising:



first and third dichroic mirrors for transmitting only the first color light component and reflecting the second and third color light components;

a second dichroic mirror for reflecting only the third color light component and transmitting the first and second color light components; and

a fourth dichroic mirror for synthesizing the light components color-split by said first through third dichroic mirrors to send the synthesized light components to a projection lens, wherein, said first through fourth dichroic mirrors are disposed in such a manner that the projected light from said light source is reflected and transmitted via said first dichroic mirror, reflected light of said first dichroic mirror is transmitted and reflected by said second dichroic mirror, the reflected light of said second dichroic mirror reaches said fourth dichroic mirror, the transmitted light of said second dichroic mirror is reflected by said third dichroic mirror to reach said fourth dichroic mirror, and the transmitted light of said first dichroic mirror is transmitted via said third dichroic mirror to reach said fourth dichroic mirror,

wherein all of said dichroic mirrors separate one color light component from the other two color light components, said other two color light components being spectrally adjacent.

5,488,437

Patent Not Issued For This Number

5,488,438

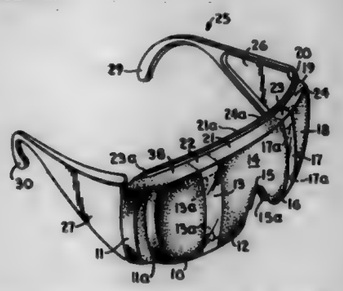
VISION CONTROL GLASSES

William A. Cochran, 17905 W. 209th St., Spring Hill, Kans. 66083

Filed Oct. 11, 1994, Ser. No. 321,444

Int. Cl.[6] G02C *7/16*

U.S. Cl. 351—45 **6 Claims**



1. Eyeglasses for aiding bowling play by limiting peripheral vision comprising:

a pair of elongate front panels joined centrally normally substantially vertically overlying both eyes of any individual,

said front panels typically somewhat rectangular, so as to substantially abut, with its lower edge, the user's cheeks under the user's eyes,

normally vertical side edges on said front panels, said vertical side edges opaqued,

elongate, substantially normally vertical side panels pivotally mounted at their front ends, each to a side edge of said front panel, said side panels pivotally collapsible, one over the other, upon the rear side of the front panels and moveable outwardly therefrom substantially parallel to one another for use;

the front panel end edges and side panel pivotal connections thereto substantially opaqued;

user ear engagements on the free ends of said side panels;

the outer portions of said front panel opaqued from outwardly inwardly at least a limited distance thereof forming a non-opaque portion;

a nose receiving indentation formed in the lower joined center edge of said front panel;

the portions of each said front panel above and adjacent to said indentation opaqued, formed together with the side edge and panel opaquing on each side, a substantially uniform width limited-viewing panel clear of opaquing.

5,488,439

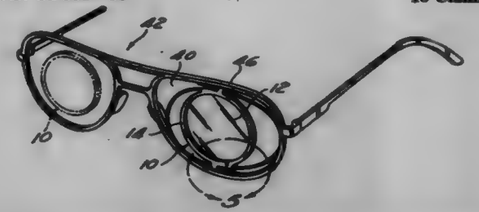
LENS HOLDER SYSTEM FOR EYEGLASS FRAME SELECTION

Alfred Weltmann, 1135 Thompson, Buffalo Grove, Ill. 60089

Filed Jun. 14, 1995, Ser. No. 490,337

Int. Cl.[6] G02C *7/08*

U.S. Cl. 351—58 **16 Claims**



1. A lens holder system for temporarily holding a prescription lens in the opening of eyeglass frames having perimeter grooves, comprising lens holders, each having:

a prescription lens;

a prescription lens encircling portion;

a pair of resilient, spring wire means with first and second end regions, said spring wires being fixably attached by said first end regions to opposing sides of said prescription lens encircling portion; and

a pair of guide means positioned on said lens encircling portion distant from the points of attachment of said first end regions of said spring wire means to said lens encircling portion;

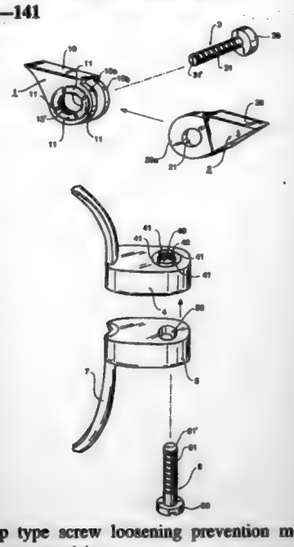
wherein each of said second end regions of said spring wires are slidably engaged with one of said guide means and said second end regions of said spring wires have terminal stop means to prevent said second end regions from being withdrawn from said guide means, said pair of spring wire means forming a pair of spring wire loops which extend from opposite sides of the lens encircling portion, and which tend to expand outwardly, and which can be contracted and expanded as desired to temporarily retain the prescription lens in the eyeglass frame during a eyeglass frame selection process.

5,488,440

CLAMP TYPE SCREW LOOSENING PREVENTION MECHANISM FOR GLASSES

Mikihito Fukuoka, Sabae, Japan, assignor to Fukuoka Seimitu Kabushiki Kaisha, Fukui, Japan

Continuation-in-part of Ser. No. 907,045, Jul. 1, 1992, abandoned. This application Sep. 8, 1994, Ser. No. 301,402
Claims priority, application Japan, Feb. 4, 1992, 4-54375
Int. Cl.[6] G02C *5/00*
U.S. Cl. 351—141 **7 Claims**



1. A clamp type screw loosening prevention mechanism for eyeglasses parts comprising:

two eyeglasses parts each of which has a piercing hole having an aligned axis, which parts are to be screw-joined to each other; and

a male screw which pierces through said piercing holes of said eyeglasses parts and screw-joins the eyeglasses parts; wherein

at the outside end surface of one of said eyeglasses parts where an end part of a threaded rod of said male screw is adapted for exiting, a split cone projection is permanently attached, the split cone projection having a bored hole extending therethrough, the bored hole having an exit end away from the outside end surface of said one of said eyeglasses parts, and at an inside wall of the bored hole, a female screw thread is provided which gradually reduces in inside diameter towards the exit end of the bored hole; and

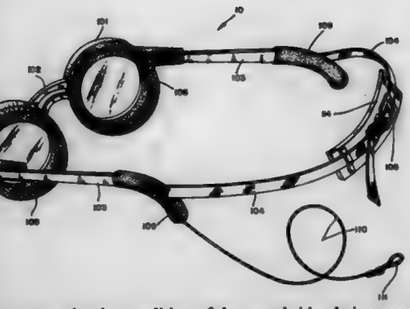
the end part of said threaded rod which is screwed into the piercing holes from a side opposite of the split cone projection is firmly joined to said female screw thread inside the split cone projection in a clamped condition by a spring-back resiliency of said split cone projection.

5,488,441

ADJUSTABLE EYEGLASSES RETAINER

Thomas W. Pomatti, 1127 15th St., Santa Monica, Calif. 90403

Continuation-in-part of Ser. No. 839,364, Feb. 21, 1992, abandoned. This application Sep. 20, 1993, Ser. No. 124,769
Int. Cl.[6] G02C *3/00*
U.S. Cl. 351—156 **18 Claims**



1. An eye-glass frame arrangement for holding a lens in front of each eye of the user comprising, in combination;

a plurality of lens supports fabricated of semi-rigid material, the shape of the internal periphery surface of said support being adapted to hold one of said lens upon the condition of said lens being popped into said support;

a nose bridge fabricated of semi-flexible material and mounted to said lens supports so that one lens is in front of each eye of the user under the condition of the nose bridge being mounted on the nose of the user;

a plurality of temple bows fabricated of semi-flexible material and mounted on said lens supports in a position engagable with the users ears;

eye pads fabricated of closed cell foam and mounted to said lens supports in a position facing the eye sockets of the user; and,

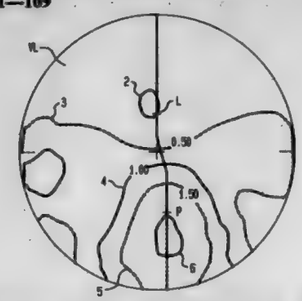
a retaining strap arrangement mountable to the ends of the temple bows remote from the lens supports and having an adjustable fastener means whereby the user may tighten said retaining strap to deform the frame arrangement from a normal position away from the eye sockets to a goggle position with said eye pads engaged with the users eye sockets.

5,488,442

PROGRESSIVE MULTIFOCAL OPHTHALMIC LENS

Christian Harsigny, Yerres; Christian Miege, Paris; Jean-Pierre Chauveau, Paris, and Françoise Ahsbahs, Paris, all of, France, assignors to Essilor International, Creteil, France

Filed Nov. 18, 1993, Ser. No. 154,336
Claims priority, application France, Dec. 11, 1992, 92 14929
Int. Cl.[6] G02C *7/06*
U.S. Cl. 351—169 **15 Claims**



1. A progressive multifocal ophthalmic lens comprising an aspherical surface having a mean sphere and a cylinder at every point thereof, said surface comprising:

a distance vision portion including a control point for distance vision,

a near vision portion including a control point for near vision,

an intermediate vision portion between said distance vision portion and said near vision portion,

a principal meridian of progression passing through the said three portions, the said lens has a power additional value defined as the variation in mean sphere between said distance vision control point on said distance vision portion and said near vision control point on said near vision portion, and in which:

the maximum value of the gradient of the mean sphere of said surface is located at a part of said principal meridian of progression that is situated within said intermediate vision portion,

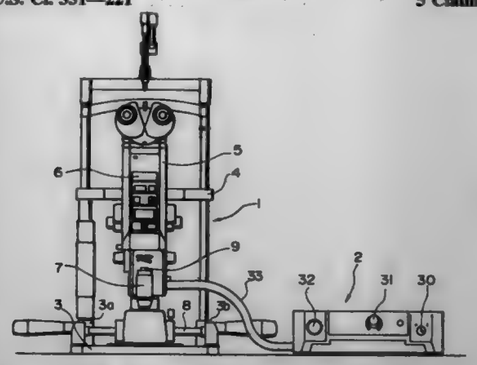
and, over the whole of said aspherical surface of the lens, the ratio of the gradient of the cylinder of said surface to said power addition value has a value that is less than a coefficient k_{cmax} equal to 0.165 mm^{-1}.

5,488,443

PORTABLE LASER APPARATUS FOR OPHTHALMOLOGICAL OPERATION

Yasuo Ota, Gamagori; Masanori Enomoto, Nishio, and Hitoshi Abe, Okazaki, all of, Japan, assignors to Nidek Co., Ltd., Gamagori, Japan

Filed Oct. 27, 1993, Ser. No. 141,539
Claims priority, application Japan, Nov. 7, 1992, 4-322386
Int. Cl.[6] A61B *3/10*
U.S. Cl. 351—221 **5 Claims**



1. A portable laser apparatus for ophthalmological operation, comprising:

an optical unit, said optical unit including

i) a slit-lamp microscope unit with an observation optical system for observing an eye to be operated,

ii) a laser light source secured to said slit-lamp microscope unit,

iii) a laser light guiding optical system for guiding treatment light emitted from said laser light source toward an affected part of the eye to be operated within an observation visual field of said slit-lamp microscope unit; said portable laser apparatus further comprising

a power source housing for containing a power source for supplying electrical power to said optical unit, said power source housing being disposed on a table;

a base with a friction plate which is attached to a top surface of said power source housing;

a slide device which includes a joy stick and slides said slit-lamp microscope unit with respect to said base by operating said joy stick; and

conductor cables for connecting said slit-lamp microscope unit and said laser light source to said power source;

said laser apparatus being made easy to carry.

5,488,444

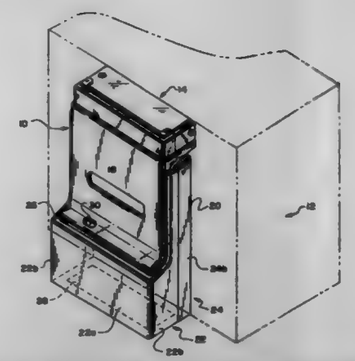
CAMERA BACK ADAPTER AND METHOD

Philip R. Norris, North Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 8, 1994, Ser. No. 302,220
Int. Cl.[6] G03B *17/50*
U.S. Cl. 354—83 **13 Claims**

1. Apparatus adapted to be mounted on an image recording apparatus and adapted for removably receiving therein a transport assembly which houses a photographic film cassette containing at least an instant developable film, the transport assembly being actuatable so that the film unit can be exposed while in the cassette, said apparatus comprising:

a housing assembly including means for securing said housing assembly to an image recording apparatus; receiving means for removably receiving therein a transport assembly containing a photographic film cassette; and an exposure aperture which allows the film unit to be exposed by the image recording apparatus when received within said receiving means;



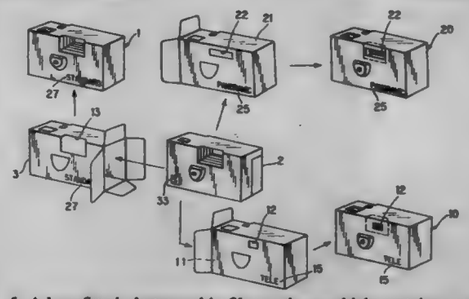
blocking means coupled to said housing assembly and being operable in a first mode for normally blocking said exposure aperture, and being operable in a second mode in response to insertion of the transport assembly into said receiving means so as to unblock said aperture and allow exposure of a film unit, said blocking means being returnable to said first mode to reblock said aperture prior to removal of the transport assembly from said receiving means.

5,488,445

LENS-FITTED PHOTOGRAPHIC FILM PACKAGE AND PRODUCTION METHOD THEREFOR

Nakao Oi, Kanagawa, and Hiroshi Komatsuzaki, Tokyo, both of, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 172,247, Dec. 23, 1993, abandoned, which is a division of Ser. No. 849,536, Mar. 11, 1992, Pat. No. 5,343,265. This application Mar. 20, 1995, Ser. No. 406,802
Claims priority, application Japan, Mar. 11, 1991, 3-70567
Int. Cl.[6] G03B *17/24*
U.S. Cl. 354—106 **29 Claims**



1. A lens-fitted photographic film package which contains a roll of photographic film, and has a taking lens, an exposure mechanism and a film winding mechanism which are adapted to photograph picture frames of a standard size, and which has a construction unsuitable for repeated film loading, said lens-fitted photographic film package comprising:

a light-tight cassette for winding up said photographic film therein after exposure;

visible indicia for indicating only one photography type other than standard photography type, said visible indicia being disposed on an outer surface of said lens-fitted photographic film package;

second indicia for indicating the same photography type as the type indicated by said visible indicia, said second indicia being prerecorded on one of said light-tight cassette and said photographic film prior to assembly of said photographic film in said film package and being adapted to be utilized for determining a format of photographic prints to be made from said standard size photographic picture frames in correspondence with the photography type indicated by said visible indicia; and

a view field defining element fixedly disposed for defining a single viewed field through a standard size viewfinder on said package, such that said viewed field corresponds to a partial area of said standard size photographic picture frame to be printed corresponding to said photography type other than standard photography type, said second indicia having information of said partial area to be used for making said photographic prints.

5,488,446

INDICATOR WITHIN FINDER OF SINGLE LENS REFLEX CAMERA

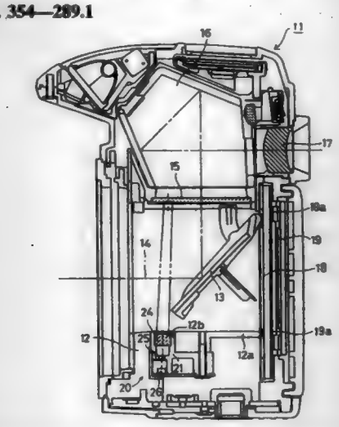
Tadayuki Kirigaya; Kaoru Imakyure; Hiroyasu Ozaki, and Hiroshi Kurei, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1994, Ser. No. 230,148

Claims priority, application Japan, May 14, 1993, 5-112691

Int. Cl.[6] G03B *17/00*

U.S. Cl. 354—289.1 **13 Claims**



1. An indicating apparatus within a finder of a single lens reflex camera, comprising:

a mirror which reflects light of an object transmitted through a photographing lens to form an object image on a focusing plate;

a finder optical system through which an image of the object formed on a focusing plate is viewed;

a mirror box which supports a mirror; and,

a photographing information projector provided on the lower portion of the mirror box to project a bundle of rays onto the focusing plate to form an image of the photographing information in a manner such that the bundle of rays is projected without interference from the mirror.

5,488,447

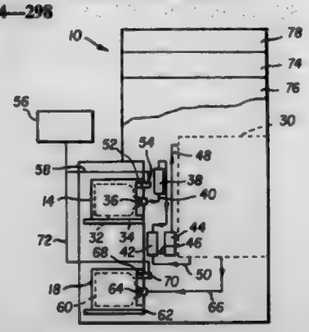
SYSTEM AND METHOD FOR TRANSFERRING A FLUID BETWEEN A CONTAINER AND AN ASSOCIATED APPARATUS FOR USING THE FLUID

David L. Patton, Webster; Clark E. Harris, Fairport, and John H. Rosenburgh, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 22, 1994, Ser. No. 363,102

Int. Cl.[6] G03D *13/00*

U.S. Cl. 354—298 **16 Claims**



1. A system for delivering fluid between at least one container for fluid and an associated apparatus for using fluid, the system comprising:

at least one container for fluid;

a first status code member associated with the container to indicate whether the container has been opened;

a second status code member associated with the container to indicate whether or not the container has been emptied of a first fluid;

a third status code member associated with the container to indicate a type of the first fluid;

a first sensor associated with the apparatus to cooperate with the first status code member and produce a first signal indicative of an opened or unopened container;

a second sensor associated with the apparatus to cooperate with the second status code member and produce a second signal indicative of a container emptied of a first fluid;

a third sensor associated with the apparatus to cooperate with the third status code member and produce a third signal indicative of a type of fluid; and

a controller for receiving and processing the first to third signals to determine whether the proper container has been installed to deliver the first fluid to the apparatus.

5,488,448

FILM CARTRIDGE RECOVERY TOOL

Thomas C. Merle; Dale W. Ryan, both of Rochester; Walter C. Slater, Prattsburg; David L. Rowden, Rochester; Gerald F. Sherman, Jr., LeRoy, and Alfonso Ianni, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 9, 1994, Ser. No. 336,599

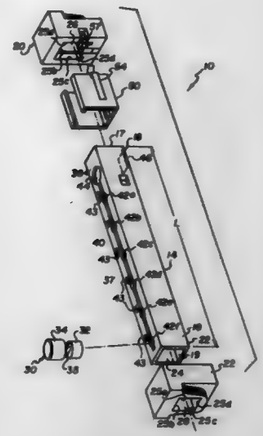
Int. Cl.[6] G03D *17/00;13/14*

U.S. Cl. 354—313 **30 Claims**

1. A recovery tool for receiving film cartridges and for storing said cartridges in a predetermined sequence, said recovery tool comprising:

a generally tubular member having a receiving chamber designed to hold a plurality of film cartridges in a single column, one cartridge above the other, said chamber having an upper end and a lower end, an inlet/outlet opening is provided at the upper end of said tubular member for allowing film cartridges to be inserted into or removed from said chamber; and

means for limiting the number of film cartridges that can be placed into said receiving chamber.



5,488,449

INFINITE-DISTANCE DETECTING CIRCUIT FOR AN AUTO-FOCUS SYSTEM

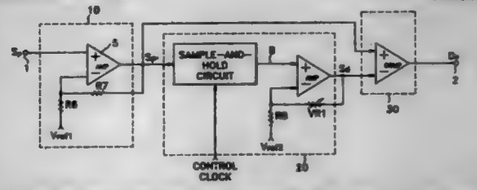
Ho-gui Joo, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 11, 1994, Ser. No. 180,862

Claims priority, application Rep. of Korea, Jan. 11, 1993, 93-244

Int. Cl.[6] G03B *13/36*

U.S. Cl. 354—402 **3 Claims**



1. An infinite-distance detecting circuit for use in a camera auto-focus system which receives a position detection signal from a position status detector, said position detection signal varying in accordance with an object-to-camera distance, and said circuit comprising:

an amplifier section receiving and amplifying said position detection signal;

a reference signal generation section sampling said amplified position detection signal, holding said sample as a reference signal level, and amplifying said reference signal to produce an infinite-distance-determining reference signal; and

a comparator comparing said amplified position detection signal with said infinite-distance-determining reference signal, and producing an output indicative of whether the position detection signal is less than a predetermined reference value.

5,488,450

IMAGE PRINTER

Toru Tanibata, Wakayama, Japan, assignor to Noritsu Koki, Co., Japan

Filed Mar. 17, 1994, Ser. No. 214,612

Claims priority, application Japan, Mar. 18, 1993, 5-057642; Jun. 11, 1993, 5-140249

Int. Cl.[6] G03B *27/72*

U.S. Cl. 355—38 **18 Claims**

1. An image printer comprising:

a projection-exposure section for projecting an image born on a film onto a photosensitive material;

an image-exposure section for exposing the photosensitive material based on image information obtained from said film, said image information comprising a plurality of image areas each including color data relating to a plurality of colors; and

transport means for transporting the photosensitive material along a transport path through the projection-exposure section and the image-exposure section;

wherein said image-exposure section includes:

a plurality of exposure means for dividing the image information into a plurality of lines and exposing the photosensitive material with exposing colored light according to the color data;

moving means for moving said plurality of exposure means and said photosensitive material relative to each other in a direction perpendicular to said lines, and

moving-exposure control means for controlling operations of said exposure means and said moving means, said exposure control means being capable of effecting a moving exposure control in which said plurality of exposure means respectively effect exposure operations thereof in a parallel manner.

5,488,451

METHOD OF PRODUCING MULTIDIMENSIONAL LITHOGRAPHIC SEPARATIONS FREE OF MOIRE INTERFERENCE

Timothy P. Goggins, Nashota, Wis., assignor to National Graphics, Inc., Brookfield, Wis.

Filed May 3, 1994, Ser. No. 237,874

Int. Cl.[6] G03B *27/32;35/14*

U.S. Cl. 355—77 **10 Claims**



1. A method of producing a multidimensional lithographic separation void of moire and screen interference, the separation comprising a plurality of segments created from a plurality of electronic frames and from which a multidimensional lithograph can be produced and joined to a lenticular lens of a predetermined line count, the method comprising the steps of:

A. Creating a plurality of electronic frames;

B. Ordering the frames into a desired sequence;

C. Rasterizing each frame at a nonbinary pixel resolution according to the formula

$$\text{resolution} = l \text{ times } f$$

in which l is the lenticular line count and f is the number frames in the lithographic separation;

D. Compressing each frame such that each frame is compressed according to the formula

$$\text{Compression} = 1/f$$

in which f is the number of frames in the separation;

E. Converting the nonbinary pixels of the compressed frames to individual color plates of binary pixels;

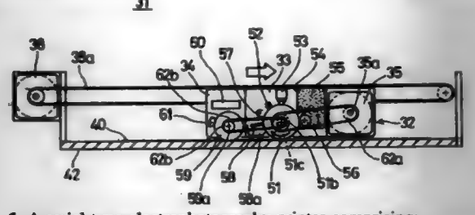
F. Interlacing the frames in the desired sequence of step (B);
G. Outputting the interlaced frames to an imaging device; and
H. Producing a lithographic separation from the imaging device of step G.

5,488,452

SERIAL TYPE ELECTROPHOTOGRAPHY PRINTER FOR FORMING A LATENT IMAGE AND DEVELOPING AND PRINTING THE DEVELOPED IMAGE

Ryoichi Iwama, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 21, 1994, Ser. No. 278,324
Claims priority, application Japan, Sep. 16, 1993, 5-230444
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—202 **10 Claims**



1. A serial type electrophotography printer comprising:
transport means for transporting a recording sheet in a transport direction;
a carriage including process means and fixing means, said process means including an image bearing member rotatable about a rotary axis parallel to the transport direction of the recording sheet and a toner developing a latent image formed by charging the image bearing member, said fixing means including a rotatable fixing member and heating means for heating the fixing member, said fixing member fixing a developed image which is transferred onto the recording sheet from the image bearing member;
driving means for rotating the image bearing member and the fixing member when said carriage is moved to carry out developing, transfer and fixing processes with respect to the recording sheet, and for rotating at least one of the image bearing member and the fixing member during a predetermined time other than the time when said carriage is moved to carry out the developing, transfer and fixing processes;
transfer means, confronting said carriage via the recording sheet in a main scan direction of said carriage, for transferring the developed image on the image bearing member onto the recording sheet; and
moving means for moving said carriage in the main scan direction which is perpendicular to the transport direction of the recording sheet.

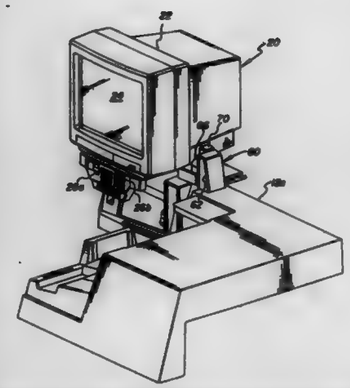
5,488,453

OPERATOR CONTROL INTERFACE MOUNTING MECHANISM

Brian R. Labudde, Rochester, and Frank Hacknauer, Honeoye Falls, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 29, 1994, Ser. No. 283,010
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—202 **22 Claims**

1. A mechanism for mounting a user control interface for inputting instruction signals to a logic and control unit controlling the operation of functional elements within the housing of a reproduction apparatus for movement relative to the reproduction apparatus housing, said mounting mechanism comprising:
a user control interface support platform;
means for slidably supporting said platform for movement, relative to said reproduction apparatus housing, to a home



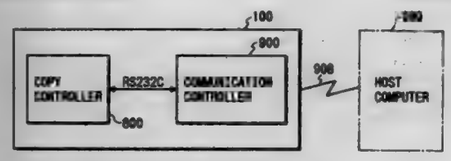
position and a position spaced from said home position where said user control interface is readily accessible by a user; and
means for automatically moving said platform to its home position when a portion of said reproduction apparatus housing is opened to provide access to the interior of said housing.

5,488,454

CONTROL OF EQUIPMENT AND OF COMMUNICATION WITH PLURAL UNITS OF EQUIPMENT

Taisei Fukuda, Tokyo; Masanori Miyata, Yokohama; Hideki Adachi; Shinichi Nakamura, both of Kawasaki; Naoyuki Ohki; Tokuharu Kaneko, both of Yokohama; Satoshi Kuroyanagi; Hiroshi Ozaki, both of Tokyo, Japan; Hisatsugu Tahara; Satoshi Kaneko, both of Kawasaki, and Mitsuharu Takizawa, Tokyo, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 212,387, Mar. 14, 1994, abandoned, which is a continuation of Ser. No. 868,342, Apr. 15, 1992, abandoned. This application Sep. 14, 1994, Ser. No. 305,820
Claims priority, application Japan, Apr. 18, 1991, 3-085605; Apr. 18, 1991, 3-085614; Apr. 18, 1991, 3-085617
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—202 **38 Claims**



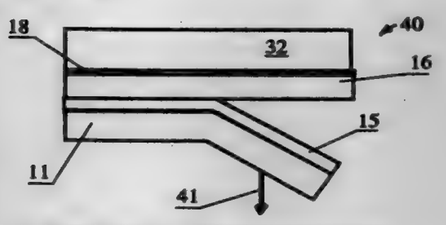
6. An equipment control unit comprising:
first storage means for storing data;
equipment control means for controlling operation of an equipment based on the data stored in said first storage means;
second storage means for storing data;
communication control means for controlling transmission and reception of data to and from an external device based on the data stored in said second storage means; and
data transfer means for holding identical contents of said first storage means and said second storage means.

5,488,455

ELECTROGRAPHICALLY PRODUCED IMAGED ARTICLE

Douglas A. Cahill, Belchertown; Donald A. Brault, Granby; Richard S. Himmelwright, Wilbraham, and Dene H. Taylor, Holyoke, all *of* Mass., assignors to Rexam Graphics, South Hadley, Mass.

Division of Ser. No. 219,395, Mar. 29, 1994, which is a continuation-in-part of Ser. No. 115,563, Sep. 3, 1993, Pat. No. 5,363,179, which is a continuation-in-part of Ser. No. 42,278, Apr. 2, 1993, abandoned. This application May 30, 1995, Ser. No. 453,383
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—202 **12 Claims**



1. An imaged article comprising in the order given:
1) a receptor substrate;
2) a toned image;
3) a single, continuous transparent layer comprising an adhered combined adhesive and dielectric layer which is substantially tack-free at ambient temperature and which has a dielectric constant of about 2 to 5, wherein the image and transparent layer have been placed on the substrate by a process comprising the steps of:
A) electrographically depositing an electrostatic charge in image-wise fashion onto an image receptive surface of an electrographic element comprising in the order given;
i) a conductive base,
ii) a release layer, and
iii) the single, transparent, combined dielectric and adhesive layer, wherein said combined dielectric and adhesive layer is substantially tack-free at ambient temperature, and is activated at a temperature which is above ambient temperature of the electrographic element, and has a dielectric constant of about 2 to 5, the image receptive surface being an exposed surface of said single combined dielectric and adhesive layer, to form a latent image;
B) applying a toner layer onto said electrostatic charge to produce a toned image;
C) contacting said toned image and combined adhesive and dielectric layer with a surface of the receptor substrate at a temperature sufficient to activate the combined dielectric and adhesive layer to adhere the electrographic element to the substrate and
D) removing the conductive base and the release layer from the combined dielectric and adhesive layer of the electrographic element adhered onto the receptor substrate following step (C), to form the imaged article.

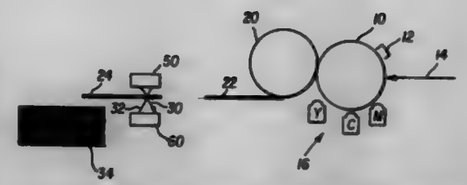
5,488,456

METHOD AND APPARATUS FOR DETECTING WHICH SIDE OF A RECORDING SHEET CONTAINS A COATING

Feraydoon S. Jamzadeh, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 15, 1993, Ser. No. 168,003
Int. Cl.[6] G03G *15/00*; G01N *21/64*
U.S. Cl. 355—203 **5 Claims**

1. A detecting device for an image-recording sheet having front and rear surfaces that have coatings having an ultraviolet-absorbing material that fluoresces light at a higher wavelength on the front surface, said detecting device comprising:



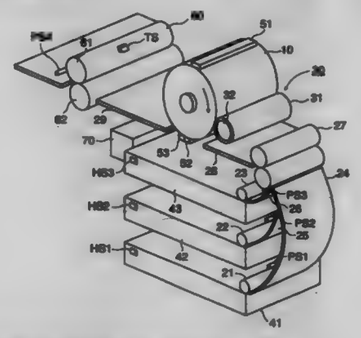
means for directing an ultraviolet light against both surfaces of the recording sheet;
means for measuring the amount of light at said higher wavelength from each surface;
means for comparing the amount of light at said higher wavelength from each surface to determine which surface fluoresced light at a higher wavelength; and
means for determining if the recording sheet is properly oriented by determining if the light at said higher wavelength was emitted from the front surface.

5,488,457

IMAGE FORMING APPARATUS WITH POWER SOURCE CONTROL

Kiyohari Nakagawa, and Mitsugu Nemoto, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Aug. 10, 1994, Ser. No. 288,044
Claims priority, application Japan, Sep. 1, 1993, 5-217656
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—203 **6 Claims**



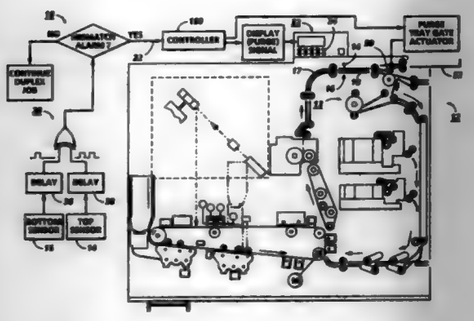
1. An image forming apparatus comprising:
a high voltage power source;
a plurality of sheet storing cassettes for storing recording sheets therein;
a moisture sensor for sensing moisture;
transfer means for transferring an image to the recording sheets by applying transfer current generated at the high voltage power source;
cut-off period estimating means for estimating a cut-off period of the high voltage power source based on a combination of surface temperature of a fixing roller and heat radiation of said fixing roller during an elapsed time period;
measuring means for measuring an elapsed time period after one of said sheet storing cassettes is mounted onto said apparatus;
moisture content conversion means for converting the moisture sensed by said moisture sensor and said elapsed time period into moisture content data; and
a control circuit for controlling an output of said high voltage power source based on said moisture content data.

5,488,458

DUPLEX PRINTING INTEGRITY SYSTEM

Lawrence R. Benedict, Rushville, and Gaith O. Zayed, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 8, 1995, Ser. No. 438,139
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—206 **8 Claims**



1. In a duplex printing integrity system for insuring that correctly matching pages are being printed by a duplex printer on the opposing first and second sides of the printed duplex document sheets, wherein said duplex printer has a duplex loop path for circulating sheets printed on one side back to be printed on their opposite side, and an output path for feeding out the duplex document sheets after they have been printed on both sides, said printer being operable to selectively print marks on selectable areas of said duplex document sheets, the improvement comprising:

a first optical sensor positioned in said output path of said duplex printer positioned to line scan said first sides of said printed duplex document sheets as said printed duplex document sheets are fed past said first optical sensor;

a second optical sensor positioned in said output path of said duplex printer positioned to line scan said second sides of said printed duplex document sheets as said printed duplex document sheets are fed past said first optical sensor; and

said opposing first and second sides of a sequence of respective said printed duplex document sheets being printed with correspondingly spaced and parallel said print marks, but with different spacings of said marks on said sheets for different said sheets in said sequence.

5,488,459

IMAGE BEARING MEMBER HAVING AN ASYMMETRICALLY WEIGHTED BASE, PROCESS CARTRIDGE AND IMAGE FORMING APPARATUS

Tadayuki Tsuda; Kazumi Sekine; Isao Ikemoto, all of Kawasaki; Kazushi Watanabe, Yokohama; Yoshikazu Sasago; Yasushi Shimizu, both of Tokyo; Shinya Noda, Yokohama, and Kazunori Kobayashi, Kawasaki, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

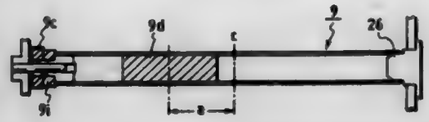
Filed Jun. 28, 1993, Ser. No. 84,489
Claims priority, application Japan, Jun. 30, 1992, 4-194661
Int. Cl.[6] G03G *5/00*
U.S. Cl. 355—211 **33 Claims**

1. An image bearing member contacting with a charge member to which a vibrating voltage can be applied, comprising:

an image bearing layer capable of bearing an image thereon;

a base for supporting said image bearing layer;

a drive force transmitting portion disposed at one end of said image bearing member in a generatrix direction thereof; and



a weight portion provided to be contacted with substantially all of an inner peripheral surface of said base, said weight portion being arranged so that a center thereof is offset from a center of said base toward said drive force transmitting portion in the generatrix direction.

5,488,460

Patent Not Issued For This Number

5,488,461

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER AND ELECTROPHOTOGRAPHIC APPARATUS USING THE SAME

Shintetsu Go; Yoshio Kashizaki, both of Yokohama; Koichi Suzuki, Kawasaki; Kazuma Sato, Yokohama, and Akira Shimada, Tokyo, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 148,337, Nov. 8, 1993, abandoned. This application Mar. 6, 1995, Ser. No. 400,007
Claims priority, application Japan, Nov. 6, 1992, 4-297249
Int. Cl.[6] G03G *5/00;7/00*
U.S. Cl. 355—211 **34 Claims**

1. An electrophotographic photosensitive member comprising: a support, and an intermediate layer and a photosensitive layer disposed on the support in this order; wherein the intermediate layer comprises a coated powder having a resistivity of 0.1 to 1,000 ohm.cm comprising barium sulfate fine particles coated with a coating layer comprising tin oxide having a reduced oxygen content.

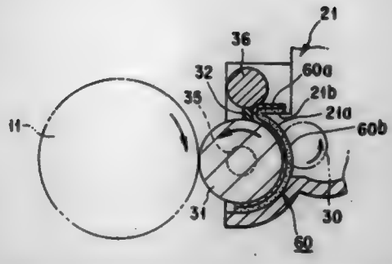
5,488,462

ELECTROPHOTOGRAPHIC APPARATUS HAVING DEVELOPING DEVICE WITH SEALS FOR PREVENTING TONER LEAKAGE

Masaaki Ishikawa; Michihisa Iguchi; Hiroshi Hashizume; Tetsuya Nakamura; Kouichirou Satou; Yoshiaki Okano; Hirotaka Fukuyama; Satoshi Katagata; Takashi Ishikawa; Seiji Arai; Chinobu Sakai, and Takahito Kabai, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 113,694, Aug. 31, 1993. This application Jun. 10, 1994, Ser. No. 258,186
Claims priority, application Japan, Aug. 31, 1992, 4-231675; Aug. 31, 1992, 4-257321; Aug. 31, 1992, 4-257322; Sep. 25, 1992, 4-256780
Int. Cl.[6] G03G *21/00*
U.S. Cl. 355—215 **10 Claims**

1. A developing device for developing an electrostatic latent image formed on a surface of a photosensitive member by using



toner which is charged by friction between a developing roller and a toner restriction member to have a predetermined polarity, the developing device comprising:

a casing including an inner wall facing side end portions of a surface of the developing roller, the inner wall being located at an upstream side of conveyance of toner with respect to the toner restriction member; and

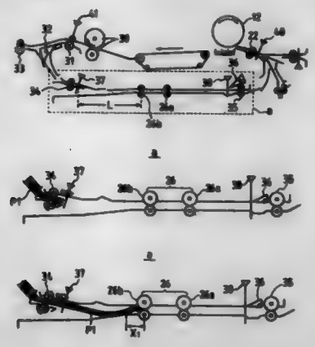
a seal member disposed between the side end portions of a surface of the developing roller and said inner wall of said casing, the seal member comprising a material which is charged to have the predetermined polarity by friction with the developing roller.

5,488,463

IMAGE FORMING APPARATUS TO FORM IMAGES ONTO A SHEET A PLURALITY OF TIMES

Mitsuo Nimura, Kawasaki; Kazuhiko Hirooka, Tokyo; Shokyo Koh, and Masao Watanabe, both of Kawasaki, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1994, Ser. No. 193,573
Claims priority, application Japan, Feb. 8, 1993, 5-041813
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—322 **29 Claims**



1. An image forming apparatus comprising:

image forming means for forming an image onto a sheet which is conveyed;

first and second conveying means for again conveying the sheet from said image forming means to said image forming means, said second conveying means stopping a first one of the sheets conveyed by said first conveying means at a first predetermined position and, after a second one of the sheets which is conveyed subsequently to the first sheet by said first conveying means is conveyed to a second predetermined position on the first sheet, said second conveying means conveying the first and second sheets in a partially overlapped state and separating the first sheet and supplying the separated first sheet to said image forming means; and

detecting means, positioned at a first distance from said second conveying means, for detecting a front edge of a sheet which is conveyed to said first conveying means,

wherein, in a state where said first conveying means is conveying the first sheet and said second conveying means is stopped, after the first sheet is conveyed by said first conveying means by a first predetermined amount after the front edge of the first sheet has been detected by said detecting means, the first predetermined amount being larger than the first distance, said second conveying means conveys the first sheet and stops the first sheet at the first predetermined position, and

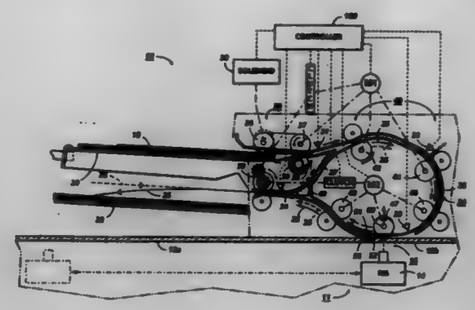
wherein, in a state where said first conveying means is conveying the second sheet and said second conveying means is stopped, after the second sheet is conveyed by said first conveying means by a second predetermined amount after the front edge of the second sheet has been detected by said detecting means, the second predetermined amount being larger than the first distance and being different from the first predetermined amount, said second conveying means conveys the first and second sheets.

5,488,464

CONSTANT VELOCITY TRANSPORT FOR ELECTRONIC DOCUMENT IMAGING

Stephen J. Wenthe, Jr., West Henrietta; Margaret C. Plain, Rochester, and Robert F. Rubocha, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 31, 1994, Ser. No. 251,064
Int. Cl.[6] G03B *27/32;* H04N *1/12;* G03G *15/00*
U.S. Cl. 355—233 **7 Claims**



1. In a document handler for sequentially feeding document sheets over an imaging platen to be imaged at a constant velocity with a constant velocity drive motor driving a document sheet feeding roller overlying said imaging platen for feeding engagement of document sheets between said constant velocity driven document sheet feeding roller and said platen when a forward driving signal is applied to said constant velocity drive motor, said document handler providing a document sheet feeding path from a document input to said imaging platen and to a document output, the improvement comprising:

a document feeding control system which predicts when said constant velocity driven sheet feeding roller will be driven against said imaging platen with no document sheet therebetween; and

an automatic lifting system which automatically lifts said constant velocity document sheet feeding roller away from said imaging platen in response to said document feeding control system predicting that no document sheet will be between said constant velocity driven sheet feeding roller and said platen and said forward driving signal is being applied to said constant velocity drive motor;

wherein said constant velocity document sheet feeding roller has at least four sections of two different diameters, comprising an inner pair of common diameter feed roller surfaces, and an outer pair of slightly smaller diameter surfaces on opposite axial sides of said inner pair of feed roller surfaces which are not feeding roller surfaces.

5,488,465

ELECTROPHOTOGRAPHIC DEVELOPING METHOD USING MAGNETIC DEVELOPING MATERIAL AND APPARATUS EMPLOYED THEREFOR

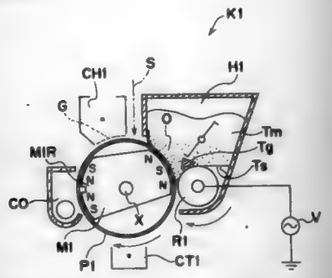
Hajime Yamamoto, Ibaraki, and Hiroshi Terada, Ikoma, both of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 27, 1992, Ser. No. 919,905

Claims priority, application Japan, Jul. 26, 1991, 3-187272; Sep. 17, 1991, 3-236061; Dec. 27, 1991, 3-345990; Dec. 27, 1991, 3-346128; Dec. 27, 1991, 3-346132; Feb. 4, 1992, 4-018616

Int. Cl.[6] G03G *13/00*

U.S. Cl. 355—246 **4 Claims**



1. An electrophotographic apparatus which comprises:

a movable electrostatic latent image holding member enclosing a fixed magnet means therein,

a charger means for charging said latent image holding member;

a latent image forming means for forming an electrostatic latent image on said latent image holding member,

a developing material hopper confronting a surface of said latent image holding member and containing a magnetic developing material therein so as to cause the developing material to be magnetically attracted and adhere onto the surface of said latent image holding member by an action of said fixed magnet means, and

all electrode roller provided through a gap with respect to the surface of said electrostatic latent image holding member, charging width of said latent image holding member by said charger means being larger than magnetizing width of said fixed magnet means.

5,488,466

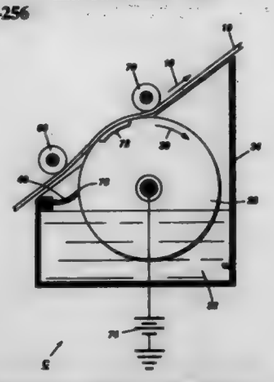
LIQUID DEVELOPMENT SYSTEM

Christian O. Abreu, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 8, 1994, Ser. No. 287,556

Int. Cl.[6] G03G *15/10*

U.S. Cl. 355—256 **11 Claims**



1. An apparatus for developing a latent image recorded on a flexible member with a liquid developer material, including: a housing defining a chamber having an open end for storing a supply of the liquid developer material therein; and

a donor roll having an exterior circumferential surface, said donor roll being at lease partially immersed in the liquid developer material being stored in the chamber of said housing and advancing the liquid developer material to the latent image through the open end of the chamber of said housing, with the flexible member having a portion thereof wrapped about a portion of the exterior circumferential surface of said donor roll so as to form an extended development zone; and

means for adjusting the liquid developer material on said donor roll to a thickness ranging from about 3 microns to about 10 microns.

5,488,467

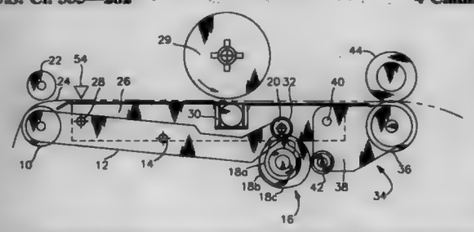
LASER PRINTER PAPER HANDLING SYSTEM

Faustin T. Marentes, Montebello, and Jorge Monasterio, Lake Forest, both of Calif., assignors to RJS, Inc., Monrovia, Calif.

Filed Jun. 24, 1994, Ser. No. 265,232

Int. Cl.[6] G03G *15/20*

U.S. Cl. 355—282 **4 Claims**



1. A bidirectional paper feed system for laser printers comprising:

a registration roller movable from a first position engaging a print media for frictional drive and a second position releasing said media;

means for selectively engaging the print media intermediate a photoconductive drum and a transfer unit, said engaging means movable from a first position to a second position;

a fuser roller positionable in a first position separated from said print media and a second position engaging said print media for frictional transport of the media;

first means for controllably positioning said registration roller between said first and second position;

second means for controllably positioning said engagement means between said first and second position;

third means for controllably positioning said fuser roller between said first and second positions;

reversible drive means separably connected to drive said registration roller and said fuser roller and responsive to a drive signal; and

a controller for controlling said first, second and third positioning means, said controller executing a first state wherein the registration roller is in said first position, said engagement means is in said first position and said fuser roller is in said first position, a second state wherein said registration roller is in said first position, said engagement means is in said second position and said fuser roller is in said first position and a third state wherein said registration roller is in said second position, said engagement means is in said second position and said fuser roller is in said second position, said controller further selectively issuing a forward drive signal in said first, second and third state and selectively issuing a reverse drive signal in said first state.

5,488,468

OPTICAL DISTANCE MEASURING APPARATUS HAVING SEMICONDUCTOR POSITION SENSITIVE PHOTODETECTOR

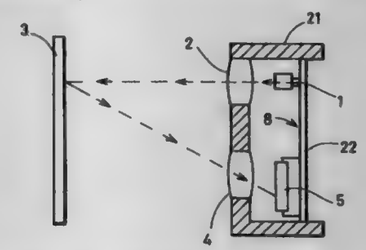
Shinya Kawanishi, Tenri; Kouichi Furuta, Nara, and Keiichi Okada, Yamatokouriyama, all of, Japan, assignors to Sharp Kabushiki Kaisha, Japan

Filed Dec. 22, 1992, Ser. No. 994,970

Claims priority, application Japan, Dec. 26, 1991, 3-344892; Jan. 7, 1992, 4-000087 U; Mar. 24, 1992, 4-065754; May 6, 1992, 4-113489

Int. Cl.[6] G01C *3/08*

U.S. Cl. 356—4.01 **20 Claims**



1. A distance measuring apparatus, comprising:

a light, emitting element;

a light receiving element;

a wiring board having a signal processing circuit formed thereon detecting a signal current from said light receiving element; and

a housing case including a conductive material, accommodating at least said light receiving element, for directing light from said light emitting element to an object to be detected, receiving light reflected by the object at said light receiving element and measuring a distance to the object based on the signal current, wherein said housing case electrically shields at least said light receiving element from noise.

5,488,469

CELL ANALYZING APPARATUS

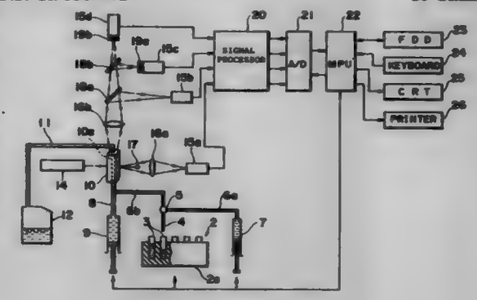
Koji Yamamoto; Masahiro Hasafusa, both of Kyoto; Fumio Onuma, Kameoka, and Michio Nishimura, Osaka, all of, Japan, assignors to Omron Corporation, Kyoto, Japan

Filed Aug. 28, 1992, Ser. No. 936,680

Claims priority, application Japan, Aug. 30, 1991, 3-219737; Sep. 2, 1991, 3-221390; May 14, 1992, 4-121787

Int. Cl.[6] G01N *21/00*

U.S. Cl. 356—72 **10 Claims**



1. A cell analyzing apparatus comprising:

a flow cell through which a specimen flows;

a light source for irradiating cells in the specimen flowing through said flow cell;

cell light-information detecting means for detecting cell light information as detected cell light information, said detected cell light information comprising at least one parameter for each cell irradiated with the light source;

cell light-information selecting means for selecting, as selected cell light information, cell light information from the detected cell light information;

cell light-information processing means for processing the detected cell light information and the selected cell light information;

control specimen concentration information measuring means for measuring a control cell count of a control specimen having a known concentration;

subject specimen information measuring means for measuring a subject cell count of a subject specimen; and

subject specimen concentration correcting means for correcting the subject cell count, based upon the control cell count, to obtain the concentration of the subject specimen,

output means for outputting results of at least one of processing by said cell-light information processing means, measuring by said control specimen concentration information measuring means, measuring by said subject specimen information measuring means, and correcting by said subject specimen concentration means;

wherein said subject specimen concentration correcting means obtains a concentration of the subject specimen, using information indicative of measurement time obtained by said control specimen concentration information measuring means, based upon a cell count of the subject specimen obtained over a measurement time identical to the measurement time obtained by said control specimen concentration information measuring means according to the formula $C=C_o\times(N/N_o)$;

wherein C represents the concentration of the subject specimen, C_o represents the concentration of the control specimen, N represents the cell count of the subject specimen and N_o represents the cell count of the control specimen.

5,488,470

BENDING ANGLE DETECTOR FOR USE IN A BENDING MACHINE

Toshiyuki Ocenoki, Hirakata, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

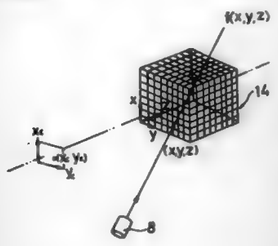
PCT No. PCT/JP93/01538, § 371 Date Jun. 29, 1994, § 102(e) Date Jun. 29, 1994, PCT Pub. No. WO94/11701, PCT Pub. Date May 26, 1994

PCT Filed Oct. 25, 1993, Ser. No. 256,083

Claims priority, application Japan, Nov. 10, 1992, 4-300112

Int. Cl.[6] G01B *11/26;* G01C *1/00;* G06F *15/46;* B21C *51/00*

U.S. Cl. 356—138 6 Claims



1. A bending angle detector for use in a bending machine in which a sheet-like workpiece is bent at a specified angle by means of an upper bender and a lower bender, the detector comprising:

(a) projector means for projecting spot lights onto an object to be photographed forming bright points on a surface of the object;

(b) photographing means for photographing the object to be photographed on the surface of which bright points are formed by the projector means;

(c) coordinate transformation parameter calculating means a) for forming a virtual cubic lattice in space by moving, at a specified pitch, a lattice pattern which is formed by arranging a number of reference positions in the lattice pattern of a cubic lattice on the surface of the object to be photographed, and b) for calculating a coordinate transformation parameter from a plurality of images obtained by photographing each point of the cubic lattice, the coordinate transformation parameter being used for transformation between a space coordinate system in which each axis of the cubic lattice is set as a reference axis and a plane coordinate system which represents an image plane of the photographing means;

(d) linear equation calculating means for calculating a linear equation representing, in the space coordinate system, each spot light projected by the projector means from positions of at least two bright points formed in the lattice patterns of the cubic lattice;

(e) coordinate value transforming means a) for photographing a bent workpiece on outer faces of which at least three bright points are formed by projecting at least three spot lights thereon by means of the projector means and b) for transforming coordinate values of each photographed bright point in the plane coordinate system to those of the space coordinate system by the use of the coordinate transformation parameter calculating means and the linear equation calculating means; and

(f) bending angle calculating means for calculating a planar equation representing the three bright points from the coordinate values of the at least three bright points which have been transformed to the space coordinate system by the coordinate value transforming means, herein containing an angle at which the workpiece is bent.

5,488,471

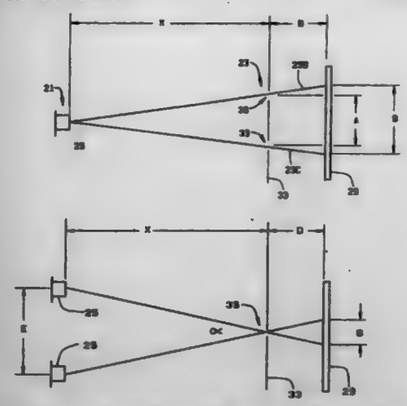
SENSORS FOR VEHICLE ALIGNMENT SYSTEM AND APPARATUS USING SAME

James W. McClenahan, 1015 Arcaro Ct., Florissant, Mo. 63034; Leigh R. Burns, Jr., 104 Kenneth, Troy, Ill. 62294; Michael T. Stieff, 20 Hill Trail Ct., Wentzville, Mo. 63385, and Daniel B. January, 737 Hidden Lake Dr., St. Peters, Mo. 63376

Filed Dec. 2, 1993, Ser. No. 162,452

Int. Cl.[6] G01B *11/26;5/24;* G01C *3/00;3/08*

U.S. Cl. 356—139.09 24 Claims



1. An improved vehicle wheel alignment system comprising:

a first sensor unit adapted to be removably mounted to a front wheel of a vehicle whose alignment is to be tested;

a second sensor unit adapted to be removably mounted to a rear wheel of the vehicle under test such that the front wheel and the rear wheel are disposed on the same side of the vehicle;

said first and second sensor units obtaining wheel alignment data for their respective wheels;

determining means for determining wheel alignment characteristics of said front and rear wheels from the wheel alignment data from the first and second sensor units;

at least one of the first and second sensor units having an active pixel array detector, said active pixel array detector providing the wheel alignment data for said sensor unit;

said first and second sensor units including means, including at least one radiation source, for projecting at least two spatially separated images upon the active pixel array detector, the spatial separation of said two images being a function of the wheelbase of the vehicle under test;

said determining means being responsive to the active pixel array detector to determine the wheelbase of the vehicle under test from the spatial separation of the images on the active pixel array detector.

5,488,472

APPARATUS FOR DETERMINING VEHICLE WHEEL ALIGNMENT POSITIONS AND ORIENTATIONS

Daniel B. January, St. Charles County, Mo., assignor to Hunter Engineering Company, Bridgeton, Mo.

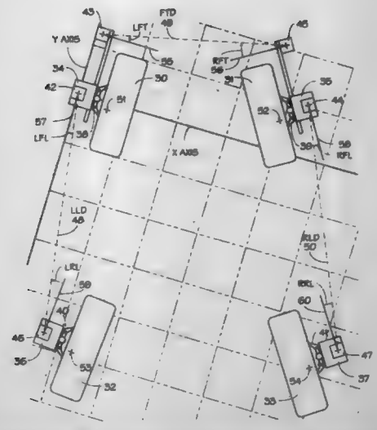
Filed Jan. 10, 1995, Ser. No. 371,007

Int. Cl.[6] G01B *11/26;5/255*

U.S. Cl. 356—139.09 32 Claims

1. A wheel alignment apparatus for determining the alignment positions and orientations of vehicle wheels in relation to an arbitrary coordinate system comprising:

at least one pair of measurement transducers, each transducer being mounted on a separate vehicle wheel in a known geometrical relationship to its corresponding wheel, at least one transducer of the pair being capable of measuring a relative bearing to the other transducer of the pair, and at least one transducer of the pair being capable of measuring a range to the other transducer of the pair;



a computer being operatively connected to each transducer, said computer being responsive to the measured range and relative bearing to determine the coordinates of the wheels on which the transducers are mounted in an arbitrary coordinate system, said computer being further responsive to transform said coordinates to corresponding coordinates in a desired reference frame, so as to provide measurements of actual wheel positions and orientations in said desired reference frame.

5,488,473

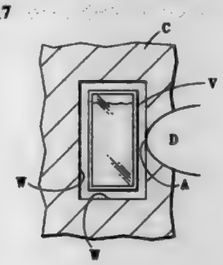
METHOD OF AND APPARATUS FOR INCREASING MEASUREMENT SENSITIVITY OF FLUORESCENCE AND LUMINESCENCE

Arthur W. Springsteen, New London, N.H., and Jeffrey L. Taylor, Mt. Airy, Md., assignors to Labsphere, Inc., N. Sutton, N.H.

Filed Mar. 1, 1994, Ser. No. 204,830

Int. Cl.[6] G01N *21/64;21/76*

U.S. Cl. 356—317 4 Claims



1. A method of increasing the sensitivity of measurement of fluorescing and/or luminescing light emitted from a volume, that comprises, enclosing the emission volume in a relatively closely fitting cavity enclosure; providing all of the inner walls of the cavity enclosing the volume with a highly reflecting diffuse material to enable all the light emitted from the emission volume inside the cavity to contribute to the radiance of the cavity inner walls, and the multiple reflections therefrom to increase the wall radiance; and positioning a detector to maximize its view of the radiant walls.

5,488,474

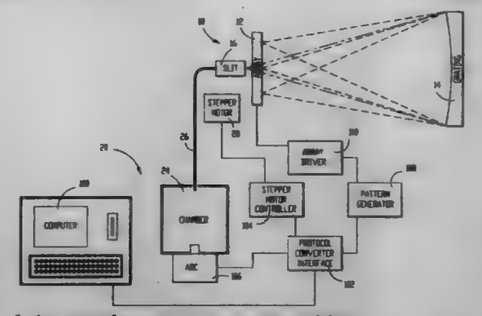
HADAMARD PHASING IN A MULTISOURCE ARRAY

William G. Fateley, and Radoslaw Sobczynski, both of Manhattan, Kans., assignors to D.O.M. Associates Int'L, Manhattan, Kans.

Filed May 6, 1994, Ser. No. 238,916

Int. Cl.[6] G01J *3/28*

U.S. Cl. 356—326 33 Claims



1. A spectrophotometer apparatus comprising:

an electromagnetic radiation source array having a plurality of activatable radiation source elements configured for activation in a plurality of encodement patterns;

means for detecting radiation emitted from said elements, and for producing signals representative thereof;

structure defining an optical pathway for directing radiation from said array to said detecting means; and

control means including

activating means coupled with said array for selectively activating said elements in a plurality of sequential encodement patterns, and

means coupled with said detecting means for receiving and processing said signals for producing an analysis thereof,

said activating means including generating means for generating a plurality of periodic activating signals having respective phases in order to thereby activate said elements, and phasing means for selectively adjusting the relative phases of said periodic activating signals in accordance with a predetermined pattern.

5,488,475

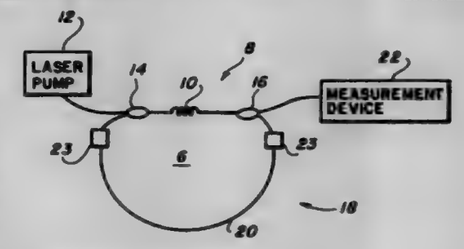
ACTIVE FIBER CAVITY STRAIN SENSOR WITH TEMPERATURE INDEPENDENCE

Edward J. Friebele, Cheverley, Md., and Alan D. Kersey, Fairfax Station, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 31, 1994, Ser. No. 220,855

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—352 13 Claims



1. A strain sensor, comprising:

a laser pump;

an active doped fiber gain section coupled to and pumped to a lasing state by the said pump; and

a measurement device coupled to said gain section and measuring strain responsive to an oscillation frequency of light exiting from said gain section;

wherein said measurement device comprises a beat frequency measurement device measuring a beat frequency of two oscillation modes of said section.

5,488,476

APPARATUS AND METHOD USING OPTICAL DIFFRACTION TO MEASURE SURFACE ROUGHNESS

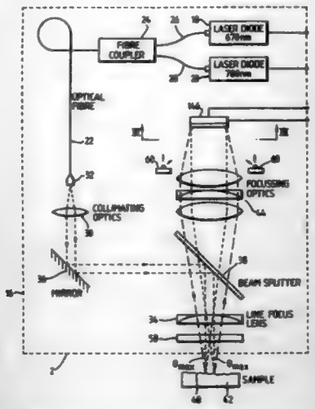
Daniel Mansfield; Ian Bell; Ian Buehring, and Jennifer Harding, all of Leicester, Great Britain, assignors to Rank Taylor Hobson Limited, Great Britain

Continuation of Ser. No. 777,349, Dec. 5, 1991, abandoned. This application Oct. 12, 1994, Ser. No. 322,088

Claims priority, application United Kingdom, Apr. 12, 1990, 9008331

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—354 **66 Claims**



1. Apparatus for measuring surface roughness of a workpiece comprising:

a) means for illuminating the workpiece to produce a diffraction pattern;

b) means for determining a set of values dependent upon the energy distribution in said pattern;

c) means for providing, for each of a plurality of values of surface roughness, a set of interpolated reference values representing the energy distribution in a diffraction pattern, said set of reference values being obtained by interpolation between first and second sets of reference values representing the energy distributions in diffraction patterns obtained respectively from relatively symmetrical and relatively asymmetrical surfaces; and

d) means for comparing the set of values determined from said diffraction pattern produced by the workpiece with said set of interpolated reference values to obtain an indication of said surface roughness.

5,488,477

METHODS AND APPARATUS FOR PROFILING SURFACES OF TRANSPARENT OBJECTS

Peter de Groot, Middletown, Conn., assignor to Zygo Corporation, Middlefield, Conn.

Filed Nov. 15, 1993, Ser. No. 153,146

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—359 **31 Claims**

1. A method of measuring the surface topography of each of opposed front and rear surfaces of a substantially transparent object without first treating at least one of the surfaces to reduce reflections from the at least one surface, comprising the steps of:

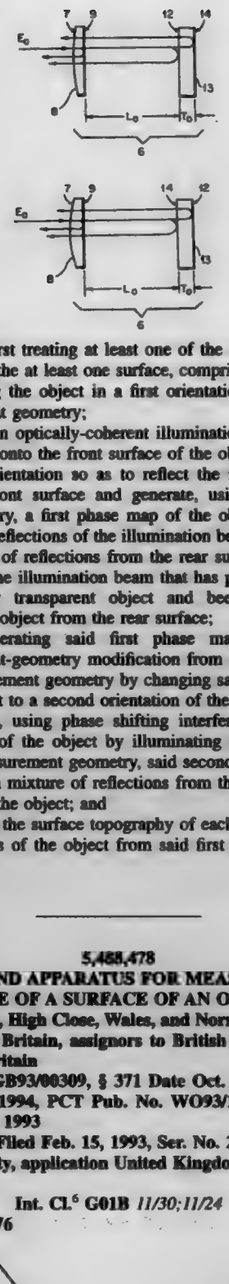
(a) positioning the object in a first orientation defining a first measurement geometry;

(b) directing an optically-coherent illumination beam of a first wavelength onto the front surface of the object positioned in said first orientation so as to reflect the illumination beam from the front surface and generate, using phase shifting interferometry, a first phase map of the object formed by a mixture of reflections of the illumination beam from the front surface and of reflections from the rear surface of at least a portion of the illumination beam that has passed through the substantially transparent object and been reflected back through the object from the rear surface;

(c) after generating said first phase map, performing a measurement-geometry modification from said first to a second measurement geometry by changing said first orientation of the object to a second orientation of the object;

(d) generating, using phase shifting interferometry, a second phase map of the object by illuminating the object in said second measurement geometry, said second phase map being formed by a mixture of reflections from the first and second surfaces of the object; and

(e) calculating the surface topography of each of said front and rear surfaces of the object from said first and second phase maps.



5,488,478

METHOD AND APPARATUS FOR MEASURING THE SHAPE OF A SURFACE OF AN OBJECT

John D. Bullock, High Close, Wales, and Norman W. Williams, Neath, Great Britain, assignors to British Steel PLC, London, Great Britain

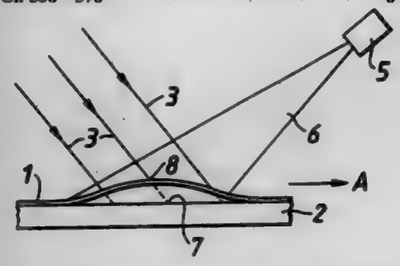
PCT No. PCT/GB93/00309, § 371 Date Oct. 3, 1994, § 102(e) Date Oct. 3, 1994, PCT Pub. No. WO93/16353, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 15, 1993, Ser. No. 290,811

Claims priority, application United Kingdom, Feb. 18, 1992, 9203448

Int. Cl.[6] G01B *11/30;11/24*

U.S. Cl. 356—376 **6 Claims**



1. Apparatus for measuring the shape of a surface of an object, the apparatus comprising:

laser means operable to direct onto a surface of an object moving relative to the laser means a plurality of light beams spaced one from another in the direction of movement of the object to produce on the object surface a plurality of light patterns which extend across the object in a direction generally normal to the direction of movement of the object;

scanning means for scanning the laser-generated light beams continuously across the object surface in a direction generally normal to the direction of movement of the object; and

an array of line-scan cameras positioned to view and record the said light patterns and to process in parallel data representative of the recorded light patterns to provide a measure of the shape of the object surface.

5,488,479

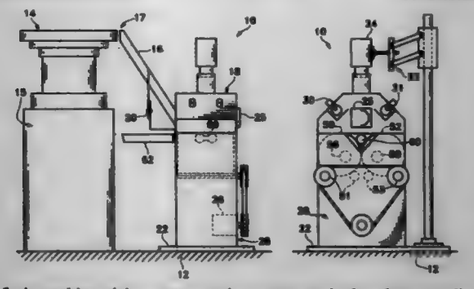
MACHINE VISION SYSTEM FOR INSPECTION OF AGRICULTURAL COMMODITIES

Earl J. Williams, Tifton, Ga., and Stephen D. Adams, Auburn, Ala., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Dec. 17, 1992, Ser. No. 991,815

Int. Cl.[6] G01J *3/46*

U.S. Cl. 356—402 **10 Claims**



1. A machine vision system to inspect an agricultural commodity comprising:

a support housing;

a pair of rollers mounted in said housing, at least one of said pair of rollers being rotatable, said pair of rollers are parallel to each other and translucent in order to provide a back light to remove shadows on said agricultural commodity during inspection and recordation of views of said agricultural commodity;

a first opening in said housing for receiving said commodity therethrough;

motor means connected to said pair of rollers for rotating at least one roller of said pair of rollers; and

a single camera secured to said support housing so as to be substantially, vertically positioned above and adjacent to said pair of rollers, said agricultural commodity supported by and positioned between said pair of rollers, said camera actuated to inspect and record views of said agricultural commodity and thereby determine maturity of said agricultural commodity.

5,488,480

APPARATUS AND METHOD FOR DETECTING A HEAT SEAL IN A MOVING PLASTIC FILM

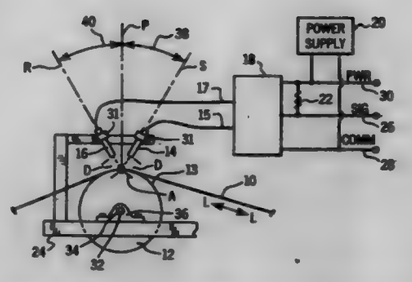
Stephen A. Saindon; Kevin O. Heindel, both of Appleton, and James G. Morrow, Wauwatosa, all of Wis., assignors to CMD Corporation, Appleton, Wis.

Filed Feb. 16, 1994, Ser. No. 197,216

Int. Cl.[6] G01N *21/84;21/00*

U.S. Cl. 356—429 **18 Claims**

8. An arrangement for detecting a heat seal in a plastic film moving in a predetermined direction of travel comprising:



a support surface disposed to support the moving plastic film at an interface between the surface and the film;

a first light guide positioned to direct light toward the interface along a line substantially parallel to the heat seal in the film and substantially perpendicular to the direction of travel, a portion of the light being reflected by the film at varying intensity;

a second light guide positioned to receive the portion of the light reflected by the film along the line; and

an interface circuit coupled to the first and second light guides, the interface circuit producing a signal representative of the intensity of the light reflected by the film, the interface circuit being adjustable for selectively detecting the heat seal in the film oriented substantially perpendicular to the path of travel based upon changes in the signal.

5,488,481

APPARATUS FOR GENERATING A COMPOSITE VIDEO SIGNAL

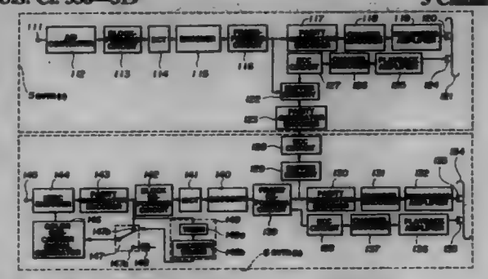
Hiroshi Okada, Kanagawa, and Hisato Shima, Chiba, both of, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 13, 1993, Ser. No. 165,419

Claims priority, application Japan, Dec. 14, 1992, 4-333141

Int. Cl.[6] H04N *9/00*

U.S. Cl. 358—319 **5 Claims**



1. A digital recording/reproducing apparatus having an external inputting digital interface, said apparatus comprising:

an encoder for generating composite video signals from digital video signals,

a color sub-carrier signal generator for generating color sub-carrier signals to be supplied to said encoder on the basis of horizontal synchronizing signals,

a changeover switch for changing over the horizontal synchronizing signals to be supplied to said color sub-carrier signal generator,

a horizontal synchronizing signal oscillator for generating standard horizontal synchronizing signals, and

a changeover control circuit for controlling the changeover of said changeover switch,

said changeover switch being controlled by said changeover control circuit for selecting the standard horizontal synchronizing signals generated by said horizontal synchronizing signal oscillator for an external input mode when the digital video signals are entered from outside via said digital interface, said changeover switch being also controlled by said

changeover control circuit for selecting horizontal synchronizing signals derived from playback video signals obtained during a playback mode.

5,488,482

HIGH-EFFICIENCY ENCODER AND VIDEO INFORMATION RECORDING/REPRODUCING APPARATUS

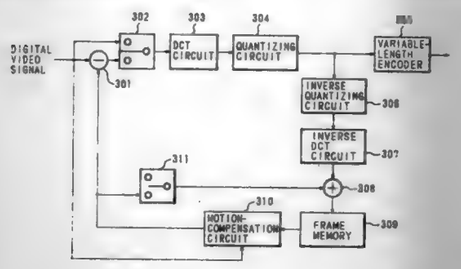
Tomohiro Ueda; Takashi Iotow; Yoshinori Asamura; Ken Onishi, and Hidetoshi Mishima, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 11,243, Jan. 29, 1993. This application Mar. 12, 1993, Ser. No. 30,538

Claims priority, application Japan, Jan. 29, 1992, 4-013719; Feb. 25, 1992, 4-037599; Feb. 25, 1992, 4-037821; Feb. 28, 1992, 4-043075; Sep. 4, 1992, 4-236909; European Pat. Off., Jan. 28, 1993, 93300616

Int. Cl.[6] H04N *5/917*

U.S. Cl. 358—339 **12 Claims**



1. A video information recording and reproducing apparatus, comprising:

intra mode encoding means for encoding a first portion of an input video signal and for storing the first portion of the input video signal decoded, as a reference image;

predictive mode encoding means for determining and subsequently encoding a difference based upon a second portion of the input video signal and the reference image; and

selection means for selecting one of the intra mode encoding means and the predictive mode encoding means for encoding the second portion of the input video signal.

5,488,483

FACSIMILE WITH USER SELECTIVE COMPRESSION METHODS

Masahiro Murayama, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 93,630, Jul. 20, 1993. This application Sep. 27, 1994, Ser. No. 313,396

Claims priority, application Japan, Jul. 20, 1992, 4-192116; Jul. 20, 1992, 4-192117

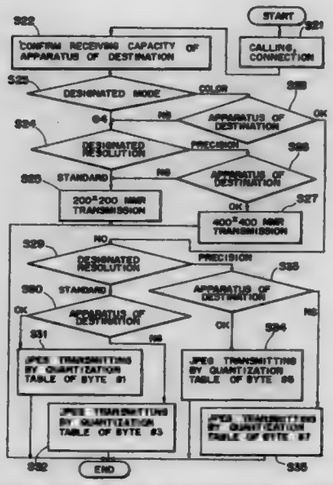
Int. Cl.[6] H04N *1/46;1/41;7/01*

U.S. Cl. 358—426 **32 Claims**

27. An image processing apparatus comprising:

encoding means having a first encoding method including a converting process for converting image information into frequency space and a quantization process for quantizing the converted image information, said quantization process capable of changing a quantization characteristic in encoding image information, and a second encoding method having an encoding characteristic different from that of said first encoding method;

encoding selection means for selecting either said first encoding method or second encoding method; and



setting means for setting the quantization characteristic in said first encoding method by selecting one of a plurality of quantization tables.

5,488,484

IMAGE DATA PROCESSING APPARATUS WITH ADJUSTMENT OF IMAGE PORTION PASTE-IN POSITION TO MINIMIZE AMOUNT OF COMPRESSED IMAGE DATA

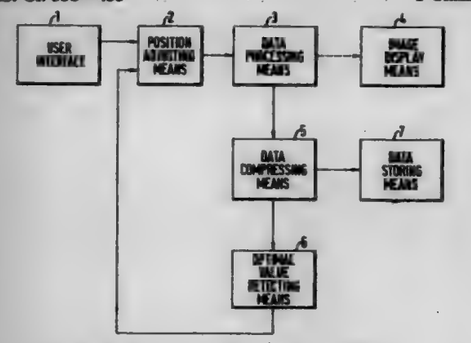
Yuichi Miyano, Kanagawaken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 14, 1994, Ser. No. 260,630

Claims priority, application Japan, Jun. 15, 1993, 5-142429

Int. Cl.[6] H04N *1/387;1/40;1/415*

U.S. Cl. 358—433 **1 Claim**



1. An image data processing apparatus, comprising:

position adjusting means for adjusting an initial paste-in position in pasting a secondary image in a primary image;

image data editing means for editing a third image resulting from pasting the secondary image in the primary image;

image data compressing means for compressing image data of said third image through block encoding;

optimal value detecting means for detecting an optimal value of the compressed image data by absolutely or relatively determining an amount of the compressed data produced by the image data compressing means; and

means for automatically adjusting a paste-in position within a given space around the initial paste-in position so as that the amount of the compressed data becomes a minimum.

5,488,485

IMAGE READING APPARATUS

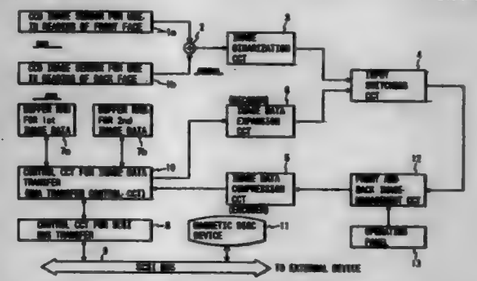
Masami Ameniya, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 45,298, Apr. 12, 1993, abandoned, which is a division of Ser. No. 766,028, Sep. 26, 1991, Pat. No. 5,392,135. This application Apr. 3, 1995, Ser. No. 423,875

Claims priority, application Japan, Jan. 5, 1990, 2-266455; Mar. 29, 1991, 3-66752

Int. Cl.[6] H04N *1/40;1/04;* **G03B** *27/32*

U.S. Cl. 358—444 **9 Claims**



1. An image processing apparatus comprising:

first input means for inputting first image data representing an image on a front face of an original line by line;

second input means for inputting second image data representing an image on a back face of the original line by line;

mixing means for mixing the first image data and the second image data line by line and for outputting mixed image data line by line;

instruction means for instructing one of the front and back faces of the original;

selection means for selecting one of the first and second image data among the mixed image data output from said mixing means line by line in accordance with the instruction by said instruction means;

temporary memory means for temporarily storing the mixed image data output from said mixing means;

compression means for compressing the mixed image data output from said mixing means, wherein said temporary memory means stores the mixed image data compressed by said compression means; and

expansion means for expanding the compressed mixed image data read out from said temporary memory means, wherein said selection means selects one of the first and second image data among the mixed image data expanded by said expansion means.

5,488,486

IMAGE PROCESSING SYSTEM

Hiromasa Shimizu, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 846,012, Mar. 4, 1992. This application Jan. 31, 1994, Ser. No. 189,245

Claims priority, application Japan, Mar. 11, 1991, 3-044850

Int. Cl.[6] H04N *1/393;1/41*

U.S. Cl. 358—451 **14 Claims**

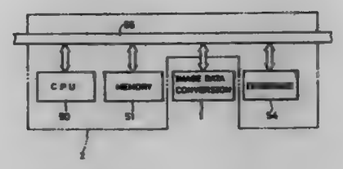
1. An image processing system for processing an image represented by run-lengths, said system comprising:

A) converting means including:

1) first means for, when a run-length is less than a base number which is an n-th power of "2" where n is an integer, representing the run-length by run-length data using a predetermined formula; and

2) second means for, when a run-length is equal to or greater than the base number, using the predetermined formula for representing the run-length by run-length data constituting:

a) a first part corresponding to a multiple of the base number; and



b) a second part corresponding to a value less than the base number; and

B) processing means, connected to the converting means, for processing the first and second parts of the run-length data obtained by said first means or said second means in order to code the data.

5,488,487

IMAGE FORMING APPARATUS, AND MODULATING METHOD THEREIN

Masaki Ojima; Masaharu Okkubo, both of Yokohama; Michio Itoh, Hachiohji; Hiroshi Sasame; Hiroaichi Yamada, both of Yokohama; Tetsuo Saito, Tokyo; Atsushi Kashihara, Hachiohji; Takashi Kawana, Yokohama; Hiroshi Mano, Tokyo; Kaoru Seto, Chigasaki, and Hiroshi Atobe, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

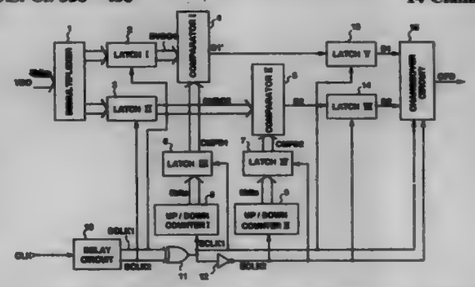
Continuation of Ser. No. 590,700, Oct. 1, 1990, abandoned.

This application Aug. 17, 1993, Ser. No. 107,037

Claims priority, application Japan, Jan. 2, 1989, 1-255294; Jan. 17, 1989, 1-268227; Nov. 23, 1989, 1-299732

Int. Cl.[6] H04N *1/23;* **H03K** *5/135;5/14*

U.S. Cl. 358—456 **14 Claims**



1. An image signal modulating device in a recording apparatus which forms an output image based upon a multivalued input recording signal, comprising:

clock generating means for generating a clock signal;

converting means for converting the multivalued input recording signal into a plurality of corresponding binary image signals; and

output means for outputting the plurality of binary image signals from said converting means in response to the clock signal from said clock generating means,

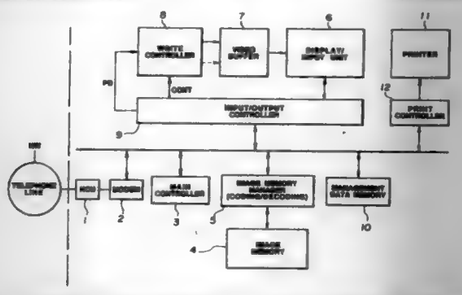
wherein said output means is outputting the plurality of binary image signals of different phase.

5,488,488

FACSIMILE MACHINE HAVING RECEIVED-IMAGE DISPLAY FUNCTION

Nobukazu Shimizu, Hino, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 13, 1992, Ser. No. 882,123
Claims priority, application Japan, May 14, 1991, 3-136981
Int. Cl.[6] H04N *1/00*
U.S. Cl. 358—468 **11 Claims**



1. A facsimile macing having a received-image display function, comprising:

an image memory for storing therein one case or a plurality of cases of image data received form another facsimile machine together with management data indicative of different files and pages;

a video buffer for temporarily storing therein part of the image data stored in the image memory corresponding to one page specified based on the management data as a bit image data;

display means for visually displaying thereon the image data temporarily stored in the video buffer as its storage image;

video buffer write control means for controlling writing operation of the image data specified to be temporarily stored in the video buffer to the video buffer; and

input means for inputting a rotational display instruction with respect to an image to be visually displayed on the display means,

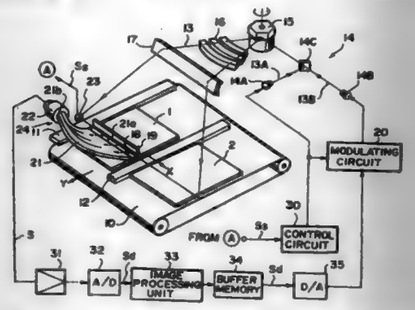
wherein the video buffer write control means writes the specified one-page image data into the video buffer and when the rotational display instruction is input through the input means, exchanges writing positions of pixels of the specified one-page image data to the video buffer in a predetermined manner to rotate the display of the image.

5,488,489

IMAGE READ-OUT AND REPRODUCING APPARATUS

Ichirou Miyagawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 19, 1992, Ser. No. 836,838
Claims priority, application Japan, Mar. 1, 1991, 3-036097
Int. Cl.[6] H04N *1/04*
U.S. Cl. 358—474 **12 Claims**



1. An image read-out and reproducing apparatus which comprises:

i) a sub-scanning means for supporting an image storage sheet, on which image information has been recorded, and a recording material, on which an image is to be reproduced during its exposure to a light beam, such that said image storage sheet and said recording material stand side by side with each other and in the same plane, said sub-scanning means conveying said image storage sheet and said recording material in the same direction or in directions opposite to each other,

ii) a light source for producing a light beam,

iii) a single main scanning means for causing said light beam, which has been produced by said light source, to scan said image storage sheet and said recording material in a direction, which is approximately normal to the direction or directions along which said image storage sheet and said recording material are conveyed, and with a scanning width that extends across both said image storage sheet and said recording material in a single scan,

iv) a photoelectric detection means for detecting light, which is radiated out of a portion of said image storage sheet exposed to said light beam, an image signal representing the image information, which has been recorded on said image storage sheet, being thereby obtained, and

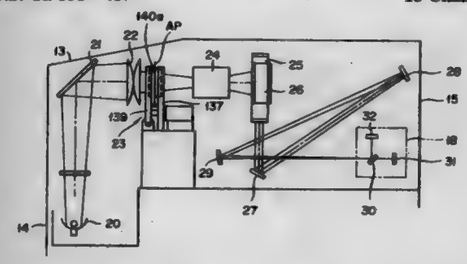
v) a light modulating means for modulating said light beam in accordance with a predetermined image signal while said light beam is scanning said recording material.

5,488,490

IMAGE READING APPARATUS FOR READING IMAGES RECORDED ON FILM

Kenji Sawada, Machida; Yashushi Yamade, Sagamihara, and Sei Onuma, Tokyo, all of, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 25, 1992, Ser. No. 857,315
Claims priority, application Japan, Mar. 26, 1991, 3-061424; Mar. 26, 1991, 3-061426; Aug. 27, 1991, 3-215405
Int. Cl.[6] H04N *1/04*
U.S. Cl. 358—487 **18 Claims**



1. An image reading apparatus, comprising:

image projecting means for projecting a beam of light containing image information of a prescribed line from an original;

a separating member for separating said beam of light projected by said image projecting means into a first direction and a second direction;

a first image reading member for reading out a portion of said prescribed line contained in the beam of light separated into said first direction by said separating member;

a second image reading member disposed at an equivalent position to said first image reading member relative to said separating member and adapted to read out a portion of said prescribed line contained in the beam of light separated into said second direction by said separating member; and

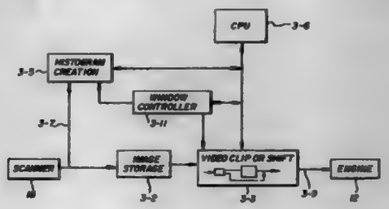
supporting means for integrally supporting said separating member, said first image reading member, and said second image reading member as one unit.

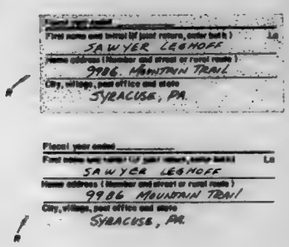
5,488,491

IMAGE PROCESSING APPARATUS AND METHOD FOR ELIMINATING BACKGROUND DENSITY IN A DESIGNATED IMAGE AREA

James J. Steinkirchner, Brockport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 6, 1993, Ser. No. 86,391
Int. Cl.[6] H04N *1/38*
U.S. Cl. 358—501 **24 Claims**





8. An image processing apparatus comprising:

scanning means for scanning and outputting first signals representing image data as determined by sensing intensity variations in an original image;

area designating means for generating second signals representing information relative to a determined image area of the document containing both foreground and background density;

area operation means responsive to the first and second signals for operating on the image data in the area to define third signals representing parameters for substantially eliminating the background density while substantially preserving information with foreground density; and

memory means for storing said third signals;

and wherein the area operation means includes;

means for generating a histogram of pixel densities and their frequencies for pixels residing within the determined image area;

means for subjecting data in said histogram to a low pass filter and outputting filtered data;

means for determining a slope of points in said filtered data;

means for defining a geometric minimum within a predetermined amount of a statistical average of the histogram data;

means for determining geometric maximums on each side of the geometric minimum; and

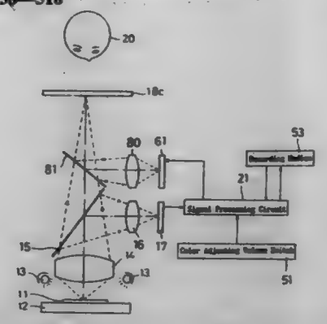
means for comparing a maximum on one side with a maximum on the other side and defining said parameters if one particular maximum is greater than the other.

5,488,492

APPARATUS FOR ADJUSTING COLOR TONE OF IMAGE TO BE RECORDED

Tetsuya Abe, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1994, Ser. No. 253,695
Claims priority, application Japan, Jun. 4, 1993, 5-134852; Jun. 4, 1993, 5-134853
Int. Cl.[6] H04N *1/60*
U.S. Cl. 358—518 **35 Claims**



1. A color adjusting apparatus that includes color image pickup means for picking-up an object image signal of an object and color adjusting means for adjusting a color component of said object image signal picked-up by the color image pickup means, said color adjusting apparatus comprising:

an optical system for converging light that is one of reflected from or transmitted through the object, to form a direct image of the object;

light splitting means for splitting object light;

a screen located at a point of convergence of a bundle of rays of light split by said light splitting means;

said color image pickup means being located at a point of convergence of another bundle of rays of light split by said light splitting means;

signal inverting means for inverting object image signals picked-up by said color image pickup means; and

inverted image projecting means for projecting an inverted image, corresponding to said object image signals inverted by said signal inverting means and adjusted by said color adjusting means, to superimpose said inverted image on said direct image.

5,488,493

HOLOGRAPHIC CHMSL INCLUDING A HOLOGRAM ASSEMBLY AND A REFRACTIVE ELEMENT LAMINARLY ATTACHED THERETO FOR DIVERGING ZERO ORDER BEAM

Gaylord E. Moss, Marina del Rey, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 1, 1993, Ser. No. 146,244
Int. Cl.[6] G03H *1/00*; G02B *5/32*; B60Q *1/44*;*1/26*
U.S. Cl. 359—13 **16 Claims**

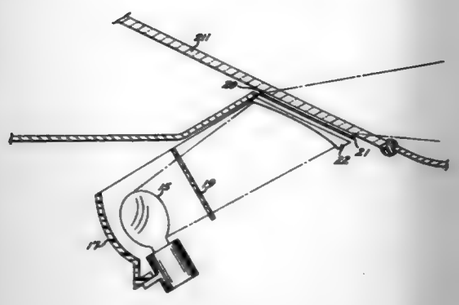
1. A holographic stoplight system comprising:

means for providing a near collimated beam;

an expanding lens responsive to the nearly collimated beam for providing a diverging reconstruction beam;

a stoplight hologram assembly responsive to the diverging reconstruction beam for producing stoplight illumination; and

wherein said expanding lens and said hologram assembly are laminarly attached to each other.

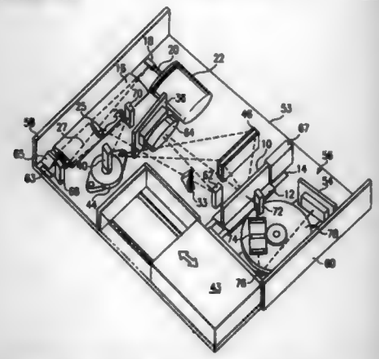


5,488,494

PACKAGING SYSTEM FOR HOLOGRAPHIC STORAGE MEDIA

Stephen R. Redfield; Gerald R. Willenbring; John Stockton, and Edward A. Halter, all of Austin, Tex., assignors to Tamarack Storage Devices, Austin, Tex.

Filed Oct. 7, 1993, Ser. No. 133,672
Int. Cl.[6] G03H 1/26
U.S. Cl. 359—22 25 Claims



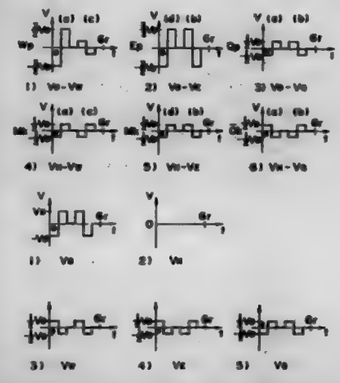
7. A holographic storage system, comprising:
a portable holographic storage media, said portable holographic storage media having:
an optically transmissive substrate,
a media layer of photosensitive photopolymer material disposed on said substrate,
an optically transmissive cupping layer disposed on the surface of said media opposite said substrate,
said substrate, said media layer and said cupping layer forming a slide having a plurality of storage locations formed within said media layer for storing holographic recordings of the Fourier transform of a data image, and
an opaque jacket containing said slide with one end open to allow said slide to be removed therefrom for reading of information therefrom and writing of information thereto, and for inserting of said slide back into said jacket;
a beam generation system for generating a data beam and a reference beam, the data beam having a data image encoded therein that represents digital data;
a slide holder;
a slide retrieval system for retrieving the slide from said jacket and disposing it in the slide holder, said slide retrieval system operable in the reverse operation to remove said slide from said slide holder and dispose it in said associated jacket;
a beam positioning system for positioning said data beam and said reference beam onto a select one of said storage locations when said slide is disposed in said slide holder;
a detection device for detecting data from a reconstructed data beam during a playback operation; and
a system controller for controlling said beam positioning system to position said data beam and said reference beam to said select location in response to an external addressing signal, and controlling said beam generation system to generate said data beam and said reference beam during a record operation, and only said reference beam during a playback operation, such that a reconstructed data beam is generated for detection by said detection device during a playback operation.

5,488,495

DRIVING METHOD FOR A FERROELECTRIC LIQUID CRYSTAL DISPLAYS HAVING NO CHANGE DATA PULSES

Takaji Numao, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 759,780, Sep. 13, 1991, abandoned, which is a continuation of Ser. No. 670,388, Mar. 15, 1991, abandoned, which is a continuation of Ser. No. 238,860, Aug. 31, 1988, abandoned. This application May 5, 1993, Ser. No. 56,948
Claims priority, application Japan, Aug. 31, 1987, 62-218290
Int. Cl.[6] G02F 1/141; G09G 3/36
U.S. Cl. 359—56 5 Claims



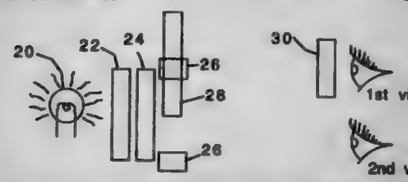
1. A method of driving a liquid crystal display device including a ferroelectric display material, a plurality of parallel scanning electrodes disposed in a first direction, a plurality of parallel signal electrodes intersecting the plurality of parallel scanning electrodes and disposed in a second direction perpendicular to the first direction, and picture elements formed at each signal and scanning electrode intersection, each picture element being switched to a bright display state, when a voltage difference between a scanning and signal electrodes associated with the picture element exceeds a first threshold voltage (+Va), and being switched to a dark display state, when said voltage difference falls below a second threshold voltage (−Vb), wherein the first threshold voltage is greater than the second threshold voltage, said method comprising the steps of:
(a) storing a previous display state for each picture element;
(b) determining, for each picture element, one of three previous to new display state scenarios, wherein,
(i) a first scenario (X), occurs when the previous and new display states of the picture element are a dark display state and a bright display state, respectively,
(ii) a second scenario (Y), occurs when the previous and new display states of the picture element are a bright display state and dark display state, respectively, and
(iii) a third scenario (Z), occurs when the new display state of the picture element is the same as the previous display state;
(c) applying a first voltage pattern when said first scenario (X) is determined, the first voltage pattern having a peak voltage greater than the first threshold voltage, wherein an integrated value of the first voltage pattern is equal to zero;
(d) applying a second voltage pattern when said second scenario (Y) is determined, the second voltage pattern having a peak voltage smaller than the second threshold voltage, wherein an integrated value of the second voltage pattern is equal to zero; and
(e) applying third voltage patterns when said third scenario (Z) is determined, the third voltage patterns having a peak voltage between the first and second threshold voltages, wherein an integrated value of the third voltage patterns is equal to zero, the third voltage patterns applied to picture elements of a selected scanning electrode and a non-selected scanning electrode respectively having the same waveform and opposite polarities.

5,488,496

PARTITIONABLE DISPLAY SYSTEM

Jerrold S. Pine, 9555 Saddlebrook Dr., Boca Raton, Fla. 33496

Filed Mar. 7, 1994, Ser. No. 206,660
Int. Cl.[6] G02F 1/1335
U.S. Cl. 359—63 23 Claims



1. An apparatus for displaying images on a liquid crystal display having partitionable selectively visible regions, comprising:
first polarizing means for forming planer polarized light background from incident light;
a liquid crystal display panel for forming images cross-polarized with polarized light background in substantially parallel alignment with said first polarizing means having a front side displaying said images;
moveable polarizing means for selectively covering at least a region of liquid crystal display panel, disposed in substantially parallel alignment with said liquid crystal display panel, disposed at the front side of said liquid crystal display panel, opposite said first polarizing means;
remote polarizing means disposed away from said liquid crystal display having polarization relative to said movable polarizing means which is one of planar-polarization or cross-polarization; said remote polarization means operative for enabling a viewer looking through said remote polarizing means to view said images both covered and uncovered by said movable polarizing means; and wherein said regions uncovered by said movable polarizing means are invisible for viewing without said remote polarizing means;
moving means connected to said movable polarizing means for displacing said movable polarizing means.

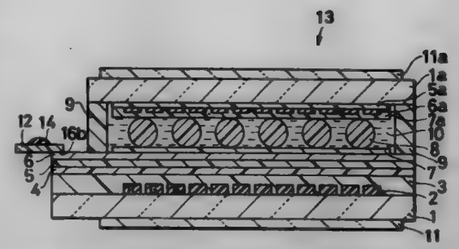
5,488,497

COLOR LIQUID CRYSTAL DEVICE WITH ORGANIC SMOOTHING LAYER OVER ITO SEPARATED BY AN OXIDE LAYER AND A NITRIDE LAYER

Hiroshi Takanashi, Soraku; Masami Ogura, Kashihara, and Masahiro Tanimoto, Daito, all of, Japan, assignors to Sharp Kabushiki Kaisha, and Sanyo Vacuum Industries Co, Ltd., both of Osaka, Japan

Filed Nov. 2, 1993, Ser. No. 144,445
Claims priority, application Japan, Nov. 2, 1992, 4-294541
Int. Cl.[6] G02F 1/13
U.S. Cl. 359—74 6 Claims

1. A color liquid crystal display device comprising:
a pair of light-transmitting substrates;
a liquid crystal layer interposed between said pair of light-transmitting substrates;
a color filter formed on one of said pair of light-transmitting substrates;



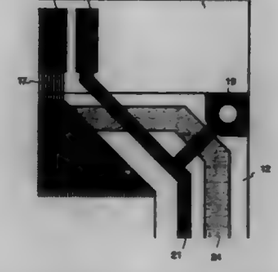
an organic protection film and an electrode film formed on said color filter;
a metallic or silicon nitride film interposed between said organic protection film and said electrode film; and
a metallic or silicon oxide film interposed between said metallic or silicon nitride film and said electrode film.

5,488,498

LIQUID CRYSTAL DISPLAY WITH PARTICULAR CONTACTS FOR SUPPLYING COUNTER ELECTRODE POTENTIAL

Yoshiharu Fujii, Sagamihara, and Toshihiko Yoshida, Yokohama, both of, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 23, 1994, Ser. No. 216,865
Claims priority, application Japan, Mar. 23, 1993, 5-063847
Int. Cl.[6] G02F 1/1343
U.S. Cl. 359—88 9 Claims



1. A liquid crystal display having a first and a second transparent substrate with sealed liquid crystal therebetween, said first transparent substrate having a plurality of scan lines and a plurality of signal lines formed therein, said second transparent substrate having a transparent counter electrode formed therein, comprising:
transfer lead electrodes formed in said first transparent substrate at first, second and third sides of said liquid crystal display, for simultaneously applying counter electrode potential at each of said sides;
an extended conductor electrically connected to at least one of said transfer lead electrodes and extending along a fourth side of said liquid crystal display, said extended conductor being located inside of a liquid crystal seal; and
a plurality of transfers at said first, second, third and fourth sides electrically connecting said transparent counter electrode to said transfer lead conductors, in order to allow counter electrode potential to be applied to said transparent counter electrode simultaneously at said first, second, third and fourth sides via said transfers, said transfers at said fourth side being located outside of said liquid crystal seal and being electrically connected to at least one of said transfer lead electrodes via said extended conductor, thereby not requiring additional transfer lead electrodes at said fourth side.

5,488,499

LIQUID CRYSTAL DISPLAY DEVICE UTILIZING A CHIRAL NEMATIC LIQUID CRYSTAL MEDIUM OPERATIVE RELATIVE TO TWO METASTABLE STATES

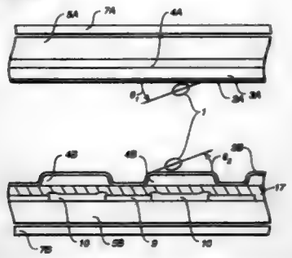
Takaaki Tanaka, and Yuzuru Sato, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Jul. 15, 1993, Ser. No. 93,290

Claims priority, application Japan, Jul. 16, 1992, 4-189436; Jul. 23, 1992, 4-197034; Aug. 17, 1992, 4-217931; Jan. 1, 1992, 4-263836; Dec. 18, 1992, 4-339051; Jul. 14, 1993, 5-195601

Int. Cl.[6] G02F *1/13;1/1335*

U.S. Cl. 359—102 21 Claims



1. A liquid crystal electrooptical element, comprising:

a pair of substrates,

a group of substantially parallel electrodes formed on a first major surface of each of said substrates,

alignment films formed over said electrode groups of each of said substrates, a surface of each of said alignment films treated to have an alignment direction formed thereon,

polarizing plates disposed relative to a second major surface of each of said substrates,

said substrates disposed in spatial relation forming a gap therebetween with the alignment direction of said respective alignment films forming a twist angle, ϕ_t, relative to each other,

a chiral nematic liquid crystal medium provided in said gap wherein the helical pitch, P_o, of said chiral nematic liquid crystal medium is adjusted such that an initial twist angle of said chiral nematic liquid crystal medium in an initial state prior to application of an applied voltage to said electrodes is substantially equal to the angle, ϕ_t, which is formed between the respective alignment directions formed on the alignment films,

pretilt angles formed in said initial state by molecular director vectors of liquid crystal molecules comprising said chiral nematic liquid crystal medium at said alignment film surfaces having mutually opposite signs,

said chiral nematic liquid crystal medium capable of relaxing to one of two metastable states, each of which has a period of memory retention, after application of an applied voltage waveform in said initial state wherein the twist angles of said liquid crystal medium in said metastable states respectively approximate $\phi_t+180°$ and $\phi_t-180°$,

polarization axes angles P, A of said polarizing plates formed by the polarization axis of one of each of said polarizing plates relative to one of said

respective alignment film alignment directions set according to (1) a value of product R (=d·Δn) where d is the layer thickness of said liquid crystal medium and where Δn of said liquid crystal medium is the apparent difference in the refractive indices of the liquid crystal medium for extraordinary light, n_e, and ordinary light, n_o, ($\Delta n=n_e-n_o$), and (2) twist angle, ϕ_t, so that one of said metastable states is an ON display state and the other of said metastable states is an OFF display state, and

a ratio of said layer thickness, d, of said liquid crystal medium to said helical pitch, P_o, of said liquid crystal medium is within the range of $0.8\ \phi_t/360° \leqq d/p_o \leqq 1.4\ \phi_t 360°$.

5,488,500

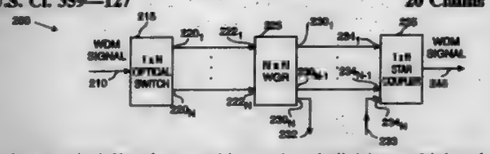
TUNABLE ADD DROP OPTICAL FILTERING METHOD AND APPARATUS

Bernard Glance, Colts Neck, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Aug. 31, 1994, Ser. No. 298,820

Int. Cl.[6] H04J *14/02*

U.S. Cl. 359—127 20 Claims



1. An optical filter for use with wavelength division multiplexed signals comprising a plurality of frequency components, the optical filter operable to remove at least one frequency component from a wavelength division multiplexed signal, the optical filter comprising:

a) a wavelength grating router, the router including a plurality of inputs and a plurality of outputs, the plurality of outputs further comprising a set of one or more drop outputs, the router operable such that when an input signal comprising a plurality of frequency components is received at one of the router inputs, each frequency component of the input signal is provided at a distinct output, and the distinct output at which each frequency component is provided is dependant upon the router input at which the input signal is received;

b) an optical switch comprising an input and a plurality of outputs connected to the wavelength grating router, each switch output connected to one of the plurality of router inputs, the switch operable to receive an optical signal at the switch input and provide the received optical signal at a select one of the plurality of switch outputs; and

c) a multiplexer for wavelength division multiplexing a plurality of frequency components, the multiplexer coupled to less than all of the plurality of waveguide grating router outputs.

5,488,501

OPTICAL PROCESSING SYSTEM

Peter E. Barnsley, Suffolk, United Kingdom, assignor to British Telecommunications plc, London, England

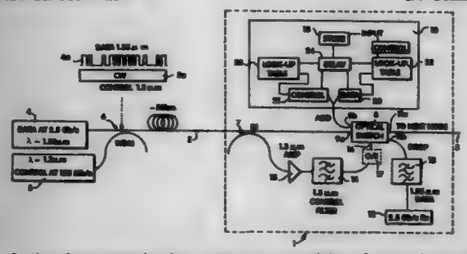
PCT No. PCT/GB93/00747, § 371 Date Jun. 15, 1994, § 102(e) Date Jun. 15, 1994, PCT Pub. No. WO93/21706, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 8, 1993, Ser. No. 244,934

Claims priority, application United Kingdom, Apr. 9, 1992, 9207937; European Pat. Off., Dec. 9, 1992, 92311238.7

Int. Cl.[6] H04J *14/08*

U.S. Cl. 359—137 24 Claims



1. A telecommunications system comprising first and second nodes interconnected by a network transmission line, the first node comprising an optical data generator for producing an optical data signal at a first wavelength, an optical header generator for producing an optical control signal at a second wavelength, means for multiplexing the data and control signals onto the transmission line in such a manner that the duration of the control signal is at least equal to the duration of the data signal, a delay unit coupled with the optical data generator and the optical header generator and control means coupled with the delay unit for providing a sufficient delay between the transmission start times of the controller and data signals to ensure that the control signal completely overlaps the data signal on arrival at the second node, the second node comprising a switch and a controller coupled to the transmission line, said controller being coupled to said switch and responsive to signals at the second wavelength for controlling the routing of optical signals through the switch.

5,488,502

LIGHT BEAM SCANNING DEVICE AND IMAGE FORMATION LENS

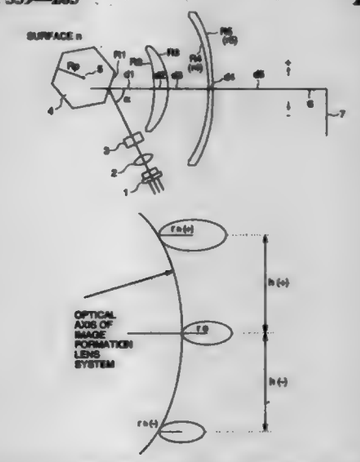
Shinichiro Saito, Hachioji, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Oct. 11, 1994, Ser. No. 321,318

Claims priority, application Japan, Jan. 14, 1993, 5-280325

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—205 24 Claims



1. An apparatus for scanning an image forming surface with a laser beam, comprising:

a laser generator for generating a laser beam;

a rotatable polygonal mirror, having an axis of rotation, for deflecting the laser beam to scan the image forming surface in a primary scanning direction; and

an image formation lens system, including a lens, provided between the polygonal mirror and the image forming surface, for focusing the laser beam on the image forming surface, the lens system having an optical axis,

the polygonal mirror being arranged in relation to the optical axis of the lens system in such a manner that the rotation axis of the polygonal mirror is deviated to one side of the optical axis of the lens system, wherein the one side is defined as a "+" side and an opposite side is defined as a "−" side,

the lens of the lens system having a cylindrical surface facing the polygonal mirror, wherein the cylindrical surface is curved in a secondary scanning direction, a radius of curvature "rh" represents a radius of curvature of the cylindrical surface in a plane perpendicular to the primary scanning direction at a distance h from the optical axis in the primary scanning direction, a change pattern in the radius of curvature "rh" is non-symmetrical in relation to the optical axis, and "rh(−)" is smaller than "r_0, wherein "rh(−)" is the radius of curvature "rh" at each point on the "−" side and "r_0" is the radius of curvature at a point on the optical axis.

5,488,503

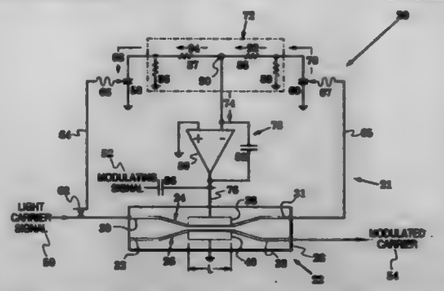
LOW-POWER, STABILIZED, PHOTONIC MODULATOR SYSTEM

James H. Schaffner, Chatsworth, and Mark B. Hammond, Irvine, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 9, 1995, Ser. No. 386,050

Int. Cl.[6] G02F *1/225*

U.S. Cl. 359—245 19 Claims



1. A control loop for stabilizing the operation of a light intensity modulator that is configured to deliver an intensity modulated light signal at an output port in response to a carrier light signal at a first input port and a modulating voltage signal at a second input port, the network comprising;

a reference photodetector arranged to produce a reference signal in response to the intensity of said carrier signal;

a feedback photodetector arranged to produce a feedback signal in response to the intensity of said modulated signal;

a comparison network configured to produce an error signal in response to said reference signal and said feedback signal; and

a loop processor configured to generate a bias signal at said second input port in response to said error signal.

5,488,504

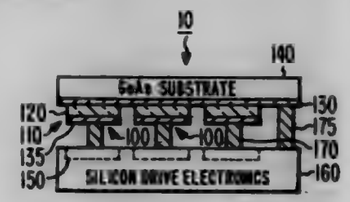
HYBRIDIZED ASYMMETRIC FABRY-PEROT QUANTUM WELL LIGHT MODULATOR

Terrance L. Worchesky, Columbia, and Kenneth J. Ritter, Sykesville, both of Md., assignors to Martin Marietta Corp., Bethesda, Md.

Filed Aug. 20, 1993, Ser. No. 109,550

Int. Cl.[6] G02F *1/03*

U.S. Cl. 359—248 10 Claims



1. A spatial light modulator including quantum wells and Fabry-Perot etalons, comprising:

(A) a transparent non-semiconductor dielectric substrate having a first composition transparent to photons within a particular energy range, and having a first index of refraction;

(B) said spatial light modulator further including a plurality of modulator pixels responsive to said photons within said particular energy range, each of said pixels comprising:

(1) a partially reflective dielectric mirror and common electrical contact layer adjacent to said transparent substrate, said dielectric mirror and common electrical contact layer comprising (a) a first layer of a first semiconductor material, having an index of refraction higher than that of said

transparent substrate, said first layer of said first semiconductor material being adhesively affixed to said transparent substrate, whereby the junction between said transparent substrate and said first layer of said first semiconductor material is a relatively wavelength independent mirror, said dielectric mirror and common electrical contact layer further comprising (b) a plurality of additional layers, at least one of which is electrically conductive, said additional layers including alternating layers of a second semiconductor material and said first semiconductor material, said second semiconductor material having an index of refraction lower than that of said first semiconductor material;

(2) a quantum well layer supported by that side of said dielectric mirror and common electrical contact layer remote from said first layer of said dielectric mirror and common electrical contact layer, said quantum well layer including a plurality of alternating layers of (a) third semiconductor material having a particular ground energy state, and (b) a further semiconductor material having a ground energy state higher than said particular ground energy state, whereby said quantum well layer includes a plurality of quantum wells;

(3) an optically non-transmissive metallic mirror layer; and

(4) means for mechanically and electrically coupling said metallic mirror layer to said quantum well layer; said modulator further comprising:

(C) an electronics section including drive electronics for generating a plurality of individual electrical drive signals; and

(D) coupling means coupled to said drive electronics, to said electrically conductive layer of said dielectric mirror and common electrical contact layer, and to said metallic mirror layers of said pixels of said modulator, for coupling each of said individual electrical drive signals to said metallic mirror layer of a different one of said pixels.

5,488,505

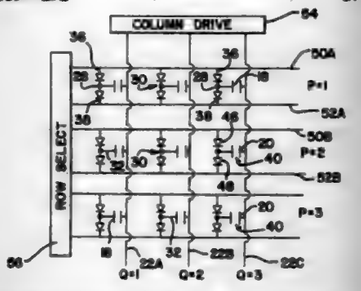
ENHANCED ELECTROSTATIC SHUTTER MOSAIC MODULATOR

Craig D. Engle, 336 Cline Ave., Griffith, Ind. 46319

Filed Oct. 1, 1992, Ser. No. 955,058

Int. Cl.[6] G02F *1/29*

U.S. Cl. 359—292 **17 Claims**



15. An enhanced electrostatic spatial light modulator for use in modulating an electromagnetic wavefront incident thereon in electronic to optical data conversion applications comprising:

an insulating substrate, said substrate further includes a first major surface and a second major surface,

said first major surface and said second major surface are opposing surfaces,

a plurality of first electrodes arranged into a matrix of p rows and q columns, each said first electrode is affixed to said substrate by a suitable means,

overlapping each said first electrode is a respective reflective conductor,

each said conductor is affixed to said first major surface by a suitable conductor affixing means,

the conductors which are overlapping said first electrodes in each column q are electrically connected,

said suitable conductor affixing means further includes means for electrically connecting the conductors in each column q so as to be electrically isolated from the conductors in every other column q,

a plurality of thin film transistors, each said thin film transistor further includes a drain electrode, a gate electrode and a source electrode,

each said first electrode is electrically connected by a suitable feedthrough means to a respective thin film transistor,

each said transistor is affixed by a suitable means to said second major surface,

the gate electrodes of said transistors which are electrically connected to said first electrodes in each row p are electrically connected by a respective row select buss,

each said respective row select buss is affixed by a suitable means to said second major surface,

a plurality of common busses electrically connecting the source electrodes of said transistors to a common potential source,

each said common buss is affixed to said second major surface by a suitable means,

each said common buss is essentially parallel to every said respective row select buss thereby eliminating electrical crossover networks,

a suitable potential control means to control an applied potential difference between each said first electrode and the respective conductor in accordance with an information bearing signal so as to enhance the commercial viability of the modulator.

5,488,506

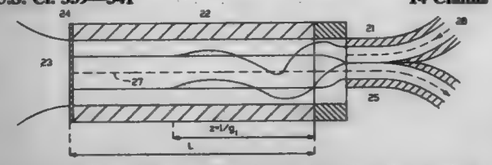
ENHANCED POWER FIBER LASER WITH CONTROLLABLE OUTPUT BEAM

Sergej G. Krisvoshlykov, Moscow, Russian Federation, and Wolfgang Neuberger, Monchen-Gladbach, Germany, assignors to CeramOptec Industries, Inc., East Longmeadow, Mass.

Filed Jun. 9, 1994, Ser. No. 257,547

Int. Cl.[6] H01S *3/098*

U.S. Cl. 359—341 **14 Claims**



1. An active graded-index fiber for use in a fiber laser having a controllable output beam, said fiber having an axis, a core of radius a, and a cladding, said active fiber has a complex refractive index distribution described by the refractive index distribution function:

$$n^2(r)=n^{o2}-\omega^2(z)r^2;\ 0\leq r<a$$

$$n^2(r)=n_o^2-\omega^2a^2=n_{cl}^2;r\geq a$$

wherein r represents the distance from the said axis, n_o represents the refractive index at said axis, and n_{cl} denotes the refractive index of said cladding, said active fiber has a complex gradient parameter g described by the gradient function:

$$g=g_r-ig_i=w/n_o$$

wherein ω is the amplification gradient and equals $(2n_o(n_o-n_{cl}))^{1/2}$, said parameter g depends upon a propagation distance z and is described by the periodic function:

$$g^2(z)=g^2(1+4h\cos 2g_rz);\ h<1,\ g_r<g_r$$

wherein parameter h represents the amplitude of modulation of said output beam, said output beam has a period of modulation Λ equal to π/g_r and to one half of the oscillation of said output beam, said parameter h is chosen to guide only one guidemode in said active fiber.

5,488,507

SEMICONDUCTOR OPTICAL AMPLIFIER HAVING REDUCED POLARIZATION DEPENDENCE

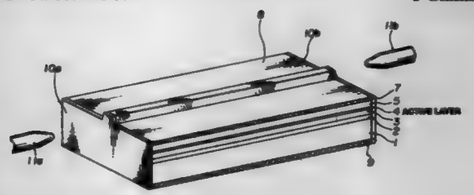
Michiyo Nishimura, Sagamihara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1994, Ser. No. 306,400

Claims priority, application Japan, Jan. 4, 1993, 5-271330

Int. Cl.[6] G02F *02/00*

U.S. Cl. 359—344 **6 Claims**



1. A semiconductor optical device comprising:

a substrate; and

an active layer of quantum well structure, said active layer including a plurality of well layers and a plurality of barrier layers which are alternately layered, said well layers having different quantum levels and said barrier layers being respectively subjected to biaxial strain,

wherein each of said plurality of well layers has a polarization dependency and said plurality of well layers compensate for each polarization dependency of each other or one another.

5,488,508

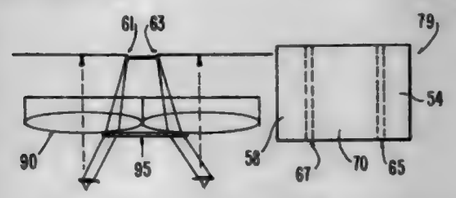
VIGNETTING TECHNIQUE FOR IMPROVENG APPEARANCE OF PARTIALLY OVERLAPPED BINOCULAR DISPLAYS

Eric C. Haseltine, Manhattan Beach, Calif., assignor to The Walt Disney Company, Burbank, Calif.

Filed Jun. 28, 1994, Ser. No. 267,187

Int. Cl.[6] G02B *21/36;23/08;26/08;27/00*

U.S. Cl. 359—362 **28 Claims**



1. A virtual reality system having a partially overlapped binocular display for displaying simulated three dimensional images to an observer, the partially overlapped binocular display comprising,

a generator of a first image having a first boundary;

a generator of a second image having a second boundary; wherein:

the first and second images are generated such that a predetermined portion of the first image overlaps a predetermined portion of the second image thereby forming a first nasal portion of the first boundary which overlaps the second image and a second nasal portion of the second boundary which overlaps the first image, the system further comprising:

an aperture step positioned in front of the first and second images, and closer to an eye of the observer than the focal renee or said eye, so as to substantially block the observer's view of the left nasal boundary and the right nasal boundary, the aperture stop being substantially out of focus to the observer.

5,488,509

LIGHT SOURCE APPARATUS FOR ENDOSCOPE

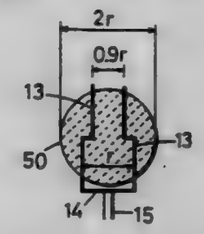
Tadashi Takahashi; Tetsuya Utsui; Rensuke Adachi; Mitsuru Iida; Katsuhiko Furuya; Junji Unnai, and Ryoji Honda, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1994, Ser. No. 281,083

Claims priority, application Japan, Aug. 19, 1993, 5-045135 U; Jun. 8, 1994, 6-125604

Int. Cl.[6] G02B *21/06;* A61B *1/06*

U.S. Cl. 359—385 **22 Claims**



1. A light source apparatus for an endoscope comprising a light source for emitting a bundle of illuminating light rays to be supplied to a light guide of the endoscope, said light source apparatus comprising:

at least a pair of light-blocking plates disposed in the bundle of illuminating light rays to face each other across an optical axis of the bundle of illuminating light rays;

means for rotatably supporting said light-blocking plates such that said light-blocking plates are rotatable about an axis extending between said light-blocking plates perpendicular to the optical axis of said bundle of illuminating light rays; and

at least one of said light-blocking plates comprises a cross-sectional configuration, as viewed in the direction of said optical axis of the bundle of illuminating light rays when said light-blocking plates lie parallel to said optical axis, such that said at least one light-blocking plate is bent at an angle to said axis of rotation at a position near a center of said illuminating optical path,

said light blocking plates having a shape such that a ratio between a peripheral portion of the bundle of illuminating light rays and a central portion of the bundle of illuminating light rays is maintained substantially constant as said pair of light blocking plates are rotated by said rotatable supporting means between blocking and nonblocking positions, said central portion of said bundle of illuminating light rays and said peripheral portion of said bundle of illuminating light rays being defined such that when said light blocking plates are in said nonblocking position, the luminous flux of said central portion of the illuminating light rays is equal to the luminous flux of said peripheral portion of the illuminating light rays.

5,488,510

ENHANCED DEPTH PERCEPTION VIEWING DEVICE FOR TELEVISION

Edward J. LeMay, 2219 Ludington-P.O. Box 212, Escanaba, Mich. 49829-0212

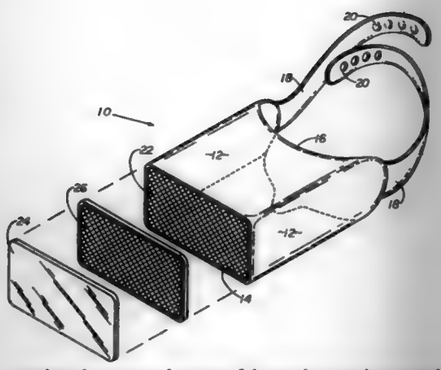
Filed Jul. 26, 1994, Ser. No. 280,723

Int. Cl.[6] G02B *27/22*

U.S. Cl. 359—478 **14 Claims**

1. An optical television viewing device comprising a hollow body having a front opening and a back opening and at least one opaque sidewall extending about the periphery of the front opening and the periphery of the back opening, the periphery of the back opening being formed for substantially light-tight engagement with the face of a user,

the improvement comprising an open mesh screening across the front opening and extending to the periphery of the front



opening, the warp and weave of the mesh screening extending diagonally across the front opening relative to the viewer's eyes.

5,488,511

SPATIALLY TUNABLE RUGATE NARROW REFLECTION BAND FILTER

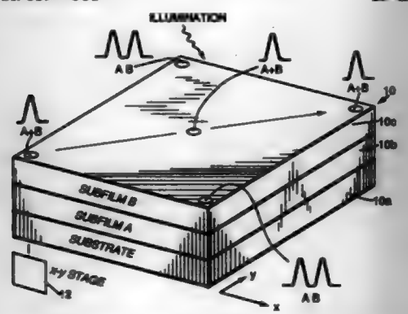
Thomas D. Rahmlow, Jr., Bethlehem, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 3, 1992, Ser. No. 862,858

The portion of the term of this patent subsequent to Jul. 11, 2012, has been disclaimed.

Int. Cl.[6] G02B *1/10;5/28*

U.S. Cl. 359—586 **19 Claims**



1. An optical filter having a radiation receiving surface, said filter comprising a rugate reflection filter having a reflection wavelength that varies along an axis of the radiation receiving surface.

5,488,512

COLOR CORRECTED OCULAR

Franz Muchel, Königsbronn, Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Germany

Filed Jun. 28, 1994, Ser. No. 266,622

Claims priority, application Germany, Jul. 2, 1993, 43 22 015.0

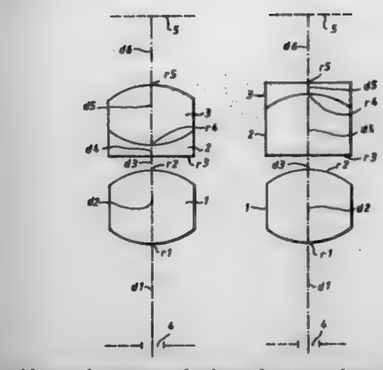
Int. Cl.[6] G02B *25/00;13/18;9/06*

U.S. Cl. 359—646 **9 Claims**

1. A color corrected ocular comprising:

first and second components;

said first component being an individual lens having an aspherical surface;



said second component having at least one planar surface; and,

said second component being a composite lens consisting of first and second elements.

5,488,513

ZOOM LENS BARREL

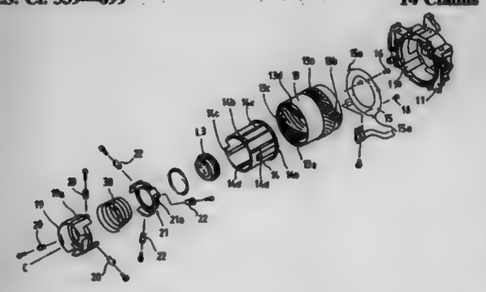
Hitoshi Tanaka, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1993, Ser. No. 106,574

Claims priority, application Japan, Aug. 17, 1992, 4-217919

Int. Cl.[6] G03B *7/00*

U.S. Cl. 359—699 **14 Claims**



1. A zoom lens barrel, comprising:

a cam ring that is threadedly engaged to a female helicoid formed in a stationary barrel mechanism;

linear movement guide means, mounted for rotation relative to said cam ring, and for movement in an optical axis direction together with said cam ring;

at least three movable lens groups, including first, second and third lens groups that are guided in said optical axis direction by said linear movement guide means, said first, second and third lens groups being located in this order from an object side of said zoom lens barrel;

a first lens frame that holds said first lens group and is provided with a helicoid, wherein another helicoid is formed on said cam ring to engage with said helicoid of said first lens frame; and,

a plurality of cam grooves formed on said cam ring to drive lens groups behind said first lens group.

5,488,514

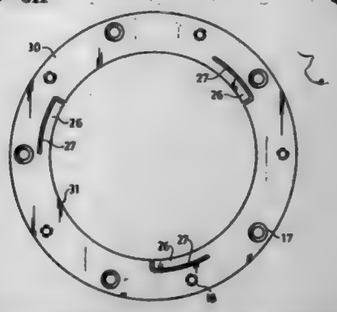
METHOD OF MOUNTING AN OPTICAL ELEMENT

John H. Bruning, Pittsford; Frank A. DeWitt, Holcomb, and Keith E. Hanford, Macedon, all of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Division of Ser. No. 79,976, Jun. 18, 1993, Pat. No. 5,428,482, which is a continuation of Ser. No. 787,785, Nov. 4, 1991, abandoned. This application Mar. 16, 1995, Ser. No. 404,924

Int. Cl.[6] G02B *7/02*

U.S. Cl. 359—811 **4 Claims**



1. A method of mounting an optical element, said method using a seating ring flexibly held within an annulus by three flexible elements extending between the ring and the annulus, and said method comprising:

a. arranging said optical element on a fixture that holds said optical element coaxially adjacent said seating ring;

b. preloading said seating ring with weight approximating the weight of said optical element;

c. bonding said optical element to said seating ring while said fixture supports said optical element and said seating ring upholds said preload weight; and

d. removing said preload weight from said seating ring and removing said fixture from said optical element to leave said seating ring supporting said optical element.

5,488,515

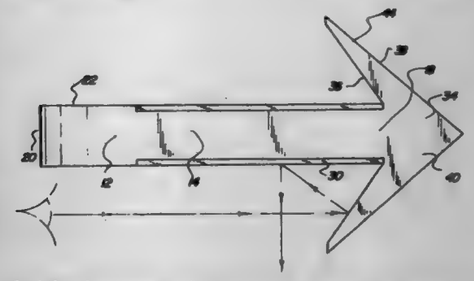
HOOD MOUNTED SAFETY MIRROR FOR VEHICLES

David D. Rachels, Sr., 2318 Floral Dr., Niles, Mich. 49120

Filed Dec. 14, 1994, Ser. No. 355,535

Int. Cl.[6] G02B *5/08;7/182;* **B60R** *1/06*

U.S. Cl. 359—855 **4 Claims**



1. A hood mounted safety mirror for vehicles for allowing a driver to see what road conditions are on both sides of the road comprising, in combination:

an elongated stem portion having a top surface, a bottom surface, a front portion, a back portion, and two side portions, the bottom surface having a rubber pad theresecured, the rubber pad serving to prevent the stem portion from scratching a hood of a car, the bottom surface having a plurality of slotted apertures therethrough, the two side portions each having an elongated mirror secured thereto;

an arrow portion integral with the front portion of the stem portion, the arrow portion having an inner surface, an outer surface, a top surface, a bottom surface, and two outwardly extending side portions, the bottom surface having a rubber pad theresecured, the bottom surface having a plurality of slotted apertures therethrough, the inner surface of the two outwardly extending portions having an elongated recess therein, each elongated recess having a mirror secured therein, each of the two outwardly extending side portions being angled at a position as such to allow a driver to view obstructions off to a side of the car as reflected from the mirrors on the side portions of the stem portion to the mirrors within the recess of the outwardly extending side portions to eyes of the driver;

a plurality of securement means, each of the securement means removably securing the stem portion and the arrow portion to a center portion of the hood of a car through the slotted apertures thereof.

5,488,516

APPARATUS FOR REPRODUCING N DIGITAL SIGNALS FROM N ADJACENT TRACKS ON A RECORD CARRIER

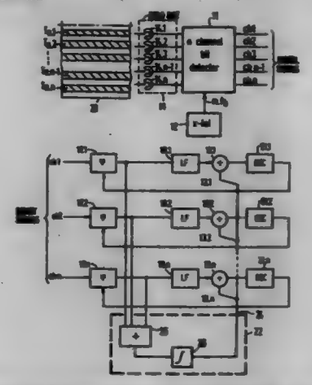
Johannes J. W. Kalfs, and Franciscus A. Kneepkens, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 17, 1994, Ser. No. 214,913

Claims priority, application European Pat. Off., May 7, 1993, 93201327

Int. Cl.[6] G11B *5/09;15/12*

U.S. Cl. 360—51 **6 Claims**



1. An apparatus for reproducing n digital signals from n adjacent tracks included on a record carrier, the apparatus comprising:

read means for reading n information signals from the n tracks;

detection means for deriving the n digital signals from n binary signals derived from the n information signals;

n phase-locked loops which each receives a respective one of the n binary signals, each phase-locked loop including (a) a phase comparator having a first input for receiving one of the n binary signals, a second input and an output for supplying a comparison signal; and (b) a voltage-controlled oscillator having an input coupled to the output of the phase comparator, and an output for supplying a clock signal of a given frequency, which output is coupled to the second input of the phase comparator;

control signal generator means for deriving from the comparison signals supplied by the phase comparators of the n phase-locked loops a control signal which is a measure of the deviation of the relative speed of transport of the record carrier with respect to the read means from the nominal relative speed of transport of the record carrier with respect to the read means, the control signal generator means having (a) n inputs which are each coupled to the output of a respective one of the phase comparators of the n phase-locked loops for receiving the comparison signals supplied by the phase comparators of the n phase locked loops, and (b) a separate output for supplying the control signal; and

combination means for (a) combining the control signal with each of the comparison signals supplied by the phase comparators of the n phase locked-loops separately to produce a respective combination signal for each of the n phase-locked loops, and (b) supplying each respective combination signal to the input of the voltage controlled oscillator of the phase-locked loop for which that respective combination signal is produced, the combination means coupling the output of the phase comparator and the input of the voltage controlled oscillator of each phase locked-loop of the n phase-locked loops together and with the output of the signal control generator means.

5,488,517

SYSTEM COMPRISING A MAGNETIC-TAPE CASSETTE AND A MAGNETIC-TAPE APPARATUS, AND MAGNETIC-TAPE CASSETTE, TAPE-CLEANING MEANS AND TAPE-CLEANING ELEMENT FOR USE IN THE SYSTEM

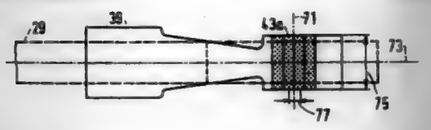
Gerardus W. A. Akkermans, Breda; Augustinus L. Braun, and Sander J. Klerk, both of Eindhoven, all of, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 4, 1993, Ser. No. 131,506

Claims priority, application European Pat. Off., Jan. 8, 1992, 92200093

Int. Cl.[6] G11B *5/09;23/02*

U.S. Cl. 360—53 **22 Claims**



1. A system, comprising:

a magnetic-tape cassette comprising a housing, a magnetic tape transportable within said housing, and a tape cleaning element engageable with said magnetic tape; and

a magnetic-tape apparatus having a magnetic head for communicating information in digital form with the magnetic tape accommodated in the housing of the magnetic-tape cassette, said magnetic-tape apparatus comprising error correction means for correcting errors in the digital information read from the magnetic tape, which information is stored on the magnetic tape in a plurality of parallel longitudinal tracks in successive information blocks in the longitudinal direction of the magnetic tape, the error-correction means being capable of correcting a maximum number of n successive information blocks on the magnetic tape,

the dimension of the active surface of the tape-cleaning element in a direction parallel to the longitudinal axis of the magnetic tape is smaller than the overall longitudinal dimension of two times n information blocks, whereby the error correction means is capable of at least substantially correcting read errors which occur as a result of soiling of the magnetic tape over the dimension of the active surface by the tape-cleaning element.

5,488,518

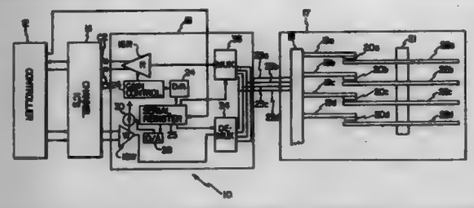
PROGRAMMABLE PRE-AMPLIFIER USING A SERIAL SHIFT REGISTER TO OUTPUT A PLURALITY OF CONTROL SIGNALS

John S. Shier, Apple Valley, Minn., assignor to VTC Inc., Bloomington, Minn.

Filed Aug. 15, 1994, Ser. No. 290,479

Int. Cl.[6] G11B *5/02;5/09*

U.S. Cl. 360—67 **3 Claims**



1. In a data storage system having a plurality of magnetic transducing means for storing and retrieving data signals on a magnetic medium and a controller for issuing instructions, a pre-amplifier comprising:

a read amplifier having an adjustable gain;

a write driver having an adjustable current source;

a serial shift register responsive to instructions from the controller to selectively operate the read amplifier and the write driver and produce control, signals;

a first digital-to-analog converter connected to the read amplifier and responsive to a control signal from the serial shift register to adjust the gain of the read amplifier;

a second digital-to-analog converter connected to the write driver and responsive to a control signal from the serial shift register to adjust the current source of the write driver;

a multiplexer means responsive to a control signal from the serial shift register to select one of the plurality of magnetic transducers and to connect the selected magnetic transducer to the read amplifier; and

a demultiplexer means responsive to a control signal from the serial shift register to select one of the plurality of magnetic transducers and to connect the selected magnetic transducer to the write driver.

5,488,519

RECORDING AND REPRODUCING DEVICE HAVING CONDUCTIVE SPINDLE

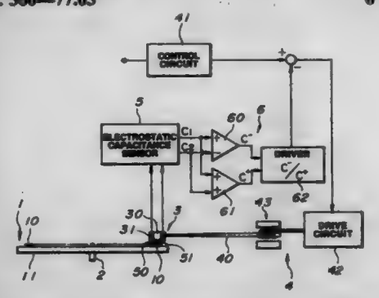
Takehisa Ishida, Tokyo, and Hiroshi Takino, Kanagawa, both of, Japan, assignors to Sony Corporation, Japan

Continuation of Ser. No. 140,273, Oct. 19, 1993, abandoned, which is a continuation of Ser. No. 681,320, Apr. 4, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 468,634

Claims priority, application Japan, Apr. 6, 1990, 2-91618

Int. Cl.[6] G11B *5/596;5/82;5/09*

U.S. Cl. 360—77.03 **6 Claims**



1. A recording and/or reproducing apparatus comprising:

head slider means having at least a pair of electrodes on a bottom surface thereof, said electrodes positioned opposite to concentric conductive magnetic stripes provided on a disc

said concentric conductive magnetic stripes being provided with conductive bridge stripes between adjacent ones of said conductive stripe, the conductive bridge stripes for storing additional information;

head arm means for supporting said head slider means;

head drive means coupled to said head arm means for moving said head slider means by way of said head arm means;

means for detecting capacitances between said electrodes and said concentric conductive magnetic stripes;

tracking error signal detecting means connected to said capacitance detecting means for generating tracking error signals;

means for feeding back said tracking error signals to said head drive means;

conductive spindle means for rotating said disc; and

at least one radial conductive stripe conductively connecting said concentric conductive magnetic stripes to said conductive spindle means.

5,488,520

DATA RECORDING AND PLAYBACK APPARATUS USING HELICAL SCAN SYSTEM WITH MAGNETIC HEAD FOR RECORDING AND PLAYING BACK PATTERN SIGNAL FOR TRACKING IN TRACKING AREA WITHIN HELICAL TRACK

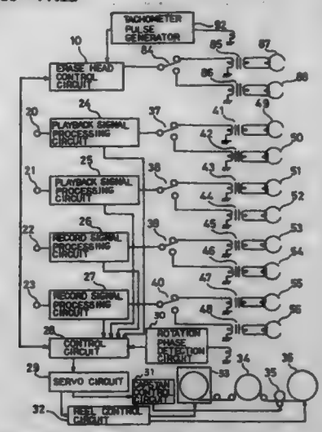
Toshiro Aizawa, Ebina, and Shigemitsu Higuchi, Fujisawa, both of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 2, 1993, Ser. No. 70,625

Claims priority, application Japan, Jun. 2, 1992, 4-141745

Int. Cl.[6] G11B *5/584;5/58;15/14*

U.S. Cl. 360—77.12 **23 Claims**



1. A data recording and playback apparatus using a helical scan system for recording and playing back data on a magnetic tape with a rotary head cylinder, said apparatus comprising:

a first magnetic head on the rotary head cylinder for scanning a recording track on said magnetic tape;

a recording magnetic head on the rotary head cylinder for scanning a data track within said recording track;

a playback magnetic head on the rotary head cylinder for scanning said data track;

means for recording a specific pattern in a tracking area within said recording track with said first magnetic head during a data recording operation of said apparatus, said tracking area not overlapping said data track;

means for recording data in said data track with said recording magnetic head during said data recording operation;

reference signal generating means for generating a reference signal at a timing indicative of a predetermined rotation phase of said rotary head cylinder;

means for playing back the data in said data track with said playback magnetic head during a data playback operation of said apparatus;

means for playing back said specific pattern in said tracking area with said first magnetic head during the data playback operation; and

tracking control means for detecting a difference between a playback timing of said specific pattern indicative of a timing at which said specific pattern is played back by said first magnetic head and the timing at which said reference signal is generated by said reference signal generating means, and for controlling tracking of said first magnetic head, said recording magnetic head, and said playback magnetic head based on said difference.

5,488,521

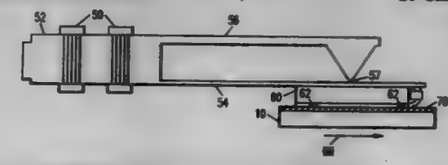
INFORMATION RECORDING APPARATUS WITH A NON-NEWTONIAN LIQUID BEARING

James U. Lemke, San Diego, and William W. French, Encinitas, both of Calif., assignors to Conner Peripherals, Inc., San Jose, Calif.

Continuation of Ser. No. 123,704, Sep. 17, 1993, abandoned, which is a continuation of Ser. No. 966,579, Oct. 26, 1992, abandoned, which is a continuation of Ser. No. 810,955, Dec. 19, 1991, abandoned, which is a continuation of Ser. No. 453,312, Dec. 20, 1989, Pat. No. 5,097,368, which is a continuation-in-part of Ser. No. 259,344, Oct. 17, 1988, abandoned. This application Mar. 7, 1994, Ser. No. 207,799

Int. Cl.[6] G11B *33/14*

U.S. Cl. 360—97.02 **20 Claims**



1. An information storage system comprising:

a substantially rigid rotatable storage medium having a magnetic data surface;

means for rotating the rotatable storage medium;

a magnetic transducer means;

means for maintaining a film of a non-Newtonian fluid on the magnetic data surface by applying the fluid to the magnetic data surface during rotation of the storage medium, the magnetic transducer means being supported adjacent to the magnetic data surface during rotation of the storage medium, by the film of the fluid.

5,488,522

EJECTION APPARATUS FOR EJECTING STORAGE MEDIA POSITIONED IN A COMPUTER MASS STORAGE MEDIA DRIVE

Steven L. Peace, Fort Collins, and Terry A. Precht, Loveland, both of Colo., assignors to ComByte, Inc., Ft. Collins, Colo.

Filed Nov. 14, 1994, Ser. No. 337,740

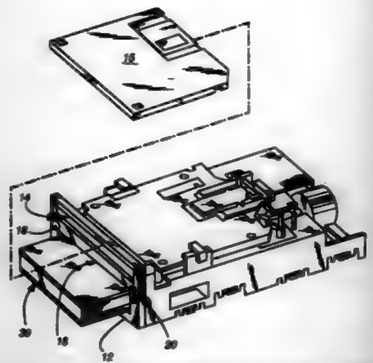
Int. Cl.[6] G11B *25/10*

U.S. Cl. 360—99.06 **9 Claims**

1. Manually operable storage media ejection apparatus for a computer mass storage media drive having a first insertion opening for removably receiving a first storage media at a first storage media receiving position, and having a second insertion opening for removably receiving a second storage media at a second storage media receiving position, said ejection apparatus comprising:

a first spring biased ejection force generating mechanism for generating a first ejection force that is operable to eject a first storage media out of said first storage media receiving position when a first storage media is positioned thereat,

a second spring biased ejection force generating mechanism for generating a second ejection force that is operable to eject a



second storage media out of said second storage media receiving position when a second storage media is positioned thereat; and

a single manually movable actuator cooperating with said first and second ejection force generating mechanism and operative, when said manually movable actuator is actuated, to initiate generation of said second and first ejection forces.

5,488,523

ULTRA-SLIM DISK STORAGE UNIT HAVING A HYDRODYNAMIC BEARING ASSEMBLY WHICH FORMS A STABLE MENISCUS

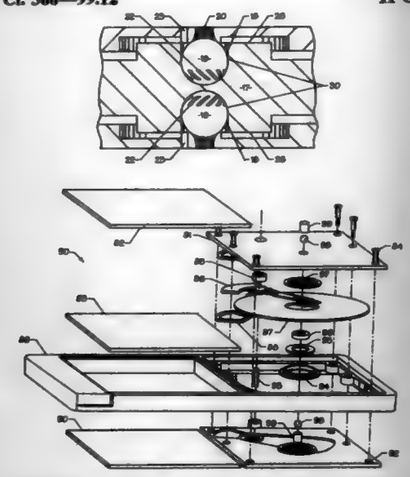
Jay R. Seaver, Longmont, Colo.; Mark A. Diel, Aptos, Calif., and Forrest Titcomb, Colorado Springs, Colo., assignors to Maxtor Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 881,739, May 6, 1992, Pat. No. 5,328,271. This application Jun. 9, 1993, Ser. No. 74,215

The portion of the term of this patent subsequent to Jul. 12, 2011, has been disclaimed.

Int. Cl.[6] G11B *17/02;33/12;* H05K *7/02;* F16C *32/06*

U.S. Cl. 360—99.12 **11 Claims**



1. An ultra-slim disk storage unit comprising:

a frame having first and second enclosed spaces, said spaces being disposed in the same general plane adjacent to each other;

disk drive assembly providing readable and writable information storage on a disk medium, said disk drive assembly comprising a hub and a hydrodynamic bearing disposed within said first enclosed space, said hub rotationally supporting said disk medium, said hydrodynamic bearing providing rotational movement of said hub within said first enclosed space about an axis of rotation, said hydrodynamic bearing comprising a pair of balls and a pair of sockets, each of said sockets having a spherical section and a cylindrical section, said pair of balls being disposed within said spherical sections of said pair of sockets, respectively, along said axis of rotation on opposite sides of said hub, either said pair of sockets or said pair of balls being affixed to said hub, wherein a gap is formed between each socket and its associated ball, said gap being filled with a liquid lubricant to facilitate rotational movement of said hub about said rotational axis, said lubricant forming a stable meniscus between each of said balls and said cylindrical section of each of said sockets, said disk drive assembly being contained within said first enclosed space;

an electronic circuit board for controlling the operation of said disk drive assembly, said electronic circuit board being housed on a board contained within said second enclosed space; and

an interconnect configured to be compatible with Personal Computer Memory Card International Association (PCMCIA) standards coupled to said electronic circuit board providing external electrical connection to said disk storage unit, said interconnect being disposed along a peripheral side of said frame.

5,488,524

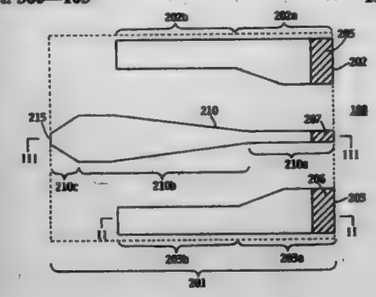
SELF ADAPTIVE HEAD FOR SEMI-CONTACT RECORDING

Karl A. Cunningham, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1993, Ser. No. 172,683

Int. Cl.[6] G11B *21/21;5/60*

U.S. Cl. 360—103 **13 Claims**



1. An air bearing slider assembly comprising:

a plurality of separated elongated rails, each rail extending in a direction parallel to a longitudinal axis of the slider assembly, each rail having a leading edge at an air inflow end of the slider assembly and a trailing edge, a first rail of the plurality of elongated rails having a load bearing portion between the leading edge and the trailing edge and a constricted tail portion at the trailing edge, said tail portion being narrower than said load bearing portion, a second elongated rail of the plurality of elongated rails being positioned on one side of the first rail, the trailing edge of said first rail being positioned further away from the air inflow end of the slider assembly than the trailing edge of said second rail; and

a transducer element mounted on the first rail constricted tail portion.

5,488,525

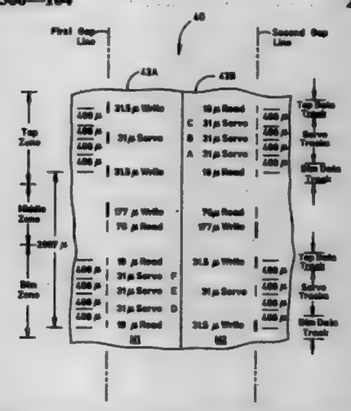
DECOUPLED MAGNETIC HEAD ASSEMBLY FOR QUARTER-INCH TAPE

George F. Adams, and Vincent N. Kahwaty, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 18, 1994, Ser. No. 292,680

Int. Cl.[6] G11B *5/265;5/48*

U.S. Cl. 360—104 **28 Claims**



1. A head assembly which has a plurality of write elements, magnetoresistive read elements and magnetoresistive servo elements, each element having a respective gap which has a track width which is located at a head surface of the head assembly, the head assembly comprising:

the head surface having top and bottom zones, each of the top and bottom zones having a length and a lateral width;

each of the top and bottom zones including:

only first and second longitudinally spaced gap lines which extend laterally along a width of the respective zone;

the track widths of the gaps extending along the gap lines;

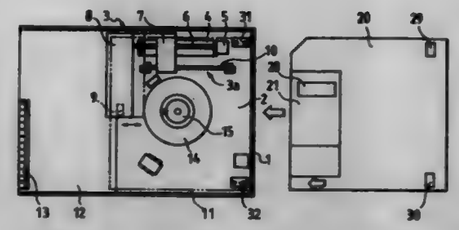
first and second data lines and servo lines laterally spaced from one another and capable of corresponding with tracks on a magnetic tape, the servo line being located between the first and second data lines;

the track widths of the gaps extending perpendicular to the data lines;

a first set of a write gap and a read gap located along first one of the data lines and a second set of a write gap and a read gap located along a second one of the data lines, the write gap of each of the first and second sets being located on one of the gap lines and the read gap of each of the first and second sets being located on the other gap line; and

at least one servo gap located on each of the servo lines; and

the write gaps, the read gaps and the servo gaps of the first and second zones being a mirror image with respect to one another.



a spindle motor including a hub base for mounting a disk cassette; and

a head carriage mechanism including a head for recording and reproducing information from the disk cassette, said spindle motor and said head carriage mechanism both being mounted on said substrate disposed in the disk cassette loading area of said chassis, wherein said loading area comprises only the area above the substrate which conforms to the area bounded by the projection of the cassette onto the substrate, said head carriage mechanism comprises a guide mechanism extending in parallel with a cassette insertion direction so as to move the head in a direction parallel with the cassette insertion direction, said guide mechanism being disposed on a side of said spindle motor when viewed in the cassette insertion direction, said guide mechanism being disposed between the disk cassette and said substrate when viewed in the cassette insertion direction.

5,488,526

DISK DRIVE DEVICE HAVING A SPINDLE MOTOR AND A HEAD CARRIAGE SECTION BOTH PROVIDED IN A DISK CASSETTE LOADING AREA

Hiroshi Sakashita, and Eiji Arasaki, both of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Tokyo, Japan

Filed Apr. 1, 1994, Ser. No. 221,786

Claims priority, application Japan, Apr. 1, 1993, 5-098626

Int. Cl.[6] G11B *5/55*

U.S. Cl. 360—106 **10 Claims**

1. A disk driving device comprising:

a chassis;

a substrate disposed in a disk cassette loading area of said chassis;

5,488,527

MAGNETIC HEAD INCLUDING A MAGNETIC RECORDING MEDIUM SLIDE SURFACE WITH PREDETERMINED DIMENSIONS

Noboru Komori; Yoshiaki Kato, and Masaru Umekida, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

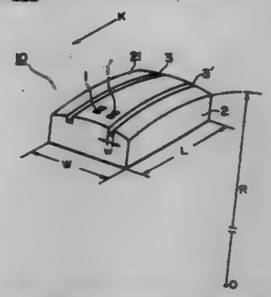
Continuation of Ser. No. 728,499, Jul. 11, 1991, abandoned.

This application Feb. 4, 1994, Ser. No. 191,729

Claims priority, application Japan, Jul. 20, 1990, 2-190629

Int. Cl.[6] G11B *5/60;5/147*

U.S. Cl. 360—122 **10 Claims**



1. A thin film magnetic head comprising a floating head slider having a spherical surface, a portion of which constitutes a medium facing surface, wherein

a radius R of said spherical surface is in a range of 80 mm≦R≦100 mm,

said facing surface, as viewed from a magnetic recording medium opposing said facing surface, is in the shape of a rectangle having an overall length L along the air flow of 1.3 to 3 mm and a transverse width W in a direction normal to the air flow of 1 to 2.2 mm, and wherein

at least two longitudinal grooves, each having a width w in a range of 100 μm≦w≦500 μm, are formed on said facing surface extending along said air flow,

wherein the grooves have a depth of 20 to 150 μm,

wherein at least one transducer element is disposed in the spherical surface at the effluent side of air flow, and

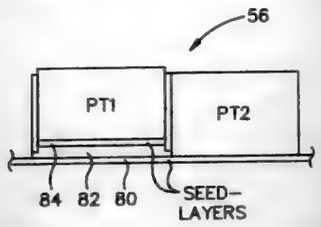
wherein said head has an improved modulation waveform indexed by a relative index value of at least 0.8.

5,488,528

POLE TIP STRUCTURE FOR THIN FILM MAGNETIC HEADS

Mao-Min Chen; Kochan Ju, both of San Jose; Neil L. Robertson, Campbell, and Po-Kang Wang, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 175,886, Dec. 30, 1993, Pat. No. 5,393,376. This application Aug. 18, 1994, Ser. No. 292,630
Int. Cl.[6] G11B *5/147*
U.S. Cl. 360—126 **15 Claims**



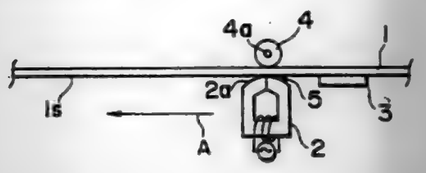
1. A thin film magnetic head which has a track width comprising:
first and second pole tips PT1 and PT2;
a sidegap sandwiched between the first and second pole tips PT1 and PT2;
first and second seedlayers with an insulation layer sandwiched directly between the first seedlayer and a portion of the second seedlayer;
the first pole tip PT1 laying directly on the second seedlayer;
the second pole tip PT2 laying directly on the first seedlayer; and
each of the pole tips PT1 and PT2 being offset from one another along said track width by thicknesses of the insulation layer and the second seedlayer to form an air bearing surface which is substantially perpendicular to the sidegap, the first and second seedlayers and the insulation layer.

5,488,529

METHOD FOR PREVENTING DEPOSITION ON MAGNETIC HEAD, AND PHOTOGRAPHIC FILM

Yoshiaki Kato, Minamiashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 12, 1993, Ser. No. 16,906
Claims priority, application Japan, Feb. 14, 1992, 4-59157
Int. Cl.[6] G11B *5/41;15/60*
U.S. Cl. 360—128 **9 Claims**



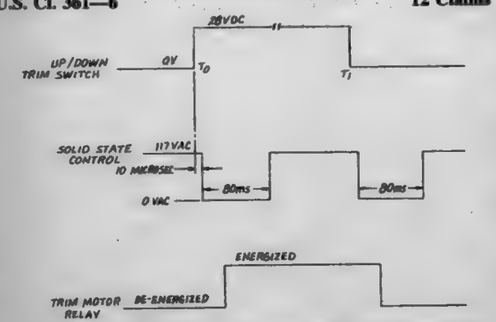
1. A method for preventing deposition on a magnetic head during information recording and/or reproducing on or from a photographic film wherein at least one magnetic track is provided along a longitudinal direction of said photographic film, and wherein information recording and/or reproduction is executed by running said magnetic track on a surface of the magnetic head, comprising running a step difference of a photographic film base provided on said magnetic track or an extension of said magnetic track over a width being at least equal to or greater than that of said magnetic track and disposed outside an image area of the photographic film in contact with said surface of the magnetic head.

5,488,530

SYSTEM AND METHOD FOR PROTECTING RELAY CONTACTS

Hans E. De Jong, Rossmoor, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Apr. 22, 1993, Ser. No. 50,602
Int. Cl.[6] H02H *3/033*
U.S. Cl. 361—6 **12 Claims**



1. A system for protecting electromagnetic relay contacts from erosion, comprising:
an A.C. load power source:
a load:
a relay for electrically connecting said load power source and said load:
a housekeeping power source;
a switch disposed in a D.C. circuit for energizing or deenergizing said relay, the circuit electrically connecting said switch and said relay;
means for sensing D.C. voltage change across said switch, said means being connected to said housekeeping power source;
a solid state component electrically connected in series between said load power source and said load, and also electrically connected in series with said sensing means;
a time delay means connected in series between the sensing means and the solid state component, said delay means further being connected to said housekeeping power source and being responsive to the sensing means for delaying A.C. current flow between the load power source and the load for a period of time selected to allow generally full closure or opening of the contacts.

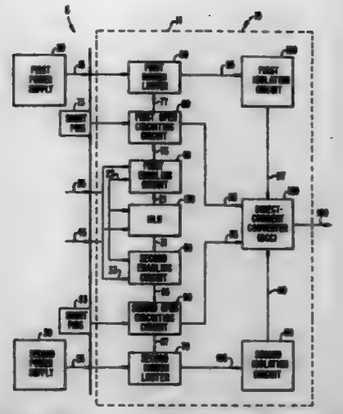
5,488,531

REDUNDANT POWER MIXING ELEMENT WITH FAULT DETECTION FOR DC-TO-DC CONVERTER

David L. Aldridge, Dripping Springs; Stephen R. Bissell, and Daniel D. Gunn, both of Austin, all of Tex., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Jun. 30, 1994, Ser. No. 268,918
Int. Cl.[6] H02J *1/04;* H02H *7/10*
U.S. Cl. 361—18 **21 Claims**

1. A power mixing apparatus coupled to receive first and second power rails to produce therefrom a direct current output, the power mixing apparatus comprising:
connection means for removably coupling the power mixing apparatus to the first and second power rails, the connection means including open circuiting pins for completing a circuit path when the power mixing apparatus is coupled to the first and second power rails;



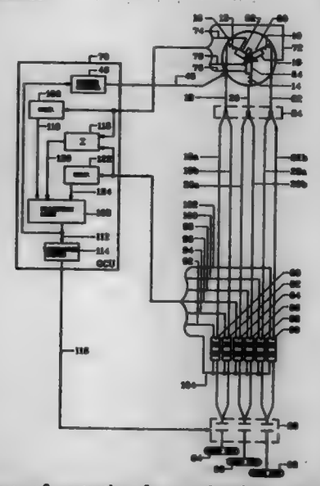
means for producing an enabling signal coupled to the open circuiting pins;
a pair of current limiters each respectively coupled to receive corresponding ones of the first and second power rails and to the open circuiting pins to receive the enabling signal to produce first and second currents from a one and another one of the pair of power rails, respectively, when the circuit path is complete; and
a converter coupled to receive the first and second currents for producing the direct-current output.

5,488,532

SYSTEM OF PROTECTION FOR ELECTRIC POWER DISTRIBUTION FAILURES

David J. Mrowiec, Rockford, Ill., and Jef W. Good, Beloit, Wis., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 27, 1993, Ser. No. 144,071
Int. Cl.[6] H02H *3/00*
U.S. Cl. 361—63 **29 Claims**



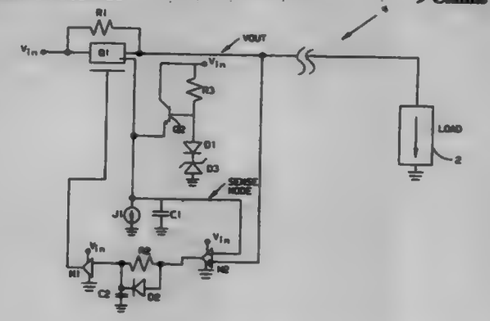
1. A system of protection for an electric power distribution system having at least three phases and at least two parallel power feeders per phase coupling a source of electrical energy through a contactor device to a lead distribution bus, comprising:
a controller;
an individual parallel feeder current sensor associated with each individual parallel power feeder sensing electrical current conducted therein, said parallel feeder current sensors producing output parallel current sense signals proportional to the magnitude of the parallel feeder current sensed thereby;
means coupling said parallel feeder current sensors to said controller for conducting said output parallel current sense signals thereto; and wherein
said controller comprises
a comparator having an input coupled to said parallel feeder current sensors by said coupling means and an output, said comparator comparing the magnitudes of said output parallel current sense signals per phase, said comparator further generating a magnitude differential signal per phase, and
protection logic circuitry, coupled to said output of said comparator, processing said magnitude differential signals, said protection logic circuitry generating a first output protection signal when any of said magnitude differential signals exceeds a predetermined threshold for a predetermined amount of time sufficient to indicate a high impedance fault on at least one of the parallel power feeders.

5,488,533

METHODS AND APPARATUS FOR ISOLATING A POWER NETWORK FROM A LOAD DURING AN OVERCURRENT CONDITION

Bruce M. Cassidy, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 7, 1994, Ser. No. 192,921
Int. Cl.[6] H02H *3/20*
U.S. Cl. 361—18 **9 Claims**



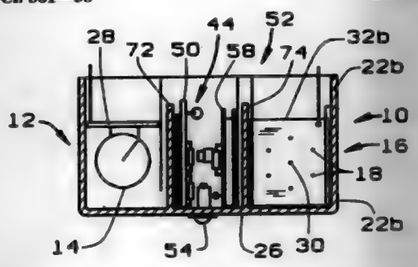
1. An electrical circuit for controlling current from a power source to a load, said circuit comprising:
transistor means, having a load current path coupled between the power source and the load, for supplying load current, and having a sense current path coupled to said power supply, for supplying sense current proportional to but substantially less than said load current, and wherein a load voltage decreases as the load current increases due to increasing voltage drop across said load current path;
bias means for preventing an output of said sense current path from falling below a predetermined voltage;
a current sink coupled to said sense current path output; and
a comparator having a first input coupled to said sense current path output, a second input coupled to said load and an output coupled to activate said transistor means when said load voltage is greater than a voltage of said sense current path output and deactivate said transistor means when said load voltage is less than the voltage of said sense current path output.

5,488,534

TRANSIENT VOLTAGE SURGE SUPPRESSION MODULE WITH ULTRAFAST FUSING

C. Peter Rau, Tioga County, N.Y., and Thomas T. Hitch, Mercer County, N.J., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 19, 1993, Ser. No. 109,815
Int. Cl.[6] H02H 9/04
U.S. Cl. 361—56 20 Claims



1. Transient voltage surge suppressor (TVSS) apparatus for connection to a power line to protect equipment connected to the line from damage in the event of high voltage surges or transients comprising:

semiconductor means connected to the power line, said semiconductor means being normally non-conducting when normal line voltage is supplied thereto, but being switched into conduction by the voltage provided thereto when an overvoltage condition caused by a line surge occurs;

fuse means connected to the semiconductor means to protect the semiconductor means in the event of an excessive current spike caused by a high voltage transient on the line;

module means in which said semiconductor means and said fuse means are installed; and,

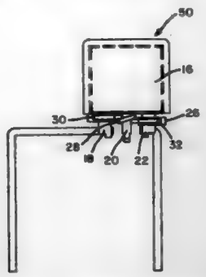
plasma suppression means substantially completely filling said module means for preventing the spread of a plasma produced if the semiconductor means or the fuse means is destroyed by the line surge or transient, said suppression means including means substantially completely encapsulating both the semiconductor means and fuse means within said module means so plasma produced if either the semiconductor means or fuse means fails is quickly extinguished and thus cannot spread to other components.

5,488,535

ARC SUPPRESSOR FOR SIDACTORS

Mohammad Masghati, Addison, and Jack R. Cline, Bartlett, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Continuation-in-part of Ser. No. 188,509, Jan. 26, 1994, Pat. No. 5,424,901. This application Apr. 7, 1995, Ser. No. 418,276
Int. Cl.[6] H02H 9/04
U.S. Cl. 361—119 20 Claims



1. An arc suppressor for a sidactor fail-safe device used for protecting telecommunication equipment against high voltage surges, comprising:

a sidactor comprising a substantially rectangularly-shaped body member, first and second end terminal pins, and a central terminal pin;

a fail-safe mechanism mounted upon and engaged with said first and second end terminal pins and said central terminal pin for short-circuiting at least one of said first and second end terminal pins to said central terminal pin under overload conditions; and

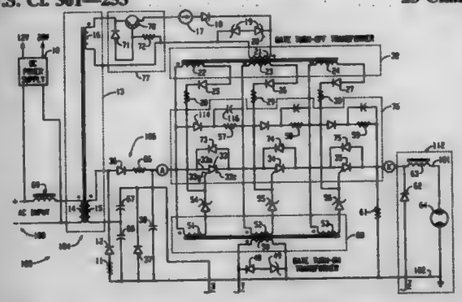
a housing tightly enveloping said substantially rectangularly-shaped body member of said sidactor so as to increase the strength of said substantially rectangularly-shaped body member of said sidactor and thereby preserve the structural integrity of said substantially rectangularly-shaped body member of said sidactor by preventing the development of cracks within said substantially rectangularly-shaped body member under said overload conditions such that any plasma gas, generated within said substantially rectangularly-shaped body member of said sidactor under said overload conditions, is contained within said substantially rectangularly-shaped body member of said sidactor and not permitted to escape from said substantially rectangularly-shaped body member of said sidactor so as not to develop an environment within which arcing between said end and central terminal pins of said sidactor can occur.

5,488,536

EXCITER CIRCUIT USING GATED SWITCHES

Howard V. Bonavia, Groton, and Dale F. Geislinger, Norwich, both of N.Y., assignors to Simmonds Precision Engine Systems, Inc., Akron, Ohio

Filed Apr. 1, 1993, Ser. No. 40,720
Int. Cl.[6] F02P 3/09
U.S. Cl. 361—253 23 Claims



7. In combination with an exciter for an internal combustion engine wherein the exciter comprises a charging circuit, a discharge circuit and a storage capacitor connected to the charging circuit and an igniter plug to produce sparks: a gate controlled thyristor having an anode and cathode connected as a switch to the storage capacitor and the plug, and trigger means for applying a first gate signal to switch said thyristor on to control discharge of the capacitor, and for applying a second gate signal to switch said thyristor off to control charging of the capacitor.

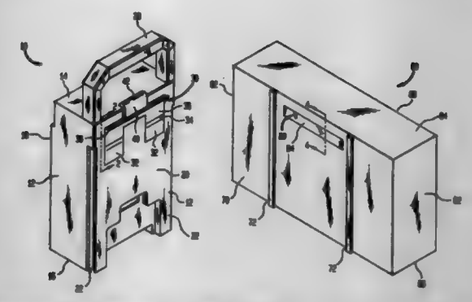
5,488,537

SAFETY INTERCONNECT LATCH FOR PORTABLE MEDICAL ELECTRONIC PATIENT MONITORING PRODUCT

Martin S. Heald, Beverly, and Per O. Hoel, Magnolia, both of Mass., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Mar. 28, 1994, Ser. No. 218,394
Int. Cl.[6] H05K 7/10;7/11
U.S. Cl. 361—684 18 Claims

1. A portable carrier for receiving a portable product having a recess forming a notch extending from an edge of the recess, the



portable product further having a track on one of a the plurality of external surfaces, the portable carrier comprising:

(a) a housing having a plurality of outer walls;

(b) a rail on one of the plurality of outer walls for engaging the track on the portable product and for aligning the portable product to the portable carrier;

(c) a latch assembly for insertion into the recess in the portable product, comprising:

(1) a shoulder portion adapted to fit into the recess of the portable product;

(2) a locking lip portion extending from the shoulder for engaging the notch of the portable product;

(3) a flexible member portion connected at one end to the shoulder and secured at another end to one of the plurality of outer walls and that allows the locking lip to move from a first position external to the recess to an intermediate position within the recess;

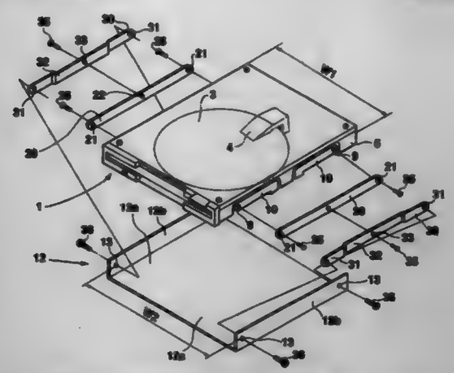
wherein when (A) the rail on one of the plurality of outer walls engages the track on the portable product so as to align the portable product to the portable carrier and (B) the locking lip is in the intermediate position within the recess and (C) the portable carrier is elevated relative to the portable product, the locking lip is caused to move to a locked position within the recess where the locking lip and notch are lockingly engaged to lock the portable carrier to the portable product.

5,488,538

MOUNTING STRUCTURE FOR MAGNETIC DISK DRIVE

Maki Wakita, Sayama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1994, Ser. No. 202,000
Claims priority, application Japan, Mar. 12, 1993, 5-016522 U; Mar. 12, 1993, 5-016523 U
Int. Cl.[6] G06F 1/16; G11B 33/02; H05K 7/02
U.S. Cl. 361—685 10 Claims



1. A system for mounting a magnetic disk drive onto an electronic equipment body having mounting holes, said system comprising:

a magnetic disk drive body having at each lateral sidewall a couple of threaded holes;

a first spacer arranged adjacent each sidewall of said magnetic disk drive body and having a single threaded through-hole and a couple of throughholes at positions immediately confronting said couple of threaded holes provided on each lateral sidewall of said magnetic disk drive body; and

a second spacer adjacent said first spacer, said second spacer having a single through-hole at a position immediately confronting said single threaded-hole of said first spacer, said second spacer having a couple of threaded holes at positions immediately confronting mounting holes on said electronic equipment body;

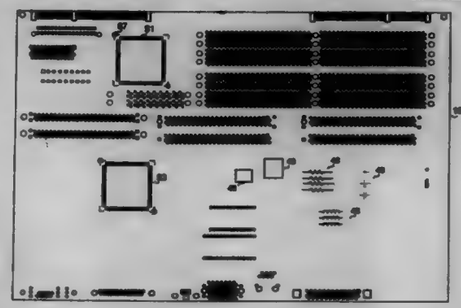
wherein, when said electronic equipment body has the same lateral dimensions as said magnetic disk drive, said magnetic disk drive is mounted onto said electronic equipment body by directly screwing bolts or machine screws into threaded holes of mounting members, and where said electronic equipment body has larger lateral dimensions than said magnetic disk drive, the attachment to said electronic equipment body being effected by way of said first and second spacers.

5,488,539

PROTECTING COT PACKAGED ICS DURING WAVE SOLDER OPERATIONS

James F. Testa, Mountain View; Jens Horstmann, Sunnyvale, and Hassan Sishpolo, Campbell, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jan. 21, 1994, Ser. No. 184,015
Int. Cl.[6] H05K 7/20
U.S. Cl. 361—720 11 Claims





1. An apparatus comprising:

a printed circuit board having a first surface, a second surface, and a plurality of through holes;

a solder pad for supporting a chip on tape packaged integrated circuit, the solder pad being formed on the first surface of the printed circuit board wherein said solder pad includes a multiplicity of fine metallic traces spaced closely together such that said traces are used to electrically connect said printed circuit board to said chip on tape packaged circuit;

a plurality of through hole mounted components which are mounted on the second surface of the printed circuit board and which include pins extending through said through holes such that a wave solder operation at the first surface of the printed circuit board secures said components to the printed circuit board; and

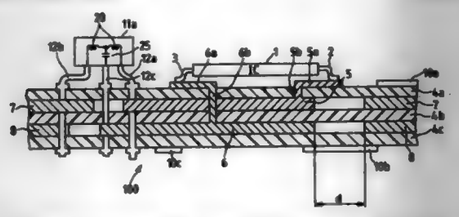
a pad cover mounted over the solder pad in a manner that protects the solder pad from being exposed to solder during said wave solder operation thereby preventing damage to the metallic traces of the solder pad.

5,488,540

PRINTED CIRCUIT BOARD FOR REDUCING NOISE

Hironobu Hatta, Okazaki, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 18, 1994, Ser. No. 178,183
Claims priority, application Japan, Jan. 19, 1993, 5-006627
Int. Cl.[6] H05K 1/11;7/06; H03H 7/00
U.S. Cl. 361—794 **17 Claims**



1. A printed circuit board adapted for connection with an IC via a plurality of IC mounting terminals including at least an IC power terminal and an IC ground terminal, said printed circuit board comprising:

an IC mounting area over which an IC can be mounted;

first and second mounting conductors adapted to be connected with the IC power terminal and IC ground terminal, respectively;

first and second conductive pattern blocks formed at locations overlapping the IC mounting area, said first and second conductive pattern blocks being connected with said first and second mounting conductors, respectively;

a first common conductor for electrical connection with the IC power terminal through said first conductive pattern block and said first mounting conductor;

a second common conductor for electrical connection with the IC ground terminal through said second conductive pattern block and said second mounting conductor;

a first noise-reducing element electrically connecting said first conductive pattern block and said first common conductor to reduce noise transmitted from said first conductive pattern block to said first common conductor;

a second noise-reducing element electrically connecting said second conductive pattern block and said second common conductor to reduce noise transmitted from said second conductive pattern block to said second common conductor; and

a first insulating base layer for insulating said first common conductor from said second common conductor and said first conductive pattern block from said second conductive pattern block.

5,488,541

VME BUS COMPATIBLE BACKPLANE AND SHELF ARRANGEMENT

Balwantrai Mistry, Nepean, and Raymond B. Wallace, Kanata, both of, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 1, 1994, Ser. No. 251,994
Int. Cl.[6] H01R 23/68; H05K 7/14
U.S. Cl. 361—788 **4 Claims**

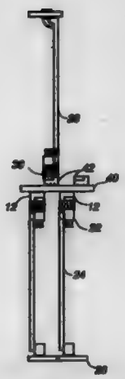
1. A VMEbus compatible backplane arrangement comprising:

a printed circuit board having first and second faces and first and second busses;

a plurality of first connectors disposed upon the first face, distributed along the backplane at a substantially fixed interval spacing and connected to the first bus;

a plurality of second connectors disposed upon the first face, distributed along the backplane at substantially the same spacing as that of the first connectors, and connected to the second bus, each corresponding located pair of the first and second connectors being suitably aligned across the backplane for receiving a respective VMEbus circuit card:

a plurality of third connectors mounted on the second face for directly receiving respective VMEbus transition cards, and



each third connector being mounted at a location laterally intermediate a pair of second connectors; and

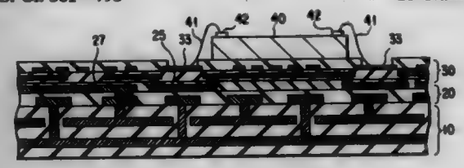
each second connector having a first plurality of terminals connected to the second bus, and a second plurality of terminals connected to a selected third connector.

5,488,542

MCM MANUFACTURED BY USING THIN FILM MULTILEVEL INTERCONNECTION TECHNIQUE

Kenji Ito, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 17, 1994, Ser. No. 291,859
Claims priority, application Japan, Aug. 18, 1993, 5-203808
Int. Cl.[6] H05K 1/11
U.S. Cl. 361—793 **16 Claims**



1. A semiconductor device comprising:

a ceramic base substrate;

a thick film wiring portion formed on the ceramic base substrate and including a thick film wiring layer and a thick film insulating layer;

a thin film multilayered wiring portion formed on the thick film wiring portion and including a first region in which thin film wiring layers and thin film insulating layers are alternately stacked upon each other, and a second region in which a plurality of thin film insulating layers are stacked upon one another, at least one of the thin film wiring layers of the first region of the thin film multilayer wiring portion being electrically connected to at least one of the thin film wiring layers of the thin film multilayered wiring portion by way of a part of the thick film wiring layers located under the second region;

a semiconductor chip mounted on the first region of the thin film multilayered wiring portion and and having a plurality of first bonding pads;

a plurality of second bonding pads formed on the second region of the thin film multilayered wiring portion; and

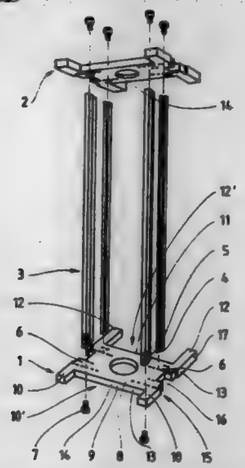
a connection wiring for electrically connecting the first bonding pads to the second bonding pads, said connection wiring having one end which is pressed and coupled to the first bonding pads and another end which is pressed and coupled to the second bonding pads.

5,488,543

FRAME STAND

Paul Mazura, Karlsbad, and Hans-Martin Schwenk, Straubenhardt, both of, Germany, assignors to Schroff GmbH, Straubenhardt, Germany

Filed Sep. 29, 1994, Ser. No. 310,794
Claims priority, application Germany, Jan. 6, 1993, 43 33 947.6; Apr. 2, 1994, 94 05 618 U
Int. Cl.[6] H02B 1/01
U.S. Cl. 361—829 **14 Claims**



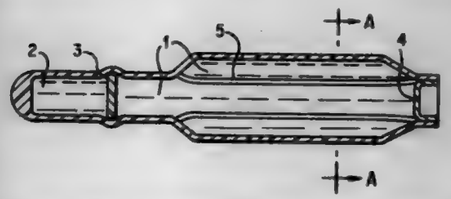
1. A frame stand for a device cabinet serving in the installation of component carriers of industrial electronics, and which is provided with panels, comprising: a lower base plate; an upper lid plate; parallel posts of equal length extending between the base plate and lid plate, the end faces on both sides of the posts have fastening bores; said base plate and lid plate having groups of fastening holes; said base plate and lid plate being fixedly connected to the posts by fastening screws which pass through the fastening holes and extend into the fastening bores; said base plate and lid plate being essentially formed by a fastening plate which has a rectangular base outline and groups of fastening holes; two front brackets that form a front recess between themselves and projecting at a right angle to the one longitudinal side of the base plate and the lid plate; two rear brackets arranged on the opposite longitudinal side of the base plate and lid plate, said rear brackets forming a rear recess between themselves and projecting at a right angle; said front and rear brackets being formed onto the ends of the longitudinal sides; and, one front and one rear bracket are aligned respectively with one another.

5,488,544

CHEMILUMINESCENT LIGHTING ELEMENT

Jacques Ladyjensky, Brussels, Belgium, assignor to Omnigiow Corporation, Novato, Calif.

Filed Aug. 26, 1991, Ser. No. 750,152
Int. Cl.[6] F21K 2/00
U.S. Cl. 362—34 **4 Claims**



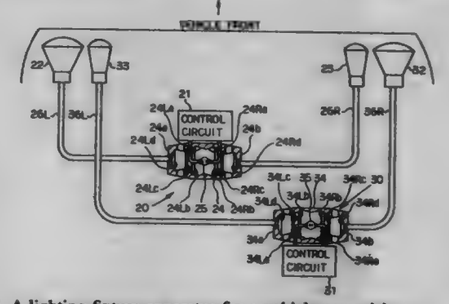
1. A chemiluminescent lighting element comprising first and second chambers of translucent synthetic material, each containing at least one chemical product which reacts with the other to produce a chemiluminescent reaction, said chambers being separated by a moveable tightness means which yields, moves or rotates under the action of the same coincident increase in the external pressure on the two chambers to permit mixing of the two chemical products and result in the production of light and wherein the first chamber has walls such that the coincident exertion of said same external pressure on the element causes more of a reduction in the volume of said first chamber than in that of the second chamber.

5,488,545

LIGHTING FIXTURE CONTROL APPARATUS FOR VEHICLE

Hideyuki Kato, Nishio; Ryoichi Sugawara, Nagoya; Yasutoshi Horii, Toyoake, and Hiromi Hiramatsu, Anjo, all of, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 28, 1994, Ser. No. 266,742
Claims priority, application Japan, Jun. 30, 1993, 5-161037; Apr. 28, 1994, 6-090925
Int. Cl.[6] F21V 8/00
U.S. Cl. 362—32 **12 Claims**



1. A lighting fixture apparatus for a vehicle comprising:

a pair of optical transmission devices for emitting light from the vehicle toward a front circumference of the vehicle;

each of said optical transmission devices being provided with a single light source, two light emitting portions wherein either one of said two light emitting portions is arranged at a left side of the vehicle and the other one of said two light emitting portions is arranged at a right side of the vehicle, and optical fibers for propagating light from said single light source to said two light emitting portions; and

said two light emitting portions of each of said optical transmission devices having respectively different light emitting functions which are combined to provide a predetermined lighting function at each of said right and said left sides of said vehicle.

5,488,546

COLOR-CHANGING LAMP FOR VEHICLE

Osamu Sato; Toshihisa Hayami; Hideki Ohashi; Makoto Izawa; Tomoaki Serizawa, and Hideki Uchida, all of Shimizu, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

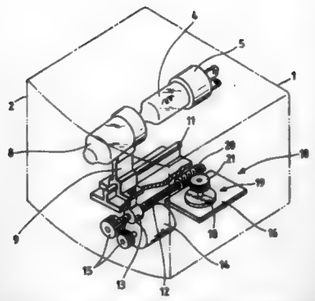
Filed Nov. 14, 1994, Ser. No. 337,854
Claims priority, application Japan, Nov. 22, 1993, 5-315937
Int. Cl.[6] F21M 3/25
U.S. Cl. 362—61 **18 Claims**

1. A color-changing lamp comprising:

a bulb for emitting a first color of light;

a power source for energizing said bulb;

a glove formed of a light-transmissive material having a second color, said glove being disposed on an optical axis of said bulb;



a change-over switch for changing a position of said glove between a first position where said glove covers said bulb and a second position where said glove is in an exposure position for said bulb;

means for moving said glove between said first position and said second position, said glove moving means being operated in accordance with said change-over switch;

means for controlling a power supplying from said power source to said bulb, said power controlling means operatively engaging with said glove moving means and turning on said bulb when said glove is located at one of said first and second positions and turning off said bulb while said glove is moving between said first and second positions.

5,488,547

HEADLAMP FOR A MOTOR VEHICLE

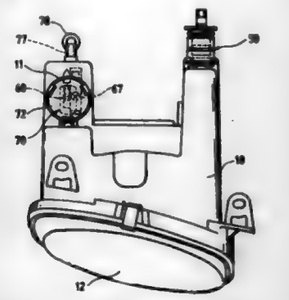
Tatushi Hiraoka, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1994, Ser. No. 252,194

Claims priority, application Japan, Jun. 2, 1993, 5-131761

Int. Cl.[6] B60Q *1/04*

U.S. Cl. 362—66 **11 Claims**



1. A headlamp for a motor vehicle comprising:

a main body having a front opening and a rear expanded portion;

a front lens attached to said front opening of said main body for defining a lamp chamber;

a reflector structure housed within said lamp chamber and supported to be tiltable with respect to said body, said reflector structure comprising a wall with a front-facing reflective surface and a rear facing surface; and

a bubble tube type level device enclosed by said rear expanded portion for detecting a vertical inclination of said reflector, said level device being affixed on said reflector structure and being disposed substantially horizontally in a longitudinal direction of the motor vehicle, said level device extending rearward from said rear facing surface of said reflector, wherein said rear expanded portion of said lamp body forms therein an air hole allowing air to flow to and from the lamp chamber.

5,488,548

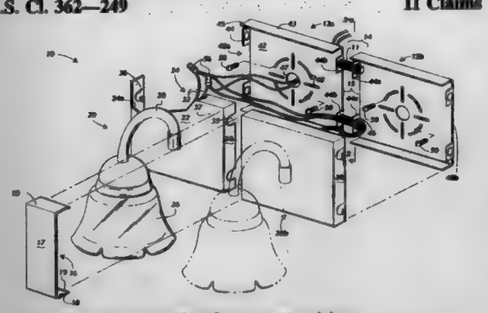
MODULAR LIGHTING FIXTURE

Allan H. C. Kwong, 11 Wang Chiu Road, Kowloon Bay, Kowloon, Hong Kong

Filed Dec. 3, 1993, Ser. No. 161,914

Int. Cl.[6] F21V *21/02*

U.S. Cl. 362—249 **11 Claims**



1. A modular wall lighting fixture, comprising:

at least two lighting fixture modules, each module comprising:

a faceplate having a face with at least two opposing flanges extending laterally from the edge of the face, each of the two opposing flanges including a knockout for selective removal to form an opening for receiving electrical conductors therethrough;

means for receiving a light bulb that connects with a pair of electrical conductors to a supply of electricity;

said modular wall lighting fixture further comprising means for securing the fixture modules to a surface in a spaced-apart relationship such that at least one pair of adjacent ones of the fixture modules is provided which defines a gap therebetween, with the pair of electrical conductors from a first of the pair of fixture modules extending into a second of the pair of fixture modules through an adjacent pair of openings defined by removing the facing ones of the knockouts in the flanges of the pair of fixture modules; and

a cap that covers a gap between the faces of the pair of fixture modules for hiding the pair of electrical conductors extending between the pair of fixture modules.

5,488,549

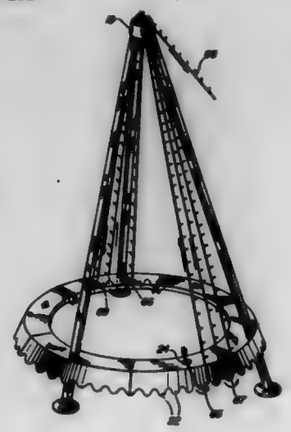
DECORATIVE LIGHT-SUPPORTING APPARATUS FOR HOLDING CONNECTED STRINGS OF LIGHTS

Donna R. Miller, and Kenneth B. Miller, both of 7011 E. Avenida de Santiago, Anaheim Hills, Calif. 92807

Filed Oct. 19, 1994, Ser. No. 325,576

Int. Cl.[6] F21P *1/00*

U.S. Cl. 362—252 **30 Claims**



1. A decorative light-supporting apparatus, comprising:

lower light-routing means having protrusions that extend at least partially downwardly therefrom for contacting and routing a connected string of lights behind said protrusions at a first plurality of locations on the connected string of lights;

extending means for extending above the lower light-routing means; and

upper light-routing means connected to the extending means for contacting and routing the connected string of lights at a second plurality of locations on the connected string of lights, the connected string of lights contacting and folding over a portion of the upper light-routing means at each of the second plurality of locations;

whereby the connected string of lights is wound a plurality of times between the upper light-routing means and behind the protrusions to form an approximate shape of a Christmas tree, each winding routing the string of lights from behind a protrusion up to the upper light-routing means and back down to and behind another protrusion.

5,488,550

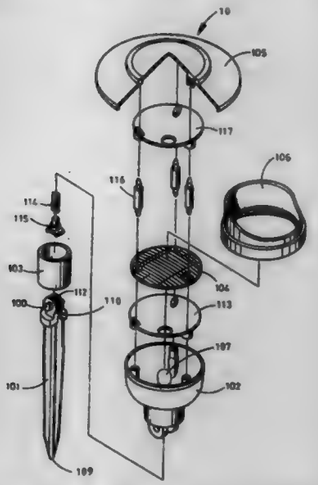
MULTI PURPOSE LAMP

Jerry S. C. Yang, 8F-8, No. 20, Ta Lung Road, Taichung, Taiwan, Prov. of China

Division of Ser. No. 978,325, Nov. 18, 1992, Pat. No. 5,384,694. This application Oct. 25, 1994, Ser. No. 328,494

Int. Cl.[6] F21V *7/00*

U.S. Cl. 362—298 **1 Claim**



1. A multi-purpose lamp for outdoor use, comprising a pole for insertion into the ground, a support mounted on the pole, a bulb within the support and substantially enclosed therein, a lens mounted on the support above the bulb, a convex-concave parabolic reflector mounted within the support and disposed below the bulb, and first and second shades mounted on the support and spaced therefrom above the lens.

5,488,551

PULSE WIDTH MODULATED POWER SUPPLY WHICH AVOIDS EXCESSIVE ON-TIME OF SWITCH DURING START-UP

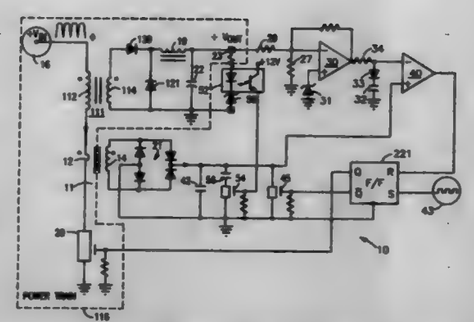
Randhir S. Malik, So. Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 27, 1993, Ser. No. 143,818

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—20 **15 Claims**

1. A pulse width modulated power supply comprising:



an input transformer having a primary winding, a secondary winding and means for coupling the primary winding to a DC power supply;

a switch coupled to the primary winding to control power through the primary winding;

a rectifier connected across the secondary winding to rectify current induced in the secondary winding;

an output capacitor coupled to the rectifier to develop a DC output voltage; and

means for controlling said switch based on a first, relatively short RC time constant during start up such that widths of pulses through said primary winding are relatively short and controlling said switch based on a second, relatively long RC time constant afterwards such that widths of pulses through said primary winding are relatively long.

5,488,552

INVERTER POWER SUPPLY

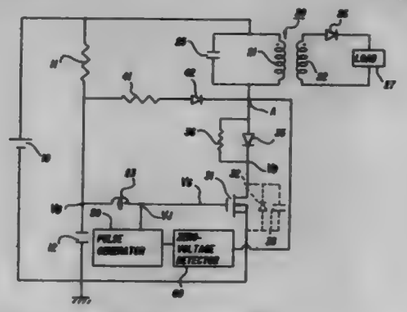
Hiroshi Sakamoto, 6-388-3, Tsuboi, Kumamoto-shi, Kumamoto; Hideki Tamura, Moriyama, and Kaoru Furukawa, Hikone, all of, Japan, assignors to Hiroshi Sakamoto, Kumamoto, and Matsushita Electric Works, Osaka, both of, Japan

Filed Oct. 6, 1993, Ser. No. 132,454

Claims priority, application Japan, Jan. 7, 1992, 4-268909; Jun. 25, 1993, 5-154864

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—21 **15 Claims**



1. An inverter power supply comprising:

a switching transistor having a gate, a source, and a drain;

a transformer having a primary winding and a feedback winding, said primary winding being connected in series with said switching transistor and a capacitor connected in parallel with said primary winding to form a resonant circuit, and said feedback winding being connected in series with said gate of said switching transistor;

a starter circuit for starting said resonant circuit;

a bias voltage generating circuit connected to apply a bias through said feedback winding to said gate which is a control terminal of said switching transistor;

a level detector connected at one end to said transformer, which issues a zero voltage signal when a voltage at said transformer is detected to have dropped to a level of zero or lower; and

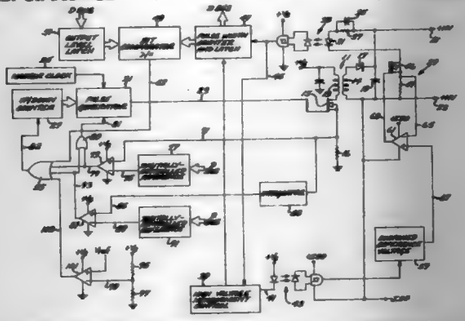
a pulse generator connected to receive said zero voltage signal from said level detector for producing as an output a pulse of predetermined pulse-width in response to said zero voltage signal, said output of said pulse generator being connected to said gate of said switching transistor to cause said switching transistor to turn on for an ON-period determined by said pulse-width.

5,488,553

POWER CONVERTER APPARATUS FOR DEFIBRILLATING CARDIAC PACEMAKER

Herman L. Renger, Calabasas, Calif., assignor to Pacesetter, Inc., Sylmar, Calif.

Filed Dec. 15, 1993, Ser. No. 168,735
Int. Cl.[6] A61N *1/00*
U.S. Cl. 363—21 **20 Claims**



1. Power converter apparatus for receiving a relatively low dc input voltage and producing a relatively high dc output voltage, comprising:

a transformer having a primary winding and a secondary winding;

a rectifier connected to the secondary winding of the transformer and including a capacitor that carries the dc output voltage;

a first pulse-width modulator for cyclically applying the input voltage to the primary winding of the transformer, each cyclic application being for a controllably-selected time duration, whereupon an electrical current is induced cyclically in the secondary winding of the transformer, to charge the capacitor of the rectifier; and

a feedback controller that measures one or more predetermined parameters of electrical signals present in the transformer and/or rectifier, to produce one or more binary feedback signals sent to the first pulse-width modulator, to controllably adjust the time duration of a subsequent application of the input voltage to the primary winding of the transformer.

5,488,554

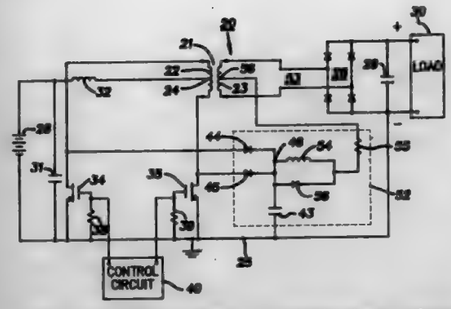
LOW-LOSS CLAMP CIRCUIT

Thomas W. Green, Rushford, N.Y., assignor to Acme Electric Corporation, East Aurora, N.Y.

Filed Aug. 23, 1994, Ser. No. 294,440
Int. Cl.[6] H02H *7/122*; H02M *3/337*
U.S. Cl. 363—25 **15 Claims**

1. A low-loss clamp circuit for a DC to DC converter, the converter including a transformer with a secondary winding in a secondary circuit and center tapped primary winding, the primary winding center tap and a circuit ground being energizable by a DC voltage input, rectifier connected to the secondary winding and to the circuit ground to supply a DC output voltage;

the said rectifier being a four diode bridge rectifier, and the converter being a current fed converter;



a pair of semiconductor switches each having input and output electrodes, each end of the primary winding being connected through a respective switch to circuit ground,

each switch having a control electrode connected to a control circuit, said clamp circuit comprising:

a pair of diodes connected cathode-to-cathode across the primary winding of the switches at a clamp junction;

a clamp capacitor connected between said clamp junction and said circuit ground; and

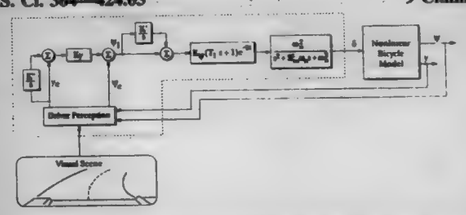
energy return means connected to said clamp junction to return energy from said clamp capacitor directly to said secondary circuit.

5,488,555

METHOD AND APPARATUS FOR FOUR WHEEL STEERING CONTROL

Jahanbakhsh Asgari; Minh N. Tran, both of Inkster, and Davorin D. Hrovat, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 27, 1993, Ser. No. 67,930
Int. Cl.[6] G06G *7/76*; B62D *5/06*
U.S. Cl. 364—424.05 **9 Claims**



5. For use with an automotive vehicle including four wheels and a four wheel steering system controlled by an electronic control unit having memory for steering the four wheels while at least one of the wheels is under a torque load, the steering system comprising:

means for determining at least one control gain for the four wheel steering system so that the torque loaded vehicle behaves like a front wheel steering vehicle under no torque load; and

means for controlling the four wheel steering system according to the control gain, thereby improving directional stability of the vehicle travelling on a slippery road surface;

the means for determining at least one control gain including means for determining a yaw rate control gain based on vehicle stability requirements,

the means for determining at least one control gain further comprising means for determining a proportional steer control gain based on the yaw rate control gain;

the means for determining a proportional steer control gain K_p determining the proportional steer control gain for a front wheel drive vehicle having a desired yaw-rate according to:

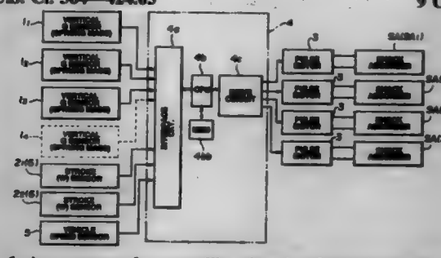
$$K_p = -\frac{aC_f(a+b)C_{f_n}}{(a+b)^2C_fC_{f_n} - (aC_{f_n} - bC_r)mu^2}\,\frac{K_{dv}}{s} - \frac{bmu^2(-C_{f_l} + C_{f_n})C_r}{C_{f_l}((a+b)^2C_fC_{f_n} - (aC_{f_n} - bC_r))mu^2}.$$

5,488,556

APPARATUS AND METHOD FOR INDEPENDENTLY CONTROLLING DAMPING FORCE CHARACTERISTIC OF VEHICULAR SHOCK ABSORBER

Mitsuo Sasaki, Atsugi, Japan, assignor to Unisia Jecs Corporation, Kanagawa, Japan

Filed Mar. 22, 1994, Ser. No. 126,040
Claims priority, application Japan, Mar. 22, 1993, 5-061942
Int. Cl.[6] B60G *17/00*
U.S. Cl. 364—424.05 **9 Claims**



1. An apparatus for controlling damping force characteristics of vehicular shock absorbers independently of one another, comprising:

a) damping force characteristic changing means for changing damping force coefficients representing the respective damping force characteristics of the respective shock absorbers variably selectable in the respective shock absorbers in response to control signals respectively input thereto;

b) sprung mass vertical velocity determining means for determining vertical velocities of a sprung mass of a vehicle adjacent respective tire wheels of the vehicle;

c) front, tire wheel relative velocity determining means for determining the relative velocities between sprung mass portions and unsprung mass portions of the vehicle, said front tire wheel relative velocity determining means being disposed on vehicular portions adjacent only front left and right tire wheels;

d) vehicle speed detecting means for detecting a vehicle speed and outputting a vehicle speed indicative signal;

e) wheel base length storing means for storing a wheel base length of the vehicle;

f) front tire wheel velocity calculating means for calculating vertical velocities of the front left and right tire wheels on the basis of the relative velocities between the sprung mass portions and unsprung mass portions of the vehicle related to the front left and right tire wheels determined by said relative velocity determining means and on the basis of the sprung mass vertical velocities determined by said sprung mass vertical velocity determining means related to the front, left, and right tire wheels;

g) rear tire wheel velocity calculating means for calculating vertical velocities of the rear left and right tire wheels from the front left and right tire wheel vertical velocities, the vehicle wheel base length, and the vehicle speed indicative signal;

h) rear tire wheel relative velocity calculating means for calculating relative velocities between the sprung mass portions and unsprung mass portions of the vehicle related to rear left and right tire wheels on the basis of the rear left and right tire wheel vertical velocities calculated by said rear tire wheel velocity calculating means and of the sprung mass vertical velocities determined by said sprung mass vertical velocity determining means related to the rear left and right tire wheels; and

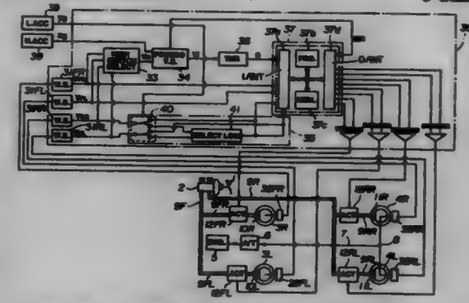
i) damping force characteristic controlling means for providing respective control signals for said damping force characteristic changing means in accordance with the determined and calculated respective relative velocities between the sprung mass portions and unsprung mass portions related to the respective tire wheels and with the determined respective sprung mass vertical velocities related to the respective tire wheels so that the respective shock absorbers provide optimum damping force characteristics.

5,488,557

ANTI-SKID CONTROLLING SYSTEM AND METHOD FOR AUTOMOTIVE VEHICLE

Toshiro Matsuda, Sagamihara, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 14, 1992, Ser. No. 883,017
Claims priority, application Japan, May 16, 1991, 3-139436
Int. Cl.[6] B60T *8/62*
U.S. Cl. 364—426.02 **6 Claims**



1. An anti-skid controlling system for a vehicle, comprising:

a) first sensing means for detecting rotation speeds of respective tire wheels and outputting detection signals indicative of the rotation speeds of the respective tire wheels;

b) second sensing means for detecting a lateral acceleration of a vehicular body and outputting a lateral acceleration signal indicative of the lateral acceleration;

c) third means for determining whether either one of slip rates of right and left rear tire wheels exceeds a set slip rate on the basis of the rotation speed signals for the tire wheels;

d) fourth means for operatively limiting a braking force imposed on each rear tire wheel when either one of the slip rates exceeds the set slip rate; and

e) fifth means for switching from a common anti-skid control mode in which the anti-skid control is commonly carried out for both rear tire wheels on a basis of the slip rate data derived from one of the rear tire wheels which provides a larger slip rate to an independent anti-skid control mode in which the anti-skid control is individually carried out for the respective rear tire wheels on a basis of each slip rate data derived for each one of the rear tire wheels as the lateral acceleration becomes increased, wherein said fifth means switches between the common anti-skid control mode and the independent anti-skid control mode when the lateral acceleration becomes increased and wherein the data of the left rear tire wheel speed V_{RL} is defined as $B.V_{RL}+(1-B)MIN(V_{RL}, V_{RR})$ and the data of the right rear tire wheel speed V_{RR} is defined as $B.V_{RR}+(1-B)MIN(V_{RL}, V_{RR})$, wherein B denotes a variable representing lateral acceleration y_g and $MIN(V_{RL}, V_{RR})$ denotes the rotation speed value selected from the lower of V_{RL} and V_{RR} such that the switching from the common anti-skid control for both rear tire wheels to the independent anti-skid control for each of both rear tire wheels is gradually carried out in response to the increase in the magnitude of lateral acceleration.

5,488,558

HANDY COMPUTER WITH BUILT-IN DIGITAL CAMERA AND SPOT STATE RECORDING METHOD USING THE SAME

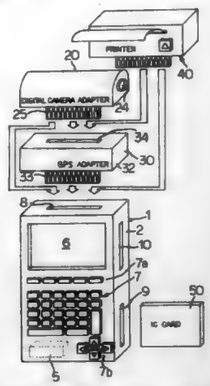
Sinji Ohki, Matsubara, Japan, assignor to Daishin Instrument Co., Ltd., Osaka, Japan

Filed Jul. 14, 1994, Ser. No. 274,753

Claims priority, application Japan, Jan. 20, 1993, 5-262078; Jan. 19, 1994, 6-003849

Int. Cl.[6] G06K *9/22*

U.S. Cl. 364—449 **6 Claims**



1. A computer with a built-in digital camera in which an image pickup unit including a charge coupled device and an imaging lens is coupled with a computer body including a portable interior power source and a bus coupling terminal for connection of a peripheral equipment, said computer comprising:

memory means for storing map information which includes a location to be inspected;

display means for selectively displaying one of said map information and an image photographed by said image pickup unit;

a microprocessor for executing internal processing of said computer body and for processing an image output signal transmitted from said image pickup unit;

input operating means for providing instructions to said computer body and for inputting data;

means for selectively calling said map information of a small area which includes said location to be inspected from said map information stored in said memory means to be inspected for graphic display;

display means for specifying and indicating said location to be inspected in said map information which is graphically displayed on said display means;

means for calculating positional data on said location from said map information specified and indicated on said display means; and

means for causing image data to be taken by said image pickup unit at an actual site corresponding to said location in said map information and for storing photographed image data transmitted from said image pickup unit in association with said positional data of said location.

5,488,559

MAP-MATCHING WITH COMPETING SENSORY POSITIONS

Leslie G. Seymour, Barrington, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

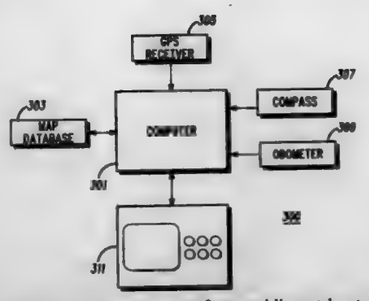
Filed Aug. 2, 1993, Ser. No. 100,804

Int. Cl.[6] G06F *15/20*

U.S. Cl. 364—449 **25 Claims**

13. A system of position estimation for determining position vectors associated with road segments on a map using competitive sensory position map-matching comprising:

first sensory means for providing a first position vector;



at least a second sensory means for providing at least a second position vector; and

means for comparing the first position vector and the at least second position vector to a road segment position vector corresponding to a road segment location determined by a reference position vector, and updating the reference position vector to correspond to a corrected position vector if at least one of the first position vector and the at least second position vector matches the road segment position vector within a predetermined criteria for a plurality of comparisons.

5,488,560

APPARATUS FOR AND METHOD OF CONTROLLING A PROCESS

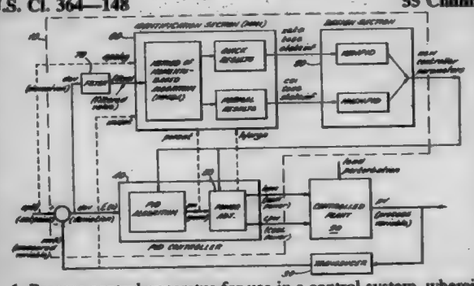
John R. Wood, Brighton, United Kingdom, and Constantin Marin, Craiova, Romania, assignors to West Instruments Limited, United Kingdom

Filed Aug. 27, 1993, Ser. No. 108,622

Claims priority, application United Kingdom, Jun. 30, 1993, 9313534

Int. Cl.[6] G05B *13/02*

U.S. Cl. 364—148 **55 Claims**



1. Process control apparatus for use in a control system, wherein said control apparatus comprises:

controller means for coupling to a process in a closed loop of said control system and for controlling a process variable having a predetermined set point value and a measured value;

first comparator means for comparing said predetermined set point value and measured value to generate a deviation signal;

said controller means being responsive to said deviation signal to control at least one operating parameter of said process to reduce said deviation signal;

identification means responsive to said deviation signal to provide a measured value of at least one characteristic of the closed loop response of the control system from said deviation signal by integrating said deviation signal with time;

second comparator means coupled to said identification means and operative to compare said at least one measured characteristic value with at least one predetermined desired characteristic value representing a desired closed loop response of the control system; and

adjustment means responsive to said second comparator means when the difference between the measured and desired characteristic values is greater than a predetermined amount, to adjust the response of said controller means such that the closed loop response of the control systems moves towards a desired closed loop response,

wherein said identification means includes integration means to integrate said deviation signal until the deviation signal reaches a substantially steady state level comprising a noise band about a deviation signal level of zero.

5,488,561

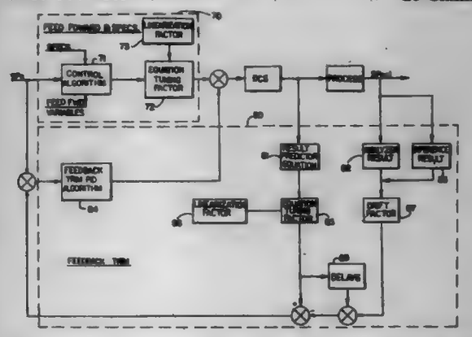
MULTIVARIABLE PROCESS CONTROL METHOD AND APPARATUS

Peter N. Berkowitz; Michael N. Papadopoulos, both of Houston; Larry W. Colwell, Friendswood, and Martin K. Moran, Houston, all of Tex., assignors to Continental Controls, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 932,155, Aug. 19, 1992, Pat. No. 5,396,416. This application Mar. 3, 1995, Ser. No. 398,598

Int. Cl.[6] G06F *19/00;* **G05B** *13/02*

U.S. Cl. 364—165 **20 Claims**



9. In a process wherein input feed having at least one fluctuating parameter is processed to yield an output feed, and wherein at least one controlled variable in the output feed varies in response to changes in the setpoint of at least one manipulated variable, a method for varying the manipulated variable setpoint to achieve an independently variable target level of the controlled variable, said method comprising the steps of:

(a) polling and collecting a plurality of process parameters affecting the controlled variable and affected by the manipulated variable;

(b) in response to the process parameters collected in step (a) and to the present value of the manipulated variable setpoint, determining the difference between said present value and an optimal value for the manipulated variable setpoint for achieving the target level of the controlled variable;

(c) in response to process parameters collected in step (a) and to the difference determined in step (b), predicting the level of the controlled variable that would result from applying said optimal manipulated setpoint value to the process;

(d) obtaining the present level of the controlled variable;

(e) comparing said predicted result from step (c) with said present level obtained in step (d) to provide a feedback signal;

(f) in response to said feedback signal and to the present value of the manipulated variable setpoint, modifying said difference determined in step (b) so that said optimal manipulated variable setpoint value more closely achieves the target level of the controlled variable; and

(g) applying a signal representing the modified optimal setpoint value derived in step (f) to control the manipulated variable setpoint in the process and thereby control the controlled variable in said output feed;

wherein steps (a) through (g) constitute an optimization cycle regularly repeated at a predetermined frequency; and

(h) in response to a command, dynamically switching during on-line operation between different process modes wherein the manipulated variable and controlled variable are different in each mode.

5,488,562

SYSTEM FOR GENERATING SIGNALS FOR CONTROL OR REGULATION OF A CHASSIS CONTROLLABLE OR REGULABLE IN ITS SEQUENCES OF MOVEMENT

Stefan Otterbein, Stuttgart; Dieter Kunz, Ditzingen-Schöckingen; Rainer Kallenbach, Waiblingen-Neustadt, and Klaus Landesfeind, Fellbach, all of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

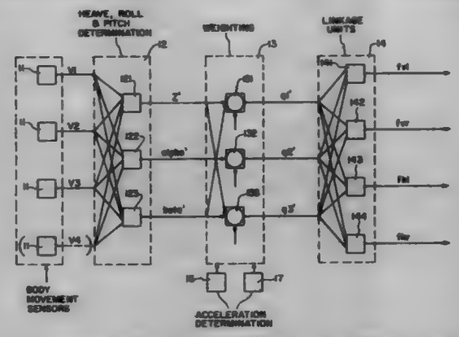
PCT No. PCT/DE92/00379, § 371 Date Jan. 27, 1993, § 102(e) Date Jan. 27, 1993, PCT Pub. No. WO92/21525, PCT Pub. Date Oct. 12, 1992

PCT Filed May 12, 1992, Ser. No. 969,840

Claims priority, application Germany, May 31, 1991, 41 17 897.1

Int. Cl.[6] B60G *17/015;11/26*

U.S. Cl. 364—424.05 **17 Claims**



1. A control system for controlling and regulating a vehicle body, said vehicle body subject to heave, pitch, and roll movements, said body connected to a plurality of wheels, a deflectable spring, and first and second adjustable suspension systems, said first and second suspension systems connected between said body and respective said wheels, said first and second suspension systems being individually independently adjustable to influence movements of said respective wheels relative to said body, said control system comprising:

means for determining a plurality of first signals which respectively represent body velocities at a plurality of preselected points of said body;

means for generating second signals based on said first signals, said second signals representing heave, roll, and pitch movements of said body;

means for generating third signals based on said second signals, said third signals representing eigenoscillation forms of said body velocities; and

means for generating actuating signals based on said third signals, for independently adjusting said first and second suspension systems.

5,488,563

METHOD AND DEVICE FOR PREVENTING COLLISIONS WITH THE GROUND FOR AN AIRCRAFT

Xavier Chazelle, Saint-Cloud; Anne-Marie Hunot, Paris, and Gérard Lepere, Aubervilliers, all of, France, assignors to Dassault Electronique, Saint Cloud, France

Filed Apr. 2, 1993, Ser. No. 41,870

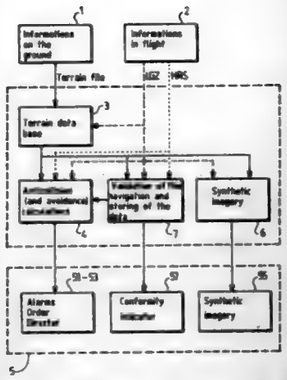
Claims priority, application France, Apr. 7, 1992, 92 04245

Int. Cl.[6] G08G *5/04*

U.S. Cl. 364—461 **26 Claims**

1. In an aerial navigation aid device, the improvement comprising:

(a) mass memory means for storing a data base representing at least a substantial part of the terrestrial globe, in a cut out form comprising a grid configuration having at least one level of resolution, said grid configuration including first grids, each first grid being associated with at least one data item representing the maximum altitude inside the first grid, and at



least one index permitting rapid access to sets of contiguous first grids contained in said data base in accordance with a system of addressing two horizontal coordinates;

(b) input means for receiving status indications representing the position of the aircraft with two horizontal components and the altitude, and the velocity and acceleration vectors of the aircraft, as well as control indications coming from the flight deck;

(c) a fast access working memory;

(d) management means for managing the data base, for extracting from and transferring into said fast access working memory a temporary local map in accordance with said horizontal components of the position of the aircraft, on the basis of which map there is defined an altitude envelope of the terrain in the zone wherein the aircraft is travelling; and

(e) anticollision processing means:

for processing said status indications so as to establish a plurality of predicted points of the flight path of the aircraft;

for comparing, at each said predicted point, the contour of a protection field round the aircraft with an altitude envelope in the corresponding part of said local map; and

for establishing an alarm if the relation between the protection field and the altitude envelope meets a first condition which is defined at least partly by said control indications.

5,488,564

NUMERICAL CONTROL UNIT WITH SCHEDULE SKIP CAPABILITY

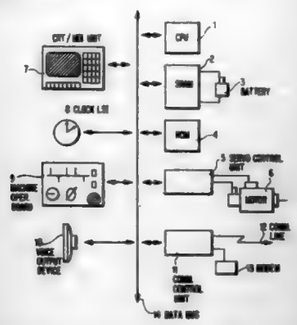
Mutsumi Ikeda, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1992, Ser. No. 899,329

Claims priority, application Japan, Jun. 17, 1991, 3-144636

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—474.16 **21 Claims**



1. A numerical control unit for performing numerical control processing in accordance with a schedule run defined by a machining command program, and for driving a machine tool according to the results of such processing for machining workpieces as commanded, comprising:

a memory for storing first and second types of machining schedules, in sequential order, each of said machining schedules comprising data identifying the machining schedule next in sequence, said first type of machining schedule including control data which is accessed by said machining command program to control driving of the machine tool, said second type of machining schedule including data which identifies one of said first type of machining schedules including said control data and which, when accessed by said machining command program, instructs said machining command program to access said control data in said one of said first type of machining schedules to control said machine tool instead of instructing said machining command program to access data in said second type of machining schedule to control said machine tool,

means for indicating whether a skip condition has occurred, and

means for causing said machining command program to access a specified machining schedule in said sequence of machining schedules when said indicating means indicates that a skip condition has occurred.

5,488,565

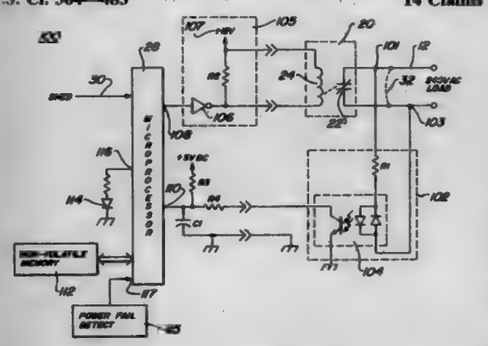
TAMPER DETECTION METHODS AND APPARATUS FOR LOAD MANAGEMENT TERMINALS

Jerry M. Kennon; Michael A. Murphy, and Kenneth C. Shuey, all of Raleigh, N.C., assignors to ABB Power T&D Company Inc., Raleigh, N.C.

Filed May 28, 1993, Ser. No. 68,768

Int. Cl.[6] G01R *11/24*; G08B *21/00*

U.S. Cl. 364—483 **14 Claims**



1. Apparatus for detecting tampering with a load management terminal, said terminal being connected to a power line and to a load, said terminal having a load control relay coupled in series to the power line wherein the load is selectably decoupled from the power line by opening the load control relay, said apparatus comprising:

a voltage sensor coupled to the load control relay for sensing whether voltage is present across said load control relay when said load control relay is open;

a timer for measuring elapsed time during which no voltage is sensed across said load control relay when said load control relay is open; and

an indicator for indicating tampering when the elapsed time measured by said timer exceeds a pre-determined time limit.

5,488,566

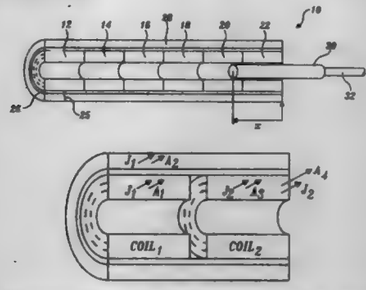
MULTI-COIL IMPEDANCE

Kevin G. Woolsey, Snohomish, Wash., assignor to Eldec Corporation, Lynnwood, Wash.

Continuation of Ser. No. 892,164, Jun. 2, 1992, abandoned. This application Apr. 28, 1995, Ser. No. 430,278

Int. Cl.[6] G01B *7/14*

U.S. Cl. 364—488 **7 Claims**



1. An inductive position sensor for detecting the position of an object, comprising:

a bobbin;

a movable target element coupled to the object, the target being mounted for movement along a longitudinal axis of the bobbin;

a plurality of serially connected coils, C, wound on the bobbin, each of said coils having N_i turns selected such that the plurality of coils have a total inductance that varies according to a desired inductance function, L(x), as the position of the target element is varied along the longitudinal axis of the bobbin, x being the position of the target element along said axis, wherein the number of turns, N_i, in each coil being equal to the number defined by the process which comprises:

determining a vector potential, A, and a current density, J, within the sensor due to a known current passing through the coils of the position sensor;

completing a set of equations having the form:

$$L(x) = \sum_{i=1}^{C} \sum_{j=1}^{C} N_i \left[-\frac{1}{R_{ij}} \right] N_j$$

wherein each equation relates a point on the desired inductance function to the number of turns, N_i, in each coil and the energy stored in the position sensor at a target element position x; and

optimizing the set of equations to determine the number of turns, N_i, that each coil should contain such that the total inductance of the position sensor varies according to the desired inductance function.

5,488,567

DIGITAL ANALYTE DETECTION SYSTEM

Fritz Allen, Corrales, and Thomas Niemczyk, Albuquerque, both of N.M., assignors to Acrogen, Inc., Oakland, Calif.

Continuation of Ser. No. 918,357, Jul. 23, 1992, Pat. No. 5,329,461. This application May 16, 1994, Ser. No. 243,153

The portion of the term of this patent subsequent to Jul. 12, 2011, has been disclaimed.

Int. Cl.[6] G06G *7/75*

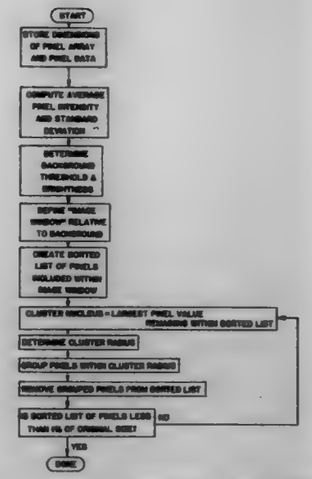
U.S. Cl. 364—497 **33 Claims**

19. A method for detecting the presence of a small number of analyte particles within a sample, said sample being divided into a multiplicity of distinct pixel regions where light emitted in each of said pixel regions is related to the amount of analyte in each of said pixel regions, comprising the steps of:

dimensioning each of said pixel regions such that the number of said analyte particles included within each of said pixel regions is less than a maximum detection threshold proportional to variation in optical responses emitted by said analyte particles;

measuring emitted signals from each of said pixel regions relative to an ambient noise threshold, wherein the emitted signal from each pixel region is proportional to said optical responses of analyte particles included therein; and

counting, based on said measurements, the number of analyte particles within each of said pixel regions in order to determine the number of said analyte particles within said sample.



5,488,568

PLAYBACK METHOD AND SYSTEM FOR PROCESSING IMAGE DATA

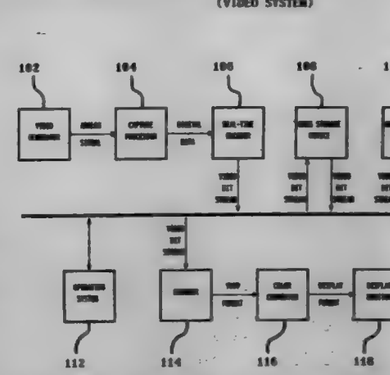
Michael Keith, Beaverton; Rohan Coelho; Stuart Golin, both of Hillsboro, and Brian Nickerson, Aloha, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 16, 1993, Ser. No. 79,449

The portion of the term of this patent subsequent to Sep. 27, 2011, has been disclaimed.

Int. Cl.[6] H04L *13/00*

U.S. Cl. 364—514 R **32 Claims**



1. A method for processing an image, comprising the steps of:

(a) accessing stored encoded image data;

(b) decoding an OPERATING SYSTEM header of said encoded image data;

(c) decoding a BITSTREAM header of said encoded image data;

(d) decoding at least one component data field of said encoded image data;

(e) converting said decoded OPERATING SYSTEM header, said decoded BITSTREAM header, and said decoded at least one component data field for display; and

(f) displaying said converted image data, wherein step (d) comprises the steps of:

(1) decoding a Y-COMPONENT DATA field of said encoded image data;

(2) decoding a U-COMPONENT DATA field of said encoded image data; and

(3) decoding a V-COMPONENT DATA field of said encoded image data, wherein:

step (d)(1) comprises the steps of:

(A) decoding a Y-component four-byte MC VECTOR COUNT field;

(B) decoding a Y-component MC VECTORS field; and

(C) decoding a Y-component ENCODED DATA field, comprising interleaved binary tree codes and region codes;

step (d)(2) comprises the steps of:

(A) decoding a U-component four-byte MC VECTOR COUNT field;

(B) decoding a U-component MC VECTORS field; and

(C) decoding a U-component ENCODED DATA field, comprising interleaved binary tree codes and region codes; and

step (d)(3) comprises the steps of:

(A) decoding a V-component four-byte MC VECTOR COUNT field;

(B) decoding a V-component MC VECTORS field; and

(C) decoding a V-component ENCODED DATA field, comprising interleaved binary tree codes and region codes.

5,488,569

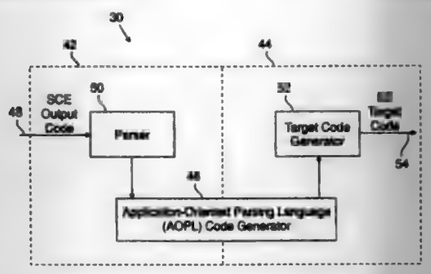
APPLICATION-ORIENTED TELECOMMUNICATION SYSTEM INTERFACE

Marc P. Kaplan, Aberdeen; Hui-Lan Lu, Marlboro, and Lev Slutsman, Wayside, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Dec. 20, 1993, Ser. No. 170,139

Int. Cl.[6] G06F *15/00*

U.S. Cl. 364—514 R **20 Claims**



1. A method of interfacing telecommunication service creation environments and service execution environments, comprising the steps of:

identifying a number of selected service creation environments to be interfaced to at least one selected service execution environment;

defining a set of intermediate code operations suitable for representing telecommunication services developed in said selected service creation environments;

parsing output code from one of said selected service creation environments to form a representation of said service creation environment output code;

generating an intermediate code from said representation of said output code using said set of intermediate code operations, such that said intermediate code preserves sufficient structural information contained within said service creation environment output code to permit optimization of the intermediate code; and

generating from said intermediate code a target code for said selected execution environment, such that said telecommunication service developed in said one of said selected service creation environments may be provided in said selected execution environment.

5,488,570

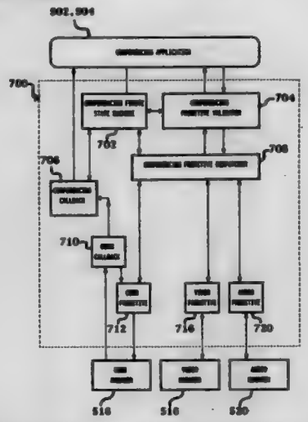
ENCODING AND DECODING VIDEO SIGNALS USING ADAPTIVE FILTER SWITCHING CRITERIA

Rohit Agarwal, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 158,855, Nov. 24, 1993. This application Jun. 29, 1994, Ser. No. 268,270

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—514 R **54 Claims**



1. A computer-implemented process for encoding video signals, comprising the steps of:

(a) encoding one or more training video frames using a selected quantization level to generate one or more encoded training video frames;

(b) decoding the encoded training video frames to generate one or more decoded training video frames;

(c) generating one or more energy measure values corresponding to the decoded training video frames;

(d) performing steps (a)–(c) for a plurality of quantization levels;

(e) selecting an energy measure threshold value for each of the quantization levels in accordance with the decoded training video frames;

(f) generating a first reference frame corresponding to a first video frame;

(g) encoding a block of a second video frame using the first reference frame and a selected quantization level to generate a block of an encoded second video frame;

(h) decoding the block of the encoded second video frame to generate a block of a second reference frame, wherein step (h) comprises the steps of:

(1) generating an energy measure value corresponding to the block of the encoded second video frame;

(2) comparing the energy measure value of step (h)(1) with the energy measure threshold value of step (e) corresponding to the selected quantization level for the block; and

(3) applying a filter to generate the block of the second reference frame in accordance with the comparison of step (h)(2); and

(i) encoding a third video frame using the second reference frame.

5,488,571

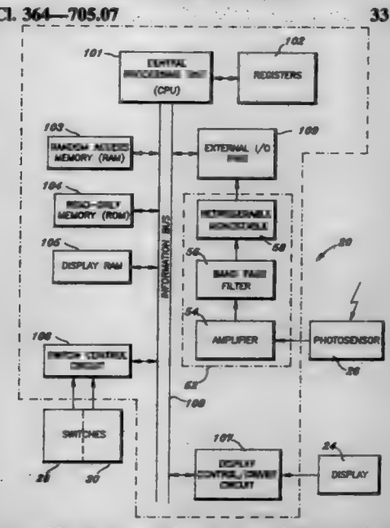
METHOD AND APPARATUS FOR DOWNLOADING INFORMATION FROM A CONTROLLABLE LIGHT SOURCE TO A PORTABLE INFORMATION DEVICE

Michael A. Jacobs, Naugatuck, and Mark A. Insero, Waterbury, both of Conn., assignors to Timex Corporation, Middlebury, Conn.

Filed Nov. 22, 1993, Ser. No. 155,326

Int. Cl.[6] G06F *15/16;1/00*

U.S. Cl. 364—705.07 **33 Claims**



1. A portable information device for receiving data from a data transmitter of the type having a CRT video display providing raster scanning of a screen at a horizontal scanning frequency and a vertical frame rate; and transmitting binary coded data in blocks of serial data bits as light pulses at a preselected pulse repetition rate less than said horizontal scanning frequency and greater than said vertical frame rate in synchronism with raster scanning of said screen so as to provide an integral number of one or more blocks for each vertical frame, said portable information device comprising:

(a) a portable casing adapted to be manipulated at a location spaced from, and within line of sight of, said screen;

(b) a photosensor mounted on said casing adapted to detect said light pulses when said portable casing is manipulated to direct said photosensor toward said screen;

(c) amplifier means within said casing connected to said photosensor to provide amplified binary coded receiver pulses corresponding to said light pulses,

(d) filter means within said casing connected to said amplifier means and adapted to pass signals at said preselected pulse repetition rate and to attenuate ambient artificial light frequencies;

(e) first means connected to receive said receiver pulses from said filter means and to provide binary coded data blocks adapted to vary between high and low logic levels at said preselected pulse repetition rate; and

(f) asynchronous data collection means within said casing connected to said first means.

5,488,572

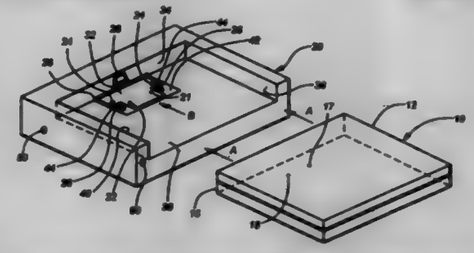
PORTABLE COMPUTER SYSTEM FOR DOCKING TO AN EXPANSION BASE UNIT

Brian V. Belmont, Houston, Tex., assignor to Compaq Computer Corp., Houston, Tex.

Filed May 4, 1994, Ser. No. 237,778

Int. Cl.[6] G06F *13/14*

U.S. Cl. 364—514 R **16 Claims**



1. A portable computer system for docking to an expansion base system, wherein the expansion base system includes an expansion bus for connection to expansion bus devices having resource requirements, a docking connector connected to the expansion bus, a device being coupled to the expansion bus and having resource requirements, and means responsive to certain of the portable computer system signals for docking and undocking the portable computer system, the portable computer system comprising:

a system bus;

a device being coupled to said system bus and having resource requirements;

an expansion connector connected to said system bus for connecting to the docking connector when the portable computer system is docked in the expansion base system;

means coupled to said system bus for determining if said resource requirements of said portable computer system bus device and the expansion bus device in the expansion base system conflict; and

means coupled to said conflict determining means and said system bus for transmitting an eject request signal to the expansion base system when said conflict is determined, wherein said eject request signal causes the expansion base system to undock the portable computer system.

5,488,573

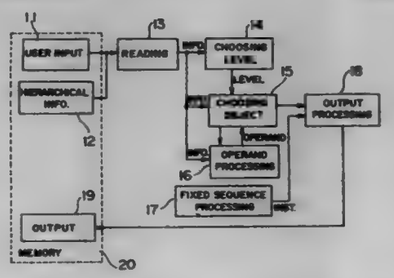
METHOD FOR GENERATING TEST PROGRAMS

Gary Brown, and Jiro Miyake, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 2, 1993, Ser. No. 115,102

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—578 **12 Claims**



1. A method for a data processor to generate a test program for verifying processors, said method comprising:

a first step of referencing input information and hierarchical information, wherein:

said hierarchical information comprises objects categorized in at least four levels: an instruction level as a level 1, an

instruction type level as a level 2, a sequence level as a level 3, and a function level as a level 4, where:

an object in said instruction level comprises an instruction name, instruction information and operand information,

an object in said instruction type level is a name of categories of objects in said instruction level,

an object in said sequence level is a combination of objects in said instruction type level, and

an object in said function level is a name of categories of objects in said sequence level; and

said input information regards how often each level of said hierarchical information is chosen; a second step of choosing a level from among said at least four levels of said hierarchical information according to said input information referenced at said first step, and selecting an object from said chosen level;

a third step of decrementing said chosen level where said chosen level is higher than said level 1, and selecting an object from said decremented level of said hierarchical information, using both a random number and said objcct selected from said chosen level, and repeating this selection step until an object is selected from the instruction level of said hierarchical information; and

a fourth step of generating a test program formed from at least one object of said instruction level of said hierarchical information selected in said second and said third steps.

5,488,574

Patent Not Issued For This Number

5,488,575

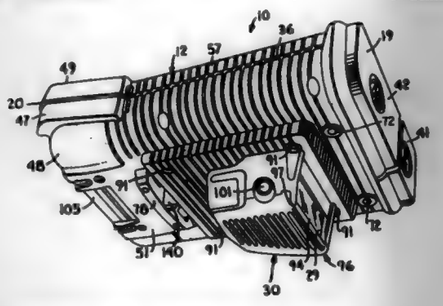
PORTABLE WORK STATION AND DATA COLLECTION TERMINAL INCLUDING SWITCHABLE MULTI PURPOSE TOUCH SCREEN DISPLAY

Arvin D. Danielson, Solon; Darald R. Schultz, Cedar Rapids, both of Iowa; Dennis Silva, San Jose, Calif.; Darrell L. Boatwright, Cedar Rapids, Iowa; Rickey G. Austin, Lisbon, Iowa, and Daniel E. Alt, Cedar Rapids, Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Continuation-in-part of Ser. No. 48,873, Apr. 16, 1993, which is a continuation-in-part of Ser. No. 948,034, Sep. 21, 1992, abandoned, which is a continuation of Ser. No. 347,602, May 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 346,771, May 2, 1989, abandoned, and a continuation-in-part of Ser. No. 23,840, Feb. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 728,667, Jul. 11, 1991, abandoned. This application Apr. 12, 1994, Ser. No. 226,516

Int. Cl.[6] G06F *1/32*

U.S. Cl. 364—707 **9 Claims**



1. A portable data collection terminal comprising:

a housing including a display screen and a keyboard having a plurality of keys disposed in a frontal side of the housing, and a non-volatile memory;

the display screen including graphic data input means disposed coincident with a screen area of the display screen; and

a power management circuit means including means for saving electrical states, including input and output device states, to the non-volatile memory wherein said means includes means for trapping input-output instructions and for shadow writing such trapped input-output instructions to the non-volatile memory during normal operations of the portable data collection terminal; said power management circuit means further including means for shutting down the portable data collection terminal during periods of inactivity and for reactivating the portable data collection terminal by attempted input through one of the plurality of keys, the power management circuit means being adapted to recognize such first attempted input as a command to resume operation instead of an input of the function normally executed by the respective one of the plurality of keys.

5,488,576

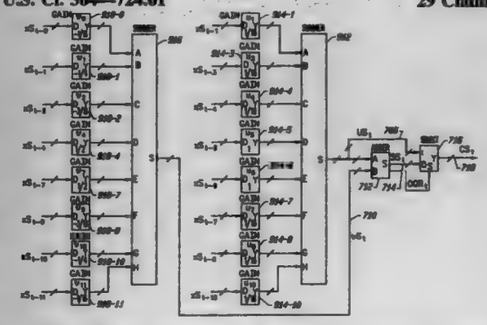
AMPLITUDE ADAPTIVE FILTER

David R. Main, Boulder Creek, Calif., assignor to The 3DO Company, Redwood City, Calif.

Filed Feb. 22, 1994, Ser. No. 199,097

Int. Cl.[6] G06F *17/10*

U.S. Cl. 364—724.01 **29 Claims**



1. Digital filter apparatus for use with a plurality of input samples, comprising:

a plurality of implementing filters, each coupled to receive said input samples and each of which produces a respective plurality of output samples, each t'th output sample in the plurality produced by any one of said implementing filters corresponding to a respective t'th output sample in the plurality produced by any other of said implementing filters; and

combining circuitry coupled to receive said output samples of said implementing filters, and which produces a plurality of combined output samples, each t'th combined output sample being selectably one of a plurality of functions of the t'th output samples of said implementing filters,

a first one of said functions producing said t'th combined output sample as the sum of the t'th output samples of at least a first and a second one of said implementing filters.

5,488,577

Patent Not Issued For This Number

5,488,578

SEMICONDUCTOR MEMORY DEVICE INCLUDING BIT CHECK FUNCTION AND TESTING METHOD USING THE SAME

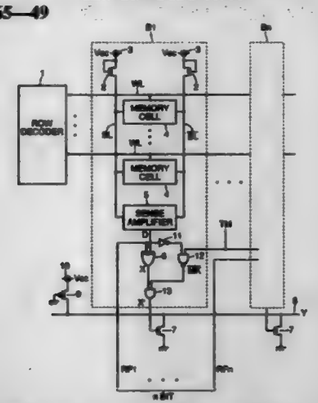
Akira Yamada, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1994, Ser. No. 296,395

Claims priority, application Japan, Sep. 3, 1993, 5-219879

Int. Cl.[6] G11C *15/00*

U.S. Cl. 365—49 **10 Claims**



1. A semiconductor memory device, comprising:

a plurality of memory cells each for storing one-bit data therein;

reading/writing means for reading data from said plurality of memory cells and writing data to said plurality of memory cells;

a plurality of comparing means provided corresponding to said plurality of memory cells for comparing a plurality of data signals corresponding to data read out from said plurality of memory cells by said reading/writing means with a plurality of reference signals externally applied corresponding to the plurality of data signals, correspondingly, wherein each of said comparing means generates a result signal indicating whether or not each data signal matches a corresponding reference signal when the corresponding reference signal is at a first logic level, and generates a result signal indicating a match irrespectively of whether or not each data signal matching the corresponding reference signal when the corresponding reference signal is at a second logic level; and

determination signal generating means for generating a determination signal indicating a match when all of result signals from said plurality of comparing means indicate a match and for generating a determination signal indicating a mismatch when any of the result signals from said plurality of comparing means indicates a mismatch.

5,488,579

THREE-DIMENSIONALLY INTEGRATED NONVOLATILE SRAM CELL AND PROCESS

Umesh Sharma; Jim Hayden, and Howard C. Kirsch, all of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Apr. 29, 1994, Ser. No. 235,735

Int. Cl.[6] G11C *11/40*

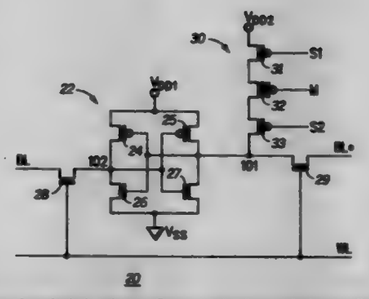
U.S. Cl. 365—185 **7 Claims**

1. An integrated circuit nonvolatile memory, comprising:

a static random access memory cell portion for storing a bit of binary information;

a first switch having a first terminal coupled to a first storage node of the static random access memory cell portion, and a second terminal, the first switch responsive to a first control signal;

a thin film transistor nonvolatile memory cell having a first current electrode coupled to the second terminal of the first switch, a second current electrode, and a control electrode; and



a second switch having a first terminal coupled to a first power supply voltage terminal, and a second terminal coupled to the second current electrode of the thin film transistor nonvolatile memory cell, the second switch responsive to a second control signal;

wherein the volatile memory cell is formed in first, second, third, and fourth layers of polysilicon, the thin film transistor nonvolatile memory cell and the first and second switches are formed in the third and fourth layers of polysilicon, the third and fourth layers of polysilicon overlying the first and the second layers of polysilicon.

5,488,580

SEMICONDUCTOR INTEGRATED CIRCUIT FOR OUTPUTTING DATA WITH A HIGH RELIABILITY

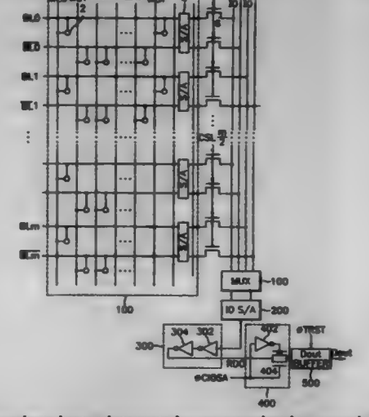
Soon-Kyu Park, Cheonahe, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 12, 1994, Ser. No. 241,855

Claims priority, application Rep. of Korea, May 12, 1993, 1993-8145

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.05 **9 Claims**



1. A semiconductor integrated memory circuit, comprising:

a plurality of memory cells for storing memory data, said memory cells arranged in a matrix of rows and columns, each row of memory cells connected by a bit line and each column of memory cells connected by a word line;

a plurality of bit line sense amplifiers, each bit line sense amplifier corresponding to one of said bit lines, said plurality of bit line sense amplifiers sensing memory data transmitted from one of said columns of memory cells to each of said bit lines when a word line is selected by a first memory address signal and when a row address strobe signal is in an active state;

a plurality of column select lines for selectively transmitting desired memory data sensed by said plurality of sense amplifiers to a latching circuit when a column is selected by a

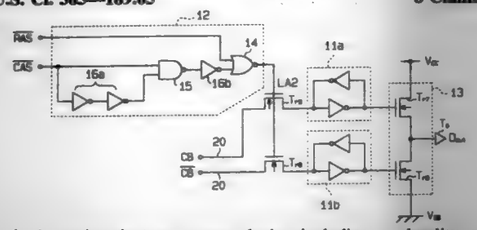
second memory address signal and when a column address strobe signal is in an active state;
a data output buffer for outputting said desired memory data latched by said latching circuit; and
switching means interposed between said latching circuit and said data output buffer to selectively connect said latching circuit to said data output buffer in response to a control signal.

5,488,581

SEMICONDUCTOR MEMORY DEVICE

Mitsuhiro Nagao; Kohji Shimbayashi, and Yoshiyuki Ishida, all of Kasugai, Japan, assignors to Fujitsu Limited, Kawasaki, and Fujitsu VLSI Limited, Kasugai, both of, Japan

Filed Aug. 11, 1994, Ser. No. 288,927
Claims priority, application Japan, Jan. 28, 1993, 5-270984
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—189.05 **8 Claims**



1. A semiconductor memory device including a plurality of memory cells from which cell data is read out as read data based on at least one control signal provided to the memory device, the semiconductor memory device comprising:
a transfer gate for receiving read data from one of said memory cells and for outputting said read data;
a transfer gate controller for producing a latch control signal based on first and second control signals provided to the memory device, and for supplying said latch control signal to said transfer gate to control the switching of said transfer gate;
a latch circuit for latching said read data sent from said transfer gate; and
an output buffer for producing data in accordance with said read data latched by said latch circuit, said output buffer operating to output the produced data in cooperation with said latch circuit even when said transfer gate is turned off,
wherein said transfer gate controller includes a delay circuit and a logic circuit, said logic circuit having an output terminal connecting to said transfer gate, a first input terminal receiving the first control signal and a second input terminal receiving the second control signal via said delay circuit, said delay circuit controlling the level-switching timing for said latch control signal in such a way as to turn on said transfer gate after a first delay time from a change in potential level of the second control signal and as to turn OFF said transfer gate after a second delay time from a subsequent change in potential level of the second control signal, and
wherein said second delay time is longer than said first delay time.

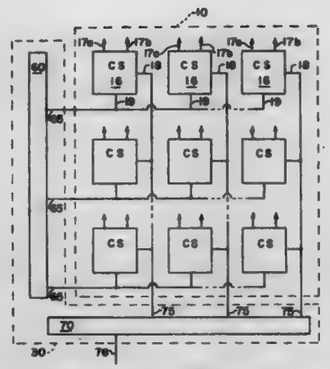
5,488,582

NON-DISRUPTIVE, RANDOMLY ADDRESSABLE MEMORY SYSTEM

Rafael C. Camarota, San Jose, Calif., assignor to Atmel Corporation, San Jose, Calif.

Continuation of Ser. No. 907,709, Jul. 2, 1992, abandoned. This application Aug. 25, 1994, Ser. No. 296,616
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—189.05 **15 Claims**

3. A configurable logic array comprising:



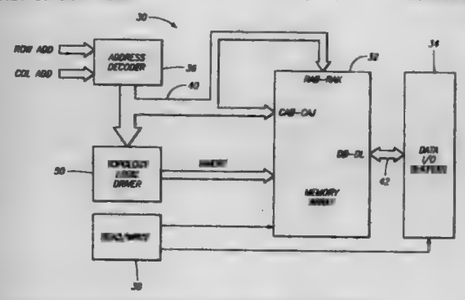
a plurality of configurable logic elements, said logic elements having at least two configuration states;
a plurality of control store elements arranged in a two-dimensional array such that each element is associated with a particular row and column of the array, said control store elements for selecting the configuration states of said configurable logic elements;
programming means for programming said control store elements, said programming means being capable of directly programming a subset of said control store elements without substantially disrupting the configuration control signals provided by others of said control store elements, said programming means comprising:
row decode means including a plurality of word lines, each said word line connecting to the control store elements in a single row of said two-dimensional array; and
column decode means including a plurality of bit lines, each said bit line connecting to the control store elements in a single column of said two-dimensional array;
each control store element comprising:
a bistable latch having two states and providing a configuration control signal;
a switch responsive to a selected one of said word lines to connect said bistable latch to a selected one of said bit lines; and
a buffer coupled to said configuration control signal, and generating therefrom a buffered configuration control signal.

5,488,583

MEMORY INTEGRATED CIRCUITS HAVING ON-CHIP TOPOLOGY LOGIC DRIVER, AND METHODS FOR TESTING AND PRODUCING SUCH MEMORY INTEGRATED CIRCUITS

Adrian E. Ong; William K. Waller, and Paul S. Zagar, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Sep. 22, 1994, Ser. No. 311,582
Int. Cl.[6] G11C *7/00;29/00*
U.S. Cl. 365—201 **16 Claims**



1. A memory integrated circuit chip, comprising:

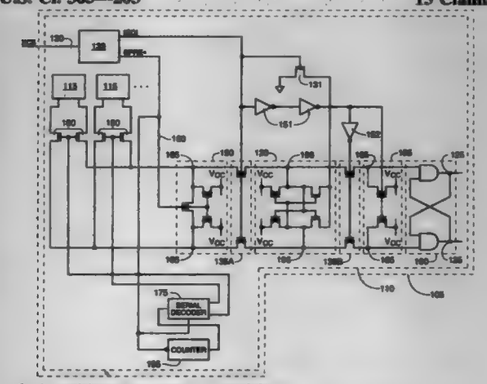
a memory array of a predefined circuit topology, the memory array having a plurality of memory cells and multiple access lines coupled to associated memory cells;
an address decoder to provide an address for selectively accessing one or more memory cells in the memory array;
I/O buffers to temporarily hold data written to and read from the memory cells in the memory array;
a read/write controller to manage data write and data read operations which transfer data between the I/O buffers and the addressed memory cells; and
a topology logic driver to selectively invert the data being written to and read from the addressed memory cells, the topology logic driver selectively inverting the data for certain addressed memory cells and not inverting the data for other addressed memory cells based upon location of the addressed memory cells in the circuit topology of the memory array.

5,488,584

CIRCUIT AND METHOD FOR EXTERNALLY CONTROLLING SIGNAL DEVELOPMENT IN A SERIAL ACCESS MEMORY

Huy T. Vo, and Loren L. Mclaury, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Aug. 26, 1994, Ser. No. 296,397
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—203 **15 Claims**



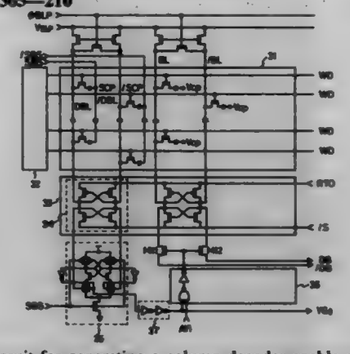
1. A multiport memory, comprising:
a) a plurality of memory cells for storing a plurality of bits;
b) an output port for presenting a data signal representative of one of the plurality of bits of a selected one of said memory cells;
c) a sampling circuit electrically interposed between said memory cells and said output port, said sampling circuit receiving the bit of the selected memory cell, and said sampling circuit developing the data signal;
d) a control node for receiving an external control signal coupled to said sampling circuit, a frequency of the external control signal determined externally by a user, wherein the frequency of said external control signal controls an amount of development of said data signal by said sampling circuit, said data signal driven to said output port from said sampling circuit;
e) a first information node interposed between said plurality of memory cells and said sampling circuit;
f) a second information node interposed between said output port and said sampling circuit;
g) a generator circuit for generating an internal control signal in response to said external control signal, said internal control signal having a first pulse and a second pulse;
h) an isolation means responding to said internal control signal to alternately electrically isolate said sampling circuit from said first information node and from said second information node in order to control an amount of said signal development;
i) first precharge means for precharging said first information node to a first precharge potential; and
j) a second precharge means for precharging said second information node to a second precharge potential, wherein said first information node is precharged when isolated from said sampling circuit and said second information node is precharged when isolated from said sampling circuit.

5,488,585

CIRCUIT FOR GENERATING COLUMN DECODER ENABLE SIGNAL IN A SEMICONDUCTOR DEVICE

Hong S. Kim, Kyungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Inc., Rep. of Korea

Filed Aug. 22, 1994, Ser. No. 294,085
Claims priority, application Rep. of Korea, Aug. 20, 1994, 1993-16245
Int. Cl.[6] G11C *7/02*
U.S. Cl. 365—210 **5 Claims**



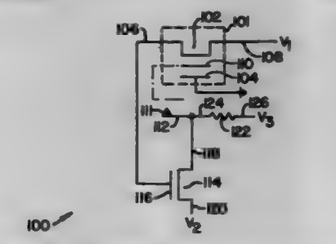
1. A circuit for generating a column decoder enable signal in a semiconductor device, comprising:
true and complementary dummy bit lines constructed in a normal cell array, each of the dummy bit lines including dummy cells; and
a dummy bit line sensing amplifier connected to the true and complementary dummy bit lines and adapted to generate a column decoder enable signal using data from the true and complementary dummy bit lines.

5,488,586

METHOD AND APPARATUS FOR ERASING AN ARRAY OF ELECTRICALLY ERASABLE PROGRAMMABLE READ ONLY MEMORY CELLS

Raminda Madurawe, Sunnyvale, and Dominik Schmidt, San Jose, both of Calif., assignors to Altera Corporation, San Jose, Calif.

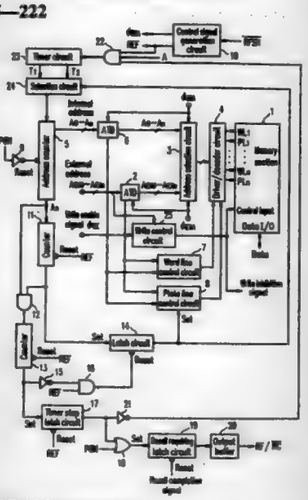
Filed Oct. 24, 1994, Ser. No. 328,303
Int. Cl.[6] G11C *11/40*
U.S. Cl. 365—218 **19 Claims**



1. An apparatus for erasing memory cells while preventing overerasure of the cells comprising:

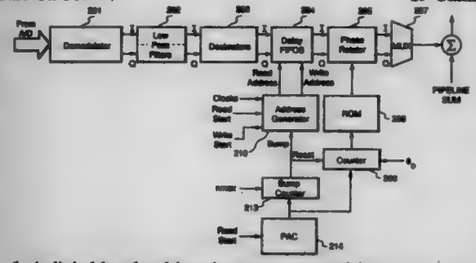
a memory cell having a gate, a drain, a source, and a floating gate from which charge must be removed by placing a potential thereacross to erase said memory cell;
an erase node for applying said potential across said floating gate;
a stop transistor having a gate directly coupled to said drain of said memory cell, a source, and a drain directly coupled to said erase node, said stop transistor preventing overerasure of said memory cell when a threshold voltage is reached on said gate of said stop transistor; and
a resistive element having a first terminal coupled to said drain of said stop transistor and a second terminal.

5,488,587
NON-VOLATILE DYNAMIC RANDOM ACCESS MEMORY
Katsumi Fukumoto, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Oct. 20, 1994, Ser. No. 325,957
Claims priority, application Japan, Jan. 20, 1993, 5-262648; Jan. 28, 1994, 6-008795
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—222 **20 Claims**



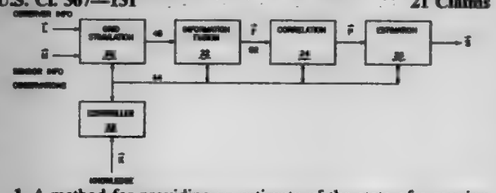
1. An NVDRAM comprising:
volatile memory cells which require a refreshing operation for retaining content stored therein;
non-volatile memory cells which permit content stored therein to be rewritten;
address generation means for automatically generating in sequence respective addresses of the volatile memory cells and the non-volatile memory cells in accordance with a clock signal;
self-refresh means for performing the refreshing operation by sequentially rewriting the content stored in each volatile memory cell based on the addresses generated by the address generation means;
refresh timing means for measuring a duration for which the self-refresh means continually performs the refreshing operation;
self-store starting means for determining whether or not duration of the refreshing operation as measured by the refresh timing means has exceeded a predetermined time amount; and
self-store means for, when the self-store starting means determines that the duration of the refreshing operation as measured by the refresh timing means has exceeded the predetermined time amount, stopping the refreshing operation by the self-refresh means and for performing a storing operation by sequentially transferring the content stored in the volatile memory cells to the non-volatile memory cells to be stored therein based on the addresses generated by the address generation means.

5,488,588
ULTRASONIC IMAGER HAVING WIDE-BANDWIDTH DYNAMIC FOCUSING
William E. Engeler, Scotia, and Christopher M. W. Daft, Schenectady, both of N.Y., assignors to General Electric Company, Schnectady, N.Y.
Filed Sep. 7, 1994, Ser. No. 301,751
Int. Cl.[6] G03B *42/06*
U.S. Cl. 367—7 **19 Claims**



1. A digital baseband imaging system comprising:
a plurality of transducers arranged in a sequence form an array;
means for selectively operating said transducers in a transmission mode to produce propagating energy pulses from electrical driving signals; and
means for forming a beam from analog electrical detection signals produced in response to detection of reflected pulses by said transducers operating in a reception mode, said beam-forming means comprising a plurality of receive channels, each receive channel being coupled to a corresponding one of said plurality of transducers, wherein each of said receive channels comprises:
analog-to-digital conversion means for converting said analog electrical detection signals into digital signal samples;
demodulation means for basebanding said digital signal samples to form complex samples;
filter means for filtering said complex samples;
selecting means for dynamically selecting complex samples to provide dynamic group delay of said filtered complex samples; and
phase rotating means for dynamically rotating the phase of said selected complex samples to provide dynamic phase focus of said selected complex samples.

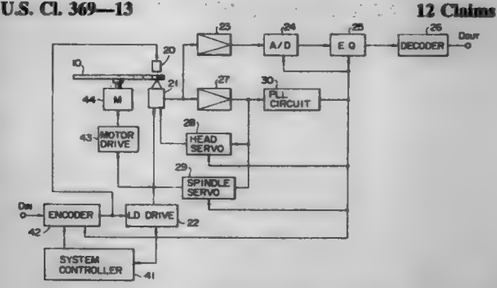
5,488,589
NEURAL NETWORK BASED THREE DIMENSIONAL OCEAN MODELER
Christopher M. DeAngelis, Cranston, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 18, 1994, Ser. No. 324,640
Int. Cl.[6] G06T *1/40;17/00*
U.S. Cl. 367—131 **21 Claims**



1. A method for providing an estimate of the state of a moving contact comprising the steps of:
providing a device for estimating the state of said contact;

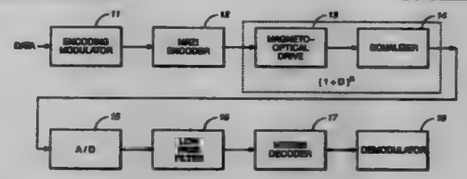
inputting into said device information about a location of an observer during a sequence of time, information from at least one sensor about a position of said moving contact relative to said observer during said sequence of time, and a-priori knowledge;
transforming the inputted information into a series of three dimensional geographical grids with each grid having a plurality of cells; and
analyzing said geographical grids to produce an estimate of the state of the contact with respect to the location of the observer.

5,488,590
MAGNETO-OPTICAL OVERWRITE RECORDING AND REPRODUCING SYSTEM
Tetsu Watanabe, Tokyo, and Tamotsu Yamagami, Kanagawa, both of, Japan, assignors to Sony Corporation, Japan
Continuation of Ser. No. 825,542, Jan. 24, 1992, abandoned.
This application Sep. 6, 1994, Ser. No. 301,045
Claims priority, application Japan, Jan. 28, 1991, 3-025061
Int. Cl.[6] G11B *7/00;11/00*
U.S. Cl. 369—13 **12 Claims**



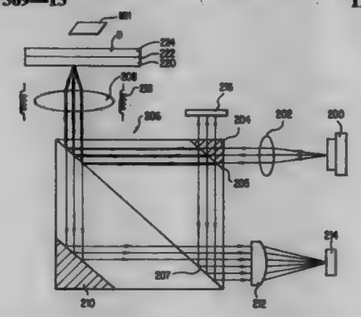
1. A magneto-optical recording and reproducing system for recording data onto a magneto-optical disk having a recording layer and for reproducing the recorded data, comprising:
motor drive means for rotating the magneto-optical disk about its axis;
first means for irradiating the magneto-optical disk with at least one pulsed laser beam to bring to at least a Curie temperature the recording layer to form adjacent partially overlapping recording tracks on the magneto-optical disk, the adjacent partially overlapping recording tracks bounded by a pair of unrecorded magneto-optical guard tracks;
magnetic field means for successively applying to each adjacent partially overlapping recording track a magnetic field to switch the normal component of magnetic domain orientations within each track;
means for modulating the magnetic field means in accordance with input data to be recorded;
second means for detecting magnetic domain orientations within each recorded track and generating a detection signal in response to the changes in magnetic domain orientations, the second means irradiating each recorded track with at least one laser beam having a wavelength less than that of the pulsed laser beam; and
signal processing means for converting the detection signal into data representative of the input data.

5,488,591
IMPROVED MAGNETO-OPTICAL RECORDING APPARATUS FOR DIGITAL SIGNAL INFORMATION
Michio Kobayashi; Hiroshi Hirayama, and Satoshi Nebashi, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Sep. 20, 1994, Ser. No. 309,286
Claims priority, application Japan, Dec. 24, 1993, 5-328592
Int. Cl.[6] G11B *11/00*
U.S. Cl. 369—13 **24 Claims**



1. A magneto-optical recording apparatus, comprising:.
a modulator for RLL (Run-Length Limited) encoding recording data;
a NRZI (Nonreturn to Zero Inverse) encoder, coupled to said modulator, for NRZI-encoding an obtained RLL code;
a magneto-optical drive, coupled to said encoder, for reading out signals from a magneto-optical recording medium;
an equalizer, coupled to said drive, for equalizing a read-out analog signal obtained from the magneto-optical recording medium into a waveform $(1+D)^n$ (n is a positive integer), while assuming that delay time for one bit period of said read-out signal is D, in such a manner that n is made to be at least 3 in a case where an amplitude ratio of a shortest waveform output and a longest waveform output of said read-out analog signal is ½ or more;
a low pass filter coupled to said equalizer, and
a Viterbi decoder that is coupled to said low pass filter and uses the difference between a sample value obtained by quantizing an output from said low pass filter and an expected value obtained from a theoretical value of a data column so as to make the most probable path to be decoding data.

5,488,592
OPTICAL PICKUP DEVICE FOR MAGNETO-OPTICAL DISC REPRODUCING SYSTEM
Jin Tae Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea
Filed Nov. 8, 1994, Ser. No. 337,493
Claims priority, application Rep. of Korea, Nov. 11, 1993, 93-23870
Int. Cl.[6] G11B *11/00*
U.S. Cl. 369—13 **11 Claims**



1. An optical pickup device for a magneto-optical disc reproducing system, comprising:
a light source for generating a laser beam in parallel;
a prism for transmitting a first portion of said laser beam which is irradiated from a first direction, for reflecting a second portion of said laser beam into a second direction perpendicu-

lar to said first direction and for reflecting a beam which is irradiated from a third direction in opposition to said first direction into a fourth direction in opposition to said second direction;

polarization beam splitting means for reflecting said first portion of said laser beam transmitted in the first direction into a fifth direction perpendicular to said first direction to irradiate said first portion onto a disc, for reflecting a first polarization component of a reflected beam irradiated onto said polarization beam splitting means from the disc in a sixth direction in opposition to the fifth direction to irradiate the first polarization component onto said prism in the third direction to be reflected in the fourth direction, for reflecting again in a seventh direction said first polarization component reflected in the fourth direction, for transmitting a second polarization component of a reflected beam irradiated from the disc in the sixth direction, and for transmitting the second polarization component in an eighth direction which has the same direction with the seventh direction;

a mirror for reflecting the second polarization component passing said polarization beam splitting means in the eighth direction; and

a photo-detector for detecting the first and second polarization components to thereby generate data signal.

5,488,593

DISC REPRODUCING METHOD AND APPARATUS WITH MULTIPLE HEADS

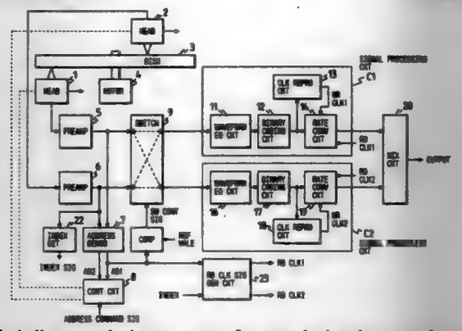
Shigeru Furumiya, and Yoshinari Takemura, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 10, 1993, Ser. No. 165,055

Claims priority, application Japan, Dec. 11, 1992, 4-331528

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—32 **8 Claims**



1. A disc reproducing apparatus for reproducing data stored on a plurality of disc surfaces at a constant linear density comprising:

(a) rotating means for rotating said disc surfaces at a constant rotational speed;

(b) a plurality of heads for reproducing said data on said plurality of disc surfaces at the same time respectively;

(c) position detection means for detecting positions of said plurality of heads to produce position signals;

(d) position control means for controlling radial positions of said plurality of heads such that a total of data rates of data reproduced by said plurality of heads in accordance with said position signals is constant, each of said disc surfaces being divided into N circumference zones, wherein said N is a natural number;

(e) N signal processing circuits for processing said reproduced data respectively, said N signal processing circuits having N processing speeds corresponding to N data rate ranges corresponding to said N circumference zones;

(f) switch means for supplying said reproduced data to said N signal processing circuits in accordance with at least one of said position signals such that data reproduced by each of said plurality of heads is supplied to a respective one of said N signal processing circuits corresponding to a respective one of said N circumference zones at which said each of plurality of heads is located; and

(g) combining means for combining said processed data signals from said N signal processing circuits into a combined serial data signal of which data rate corresponds to said total of data rates.

5,488,594

OBJECTIVE ACTUATOR FOR POSITIONING AN OPTICAL PICK-UP DEVICE

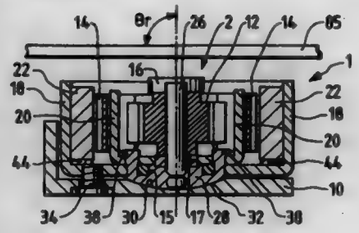
Fumio Kobayashi; Ikuo Kasuga, and Akira Miyamae, all of Nagano, Japan, assignors to K. K. Sankyo Seiki Seisakusho, Nagano, Japan

Filed Aug. 24, 1993, Ser. No. 110,960

Claims priority, application Japan, Aug. 24, 1992, 4-064732 U; Aug. 24, 1992, 4-064733 U; Jun. 11, 1993, 5-036788 U

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—44.14 **10 Claims**



1. An objective actuator comprising:

an object lens holder for holding an object lens, the object lens holder being mounted on a support shaft in a manner that the object lens holder is slidable along and rotatable about the support shaft;

a drive coil mounted on the object lens holder;

first yoke, formed by molding, provided with drive magnets, the first yoke being mounted in such manner that the drive magnets confront with the drive coil, the first yoke having a center hole which is larger in diameter than the support shaft, the first yoke and the support shaft being integrally connected by molding, the first yoke having arc-shaped side walls integrally formed on an outer circumferential edge of the first yoke; and

shaft holding means for stabilizing said support shaft, said shaft holding means including a shaft holding member defined by filling a resin at the center hole of the first yoke with the support shaft disposed in the center hole of the first yoke, the shaft holding member including a base portion.

5,488,595

OPTICAL INFORMATION RECORDING MEDIUM HAVING A TRANSITIONING THREE BIT ACCESS PIT GROUP AND OPTICAL INFORMATION RECORDING/REPRODUCING APPARATUS USING THE SAME

Takashi Takeuchi; Tadashi Saitoh, both of Fujisawa; Toshihiro Matsunaga, Kamakura; Masashi Mori, Chigasaki, and Hajime Fujiya, Kamakura, all of, Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Video Engineering, Inc., Kanagawa, both of, Japan

Continuation of Ser. No. 511,800, Apr. 20, 1990, abandoned. This application Sep. 21, 1993, Ser. No. 123,978

Claims priority, application Japan, Apr. 24, 1989, 1-101634; Dec. 15, 1989, 1-323756

Int. Cl.[6] G11B *7/00*

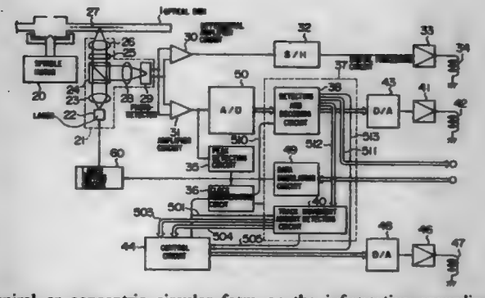
U.S. Cl. 369—54 **9 Claims**

1. An optical information recording medium which has a disk-like shape and in/from which information can be optically recorded/reproduced along a virtual track virtually defined in a spiral or concentric circular form on the information recording medium following a predetermined modulation rule comprising:

a pair of wobbling pits provided for each predetermined data record unit, with a first and second wobbling pit being shifted in position in opposite radial directions, of the information recording medium with respect to a virtual track center; and

an access pit group provided at a specified position in association with said pair of wobbling pits, said access pit group having at least three access pits different from said wobbling pits and being provided within a predetermined range of at least six contiguous pit positions, and at least one of said three access pits being disposed in a pit position which is different from pit positions of access pit groups provided for adjacent tracks;

wherein one of said at least three access pits in said access pit group excepting said leading wobbling pit has a positional change of two pit positions between tracks adjacent to each other in the radial direction of the information recording medium in accordance with a track-to-track transition, a plurality of said access pit groups are periodically repeated for every predetermined number of tracks in the radial direction of the information recording medium and a fixed access pit is interposed between the positions of said one pit before and after the change.



5,488,596

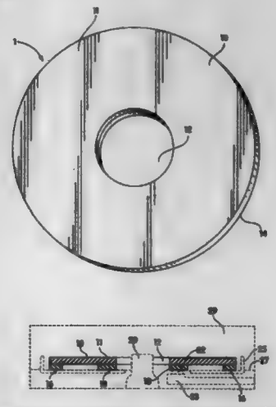
CLEANING DEVICE THAT DOES NOT ENGAGE THE DISC DRIVE SPINDLE

Robert D. Martin, 13 Wheeler Dam Rd., Salem, N.H. 03079

Filed Feb. 17, 1993, Ser. No. 18,114

Int. Cl.[6] G11B *15/18*

U.S. Cl. 369—71 **10 Claims**



1. A combination comprising an optical disc drive unit and a cleaning device for cleaning a laser lens of said optical disc drive unit,

said optical disc drive unit having a receiving area and a drive spindle which extends into said receiving area;

said cleaning device including a member adapted for insertion into said receiving area of said optical disc drive unit and

cleaning means supported by said member for cleaning said laser lens of said optical disc drive unit;

said member having an aperture extending therethrough, said aperture being constructed and designed to provide sufficient radial clearance about said drive spindle of said optical disc drive unit, which extends through at least a portion of said aperture when said member is fully inserted within said receiving area of said disc drive unit but does not engage nor otherwise contact said cleaning device, allowing said member and said cleaning means to remain stationary while said spindle is rotated;

wherein said laser lens moves upwardly and downwardly during a focusing sequence so as to contact said cleaning means, causing dust and contaminants to be removed therefrom; and said cleaning means surrounds said aperture.

5,488,597

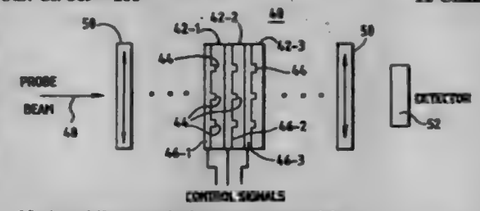
MULTILAYER OPTICAL MEMORY WITH MEANS FOR RECORDING AND READING INFORMATION

Alan G. Chen, 129 White Oak Ct. #6, Schaumburg, Ill. 60195, and David J. Brady, Champaign, Ill., assignors to Alan G. Chen, Schaumburg, Ill.

Filed Apr. 19, 1994, Ser. No. 229,653

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—100 **12 Claims**



12. A multilayer optical memory, comprising:

a plurality of stacked recording media layers each having a reflective control surface, each reflective surface having a different wavelength characteristic;

pits in the reflective surfaces, extending into the adjacent recording media layer; and

a tunable probe light beam which scans said layers, the wavelength of the tunable probe beam being chosen for reflection by a selected surface to interact with the pits therein.

5,488,598

OPTICAL PICKUP USING SPLIT BEAMS IMPINGING ON DIFFERENT PHOTODETECTOR AREAS

Kiyonobu Endo; Kazuya Matsumoto, and Tetsuro Kuwayama, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 77,405, Jun. 16, 1993, abandoned, which is a continuation of Ser. No. 658,428, Feb. 20, 1991, abandoned, which is a continuation of Ser. No. 349,963, May 8, 1989, abandoned, which is a continuation of Ser. No. 832,651, Feb. 25, 1986, abandoned. This application Jul. 14, 1994, Ser. No. 275,328

Claims priority, application Japan, Feb. 28, 1985, 60-39050; Feb. 28, 1985, 60-39051; Apr. 8, 1985, 60-72733

Int. Cl.[6] G11B *7/00;11/00*

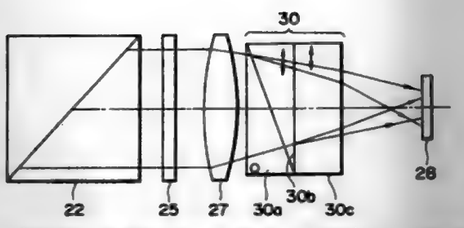
U.S. Cl. 369—120 **12 Claims**

1. An optical pickup apparatus comprising:

light projection means for projecting a light beam generated by a light source onto a recording medium;

light separation means for separating a light beam reflected by the recording medium into first and second light beams;

light converging means for respectively converging the first and second light beams;



a first detector and a second detector, formed on a common substrate, for detecting the first and second light beams, respectively, and for producing detection outputs, a light receiving portion of each of said first and second detectors being divided into a plurality of areas for respectively detecting an area of a spot of light produced by the first and second light beams, wherein one of said first and second light receiving portions is located before a focusing position of one of the first and second light beams and the other light receiving portion is located after a focusing position of the other light beam; and

processing means for obtaining a focusing error signal on the basis of the outputs of said first and second detectors.

5,488,599

OPTICAL PICK-UP DEVICE WITH A MULTIFUNCTIONAL PRISM

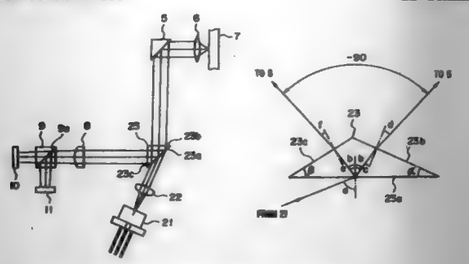
Hiroshi Akiyama, and Yoshitaka Takahashi, both of Yokohama, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Feb. 4, 1994, Ser. No. 191,599

Claims priority, application Japan, Feb. 5, 1993, 5-040714; Aug. 27, 1993, 5-234336; Sep. 3, 1993, 5-242124; Dec. 28, 1993, 5-349198

Int. Cl.[6] G11B *7/135*

U.S. Cl. 369—112 **11 Claims**



1. An optical pickup device, which comprises:

a light source having a light flux output of non-circular cross-section;

a multi-functional single body prism in optical alignment with said light source;

at least one light directing optical member configured to focus light received from said multi-functional prism onto a optical recording medium and to direct light reflected from said optical recording medium to said multi-functional prism; and

a light detection system aligned with said multi-functional prism and configured to receive light reflected by said optical recording medium;

wherein said multi-functional prism has at least one face configured to shape said light flux outputted from said light source to a substantially circular beam, to direct said beam to said at least one light directing member, to separate light reflected from said optical recording medium from said source light, and to guide said reflected light separated from said source light to said light detection system; and

wherein a following expression is established in said multi-functional prism, such that an incidence angle of said light flux outputted from said semiconductor laser chip light source is a, and an angle between an incidence face of said multi-functional prism for said light flux and a first outgoing irradiation face of said multi-functional prism for said light flux subjected to beam shaping is α, an angle between said incidence face and a second outgoing irradiation face of said multi-functional prism from which said light flux subjected to light separation guided from said multi-functional prism is β, and an index of refraction of a material for said multi-functional prism is n:

$$\alpha+\beta+\left|\sin^{-1}\left[\min\left\{\sin^{-1}\left(\frac{\sin a}{n}\right)-\alpha\right\}\right]\right|+\left|\sin^{-1}\left[\min\left\{\sin^{-1}\left(\frac{\sin a}{n}\right)-\beta\right\}\right]\right|\leq 90^{\circ}$$

5,488,600

DIFFERENTIAL OPTICAL SWITCH FOR DATA MULTIPLEXING IN AN OPTICAL FIBER LOOP OF AN OPTICAL INFORMATION STORAGE APPARATUS

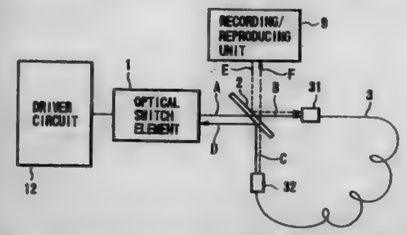
Yutaka Yamanaka, Tokyo, Japan, assignor to NEC Corporation, Japan

Division of Ser. No. 67,996, May 27, 1993, Pat. No. 5,384,728. This application Aug. 22, 1994, Ser. No. 294,065

Claims priority, application Japan, May 29, 1992, 4-138134

Int. Cl.[6] G11B *7/00*; H04B *10/00*

U.S. Cl. 369—116 **6 Claims**



1. An optical information storage apparatus comprising:

a differential type optical switch element having a first terminal for emitting a first optical output and receiving a first optical input, and a second terminal for emitting a second optical output and receiving a second optical input, the first and second optical outputs being light pulses to read/write an optical information storage medium, the first and second optical inputs being light pulses to drive the optical switch element, each of the terminals switching from a non-emission state to an emission state in accordance with an amplitude difference between the first and second optical inputs, the first optical output being propagated to the first optical input through a first optical path, the second optical output being propagated to the second optical input through a second optical path;

an optical fiber constituting a common optical path common to the first and second optical paths and having a light-reflecting surface on one end face of the optical fiber to reflect the light pulses, and a read/write surface on an other end face to read/write the light pulses, the common optical path guiding the first and second optical outputs written through the read/write surface to the light-reflecting surface, and the first and second optical outputs reflected by the light-reflecting surface to the read/write surface to output the optical outputs from the read/write surface; and

optical path separating/multiplexing means for separating/multiplexing the common optical path from/with the first and second optical paths, the first and second optical outputs emitted from the differential type optical switch element being multiplexed to be commonly incident on the read/write surface of the optical fiber through the optical path separating/multiplexing means, the optical outputs read from the read/write surface of the optical fiber being separated into the first and second optical inputs to be selectively incident onto the first and second terminals of the differential type optical switch element, respectively.

5,488,601

PHOTOELECTRIC SENSOR, INFORMATION RECORDING SYSTEM, AND INFORMATION RECORDING METHOD

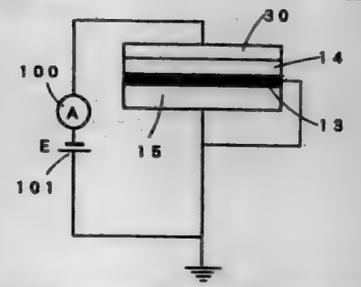
Shinichi Sakano; Daigo Aoki; Minoru Utsumi; Masanori Akada, and Osamu Shimizu, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1993, Ser. No. 141,110

Claims priority, application Japan, Jan. 26, 1992, 4-287983; Jan. 27, 1993, 5-011721; Apr. 28, 1993, 5-102244; Jul. 14, 1993, 5-173988

Int. Cl.[6] G11B *7/00*; G11C *13/04*

U.S. Cl. 369—120 **168 Claims**



1. A photoelectric sensor comprising a photoconductive layer stacked on an electrode, said photoelectric sensor being semiconductive, wherein when an electric field having an intensity of 10^5 V/cm to 10^6 V/cm is applied to said photoelectric sensor during voltage application when unexposed to light, a passing current density through said photoelectric sensor of 10^{-4} A/cm^2 to 10^{-7} A/cm^2 is obtained, and when said photoelectric sensor is exposed to light during voltage application, the amount of photo-induced current increases during exposure to light with time, and increases to an amount more than a calculated theoretical amount of photoelectric current generated by the light exposure, wherein the increased photo-induced current gradually decreases after the termination of the light exposure during continuous voltage application.

5,488,602

INFORMATION RECORD/REPRODUCING APPARATUS AND INFORMATION RECORDING MEDIUM

Akihiko Yamano, Yokohama; Hiroyasu Nose, Zama; Toshimitsu Kawase, Atsugi; Toshihiko Miyazaki, Isehara, and Takahiro Oguchi, Atsugi, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 953,202, Sep. 29, 1992, abandoned, which is a continuation of Ser. No. 513,931, Apr. 24, 1990, abandoned. This application Jun. 29, 1994, Ser. No. 267,516

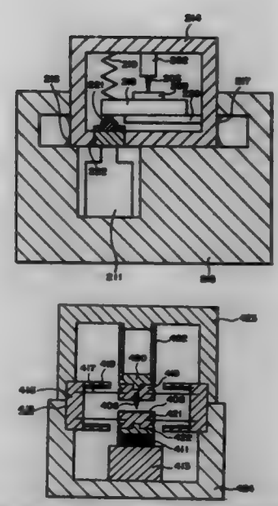
Claims priority, application Japan, Apr. 25, 1989, 1-103453; Apr. 5, 1990, 2-091452

Int. Cl.[6] G11B *9/00*

U.S. Cl. 369—126 **25 Claims**

1. A method for mounting containing means in which a probe electrode and a recording medium are sealed, in an apparatus for performing at least one of information recording and reproducing, comprising the steps of;

mounting the containing means in which the probe and the recording medium are sealed, in the apparatus; and



electrically connecting an electrode of said containing means to an electrode of said apparatus when said containing means is mounted in said apparatus.

5,488,603

OPTICAL INFORMATION RECORDING REPRODUCING APPARATUS WITH FIRST AND SECOND ELECTROKINETIC TRANSDUCERS AT RESPECTIVE DISTANCES

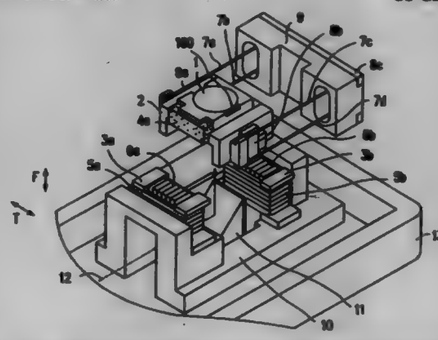
Hiromori Tomita; Tohru Nakamura; Takuya Wada, all of Katano, and Hiroyuki Nakamura, Kobe, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 17, 1994, Ser. No. 261,739

Claims priority, application Japan, Jun. 21, 1993, 5-174739

Int. Cl.[6] G11B *7/095*

U.S. Cl. 369—219 **38 Claims**



1. An optical information recording/reproducing apparatus for optically writing and reproducing information on a disk-shape recording medium, the optical information recording/reproducing apparatus comprising:

a base;

an objective lens for converging a light beam on the disk-shape recording medium, an optical axis of the objective lens being perpendicular to the disk-shape recording medium;

an actuator for actuating the objective lens along an optical axis direction in which the optical axis of the objective lens extends and along a radial direction of the disk-shape recording medium, wherein the actuator is fixed on the base and includes supporting means for supporting the objective lens, and a first electrokinetic type transducing means and a second electrokinetic type transducing means for driving the support-

ing means along at least one of the optical axis direction and the radial direction of the disk-shape recording medium, the first and second electrokinetic type transducing means interposing the supporting means, and a distance between the first electrokinetic type transducing means and the base being different from a distance between the second electrokinetic type transducing means and the base; and

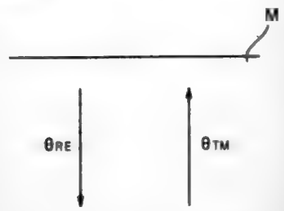
an optical member for directing a light beam to travel between the first electrokinetic type transducing means and the base and to be incident on the objective lens.

5,488,604

MAGNETO-OPTICAL DISK HAVING ZERO KERR ROTATION ANGLE AT ROOM TEMPERATURE

Nobuyasu Negishi, Tsurugashima, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 2, 1994, Ser. No. 300,384
Claims priority, application Japan, Sep. 7, 1993, 5-221953
Int. Cl.[6] G11B *7/29;13/04*
U.S. Cl. 369—275.2 **10 Claims**



1. A magneto optical disc comprising:

a substrate having a disc shape; and

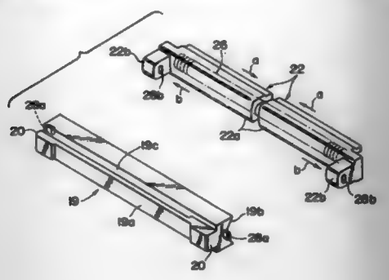
a single ferrimagnetic layer formed on said substrate for recording information as a magnetization condition therein, said ferrimagnetic layer comprising material which Kerr rotation angle at a room temperature is substantially zero and which Kerr rotation angle at a predetermined reproducing temperature has a predetermined value other than zero, said predetermined reproducing temperature being higher than said room temperature and lower than a Curie point of the ferrimagnetic layer.

5,488,605

DISC CARTRIDGE WITH EASILY ASSEMBLED SLIDER AND SHUTTER MEANS

Yoshikazu Ishimatsu, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 201,259, Feb. 24, 1994, abandoned.
This application May 12, 1995, Ser. No. 440,002
Claims priority, application Japan, Feb. 25, 1993, 5-059381
Int. Cl.[6] G11B *23/03*
U.S. Cl. 369—291 **10 Claims**



1. A disc cartridge comprising:

a housing main body for rotatably housing therein a disc-shaped recording medium, the housing main body having an opening on at least one surface;

shutter means slidably connected to the housing main body for opening and closing the opening, the shutter means movable between a closed position that closes the opening and a first open position that at least partially opens the opening, and between the closed position and a second open position that at least partially opens the opening, the shutter means being positioned adjacent to a first side of the housing main body when in the first open position, the shutter means being positioned adjacent to a second side of the housing main body when in the second open position;

a first slider movable in a direction parallel to the movement of the shutter means, the first slider being entirely disposed within a region between a center of the opening and the first side of the housing main body when the opening is closed by the shutter means;

a second slider movable in the direction parallel to the movement of the shutter means, the second slider being entirely disposed within a region between the center of the opening and the second side of the housing main body when the opening is closed by the shutter means;

stopper means disposed between the first and second sliders for preventing movement of any portion of the first slider beyond the center of the opening towards the second side, and for preventing movement of any portion of the second slider beyond the center of the opening towards the first side;

force applying means for pressing the first and second sliders toward each other so that end portions of the sliders are abutted against the stopper means; and

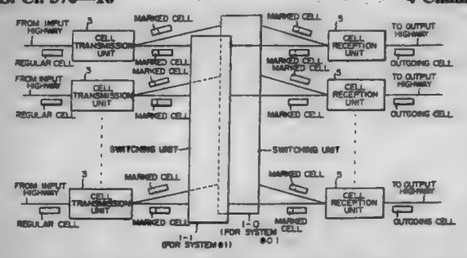
guide means connected to the shutter means for engaging the first and second sliders so that the guide means pushes the first slider towards the first side when the shutter means moves towards the first position, and so that the guide means pushes the second slider towards the second side when the shutter means moves towards the second position.

5,488,606

PROCEDURE FOR SWITCHING-OVER SYSTEMS

Satoshi Kakuma; Shuji Yoshimura; Kazuo Hajikano; Masami Murayama, and Yuzo Okuyama, all of Kanagawa, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 21, 1994, Ser. No. 216,149
Claims priority, application Japan, Sep. 20, 1993, 5-233460
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—16 **4 Claims**



1. A redundant ATM (asynchronous transfer mode) exchange for communications between a plurality of input highways and a plurality of output highways, the exchange comprising:

a switching system #0 and a switching system #1 each having switching means operating in parallel with each other, one system being a master and another being a slave;

cell transmission means for each input highway, for receiving cells from a respective input highway and transmitting a copy of each received cell to each of the system #0 and system #1, for assigning a mark designating either a master indication or a slave indication to each cell received from said input highway, wherein a cell having the master indication is transmitted

to the switching means operating as a master and a cell having the slave indication to the switching means operating as a slave; and

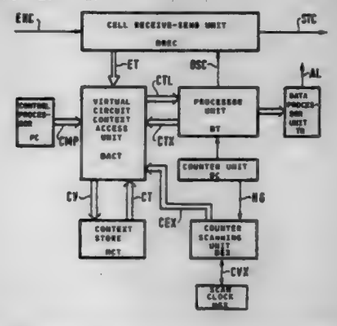
cell reception means for each output highway, for receiving cells from the switching means of the system #0 and the switching means of the system #1 and transmitting one of said cells to a respective output highway based on said mark, for storing cells having the master indication after detecting at least one cell having said mark corresponding to a system switchover, for detecting that marks of said cells have changed to indicate said system switchover for each path currently set, and for switching-over between one system and another system without duplication and loss of cells by outputting the cells having the master indication stored in said cell reception means.

5,488,607

ASYNCHRONOUS TIME-DIVISION MULTIPLEX COMMUNICATION MEDIUM VIRTUAL CIRCUIT THROUGHPUT MEASURING DEVICE

Paul Vinel, Velizy, and Marc Dieudonne, Igny, both of, France, assignors to Alcatel N.V., Amsterdam, Netherlands

Continuation of Ser. No. 899,738, Jun. 17, 1992, abandoned.
This application Apr. 26, 1994, Ser. No. 233,205
Claims priority, application France, Jun. 18, 1991, 91 07430
Int. Cl.[6] H04J *1/16*
U.S. Cl. 370—17 **14 Claims**



5. Device for detecting the absence of a predetermined minimal throughput of a virtual circuit conveying cells over an asynchronous time-division multiplex transmission medium, comprising:

a store in which the virtual circuit is assigned a context in the form of stored throughput data relating to said virtual circuit, said stored throughput data including an indication of when a previous cell of the virtual circuit in question was received;

timing means;

scanning and evaluating means responsive to said timing means for regularly accessing and processing said stored throughput data and producing a cut off call detection signal if said stored throughput data including said indication of when said previous cell of was received corresponds to a maximum possible average throughput rate since the receipt of said previous cell that is below a predetermined minimum throughput, and

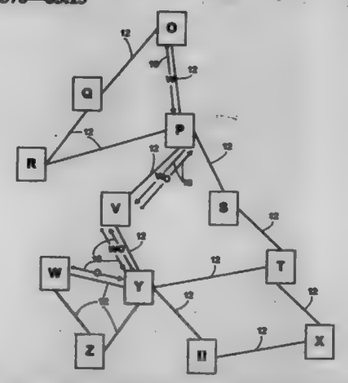
throughput calculation means for updating said stored throughput data in response to the receipt of a subsequent cell on said virtual circuit and storing said updated throughput data in said store.

5,488,608

METHOD AND SYSTEM FOR ROUTING PACKETS IN A PACKET COMMUNICATION NETWORK USING LOCALLY CONSTRUCTED ROUTING TABLES

George H. Flammer, III, Cupertino, Calif., assignor to Metricom, Inc., Los Gatos, Calif.

Filed Apr. 14, 1994, Ser. No. 227,774
Int. Cl.[6] H04J *3/26*
U.S. Cl. 370—85.13 **12 Claims**



6. A system for routing packets of data in a packet data communication network without a network directory comprising:

a plurality of nodes in a network, each node including an identifier indicative of coordinate location, said identifier including a coordinate value referenced to a terrestrial grid;

means for addressing a packet to an ultimate destination node by designating in a packet header said ultimate destination node only by said coordinate value of said ultimate destination node and without designating a complete intermediate path to said ultimate destination node such that the network is free to route the packet via any intermediate path to said ultimate destination node;

means at each of said plurality of nodes for selecting upon first receipt of a packet for a destination node a neighboring node by using said identifier indicative of coordinate location of said destination node; and

means at each of said plurality of nodes for storing a routing table entry for an ultimate destination of a packet, said routing table entry selected by an identifier for said ultimate destination node and including information identifying a neighboring node as a forwarding node for said ultimate destination.

5,488,609

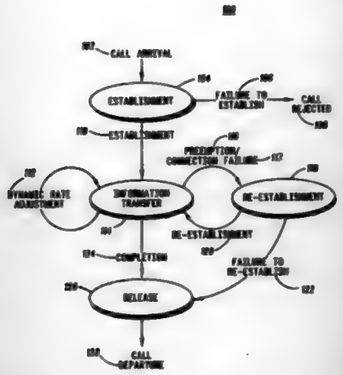
DYNAMIC RATE ADJUSTMENT FOR OVERLOAD CONTROL IN COMMUNICATION NETWORKS

Michael G. Hluchyj, Wellesley, and Whay C. Lee, Cambridge, both of Mass., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 123,773, Sep. 20, 1993, abandoned.
This application Jun. 29, 1995, Ser. No. 496,350
Int. Cl.[6] H04J *3/22*
U.S. Cl. 370—84 **5 Claims**

1. A device for dynamic rate adjustment for overload control in a connection-oriented communication network by managing call-level resource allocation on selected link, each link being associated with a predetermined node for marking the link's status, such that existing connections share the burden of releasing resources for accommodating new connections, comprising:

A) a rate adjustment determiner, operably coupled to a rate adjustment controller, for, upon receiving a rate adjustment trigger signal, determining a new agreed rate for the connection and providing the new agreed rate to the rate adjustment controller, and



B) the rate adjustment controller, operably coupled to the rate adjustment determiner, for adjusting the previously agreed rate to a new agreed rate determined by the rate adjustment determiner,

wherein the rate adjustment determiner determines a new agreed rate such that:

C) where the previously agreed rate is equal to a predetermined acceptable value, the rate adjustment determiner determines whether any link along a path supporting the connection is marked and one of C1–C2;

C1) where at least one link is marked, leaving the previously agreed rate unchanged,

C2) where all links along the path are unmarked, determines whether a predetermined available capacity associated with the path is greater than or equal to a predetermined requested value and one of C2a–C2b;

C2a) where the predetermined available capacity associated with the path is greater than or equal to the requested value, determines that the new agreed rate is equal to the requested value, and signals the rate adjustment controller to adjust the agreed rate accordingly,

C2b) where the predetermined available capacity associated with the path is less than the requested value, leaving the previously agreed rate unchanged,

D) where the previously agreed rate is equal to a predetermined requested value, the rate adjustment determiner determines whether any link along a path supporting the connection is marked and one of D1–D2;

D1) where all links along the path are unmarked, leaving the previously agreed rate unchanged,

D2) where at least one link is marked, determines that the new agreed rate is equal to a predetermined acceptable value, and signals the rate adjustment controller to adjust the agreed rate accordingly,

E) where the previously agreed rate is a value other than a predetermined requested value and a predetermined acceptable value, the rate adjustment determiner determines whether any link along a path supporting the connection is marked and one of E1–E3;

E1) where all links along the path are unmarked and the available capacity associated with the path is less than the requested value, leaving the previously agreed rate unchanged,

E2) where all links along the path are unmarked and the available capacity associated with the path is greater than or equal to the requested value, determines that the new agreed rate is equal to the requested value, and signals the rate adjustment controller to adjust the agreed rate accordingly,

E3) where at least one link is marked, determines that the new agreed rate is equal to the acceptable value, and signals the rate adjustment controller to adjust the agreed rate accordingly,

wherein the new agreed rate is determined utilizing the steps of one of F–G:

F) where the available capacity associated with the path is greater than or equal to a predetermined requested value, setting the agreed rate to the requested value,

G) where the available capacity associated with the path is less than a predetermined requested value, leaving the agreed rate unchanged.

5,488,610

COMMUNICATION SYSTEM

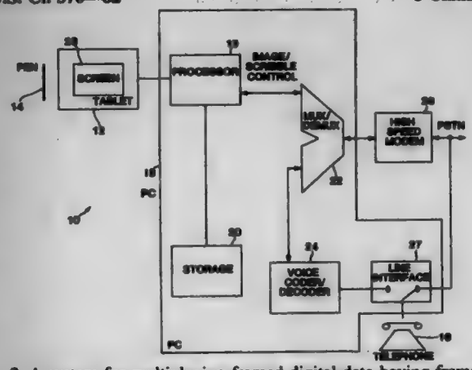
Stephen Morley, Stoke Gifford, United Kingdom, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 12, 1994, Ser. No. 274,203

Claims priority, application European Pat. Off., Aug. 26, 1993, 93306797

Int. Cl.[6] H04J *3/02*

U.S. Cl. 370—82 **8 Claims**



2. A system for multiplexing framed digital data having frames of predetermined size with other data for transmission on a single physical channel, comprising:

a) means for receiving from a source of framed digital data the framed digital data at a first frame rate, wherein the source of framed digital data is controlled by a first clock;

b) means for receiving the other data;

c) means for generating multiplexer frames under the control of a second clock, the multiplexer frames being of a substantially predetermined size, wherein an individual multiplexer frame:

(1) incorporates the framed digital data and/or other data according to whether the framed digital data and/or the other data is available for inclusion in that individual multiplexer frame and a header containing information about the contents of that individual multiplexer frame, and

(2) has a length chosen so that the multiplexer frames are transmitted at a second frame rate wihich is faster than the first frame rate.

5,488,611

METHOD AND ARRANGEMENT FOR DATA TRANSMISSION

Frans Zijderhand, Eindhoven, Netherlands, and Alfred L. M. Weling, Nürnberg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

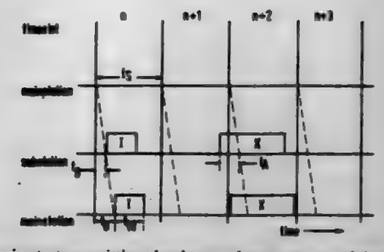
Filed Jul. 7, 1992, Ser. No. 909,899

Claims priority, application European Pat. Off., Jul. 8, 1991, 91201768

Int. Cl.[6] H04J *3/26*

U.S. Cl. 370—108 **15 Claims**

1. Method of transmitting data packets from any of a plurality of anonymous mobile sub-stations to a stationary main station via a common channel subdivided into time slots whose length and synchronization are determined by a corresponding time slot distribution of a data transmission signal transmitted by the main station, said data packets having a length essentially equal to the time length, t_s, of the time slots, comprising the steps:



(a) prior to transmitting the data packets, any one of the plurality of anonymous sub-stations first transmits a request-for-access packet which has a different configuration from that of the data packet, said request-for-access packet being substantially shorter than t_s and beginning substantially at the beginning of a time slot,

(b) upon receiving said request-for-access packet, the main station determines the time, t_g, that elapses during said time slot from the beginning of the time slot to the time of receipt within the time slot, of the request-for-access packet,

(c) the main station then transmits a signal representative of said time, t_g, to the sub-station,

(d) said sub-station in response to receipt of the time, t_g, transmits its data packets with an advancement-of-time, t_A, and a length, t(x), where $t_A=t_g$, t(x) substantially equals t_s and advancement-of-time means that the data packets are transmitted slightly before the start of a time slot such that the data packets when received by the main station are substantially synchronized with the time slot distribution of the main station.

5,488,612

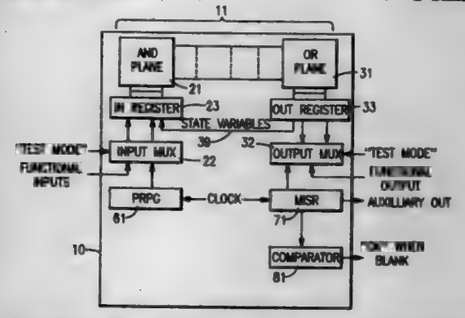
METHOD AND APPARATUS FOR FIELD TESTING FIELD PROGRAMMABLE LOGIC ARRAYS

William F. Heybruck, Charlotte, N.C., assignor to International Business Machines, Corporation, Armonk, N.Y.

Filed Oct. 4, 1993, Ser. No. 131,070

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—22.2 **2 Claims**



1. A self-testable, field programmable gate array having a plurality of individual gates, each of said gates comprising a non-volatile floating gate field effect transistor logically in series with a volatile field effect transistor, said gate array comprising means for selectively changing the state of selected non-volatile floating gate field effect transistors to program the gate array; said gate array being programmably divisible into four logical areas, said areas comprising:

a. a first logical area comprising a programmable logic gate array sea of gates having an AND-plane and an OR-plane;

b. a second logical area comprising pseudo random pattern generator register means to apply a pseudo random set of test patterns to the programmable logic gate array sea of gates;

c. a third logical area comprising multiple input signature register means to capture the output of the programmable logic gate array sea of gates with respect to test patterns generated by the pseudo random pattern generator means; and

d. a fourth logical area comprising comparator means to compare the input pseudo random set of test patterns received by the sea of gates to the sea of gates output received by the multiple input signature register means from the sea of gates.

5,488,613

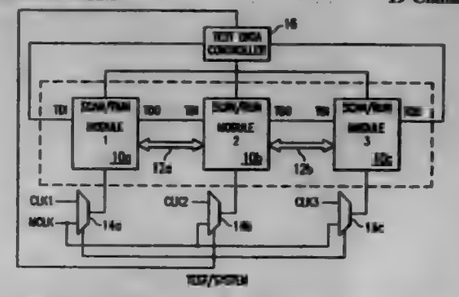
SCAN TEST CIRCUITS FOR USE WITH MULTIPLE FREQUENCY CIRCUITS

Thirumalai Sridhar, Hudson, N.H., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 511,677, Apr. 20, 1990, abandoned. This application Dec. 8, 1992, Ser. No. 988,383

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—22.3 **19 Claims**



19. Circuitry for testing a plurality of modules controlled by two or more system clocks of differing frequencies, comprising:

a master clock;

a test data controller means for performing run cycles using the system clocks;

a control circuit means for switching the control of said modules between said system clocks of differing frequencies and said master clock;

said test data controller means further for scanning test data through the modules using the master clock;

said test data controller means further for performing a run cycle on the modules using the master clock;

said test data controller means further for scanning additional test data through the modules using the master clock; and

said test data controller means for performing additional run cycles using the system clocks of differing frequencies.

5,488,614

INTEGRATED LOGIC CIRCUIT

Tomoaki Shima, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 23, 1993, Ser. No. 36,171

Claims priority, application Japan, Mar. 24, 1992, 4-066449

Int. Cl.[6] G06F *13/12*

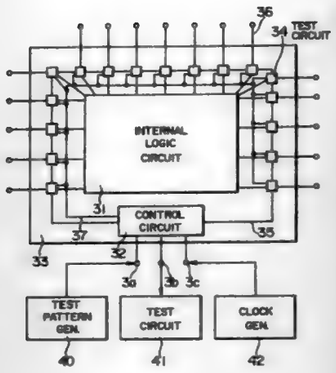
U.S. Cl. 371—22.3 **10 Claims**

1. A semiconductor integrated logic circuit comprising:

an internal logic circuit;

a plurality of input/output terminals respectively connected to said internal logic circuit;

a plurality of test circuits respectively interposed between said internal logic circuit and said input/output terminals, said test circuits forming a shift register by establishing a series signal path during a testing condition, each of said test circuits including first, second and third latch circuits, said first and third latch circuits being active in a common response to a first phase of a clock signal and said second latch circuit being active in response to a second phase of said clock signal, said second phase being opposite to said first phase of said clock signal.

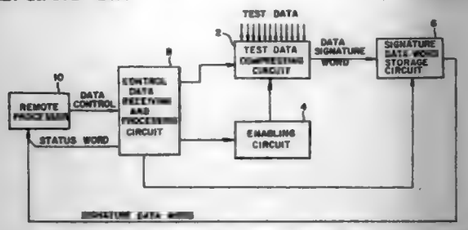


5,488,615

UNIVERSAL DIGITAL SIGNATURE BIT DEVICE

Noah Kunoff, Old Bethpage; Anant Patel, Hicksville, and Robert D. Melton, Commack, all of N.Y., assignors to AIL Systems, Inc., Deer Park, N.Y.

Filed Feb. 28, 1990, Ser. No. 486,315
Int. Cl.[6] H04B 17/00
U.S. Cl. 371—22.4 7 Claims



1. A digital signature built-in-test device for testing a digital circuit, which comprises:

means for compressing test data received from the digital circuit being tested, the test data compressing means providing a signature data word corresponding to the test data received, the test data compressing means including a cascaded arrangement of a first linear feedback shift register, a second linear feedback shift register electrically coupled in series to the first linear feedback shift register, and a third linear feedback shift register electrically coupled in series to the second linear feedback shift register, each of the first, second and third linear feedback shift registers having a plurality of test data inputs which are electrically coupled to the digital test circuit and on which are provided the test data;

means for enabling the test data compressing means for a predetermined period of time, the enabling means providing an enable signal to the test data compressing means;

means for storing the signature data word from the test data compressing means; and

means for receiving and processing control data from a remote processor, the control data receiving and processing means providing control signals to the test data compressing means, signature data word storing means and enabling means;

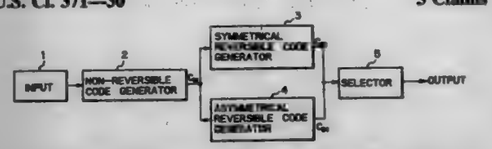
wherein each of the first, second and third linear feedback shift registers includes a plurality of serially interconnected stages, each of the test data inputs of a respective linear feedback shift register being coupled to a respective one of the stages; and wherein the first linear feedback shift register includes fewer stages than the second linear feedback shift register, and the second linear feedback shift register includes fewer stages than the third linear feedback shift register.

5,488,616

SYSTEM FOR PROVIDING REVERSIBLE VARIABLE LENGTH CODES

Yasuhiro Takishima; Masahiro Wada, and Hitomi Murakami, all of Saitama, Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1993, Ser. No. 44,472
Claims priority, application Japan, Apr. 17, 1992, 4-122822
Int. Cl.[6] H03M 7/40;13/00
U.S. Cl. 371—30 5 Claims



1. A reversible instantaneously decodable variable length code generation system comprising;

means for providing symbols with occurrence probability of each symbol,

first encoding means for provisionally encoding said symbols to non-reversible variable length code according to occurrence probability of each symbol,

second encoding means for transforming said non-reversible code to asymmetrical reversible code,

third encoding means for transforming said non-reversible code to symmetrical reversible code, and

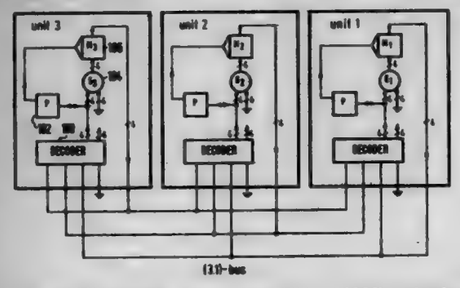
selection means for selecting at least one output of said second encoding means and said third encoding means to provide an instantaneously decodable reversible variable length code.

5,488,617

DATA PROCESSOR SYSTEM BASED ON AN (N, K) SYMBOL CODE HAVING SYMBOL ERROR CORRECTIBILITY AND PLURAL ERROR MENDABILITY

Carel-Jan L. Van Driel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 777,056, Oct. 16, 1991, abandoned.
This application Sep. 12, 1994, Ser. No. 304,647
Claims priority, application European Pat. Off., Jan. 16, 1990, 90202747
Int. Cl.[6] G06F 11/10; H03M 13/00
U.S. Cl. 371—37.1 7 Claims



1. A data processing system based on a 100% redundancy four-symbol code word having both single-symbol error correctability and plural error mendability with respect to at least two symbols in one code word coexistently, said system having:

a. a decoder stage having an input for receiving said code word and to therefrom deriving two-symbol data words;

b. a processor stage fed by said decoder stage to process said data words for therefrom developing memory addresses and further data words;

c. an encoding stage having multiple encoder modules for receiving intendedly identical data word versions of a selection of said data words and fork in respective encoder modules, encoding unto respective different code symbols;

d. a memory stage having multiple memory modules each fed by a respective one of said encoder modules for, under control of said memory addresses, writing and reading all code symbols of an associated code word; and

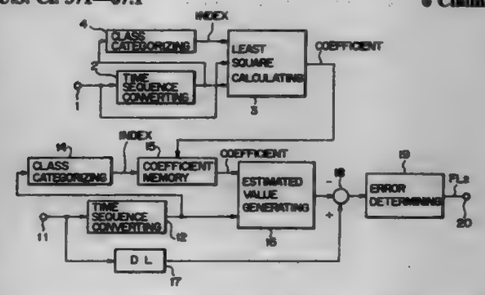
e. feedback means fed by said memory modules for retrocoupling any code word read to said decoder stage; wherein said data processing system comprises at least one data processing unit, wherein any said unit has more than one but less than four different active encoder modules fed in parallel by corresponding processing unit for collectively processing one single of said version, for in respective memory modules of the data processing unit storing respective disjunct symbols of the data word version developed in said corresponding data processing unit.

5,488,618

ERROR DETECTING APPARATUS

Tetsujiro Kondo, and Hideo Nakaya, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 22, 1994, Ser. No. 263,527
Claims priority, application Japan, Jun. 29, 1993, 5-184435
Int. Cl.[6] G06F 7/02
U.S. Cl. 371—67.1 6 Claims



1. An error detecting apparatus for detecting an error of an input digital information signal, comprising:

coefficient generating means for inputting a plurality of information data, forming a class corresponding to a pattern of the information data, and outputting a coefficient for the class corresponding to a least square method;

means for inputting the input digital information signal and categorizing the input digital information signal as the class;

estimating means in communication with said coefficient generating means and with said means for inputting the input digital information signal for linear-primary-coupling the coefficient corresponding to the class and the input digital information so as to generate an estimated value of a future data of the input digital information;

means in communication with said estimating means for generating a difference value between a true value of the future data of the input digital information and an estimated value estimated by said estimating means; and

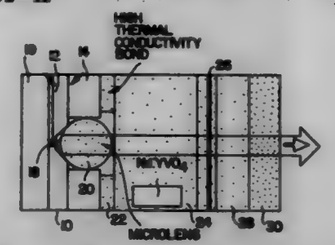
determining means in communication with said means for generating a difference value and having a comparing means, the comparing means being adapted for comparing the difference value with a predetermined threshold value so as to determine whether or not the input digital information signal is defective corresponding to the compared result of the comparing means.

5,488,619

ULTRACOMPACT Q-SWITCHED MICROLASERS AND RELATED METHOD

Hagop Injeyan, Glendale, and Terry L. Holcomb, Torrance, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 6, 1994, Ser. No. 319,192
Int. Cl.[6] H01S 3/115
U.S. Cl. 372—12 10 Claims



1. An array of Q-switched microlasers, comprising:

an array of individually addressable diode lasers adapted to produce an array of generally parallel output light beams;

an array of microlenses positioned in the array of generally parallel output light beams to provide collimation of the output beams;

a crystal functioning as a laser gain medium, positioned to receive the generally parallel output light beams from the diode lasers, such that the light beams operate to provide optical pumping of the laser gain material of the crystal;

an array of individually addressable electroabsorptive modulators formed in resonant cavities that are defined in part by the laser gain medium; and

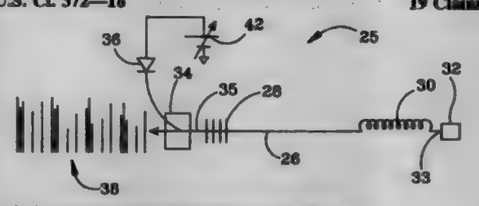
means for selectively electrically biasing the electroabsorptive modulators periodically to provide a Q-switching function in which relatively higher power output peaks are obtained from selected elements of the microlaser laser array.

5,488,620

PASSIVELY MODE LOCKED-LASER AND METHOD FOR GENERATING A PSEUDO RANDOM OPTICAL PULSE TRAIN

Monica L. Minden, Calabasas, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 5, 1995, Ser. No. 369,050
Int. Cl.[6] H01S 3/098
U.S. Cl. 372—18 19 Claims



1. A passively mode-locked laser, comprising:

an optical resonant cavity that is capable of sustaining the oscillation of a plurality of resonant modes having respective phases;

a saturable absorber that is positioned in the resonant cavity, said saturable absorber having a threshold beyond which a pseudo random pulse train is generated; and

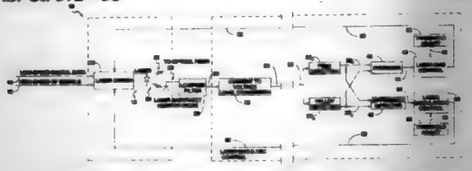
a pump that injects power into the resonant cavity at a level at which the optical intensity that is incident on the saturable absorber exceeds said threshold.

5,488,621

LASER BIAS AND MODULATION CIRCUIT

Michael R. Slawson, Raleigh, and James J. Stiscia, Garner, both of N.C., assignors to Alcatel Network Systems, Inc., Richardson, Tex.

Continuation of Ser. No. 898,702, Jun. 15, 1992, Pat. No. 5,268,916. This application Nov. 24, 1993, Ser. No. 158,166
The portion of the term of this patent subsequent to Aug. 23, 2011, has been disclaimed.
Int. Cl.[6] H01S *3/10*
U.S. Cl. 372—31 16 Claims



1. A method for maintaining constant light output for varying efficiencies and operating points of a laser diode modulated by a modulating signal, comprising the steps of:

sensing the light output and providing a sensed signal having a magnitude indicative thereof;

providing, in response to the sensed signal, a bias current feedback control signal for controlling a bias current provided to the laser diode, said bias current feedback control signal being provided in response to a midpoint of a highest absolute magnitude and a lowest absolute magnitude of the sensed signal; and

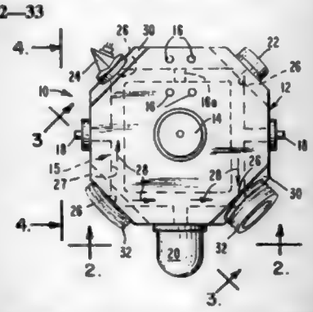
providing, in response to the sensed signal, a modulation current amplitude feedback control signal for controlling the modulation current amplitude used to modulate the bias current.

5,488,622

SIMPLIFIED DISPERSION EQUALIZATION FIELD COIL DESIGN FOR A MULTIOSCILLATOR RING LASER GYROSCOPE

Robert A. Mitchell, Woodland Hills, Calif., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Filed Jul. 29, 1994, Ser. No. 283,393
Int. Cl.[6] H01S *3/00*
U.S. Cl. 372—33 12 Claims



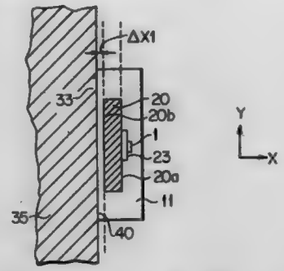
1. A multioscillator ring laser gyroscope including a frame having an exterior face, means for producing a plasma discharge in the optical cavity of said gyroscope, and at least one coil on said face and so positioned thereon that a significant component of the magnetic field generated by the coil is colinear with the plasma discharge in the optical cavity.

5,488,623

MOLD-TYPE SEMICONDUCTOR LASER DEVICE WITH REDUCED LIGHT-EMITTING POINT DISPLACEMENT DURING OPERATION

Shoji Kitamura; Yoichi Shindo, and Akira Amano, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Division of Ser. No. 43,482, Apr. 6, 1993, Pat. No. 5,444,726, which is a continuation-in-part of Ser. No. 788,601, Nov. 6, 1991, Pat. No. 5,355,385. This application Aug. 12, 1994, Ser. No. 289,574
Claims priority, application Japan, Nov. 7, 1990, 2-302258; Apr. 1, 1992, 4-85323; Jan. 22, 1993, 5-8679; Mar. 30, 1993, 5-70597
Int. Cl.[6] H01S *3/04*
U.S. Cl. 372—36 1 Claim



1. A semiconductor laser device comprising a laser diode element having at least one end face for emitting a laser beam, a lead frame for electrically controlling the laser diode element and having a planar major surface for mechanically supporting the laser diode element with a support member interposed therebetween, a sealing resin layer allowing the laser beam to pass therethrough and covering at least the laser diode element on the lead frame in a sealing manner, and an external fixing board, wherein a mounting surface of the sealing resin layer, placed against the external fixing board, is uniformly separated from an adjacent surface of the lead frame by a distance ΔX1 (mm) defined by the following formula:

$$\Delta X1 \leq (\Delta L/M)/(\alpha \times \Delta T)$$

where α is a linear expansion coefficient of the sealing resin layer,

ΔT is a change in ambient temperature,

ΔL is a tolerable shift of a laser beam spot on a divided photo diode of a pick-up device included with the semiconductor laser device in an optical disc system, and

M is an image forming magnification defined by a magnification of a lens system including at least one lens positioned along a distance in an optical path between a light emitting point of the laser diode element and the divided photo diode of the pick-up device.

5,488,624

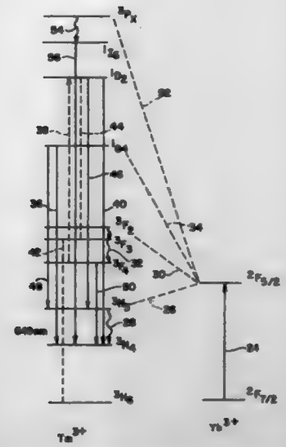
RARE EARTH ION UPCONVERSION LASER SYSTEM

Robert J. Thrash, St. Charles, Ill., and Leo F. Johnson, Bedminster, N.J., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 765,381, Sep. 25, 1991, Pat. No. D. 341,719. This application Feb. 8, 1994, Ser. No. 195,790
Int. Cl.[6] H01S *3/16*
U.S. Cl. 372—41 6 Claims

1. An upconversion laser system for convening relatively long wavelength, substantially coherent single band infrared radiation that is at least quasi-continuous to relatively short wavelength optical radiation, comprising:

a pumping source that has at least a quasi-continuous output of said substantially coherent single band infrared radiation;



an active lasant material comprising a fluoride crystal host, a sensitizer comprising a concentration of ytterbium sensitizer ions in said host that has a quantum energy level that is shifted from the $^4F_{5/2}$ state to the $^4F_{7/2}$ state by absorption of said infrared radiation and rapidly decay back to said $^4F_{5/2}$ state, an activator comprising a concentration of thulium activator ions in said host, as a percentage of available rare earth sites in said host in the range of 0.1 to 10 percent, that accept energy from at least some of said sensitizer ions that decay from said $^4F_{7/2}$ state to said $^4F_{5/2}$ state by substantially non-radiative transfer so that at least some of said activator ions have quantum energy levels that are raised from the $^3H_6$ state through at least one intermediate state to a relatively highest state during successive ones of said energy transfers from said sensitizer ions to said activator ions, and rapidly decay from said highest state to a relatively low state to produce substantially coherent radiation that has a shorter wavelength than said infrared radiation; and

an optical cavity for resonating said coherent radiation produced by said lasant material.

5,488,625

SEMICONDUCTOR LASER DEVICE HAVING CHIP-MOUNTED HEATING ELEMENT

Tomohiro Nakamori, Ichikawa; Hiroshi Hashimoto, Tokyo; Soya Endo, Tokyo; Hitoshi Machino, Tokyo, and Masanori Ishizu, Yokohama, all of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1993, Ser. No. 131,677
Claims priority, application Japan, Jan. 7, 1992, 4-268863; Jan. 7, 1992, 4-268864; Jan. 7, 1992, 4-268865; Nov. 13, 1992, 4-303564
Int. Cl.[6] H01S *3/025*
U.S. Cl. 372—50 12 Claims

1. A semiconductor laser device comprising:

a chip;

a laser element formed on said chip, said laser element being operable to emit a laser beam in a first direction; and

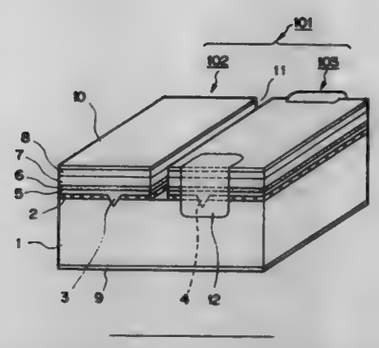
a heating element formed on the chip, said heating element comprising a heating laser element formed so as not to emit a laser beam in the first direction.

5,488,626

METHOD OF AND APPARATUS FOR PUMPING OF TRANSITION METAL ION CONTAINING SOLID STATE LASERS USING DIODE LASER SOURCES

Donald F. Heller, Bound Brook; Timothy C. Chin, Lebanon, both of N.J., and Jerzy S. Krasinski, Stillwater, Okla., assignors to Light Age, Inc., Warren, N.J.

Filed Jan. 14, 1991, Ser. No. 640,653
Int. Cl.[6] H01S *3/091*
U.S. Cl. 372—70 16 Claims



1. An apparatus for pumping a vibronic laser, which comprises:

a transition-metal ion-containing solid state vibronic laser gain medium;

means for exciting said laser medium to emit radiation said exciting means being a pumping source comprising at least one laser diode operating at a wavelength shorter than 750 nm; and

an optical resonator means for generating coherent radiation.

5,488,627

SPREAD SPECTRUM CLOCK GENERATOR AND ASSOCIATED METHOD

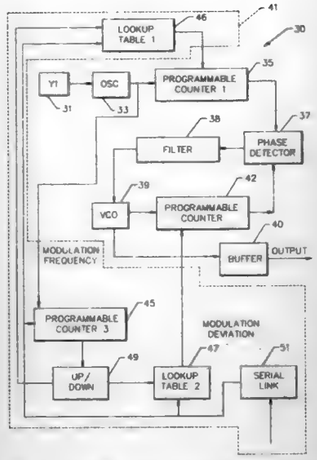
Keith B. Hardin; John T. Fessler, both of Lexington; Donald R. Bush, Winchester, and James J. Booth, Nicholasville, all of Ky., assignors to Lexmark International, Inc., Greenwich, Conn.

Filed Nov. 29, 1993, Ser. No. 160,077
Int. Cl.[6] H03D *1/04*
U.S. Cl. 375—204 31 Claims

1. A clock circuit for generating a clock output signal with reduced amplitude electromagnetic interference (EMI) spectral components, said clock circuit comprising:

oscillator means for generating a reference frequency signal; and

spread spectrum clock generating means cooperating with said oscillator means for generating a spread spectrum clock output signal having a fundamental frequency and reduced amplitude EMI spectral components at harmonics of the fundamental frequency, said spread spectrum clock generating means comprising



clock pulse generating means for generating a series of generally rectangularly shaped electrical clock pulses; and

spread spectrum modulating means cooperating with said clock pulse generating means for modulating same to broaden and flatten amplitudes of impulse-shaped EMI spectral components which would otherwise be produced by said clock pulse generating means, said spread spectrum modulating means comprising frequency modulating means for frequency modulating said clock pulse generating means, said frequency modulating means comprising profile modulating means for modulating the clock pulse generating means with a periodic waveform having a percentage of frequency deviation profile as a function of percentage of a period (% Period) of the periodic waveform within an envelope defined by predetermined upper and lower bounds, wherein said predetermined upper bound for a second quadrant is defined by F_3 which is equal to

$$100\% \left(\frac{\% \text{ Period}}{25} \right),$$

wherein said predetermined lower bound is defined by F_4 which is equal to

$$100\% \left(\frac{\% \text{ Period}}{25} \right)^3;$$

wherein for a first quadrant between −25% to 0% Period the lower bound is equal to $-F_3$(−% Period) and the upper bound is equal to $-F_4$(−% Period); wherein for a third quadrant between 25% to 50% Period the lower bound is equal to F_4(50−% Period), and the upper bound is equal to F_3(50−% Period); and wherein for a fourth quadrant the lower bound is equal to $-F_3$(% Period−50) and the upper bound is equal to $-F_4$(% Period−50).

5,488,628

METHOD AND APPARATUS FOR TRANSITION ENCODING A LOGIC SIGNAL

Pierre-Yves Thoulon, Voreppe, France, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 26, 1994, Ser. No. 187,320

Claims priority, application France, Jan. 26, 1993, 93 00997

Int. Cl.[6] H03K *7/04*

U.S. Cl. 375—239 **9 Claims**

1. A method of transition encoding a logic signal that may have one of a plurality of discrete speeds up to a maximum speed, the ratio between said maximum speed and the immediately lower discrete speed being equal to 2; the method comprising the steps of:

(a) repeatedly initializing a first counter at a frequency F approximately equal to one half of said maximum speed, the time between each initializing of the first counter constituting a window period; and

(b) during each window period, generating a codeword representing the form of the logic signal during that period by effecting the following sub-steps:

(i) incrementing said first counter at a frequency 2 qF where q is a positive integer setting encoding resolution;

(ii) detecting a first transition of the logic signal during a current window period, reading a count value of the first counter at the occurrence of said first transition, and setting the state of a first bit to permit the state of the logic signal after said transition to be derived therefrom;

(iii) detecting a possible second transition of the logic signal during the current window period, and setting the state of a second bit to indicate whether said second transition has occurred; and

(iv) forming said codeword by arranging together, in any predetermined desired order, said count value, said first bit and said second bit;

said method further involving effectively delaying any third transition of the logic signal during said current window period until the beginning of a next window period whereby such third transition is treated as the first transition for said next window period.

5,488,629

SIGNAL PROCESSING CIRCUIT FOR SPREAD SPECTRUM COMMUNICATIONS

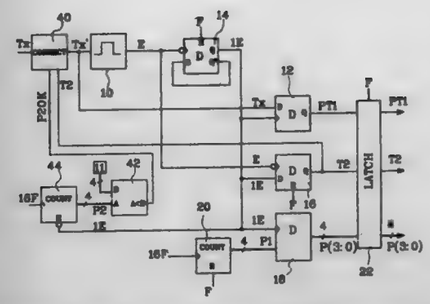
Kenichi Takahashi; Minako Takeishi, both of Kawasaki, and Hiroshi Onishi, Tokyo, all of, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

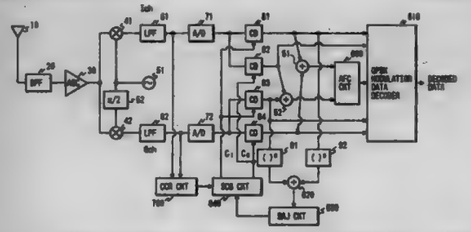
Filed Feb. 17, 1994, Ser. No. 197,592

Claims priority, application Japan, Feb. 17, 1993, 5-027711; Feb. 24, 1993, 5-035099; Aug. 3, 1993, 5-192167; Jan. 4, 1993, 5-247911

Int. Cl.[6] H04B *1/707*

U.S. Cl. 375—206 **4 Claims**





1. A signal processing circuit in use for receiving a signal modulated based on n-PSK including an in-phase component (Ich) of an information signal spread by a first spread code and a quadrature component (Qch) of the information signal spread by a second spread code in direct sequence spectrum spread communication comprising:

oscillating means (**51**) for generating an oscillating signal;

a frequency converter (**41, 42**) for converting the modulated signal into the in-phase component (Ich) and the quadrature component (Qch) by the oscillating signal;

a spread code generator (**640**) for generating a third spread code (Ci) corresponding to the first spread code and a fourth spread code (Cq) corresponding to the second spread code;

a first correlating detector (**81**) for detecting a first correlation between the in-phase component (Ich) and the third spread code (Ci);

a second correlating detector (**83**) for detecting a second correlation between the quadrature component (Qch) and the third spread code (Ci);

a third correlating detector (**82**) for detecting a third correlation between the in-phase component (Ich) and the fourth spread code (Cq);

a fourth correlating detector (**84**) for detecting a fourth correlation between the quadrature component (Qch) and the fourth spread code (Cq);

an adder (**51**) for calculating one of a sum of the first correlation and the fourth correlation, and a sum of the second correlation and the third correlation;

a subtracter (**52**) for calculating one of a remainder between the second correlation and the third correlation, and a remainder between the first correlation and the fourth correlation, the correlations relating to the sum calculated by the adder (**51**) differing from the correlations relating to the remainder calculated by the subtracter (**52**); and

a frequency controller (**600**) for calculating a quotient of the sum calculated by the adder (**51**) and the remainder calculated by the subtracter (**52**), the quotient representing a frequency offset between a transmitter and a receiver, and for allowing the oscillating means (**51**) to correct a phase of the oscillating signal based on the quotient.

5,488,630

SYSTEM FOR ACQUIRING AND COMPRESSING PULSE TRAINS

Jean Huignard, Cretell, and Patrick Sauvin, Ris-Orangis, both of, France, assignors to Sodena, Halluin, France

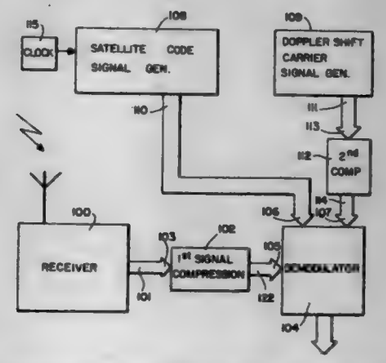
PCT No. PCT/FR93/00941, § 371 Date Jun. 1, 1994, § 102(e) Date Jun. 1, 1994, PCT Pub. No. WO94/08251, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 27, 1993, Ser. No. 244,515

Claims priority, application France, Jan. 1, 1992, 92 11981

Int. Cl.[6] H04B *1/707;1/69*

U.S. Cl. 375—206 **9 Claims**



1. A receiver system for receiving pulse trains transmitted by satellites, the system comprising:

receiver means (**100**) for receiving said pulse trains and for delivering at an output signal trains representative of said pulse trains;

first compression means (**102**) for compressing signal trains by a factor n, said first compression means having an input (**103**) connected to said output (**101**) of the receiver means (**100**) and said first compression means having an output;

demodulator means (**104**) having three inputs, a first input (**105**), a second input (**106**), and a third input (**107**), said output (**106**) of said first compression means (**102**) being connected to the first input (**105**) of said demodulator means (**104**);

first and second generators (**108, 109**) for delivering at respective outputs thereof (**110, 111**) respectively satellite code signals and trains of Doppler shift carrier signals, the output (**110**) of the first generator (**108**) being connected to the second input (**106**) of the demodulator means (**104**); and

second compression means (**112**) for compressing signal trains by a factor n, said second compression means having an input (**113**) and an output (**114**), said input of said second compression means (**112**) being respectively connected to the output (**111**) of said second generator (**109**) and said output of said second compression means to the third input (**107**) of said demodulator means (**104**).

5,488,631

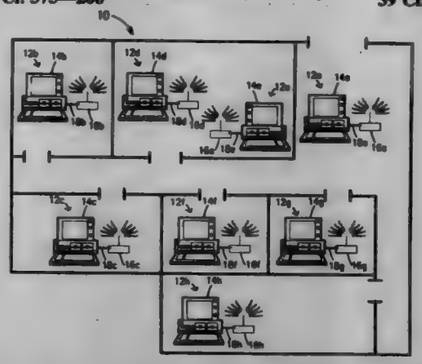
WIRELESS DIRECT-SEQUENCE SPREAD SPECTRUM TDMA COMMUNICATIONS SYSTEM

Kenneth S. Gold, Bell Canyon, and Hubert M. France, Jr., Palos Verdes Estates, both of Calif., assignors to Radio Connect Corporation, Culver City, Calif.

Filed Oct. 31, 1994, Ser. No. 331,925

Int. Cl.[6] H04B *1/707*

U.S. Cl. 375—206 **39 Claims**



37. A device for wireless transmission and reception of DSSS TDMA digital signals within a frequency band including a predetermined lower limit frequency and a predetermined upper limit frequency, the device comprising a radiofrequency portion comprising:

a frequency generator generating continuously and repetitively at a first predetermined chip-clock rate about one-half the predetermined frequency bandwidth, a first PRDS code having a bit sequence length equal to the product of a first integer and a second integer, each complete sequence of the first code generated over a predetermined time interval, the frequency generator further generating continuously and repetitively at a second predetermined chip-clock rate evenly divisible into the first chip-clock rate by a factor which is a third integer, a second PRDS code having a bit sequence length equal to a fourth integer, each complete sequence of the second code generated over said predetermined time interval, each successive chip of the second PRDS code being in a predetermined one-to-one correspondence with a chip which is the leading chip of the chips comprising successive bits in the first PRDS code and separated by a number of chips equal to a fifth integer, a preselected and identifiable position in the first

PRDS code being permanently aligned with a preselected and identifiable position in the second PRDS code;

a pilot signal transmitter continuously transmitting the second PRDS code at a signal center frequency near a limit frequency of the frequency band; and

a data signal transmitter intermittently transmitting a data-modulated first PRDS code signal at a signal center frequency near the center frequency of the frequency band.

5,488,632

TRANSMISSION AND RECEPTION IN A HOSTILE INTERFERENCE ENVIRONMENT

Arthur G. Mason, Andover, and Jeffrey J. Gledhill, Chandlers Ford, both of, England, assignors to National Transcommunications Limited, Winchester, England

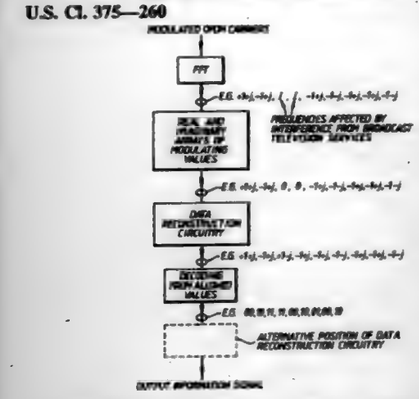
PCT No. PCT/GB91/00513, § 371 Date Oct. 29, 1992, § 102(e) Date Oct. 29, 1992, PCT Pub. No. WO91/15925, PCT Pub. Date Oct. 17, 1991

PCT Filed Apr. 2, 1991, Ser. No. 940,874

Claims priority, application United Kingdom, Mar. 30, 1990, 9007141; Sep. 14, 1990, 9020169; Sep. 14, 1990, 9020170

Int. Cl.[6] H04K *1/10*; H04L *27/28*

U.S. Cl. 375—260 **25 Claims**



1. Apparatus for receiving an orthogonal frequency division multiplex (OFDM) signal transmitted at low power in a frequency band subject to interference from other transmissions, said OFDM signal comprising a plurality of OFDM carriers modulated by a block of samples, comprising:

means for demodulating the received OFDM carriers so as to produce a block of values representing the block of samples modulating said OFDM carriers;

means for decoding information contained in said sample values, the decoding means excluding from the decoding process sample values demodulated from OFDM carriers at frequencies likely to experience interference from said other transmissions; and

means for outputting said decoded information.

5,488,633

INTERSYMBOL INTERFERENCE CHANNEL CODING SCHEME

Rajiv Laroia, Bridgewater, N.J., assignor to AT&T Corp., Murray Hill, N.J.

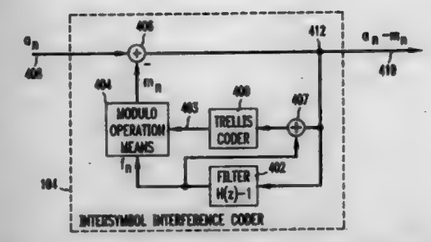
Filed Jun. 14, 1993, Ser. No. 76,603

Int. Cl.[6] H04L *5/12;25/34*

U.S. Cl. 375—262 **17 Claims**

1. A method for transmitting data over an intersymbol interference channel using a predetermined signal-space code, the method comprising the steps of:

receiving a sequence of input signal points (**408**) selected from a predetermined constellation of signal points; and



adding a dither signal to each of the input signal points, the dither signal (**406**) applied to a present signal point being selected as a function of previous signal points in the sequence and the current state of a finite-state machine (**400**) used to generate the signal-space code.

5,488,634

LOWER TIE PLATE DEBRIS CATCHER FOR A NUCLEAR REACTOR

Eric B. Johansson, Wrightsville Beach, N.C.; Robert B. Elkins; Bruce Matzner, both of San Jose, Calif.; Gerald M. Latter, Wilmington, N.C., and Richard A. Proebstle, San Jose, Calif., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 10, 1994, Ser. No. 194,357

Int. Cl.[6] G21C *19/42*

U.S. Cl. 376—313 **16 Claims**



1. In a nuclear fuel assembly, a unitary one-piece lower tie plate grid comprising:

a lower grid portion and an upper grid portion;

means for supporting fuel rods above the lower tie plate grid including said upper and lower grid portions;

said supporting means comprising a plurality of laterally spaced cylindrical bosses having apertures extending therethrough and cylindrical boss portions extending upwardly from said lower grid portion, said bosses being sized for receiving lower ends of the fuel rods in said apertures, said supporting means further including web portions extending upwardly from said lower grid portion and interconnecting said boss portions to define with said boss portions a plurality of flow spaces in said upper grid portion extending from said lower grid portion and opening through an upper surface of said lower tie plate grid;

said boss portions having vertical centerlines arranged at the corners of square matrices with said web portions extending linearly between said boss portions along sides of the square matrices and convex portions of said cylindrical boss portions extending between perpendicularly oriented web portions of each matrix, said web portions and said convex portions defining side walls of the flow spaces;

said lower grid portion of said lower tie plate grid including a plurality of openings extending therethrough and opening into said flow spaces for separating debris from a coolant flowing through said lower grid portion into said flow spaces between said boss and said web portions.

5,488,635

LOW COMPLEXITY ADAPTIVE EQUALIZER RADIO RECEIVER EMPLOYING REDUCED COMPLEXITY BRANCH METRIC CALCULATION

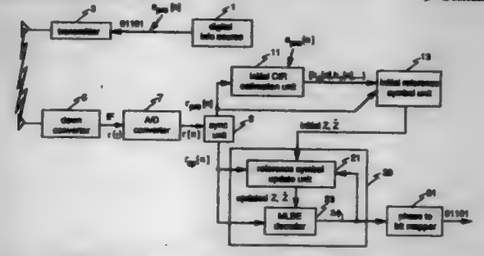
Sandeep Chennakeshu, Schenectady; Ravinder D. Kolipilai, and Raymond L. Toy, both of Latham, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 29, 1993, Ser. No. 143,027

The portion of the term of this patent subsequent to Dec. 6, 2011, has been disclaimed.

Int. Cl.[6] H03D *1/00*; H04L *27/06*

U.S. Cl. 375—340 **3 Claims**



1. A method for demodulating at a receiver, a transmitted message intended for a user, the transmitted message comprised of message symbols transmitted with synchronization ("sync") symbols, being the same as sync symbols prestored in the receiver, differentially encoded in phases and amplitudes of a radiowave signal transmitted as symbol s from an even symbol constellation during even symbol periods, and as ŝ from an odd symbol constellation during odd symbol periods, comprising the steps of:

a) sensing the phases and amplitudes of the radiowave signal at a down converter;

b) digitizing the sensed phases and amplitudes into received samples at an analog to digital (A/D) converter;

c) extracting received message samples at a sync unit;

d) calculating estimated received symbol constellation {Z} comprised of estimated received symbols Z_{ji} which is an estimate of a symbol s_i being transmitted during even time periods through a channel with intersymbol interference from a previously transmitted symbol $\hat{s}_j$ at an initial reference symbol unit;

e) calculating estimated received symbol constellation {$\hat{Z}$} comprised of estimated received symbols $\hat{Z}_{ji}$ which is an estimate of a symbol s_i being transmitted during odd time periods through a channel with intersymbol interference from a previously transmitted symbol s_j at an initial reference symbol unit;

f) determining a set of reference constellation points {Z^{ref}} and {$\hat{Z}^{ref}$} being a subset of estimated received symbol constellations {Z}, {$\hat{Z}$} that when rotated, provide received symbol constellations {Z}, {$\hat{Z}$};

g) determining a demodulated symbol sequence at a MLSE decoder which would minimize a total deviation, being a sum of branch metrics, d_{ji}, each branch metric, d_{ji}, being a deviation from a received message sample to a closest estimated symbol constellation point Z_{ji}, $\hat{Z}_{ji}$ and is calculated from reference constellation points {Z^{ref}} and {$\hat{Z}^{ref}$} for even and odd symbol periods, respectively;

h) adjusting the estimated symbol constellation points Z_{ji}, $\hat{Z}_{ji}$ to compensate for a change in the channel over time at a reference symbol update unit;

i) converting the demodulated symbol sequence to a bit sequence at an output means;

j) creating a message from the bit sequence; and

k) providing the message to said user.

5,488,636

DIGITAL DATA DETECTOR

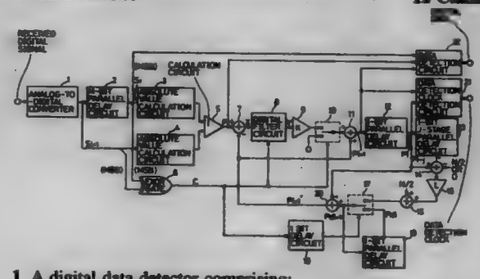
Eiji Yamada, Tenri, and Hitoshi Takeuchi, Kitakatsuragi, both of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 28, 1994, Ser. No. 266,755

Claims priority, application Japan, Jun. 30, 1993, 5-162832

Int. Cl.[6] H03D *1/00*

U.S. Cl. 375—340 **12 Claims**



1. A digital data detector comprising:

a sampler for sampling a received digital signal at a constant frequency higher than a channel bit rate;

a phase interval calculator connected to receive an output of said sampler, for calculating a phase interval from a point where said received digital signal crosses a reference level to a current sampling point from the sampler;

a reference level crossing detector, connected to receive an output of the sampler, for outputting a cross detection signal when the received digital signal between the current sampling point and a previous sampling point located one point before the current sampling point crosses the reference level;

a phase predictor for calculating a predicted phase of the current sampling point based on a phase of the prior sampling point, a phase of a sampling point located at least two points before the current sampling point, and the cross detection signal;

an error calculator for calculating a predicted error between the calculated phase interval and the predicted current phase,

a band limiter for limiting a frequency band of said predicted error in response to said cross detection signal,

a phase calculator for calculating a phase of the current sampling point according to said band limited predicted error, said predicted current phase, and said cross detection signal,

a clock detector for detecting a data detection clock signal in synchronization with received digital signal according to a phase of each sampling point calculated by said phase calculator, and

a data detector for detecting digital data from said received digital signal according to the calculated phase interval, the calculated current phase and the sampling data, the calculated current phase and the sampling data.

5,488,637

DECODING METHOD AND APPARATUS HAVING OPTIMUM DECODING PATHS

Jechang Jeong, Seoul, and Hyunsoo Shin, Suwon, both of, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

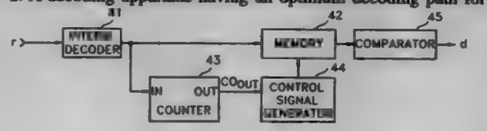
Filed Mar. 28, 1994, Ser. No. 219,293

Claims priority, application Rep. of Korea, Mar. 26, 1993, 93-4815

Int. Cl.[6] H04L *27/06*

U.S. Cl. 375—341 **18 Claims**

1. A decoding apparatus having an optimum decoding path for



use in a digital communication apparatus which decodes a code sequence constituting symbols, said decoding apparatus comprising:

a decoder for decoding the symbols within a window formed in units representing a decoding depth after receiving the code sequence to generate decoded data, and for relocating the window on the code sequence by a predetermined movement distance whenever the decoding with respect to the window is completed;

memory means for storing the decoded data supplied from the decoder and for providing respective stored decoded data in response to respective address signals;

control means for receiving the decoded data from the decoder and generating respective said address signals permitting reproduction of said stored decoded data corresponding to an identical symbol from the memory means; and

means for outputting the stored decoded data having the highest frequency of occurrence among the decoded data corresponding to the identical symbol received from the memory means.

5,488,638

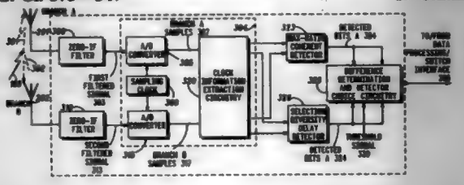
CLOCK RECOVERY METHOD AND APPARATUS IN A DIVERSITY RECEIVER

Henry L. Kazecki, Arlington Heights, and John W. Diehl, Glen Ellyn, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 844,084, Mar. 2, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 198,662

Int. Cl.[6] H04B 7/10; H04L 1/02

U.S. Cl. 375—347 **19 Claims**



4. A receiver utilized in a radiotelephone, the receiver receiving a signal transmitted from a source, the signal having both clock information and data, the clock information to be used by the receiver for detection of the data, the receiver comprising:

means for filtering the received signal;

mean, coupled to said means for filtering, for converting said filtered received signal into a plurality of samples, including both the clock information and data;

means, coupled to said means for converting, for extracting the clock information from said plurality of samples;

at least a first, max-ratio coherent, data detector and a second, selection diversity delay, data detector for detecting the data contained in said plurality of samples utilizing said extracted clock information; and

means, coupled to said at least first and second data detectors, for determining a difference in said detected data between said at least first and second data detectors and choosing said detected data from said first data detector or said second date detector when said difference is less than or equal to a predetermined threshold.

5,488,639

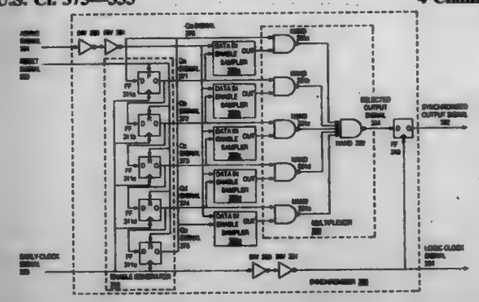
PARALLEL MULTISTAGE SYNCHRONIZATION METHOD AND APPARATUS

Peter D. MacWilliams, Aloha, Oreg.; Dror Avni, Haifa, Israel; Avi Liebermensch, Kfar Vradim, Israel; Anan Baransy, Nazareth, Israel, and Robert L. Farrell, Hillsborough, N.J., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 21, 1993, Ser. No. 171,554

Int. Cl.[6] H04L 7/00

U.S. Cl. 375—355 **4 Claims**



1. A synchronizing method for synchronizing an asynchronous signal with a clock signal in a synchronizer, said asynchronous signal being asynchronous to said clock signal in both phase and frequency, said synchronizer including an enable generator, a first sampling circuit, a second sampling circuit, a third sampling circuit, a selecting circuit, and a latching circuit, said enable generator coupling to said first sampling circuit via a first enable line, said enable generator coupling to said second sampling circuit via a second enable line, and said enable generator coupling to said third sampling circuit via a third enable line, said first, said second and third sampling circuits coupling to receive said asynchronous signal, said selecting circuit coupling to receive output of said first, second and third sampling circuits, said latching circuit coupling to receive the output of said selecting circuit, said synchronizing method comprising the steps of:

said first sampling circuit sampling said asynchronous signal;

generating an output signal for said first sampling circuit;

waiting a first period of time;

at a first time, selecting the output of said first sampling circuit to correspond to a synchronized output;

said second sampling circuit sampling said asynchronous signal;

generating an output signal for said second sampling circuit;

waiting a second period of time;

at a second time, selecting the output of said second sampling circuit to correspond to said synchronized output;

said third sampling circuit sampling said asynchronous signal;

generating an output signal for said third sampling circuit;

waiting a third period of time;

at a third time, selecting the output of said third sampling circuit to correspond to said synchronized output;

said first sampling circuit sampling said asynchronous signal a second time;

generating an output signal for said first sampling circuit a second time;

waiting a fourth period of time; and

at a fourth time, selecting the output of said first sampling circuit a second time to correspond to said synchronized output.

5,488,640

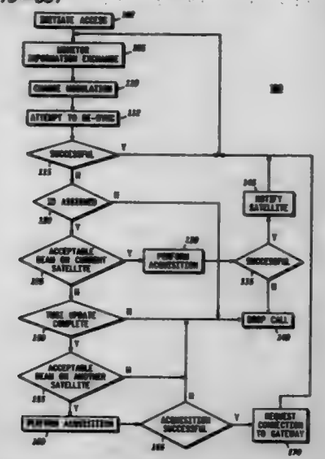
METHOD AND APPARATUS FOR RE-ESTABLISHMENT OF A COMMUNICATION

James P. Redden, Mesa; David Terris, Phoenix, and Keith A. Olds, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 31, 1994, Ser. No. 298,633

Int. Cl.[6] H04L 7/00

U.S. Cl. 375—357 **14 Claims**



1. A method of re-establishing a communication link between a communication station and a subscriber unit comprising the steps of:

(a) monitoring by said subscriber unit, an information exchange on said communication link to detect a loss of synchronization;

(b) changing by said subscriber unit, a modulation technique of said communication link to re-synchronize said subscriber unit and said communication station when said loss of synchronization is detected;

(c) determining if said subscriber unit has been assigned a subscriber identifier by said communication station; and

(d) performing an acquisition attempt on another antenna beam of said communication station using said subscriber identifier, steps (c) and (d) being performed by said subscriber unit when step (b) fails to re-synchronize.

5,488,641

DIGITAL PHASE-LOCKED LOOP CIRCUIT

Oguz Ozkan, Brampton, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Continuation of Ser. No. 988,536, Dec. 10, 1992, abandoned. This application Feb. 9, 1995, Ser. No. 405,171

Int. Cl.[6] H03D 3/24

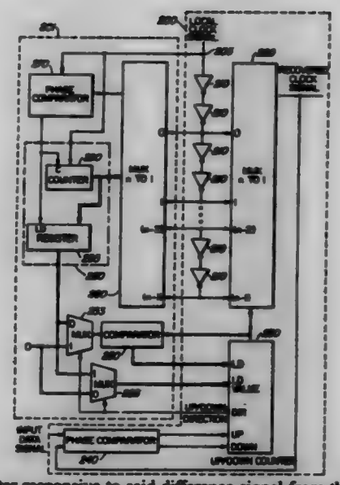
U.S. Cl. 375—374 **20 Claims**

1. A phase-locked loop circuit comprising:

a first circuit for generating recovered clock signals each one corresponding to a discrete amount of delay of a local clock signal, the first circuit including a delay line having a predetermined number of delay units n and corresponding taps distributed at substantially equal increments along the length of the delay line, the total delay duration of the delay line being substantially larger than a period of the local clock signal, means for comparing the phase of an input data signal with a last-generated recovered clock signal and for generating a difference signal when a phase difference exists between the input data signal and the last-generated recovered clock signal, and means responsive to the difference signal for selecting a tap of the delay line for the generation of a recovered clock signal, the selecting means including a first counter responsive to said difference signal from the comparing means for providing tap select control signals and a first multiplexer responsive to the tap select control signals and connected to the taps of the delay line to provide the recovered clock signal from a tap selected in accordance with the tap select control signals;

means responsive to the local clock signal and to signals from respective taps of the delay line for measuring the smallest quantity of delay units required to provide at least a 360 degree phase shift of the local clock signal and for generating a corresponding output signal; and

means responsive to the output signal generated by the measuring means for limiting the first counter to a count corresponding to the measured quantity of delay units.



5,488,642

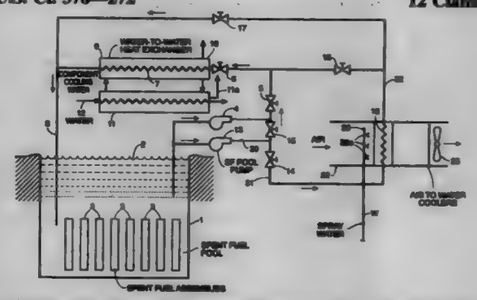
COOLING SYSTEM FOR SPENT FUEL POOL

Paul Malik, Northport; Robert Kosson, Massapequa, both of N.Y.; Michael Vasely, 21 Newbard Pl., Hopewell Junction, N.Y. 12533, and George Stegmann, Thornwood, N.Y., assignors to Consolidated Edison Company of New York, Inc., New York, and Michael Vasely, Hopewell Junction, both of N.Y.

Filed Aug. 22, 1994, Ser. No. 294,072

Int. Cl.[6] G21C 19/07

U.S. Cl. 376—272 **12 Claims**



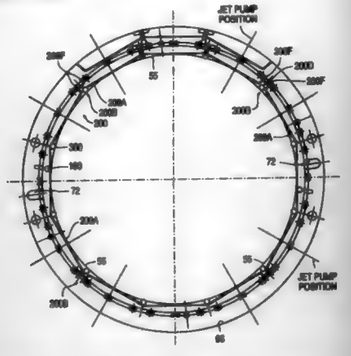
6. In a nuclear power generating plant having a pool of water for cooling spent fuel assemblies and a water to water heat exchanger for maintaining the water in said pool of water at a desired cooling temperature, an auxiliary heat exchanger which employs a stream of air carrying a mist of fine water droplets as a coolant medium for indirect heat exchange with water circulated through said auxiliary heat exchanger from said pool of cooling water.

5,488,643

METHOD AND APPARATUS FOR SUPPORTING A SHROUD IN A NUCLEAR REACTOR

Bengt I. Baversten, Weatogue, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 11, 1994, Ser. No. 241,441
Int. Cl.[6] G21C *19/28*
U.S. Cl. 376—390 **3 Claims**



1. A method of supporting a shroud in a pressure vessel of a nuclear reactor comprising the steps of:

suspending a plurality of upper hanger rods on a structure disposed in said pressure vessel above the level at which said shroud is suspended;

connecting the plurality of upper hanger rods to a multi-segment ring member which is disposed about said shroud by arranging hooks which are provided on the lower end of said upper hanger rods to engage with the ring member so that when said ring member is tightened portions of said hooks are pressed into engagement with said shroud; and

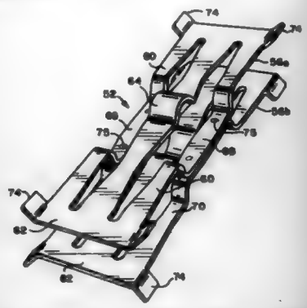
tightening said ring member to clamp said portions of said hooks against said shroud.

5,488,644

SPRING ASSEMBLIES FOR ADJOINING NUCLEAR FUEL ROD CONTAINING FERRULES AND A SPACER FORMED OF THE SPRING ASSEMBLIES AND FERRULES

Eric B. Johansson, Wrightsville Beach, N.C., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 13, 1994, Ser. No. 274,516
Int. Cl.[6] G21C *3/34*
U.S. Cl. 376—441 **15 Claims**



1. A spring assembly for location between a pair of adjacent ferrules in a nuclear fuel bundle having a plurality of nuclear fuel rods passing through the ferrules and biasing the fuel rods of adjacent ferrules against stops in the ferrules, the spring assembly in an unstressed condition, comprising:

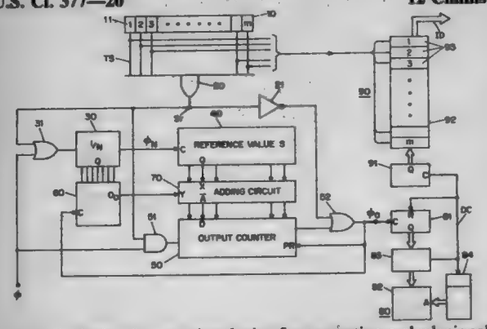
first and second spring bodies lying in respective planes, each spring body having a central leaf, a pair of outer leaves spaced from said central leaf, and an end portion at each of opposite ends of said spring body joining ends of said central and outer leaves, said central leaf of each spring body having an intermediate portion projecting forwardly of the plane of said spring body to a fuel rod contacting forward side of said plane, said pair of outer leaves of each spring body having intermediate portions projecting rearwardly of the plane of said spring body, said spring bodies being disposed in back-to-back relation to one another with said intermediate portions of said outer leaves engaging one another, said planes lying parallel to and spaced from one another and said end portions lying in registration with one another whereby said intermediate portions of said central leaves project to opposite sides of said assembly for engagement with fuel rods in next-adjacent ferrules.

5,488,645

CLOCK SIGNAL GENERATING DEVICE

Kenichi Mori, and Shotaro Yokoyama, both of Nagano, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 10, 1995, Ser. No. 402,030
Claims priority, application Japan, Mar. 10, 1994, 6-038926
Int. Cl.[6] H03K *3/02;21/40*
U.S. Cl. 377—20 **12 Claims**



1. A clock signal generating device for generating a clock signal for chopping periods of time represented by a plurality of time signals, comprising:

a reference time detecting means for detecting a reference time from the time signals and for outputting a reference signal;

a frequency divide-and-counting means operatively coupled to the reference time detecting means, for counting a reference clock signal until the reference signal is generated and for outputting a divided clock signal obtained by dividing the reference clock signal with a predetermined frequency dividing ratio;

a reference value counting means operatively coupled to the frequency divide-and-counting means, for counting the divided clock signal and for storing a count value of the divided clock signal as a reference value;

an output counting means operatively coupled to the reference value counting means, for receiving the reference clock signal after the reference signal is generated, for counting the received reference clock signal, and for generating an output clock signal each time a count value of the received reference clock signal reaches a set value thereof;

an accumulating means operatively coupled to the output counting means, for accumulating, each time the output clock signal is generated, a count value of the reference clock signal of the frequency divide-and-counting means at a time of generation of the reference signal; and

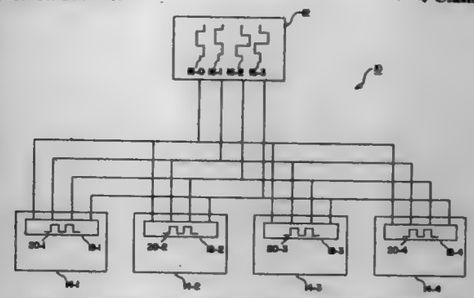
a set value renewing means operatively coupled to the output counting means, for renewing the set value of the output counting means to the reference value stored in the reference value counting means each time the output clock signal is generated, and for renewing the set value of the output counting means to a value obtained by adding 1 to a multiple of a set parameter of the frequency dividing ratio only when an accumulated value of the accumulating means reaches the multiple of the set parameter.

5,488,646

CLOCK DIVIDER

Anthony M. Jones, Bristol, and David A. Barnes, Gloucestershire, both of, United Kingdom, assignors to Discovision Associates, Irvine, Calif.

Filed Mar. 23, 1995, Ser. No. 409,108
Claims priority, application United Kingdom, Mar. 24, 1994, 9405806
Int. Cl.[6] H03K *21/02;21/10;3/78*
U.S. Cl. 377—47 **4 Claims**



1. A counter clocked by a L phase system clock of frequency f, counting an integer number N, comprising:

L means for counting (N-D), where D is a predetermined integer number that allows each L counter means to settle before N would be counted, each counting means being clocked by a predetermined phase of system clock;

L means for controlling counter means, one counter controlling means associated with each counter means, for delaying the output of their associated counter by at least D; and

a means for implementing a logic OR;

wherein:

the L counter means and their associated counter control means are arranged in series such that the input to each counter means is the output of the previous counter means in series delayed by the counter control means associated with the previous counter means; and

the outputs of each counter means are delayed by their associated counter control means, then are inputs to the OR means, which ORs the outputs to form the output of the counter.

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Patent Not Issued For This Number

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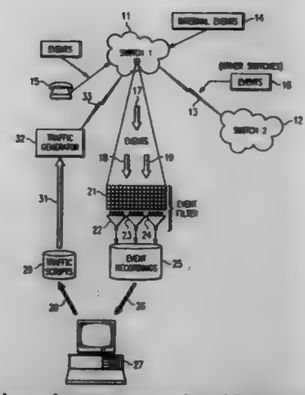
BEHAVIOR MONITORING AND ANALYZING SYSTEM FOR STORED PROGRAM CONTROLLED SWITCHING SYSTEM

Brian R. Womble, Bedford, Tex., assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Aug. 17, 1993, Ser. No. 107,965
Int. Cl.[6] H04M *1/24;3/08;3/22;* H04J *1/16*
U.S. Cl. 375—13 **26 Claims**

1. A method of monitoring a telecommunication switch having internal events communicated between interacting, event driven blocks of software executed to control operation of the telecommunication switch, said method comprising the steps of:

defining the internal events desired to be monitored and parameters associated with the internal events desired to be monitored;



detecting internal events communicated between the blocks of software of said telecommunication switch;

filtering said detected internal events using said defined parameters associated with the defined internal events desired to be monitored; and

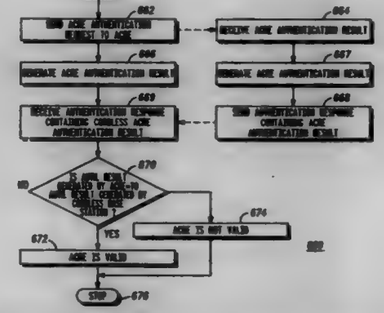
recording the filtered, detected internal events and associated parameters.

5,488,649

METHOD FOR VALIDATING A COMMUNICATION LINK

Michael J. Schellinger, Vernon Hills, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 6, 1994, Ser. No. 239,012
Int. Cl.[6] H04Q *7/34*
U.S. Cl. 379—62 **17 Claims**



15. A method for authenticating authorization equipment operating in a communication system having a cordless base station coupled to a telephone network, said cordless base station having an identification code associated therewith, the method comprising the steps of:

transmitting an authentication request from said cordless base station to said authorization equipment, said authentication request including a random number generated at said cordless base station and a first identification number;

generating a first authentication result at said cordless base station, said first authentication result being based upon said random number and said first identification number;

generating a second authentication result at said authorization equipment based upon said random number and said cordless base station identification code;

transmitting said second authentication result to said cordless base station; and

comparing said first authentication result and said second authentication result to authenticate said authentication equipment.

5,488,650

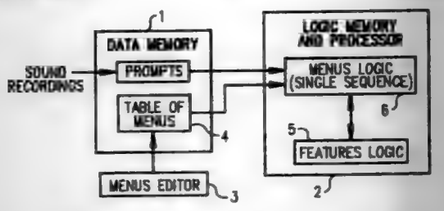
CONFIGURABLE TELEPHONE INTERFACE FOR ELECTRONIC DEVICES

Robert C. Greco, and Brian J. Gore, both of Seattle, Wash., assignors to Active Voice Corporation, Seattle, Wash.

Continuation-in-part of Ser. No. 764,628, Sep. 24, 1991, abandoned. This application Sep. 4, 1992, Ser. No. 940,614

Int. Cl.[6] H04M *1/32*

U.S. Cl. 379—67 22 Claims



1. A method for communication between a user using a telephone and an electronic logic device, which device includes a table of menus containing a plurality of menus, each of which contains data and not logic instructions, and a logic memory and processor containing logic steps executed by the processor upon invocation of each menu, each menu including specification of actions to be taken by the processor upon receipt of any of a plurality of possible inputs, comprising:

including in the logic steps which are executed upon invocation of a menu a play prompt step and a get response step; and,

when the menu is invoked, executing both the play prompt step and the get response step before proceeding to another menu from the table of menus.

5,488,651

FAX MESSAGE SYSTEM

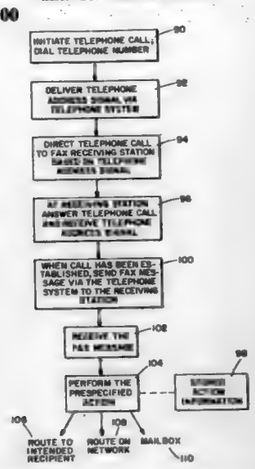
Eric R. Giler, Wellesley Hills, and David W. Duehren, Needham, both of Mass., assignors to Brooktrout Technology, Inc., Needham, Mass.

Continuation-in-part of Ser. No. 721,915, Jun. 20, 1991, Pat. No. 5,291,546, which is a continuation of Ser. No. 348,592, May 8, 1989, abandoned. This application Feb. 28, 1994, Ser. No. 203,658

The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—100 6 Claims



1. A method for causing information including at least a fax message sent via a telephone system to be routed through a multinode computer network between a telephone receiving station and a prespecified network location, the method comprising:

initiating a telephone call via the telephone system to the receiving station by dialing a telephone number enabling the telephone call to be routed through a telephone network to the receiving station which is coupled to the telephone system and the computer network, said telephone number also being sufficient to indicate a computer network location;

passing said telephone number through the telephone system in the form of a telephone address signal as part of the call initiation process by which a telephone connection to the receiving station is established;

directing the telephone call being initiated to the receiving station, based on the telephone address signal;

answering the telephone call at the receiving station, and receiving at the receiving station at least part of the telephone address signal;

storing computer network location information which associates computer network locations with telephone address signals; and

when the connection has been established, sending a fax message between the receiving station and the computer network location based on the telephone address signal.

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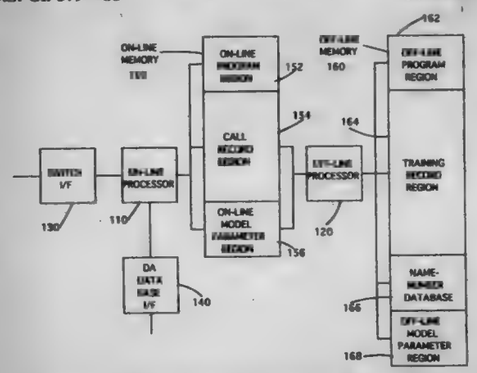
METHOD AND APPARATUS FOR TRAINING SPEECH RECOGNITION ALGORITHMS FOR DIRECTORY ASSISTANCE APPLICATIONS

Gregory J. Bielby, Pointe Claire; Vishwa N. Gupta, Brossard; Lauren C. Hodgson, Beaconsfield; Matthew Lennig; R. Douglas Sharp, both of Westmount, and Hans A. Wasmeier, Ottawa, all of, Canada, assignors to Northern Telecom Limited, Canada

Filed Apr. 14, 1994, Ser. No. 227,830

Int. Cl.[6] H04M *3/42*

U.S. Cl. 379—88 31 Claims



2. A method for performing a telephone directory assistance function, comprising:

for each of a plurality of callers:

prompting the caller to speak a name associated with a desired directory listing;

receiving a speech signal from the caller;

applying a speech recognition algorithm to the received speech signal to recognize a name in a name vocabulary as corresponding to the received speech signal;

determining a telephone number desired by the caller using the recognized name;

releasing the desired telephone number to the caller; and

creating a call record comprising the released telephone number and a stored representation of the speech signal to associate the stored representation of the speech signal with the released telephone number;

processing according to a parameter modification algorithm a plurality of the call records to modify parameters of the speech recognition algorithm, said processing comprising:

processing each of the call records by:

deriving a plurality of name candidates from the released telephone number;

for each name candidate, calculating a measure of probability that the name candidate corresponds to the stored representation of the speech signal;

identifying a best name candidate having the highest measure of probability of the plurality of name candidates;

applying acceptance criteria based on the calculated measures of probability and, in response to the acceptance criteria being met, creating a training record comprising the stored representation of the speech signal and the best candidate name; and

processing the training records according to a training algorithm to modify the parameters of the speech recognition algorithm by, for each name of the name vocabulary:

accumulating statistics for said name derived from plural training records containing said name as a best name candidate; and

recalculating parameters associated with said name by the speech recognition algorithm from the statistics accumulated for said name; and

employing the speech recognition algorithm to recognize names spoken by callers in directory assistance calls received subsequent to modification of the parameters of the speech recognition algorithm.

5,488,653

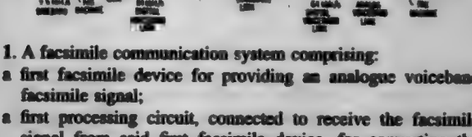
FACSIMILE INTERFACE UNIT (FIU) ENHANCED CAPABILITIES NEGOTIATION

Spiros Dimolitsas, Gaithersburg; Michael Onufry, Jr., Clarksburg, and Jack H. Rieser, Middletown, all of Md., assignors to Comsat Corporation, Bethesda, Md.

Continuation-in-part of Ser. No. 754,785, Sep. 4, 1991. This application Aug. 27, 1992, Ser. No. 935,787

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—100 9 Claims



1. A facsimile communication system comprising:

a first facsimile device for providing an analogue voiceband facsimile signal;

a first processing circuit, connected to receive the facsimile signal from said first facsimile device, for converting the analogue voiceband facsimile signal into a digital code signal representing information carried in the analogue voiceband signal, and for transmitting the digital code signal, and for detecting a type of facsimile signal provided by said first facsimile device and assembling an identification packet containing information identifying the type thus detected, said first processing circuit transmitting the identification packet in-band prior to transmitting the digital code signal;

a second processing circuit, connected to receive the transmitted digital code signal from said first processing circuit, for converting the received digital code signal into an analogue voiceband facsimile signal; and

a second facsimile device, connected to receive the analogue voiceband facsimile signal from the second processing circuit, for providing a responsive analogue voiceband facsimile signal;

wherein said second processing circuit detects a type of responsive facsimile signal provided by said second facsimile device and assembles a responsive identification packet containing information identifying the type of signal thus detected, and transmitting the responsive identification packet in-band prior to transmitting the digital code signal, said responsive identification packet including regarding capabilities of said second processing circuit.

5,488,654

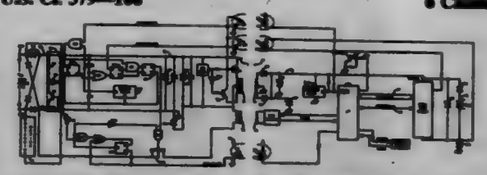
TELEMETRY DEVICE INCLUDING A DYNAMIC OFF-HOOK DETECTOR CAPABLE OF OPERATIONG IN A PULSE-DIALING ENVIRONMENT

Stewart W. Oliver, Venice, Calif., assignor to Telegenics, Inc., Los Angeles, Calif.

Filed Sep. 29, 1993, Ser. No. 128,864

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—106 6 Claims



1. A method of operating a telemetry device coupled to a phone line at a remote location, said telemetry device residing in a static state until said telemetric device enters an active state to seize said phone line to transmit data back to a central station over said phone line, said telemetry device including a static off-hook detector for determining when a contending device seizes said phone line while said telemetry device is in said static state, said method comprising the steps of:

pulse dialing by said telemetry device over said phone line to generate a dial pulse signal with alternating on-hook portions and off-hook portions when said telemetry device enters said active state;

monitoring said static off-hook detector during said on-hook portions of said dial pulse signal to determine if the contending device goes off-hook and seizes said phone line, and

disengaging said telemetry device from said phone line during said pulse dialing if in said monitoring step a determination was made that the contending device is seizing said phone line during an on-hook portion of said dial pulse signal.

5,488,655

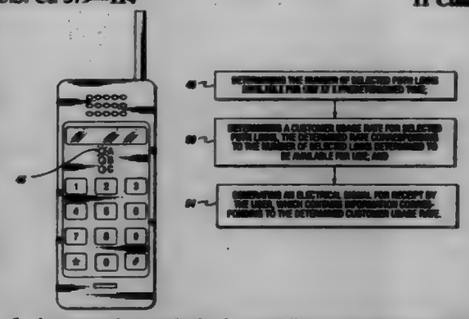
METHOD AND SYSTEM FOR CONTROLLING TRAFFIC IN PSTN LINKS THROUGH THE USE OF VARIABLE PRICE INCENTIVES

Glen A. Hamlen, Denver, Colo., assignor to U S WEST Technologies, Inc., Boulder, Colo.

Filed Jul. 6, 1994, Ser. No. 271,332

Int. Cl.[6] H04M *15/00*

U.S. Cl. 379—114 11 Claims



1. A preemptive method of controlling prospective customer telephone usage in selected PSTN links of the Public Switched Telephone Network (PSTN) through the use of variable price incentives, comprising:

determining on a substantially continuous real-time basis the number of said selected PSTN links which are available for use at a selected time;

determining on a real-time basis a customer usage rate for said selected PSTN links, said determined customer usage rate corresponding to the number of said selected links determined to be available for use at a selected time;

transmitting to a customer an electrical signal containing information corresponding to said determined customer usage rate; and

displaying to said customer said information corresponding to said determined customer usage rate in response to said electrical signal.

5,488,656

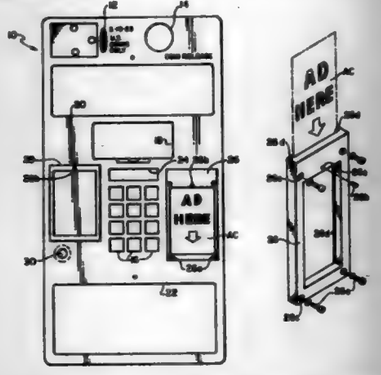
FACE PLATE WITH AD FRAMES FOR COIN OPERATED TELEPHONE BOXES

James R. DeArkland, 8119 Buena Fortuna, Carpinteria, Calif. 93013

Filed Mar. 15, 1994, Ser. No. 212,917

Int. Cl.[6] H04M *17/00;1/00;* G09F *3/00;15/00*

U.S. Cl. 379—155 6 Claims



4. In a coin operated telephone unit having: a principal section defined by an outer face plate including a coin payment slot, an opening for a coin return mechanism, a dialing key pad area having openings for a set of dialing keys, an opening for the mounting of a telephone handset cradle, and openings for dialing information panels; and a second section containing a locked compartment within which coins are stored, and a return coin unit including a top pivoted front coin return door: an improved outer face plate for the principal section of said coin operated telephone unit including two external rectangular frame members affixed to said face plate with each of said frame members located on one side of the dialing key pad area of said plate, said frame members defining through their peripheries framed panel areas, said frame members being each defined by vertical side legs and horizontal upper and lower legs and having a peripheral rear ridge portion extending along both of said side legs and said lower leg for positioning said frames in spaced relationship with respect to said plate and for supporting therein advertising display cards which are interchangeably insertable into said frames between said upper legs thereof and said plate, and said upper legs of said frame members being provided with security screw meads to maintain said advertising display cards within said frames.

5,488,657

APPARATUS FOR AND METHOD OF OPERATING AN AUTOMATIC LOG ON/LOG OFF CIRCUIT IN A TELEPHONE SYSTEM BY DISCONNECTING A HEADSET

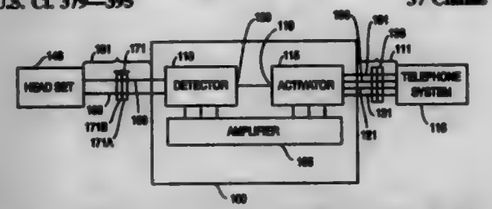
Dwight D. Lynn; Kirk A. Reid, and Shu-Ren Chen, all of Santa Cruz, Calif., assignors to ACS Communications, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 844,739, Mar. 2, 1992, Pat. No. 5,226,077. This application May 11, 1993, Ser. No. 62,614

The portion of the term of this patent subsequent to Jul. 6, 2009, has been disclaimed.

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—395 37 Claims



1. An amplifier for connection to a telephone system, the telephone system including a means for monitoring when a peripheral device is connected thereto, the monitoring means operating to detect a change in a parameter which occurs when the peripheral device is disconnected from the telephone system, the amplifier also being connectable to a telephone headset, and passing signals between the telephone headset and the telephone system, the amplifier comprising:

detecting means for detecting when the headset is disconnected from the amplifier and for generating an output signal in response thereto; and

activating means, operating in response to the output signal, for changing the parameter in a manner that emulates the disconnection of a peripheral device from the telephone system, even though the amplifier remains connected.

5,488,658

VIDEO SIGNAL SCRAMBLING AND DESCRAMBLING APPARATUS

Masayoshi Hirashima, Iberaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

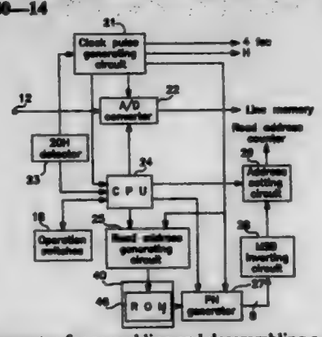
Filed Apr. 15, 1994, Ser. No. 228,220

Claims priority, application Japan, Apr. 15, 1993, 5-113804

The portion of the term of this patent subsequent to Oct. 11, 2011, has been disclaimed.

Int. Cl.[6] H04N *7/167;* H04L *9/02*

U.S. Cl. 380—14 23 Claims



14. An apparatus for scrambling and descrambling a video signal including a plurality of horizontal scanning lines, comprising:

a first memory for storing key data,

a second memory for storing a reloadable code number which includes a plurality of digits,

a plurality of line memories, each for storing respective ones of said plurality of horizontal scanning lines,

a PN generator, initialized by said key data stored in said first memory and said reloadable code number stored in said second memory, for generating a respective pseudo-random pulse signal for each one of said plurality of horizontal scanning lines,

an address setting circuit for scrambling and descrambling, said address setting circuit set to an initial value corresponding to an output of the PN generator during scrambling, and set to a further initial value which corresponds to a maximum address value of the plurality of line memories minus a further output of the PN generator during descrambling, and

an address counter for generating a plurality of consecutive address values beginning at one of said initial value and said further initial value, and for applying each one of said plurality of consecutive address values respectively to each one of said plurality of line memories for each horizontal scanning line.

5,488,659

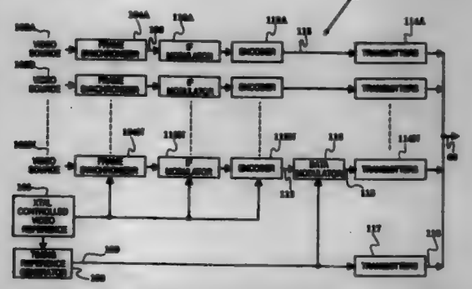
ENCRYPTION/DECRYPTION PROCESS AND APPARATUS FOR A MULTICHANNEL TELEVISION SYSTEM

Pablo Millani, Westlake Village, Calif., assignor to California Amplifier, Camarillo, Calif.

Continuation-in-part of Ser. No. 89,941, Jul. 12, 1993, abandoned. This application Oct. 28, 1994, Ser. No. 331,854

Int. Cl.[6] H04N *7/171*

U.S. Cl. 380—15 32 Claims



1. A method of distributing multiple video signals, each produced by a different video source at a system headend and each containing picture and synchronization components, to a plurality of subscriber sites located remote from said headend, said method comprising the steps of:

generating at said headend multiple carrier signals;

modulating at said headend each of said carrier signals with a different one of said video signals to form multiple channel signals, all of said channel signals having their respective video signal synchronization components in time coincidence;

generating a common timing reference signal synchronous with said time coincident synchronization components;

causing each of said channel signals to be encrypted at said headend in accordance with a common predetermined encoding rule;

modulating a selected encrypted channel signal in response to said common timing reference signal;

distributing said multiple encrypted channel signals from said headend to said subscriber sites as a common RF signal; and

responding at each subscriber site to said common timing reference signal to simultaneously decrypt all of the channel signals distributed thereto by operating upon said common RF signal with a single downconverter/decoder in accordance with the inverse of said encoding rule to recover multiple decrypted channel signals for direct simultaneous application to a conventional television receiver.

5,488,660

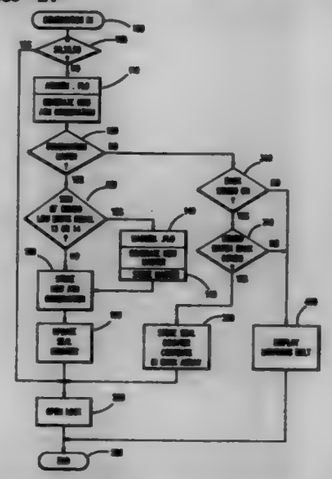
ELECTRONIC COMBINATION LOCK UTILIZING A ONE-TIME USE COMBINATION

Gerald L. Dawson, Lexington, and Daniel L. Thompson, Paris, both of Ky., assignors to Mas-Hamilton Group, Lexington, Ky.

Continuation of Ser. No. 139,458, Oct. 20, 1993, abandoned. This application Apr. 3, 1995, Ser. No. 416,455

Int. Cl.[6] H04K *1/00;* H04L *9/00;* G06F *7/04;* E05B *49/00*

U.S. Cl. 380—24 19 Claims



1. An electronic combination lock comprising:

an input dial for inputting numbers of a combination into said lock;

a display for displaying numbers;

an electronic control means for receiving said numbers of said combinations and for comparing said numbers with numbers of an authorized combination;

said electronic control means including:

an encrypting combination generator responsive to an entered combination for encrypting predetermined data and for generating a combination derived from said predetermined data;

a comparator for comparing said entered combination with said generated combination and responsive to a compare equal to generate a signal permitting said lock to open,

said encrypting and generating means responsive to a last accepted combination, a parameter unique to said lock, a master combination, a variable value, said variable value changed in a predictable manner upon each opening of said lock to form a result and manipulation of said result, to generate said authorized combination.

5,488,661

DATA COMMUNICATION SYSTEM AND METHOD WITH DATA SCRAMBLING

Mitsuru Matsui, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 895,629, Jun. 9, 1992, Pat. No. 5,261,003. This application Sep. 22, 1993, Ser. No. 125,131

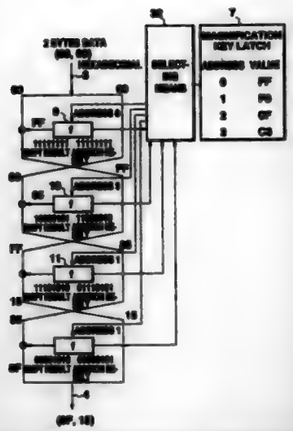
Claims priority, application Japan, Jun. 13, 1991, 3-141911

Int. Cl.[6] H04L *9/06*

U.S. Cl. 380—29 17 Claims

3. A data communication method with a data scrambling of a bit array configuration of a digital data array of an input plain text according to a predetermined conversion rule, comprising the steps of:

selecting one of cipher keys as a function of at least part of the input digital data array; and



performing a scramble processing by applying input digital data and the selected cipher key to a scramble function selected from a plurality of scramble functions;

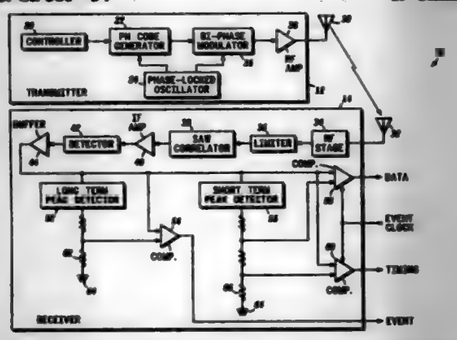
wherein a plurality of the scramble processing means are connected in series, and the cipher key of the scramble processing on and after a second step is selected from a plurality of cipher keys recorded by using a part of data of a scramble output at a previous step.

5,488,662

SYSTEM AND METHOD FOR IDENTIFYING AN ARRIVAL TIME OF A COMMUNICATED SIGNAL

Thomas M. Fox, Gilbert; Neal R. Anderson, Mesa, and Julius A. Heeren, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 10, 1994, Ser. No. 209,657
Int. Cl.[6] H04K 1/10
U.S. Cl. 380—34 **19 Claims**



1. An apparatus for identifying an arrival time of a communicated signal which conveys a message having a plurality of bits of data, said apparatus comprising:

a correlator adapted said communicated signal with a PN sequence and to generate a correlation signal;

means, coupled to said correlator, for detecting the occurrence of a first bit of said message; and

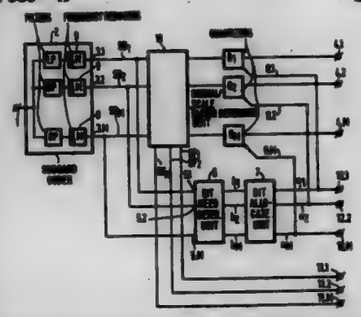
means, coupled to said detecting means and to said correlator, for determining when, after said first bit, said correlation signal corresponds to a threshold, wherein said determining means comprises a comparison circuit which is disabled during said first bit.

5,488,663

ENCODING METHODS FOR GENERATING A DIGITAL SIGNAL CONTAINING MODULATED BIT ALLOCATION INFORMATION, AND RECORD CARRIERS CONTAINING THAT SIGNAL

Jan Dewolf; Gerardus C. P. Lokhoff, and Abraham Hoogendoorn, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 11,938, Feb. 1, 1993, Pat. No. 5,375,171. This application Aug. 4, 1994, Ser. No. 285,870
Claims priority, application European Pat. Off., Feb. 3, 1992, 92200298
The portion of the term of this patent subsequent to Dec. 20, 2011, has been disclaimed.
Int. Cl.[6] H04L 9/00
U.S. Cl. 380—49 **20 Claims**



1. A method of subband encoding a wide-band digital signal, the method comprising:

generating a plurality of subband signal from the wide-band digital signal, each of the subband signals being made up of consecutive signal blocks with each contain a predetermined number of samples of that subband signal;

quantizing the samples in the signal blocks of the subbands signals to produce quantized samples in the signal blocks;

generating bit allocation information denoting how many bits the samples in the signal blocks are to be quantized by;

modulating the bit allocation information or a portion thereof to produce modulated bit allocation information; and

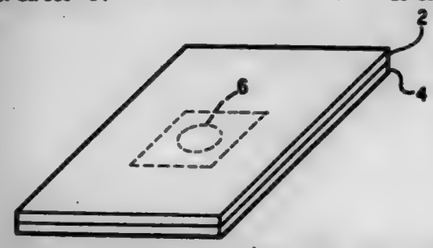
generating a digital transmission signal including the quantized samples and the modulated bit allocation information.

5,488,664

METHOD AND APPARATUS FOR PROTECTING VISUAL INFORMATION WITH PRINTED CRYPTOGRAPHIC WATERMARKS

Adi Shamir, Rehovot, Israel, assignor to Yeda Research and Development Co., Ltd., Rehovot, Israel

Filed Apr. 22, 1994, Ser. No. 231,933
Int. Cl.[6] G09C 5/00
U.S. Cl. 380—54 **18 Claims**



10. A device for protecting visual information against unauthorized access and modification using a printed cryptographic watermark, the device comprising:

a first sheet of material having a first array of shapes printed thereon, the first sheet of material including the visual information to be protected;

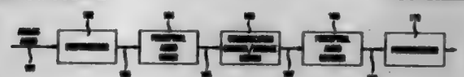
a second sheet of material having a second array of shapes printed thereon, the second sheet of material being transparent so as to form a developer for developing the cryptographic watermark when the second sheet of material is positioned on top of the first sheet of material, the second array of shapes aligned with the first array of shapes so as to display the cryptographic watermark in a superimposed combination of the first and second arrays of shapes when the first sheet of material is viewed through the second sheet of material, wherein the cryptographic watermark is not visible in either one of the first and second sheets when viewed individually.

5,488,665

MULTI-CHANNEL PERCEPTUAL AUDIO COMPRESSION SYSTEM WITH ENCODING MODE SWITCHING AMONG MATRIXED CHANNELS

James D. Johnston, Warren, and Deepen Sinha, Chatham, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Nov. 23, 1993, Ser. No. 156,495
Int. Cl.[6] H04N 5/78
U.S. Cl. 381—2 **36 Claims**



1. A method of perceptually encoding an audio signal comprising a set of input channels, the method comprising the steps of

generating a set of matrixed channels in response to said input channels, and

perceptually encoding said matrixed channels, said perceptually encoding step including selecting noise threshold values based upon noise masking criteria and using said noise threshold values to control the coarseness of quantizing said audio signal during said encoding;

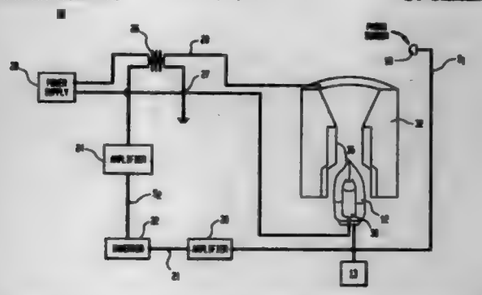
at least an individual one of the matrixed channels of said set of matrixed channels being a function of a) an individual one of said input channels or the sum of, or the difference between, two of them, and b) a prediction of a).

5,488,666

SYSTEM FOR SUPPRESSING SOUND FROM A FLAME

William H. Greenhalgh, Neshanic Station, N.J., assignor to Greenhalgh Technologies, Neshanic Station, N.J.

Filed Oct. 1, 1993, Ser. No. 113,715
Int. Cl.[6] A61F 11/06
U.S. Cl. 381—71 **14 Claims**



1. A system for suppressing sound produced by a flame comprising:

a photo sensor for detecting fluctuation of said flame for producing a first acoustical signal from said flame, said first acoustical signal having a rate of fluctuation in the range of 20 to 20,000 hertz;

means for producing a second acoustical signal which is inverted in relation to said first acoustical signal; and

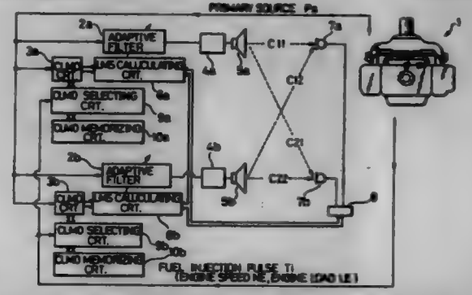
an electric arc for applying said second acoustical signal to said flame, said electric arc is modulated by said second acoustical signal to cause a suppression of said sound produced by said flame.

5,488,667

VEHICLE INTERNAL NOISE REDUCTION SYSTEM

Masapel Tamamura, Obita; Hiroshi Ichiba, Kagami, and Eiji Shibata, Gunma, all of, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 14, 1994, Ser. No. 180,995
Claims priority, application Japan, Feb. 1, 1993, 5-016927
Int. Cl.[6] G10K 11/16
U.S. Cl. 367—71 **15 Claims**



1. A vehicle internal noise reduction system for attenuating a vibration noise sound within a passenger compartment by producing a canceling sound from a plurality of speakers, comprising:

operational conditions detecting means for detecting an engine operational condition signal;

canceling signal synthesizing means for synthesizing a vibration noise source signal with a filter coefficient of an adaptive filter into a canceling signal;

canceling sound generating means responsive to said canceling signal for generating a canceling sound from a speaker so as to cancel said vibration noise sounds within the passenger compartment;

error signal detecting means for detecting a state of noise reduction as an error signal;

compensation coefficients determining means for determining a series of compensation coefficients;

compensation coefficients memorizing means for memorizing said series of compensation coefficients;

compensation coefficients selecting means responsive to said engine operational condition signal for selecting a compensation coefficient from within said series of compensation coefficients memorized in said compensation coefficients memorizing means;

input signal compensation means for compensating said vibration noise source signal by said compensation coefficient; and

filter coefficient updating means responsive to an output signal from said input signal compensating means and responsive to said error signal for updating said filter coefficient of said adaptive filter.

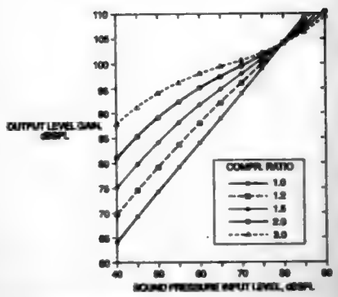
5,488,668

MULTIBAND PROGRAMMABLE COMPRESSION SYSTEM

Fred Waldhauer, La Honda, Calif., assignor to ReSound Corporation, Redwood City, Calif.

Division of Ser. No. 723,233, Jun. 28, 1991, Pat. No. 5,278,912. This application Nov. 23, 1993, Ser. No. 156,425
Int. Cl.[6] H04R 25/00
U.S. Cl. 381—68.4 **3 Claims**

1. A signal compressor for use in a hearing aid, comprising:



variable gain limiter means having an input terminal for receiving an electrical signal which is representative of ambient sounds and an output terminal, said limiter means having a gain which is generally a function of the amplitude of said input electrical signal, which function defines a lower breakpoint:

parallel circuit means, connected to said input terminal and said output terminal in parallel to said limiter means for providing a signal at said output terminal generally proportional to said input electrical signal which defines an upper breakpoint, such that the gain curve of said compressor defines a sigmoid function wherein there is a pivot point midway between said upper and lower break points and further wherein the compression ratio of the compressor is substantially the reciprocal of the slope of the gain curve at the pivot point; and

compression control means for varying the compression ratio of the compressor by varying the slope of the gain curve at the pivot point.

5,488,669

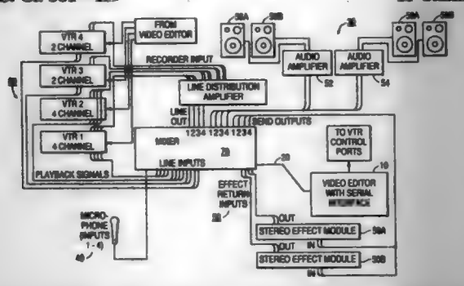
MANUAL CROSS FADE LEARN FEATURE FOR AN AUDIO FOLLOW VIDEO MIXER

Michael A. Zampini; Alan Flum, both of Boca Raton; Donald E. Davis, Margate, and Joseph J. Dombrowski, Hollywood, all of Fla., assignors to Sony Corporation, Tokyo, Japan, and Sony Electronics Inc., Park Ridge, N.J.

Filed Oct. 29, 1993, Ser. No. 142,974

Int. Cl.[6] H04B *1/00*

U.S. Cl. 381—119 **11 Claims**



1. An audio follow video mixer for performing a crossfade operation between a first audio channel having a first amplitude and a second audio channel having a second amplitude comprising:

gain control means for adjusting the amplitudes of the first audio channel and the second audio channel, said gain control means including means for manually controlling the adjustment of the amplitude of the first audio channel and the second audio channel and means for providing signals indicating the adjustment made to the first audio channel and the second audio channel;

processor means for receiving said adjustment indicating signals;

memory means for storing data corresponding to said adjustment indicating signals;

a first control member provided on a display portion of said audio follow video mixer, said member being operable to provide a store signal to said processor means to cause said processor means to provide said data corresponding to said adjustment indicating signals to said memory means; and

a second control member provided on said display portion operable to cause said processor means to control said gain control means to adjust the amplitudes of the first audio channel and the second audio channel in accordance with said data stored in the memory means;

wherein said first control means and said second control means together comprise a write control member and at least one recall control member, wherein said write control member is operable to arm said processor means to provide said data to said memory means upon operation of said at least one recall control member, and said recall control member is otherwise operable independent of said write control member to cause said processor means to provide said data to said memory means.

5,488,670

COLOR IMAGE PROCESSING METHOD AND APPARATUS

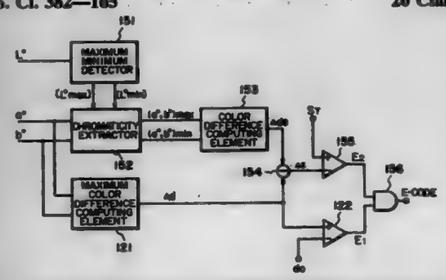
Yoshiyuki Suzuki, Kawasaki, and Masahiro Funada, Yokohama, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 877,390, Apr. 30, 1992, abandoned, which is a continuation of Ser. No. 327,002, Mar. 22, 1989, abandoned. This application Dec. 13, 1993, Ser. No. 165,580

Claims priority, application Japan, Mar. 25, 1988, 63-72969

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—165 **20 Claims**



1. A color image processing method comprising the steps of:

a) providing color image data for a block comprising a plurality of pixels;

b) separating said data into lightness data and chromaticity data for each pixel;

c) discriminating a presence of an edge for each block by using the lightness data without reference to the chromaticity data;

d) deciding whether or not the pixels in the block have a common hue by using the chromaticity data without reference to the lightness data; and

e) judging whether or not the pixels in the block represent a part of a color line image on the basis of the edge discrimination and on the basis of the hue decision.

5,488,671

REDUCING OPERATOR BALANCING IN A DOCUMENT PROCESSING SYSTEM EMPLOYING AUTOMATIC READING

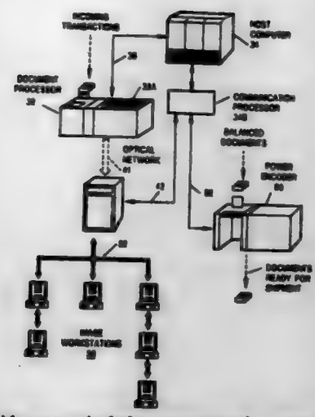
Norman P. Kern, Birmingham, Mich., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Oct. 19, 1990, Ser. No. 600,777

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—138 **10 Claims**

1. In a transaction processing system, wherein a transaction comprises credit and debit documents which should balance,



wherein said system includes an automatic amount reader for automatically reading document amounts from at least some of said documents, and wherein each amount comprises a plurality of digits at respective digit positions, a method for automatically correcting a document amount which has been incorrectly ready by said automatic amount reader, said method comprising:

providing a first digit choice and a second digit choice for at least one digit position of a document automatically ready by said automatic amount reader, each first digit choice being the one which said automatic amount reader determines as most likely to be correct;

extracting the amount from each document of said transaction which is not automatically read by said automatic amount reader, each extracted amount comprising a plurality of digits at respective digit positions;

determining from the first choice digits and extracted digits of documents making up a transaction whether it is an out-of-balance transaction;

determining a digit position in error for said out-of-balance transaction; and

substituting a second digit choice for the first digit choice of an automatically read document of said out-of-balance transaction at the digit position in error to attempt to automatically balance said out-of-balance transaction.

5,488,672

COLOR IMAGE PROCESSING APPARATUS

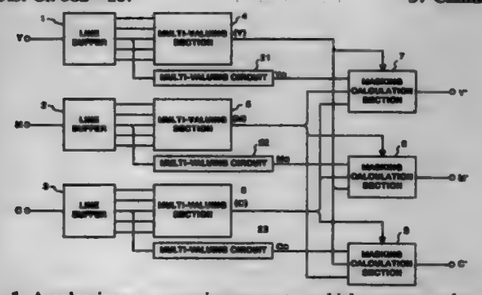
Yoshinobu Mita, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 844,941, Mar. 4, 1992, abandoned, which is a continuation of Ser. No. 575,681, Aug. 31, 1990, abandoned. This application Feb. 22, 1994, Ser. No. 200,560

Claims priority, application Japan, Sep. 5, 1989, 1-229784; Jan. 11, 1989, 1-264531

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—167 **37 Claims**



1. A color image processing apparatus which converts n-level image pixels of a first geometric area of an image into m-level image pixels (n<m), comprising:

first multi-valuing means for generating an m-level main-color-component signal based on an n-level signal representing a main color component of pixels in the first geometric area of the image;

second multi-valuing means for forming a signal representative of a pixel density for at least one sub-color component, in a second geometric area of the image having a greater number of pixels than the first geometric area of the image;

color masking means for mask correcting the main-color-component signal generated by said first multi-valuing means for the first geometric area of the image based on the pixel density representative signal formed by said second multi-valuing means; and

image forming means for forming an image based on the mask corrected image on a medium.

5,488,673

IMAGE PROCESSING WITH FIXED OR VARIABLE THRESHOLD

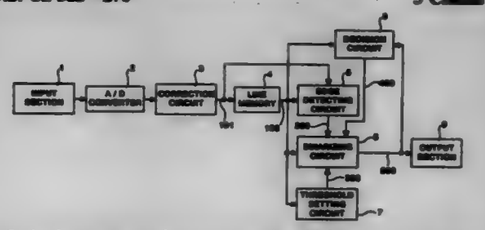
Akihiro Katayama, Kawasaki, and Hidefumi Ossawa, Kawaguchi, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 116,546, Sep. 7, 1993, abandoned, which is a continuation of Ser. No. 787,628, Nov. 4, 1991, abandoned, which is a division of Ser. No. 396,339, Aug. 21, 1989, Pat. No. 5,086,484. This application Jul. 19, 1994, Ser. No. 276,643

Claims priority, application Japan, Aug. 24, 1988, 63-208274; Aug. 29, 1988, 63-212386; Aug. 29, 1988, 63-212387; Nov. 8, 1988, 63-283484

Int. Cl.[6] G06K *9/38*

U.S. Cl. 382—270 **5 Claims**



1. An image processing apparatus in which an error occurring when input pixel data is binarized is distributed to a plurality of non-binarized neighboring pixels, comprising:

input means for inputting pixel by pixel image data representing an original image;

a binarizer for binarizing corrected objective pixel data which is obtained by adding data of an objective pixel input by said input means and data distributed to a position corresponding to the input objective pixel to produce pixel by pixel an output image;

first calculating means for calculating, from an error occurring as a result of binarization by said binarizer, values to be distributed to respective plural non-binarized neighboring pixels which are located in the vicinity of the objective pixel, based upon predetermined weighting factors corresponding to the positions of the non-binarized neighboring pixels;

first distributing means for distributing the values calculated by said first calculating means respectively to the positions of the non-binarized neighboring pixels;

second calculating means for calculating an over flow amount by subtracting the total sum of the values calculated by said first calculating means from the value of the error occurring as a result of binarization by said binarizer; and

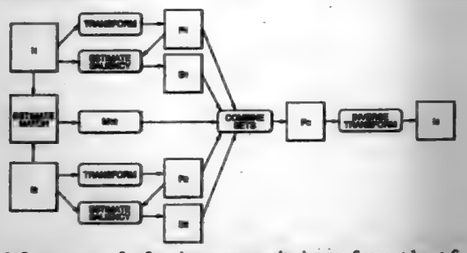
second distributing means for distributing the over flow amount calculated by said second calculating means to the position of one neighboring pixel which is located in a different position with respect to the objective pixel position, at least each time the position of the objective pixel is updated.

5,488,674

METHOD FOR FUSING IMAGES AND APPARATUS THEREFOR

Peter J. Burt, Mercer County; Gooitzen S. van der Wal, Mercer; Raymond J. Kolczynski, Mercer, and Rajesh Hingorani, Mercer, all of N.J., assignors to David Sarnoff Research Center, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 884,096, May 15, 1992, Pat. No. 5,325,449. This application May 12, 1993, Ser. No. 59,610
Int. Cl.[6] H04N 9/76
U.S. Cl. 382—284 7 Claims



1. In apparatus for forming a composite image from at least first and second monochrome source images comprising first means for decomposing each of the source images into a set of a plurality of component patterns and deriving a monochrome composite image in response to a weighted average of amplitudes of the component patterns of the source images; the combination therewith of:

second means for assigning amplitudes of a first of opponent colors to first component patterns of a source image in accordance with their normalized weight contribution to said weighted average of the amplitudes of the component patterns of the source images; and

third means for assigning amplitudes of a second of said opponent colors to second component patterns of a source image in accordance with their normalized weight contributions to said weighted average of the amplitudes of the component patterns of the source images; and

fourth means responsive to outputs from said first, second and third means for augmenting said monochrome composite image with said first and second opponent colors thereby to provide a color composite image.

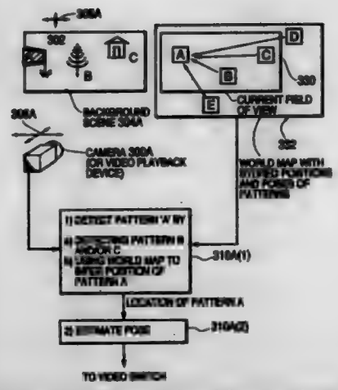
5,488,675

STABILIZING ESTIMATE OF LOCATION OF TARGET REGION INFERRED FROM TRACKED MULTIPLE LANDMARK REGIONS OF A VIDEO IMAGE

Keith J. Hanna, Princeton, N.J., assignor to David Sarnoff Research Center, Inc., Princeton, N.J.

Filed Mar. 31, 1994, Ser. No. 222,207
Int. Cl.[6] H04N 9/74
U.S. Cl. 382—284 5 Claims

1. In an image processing method for inserting a given pattern at a target region having a particular location with respect to a scene being viewed by an image sensor which produces a series of successive image frames, wherein said scene includes at least two landmark regions displaced in position from one another; and wherein said method comprises the computation steps of (a) inferring the size and position of said particular location within each image frame of said scene from the size and position of a first one of said landmark regions represented within each image frame of said scene and (b) independently inferring the size and position of said particular location within each image frame of said scene from the size and position of a second one of said landmark regions represented within each image frame of said scene, whereby there may be a difference in the size and position of said particular location within each image frame of said scene inferred from the size and position of said second one of said landmark regions with respect to the size and position of said particular location within



each image frame of said scene inferred from the size and position of said first one of said landmark regions; the improvement comprising the step of:

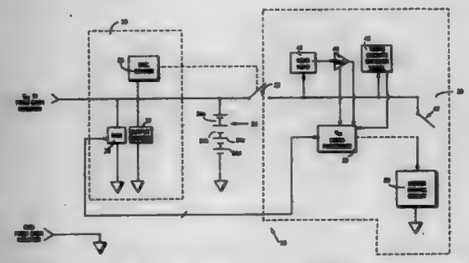
c) modifying the size and position of the particular location within one of said image frames of said scene inferred from the size and position of said second one of said landmark regions within that one of said image frames so that it is substantially the same as the size and position of the particular location within that one of said image frames of said scene inferred from the size and position of said first one of said landmark regions.

5,488,676

MINIATURE MICR DOCUMENT READER WITH POWER MANAGEMENT AND MOTORIZED CONVEYANCE

Richard W. Harding, Jr., Atlanta, Ga., assignor to Checkmate Electronics, Inc., Roswell, Ga.

Continuation of Ser. No. 819,498, Jan. 10, 1992, abandoned. This application Aug. 30, 1994, Ser. No. 298,179
Int. Cl.[6] G06K 9/20
U.S. Cl. 382—320 19 Claims



1. A document reader having dormant and active modes for cooperation with an electronic cash register (ECR) host and an electronic data entry keyboard which receives a supply of DC electrical power from said ECR host, said document reader including:

first circuitry which includes a connector connectable to said data entry keyboard so as intercept at least a part of said supply of DC electrical power supplied by said ECR to said keyboard during both said dormant and active modes;

second circuitry which is active only during said active mode of said document reader and which demands a peak supply of DC electrical power in excess of that supplied by the ECR host to the keyboard;

a power storage component connected to said first circuitry for receiving said intercepted DC electrical power from said ECR host and for storing said intercepted DC electrical power during said dormant mode; and

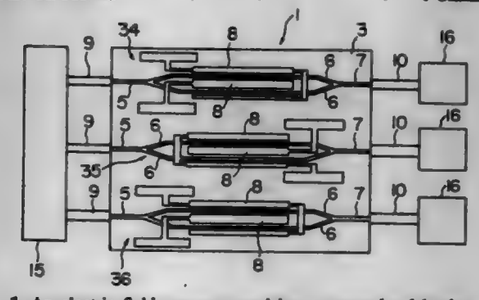
a power management switch coupled to said power storage component and said second circuitry for enabling said stored DC electrical power to be transferred to and used by said second circuitry during said active mode to satisfy said peak electrical power demand thereof.

5,488,677

ELECTRIC FIELD SENSOR

Yuichi Tokano, Sendai, Japan, assignor to Tokin Corporation, Miyagi, Japan

PCT No. PCT/JP94/01110, § 371 Date Mar. 7, 1995, § 102(e) Date Mar. 7, 1995, PCT Pub. No. WO95/02193, PCT Pub. Date Jan. 19, 1995
PCT Filed Jul. 7, 1994, Ser. No. 397,876
Claims priority, application Japan, Jul. 7, 1993, 5-167857; Jul. 7, 1993, 5-167861; Feb. 25, 1994, 6-053256
Int. Cl.[6] G02F 1/035
U.S. Cl. 385—3 4 Claims



1. An electric field sensor comprising a sensor head having a substrate and an optical modulator attached to said substrate, a package accommodating said sensor head, and an antenna attached to the outside of said package and connected to said optical modulator, said optical modulator comprising an incident optical waveguide formed on said substrate, two phase-shift optical waveguides which are formed on said substrate to be branched from said incident optical waveguide and each of which has a variable refractive index varying in response to an electric field intensity applied thereto, an outgoing optical waveguide formed on said substrate to join said phase-shift optical waveguides, and two modulation electrodes formed on or in the vicinity of said phase-shift optical waveguides, said antenna having two rod antenna elements respectively connected to said modulation electrodes, said rod antenna elements extending in opposite directions with their one ends located at a center portion of said package and being arranged in parallel to said phase-shift optical waveguides.

5,488,678

ASSEMBLY STRUCTURE FOR AN OPTICAL INTEGRATED CIRCUIT DEVICE

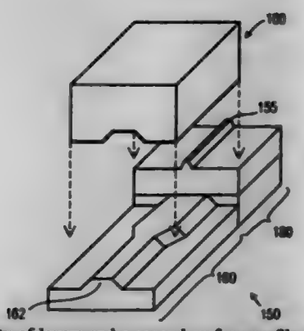
Mototaka Taneya; Hideneri Kawanishi, both of Nara; Tatsuya Morioka, Tenri, and Atsushi Shimonaka, Nara, all of, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 1, 1994, Ser. No. 283,743
Claims priority, application Japan, Aug. 3, 1993, 5-192608
Int. Cl.[6] G02B 6/12
U.S. Cl. 385—14 5 Claims

1. An assembly structure for an optical integrated circuit device, comprising:

an optical integrated circuit substrate in which a layered structure including a waveguide is formed on a base, the optical integrated circuit substrate having a first surface profile on an opposite surface of the base, the first surface profile including a first structure which is one of a raised structure and a recessed structure; and

a semiconductor laser device to be secured on the optical integrated circuit substrate, the semiconductor laser device having



a plurality of layers and a second surface profile on a surface of the layers, the second surface profile corresponding to the first surface profile and including a second structure which has a shape corresponding to the first structure on the optical integrated circuit substrate,

wherein the first structure extends parallel to a waveguide axis of the optical integrated circuit substrate, a cross-sectional shape of the first structure taken parallel to the base is symmetrical with respect to the waveguide axis, and the first structure includes a first tapered profile,

the second structure extends parallel to a light-emitting stripe axis of the semiconductor laser device, a cross-sectional shape of the second structure taken parallel to the layers is symmetrical with respect to the light-emitting stripe axis, and the second structure includes a second tapered profile which corresponds to the first tapered profile of the first structure, and

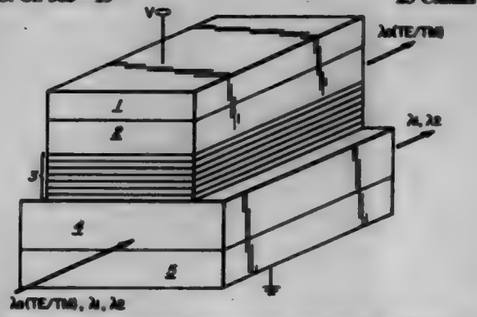
the first and second surface profiles are fitted to and bonded with each other so as to secure the semiconductor laser device to the optical integrated circuit substrate.

5,488,679

POLARIZATION INDEPENDENT WAVELENGTH TUNABLE FILTER BASED ON BIREFRINGENCE COMPENSATION

Chi Wu, Crescent, Canada, assignor to Northern Telecom Limited, Quebec, Canada

Filed Oct. 27, 1994, Ser. No. 329,923
Int. Cl.[6] G02B 6/26;6/00
U.S. Cl. 385—15 23 Claims



1. A polarization independent wavelength tunable filter compromising:

a first waveguide for receiving an optical signal on at least one wavelength carrier, said wavelength carrier including TM and TE polarization modes;

a second waveguide, spaced from said first waveguide for receiving from said first waveguide said at least one wavelength carrier including both TM and TE polarization modes; and

a coupling region between and integral with said first and second waveguides wherein the physical characteristics of said waveguides and said coupling region are selected so as to

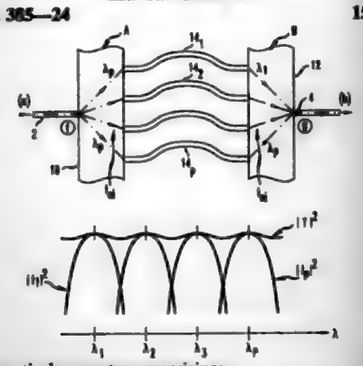
facilitate effective coupling of said wavelength carrier and both TM and TE polarization modes from said first waveguide to said second waveguide.

5,488,680

FREQUENCY ROUTING DEVICE HAVING A WIDE AND SUBSTANTIALLY FLAT PASSBAND

Corrado Dragone, Little Silver, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Aug. 24, 1994, Ser. No. 295,445
Int. Cl.[6] G02B 6/28
U.S. Cl. 385—24 15 Claims



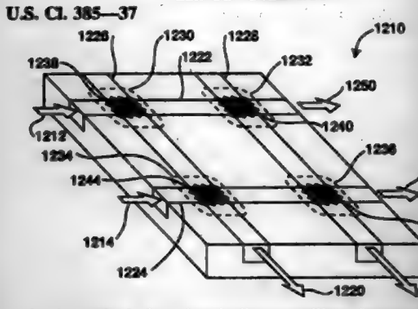
1. An optical apparatus comprising:
a first frequency routing device having at least one input port and P output ports, where P>2;
a second frequency routing device having at least P input ports and at least one output port;
P optical paths coupling the output port of the first frequency routing device to the input port of the second frequency routing device; and
wherein the optical paths each have a transmission coefficient substantially equal to unity at a distinct optical wavelength, each of said transmission coefficients being substantially equal to one half unity at an intermediate wavelength approximately halfway between adjacent ones of said distinct optical wavelengths.

5,488,681

METHOD FOR CONTROLLABLE OPTICAL POWER SPLITTING

David A. G. Deacon, Los Altos; Michael J. Brinkman, Redwood City, and William K. Bischel, Menlo Park, all of Calif., assignors to Deacon Research, Palo Alto, Calif.

Filed Sep. 9, 1994, Ser. No. 303,992
Int. Cl.[6] G02B 6/36
U.S. Cl. 385—37 4 Claims



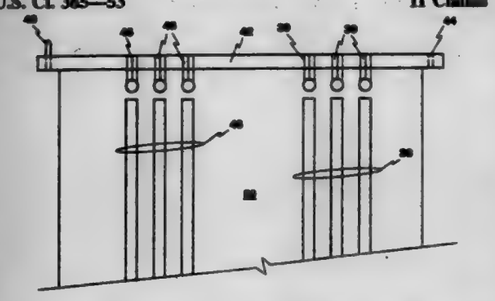
1. A method for electrically-controlling frequency-selective beam coupling in a solid device, said solid device comprising: a solid material having a pattern of differing domains, at least a first type of said domains being a poled structure and forming at least two elements alternating with a second type of said domains and defining a grating; at least a first electrically-conductive material forming a first electrode, said first electrode confronting said solid material and bridging at least two of said elements of said first type of poled structure; a waveguide segment traversing said solid material; a waveguide wye junction having a first arm and a second arm, said wye junction being coupled to said waveguide segment, said method comprising:
superimposing a first optical mode and a second optical mode in said waveguide segment; and
applying an electric field through said grating to selectively control coupling of optical energy in said waveguide segment with said first arm and said second arm to control power in the first optical mode and the second optical mode such that superposition of said first optical mode and said second optical mode result in selective spatial concentration of power in said waveguide segment.

5,488,682

POLYMER BASED OPTICAL CONNECTOR

Gerald F. Sauter, Eagan, and Rick C. Stevens, Apple Valley, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jul. 5, 1994, Ser. No. 270,984
Int. Cl.[6] G02B 6/32
U.S. Cl. 385—53 11 Claims



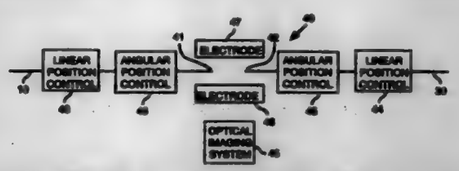
1. An optical connector of the type useful for interconnecting operational modules onto an optical backplane, comprising:
a backplane for supporting said optical connector,
a low index of refraction layer on said backplane,
a plurality of polymer waveguides formed on top of said low index of refraction layer,
said waveguides having exposed light transmitting/receiving ends,
a precision recess formed in said backplane juxtaposed each of said transmitting/receiving ends of said waveguides,
collimating lens means mounted in each said precision recess opposite the ends of said polymer waveguides,
light shielding means on top of said polymer waveguides,
window means mounted on said backplane opposite said lens means, and
said window means having positioning means thereon for indexing said optical connector relative to a mating optical connector.

5,488,683

METHOD FOR SPLICING POLARIZATION MAINTAINING FIBER WITH ELLIPTICAL STRESS MEMBER

Ronald J. Michal, Wrightwood, and Fernando Torres, Canoga Park, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Apr. 29, 1994, Ser. No. 235,172
Int. Cl.[6] G02B 6/255
U.S. Cl. 385—98 4 Claims



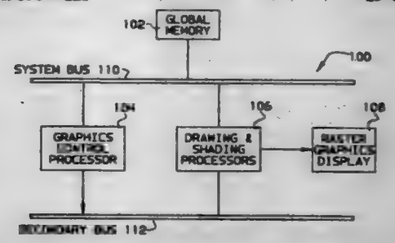
1. A method for forming an end-to-end splice in a pair of polarization-maintaining optical fibers that each have a core and a cladding with an elliptical stress member being in the cladding to produce stress induced birefringence in the polarization-maintaining optical fibers, comprising the steps of:
(a) placing the ends of the pair of polarization-maintaining optical fibers end-to-end with a predetermined gap between the ends of the fibers;
(b) examining the sides of the pair of optical fibers with an optical imaging apparatus;
(c) defocusing the optical imaging apparatus on the pair of optical fibers such that scattered light from the interfaces of the core and cladding becomes visible to form an alignment band in each of the pair of polarization-maintaining optical fibers; and
(d) adjusting the angular position of one of the polarization maintaining optical fibers relative to the other one of the polarization-maintaining optical fibers until the alignment bands in the polarization-maintaining optical fibers are in longitudinal alignment.

5,488,684

METHOD AND APPARATUS FOR RENDERING TRIMMED PARAMETRIC SURFACES

Nader Gharachorloo, Ossining, and William L. Luken, Ulster Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 86,750, Jul. 1, 1993, abandoned, which is a continuation of Ser. No. 620,965, Nov. 30, 1990, abandoned. This application Sep. 23, 1994, Ser. No. 311,701
Int. Cl.[6] G06T 15/30
U.S. Cl. 395—123 19 Claims



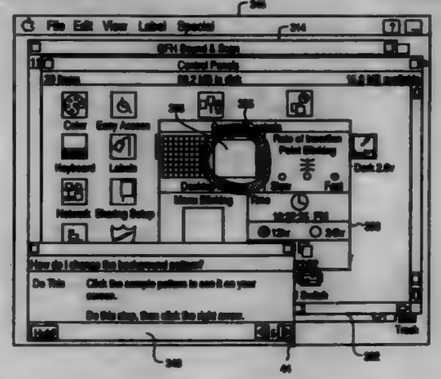
11. In a computer graphics system having a polygon processor capable of processing concave polygons, apparatus for rendering a trimmed parametric surface representing a mapping from U and V parametric coordinates to X and Y geometric coordinates, said X and Y geometric coordinates for deriving the location of graphics entities on a computer graphics display, said parametric surface having multiple patches and a trimming region bound by a trim polyline, said apparatus comprising:
(a) means for dividing the parametric surface having multiple patches into a plurality of contiguous U and V intervals intersecting to form a grid of UV rectangles, said trim polyline intersecting a subset of said UV rectangles to divide each of the UV rectangles of the subset into at least one polygon lying within the trimming region and at least one polygon lying outside of the trimming region; and
(b) means for processing each V interval intersected by the trim polyline comprising:
(1) means for determining vertices of a V polygon lying within the trimming region formed by the intersection of the trim polyline and the V interval;
(2) means for determining vertices of U polygons formed by the intersection of the V polygon and said U intervals; and
(c) means for providing vertex data for said vertices to the polygon processor to render the polygon for said computer graphics display.

5,488,685

METHOD AND APPARATUS FOR PROVIDING VISUAL CUES IN A GRAPHIC USER INTERFACE

James E. Palmer, Redwood City; John R. Powers, III, Monte Sereno; Patricia J. Coleman, Menlo Park; Gregory S. Brewer, Pleasanton; Jeffrey A. Herman, Palo Alto, and Eli Cochran, Menlo Park, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Jan. 27, 1993, Ser. No. 10,062
Int. Cl.[6] G06F 3/14
U.S. Cl. 395—157 24 Claims



1. In a data processing display system having a display, a method for providing visual cues to a user comprising the steps of:
(a) displaying on said display a user interface having a plurality of objects;
(b) displaying on said display, in response to said user providing a first signal by inputting a help inquiry, a coach mark having at least one geometric shape to visually identify at least one of said objects on said user interface to said user,
wherein said coach mark is displayed on said user interface such that said coach mark is rendered over time to achieve the visual appearance of being animated and drawn free-hand on said user interface by a human being;
(c) displaying on said display an access window having a first working area and at least one access button function;
(d) selecting one of said at least one access button function;
(e) displaying a plurality of phrases in said first working area;
(f) selecting one of said displayed phrases; and
(g) displaying on said display a presentation window including instruction data related to said selected phrase.

5,488,686

DATA PROCESSING SYSTEM

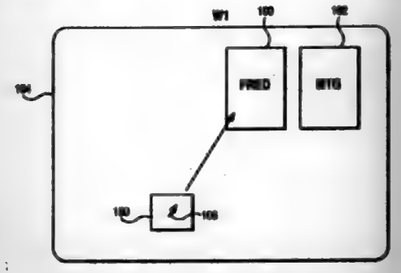
Alan S. Murphy, Hiltingbury, and Patricia Tustin, Locks Heath, both of, United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 13, 1992, Ser. No. 867,932

Claims priority, application United Kingdom, Jul. 13, 1991, 9115142

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—161 11 Claims



1. A data processing system with a plurality of workspaces for performing one or more tasks in response to user inputs, comprising:

(a) means for enabling communication between the plurality of workspaces;

(b) a screen object associated with each of said plurality of workspaces;

(c) a data structure for storing a list of user profile information for each user; and

(d) means for selecting a screen object by a user in a first of the plurality of workspaces, the screen object corresponding to a second of the plurality of workspaces, and initiating visual, audio or data communication between the user and the second workspace according to the user profile information stored in the data structure.

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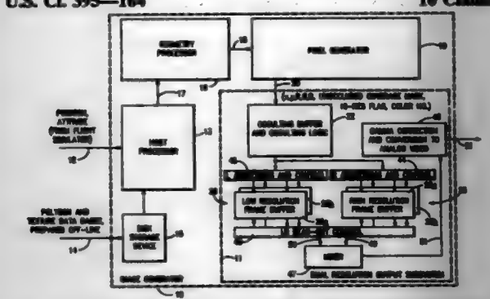
DUAL RESOLUTION OUTPUT SYSTEM FOR IMAGE GENERATORS

Henry H. Rich, Raleigh, N.C., assignor to Star Technologies, Inc., Sterling, Va.

Filed Sep. 17, 1992, Ser. No. 946,082

Int. Cl.[6] G06T *1/60*

U.S. Cl. 395—164 10 Claims



1. In an image generator for producing pixel data with occluded and unoccluded portions having pixel color components and to produce target pixels with a high resolution flag and a color number, a real time output system of said image generator comprising:

occulting logic means for receiving pixel data with unoccluded portions and with color components and with high resolution flag means and with color identifying numbers for generating output occluded pixels and pixel fragments;

high resolution frame buffer means and low resolution frame buffer means connected to receive said output pixels and pixel fragments of said occulting logic means and

mixer circuit means for performing color table, weighting and delay logic functions, and connected to receive output data of said high and low resolution frame buffer means for combining said output data for developing data for display;

wherein output pixels and pixel fragments from the occulting logic means are selectively provided to either the high resolution frame buffer means or the low resolution frame buffer means in response to said flag means.

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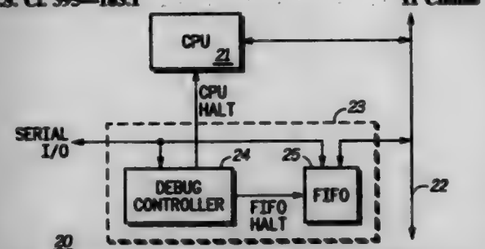
DATA PROCESSOR WITH REAL-TIME DIAGNOSTIC CAPABILITY

David R. Gonzales, and Gordon A. Carichner, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 30, 1994, Ser. No. 220,329

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—183.1 11 Claims



1. A data processor with real-time diagnostic capability, comprising:

a central processing unit (CPU) coupled to a bus, for continuously executing instructions during a normal operation mode, and for suspending instruction execution in response to a CPU halt signal;

a first-in, first-out memory (FIFO) coupled to a portion of said bus, for sequentially storing states of said portion of said bus at corresponding locations of a plurality of locations when a FIFO halt signal is inactive; and

a debug controller coupled to said CPU and to said FIFO, for activating both said CPU halt signal and said FIFO halt signal in response to an event condition in a first mode, and for activating said FIFO halt signal but keeping said CPU halt signal inactive in response to said event condition in a second mode,

wherein said plurality of locations of said FIFO are observable while said CPU is in said normal operation mode.

5,488,689

ROBOT OPERATION TRAINING SYSTEM

Kunitada Yamato, Kakogawa; Masato Fuji, Akashi, and Naohiro Fukada, Kakogawa, all of, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 996,610, Dec. 24, 1992, abandoned.

This application Sep. 26, 1994, Ser. No. 313,726

Claims priority, application Japan, Sep. 18, 1992, 4-250106

Int. Cl.[6] B25J *13/00;9/22*

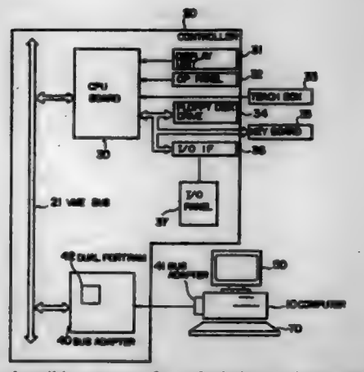
U.S. Cl. 395—99 9 Claims

1. A robot operation training system, comprising:

teaching data inputting means for inputting teaching data;

control means for receiving the teaching data and generating and sequentially outputting encoder command data to control an operation of a real robotic arm in response to the teaching data inputted through said teaching data inputting means;

display means for displaying visual model of simulated robot motion in animation responsive to the teaching data; and



picture describing means for calculating and outputting said visual model to be displayed on the display means, on the basis of the encoder command data sequentially outputted from said control means without connecting the real robotic arm, wherein said picture describing means, said teaching data inputting means and said control means comprise a real controller for the real robotic arm, and said picture describing means comprises personal computer.

5,488,690

COLOR VIDEO PRINTER WHICH ENABLES A PATTERN GENERATION PROCESS WHEN NO SYNCHRONIZING SIGNALS ARE DETECTED

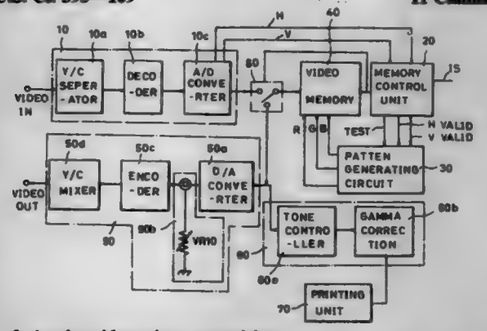
Won S. Cho, Kyungki, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 18, 1992, Ser. No. 992,765

Claims priority, application Rep. of Korea, Dec. 20, 1991, 23549/1991

Int. Cl.[6] G03G *15/01*

U.S. Cl. 395—109 11 Claims



1. A color video printer comprising:

first signal processing means for processing a video signal inputted therein to be storable and detecting synchronizing signals from the inputted video signal;

memory control means for outputting read and write signals as memory control signals and generating a predetermined color test control signal upon receiving no synchronizing signals from said first signal processing means;

pattern generating means being enabled by the color test control signal from said memory control means for outputting a video pattern signal;

video memory means for storing the video signal from said first signal processing means or the video pattern signal from said pattern generating means in response to the write signal from said memory control means and outputting the stored video signal or video pattern signal in response to the read signal from said memory control means;

second signal processing means for processing the video signal or the video pattern signal read from said video memory means to be displayable;

third signal processing means for processing the video signal or the video pattern signal read from said video memory means to be printable; and

printing means for printing a desired video based on an output signal from said third signal processing means.

5,488,691

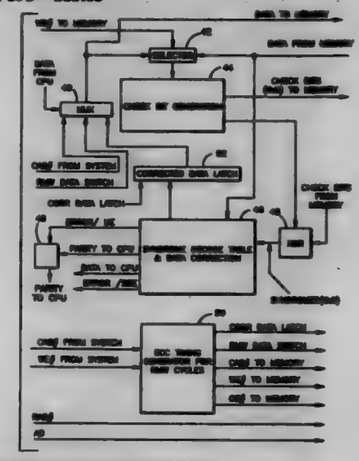
MEMORY CARD, COMPUTER SYSTEM AND METHOD OF OPERATION FOR DIFFERENTIATING THE USE OF READ-MODIFY-WRITE CYCLES IN OPERATING AND INITIALIZATION MODES

Daniel P. Fusco, Boca Raton, Fla.; Christopher M. Herring; Mark W. Kellogg, both of Essex Junction, Vt., and Jorge E. Lenta, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 17, 1993, Ser. No. 154,193

Int. Cl.[6] G06F *11/10*

U.S. Cl. 395—185.05 5 Claims



1. A computer system comprising:

a CPU;

at least one memory card interfaced with said CPU;

said said CPU and said card being:

configured to write and store multiple byte data words at a given address,

configured to write all of the bytes of said data word or write less than all the bytes of said word selectively to memory,

free of error correction code capabilities but capable of providing varying wait states for memory write operations,

configured to provide sufficient cycle time for logic elements provided on said card to perform a read-modify-write operation to memory;

said CPU and said card functioning together in an operating mode and an initialization mode in which read-modify-write cycles are used;

said card comprising:

check bit logic to generate check bits and write logic to write said data words and said associated check bits to said selected memory location;

detector logic to detect when less than all of the data bytes are to be rewritten to a selected address and to initiate a read-modify-write cycle;

read-modify-write logic to perform a read-modify-write cycle wherein (a) data bytes at the given address that are not to be rewritten are read from memory and multiplexed with bytes that are to be rewritten, (b) check bits are generated from multiplexed bytes and the multiplexed data bytes and (c) check bits are written to memory;

said read-modify-write logic including delay logic to generate a delay in the write cycle for a sufficient time to read said data bytes from memory, multiplex said read data bytes with the newly written data bytes and write the multiplexed data bytes and check bits to memory;

read logic to read the data bytes and check bits from memory;

error correction code logic to generate syndrome bits and correct all one bit errors when said CPU are in the operating mode; and

blocking logic to block reporting or correcting of any errors detected when said CPU and said card are in the initialization mode.

5,488,692

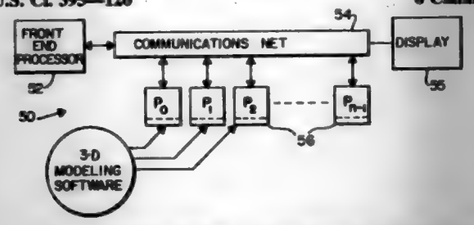
SYSTEM AND METHOD FOR REPRESENTING AND MANIPULATING THREE-DIMENSIONAL OBJECTS ON MASSIVELY PARALLEL ARCHITECTURES

Michael S. Karasick, Ridgefield, Conn., and David R. Strip, Albuquerque, N.M., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 641,471, Jan. 15, 1991, abandoned. This application Aug. 11, 1994, Ser. No. 289,181

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—120 **6 Claims**



1. A method for modelling a three-dimensional object that includes vertices, faces and edges, said method implemented on a parallel computing system which includes a front and processor for issuing modelling instructions and plural modelling processors responsive to said modelling instructions, each modelling processor having an assigned unique label, said method comprising the steps of:

storing directed-edge (d-edge) data structures in a plurality of said modelling processors, each d-edge having a label equal to the unique label of the modelling processor in which it is stored, a plurality of d-edges defining a face of said three-dimensional object, said plurality of d-edges sequentially valued, said face having a label equal to one of a sequentially valued d-edge, said data structure defining a d-edge with at least vertex descriptions of an associated edge of said face and a description of said face;

issuing an instruction to said modelling processors to model at least a face of said three-dimensional object, said instruction including a designation of said face;

enabling each said modelling processor to determine if a d-edge data structure having a label equal to the label of said face that is to be modeled, is stored therein; and

operating each said modelling processor which includes a d-edge data description equal to the label of said face, to execute, simultaneously with all other modelling processors including a d-edge data description equal to the label of said face, a modelling instruction with respect to each said stored d-edge data description stored therein.

5,488,693

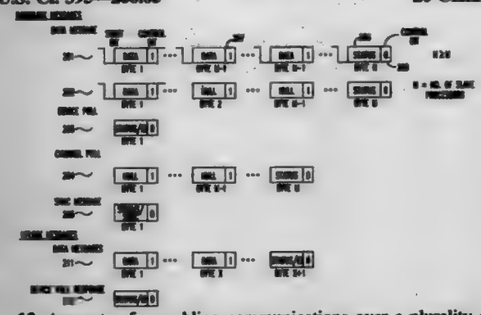
PROTOCOL WITH CONTROL BITS AND BYTES FOR CONTROLLING THE ORDER OF COMMUNICATIONS BETWEEN A MASTER PROCESSOR AND PLURAL SLAVE PROCESSORS

Warren B. Houck, Fair Haven; Vincent A. Illuzzi, Toms River; Mary E. Ricker, Hazlet, and Richard S. Vidil, Eatontown, all of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jun. 24, 1992, Ser. No. 903,304

Int. Cl.[6] H04B *3/00*

U.S. Cl. 395—200.05 **20 Claims**



12. Apparatus for enabling communications over a plurality of communication paths connected thereto, said apparatus comprising

means for receiving a downlink message over a first communication path, said downlink message including a plurality of information bytes, each byte except a last byte comprising a data portion followed by a control bit at a first state and said last byte comprising a status portion followed by a control bit at a second state;

means for monitoring a state of a third communication path during the reception of said downlink message;

means, responsive to a first state of said third path and an indication that said apparatus desires to send an uplink message, for establishing a second state on said third path during a predetermined unique byte of said received downlink message, the unique byte being associated with said apparatus; and

means for sending an uplink message over a second communication path after the complete reception of said downlink message as determined by said control bit at said second state in said last byte of said downlink message, said uplink message including at least one information byte, wherein each byte except a last byte comprises a data portion followed by a control bit at a first state bit and said last byte comprises a status portion followed by a control bit at a second state.

5,488,694

BROADCASTING HEADERS TO CONFIGURE PHYSICAL DEVICES INTERFACING A DATA BUS WITH A LOGICAL ASSIGNMENT AND TO EFFECT BLOCK DATA TRANSFERS BETWEEN THE CONFIGURED LOGICAL DEVICES

Mark P. McKee, Alameda; John Zapisek, Santa Clara; David M. Bulfer, Santa Clara; John M. Long, Santa Clara; John R. Nickolls, Santa Clara, and William T. Blank, Santa Clara, all of Calif., assignors to MasPar Computer Company, Sunnyvale, Calif.

Filed Aug. 28, 1992, Ser. No. 937,639

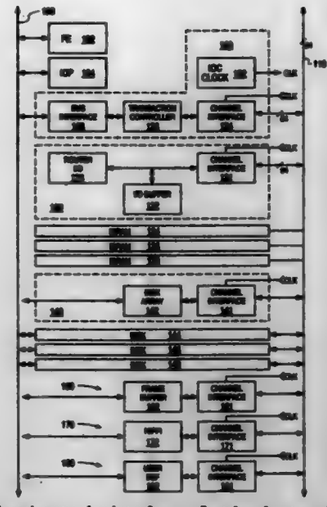
Int. Cl.[6] G06F *13/00;13/138*

U.S. Cl. 395—824 **21 Claims**

1. In a data processing system input/output ("I/O") channel, a method for effecting a block data transfer between physical devices coupled through respective interfaces to a data I/O bus, comprising the steps of:

assigning a unique physical address to each of the interfaces;

individually configuring a particular one of the interfaces by:



broadcasting to the interface a first header to select the particular interface in accordance with the physical address thereof for receipt of configuration data; and

subsequent to said first header broadcasting step, broadcasting configuration data, including a logical device assignment, to the interfaces;

wherein the particular interface acquires a configuration, including a logical device assignment, in accordance with the configuration data, and the interfaces other than the particular interface are not configured by the configuration data;

repeating said individual interface configuration step so that each of the interfaces are configured;

initiating an I/O transaction on the bus by placing a second header on the data I/O bus to select one or more of the physical devices as a source logical device in accordance with the logical device assignments of their respective configured interfaces, and one or more of the physical devices as a destination logical device in accordance with the logical device assignments of their respective configured interfaces, at least one of the source logical device and the destination logical device comprising a subset of at least two of the physical devices, and the second header identifying for each of the physical devices in the subset a schedule of mutually exclusive and repeated participation in the block data transfer; and

activating the source logical device and the destination logical device as established in the initiating step to autonomously achieve the block data transfer based upon the schedules.

5,488,695

VIDEO PERIPHERAL BOARD IN EXPANSION SLOT INDEPENDENTLY EXERCISING AS BUS MASTER CONTROL OVER SYSTEM BUS IN ORDER TO RELIEF CONTROL OF HOST COMPUTER

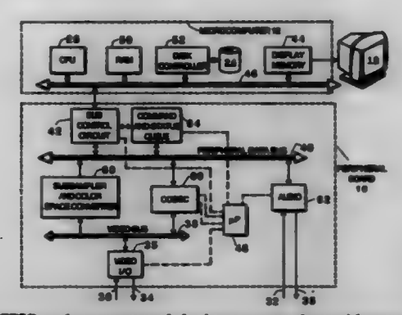
Daniel F. Cutter, Boxboro, Mass., assignor to Data Translation, Inc., Marlboro, Mass.

Continuation of Ser. No. 48,490, Apr. 16, 1993, abandoned. This application Mar. 16, 1995, Ser. No. 405,763

Int. Cl.[6] G06F *13/12;13/14*

U.S. Cl. 395—290 **25 Claims**

1. A video peripheral board having connections for an expansion slot of a general purpose computer for providing video I/O capabilities to said general purpose host computer, said general purpose computer having a system bus, data storage accessed by read and write operations over said system bus, and a central processing unit, said system bus being controllable by said central processing unit (CPU) or by an external device connected to said system bus, the video peripheral board comprising:



a video I/O port connected to a video device;

a bus interface circuit connected to said system bus of the host computer and to said video I/O port, said bus interface circuit including a bus master address generator that generates addresses of said storage for read and write operations over said system bus, a data buffer storing video data for transfer to or from said system bus, and bus control logic that provides and receives bus control signals to and from said system bus to effect read and write operations over said system bus independent of said central processing unit of said general purpose host computer, said bus interface circuit thereby being bus master of said system bus; and

a processor connected to control said video I/O port and said bus control logic of said bus interface circuit to effect transfer of video data between said video I/O port and said data buffer and transfer between said data buffer and said storage of the host computer at addresses generated by said bus master address generator, said video data passing through said video I/O port in real time wherein:

the video peripheral board has two or more data paths through the video peripheral board to said bus interface circuit, each said data path having two ends and a priority, at least one said data path being connected between said bus interface circuit and said video I/O port; and

said processor is configured to control said bus interface circuit and said data paths to effect real time transfers of data over said data paths, and to schedule completion of a transfer over a higher-priority one of said data paths in preference to a transfer over a lower-priority one of said data paths.

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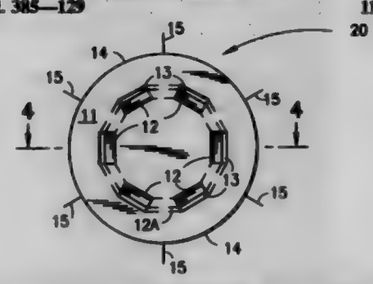
LIGHT - REFLECTING WAVEGUIDE ASSEMBLIES AND PROCESS

Kerry R. Brosnan, 3255 Madison Ave., Apt. #3, Bridgeport, Conn. 06606

Filed Mar. 28, 1995, Ser. No. 411,473

Int. Cl.[6] G02B *6/10*

U.S. Cl. 385—129 **11 Claims**



1. A light-reflecting waveguide illumination assembly comprising a thin waveguide sheet or panel having an upper surface and a lower surface enclosing a core! and being capable of transmitting light introduced through one or more edges of said core by internal

reflection, a plurality of reflective mirror surfaces within said core and extending diagonally therethrough at predetermined angles from the upper surface toward the lower surface, a plurality of optical fibers, one end of which is coupled with one or more edges of said sheet or panel, and a remote light-emission source which is coupled with the other end of said optical fibers to supply lightwaves through said fibers and through the core of said waveguide sheet or panel, each of said mirror surfaces being located within said core to reflect said lightwaves out of the plane of said core and through a common surface and in a common direction to illuminate an area adjacent to said sheet or panel.

5,488,697

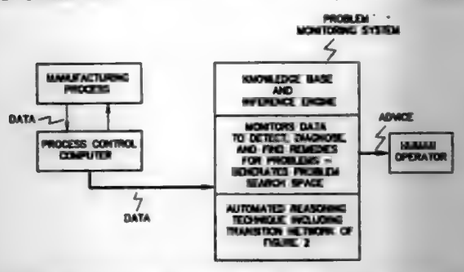
PROBLEM STATE MONITORING SYSTEM

William F. Kaemmerer, Minneapolis, Minn., and James R. Allard, Brookline, Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 898,642, Jun. 15, 1992, abandoned, which is a division of Ser. No. 433,401, Nov. 7, 1989, Pat. No. 5,193,143, which is a continuation-in-part of Ser. No. 363,374, Jun. 2, 1989, abandoned, which is a continuation of Ser. No. 143,898, Jan. 12, 1988, abandoned. This application Mar. 8, 1994, Ser. No. 208,065

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—51 **1 Claim**



1. An expert system for diagnosing and providing remedies for problems in a controlled system, said controlled system having a plurality of data points from which said problems may be determined and said expert system comprising a set of nodes, each node comprising at least four necessary elements:

a state holder means, having an indication of the state of the node, for communicating the state of the node to other nodes;

an immediate descendant tally means for holding a representation of state information of all direct descendant nodes relative to the node having said tally means, and for providing an indication of whether said direct descendant has been "confirmed" or "rejected" as a cause of said problem;

test means for determining whether said node has a problem by referencing an information holder;

algorithmic mechanism means for performing the activities of said node; and,

at least a select one of the following additional elements:

an advice list means, having a list of advice members, for solving a problem and providing a flag for each member of the advice list indicative of whether a particular advice member has been given advice currently,

a communications link means for transferring advice to an entity that monitors or controls the controlled system, and

an information holder means connected to an information generating device for indicating the state of the information generating device; and wherein the algorithmic mechanism means element of each node comprises means for:

A. Determining whether the problem has been remedied; if so, transitioning to a "Resolved" state,

B. Otherwise, if new direct descendants of the node can be generated, adding them to said tally means and transitioning the node to a "Pending" state,

C. Otherwise, if more than zero of the node's descendants are not either in a "Confirmed" or a "Rejected" state, no transitioning is made,

D. Otherwise, if the node has no descendants in a "Confirmed" state, then if the node has an advice list which contains some remedial advice associated with said node, transitioning the node to a "Ready" state; else transitioning the node to a "No-Remedy" state,

E. Otherwise, if more than zero of the nodes which are in the "Confirmed" state are furthermore in either a "Fixed" or a "Can't-be-Fixed" state, transitioning the node to a "Diagnosed" state,

F. Otherwise, if the node has direct descendants in the "Can't-be-Fixed" state, and the node is not already transitioned to the "No-Remedy" state, transitioning said node to the "No-Remedy" state; if not then transitioning said node to an "Uncle" state, and,

G. Otherwise, if the advice list contains some remedial advice associated with this node, transitioning the node to the "Ready" state unless the node is not already transitioned to the "No-Remedy" state, in which case transitioning the node to the "No-Remedy" state; otherwise, transitioning the node to the "Uncle" state.

5,488,698

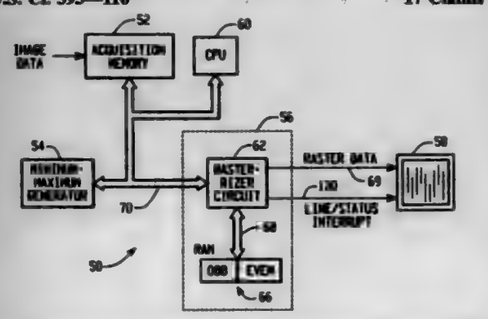
RASTERIZATION OF LINE SEGMENTS USING DIFFERENCE VECTORS

David C. Oliver, 11146 Vance Johnson #2503, San Antonio, Tex. 78230-2560, and Michael J. Petrillo, 1240 Waldo Way, Twinsburg, Ohio 44087

Filed Nov. 5, 1992, Ser. No. 972,113

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—110 **17 Claims**



1. An apparatus for processing image data comprising a plurality of groups of data values, said apparatus comprising:

memory means for storing difference vectors for controlling an output of a display;

means for generating each of said difference vectors as a function of a minimum data value and a maximum data value included within a corresponding group of said data values; and

means for outputting said difference vectors from said memory means to produce an image on a display, said display comprising an M-by-N array of display elements, and said difference vectors comprising M difference vectors each comprising N vector elements, said means for generating comprising means for incrementing a value of a vector element corresponding to said minimum data value in said difference vector, and means for decrementing a value of a vector element corresponding to said maximum data value in said difference vector.

5,488,699

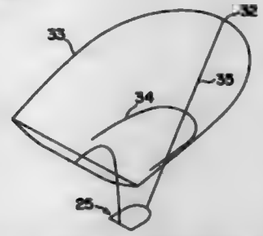
METHOD FOR GENERATING A COMPUTERIZED THREE DIMENSIONAL MODEL OF A SHOE HEEL AND A TWO DIMENSIONAL COVER FOR THE SAME

Joseph R. Hanson, Jr., Town and Country, Mo., assignor to Brown Group, Inc., St. Louis, Mo.

Filed May 24, 1993, Ser. No. 65,752

Int. Cl.[6] G06T *17/00*

U.S. Cl. 395—119 **4 Claims**



1. A method for generating a computerized three dimensional model of a shoe heel having a pinch curve, a right-hand breast curve, a left hand breast curve, a seat surface, a breast surface, a back surface, and a toplift surface, comprising the steps of:

a) digitizing into a computer a heel toplift pattern;

b) digitizing into a computer a heel back profile pattern;

c) digitizing into a computer a heel breast profile pattern;

d) entering into a computer a table of values consisting of a heel size, a wedge angle, a heel back height, a heel seat length, a top length, a top width, a shrink percentage, a heel pinch sealing factor, and a pinch percentage;

e) picking a heel seat pattern from a stored look-up table of seat patterns;

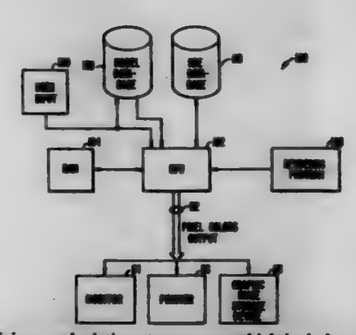
f) displaying in a computer said toplift pattern, heel back profile pattern, heel breast profile pattern, and heel seat pattern in pre-defined top, side, front, and isometric views;

g) generating a pinch curve, said pinch curve being a copy of the toplift pattern, scaled by the pinch scaling factor, and placed on the back profile pattern at a point which is the pinch percentage multiplied by the computer calculated length of the back profile curve;

h) computer generating a right-hand breast curve and a left-hand breast curve connecting the ends of the seat pattern, the pinch curve, and the toplift curve;

i) computer generating a seat surface, a breast surface, a back surface, and a toplift surface, said surfaces being directed by said seat pattern, toplift pattern, right-hand breast curve, left-hand breast curve, and pinch curve; and

j) computer generating toolpath information for machine cutting a model of a shoe heel.



initializing a calculation storage area which includes storage for each of a plurality of calculation results, a calculation result including at least an indication of an incident light ray color, an incident light ray direction, and a reflection type selected from a specular reflection type and a diffuse reflection type;

calculating, for each unit area, a color value, said step of calculating a color value comprising the steps of:

tracing at least one ray from said view point through said unit area to intersect a shading point to be shaded on a surface of an object in the space, or to intersect a point on a background surface if no object is intersected by said traced ray;

identifying light rays incident on said shading point, wherein said light rays are identified either by determining which objects and light sources cast light rays onto said shading point, or by determining which objects and light sources provide a specular reflection of light which is incident on said shading point and retrieving a saved indication of diffuse reflections incident on said shading point;

saving an indication of said identified light rays in said calculation storage area, saving at least an indication of an incident light color and direction, and saving an indication of a reflection type for each identified light ray if more than one reflection type is saved, said saving step performed when a new indication is calculated;

calculating a reflected light which would reflect off said intersected surface at said shading point in a direction of an origin of said traced ray when illuminated by said identified light rays, including at least one calculation which is a function of incident light direction at least when the reflection type is a specular reflection type; and

assigning a color of said reflected light in said direction of said traced ray to the pixel associated with said unit area, or a combination of colors of reflected light in the direction of multiple rays if multiple rays are used.

5,488,700

IMAGE RENDERING SYSTEM WITH LOCAL, ADAPTIVE ESTIMATION OF INCIDENT DIFFUSE ENERGY

Andrew Glassner, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 30, 1993, Ser. No. 100,087

Int. Cl.[6] G06T *15/50*

U.S. Cl. 395—126 **12 Claims**

1. A method for coloring pixels of a pixelated display to present a simulated image of a view of objects illuminated by light from light sources and light reflected off the objects, the method comprising the steps of:

defining a space;

positioning objects and light sources in said space;

positioning a view point in said space;

positioning a view surface in said space;

dividing said view surface into a plurality of unit areas;

associating each unit area of said plurality of unit areas with a pixel of the pixelated display;

5,488,701

IN LOG SPARING FOR LOG STRUCTURED ARRAYS

James T. Brady, and Jaishankar M. Menon, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 17, 1994, Ser. No. 340,977

Int. Cl.[6] G06F *11/34*

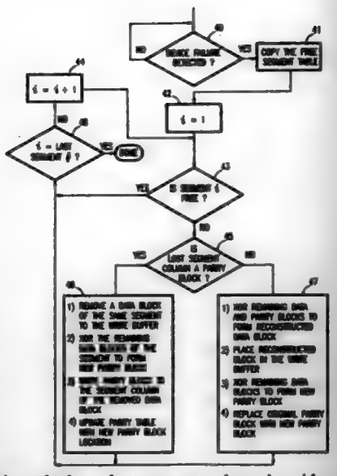
U.S. Cl. 395—182.04 **31 Claims**

1. In a log structured array (LSA) comprising a plurality of storage devices configured in a plurality of segments, wherein a plurality of parity groups are distributed to some of said segments, each parity group comprising a plurality of data block and a parity block, and wherein others of said segments are free, a method for restoring lost ones of said blocks, comprising the steps of:

detecting a failure in one of said plurality of storage devices;

copying a free segment table to a temporary storage to preserve the state of said free segment table at the time of said failure;

testing each segment in said array against said copy of said free segment table, to determine if said segment stores a parity group;



determining whether a lost segment column in said parity group is a data block or a parity block;

generating a reconstructed data block, if said lost column is determined to be a data block;

generating a new parity block from data blocks in said parity group; and

storing said reconstructed data block and said new parity block in free segments in said array.

5,488,702

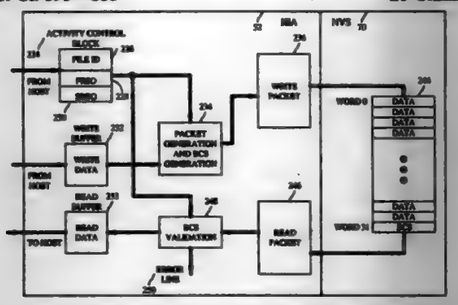
DATA BLOCK CHECK SEQUENCE GENERATION AND VALIDATION IN A FILE CACHE SYSTEM

Larry L. Byers, Appley Valley; Josebo M. Desubijana, Minneapolis, and Wayne A. Michaelson, Circle Pines, all of Minn., assignors to UNISYS Corporation, Blue Bell, Pa.

Filed Apr. 26, 1994, Ser. No. 233,199

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—186 **20 Claims**



1. A system for detecting errors occurring during storage and retrieval of file information of a file between a processor and a mass storage device, having a unit of data transfer between the processor and the mass storage device of a block of file information of a predetermined number of 32-bit words, each word containing two 16-bit half-words, the storage of file information being requested by a write requester, and the retrieval of file information being requested by a read requester, identification information of the file being specified by a plurality of 16-bit half-words, comprising:

generation means coupled to the mass storage device for generating a key representing a selected block of a file, wherein said key is generated from said selected block of said file, the identification information of said file, and identification information of said selected block supplied by the write requester, and for storing said key and said selected block of said file in the mass storage device: and

validation means coupled to the mass storage device, including retrieval means for retrieving said selected block of said file and said key from the mass storage device, generating means for generating a new key representing said selected block of said file, wherein said new key is generated from said selected block retrieved from the mass storage device, the identification information of said file, and said identification information of said selected block supplied by the read requester, said validation means for comparing said new key to said key retrieved from the mass storage device, and activating an error signal when said new key does not match said key.

5,488,703

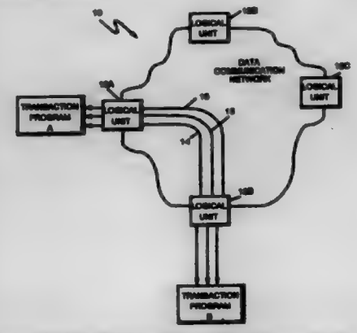
SYSTEM FOR ESTABLISHING AND PERFORMING MULTIPLE CONVERSATIONS SIMULTANEOUSLY BETWEEN TRANSACTION PROGRAMS THROUGH LOGICAL UNITS

Marsha E. Ferree, Raleigh, and James P. Gray, Chapel Hill, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 1, 1992, Ser. No. 876,945

Int. Cl.[6] G06F *15/04*

U.S. Cl. 395—200.12 **10 Claims**



1. A method of establishing a plurality of conversations between a single instance of a first transaction program and a single instance of a second transaction program over a communication network which includes at least first and second logical units (LUs) connected, respectively, to said first and second transaction programs and to each other by a plurality of LU-LU communication sessions over which electronic signal representing both data and control are exchanged under control of said transaction programs, said method comprising steps of:

establishing a communication link between a single instance of a first transaction program and a single instance of a second transaction program; and

initiating a first conversation between said single instance of said first transaction program and said single instance of said second transaction program over a first LU-LU communication session using said first and second LUs so that data and control signals may be exchanged therebetween; and

initiating a second conversation between said single instance of said first transaction program and said single instance of said second transaction program over a second LU-LU communication session using said first and second LUs so that data and control signals may be exchanged between said single instance of said first transaction program and said single instance of said second transaction program, over said first and second LU-LU communication sessions; and

wherein said first and second conversations occur simultaneously over said LU-LU communications sessions.

5,488,704

SPEECH CODEC

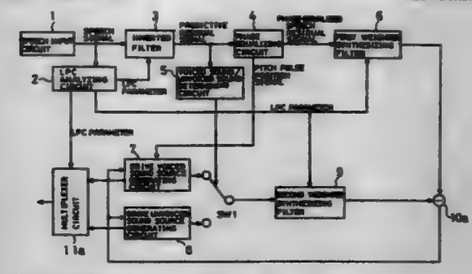
Mitsuo Fujimoto, Nara, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Mar. 15, 1993, Ser. No. 31,908

Claims priority, application Japan, Mar. 16, 1992, 4-058078; Dec. 28, 1992, 4-348880

Int. Cl.[6] G10L *9/14*

U.S. Cl. 395—228 **18 Claims**



1. A speech codec, comprising:

pitch extracting means for extracting a pitch-scale on the basis of a signal of an inputted speech;

voiced sound/unvoiced sound determinating means for determinating whether said inputted speech is one of a voiced sound speech and unvoiced sound speech on the basis of the signal of said inputted speech;

drive sound source generating means for generating a drive sound source signal on the basis of said pitch-scale and a determination result of said voiced sound/unvoiced sound determinating means, said drive sound source generating means including drive voiced sound source generating means for generating drive voiced sound source signal when said inputted speech is the voiced sound speech, and unvoiced sound source generating means for generating a drive unvoiced sound source signal when said inputted speech is the unvoiced sound speech, wherein said drive voiced sound source generating means includes pulse pattern generating means for generating a pulse pattern signal corresponding to said pitch-scale; first adaptive code book means for storing drive voiced sound source signals within a predetermined past time period; first noise code book means for storing in advance a noise signal; and first generating means for generating the drive voiced sound source signal on the basis of said pulse pattern signal, an output of said first adaptive code book means and an output of said first noise code book means;

speech synthesizing means for outputting a synthesized speech signal on the basis of one of said drive voiced sound source signal and said drive unvoiced sound source signal generated by said drive sound source generating means; and

code outputting means for selectively outputting a code corresponding to one of said drive voiced sound source signal and said drive unvoiced sound source signal at a timing that an error between said synthesized speech signal and the signal of said inputted speech becomes minimum by comparing the synthesized speech signal and the signal of said inputted speech.

5,488,705

APPARATUS FOR CONNECTING COMPUTER DEVICES

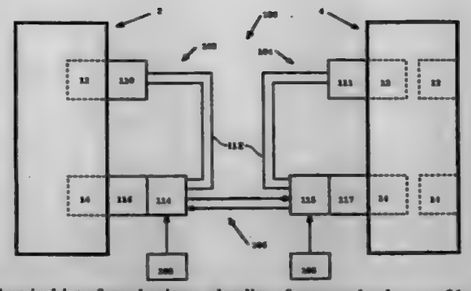
Richard S. LaBarbera, Roanoke, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 919,649, Jul. 24, 1992, abandoned. This application Jan. 31, 1995, Ser. No. 381,468

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—309 **32 Claims**

1. An apparatus for use in connecting a first computer device and a second computer device through a dual line cable assembly, the first and second computer devices each having first and second electrical interfaces having a plurality of rows and columns of bus and tag inputs and outputs, comprising:



a first bus and tag sub-assembly including:

a first connector for mating with the first interface in the first device,

a first multi-line cable assembly having a first end and a second end, the first end connected to the first connector,

a first converter adapter connected to the second end of the first multi-line cable assembly and being adapted for connection to the dual line cable assembly,

a second connector connected to the first converter adapter and being mated with the second interface in the first device, and

the first converter adapter including integrated circuit means for (1) multiplexing and then serializing parallel bus and tag information received from the first and second interfaces in the first device and sending such multiplexed serial information over a first line of the dual line cable assembly to the second computer device and (2) deserializing and then demultiplexing serial bus and tag information received through a second line of the dual line cable assembly and sending such parallel and demultiplexed information to the first and second interfaces of the first device.

5,488,706

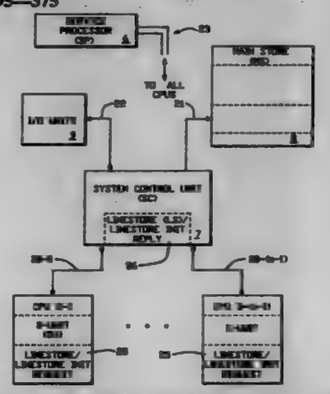
RETRY REQUEST SYSTEM IN A PIPELINE DATA PROCESSING SYSTEM WHERE EACH REQUESTING UNIT PRESERVES THE ORDER OF REQUESTS

Kent Wendorf, San Jose; Ronald N. Hilton, Cupertino; Nicholas Y. Pang, San Mateo; Jeffrey L. Baker, and Khan X. Nguyen, both of Milpitas, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Dec. 18, 1992, Ser. No. 993,082

Int. Cl.[6] G06F *9/30;9/28*

U.S. Cl. 395—375 **11 Claims**



1. A retry request control system in a data processing system, said data processing system having a pipeline architecture where the pipeline processes a plurality of overlapping pipeline flows simultaneously, said control system comprising:

first means in a requesting unit within said data processing system for issuing a request during a request flow of said pipeline and for identifying said request as an initial request if no pending requests remain in the pipeline or awaiting a reply from a previously issued request or otherwise as a non initial request;

second means in a control unit within said data processing system for issuing during a reply flow of said pipeline a restart pipeline reply if a request issued during said request flow fails or otherwise a successful reply;

third means in said requesting unit in response to said restart pipeline for causing said request which failed to be reissued by said first means as an initial request;

fourth means in said requesting unit for inhibiting the storage of the results of all requests issued by said first means between the time said first means first issued said failed request and the time said first means reissues said failed request as an initial request; and

said requesting unit preserving the order of the requests issued by said requesting unit when a failed request issued by said requesting unit is retried by said requesting unit independently of said control unit.

5,488,707

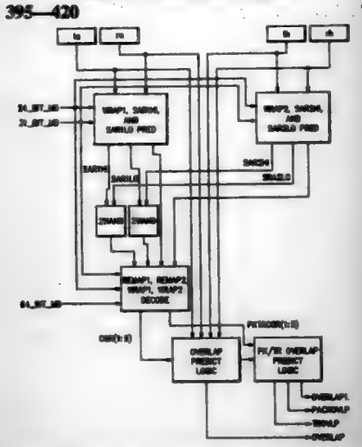
APPARATUS FOR PREDICTING OVERLAPPED STORAGE OPERANDS FOR MOVE CHARACTER

James E. Phillips, Binghamton, and Stamatis Vassiliadis, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 28, 1992, Ser. No. 920,941

Int. Cl.[6] G06F *9/34;12/06*

U.S. Cl. 395—420 **7 Claims**



1. A system to predict destructive overlap between a first operand and a second operand stored in a memory, said first operand including a first base address and a displacement from the first base address and said second storage operand including a second base address and a displacement from the second base address, comprising in combination:

first means responsive to said first base address and to said displacement from the first base address to detect a wrap condition of said first operand in said memory and to detect the presence of said first operand in a high block of said memory;

second means responsive to said second base address and to said displacement from the second base address to detect a wrap condition of said second operand in said memory and to detect the presence of said second operand in a low block of said memory;

means responsive to said first means and said second means to generate an overlap correction factor in predicting a destructive overlap between said first operand and said second operand;

a storage operand overlap predictor responsive to said first base address, said displacement from said first base address, said second base address, said displacement from said second base address, and said overlap correction factor to generate an output indicative of a destructive overlap between said first operand and said second operand.

5,488,708

MEMORY MANAGEMENT IN AN IMAGE PROCESSING APPARATUS WITH DETACHABLE MEMORY

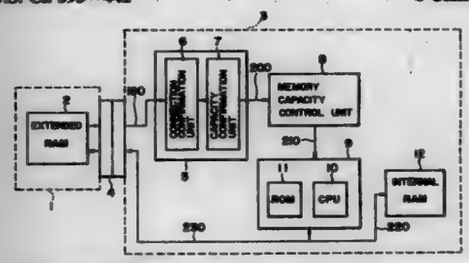
Masao Hayashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 659,687, Feb. 25, 1991, abandoned. This application Mar. 14, 1994, Ser. No. 209,375

Claims priority, application Japan, Mar. 5, 1990, 2-051648

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—442 **6 Claims**



1. An information processing apparatus which performs a plurality of processings, comprising:

internal memory means;

first definition means for defining areas available for each of the plurality of processings, respectively, in said internal memory means;

connection means for detachably connecting an expansion memory to said apparatus;

detection means for detecting presence or absence of the expansion memory to be connected to said apparatus;

second definition means for defining, in the expansion memory, a fixed size area available for a predetermined one of the plurality of processings and additional areas available for each of the plurality of processing other than the predetermined one, respectively, in response to the detection of the presence of the expansion memory by said detection means; and

processing means for performing each of the plurality of processings of information by utilizing the areas available for respective processings defined by said first definition means in the internal memory means, and by further utilizing the areas in the expansion memory available for the respective processing defined by said second definition means if the expansion memory is connected to said apparatus.

5,488,709

CACHE INCLUDING DECOUPLING REGISTER CIRCUITS

Alfred K. Chan, Milpitas, Calif., assignor to MOS Electronics, Corp., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 546,071, Jun. 27, 1990, abandoned. This application Apr. 1, 1991, Ser. No. 678,912

Int. Cl.[6] G06F *13/00;13/28*

U.S. Cl. 395—445 **26 Claims**

1. A cache memory apparatus comprising:

a random access memory;

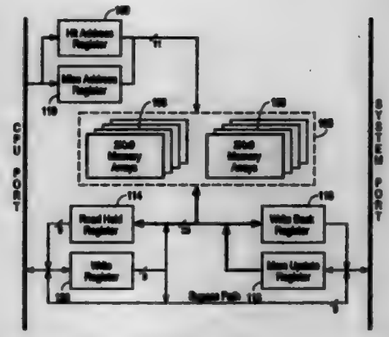
a host port;

a system port;

a memory write register for buffering first data received from said host port and selectively providing the first data to one of said random access memory, said system port, and said random access memory and said system port, said memory write register being coupled between said host port and said random access memory and between said host port and said system port; and

a write back register for holding second data received from said random access memory and selectively providing the second data to said system port, said write back register being coupled between said random access memory and said system port;

wherein the buffering and selective providing of the first data to said random access memory and the holding and selective providing of the second data to said system port allows memory accesses at said host port to be decoupled from memory accesses at said system port.



5,488,710

CACHE MEMORY AND DATA PROCESSOR INCLUDING INSTRUCTION LENGTH DECODING CIRCUITRY FOR SIMULTANEOUSLY DECODING A PLURALITY OF VARIABLE LENGTH INSTRUCTIONS

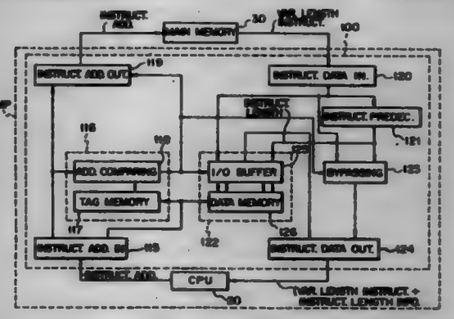
Taiso Sato, and Atsushi Fujihira, both of Kawasaki, Japan, assignors to Fujitsu Limited

Filed Feb. 10, 1992, Ser. No. 833,412

Claims priority, application Japan, Feb. 8, 1991, 3-016716; Feb. 13, 1991, 3-019849

Int. Cl.[6] G06F *12/04;13/00;9/30*

U.S. Cl. 395—452 **14 Claims**



1. A cache memory for storing at least one variable length instruction from a memory and outputting stored information to control means, the cache memory comprising:

instruction length decoding means for decoding an instruction length of the variable length instruction from the memory; and

instruction storing means for storing the variable length instruction from the memory and corresponding instruction length information from the instruction length decoding means, and outputting the variable length instruction and the corresponding instruction length information thereof to the control means, the instruction storing means comprising:

memory means for storing the variable length instruction output from the memory and the corresponding instruction length information from the instruction length decoding means; and

means for reading an instruction and corresponding instruction length information from the memory means when a cache hit occurs indicating the instruction and the corresponding instruction length information are in said memory means and transmitting the instruction and corresponding instruction length information from the memory means to the control means, and for receiving the instruction output from the memory and the corresponding instruction length information from the instruction length decoding means when a cache miss occurs indicating the instruction and the corresponding instruction length information are not in said memory means and writing the received instruction and corresponding instruction length information into the memory means.

5,488,711

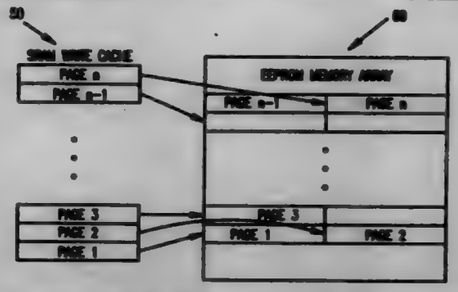
SERIAL EEPROM DEVICE AND ASSOCIATED METHOD FOR REDUCING DATA LOAD TIME USING A PAGE MODE WRITE CACHE

Kent D. Hewitt, Tempe; Samuel E. Alexander, Gilbert, and Richard J. Fisher, Phoenix, all of Ariz., assignors to Microchip Technology Incorporated, Chandler, Ariz.

Filed Apr. 1, 1993, Ser. No. 41,876

Int. Cl.[6] G06F *13/28;13/36;* G11C *16/04*

U.S. Cl. 395—430 **5 Claims**



1. A serial EEPROM (electrically erasable programmable read only memory) device having an internal memory array to be written by data sent from a controller on a bus used to carry other data and instructions when the controller is performing other tasks, comprising:

SRAM (static random access memory) write cache means for receiving a burst of data from the controller on the bus, and for storing the received burst of data sequentially and grouped in a plurality of pages,

the internal memory array having a plurality of rows of memory cells for storing data written therein from said SRAM write cache means,

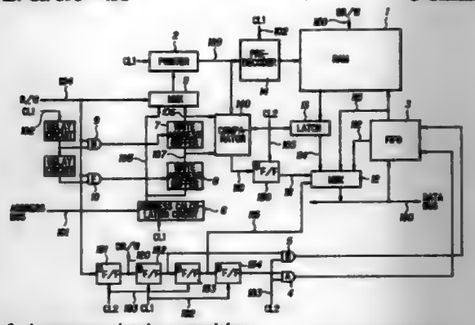
whereby when the internal memory array is being written sequentially from the pages of the SRAM write cache means after all data in the burst of data has been loaded into the SRAM write cache means, the bus is available to carry other data and instructions to permit the controller to perform other processing tasks, and

means for writing the burst of data received by the SRAM write cache means to the memory array of the device in page by page sequence, each page having a size equal to that of the other pages of the SRAM write cache means which allows all of the data contained in a precise integral number of pages of the SRAM write cache means to be stored in a corresponding row of the internal memory array.

5,488,712
MEMORY CIRCUIT WITH PIPELINE PROCESSING

Toyoo Kiuchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1991, Ser. No. 816,396
Claims priority, application Japan, Dec. 28, 1990, 2-417522
Int. Cl.[6] G06F 13/16;5/06; G11C 7/00
U.S. Cl. 395—431 3 Claims



1. A memory circuit, comprising:

a first-in, first-out (FIFO) type buffer circuit provided between a random access memory and a system data bus, said FIFO type buffer circuit holding data successively supplied from said system data bus in a data writing mode;

an address calculation circuit for calculating an address in accordance with data on an address bus;

an address pointer holding an address for designating an address of said random access memory;

a first selection circuit for selecting one of a read data bus connected to said random access memory and a data bus connected to said FIFO type buffer circuit in response to first and second selection signals;

a shift circuit for holding an address, said shift circuit being connected to said address calculation circuit;

a second selection circuit, connected to said address pointer, for selecting one of an address bus connected to said address calculation circuit and an address bus connected to said shift circuit in response to a read/write control signal;

a circuit for generating a mode designating signal supplied to said random access memory, a first control signal supplied to said FIFO type buffer circuit, said first selection signal supplied to said first selection circuit, and a second control signal supplied to said shift circuit, respectively, in response to said read/write control signal; and

a comparison circuit for comparing said address of said shift circuit and said address of said address pointer to generate said second selection signal supplied to said first selection circuit,

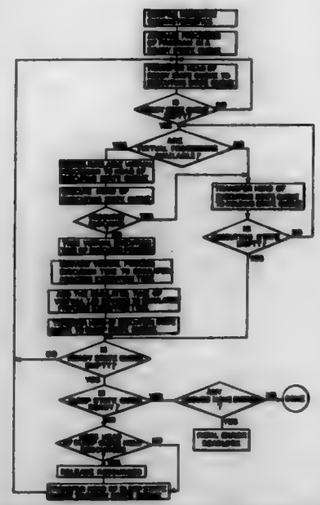
wherein said circuit for generating generates said mode designating signal and said first selection signal by delaying said read/write control signal, said first control signal by logic calculation of a delayed signal which is obtained by delaying said read/write control signal, and said second control signal to be obtained by selectively masking a clock signal.

5,488,713
COMPUTER SIMULATION TECHNIQUE FOR PREDICTING PROGRAM PERFORMANCE

Richard L. Norten, and Karen J. Norton, both of Colorado Springs, Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 457,325, Dec. 27, 1989, abandoned.
This application Jul. 28, 1993, Ser. No. 98,757
Int. Cl.[6] G06F 9/455
U.S. Cl. 395—500 25 Claims

1. A method for evaluating the execution of a computer program designed to execute on a target computer system using a host computer system having a single processor unit to simulate said target computer system and execute said computer program, comprising the steps of:



configuring system characteristics for said target computer system including characteristics of simulated processors and simulated I/O devices, said target system having a single processor configuration according to one user defined selection and said target system having a multiple processor configuration according to another user defined selection;

executing component processes of said computer program on said host computer with assigned ones of said simulated processors and simulated I/O devices according to said system characteristics for said target computer system;

measuring the virtual process execution time of each of said component processes on said single processor of said host computer system for each of said executed component processes;

converting the measured virtual process execution time of each of said component processes to simulated process execution time proportional to the ratio of the speed of each corresponding one of said simulated processors to the speed of said single processor of said host computer system;

adding the simulated time of each corresponding one of said simulated I/O devices to said simulated process execution time for each of said executed component processes; and

advancing simulated program execution time by said simulated process execution time of each of said executed component processes according to the simulated concurrence of execution of each of said component processes with other ones of said component processes.

5,488,714
COMPUTER PROGRAM ANALYZER FOR ADAPTING COMPUTER PROGRAMS TO DIFFERENT ARCHITECTURES

Wendy C. Skidmore, Wayne, Pa., assignor to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 955,226, Oct. 1, 1992, abandoned, which is a continuation of Ser. No. 527,859, May 23, 1990, abandoned. This application Aug. 25, 1993, Ser. No. 112,631
Int. Cl.[6] G06F 3/00
U.S. Cl. 395—500 12 Claims

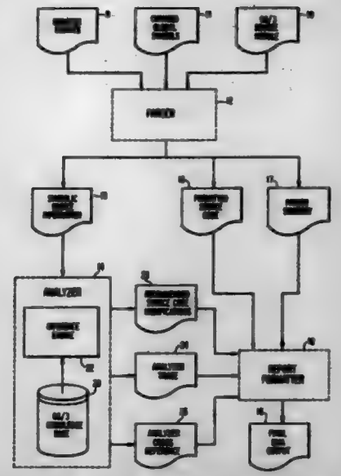
1. A computer program analyzer for aiding a computer programmer in modifying a computer program to run on a different computer architecture than an architecture for which the program was originally written comprising;

parser means for receiving a computer program in source code form and generating symbolic source information having source code lines, said source information being organized into hierarchical data structures which partition all source code lines into homogeneous classes characterized by function or instruction type;

a knowledge base containing structures for representing said source code and information on conversion rules for modifying said source code for said different computer architecture;

an inference engine connected to said parser means and knowledge base for receiving said organized symbolic source information and selectively retrieving said conversion rules for applying said conversion rules to said symbolic source information and for generating outputs including recommendations for source code modification, a trace of rules used in arriving at said recommendations and a cross reference of all symbol names used on source lines which have been cited for change; and

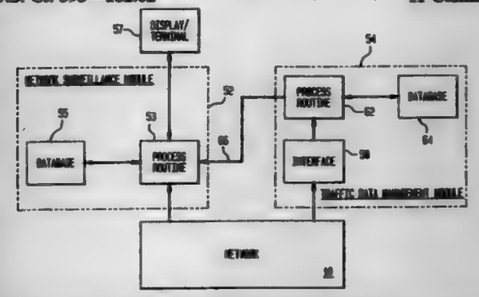
report formatter means connected to said parser means for receiving said organized symbolic source information and to said inference engine for receiving said recommendations, trace and cross reference for generating a report of recommendations for source code modification for use by said programmer.



5,488,715
PROCESS FOR INTEGRATED TRAFFIC DATA MANAGEMENT AND NETWORK SURVEILLANCE IN COMMUNICATIONS NETWORKS

Paul F. Wainwright, Monmouth, N.J., assignor to AT&T Corp., Murray Hill, N.J.

Filed Aug. 1, 1994, Ser. No. 284,019
Int. Cl.[6] G06F 11/34
U.S. Cl. 395—182.02 11 Claims



1. A method for prioritizing maintenance problems in a communications network having a plurality of network elements, comprising:

interfacing with the network elements to gather in real-time and at predetermined time intervals, traffic data corresponding to measured levels of utilization of the plural network elements;

storing said gathered traffic data in a database for subsequent analysis by network planners;

processing said stored traffic data by comparing utilization level measurements obtained during said interfacing step with a predetermined range of acceptable values in order to detect first and second measurements outside of said predetermined range;

said processing step generating first and second traffic data exception messages corresponding to first and second detected measurements outside of said range, said first traffic data exception message indicative of a first traffic abnormality having a first traffic affecting severity level, and said second traffic data exception message indicative of a second traffic abnormality having a second traffic affecting severity level;

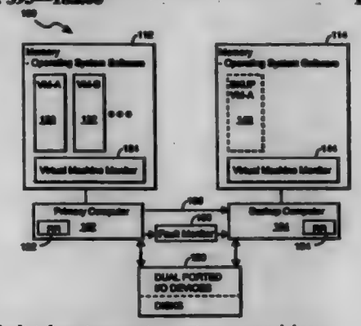
comparing, in said processing step, said first traffic affecting severity level to said second traffic affecting severity level and generating a comparison output; and

outputting to a message center said first and second traffic data exception messages along with a representation of the traffic affecting severity levels associated therewith and said comparison output, so as to provide maintenance personnel with a priority of maintenance problems requiring repair.

5,488,716
FAULT TOLERANT COMPUTER SYSTEM WITH SHADOW VIRTUAL PROCESSOR

Fred B. Schneider, Ithaca, N.Y.; Butler Lampson, Cambridge; Edward Bulkovich, Acton, both of Mass., and David Thiel, Colorado Springs, Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 783,519, Oct. 28, 1991, abandoned.
This application Jan. 14, 1994, Ser. No. 182,311
Int. Cl.[6] G06F 11/34
U.S. Cl. 395—182.08 16 Claims



5. A fault tolerant computer system, comprising:

a primary computer;

a backup computer coupled to said primary computer for communication of messages therebetween; said primary and backup computers each executing a substantially identical stream of instructions;

a fault detector coupled to said primary computer and said backup computer for sending a fault message to said backup computer when said primary computer fails;

said primary computer including:

primary interrupt/trap buffer means for trapping and buffering all interrupts and traps associated with operation of said primary computer, for sending copies of said interrupts to said backup computer, and for delivering said buffered interrupts and traps to said primary computer at predefined points in said stream of instructions executed by said primary computer; and

primary epoch control means for sending a control message to said backup computer each time said primary computer reaches one of said predefined points in said stream of

instructions, wherein said control message indicates which instructions the primary computer has just executed;

said backup computer including:

backup interrupt/trap buffer means for trapping and buffering all traps associated with operation of said backup computer as well as said interrupts sent by said primary computer, and for delivering said buffered interrupts and traps to said backup computer at predefined points in said stream of instructions executed by said backup computer;

backup epoch control means for stopping execution of said stream of instructions by said backup computer at each of said predefined points until said backup computer receives the control message indicating that said primary computer has completed execution of said stream of instructions through a next one of said predefined points in said stream of instructions after the predefined point at which said backup computer is stopped, such that said backup computer's execution of said stream of instructions always lags behind the primary computer's execution of said stream of instructions.

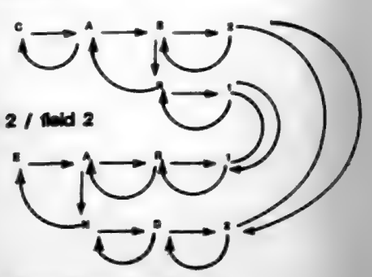
5,488,717

MTREE DATA STRUCTURE FOR STORAGE, INDEXING AND RETRIEVAL OF INFORMATION

Seana Gibson, and Kerr Gibson, both of Columbus, Ohio, assignors to 1st Desk Systems, Inc., Medway, Mass.

Filed Jul. 6, 1992, Ser. No. 909,170
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **21 Claims**

Mtree 1 / field 1



Mtree 2 / field 2

11. A computation system comprising:

(a) an architecture including a central processing unit, a memory means and an operating system;

(b) said operating system being programmed in a machine code language;

(c) a linker for combining a first input and a second input;

(d) a text editor for said operating system to input data units composed of data elements for generation of a source code;

(e) said source code being in a higher level language than said machine code language;

(f) said central processing unit establishing in said memory means a plurality of trees of nodes that are interrelated by a plurality of distributions of pointers;

(g) each of said trees of nodes including predecessor nodes and successor nodes;

(h) each of said distributions of pointers including progressions of next pointers and alternate pointers;

(i) said central processing unit accessing progressions of said nodes in correspondence with progressions of elements of coded data;

(j) each of said progressions of nodes being associated with at least one index, wherein said index gives said progression of nodes the means (1) to locate a progression of nodes in one or more other of said trees and (2) to permit one or more progressions of nodes of other of said tree of nodes to locate said progression of nodes;

(k) selected elements of different data units in selected progressions of successor nodes being different for different data units in order to uniquely identify said different data units; and

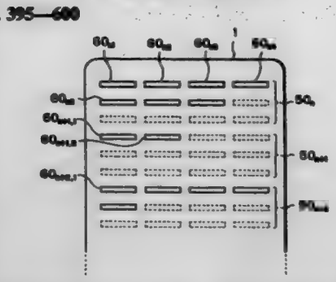
(l) selected elements of different data in selected predecessor nodes being common to said different data in order to achieve a high concentration of said data in said memory means and to achieve rapid accessibility of said different data by said central processing unit.

5,488,718

RECORDING AND REPRODUCING METHOD IN WHICH DATA AND UPDATING DATA ARE RECORDED IN A SECTOR OF A SELECTED BLOCK OF A RECORDING MEDIUM IN A PREDETERMINED ORDER WITHOUT RECORDING A DIRECTORY

Hirokazu Tanaka, Yokohama, and Keiji Tsuchiya, Kawasaki, both of, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1993, Ser. No. 66,447
Claims priority, application Japan, May 27, 1992, 4-158892
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **4 Claims**



1. A method of recording data on and reproducing data from a recording medium using a recording and reproducing head, the recording medium having a recording surface on which a plurality of sectors are arranged in a predetermined order, said method comprising the steps of:

preparing a plurality of blocks on the recording surface of the recording medium, each of the blocks corresponding to the contents of recording data and each including a plurality of sectors;

selecting a block, which corresponds to the content of data to be recorded, from among the plurality of blocks;

moving the recording and reproducing head to the selected block;

recording data by the recording and reproducing head on at least one sector in the selected block in accordance with a predetermined order, without recording a directory;

additionally recording updating data by the recording and reproducing head in accordance with a predetermined order in at least one sector subsequent to the sector recorded in the selected block, without recording a directory; and

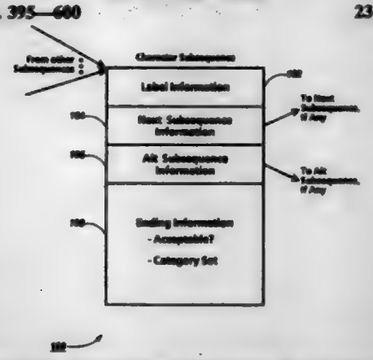
reading out the data from at least one sector lastly recorded in the selected block, as only data indicating the content of the data corresponding to the selected block.

5,488,719

SYSTEM FOR CATEGORIZING CHARACTER STRINGS USING ACCEPTABILITY AND CATEGORY INFORMATION CONTAINED IN ENDING SUBSTRINGS

Ronald M. Kaplan, Palo Alto, Calif.; Robert Shuchatowitz, Brighton, Mass., and Atty T. Mullins, Tucson, Ariz., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1991, Ser. No. 814,552
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **23 Claims**



1. An article, of manufacture for use in a character recognition system that includes a processor; the article comprising:

a data storage medium; and

string data stored by the data storage medium; the string data comprising two or more data units, each of which can be accessed by a processor of a character recognition system; the data units including, for each of a set of two or more acceptable strings of characters, a respective sequence of data units that the processor can access using character data indicating character types of the string's characters;

the set of acceptable strings including a first string that is in a first subset of categories, each category in the first subset being one of a set of two or more categories; the first string's sequence of data units including a respective ending subsequence of data units that the processor can access at the end of the first string's sequence and use to obtain first string ending data indicating that the first string is one of the acceptable strings and indicating the first subset of categories; the first string's ending subsequence including:

acceptance information indicating that a string at the end of whose respective sequence the processor can access the ending subsequence is one of the set of acceptable strings; and

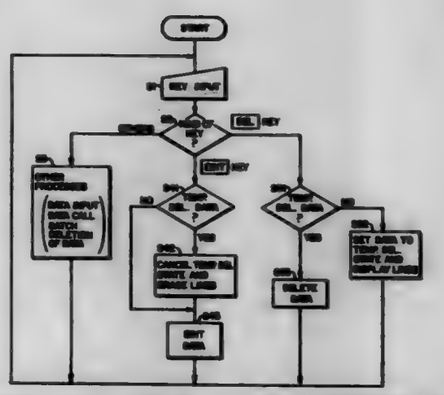
category set information indicating the first subset of categories; the first subset of categories including at least one of the set of categories.

5,488,720

APPARATUS WITH DELETION SAFEGUARD FOR SETTING A NUMBER OF DATA IN TEMPORARY DELETION STATE AND INDEPENDENTLY RELEASING OR DELETING ANY ONE OF THE DATA

Kenichi Inui, Kitakatsuragi, Japan, assignor to Sharp Kabushiki Kaisha, Japan

Continuation of Ser. No. 548,413, Jul. 5, 1990, abandoned.
This application Feb. 8, 1995, Ser. No. 385,581
Claims priority, application Japan, Jul. 7, 1989, 1-176343
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—600 **10 Claims**



1. An electronic apparatus comprising a display, control means, and memory means under the control of the control means, the control means being responsively connected to a plurality of input keys, wherein said control means comprises:

temporary deletion means, responsive to a first predetermined key operation, for independently setting any number of desired data which are stored in said memory means into a temporary deletion state at any one time;

deletion means, responsive to a second predetermined key operation, for independently deleting any one of said desired data which have been set into the temporary deletion state from said memory means while maintaining other desired data in the temporary deletion state;

temporary deletion indication means for providing a visual indication, to be displayed with said desired data when any one of said desired data is displayed on the display, which indicates that said desired data is in the temporary deletion state; and

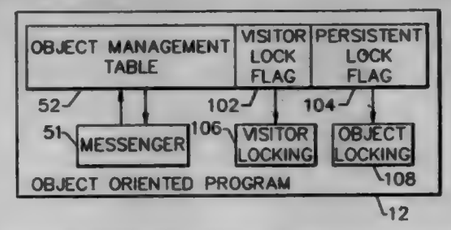
release means, responsive to a third predetermined key operation, for independently releasing the temporary deletion state of any number of said desired data which have been set into the temporary deletion state while maintaining other desired data in the temporary deletion state.

5,488,721

SYSTEM AND METHOD FOR APPLYING VISITOR LOCK AND PERSISTENT LOCK FLAGS TO CONTROL UNITS OF WORK BOUNDARIES IN AN OBJECT ORIENTED ENVIRONMENT

William L. Rich, Stone Mountain, and Floyd W. Shackelford, Roswell, both of Ga., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 9,588, Jan. 26, 1993, abandoned.
This application May 19, 1995, Ser. No. 444,654
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—600 **20 Claims**



1. An object management system for an object oriented computing environment on a computing platform, said object oriented computing environment including a plurality of objects each including an object frame containing data attributes, and at least one object method for performing actions on the associated object, at least some of said objects being organized into a plurality of units of work, such that the objects in a unit of work are manipulated as a group to perform a task, said object management system comprising:

an object management table, including a listing of said plurality of units of work and pointers to the objects contained therein, said object management table further including a visitor lock flag for each of said plurality of units of work, each visitor lock flag being in one of a first state and a second state, and a

persistent lock flag for each of said plurality of units of work, each persistent lock flag being in one of a first state and a second state;

visitor locking means for preventing copying of an object from a first unit of work to a second unit of work in response to the visitor lock flag associated with said first unit of work being in said first state, and for allowing copying of said object from said first unit of work to said second unit of work in response to the visitor lock flag associated with said first unit of work being in said second state; and

object locking means for locking an object within said first unit of work in response to the persistent lock flag associated with said first unit of work being in said first state, and for unlocking said object from said first unit of work in response to the persistent lock flag associated with said first unit of work being in said second state.

5,488,722

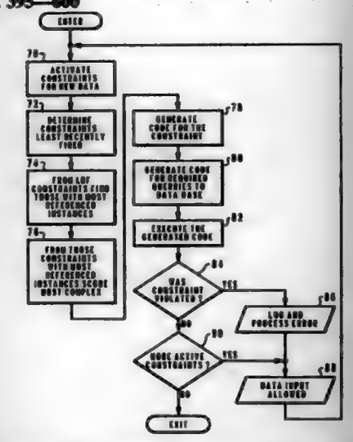
SYSTEM AND METHOD FOR AUTOMATING IMPLEMENTATION AND EXECUTION OF CONSTRAINT MOST LIKELY TO BE VIOLATED IN A DATABASE

Thomas E. Potok, Apex, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 28, 1993, Ser. No. 68,820

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—600 **12 Claims**



1. A method for operating a computer to update an entity-relationship model database, the method comprising the steps performed by the computer of:

accepting data for a new or modified instance or to delete an instance of an entity;

activating constraints applicable to the accepted data;

determining a firing order including at least a first constraint for firing from among the activated constraints, the first constraint being determined based on criteria which attempts to identify a constraint most likely to be violated;

firing the first constraint;

determining if the first constraint was violated; and

returning to the step of activating constraints if any constraints remain to be fired.

5,488,723

SOFTWARE SYSTEM HAVING REPLICATED OBJECTS AND USING DYNAMIC MESSAGING, IN PARTICULAR FOR A MONITORING/CONTROL INSTALLATION OF REDUNDANT ARCHITECTURE

Christophe Baradel, Paris; Yves Eychenne, Limours, and Bruno Kohen, Paris, all of, France, assignors to Cegelec, Levallois-Perret, France

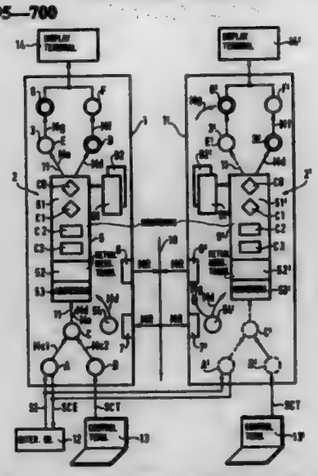
PCT No. PCT/FR93/00499, § 371 Date Jan. 24, 1994, § 102(e) Date Jan. 24, 1994, PCT Pub. No. WO93/24884, PCT Pub. Date Dec. 9, 1993

PCT Filed May 24, 1993, Ser. No. 185,859

Claims priority, application France, May 25, 1992, 92 06372

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—700 **4 Claims**



1. In a monitoring/control installation comprising: a first processor (1) acting as a primary processor for running a first object-oriented program (2) having first objects (A,B,C,D,E,F,G) and a first dynamic object messaging mechanism (5), and a second processor (1') connected to said first processor via a communication network (10), said second processor acting as a backup processor for running a second object-oriented program (2') having second objects (A',B',C',D',E',F',G') and a second dynamic object messaging mechanism (5') with said second objects being replicas of at least certain ones (D,G) of said first objects which encapsulate non-volatile data,

a method for maintaining consistency between said certain ones of said first objects in said first processor and said second objects in said second processor during runtime of said first program, said method comprising the steps of:

providing a mark to each of said first objects, said mark being retrievable from processing of an operation invocation on said first objects via said first dynamic object messaging mechanism;

setting the mark of said certain ones of said first objects with a specific value;

in said first dynamic object messaging mechanism,

detecting (51,C1), from each operation invocation on one of said a first objects, whether said one of said first objects has a mark set with said specific value,

when said one of said first objects has a mark not set with said specific value, performing (53) the processing of said operation invocation on said one of said first objects,

when said one of said first objects has a mark set with said specific value, broadcasting (52) an object call message corresponding to said operation invocation on said one of said first objects via said communication network for time delaying said object call message at an input of said first processor and said second processor by using an atomic and ordered broadcast protocol, and

retrieving (54), from said communication network, object call messages and processing said object call messages to perform a succession of corresponding operation invocations on said first objects; and

in the second dynamic object messaging mechanism,

retrieving (54'), from said communication network, object call messages, and

processing said object call messages to perform a succession of corresponding operation invocations on said second objects, so that the successive operations on said certain ones of said first objects in said first processor and the successive operations on the replicas of said certain ones of said first objects in said second processor are performed in the same order.

5,488,724

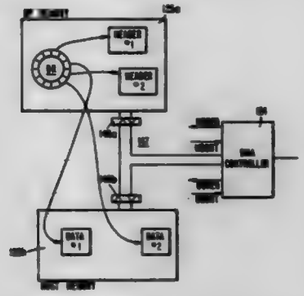
NETWORK CONTROLLER WITH MEMORY REQUEST AND ACKNOWLEDGEMENT SIGNALS AND A NETWORK ADAPTER THEREWITH

Farzin Firoozmand, Cupertino, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 529,362, May 29, 1990, Pat. No. 5,136,582. This application May 15, 1992, Ser. No. 883,748

Int. Cl.[6] G06F *13/16*

U.S. Cl. 395—200.07 **20 Claims**



1. A network controller for a local system coupled to a network, said local system including a plurality of processors and at least first and second memories for storing data arranged in buffers, said first and second memories respectively being on first and second busses and said first and second busses being connected to a third bus, the network controller comprising:

network DMA controller means on said third bus for sending thereon one or the other of a first memory request signal and a second memory request signal to said first and second memories in response to signals from one of said plurality of processors;

means coupled to said first bus and responsive only to said first memory request signal for sending a first memory acknowledgement signal to the DMA controller;

means coupled to said second bus and responsive only to said second memory request signal for sending a second memory acknowledgement signal to the DMA controller; and

wherein said network DMA controller means includes means for accessing only the selected one of said first memory and second memory in response, respectively, to said first memory acknowledgement signal or said second memory acknowledgement signal.

5,488,725

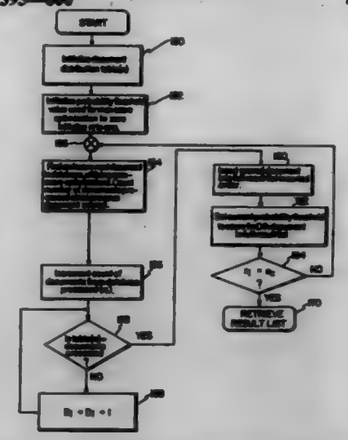
SYSTEM OF DOCUMENT REPRESENTATION RETRIEVAL BY SUCCESSIVE ITERATED PROBABILITY SAMPLING

Howard R. Turtle, Rosemount; Gerald J. Merten, South St. Paul, and F. Kinley Larntz, Shoreview, all of Minn., assignors to West Publishing Company, Eagan, Minn.

Continuation-in-part of Ser. No. 773,101, Oct. 8, 1991, Pat. No. 5,265,065. This application Mar. 30, 1993, Ser. No. 39,757

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—600 **46 Claims**



1. In a computer system for identifying a predetermined number of documents of a document collection containing representations that have high probabilities of matching a query containing a plurality of concepts, in which the system has a database containing identifications of documents in the document collection and defining a plurality_ of representations representing the contents of the documents, the collection comprising a plurality_ of documents, and query means for defining the query, apparatus comprising:

sample selection means for iteratively selecting successive samples of a plurality of documents from the collection, each sample containing fewer documents than the entire collection and each successive sample containing documents different from each previous sample;

processing means responsive to the sample selection means for calculating, during each iteration, probabilities that documents contained in the sample contain representations that match the query and for identifying a preselected number of documents having the highest probabilities, the documents being identified during an iteration from a group consisting of the respective sample of documents and the documents identified during the next previous iteration, the preselected number being different for each iteration and no greater than the predetermined number; and

output means outputting the identifications of the predetermined number of documents identified by the processing means.

5,488,726

Patent Not Issued For This Number

5,488,727

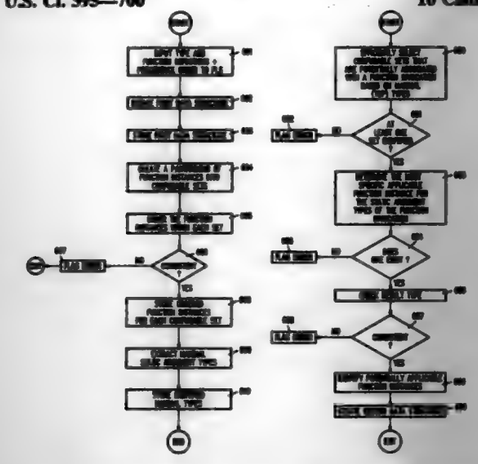
METHODS TO SUPPORT MULTIMETHOD FUNCTION OVERLOADING WITH COMPILE-TIME TYPE CHECKING

Rakesh Agrawal, San Jose; Linda G. De Michiel, Los Altos, and Bruce G. Lindsay, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1991, Ser. No. 771,376

Int. Cl.[6] G06F 9/45;11/00

U.S. Cl. 395—700 10 Claims



1. A method, to be practiced at compile time by a data handling system that supports multimethod function selection on typed data, including subtypes with multiple inheritance, for enabling static-type checking to be performed at run time for overloaded functions, wherein said system includes (i) a set of type definitions, including specification of subtype relationships, (ii) function definitions referring to at least one of the type definitions, each function definition including a definition of arguments, including an argument order and argument positions, and (iii) precedence rules which, in combination with the function argument order, define an ordering of the confusable function instances, for a given set of arguments, the method comprising the steps of:

(a) creating from said type definitions a first data structure for representing subtype relationships between data types, the subtype relationships including levels of specificity, such that, within a given subtype relation for a given set of the data types, there is a maximal static argument type which has a lowest level of specificity;

(b) creating from said first data structure and said function definitions a partitioning of function instances into confusable sets;

(c) ordering the function instances within each confusable set;

(d) verifying consistency among the ordered function instances resulting from said step of ordering;

(e) identifying any consistency errors with respect to said ordered function instances;

(f) signaling an error condition upon the identification of any such consistency error;

(g) extracting, for each confusable set, information as the maximal static argument types of the functions are for each of the argument positions; and identifying confusable sets of function instances as confusable sets which potentially contain all functions applicable to the function invocation, the applicable functions having arguments, the arguments having argument types which are supertypes or subtypes of the compile time argument types of the function invocation;

whereby, one of the applicable functions is chosen for execution at run time, in accordance with actual types of the function arguments.

5,488,728

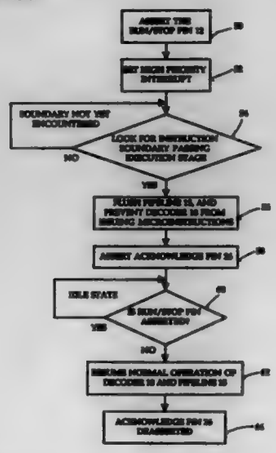
MICROPROCESSOR HAVING A RUN/STOP PIN FOR ACCESSING AN IDLE MODE

Robert S. Dreyer, Sunnyvale, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 101,783, Aug. 3, 1993, abandoned, which is a continuation of Ser. No. 874,716, Apr. 27, 1992, abandoned. This application Oct. 31, 1994, Ser. No. 332,373

Int. Cl.[6] G06F 15/46

U.S. Cl. 395—726 19 Claims



1. A method of operating a microprocessor having an external R/S pin, an execution unit, and a decoder and microcode sequencer coupled to said execution unit, said microprocessor having a processor state associated therewith during operation, said microprocessor executing a sequence of macroinstructions, each of said macroinstructions being decoded by said execution unit and when execution is completed, then the processor state is updated responsive to the completed instruction, said method comprising:

a) asserting the R/S pin by assertion of an external signal while said microprocessor is executing a macroinstruction that has been decoded into one or more instructions;

b) continuing executing said one or more microinstructions until execution of the currently executing macroinstruction is complete and the processor state is updated responsive to said macroinstruction, and then halting execution of said microinstructions within said execution unit, thereby halting microprocessor execution at a macroinstruction boundary;

c) following said step b, flushing the execution unit of all microinstructions that are currently in the pipeline; and

d) while said R/S pin remains asserted subsequent to step c, signaling the decoder and microcode sequencer so that said decoder and microcode sequencer are not allowed to issue any microinstructions to the execution unit.

5,488,729

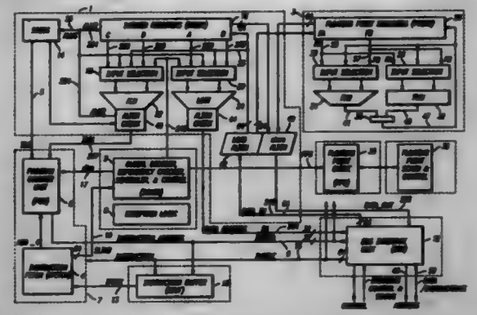
CENTRAL PROCESSING UNIT ARCHITECTURE WITH SYMMETRIC INSTRUCTION SCHEDULING TO ACHIEVE MULTIPLE INSTRUCTION LAUNCH AND EXECUTION

Anantakotiraju Vegesna; Jayachandra B. Avula; Peter H. Jewett, and Yatin G. Muzdkar, all of Austin, Tex., assignors to Rise Technology, Inc., Austin, Tex.

Continuation of Ser. No. 701,142, May 15, 1991, abandoned. This application Mar. 7, 1994, Ser. No. 208,091

Int. Cl.[6] G06F 15/16;9/28;9/38

U.S. Cl. 395—800 7 Claims



1. A method of using a processor to execute a sequence of instructions, the processor issuing none, one or more of the instructions for execution at the start of each cycle of a clock signal, the processor comprising a plurality of execution resources, each of which is associated with one of a plurality of pipelines, each of the instructions being classified according to which of the plurality of resources is appropriate for executing each of the instructions, each of the instructions being processed within an appropriate one of the plurality of pipelines the appropriate one of the plurality of pipelines for each of the instructions being associated with the appropriate of the plurality of execution resources for executing each of the instructions, said method comprising the steps of:

fetching one or more of the sequence of instructions, said step of fetching further comprising the step of grouping two or more of the fetched instructions into a packet;

dynamically scheduling the instructions of the packet for execution, said step of dynamically scheduling further comprising the steps of:

globally decoding each of the instructions of the packet to produce an initial characterization of each, the initial characterization including the classification of each of the instructions of the packet;

detecting resource conflicts between or among the instructions of the packet using the initial characterization of each;

detecting intrapacket dependencies between or among the instructions of the packet using the initial characterization of each;

detecting interpacket dependencies between one or more of the instructions of the packet and one or more of the instructions of the sequence currently being processed ahead of the instructions of the packet and within two or more of the plurality of pipelines; and

resolving any detected resource conflicts, intrapacket dependencies and interpacket dependencies to identify which of the instructions of the packet can be executed at the start of next cycle of the clock signal;

initiating execution of the identified instructions of the packet at the start of the next cycle of the clock signal;

wherein each of the two or more of the plurality of pipelines comprises a series of stages the series of stages including an instruction fetch stage, an instruction decode stage, and at least one instruction execute stage, each of the series of stages having a time duration equal to at least one cycle of the clock signal;

wherein said step of dynamically scheduling is performed within the instruction decode stage; and

wherein said step of dynamically scheduling is performed in less than one cycle of the clock signal such that the duration of one cycle of the clock signal is dictated by functions of the processor other than said step of dynamically scheduling.

5,488,730

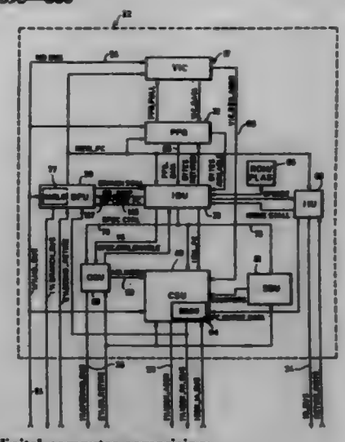
REGISTER CONFLICT SCOREBOARD IN PIPELINED COMPUTER USING PIPELINED REFERENCE COUNTS

John F. Brown, III, Northborough, and Mary K. Gowan, Framingham, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 547,804, Jun. 29, 1990, Pat. No. 5,394,525. This application Aug. 21, 1992, Ser. No. 934,351

Int. Cl.[6] G06F 9/38

U.S. Cl. 395—800 20 Claims



16. A digital computer comprising:

an instruction unit for decoding instructions;

an execution unit coupled to said instruction unit for executing the instructions decoded by said instruction unit;

a set of general purpose registers coupled to said execution unit for providing source and destination operands during execution of the instructions decoded by said instruction unit;

a complex specifier unit coupled to said instruction unit and said general purpose registers for receiving complex specifiers decoded from said instructions by said instruction unit, said complex specifiers specifying contents of general purpose registers needed for fetching operands from memory, and changes to be made to the contents of said general purpose registers prior to execution of said instructions by said execution unit, and for making the specified changes to the contents of said general purpose registers prior to execution of said instructions by said execution unit; and

means coupled to said complex specifier unit and to said execution unit for preventing register access conflict between said execution unit and said complex specifier unit, said means for preventing register access conflict including:

for each general purpose register, a source counter for counting decoded register source specifiers that specify source operands not yet read from said each general purpose register for use by said execution unit;

for each general purpose register, a destination counter for counting decoded destination specifiers that specify said each general purpose register as a destination for results not yet written into said each general purpose register from said execution unit;

means coupled to said source counters and said complex specifier unit for preventing said complex specifier unit from reading from each general purpose register having a non-zero count of decoded register source specifiers that specify source operands not yet read from said each general purpose register for use by said execution unit; and

means coupled to said source counters and said complex specifier unit for preventing said complex specifier unit

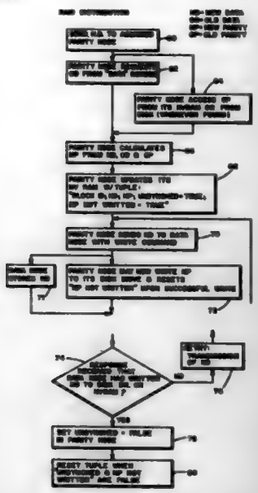
from writing to each general purpose register having a non-zero count of decoded register destination specifiers that specify said each general purpose register as a destination for results not yet written into said each general purpose register from said execution unit.

5,488,731

SYNCHRONIZATION METHOD FOR LOOSELY COUPLED ARRAYS OF REDUNDANT DISK DRIVES

Noah Mendelsohn, Arlington, Mass., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 924,219, Aug. 3, 1992, abandoned. This application Dec. 8, 1994, Ser. No. 352,428
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—800 13 Claims



1. A multiprocessor system including a plurality of substantially identical nodes interconnected through a switch network, each node comprising disk drive means, nonvolatile random access memory (NVRAM) and a processor, said multiprocessor system storing RAID-structured data across disk drive means in a plurality of different nodes, said system performing a method comprising the steps of:

a. listing at least an identifier of a data segment to be updated by received update data in an NVRAM in a first node in response to a command to write said update data to said data segment;

b. sending said update data from said first node to a second node containing a copy of said data segment;

c. removing said listing of said identifier in said NVRAM in said first node only when said update data is written to disk drive means in said first node and after receiving a signal that said second node has recorded said update data;

d. causing each node, in the event of a power-up, to scan its NVRAM to find any listed identifiers of data segments contained therein; and

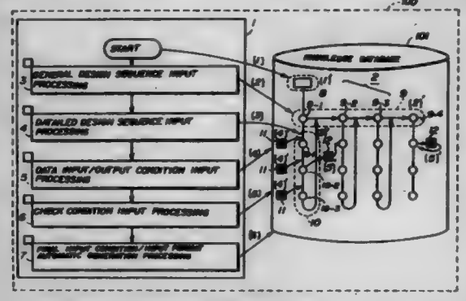
e. for any data segment denoted by a listed identifier in said NVRAM in said first node, causing a corresponding data segment in said second node to be in synchronism with said data segment denoted by said listed identifier in NVRAM in said first node.

5,488,732

AUTOMATIC SUPPORT TOOL GENERATING SYSTEM BASED ON A KNOWLEDGE ACQUISITION TOOL AND A DATABASE

Tadamitsu Ryu; Gen Kakehi, and Shigeru Aoe, all of Kawasaki, Japan, assignors to Fujitsu Network Engineering Limited, Kawasaki, Japan

Continuation of Ser. No. 778,442, Oct. 17, 1991, abandoned. This application Oct. 24, 1994, Ser. No. 328,572
Claims priority, application Japan, Jan. 18, 1990, 2-288335
Int. Cl.[6] G06F *15/20;15/40*
U.S. Cl. 395—800 8 Claims



1. A data processing system comprising:

an automatic support tool generating system generating an automatic support tool making a design, comprising a specification, from a general design, said automatic support tool comprising:

a database comprising knowledge data groups storing knowledge as data, each knowledge data group comprising:

a design support tool name corresponding to the general design;

attribute data comprising macro attribute data, in turn comprising micro attribute data,

input/output conditions related to the micro attribute data, said input/output conditions being stored in a relational type structure,

check conditions linking the micro attribute data together, said check conditions being stored in a hyper type structure, and

a design support knowledge data group corresponding to the micro attribute data; and

a knowledge acquisition tool, coupled to the database, generating questions and inputting answers comprising the general design, the attribute data, the input/output conditions, and check conditions, to the questions, and acquiring the knowledge from the answers, said knowledge acquisition tool comprising:

general design sequence input processing means for inputting and storing in the database the general design comprising the macro attribute data and mutual relationships of the macro attribute data,

detailed design sequence input processing means for inputting and storing in the database the micro attribute data,

data input/output condition input processing means for inputting and storing in the database the input/output conditions, and

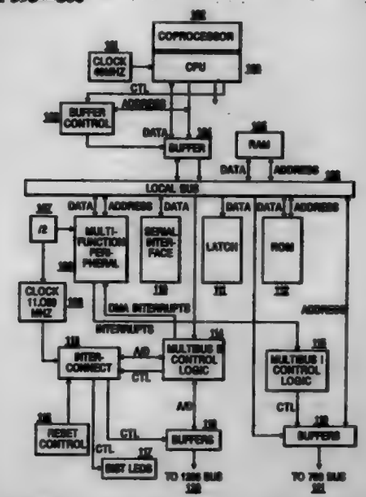
check condition input processing means for inputting and storing in the database the check conditions, wherein the automatic support tool generating system repeatedly generates the questions and inputs the answers until the general design, the attribute data, the input/output conditions, and the check conditions needed by the automatic support tool generating system to generate the design are input, the automatic design tool adding, modifying, and deleting the attribute data, and link data linking the name, the macro attribute data, the micro attribute data, the input/output conditions, and the check conditions are stored within a link data file, form a network structure, and are extracted to produce an output of the automatic design support tool generating system.

5,488,733

PROPULSION CONTROL SYSTEM CENTAL PROCESSING UNIT BOARD

William F. Molyneaux, Huntington, Pa., assignor to AEG Transportation Systems, Inc., Pittsburgh, Pa.

Division of Ser. No. 686,927, Apr. 18, 1991, Pat. No. 5,377,356, which is a continuation of Ser. No. 584,933, Sep. 19, 1990, abandoned. This application Aug. 30, 1994, Ser. No. 297,845
Int. Cl.[6] G06F *13/28;13/36*
U.S. Cl. 395—800 2 Claims



1. A propulsion control system for controlling a vehicle, said propulsion control system comprising:

a field connector interface board connected to vehicle wiring;

a plurality of master and slave interface and control boards connected to the field connector interface board, said plurality of master and slave interface and control boards including a digital input-output board, an analog input-output board, a bitbus board, a tach reader board, a memory board, and a master CPU board, each of which are connected to the field connector interface board;

a first bus connected to the plurality of master and slave interface and control boards and a second bus connected to the master CPU board;

wherein, the master CPU board comprises:

a local bus;

memory;

a multifunction peripheral device; and

a central processing unit operatively connected to said memory and said multifunction peripheral device by said local bus,

with said multifunction peripheral device including:

wait state generator means for generating timing signals,

direct memory access control means for controlling data transfer in said system, and

interrupt handling means for generating interrupt requests and handling direct memory access interrupts;

a first bus interface, operatively connected to said multifunction peripheral device and said local bus, including:

first bus master control logic means for controlling the first bus responsive to said interrupt requests from said interrupt handling means; and

buffering means for buffering data between said local bus and the first bus responsive to said first bus control logic means; and

a second bus interface, operatively connected to said multifunction peripheral device, including:

second bus master control logic means for controlling the second bus and producing said direct memory access interrupts;

interconnect means for interfacing control signals from said second bus control logic means;

reset control having an output connected to said interconnect means; and

buffering means for buffering data between the second bus and said second bus control logic means responsive to control signals from said interconnect means;

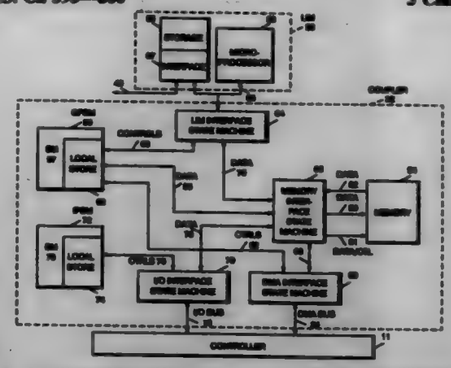
with said central processing unit circuit board communicating with the remaining components of said propulsion control system via said first and said second buses.

5,488,734

COUPLER FOR PROVIDING A HIGH SPEED INTERFACE BETWEEN A COMMUNICATION CONTROLLER AND A CONTROLLER EXTENSION

Warren D. Bailey, Pittsboro; Kenneth J. Barker; Joan M. Bellinghausen, both of Cary; George M. Calhoun, Raleigh, all of N.C.; Bernard J. Naudin, Saint Laurent Du Var, and Edward Suffern, Vence, both of, France, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 909,887, Jul. 7, 1992, abandoned. This application Nov. 3, 1994, Ser. No. 333,931
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—800 5 Claims



1. A coupler, for use in a communication system having a communication controller and a controller extension, for transferring individual segments of data at a high speed between the communication controller and the controller extension, the coupler for being connected to the communication controller by a first bus and a second bus and to the controller extension by a third bus, the coupler comprising:

a.) a memory for temporarily storing commands and data segments received from the first bus, the second bus and the third bus;

b.) means, connected between the second bus and the memory (element a) for retrieving and temporarily storing commands from the second bus and sending commands to the second bus;

c.) a first picoprocessor connected to the memory (element a) and to the second bus retrieving and sending means (element b) for retrieving from the second bus retrieving and sending means (element b) commands received from the second bus and placing the received commands in a queue in the memory (element a);

d.) means, connected between the first bus and the memory (element a), for retrieving data segments from the first bus and sending the data segments to the memory and for retrieving data segments from the memory and sending the data segments to the first bus;

e.) means, connected between the third bus and the memory (element a) for retrieving data segments from the third bus and sending the data segments to the memory and for retrieving data segments from the memory and sending the data segments to the third bus;

f.) the memory (element a), the first bus retrieving and sending means (element d), and the third bus retrieving and sending

means (element e) comprising a main data path over which the data segments pass between the first bus and the third bus; and

g.) a second picoprocessor, located logically out of the main data path, connected to the memory (element a), the first bus retrieving and sending means (element d), and the third bus retrieving and sending means (element e), for managing and controlling the flow of the data segments over the main data path in response to the queued received commands from the second bus.

5,488,735

OPTICAL INTERCONNECTION SUITABLE FOR HIGHLY PARALLEL COMPUTER SYSTEM

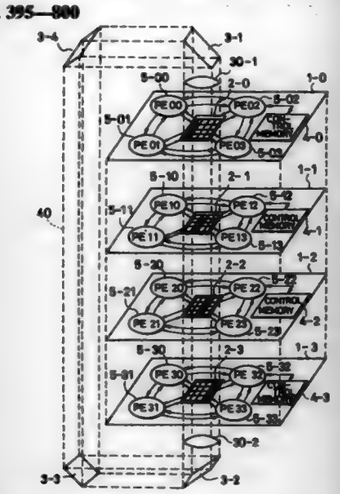
Noboru Tanabe; Shigeru Oyanagi; Shinichi Baba; Katsuji Kaminishi, all of Kanagawa; Masaru Nakamura, Saitama, and Kazuneri Sekido, Kanagawa, all of, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 26, 1992, Ser. No. 906,220

Claims priority, application Japan, Jun. 29, 1991, 3-159289; Sep. 30, 1991, 3-252631; Nov. 7, 1991, 3-291646

Int. Cl.[6] G06F 13/00

U.S. Cl. 395—800 41 Claims



40. A highly parallel computer system, comprising:

a plurality of processor boards;

a plurality of processor elements provided on each of said processor boards;

a plurality of optical devices, one optical device being provided on each of said processor boards, each optical device on each processor board being connected with processor elements provided on each processor board and including a plurality of optical element cells for intercepting light signals from a first side of said optical device, transmitting intercepted light signals to a second side of said optical device, and emitting light signals to said second side of said optical device; and

a continuous ring shaped optical path for optically connecting all of said optical devices such that light signals coming from a second side of one optical device are intercepted at a first side of another optical device.

5,488,736

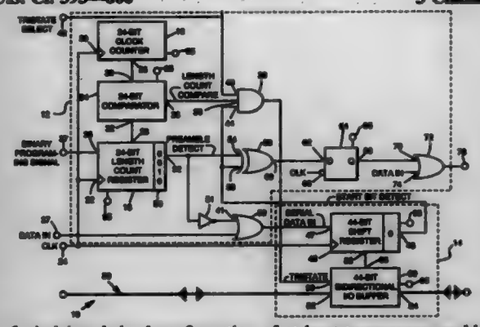
BIDIRECTIONAL PROGRAMMABLE I/O DRIVER ARRAY

Kimberly W. Keeth, Brea, and Robert J. Rothaus, Yorba Linda, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 676,604, Mar. 28, 1991, abandoned. This application Jul. 13, 1994, Ser. No. 274,653

Int. Cl.[6] G06F 15/00

U.S. Cl. 395—800 3 Claims



1. A daisy-chained configuration of at least two programmable bidirectional input/output drivers, said daisy-chained configuration comprising:

first and second bidirectional input/output (I/O) drivers, each driver including:

an array of bidirectional current buffers, each current buffer having a direction control signal input terminal and first and second I/O terminals, said array further including a direction control signal register for receiving and storing direction control signals for controlling a direction of propagation of data between said first and second I/O terminals, said direction control inputs being connected to data output terminals of the direction control signal register;

a tristate control signal input for receiving an externally generated tristate control signal;

program control circuit means having a data input terminal connected to receive a binary coded programming signal and a data output terminal, said circuit means for generating a plurality of direction control signals in response to the binary coded programming signal, said programming signal includes a header data portion including a preamble code and program length data, said programming signal further including direction control data, the program control circuit means including a length count register means for receiving the header data portion, the length count register means including means for generating a preamble detect signal in response to reception of the header data portion;

wherein the direction control inputs of the bidirectional current buffers are connected to the direction control register for receiving the direction control signals, and the current buffers are individually responsive to individual ones of the direction control signals to transmit data signals in a selected direction;

said program control circuit means further including logic circuit means responsive to said preamble detect signal for permitting said direction control signal to be loaded into said direction control signal register only after receipt of said preamble, said logic circuit means connected to the length counter register and the data input terminal for controlling the loading of direction control data in the direction control register and transmitting of the direction control signals from the direction control register to the direction control signal inputs of the array of bidirectional current buffers;

wherein the array of bidirectional current buffers further includes a tristate control signal input port connected to the tristate input through the program control circuit means for receiving the tristate control signal; and

wherein the array of bidirectional current buffers is operable in a tristate mode in response to the tristate control signal; and

wherein said first and second drivers are connected together in a programming signal daisy chain so that said data input terminal of the second driver is connected to the data output terminal of the first driver, said header data portion of said programming signal is propagated to said first and second drivers, and said drivers are controlled by information in said header data portion so that said first driver receives and acts on direction control data specific to the driver array of said first driver from said programming signal to program the driver array of the first driver, and said second driver receives and acts on direction control data specific to the driver array of the second driver from said programming signal to program the driver array of the second driver.

5,488,737

LAND-BASED WIRELESS COMMUNICATIONS SYSTEM HAVING A SCANNED DIRECTIONAL ANTENNA

Steven A. Harbin, Grover, and Brian K. Raiser, Chesterfield, both of Mo., assignors to Southwestern Bell Technology Resources, Inc., St. Louis, Mo.

Filed Nov. 17, 1992, Ser. No. 977,635

Int. Cl.[6] H04Q 7/20; H04B 7/00

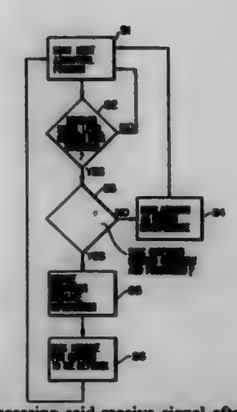
U.S. Cl. 455—33.1 40 Claims

1. A radio communications system, comprising:

one or more remote stations, each of said remote stations comprising means for transmitting an identifying signal pattern and message information within a frequency band;

a base station for transmitting and receiving signals to and from said remote stations, said base station comprising at least one receiving antenna coupled to a base station receiver which monitors said frequency band, said at least one receive antenna having a directional pattern in a horizontal plane and means for scanning said directional pattern azimuthally;

means for filtering a signal received at said at least one receive antenna



means for processing said receive signal after filtering by said filtering means, said processing means comprising means for decoding information which is included in said received signals;

means for monitoring a signal strength of said received signal; and

means for controlling said scanning means; wherein said decoding means comprises means for decoding said identifying signal pattern, said system further comprising:

means for determining if said identifying signal pattern has been correctly decoded; and

means for decoding remaining portions of said received signal and forwarding a corresponding message to a network, if it is determined by said determining means that said identifying signal pattern has been correctly decoded;

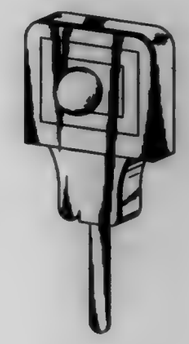
said means for controlling said scanning means further comprising means for instructing said scanning means to move said directional pattern from one azimuthal position to another if said identifying signal pattern has not been correctly decoded.

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366,551
FROZEN CONFECTION
Connie A. Kellogg, and Daryl D. Spors, both of Green Bay, Wis., assignors to Good Humor Corporation, Green Bay, Wis.
Filed Feb. 10, 1995, Ser. No. 34,689
Term of patent 14 years
U.S. Cl. D1—102



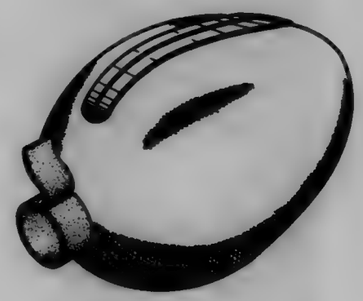
366,552
FROZEN CONFECTION
Connie A. Kellogg, and Daryl D. Spors, both of Green Bay, Wis., assignors to Good Humor Corporation, Green Bay, Wis.
Filed Feb. 10, 1995, Ser. No. 34,783
Term of patent 14 years
U.S. Cl. D1—102



366,553
NECKTIE
Michael P. Wade, 3304 Shakertown Ct., Antioch, Tenn. 37013
Filed Nov. 28, 1994, Ser. No. 31,426
Term of patent 14 years
U.S. Cl. D2—607



366,554
HAND WARMER
Richard L. Lawson, 6485 Morris Rd., Hamilton, Ohio 45011-5128
Filed Jul. 25, 1994, Ser. No. 26,317
Term of patent 14 years
U.S. Cl. D3—618



366,555
WEIGHT LIFTING BELT
Jerry Daniels, P.O. Box 587, Ooltewah, Tenn. 37363
Filed May 17, 1994, Ser. No. 23,047
Term of patent 14 years
U.S. Cl. D2—627

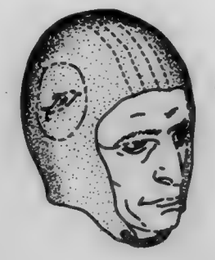


366,556
DINING BIB
Florence R. Wilson, 1707 Carol Stream, Richardson, Tex. 75081
Filed Aug. 16, 1994, Ser. No. 27,239
Term of patent 14 years
U.S. Cl. D2—861





366,557
SOFT HAT IN THE SHAPE OF A FOOTBALL HELMET
Theodore Ashby, and Ann Ashby, both of 9 Roome Ave., Pompton Plains, N.J. 07444
Filed Jun. 23, 1994, Ser. No. 24,891
Term of patent 14 years
U.S. Cl. D2—870



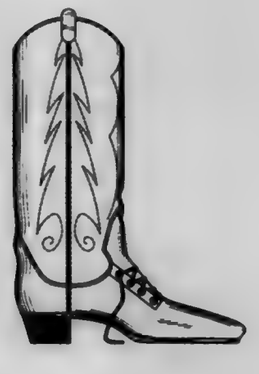
366,558
VISOR
Sheri Galper, 22342 Lavender Bell La., Woodland Hills, Calif. 91367, and Eugene B. Schrier, 24 Dappiegray La., Rolling Hills, Calif. 90274
Filed Aug. 26, 1994, Ser. No. 27,641
Term of patent 14 years
U.S. Cl. D2—872



366,559
BOOT FOR ROLLER-SKATES
Ting-Hsing Chen, Tainan, Taiwan, Prov. of China, assignor to Far Great Plastics Industrial Co., Ltd., Tainan, Taiwan, Prov. of China
Filed Oct. 7, 1994, Ser. No. 29,499
Term of patent 14 years
U.S. Cl. D2—904



366,560
BOOT WITH LACES
John F. Reedy, P.O. Box 17458, Mundo Park, Ariz. 86017, and Kathy M. Yarbrough, 7865 Circle S Dr., Sierra Vista, Ariz. 85635
Filed Dec. 1, 1994, Ser. No. 31,642
Term of patent 14 years
U.S. Cl. D2—912



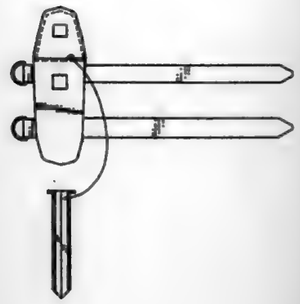
366,561
ELEMENT FOR A SHOE UPPER
Joseph Shea, Boston, Mass., assignor to SRL, Inc., Wilmington, Del.
Filed Sep. 9, 1994, Ser. No. 28,282
Term of patent 14 years
U.S. Cl. D2—972



366,562
SKI EQUIPMENT CARRIER
Jung Sung-Rok, 4th Floor, Dongsu Bldg., 822-5, Yeksam-Dong, Kangnam-Ku, Seoul, 135-080, Rep. of Korea
Filed Aug. 1, 1994, Ser. No. 26,530
Term of patent 14 years
U.S. Cl. D3—221



366,563
COMBINED PORTABLE ATTACHABLE ICE PICK AND HOLDER
John W. Mumley, P.O. Box 132, East Alburg, Vt. 05440
Filed Jun. 9, 1994, Ser. No. 24,133
Term of patent 14 years
U.S. Cl. D3—228



366,564
EYEGLASS CASE
Larry C. Yabarra, 4674 E. Vassar, Fresno, Calif. 93703
Filed Nov. 22, 1994, Ser. No. 31,314
Term of patent 14 years
U.S. Cl. D3—266



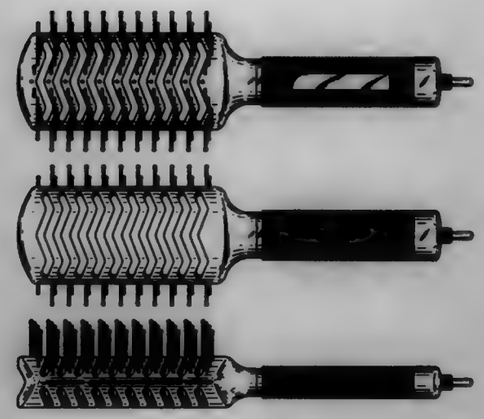
366,565
GOLF CLUB HEAD CLEANER
John Harper, 28 Wingfield Road, Trowbridge Wilts, BA14 9ED, United Kingdom
Filed Dec. 29, 1994, Ser. No. 32,827
Term of patent 14 years
U.S. Cl. D4—121



366,566
VENTED HAIRBRUSH
Sabrina S. Denebeim, 260 Avila St., San Francisco, Calif. 94123
Filed Aug. 17, 1994, Ser. No. 27,258
The portion of the term of this patent subsequent to Jan. 2, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D4—128



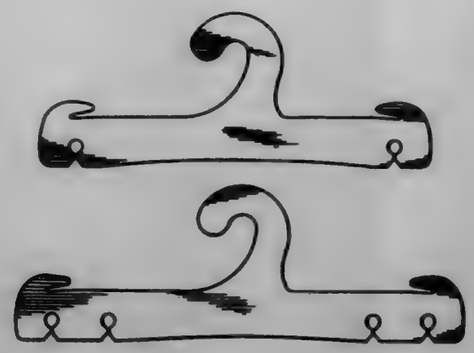
366,567
HAIRBRUSH
Kathy Gertsma, Sausalito, and Christopher Davis, San Francisco, both of Calif., assignors to West Coast Beauty Supply Co., Benicia, Calif.
Filed Mar. 29, 1995, Ser. No. 36,869
Term of patent 14 years
U.S. Cl. D4—136



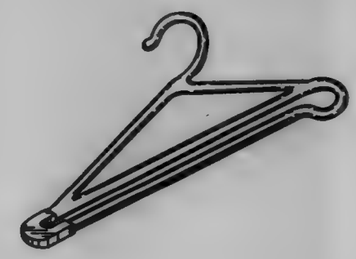
366,568
BOOK HOLDER
Samuel Pagano, 1632 Squaw Creek, Girard, Ohio 44420
Filed Mar. 3, 1995, Ser. No. 35,626
Term of patent 14 years
U.S. Cl. D6—310



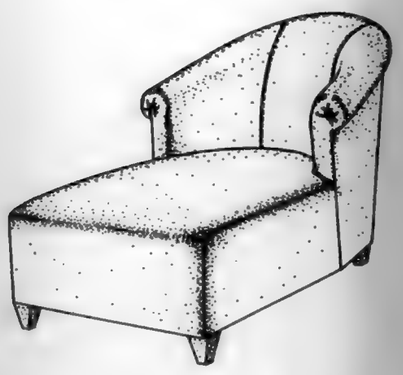
366,569
HANGER
Colin V. Coles, and Joe Magro, both of Melbourne, Australia, assignors to Visy Board Properties Pyt Ltd, Victoria, Australia
Filed Feb. 22, 1994, Ser. No. 19,865
Term of patent 14 years
U.S. Cl. D6—315



366,570
CLOTHES HANGER
Masud Zabery, 4242 Delaney St., Pierre Fonds, Canada
Filed Dec. 22, 1994, Ser. No. 32,665
Term of patent 14 years
U.S. Cl. D6—317



366,571
CHAISE
John Hutton, New York, N.Y., assignor to Donghia Furniture, New York, N.Y.
Filed Sep. 16, 1993, Ser. No. 13,037
Term of patent 14 years
U.S. Cl. D6—361



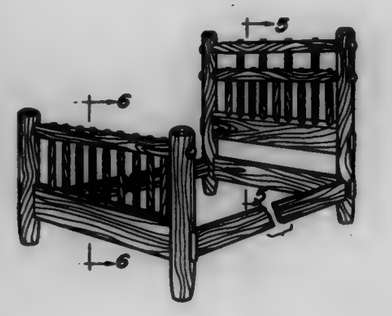
366,572
CHAIR FRAME
Stephen C. Hess, Birmingham, Ala., assignor to Winston Furniture Company of Alabama, Birmingham, Ala.
Filed Jun. 17, 1994, Ser. No. 24,603
The portion of the term of this patent subsequent to Aug. 22, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—373



366,573
CHAIR
Stephen C. Hess, Birmingham, Ala., assignor to Winston Furniture Co. of Alabama, Birmingham, Ala.
Filed Jun. 22, 1994, Ser. No. 24,885
The portion of the term of this patent subsequent to Nov. 22, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—373



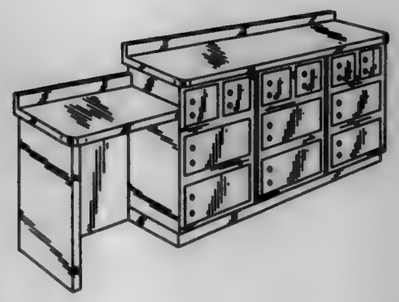
366,574
BED
Michael J. Paus, High Point, N.C., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Mar. 24, 1994, Ser. No. 20,331
Term of patent 14 years
U.S. Cl. D6—395



366,575
BED
Michael J. Paus, High Point, N.C., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Sep. 25, 1994, Ser. No. 20,411
Term of patent 14 years
U.S. Cl. D6—395



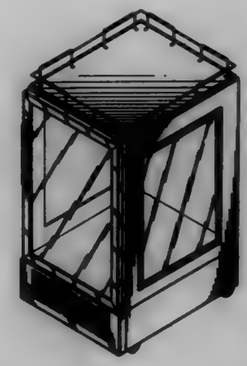
366,576
COMBINED LOBBY COUNTER, PARCEL LOCKERS AND HANDICAP TABLE
George F. Stacy, Traverse City, Mich., assignor to HSS Industries, Inc., Traverse City, Mich.
Filed Aug. 15, 1994, Ser. No. 27,194
Term of patent 14 years
U.S. Cl. D6—397



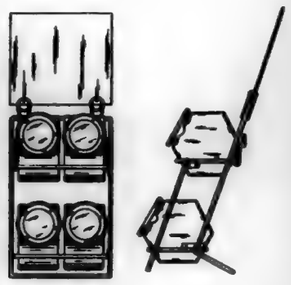
366,577
FULL SIZE FOOTALL LOCKER
Thomas A. Tiebe, Barrington Hills; Stephen P. Whitehead, Elgin, and Lyle A. Reuboe, Aurora, all of Ill., assignors to Suncast Corporation, Batavia, Ill.
Filed May 5, 1994, Ser. No. 22,462
Term of patent 14 years
U.S. Cl. D6—434



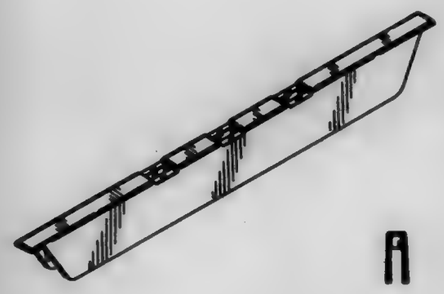
366,578
MOBILE BEVERAGE STORAGE CABINET
Duane A. Cormican, Glenwood City, and Douglas J. Klatt, Hudson, both of Wis., assignors to Nor-Lake, Incorporated, Hudson, Wis.
Filed Apr. 1, 1993, Ser. No. 7,929
Term of patent 14 years
U.S. Cl. D6—470



366,579
CONTAINER SUPPORTING DISPLAY RACK
Ira M. Kozak, 2475 Woodlawn Dr., Northbrook, Ill. 60062
Filed Aug. 3, 1993, Ser. No. 11,349
Term of patent 14 years
U.S. Cl. D6—476



366,581
FOOD SERVICE DIVIDER BAR
Argyle Campbell, Newport Beach, and Larry D. Maddux, Westminster, both of Calif., assignors to Cambro Manufacturing Company, Huntington Beach, Calif.
Filed Aug. 22, 1994, Ser. No. 27,397
Term of patent 14 years
U.S. Cl. D6—491



366,580
ELLIPTICAL COFFEE TABLE
Richard D. Berry, Jr., and David A. Clark, both of Hickory, N.C., assignors to Ethan Allen Finance Corporation, Danbury, Conn.
Filed Dec. 19, 1994, Ser. No. 32,405
Term of patent 14 years
U.S. Cl. D6—480



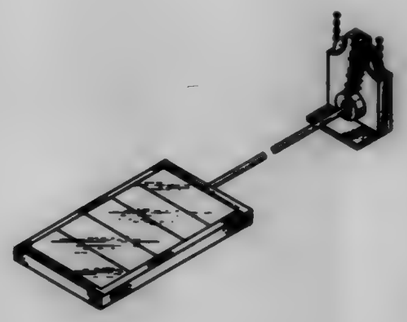
366,582
ARMREST
Hans-Joachim Wagerfor, Wutoschingen, Germany, assignor to Herman Miller, Inc., Zeeland, Mich.
Filed Aug. 3, 1994, Ser. No. 25,223
Term of patent 14 years
U.S. Cl. D6—581



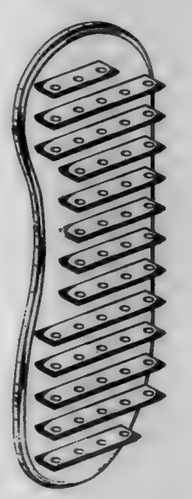
366,583
DISPOSABLE DIAPER DISPENSER
Melvin C. Scalfe, R.R. #1, Box 674, Osceola Mills, Pa. 16666
Filed Feb. 27, 1995, Ser. No. 35,399
Term of patent 14 years
U.S. Cl. D6—515



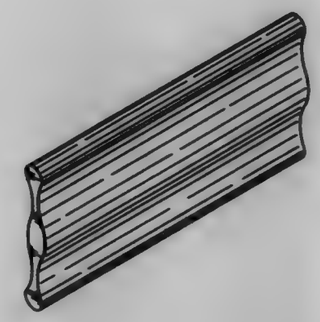
366,585
SOLAR ACTIVATED OPENING AND CLOSING DEVICE FOR USE WITH VERTICAL BLINDS
Melvin M. Mueller, 810 Old Willow Rd. #109, Prospect Heights, Ill. 60070
Filed Jun. 27, 1994, Ser. No. 25,885
Term of patent 14 years
U.S. Cl. D6—500



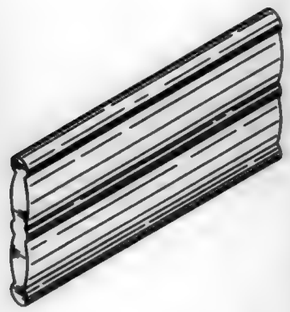
366,584
GOLF BALL DISPLAY RACK
Kevin M. Ellis, 3429 Berkeley Way, Dallas, Ga. 30132
Filed May 2, 1994, Ser. No. 22,167
Term of patent 14 years
U.S. Cl. D6—552



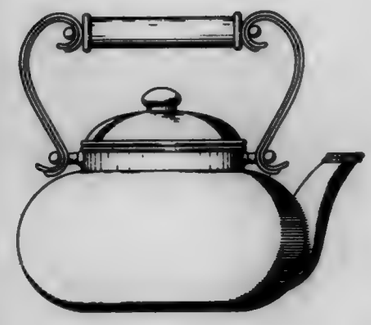
366,586
LOUVER
Russell H. Underdahl, North Oaks, Minn., assignor to Pinecrest, Inc., Minneapolis, Minn.
Filed Jul. 21, 1994, Ser. No. 26,173
Term of patent 14 years
U.S. Cl. D6—580



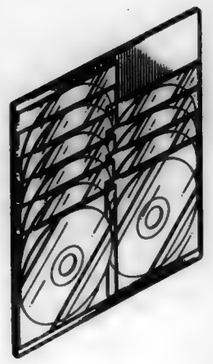
366,587
LOUVER
Russell H. Underdahl, North Oaks, Minn., assignor to Pinecrest, Inc., Minneapolis, Minn.
Filed Jul. 21, 1994, Ser. No. 26,174
Term of patent 14 years
U.S. Cl. D6—580



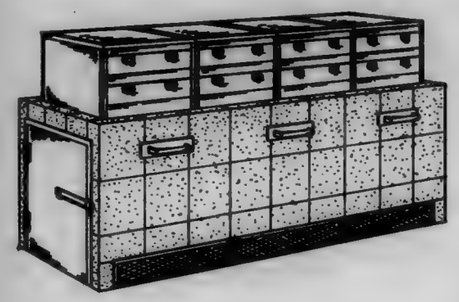
366,589
KETTLE
Bruce Ancona, New York, N.Y., assignor to B. Via International Housewares, Inc., Englewood Cliffs, N.J.
Filed Oct. 17, 1994, Ser. No. 29,760
Term of patent 14 years
U.S. Cl. D7—320



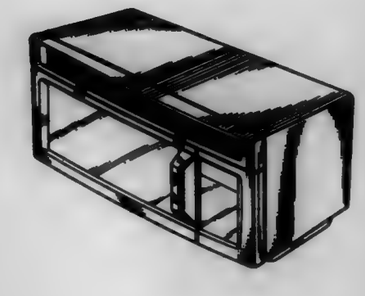
366,588
COMPACT DISC DISPLAY BOARD AND HOLDER
Richard A. Gnant, 4839 E. Sunnyside Dr., Scottsdale, Ariz. 85254
Filed Oct. 27, 1994, Ser. No. 30,335
Term of patent 14 years
U.S. Cl. D6—630



366,590
COOK/SMOKER
Lawrence E. Reddick, 3201 Loma Verde Dr., #108, San Jose, Calif. 95117
Filed Apr. 17, 1995, Ser. No. 37,715
Term of patent 14 years
U.S. Cl. D7—348



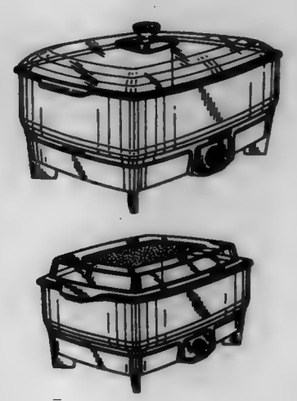
366,591
MICROWAVE OVEN
Byung S. Kim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Aug. 2, 1994, Ser. No. 26,648
Claims priority, application Rep. of Korea, Mar. 24, 1994, 5786/1994
Term of patent 14 years
U.S. Cl. D7—351



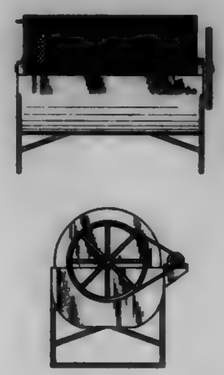
366,593
AUTOMATIC FOOD STIR
Francis L. Robinson, 335 Mohawk Dr., Lancaster, Ohio 43130
Filed Dec. 3, 1993, Ser. No. 15,949
Term of patent 14 years
U.S. Cl. D7—376



366,592
ELECTRIC COOKER
William C. Cesaroni, Glenview, Ill., and Edward J. Duquaine, Jr., West Bend, Wis., assignors to The West Bend Company, West Bend, Wis.
Filed Apr. 15, 1987, Ser. No. 38,795
The portion of the term of this patent subsequent to Dec. 8, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—360



366,594
ELECTRIC FISH SCALER
Timothy Ousley, 4704 N. Camp Shabeia Dr., Rochester, Ind. 46975
Filed Mar. 10, 1994, Ser. No. 19,708
Term of patent 14 years
U.S. Cl. D7—383



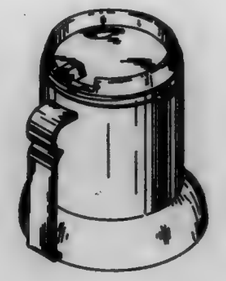
366,595
FOOD PROCESSOR
William C. Dobson, West Bend, Wis., and William C. Cesaroni, Glenview, Ill., assignors to The West Bend Company, West Bend, Wis.
Filed May 20, 1987, Ser. No. 53,431
The portion of the term of this patent subsequent to Nov. 8, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—384



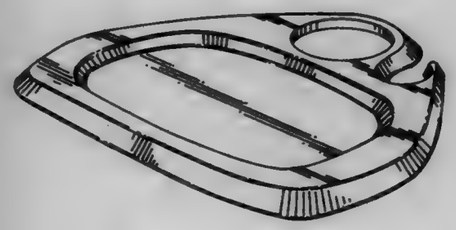
366,596
MIXING TOOL FOR LIQUIDS
Harvey L. Hewin, 628 Hartford Ave., Huntington Beach, Calif. 92648
Filed Jan. 19, 1993, Ser. No. 3,738
Term of patent 14 years
U.S. Cl. D7—412



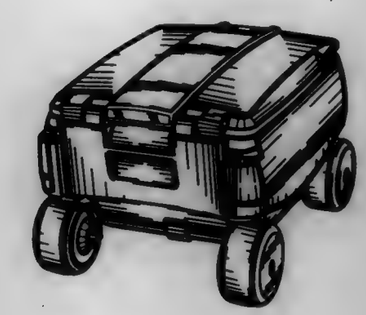
366,597
DRINKING MUG
David W. Smith, Fort Collins, and Ted F. Kelley, Jr., Boulder, both of Colo., assignors to Teledyne Industries, Inc., Ft. Collins, Colo.
Filed Oct. 7, 1994, Ser. No. 29,535
Term of patent 14 years
U.S. Cl. D7—536



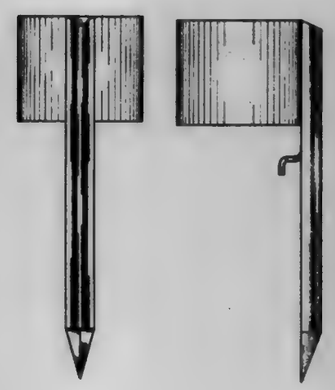
366,598
TRAY
Robert W. Geddes, Fortitude Valley Qld., Australia, assignor to Nidea Pty. Ltd., Queensland, Australia
Filed Apr. 8, 1994, Ser. No. 21,106
Claims priority, application Australia, Jan. 12, 1993, 3251/93
Term of patent 14 years
U.S. Cl. D7—553



366,599
WHEELED INSULATED COOLER
Patrick W. Brown, Strongsville, and Craig M. Saunders, Rocky River, both of Ohio, assignors to Rubbermaid Specialty Products Inc., Wooster, Ohio
Filed Dec. 21, 1994, Ser. No. 32,554
Term of patent 14 years
U.S. Cl. D7—685



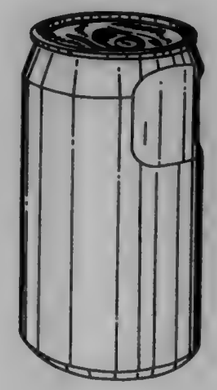
366,600
COMBINED BEVERAGE CONTAINER AND BLANKET/TOWEL SPIKE
Jay S. Laskowski, 2247 Arabian Way, and Karl E. Gastling, 2244 Arabian Way, both of Corona, Calif. 91719
Filed Jan. 5, 1995, Ser. No. 33,123
Term of patent 14 years
U.S. Cl. D7—620



366,681
BOTTLE HOLDER
Akop Oroudjian, 1135 E. Maple St., Glendale, Calif. 91205
Filed Oct. 24, 1994, Ser. No. 30,184
Term of patent 14 years
U.S. Cl. D7—622



366,682
DRINKING STRAW DISPENSER
Evan R. Penn, Bondi, and Robert D. Barta, Double Bay, both of, Australia, assignors to 3D International Promotions Pty. Ltd., Australia
Filed Jun. 22, 1994, Ser. No. 24,864
Term of patent 14 years
U.S. Cl. D7—636



366,603

HANDLE FOR FORKS, SPOONS, AND TOOTHBRUSHES

Susan Harrison, Wichita Falls, Tex., assignor to Zooth, Inc., Wichita Falls, Tex.

Continuation-in-part of Ser. No. 3,463, Jan. 12, 1993, Pat. No. 5,269,420. This application Oct. 22, 1993, Ser. No. 14,501

Term of patent 14 years

U.S. Cl. D7—654



366,604

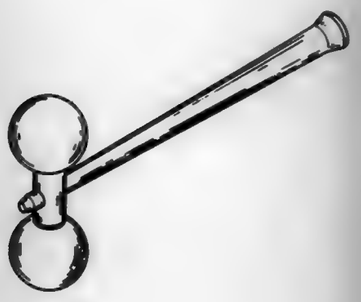
NOVELTY HAMMER

Louis E. Welch, Jr., 1010 Dodd St., River Wood, Nebr. 68883

Filed Nov. 30, 1994, Ser. No. 31,533

Term of patent 14 years

U.S. Cl. D8—77



366,605

HANDLE FOR A KNIFE

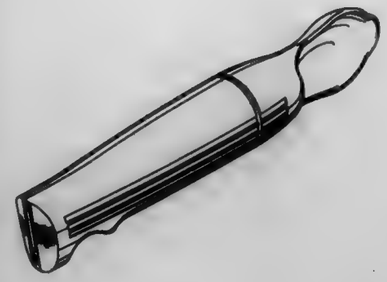
Katsumi Hasegawa, Sagamihara, Japan, assignor to Kai R & D Center Co., Ltd., Seki, Japan

Filed Apr. 29, 1994, Ser. No. 22,185

Claims priority, application Japan, Jan. 29, 1993, 5-32916

Term of patent 14 years

U.S. Cl. D8—107



366,606

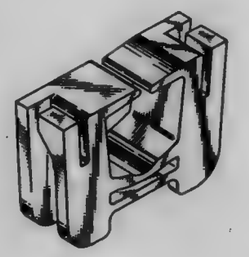
CABLE HOLDER

Toshinobu Nakamura, Tokyo, Japan, assignor to Shinagawa Shoko Co., Ltd., Tokyo, Japan

Filed May 24, 1994, Ser. No. 23,403

Term of patent 14 years

U.S. Cl. D8—356



366,607

TIE DOWN STRAP

Paul Holmgren, Stanchfield, and Michael Bobo, Braham, both of Minn., assignors to JSC Marketing Incorporated, Minneapolis, Minn.

Filed Sep. 17, 1993, Ser. No. 13,070

Term of patent 14 years

U.S. Cl. D8—382



366,608

PLASTIC FASTENER

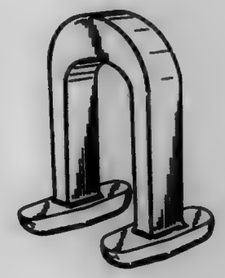
Charles L. Deschenes, North Attleboro; Terrence J. Jones, Bolton, both of Mass., and William J. Cooper, Woonsocket, R.I., assignors to Avery Dennison Corporation, Pasadena, Calif.

Filed Sep. 19, 1994, Ser. No. 28,647

The portion of the term of this patent subsequent to Aug. 21, 1995, has been disclaimed.

Term of patent 14 years

U.S. Cl. D8—382



366,609

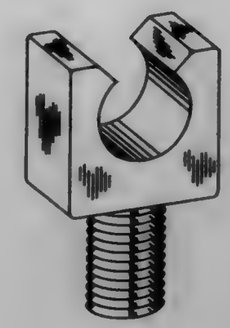
CLAMP FOR PEGBOARD HOOK

James L. McDonald, 260 Tipton Rd., Roseburg, Oreg. 97470

Filed Sep. 9, 1994, Ser. No. 28,214

Term of patent 14 years

U.S. Cl. D8—387



366,610

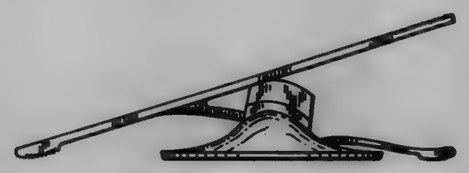
SPRING CLIP

Jon M. Blumenauer, Dalton, Ga., assignor to Clipstix, Inc., Dalton, Ga.

Filed Sep. 14, 1994, Ser. No. 28,308

Term of patent 14 years

U.S. Cl. D8—395



366,611
RAZOR BLADE CARTRIDGE DISPENSER
Norman D. Polseon, Andover, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Jul. 20, 1994, Ser. No. 26,146
Term of patent 14 years
U.S. Cl. D9—342



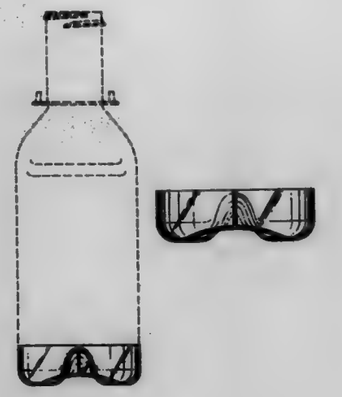
366,612
PACKAGE FOR INSTANT ADHESIVES
Richard C. Edstrom, New York, N.Y.; Bryon J. Bourgeois, St. Albans, Vt., and Richard N. Hirst, Teaneck, N.J., assignors to Loctite Corporation, Hartford, Conn.
Filed Mar. 11, 1994, Ser. No. 19,836
Term of patent 14 years
U.S. Cl. D9—429



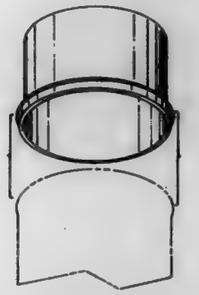
366,613
DESSERT CUP
Jerry Fultz, Lancaster, Pa., assignor to BC-USA, Inc., New Holland, Pa.
Filed May 6, 1994, Ser. No. 22,517
Term of patent 14 years
U.S. Cl. D9—429



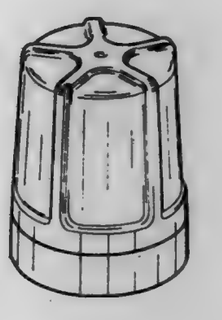
366,614
BASE FOR A BOTTLE
Frank E. Semersky, and Daniel J. Durham, both of Toledo, Ohio, assignors to Plastic Technologies, Inc., Holland, Ohio
Filed Nov. 15, 1994, Ser. No. 31,019
Term of patent 14 years
U.S. Cl. D9—434



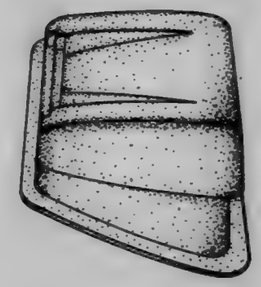
366,615
MIXING SHIELD
Robert A. Gearin, 3090 N. Lexington Ave., St. Paul, Minn. 55113
Continuation-in-part of Ser. No. 1,733, Nov. 23, 1992, abandoned. This application Nov. 21, 1994, Ser. No. 31,271
Term of patent 14 years
U.S. Cl. D9—434



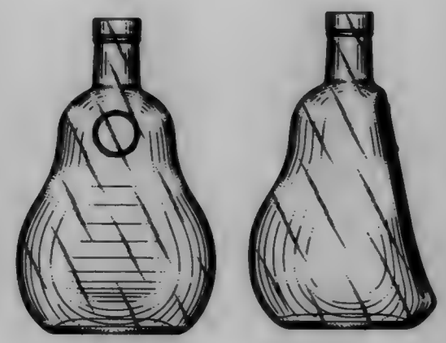
366,616
PROTECTIVE CAP FOR FINGER PUMP
Michael G. Knickerbocker, Crystal Lake, Ill., assignor to Aptar Group, Inc., Cary, Ill.
Filed Nov. 3, 1994, Ser. No. 30,614
Term of patent 14 years
U.S. Cl. D9—445



366,617
CONTAINER SPOUT
Jean-Marie Hotz, Prèles, Switzerland, assignor to Tetra Alfa Holdings S.A., Pully, Switzerland
Continuation-in-part of Ser. No. 32,409, Dec. 19, 1994, abandoned, which is a continuation of Ser. No. 918,228, Jul. 24, 1992, abandoned. This application Feb. 17, 1995, Ser. No. 35,401
Claims priority, application Switzerland, Jan. 24, 1992, 119 528
Term of patent 14 years
U.S. Cl. D9—447



366,618
BOTTLE
Isabelle Brillet, and Jean-Louis Brillet, both of Chatenoncuf, France, assignors to Maison J.R. Brillet S.A., Chatenoncuf, France
Filed Apr. 5, 1995, Ser. No. 37,163
Claims priority, application France, Nov. 10, 1994, 94 6240
Term of patent 14 years
U.S. Cl. D9—522



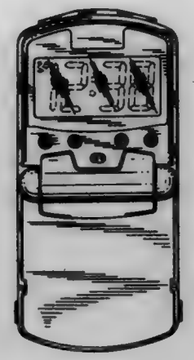
366,619
BOTTLE
Don Holbrook, 7673 S. Caballero Dr., Sandy, Utah 84093
Filed Jan. 24, 1995, Ser. No. 33,933
Term of patent 14 years
U.S. Cl. D9—526



366,620
COMBINED BOTTLE AND CAP
Gene J. Kuzma, Columbus, and Douglas W. Weaver, Troy, both of Ohio, assignors to G K Packaging, Inc., Columbus, Ohio
Filed Jun. 28, 1994, Ser. No. 25,319
Term of patent 14 years
U.S. Cl. D9—542



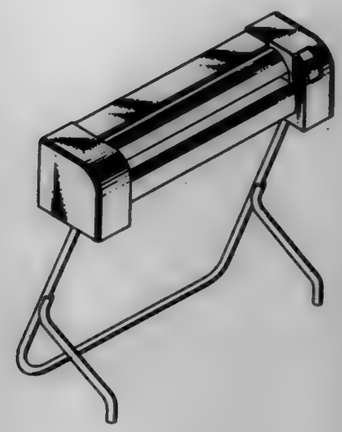
366,621
TRAVEL CLOCK
Cheng F. W. George, Shiu Fai Terrace, and Yu P. Hop, Kwai Chung, both of, Hong Kong, assignors to Tomor Electronics Ltd., Quarry Bay, Hong Kong
Filed Jan. 24, 1995, Ser. No. 33,953
Term of patent 14 years
U.S. Cl. D10—15



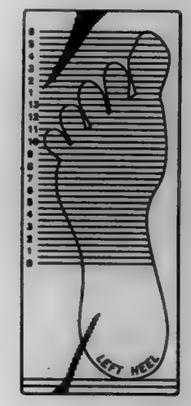
366,622
HANDS-FREE JIGGER
William A. Cary, 1041 Washington Ave., Box 18, Miami Beach, Fla. 33139
Division of Ser. No. 6,067, Mar. 23, 1993, Pat. No. Des. 350,904. This application Aug. 8, 1994, Ser. No. 24,721
Term of patent 14 years
U.S. Cl. D10—46.2



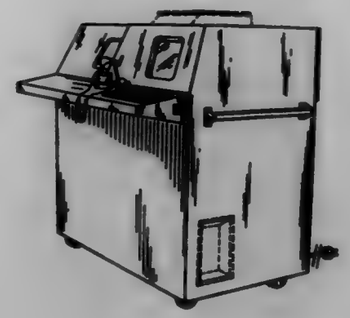
366,623
PLOTTER HOUSING
Patrick Nguyen, 759 S. Leland Dr., Diamond Bar, Calif. 91765
Filed May 16, 1995, Ser. No. 38,817
Term of patent 14 years
U.S. Cl. D10—63



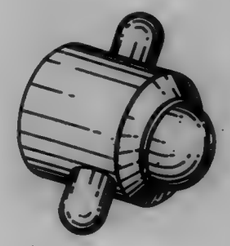
366,624
RIGHT AND LEFT FOOT SHOE SIZER
Kyle R. Collins, 1440 Longfellow, Detroit, Mich. 48206
Filed Nov. 21, 1994, Ser. No. 31,279
Term of patent 14 years
U.S. Cl. D10—70



366,625
OIL ANALYSIS APPARATUS
Charles E. Carroll, Kingston, N.H., assignor to Thermo Jarrell Ash Corporation, Franklin, Mass.
Division of Ser. No. 191,395, Feb. 2, 1994. This application Jan. 5, 1995, Ser. No. 33,141
Term of patent 14 years
U.S. Cl. D10—81



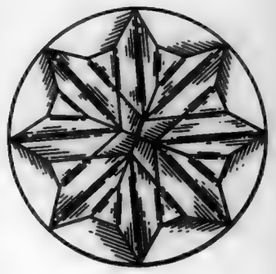
366,626
WATCH CROWN/STEM
Francoise H. Druz, Rue Haute 36, CH 1422, Grandson, Switzerland
Filed May 25, 1994, Ser. No. 23,423
Term of patent 14 years
U.S. Cl. D10—131



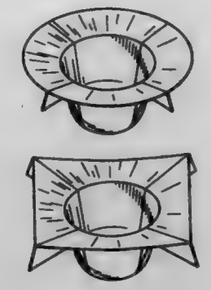
366,627
WATCH BRACELET
Burgauer Eddy, Le Landeron, Switzerland, assignor to Severin Montres AG (Severin Montres SA) (Severin Montres Ltd), Longeau, Switzerland
Filed Oct. 25, 1994, Ser. No. 30,268
Claims priority, application Hague Agreement, Apr. 26, 1994, DMA/002501
Term of patent 14 years
U.S. Cl. D11—17



366,628
DIAMOND
Henry Grossbard, Belle Harbor, N.Y., assignor to Park Satisrapat, Bangrak THX
Filed Nov. 14, 1994, Ser. No. 30,949
Term of patent 14 years
U.S. Cl. D11—90



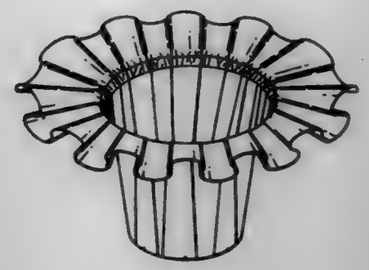
366,629
FLOWER POT COVER
Donald E. Weder, and Joseph G. Stracter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 781,453, Oct. 21, 1991, Pat. No. Des. 348,634, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Oct. 20, 1992, Ser. No. 693
Term of patent 14 years
U.S. Cl. D11—164



366,630
FLOWER POT COVER
Donald E. Weder, and Joseph G. Stracter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 807,684, Dec. 16, 1991, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, said Ser. No. 710,272is a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, and Ser. No. 411,245, Sep. 22, 1989. This application Jan. 8, 1993, Ser. No. 3,581
Term of patent 14 years
U.S. Cl. D11—164



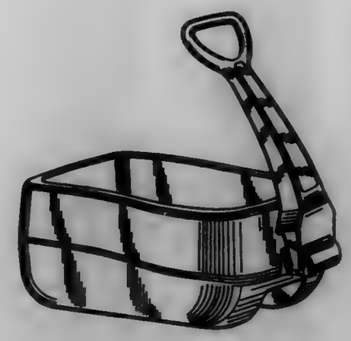
366,631
FLOWER POT COVER
Donald E. Weder, and Joseph G. Stracter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation of Ser. No. 543,628, Jun. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 411,247, Sep. 22, 1989, which is a continuation of Ser. No. 283,014, Dec. 8, 1988, abandoned, which is a continuation of Ser. No. 652,983, Sep. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 613,853, May 22, 1984, Pat. No. Des. 293,224. This application Jul. 21, 1994, Ser. No. 26,208
Term of patent 14 years
U.S. Cl. D11—164



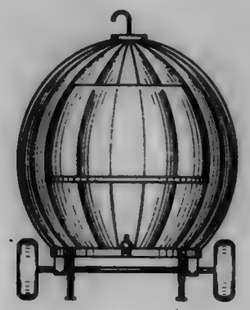
366,632
FLOWER STEM HOLDER FOR FLOWER VASE
Daniel W. Gassner, 208 Daniel Boone Rd., Birdsboro, Pa. 19508
Filed Dec. 6, 1994, Ser. No. 32,102
Term of patent 14 years
U.S. Cl. D11—164



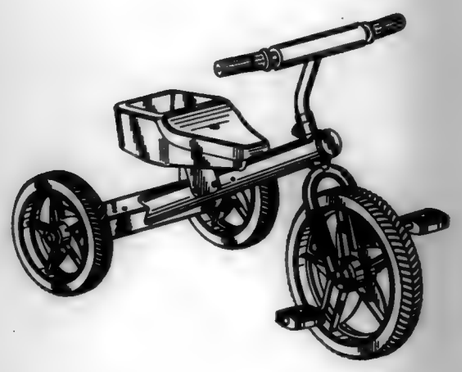
366,633
CHILD'S SLED
Marie A. Pasin, Hinsdale, Ill., and James B. Easley, Minneapolis, Minn., assignors to Radio Flyer Inc., Chicago, Ill.
Filed Sep. 22, 1994, Ser. No. 28,801
Term of patent 14 years
U.S. Cl. D12—6



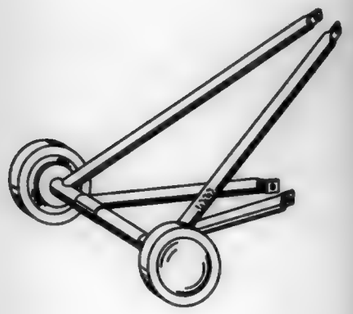
366,634
LEMONADE STAND
John R. Anderson, 15438 Oasis Rd., Caldwell, Id. 83605
Filed Jul. 11, 1994, Ser. No. 25,716
Term of patent 14 years
U.S. Cl. D12—102



366,635
CHILD'S TRICYCLE
Mark Pauls, Oak Park, Ill., and James B. Easley, Minneapolis, Minn., assignors to Radio Flyer Inc., Chicago, Ill.
Filed Sep. 22, 1994, Ser. No. 28,802
Term of patent 14 years
U.S. Cl. D12—112



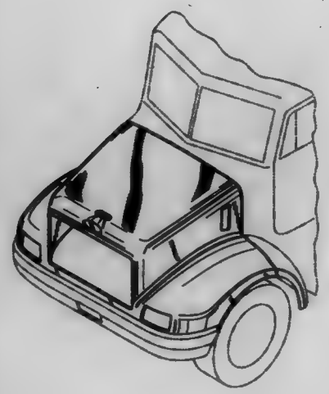
366,636
BICYCLE SAFETY UNIT FOR STUNT WHEELIES
Raymond Smith, 26 Becker Ter., Irvington, N.J. 07111
Filed Jun. 17, 1994, Ser. No. 24,617
Term of patent 14 years
U.S. Cl. D12—114



366,637
VEHICLE BODY PROTECTIVE PANEL UNIT
Russell Bushey, 742 2nd Ave., Space 24, P.O. Box 69, Gold Hill, Oreg. 97545
Filed Aug. 31, 1994, Ser. No. 27,777
Term of patent 14 years
U.S. Cl. D12—167



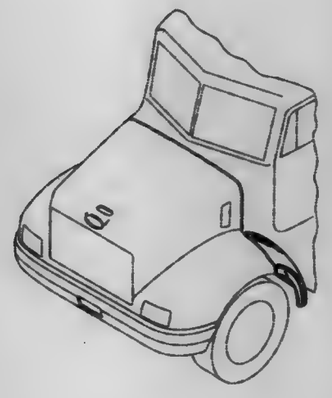
366,638
TRUCK HOOD
Eric N. Tucker, Denton, Tex., and Ronaldo S. Natividad, San Jose, Calif., assignors to PACCAR Inc.
Filed Sep. 16, 1994, Ser. No. 28,501
Term of patent 14 years
U.S. Cl. D12—173



366,639
VEHICLE DUST DEFLECTOR
Rodney E. Herwill, P.O. Box 171, Salisbury, Queensland 4107, Australia
Filed Mar. 8, 1994, Ser. No. 19,643
Claims priority, application Australia, Sep. 14, 1993, 2858/93
Term of patent 14 years
U.S. Cl. D12—181



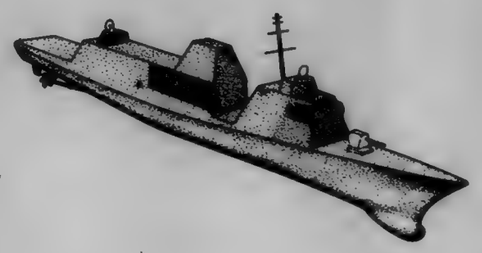
366,640
TRUCK QUARTER FENDER
Eric N. Tucker, Denton, Tex., and Ronaldo S. Natividad, San Jose, Calif., assignors to Paccar Inc, Bellevue, Wash.
Filed Sep. 16, 1994, Ser. No. 28,503
Term of patent 14 years
U.S. Cl. D12—184



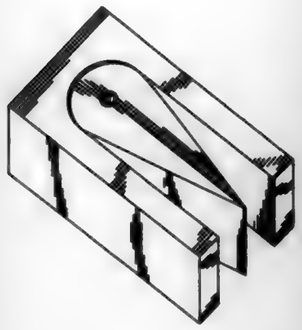
366,641
VEHICLE WHEEL
Mark D. Neeper, Denver, Colo., assignor to Mobile Hi-Tech Wheels, Torrance, Calif.
Filed Oct. 31, 1994, Ser. No. 30,462
Term of patent 14 years
U.S. Cl. D12—309



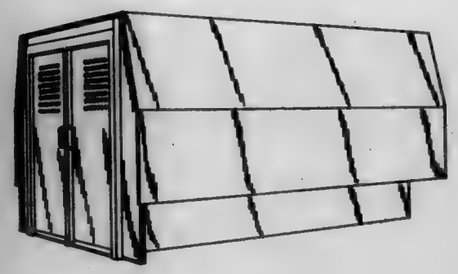
366,642
MULTI PURPOSE FRIGATE
James P. Brooks; Ross L. Buck, both of Gautier; John P. Hackett, Ocean Springs; Kenneth E. Hoffman, Gautier; Kermit B. Pethtel, Jr., Ocean Springs; John F. Robbins, Gulfport; William J. Steckman; Martin F. Fitzgerald, both of Ocean Springs, and Thomas J. Thawley, Pascagoula, all of Miss., assignors to Ingalls Shipbuilding Inc., Pascagoula, Miss.
Filed Jul. 28, 1994, Ser. No. 26,445
Term of patent 14 years
U.S. Cl. D12—315



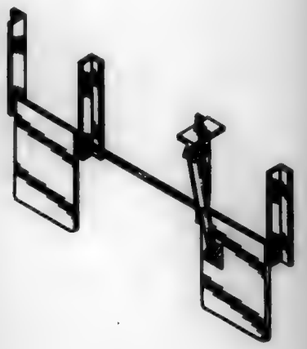
366,643
WATER CRAFT PROPULSION DEVICE WITH PIVOTING VANE
Lester E. Ballentine, 9525 Yale Rd., Deerfield, Ohio 44411
Filed Sep. 1, 1994, Ser. No. 27,789
Term of patent 14 years
U.S. Cl. D12—317



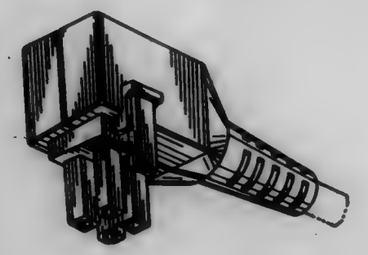
366,645
PRISONER TRANSPORT MODULE
Ronald L. Dirck, P.O. Box 196, Warsaw, Ind. 46580
Filed Oct. 15, 1990, Ser. No. 597,585
Term of patent 14 years
U.S. Cl. D12—405



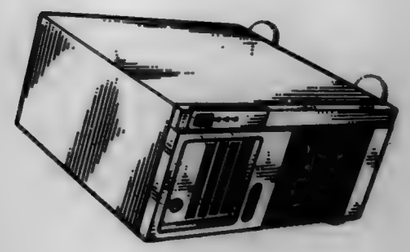
366,644
BOAT SPEED REGULATOR
Lyle S. Morrow, 1014 Alpine Rd., Montrose, Colo. 81401-4686
Filed Jan. 11, 1995, Ser. No. 33,743
Term of patent 14 years
U.S. Cl. D12—317



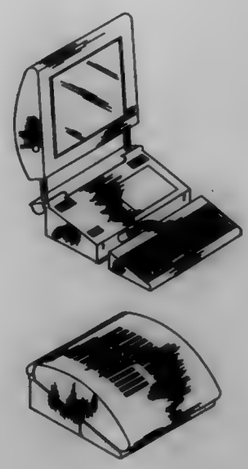
366,646
ELECTRICAL CONNECTOR
Francis L. Carr, Downers Grove, Ill., assignor to SAFCO Corporation
Filed Feb. 10, 1995, Ser. No. 34,719
Term of patent 14 years
U.S. Cl. D13—146



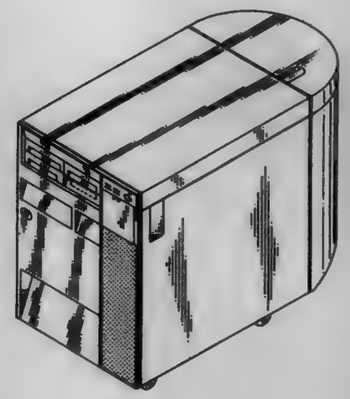
366,647
DATA PROCESSING EQUIPMENT UNIT
Randall W. Martin, The Woodlands, Tex., assignor to Compaq Computer Corporation, Houston, Tex.
Division of Ser. No. 951,550, Sep. 24, 1992. This application Jan. 31, 1994, Ser. No. 18,150
Term of patent 14 years
U.S. Cl. D14—100



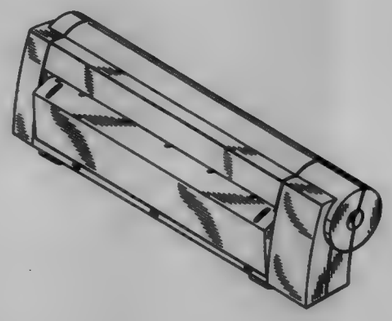
366,649
DESKTOP COMPUTER HOUSING
Paul L. Soderburg, 66 Barranca #3, Santa Barbara, Calif. 93109
Filed Feb. 9, 1994, Ser. No. 18,725
Term of patent 14 years
U.S. Cl. D14—106



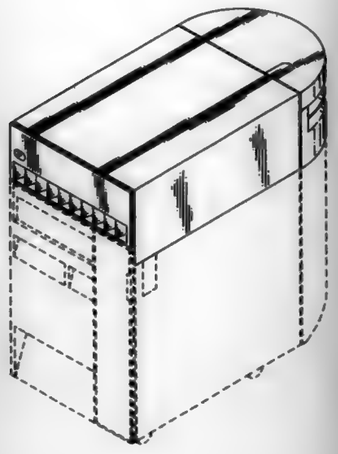
366,648
DATA PROCESSING SYSTEM
David W. Hill, and Tim K. Murphy, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 3, 1994, Ser. No. 22,254
Term of patent 14 years
U.S. Cl. D14—100



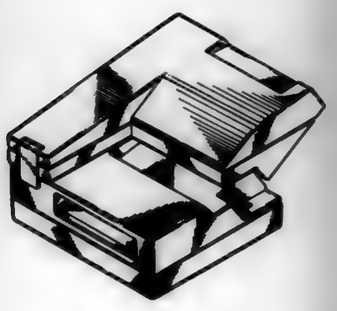
366,650
DOCUMENT SCANNER
Raymond J. McKinnon, Jr., Castro Valley, and Michael R. Barry, Palo Alto, both of Calif., assignors to Visioneer Communications, Inc., Palo Alto, Calif.
Filed Oct. 22, 1993, Ser. No. 14,507
Term of patent 14 years
U.S. Cl. D14—114



366,651
DISK STORAGE EXPANSION UNIT FOR A DATA PROCESSING SYSTEM
David W. Hill, and Tim K. Murphy, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 3, 1994, Ser. No. 22,317
Term of patent 14 years
U.S. Cl. D14—107



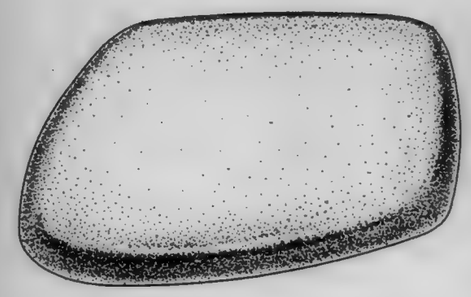
366,652
DOCUMENT SCANNER
Hayato Ichinose, Yamanashi, Japan, assignor to Nisca Corporation, Yamanashi, Japan
Filed Mar. 6, 1995, Ser. No. 36,601
Claims priority, application Japan, Sep. 6, 1994, 6-26973
Term of patent 14 years
U.S. Cl. D14—107



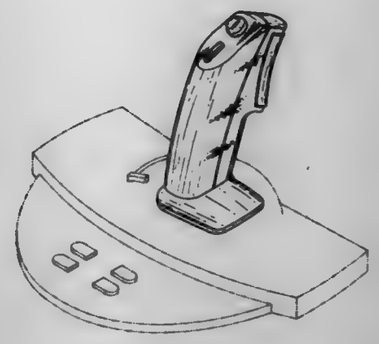
366,653
WRISTREST
Ross Lovegrove, London, England, and Stephen Peart, Campbell, Calif., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jul. 26, 1994, Ser. No. 26,355
Term of patent 14 years
U.S. Cl. D14—114



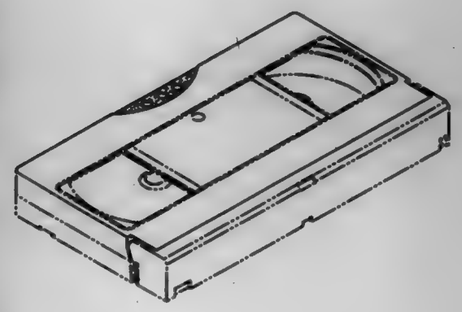
366,654
MOUSEPAD
Ross Lovegrove, London, England, and Stephen Peart, Campbell, Calif., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jul. 26, 1994, Ser. No. 26,356
Term of patent 14 years
U.S. Cl. D14—114



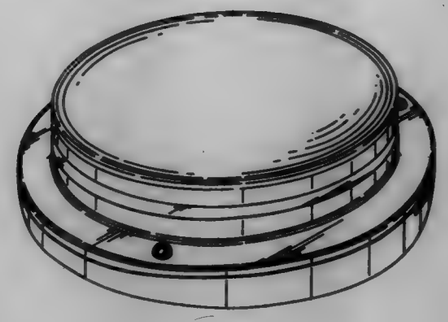
366,655
HANDLE FOR A COMPUTER JOYSTICK
Russell Sanchez; Mike Paull; Steve Kaneko, all of Seattle, Wash.; Henry Chin, Portland, Oreg.; Robert Dillon, Venice, Calif.; Michael Knodt, Columbus, Ohio, and Claire Bellard, Seattle, Wash., assignors to Microsoft Corporation, Redmond, Wash.
Filed Dec. 6, 1994, Ser. No. 31,814
Term of patent 14 years
U.S. Cl. D14—114



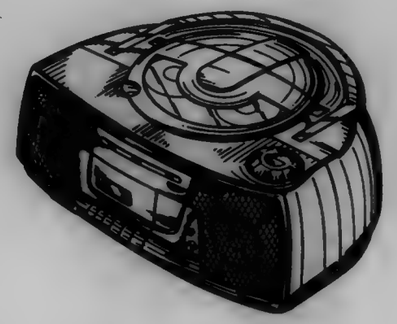
366,656
REAR PORTION OF A TOP SURFACE FOR A VIDEOCASSETTE
Gregory H. Johnson, Oakdale, Minn.; Mark J. Cieslo, Hilliard, and Donald J. Stauffenberg, Dublin, both of Ohio, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 5, 1994, Ser. No. 20,924
Term of patent 14 years
U.S. Cl. D14—121



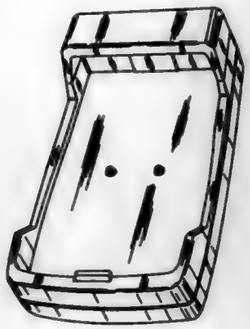
366,657
COMMUNICATION AID
Leander Haligren, St. Paul, and Lisa E. Peterson, Circle Pines, both of Minn., assignors to Ablenet, Inc., Minneapolis, Minn.
Filed Sep. 2, 1994, Ser. No. 28,815
Term of patent 14 years
U.S. Cl. D14—160



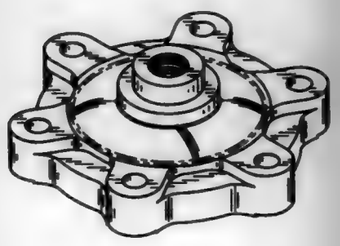
366,658
COMBINED DIGITAL AUDIO DISK PLAYER, RADIO AND TAPE RECORDER
Satoshi Fukutome, Hirakata, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jan. 12, 1995, Ser. No. 34,597
Term of patent 14 years
U.S. Cl. D14—168



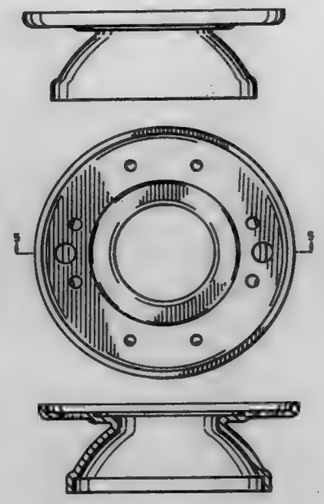
366,659
CRADLE MOUNT FOR A PERSONAL COMPUTER FOR USE IN A VEHICLE
Monte Ross, St. Louis, Mo., and Howard Konig, Southfield, Mich., assignors to Laser Data Technology, Inc., St. Louis, Mo.
Filed Dec. 8, 1993, Ser. No. 16,133
Term of patent 14 years
U.S. Cl. D14—114



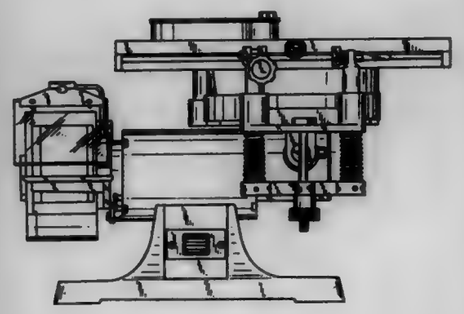
366,660
SNOW MOBILE ENGINE HEAD
Steven R. Benson, 5919 S. 350 West, Murray, Utah 84107
Filed Sep. 23, 1994, Ser. No. 28,855
Term of patent 14 years
U.S. Cl. D15—5



366,661
FLANGED FITTING FOR A CATALYTIC CONVERTER
Toshiaki Kanesuiten, Kobe, Japan, assignor to Kabushiki Kaisha Kanesuiten, Akashi, Japan
Filed Oct. 12, 1994, Ser. No. 29,641
Claims priority, application Japan, May 2, 1994, 6-12787; May 2, 1994, 6-12788
Term of patent 14 years
U.S. Cl. D15—5



366,662
GRINDING AND SHARPENING MACHINE
Jeffrey L. Haffely, Gibsonia; Xun Lei, Cheswick, and Louis C. Brickner, Pittsburgh, all of Pa., assignors to Delta International Machinery Corp., Pittsburgh, Pa.
Filed Aug. 9, 1994, Ser. No. 26,701
Term of patent 14 years
U.S. Cl. D15—124



366,663
LENS COVER FOR CONVERTING EYEGLASSES TO SUNGLASSES
Carlene Metruk, R.R. 1 Box 2910, Underhill, Vt. 05489
Filed Mar. 14, 1994, Ser. No. 19,849
Term of patent 14 years
U.S. Cl. D16—101



366,664
Patent Not Issued For This Number

366,665
CAMERA REMOTE CONTROLLER
Hiroshi Morobushi, and Tetsuya Yamazaki, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., and Mikasui Electric Co., Ltd., Japan
Filed Oct. 20, 1993, Ser. No. 14,385
Claims priority, application Japan, Apr. 28, 1993, 5-12482
Term of patent 14 years
U.S. Cl. D16—237



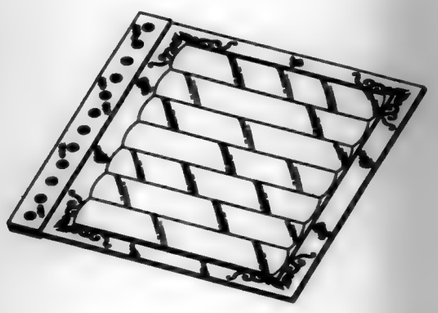
366,666
SUNGLASSES
Gregory F. Arnette, 33965 Cape Cove, South Laguna Beach, Calif. 92677
Filed Aug. 24, 1994, Ser. No. 27,543
Term of patent 14 years
U.S. Cl. D16—325



366,667
SUNGLASSES
Gregory F. Arnette, 33965 Cape Cove, South Laguna Beach, Calif. 92677
Filed Aug. 24, 1994, Ser. No. 27,545
Term of patent 14 years
U.S. Cl. D16—329



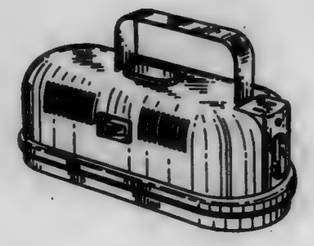
366,668
POCKETED PAGE FOR STORING PHOTOGRAPH NEGATIVES
Javier A. Infantas, 251 Galen Dr., Apt. 101-E, Key Biscayne, Fla. 33149
Filed Dec. 5, 1994, Ser. No. 31,767
Term of patent 14 years
U.S. Cl. D19—33



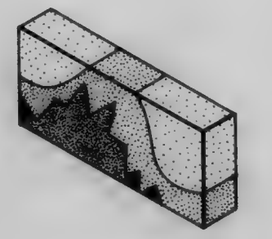
366,669
WRITING INSTRUMENT
James A. McCartney, 301 Sandra La., N. Syracuse, N.Y. 13212, and Tricia A. Jordan, 9510 Woodlawn Dr., Brewerton, N.Y. 13029
Filed May 1, 1995, Ser. No. 38,194
Term of patent 14 years
U.S. Cl. D19—42



366,670
BLACKBOARD ERASER
Sung J. Huh, 4/4, 142-4 Kuro-6-dong, Kuro-ku, Seoul, Rep. of Korea
Filed Sep. 9, 1994, Ser. No. 28,229
Claims priority, application Rep. of Korea, Mar. 14, 1994, 4784D94
Term of patent 14 years
U.S. Cl. D19—53



366,671
ERASER HAVING A SUNBURST
Sean Kitzmiller, Knoxville, Tenn., assignor to Berol Corporation, Brentwood, Tenn.
Filed Mar. 23, 1995, Ser. No. 36,597
Term of patent 14 years
U.S. Cl. D19—53



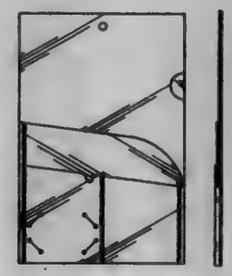
366,672
ERASER HAVING A SWIRL
Sean Kitzmiller, Knoxville, Tenn., assignor to Berol Corporation, Brentwood, Tenn.
Filed Mar. 23, 1995, Ser. No. 36,599
Term of patent 14 years
U.S. Cl. D19—53



366,673
EDUCATIONAL TOY FIGURE
Christine J. Harling-Berg, 59 Dunster Rd., Holliston, Mass. 01746
Filed Oct. 17, 1994, Ser. No. 29,754
Term of patent 14 years
U.S. Cl. D19—59



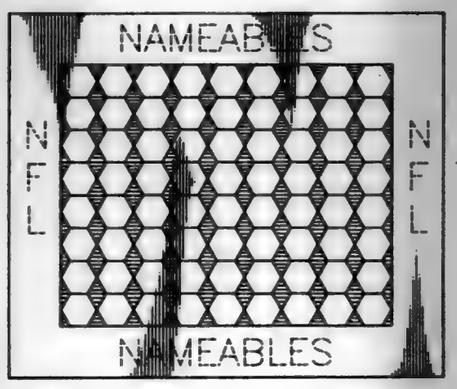
366,674
DOCUMENT HOLDER
Masafumi Hirai, Torrance, Calif., assignor to Lion Office Products, Inc., Gardena, Calif.
Filed Oct. 24, 1994, Ser. No. 30,899
Term of patent 14 years
U.S. Cl. D19—86



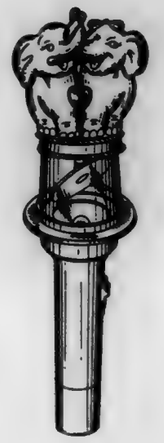
366,675
DISPLAY STAND
Ray M. Milojevich, 11541 SE. Flavel St., Portland, Oreg. 97266
Division of Ser. No. 4,731, Feb. 12, 1993, Pat. No. Des. 357,705. This application Mar. 7, 1995, Ser. No. 36,813
Term of patent 14 years
U.S. Cl. D19—98



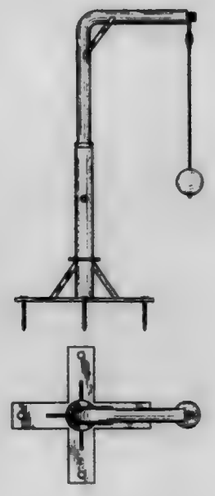
366,676
BOARD GAME
Roger W. Walker, 6329 S. 30th West Ave., Tulsa, Okla. 74132
Filed Aug. 31, 1994, Ser. No. 27,765
Term of patent 14 years
U.S. Cl. D21—34



366,678
TOY FLASHLIGHT
Benjamin J. Cimock, Altamonte Springs, Fla., assignor to I & K Trading, Vienna, Va.
Filed Apr. 6, 1994, Ser. No. 20,900
Term of patent 14 years
U.S. Cl. D21—120



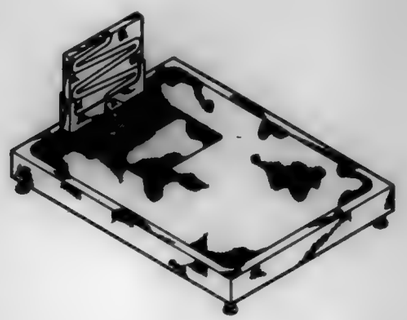
366,679
TETHERED BALL HITTING PRACTICE AID
Don A. Clements, 5205 Prince Charles Ct., Arlington, Tex. 76017
Filed Sep. 2, 1994, Ser. No. 23,011
Term of patent 14 years
U.S. Cl. D21—199



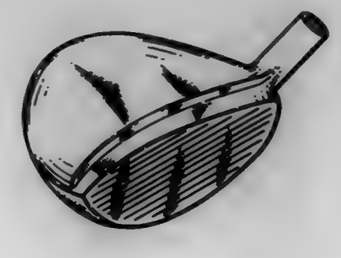
366,677
DINOSAUR-ROCKER
Ken E. Patterson, P.O. Box 1409, Eagle Point, Oreg. 97524
Filed Apr. 13, 1994, Ser. No. 21,237
Term of patent 14 years
U.S. Cl. D21—66



366,680
AUTOMATIC GOLF BALL TEEING PLATFORM
James G. Justz, Box 132 403 West Carter; James C. Hayden, 102 Tover P.O. Box 348, and Max A. Justz, Rte. 2, Box 69, all of Mo[illegible], Kans. 67867
Filed Sep. 26, 1994, Ser. No. 28,917
Term of patent 14 years
U.S. Cl. D21—208



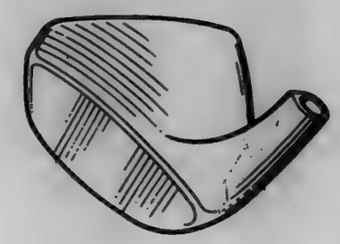
366,682
METAL WOOD GOLF CLUB HEAD
Anthony J. Antonious, 7720 Calle Fiesta, Sarasota, Fla. 34238
Filed Aug. 26, 1994, Ser. No. 27,582
Term of patent 14 years
U.S. Cl. D21—214



366,681
TENNIS RACKET
Joseph J. Hodges, 2 Hull St., Oceanside, N.Y. 11572
Filed Jun. 9, 1994, Ser. No. 24,134
Term of patent 14 years
U.S. Cl. D21—212



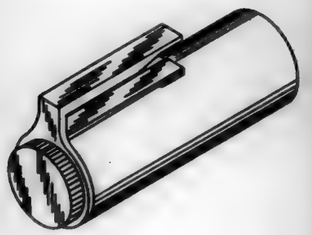
366,683
GOLF CLUB HEAD
Donald C. Wood, Carlsbad, Calif., assignor to Ping Golf Company, Carlsbad, Calif.
Filed Sep. 27, 1994, Ser. No. 29,620
Term of patent 14 years
U.S. Cl. D21—214



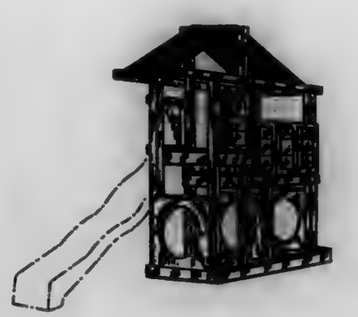
366,684
GOLF CLUB HEAD
Shih-An Lin, Ping-Tung, Taiwan, Prov. of China, assignor to ROCS Precision Casting Co., Ltd., Ping-Tung, Taiwan, Prov. of China
Filed Dec. 16, 1994, Ser. No. 32,355
Term of patent 14 years
U.S. Cl. D21—214



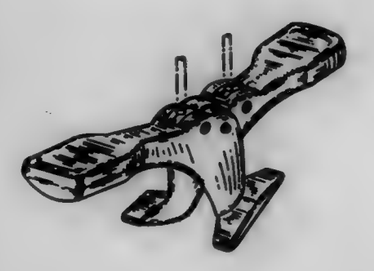
366,685
PORTABLE GOLF BALL WASHER
Charles A. Faulk, 1625 S. 109th St., Omaha, Nebr. 68144, and Robert M. Faulk, 9925 Devonshire Dr., Omaha, Nebr. 68114
Filed Dec. 28, 1994, Ser. No. 32,784
Term of patent 14 years
U.S. Cl. D21—234



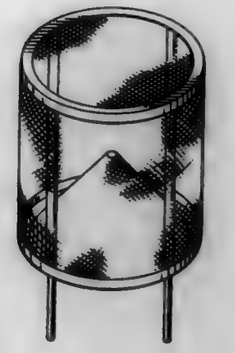
366,686
CHILDREN'S PLAY TOWER
William H. Ziegler, Jr., Bedford, Pa., assignor to Hedstrom Corporation, Bedford, Pa.
Filed Aug. 29, 1994, Ser. No. 27,698
Term of patent 14 years
U.S. Cl. D21—244



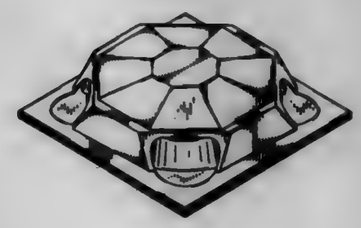
366,687
SWING SEATING PLATFORM
Robert J. Nolan, Columbus, Miss., and Paul C. Gillis, Bedford, Pa., assignors to Hedstrom Corporation, Bedford, Pa.
Filed Aug. 29, 1994, Ser. No. 27,726
Term of patent 14 years
U.S. Cl. D21—246



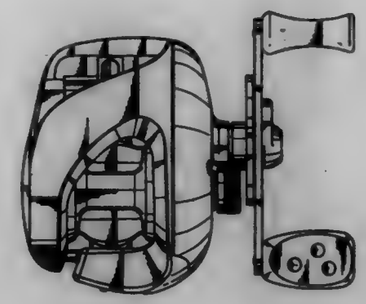
366,688
INSECT TRAP
Kenneth S. Carvalho, 3126A Catherina, Honolulu, HI. 96826
Filed Jan. 10, 1994, Ser. No. 17,311
Term of patent 14 years
U.S. Cl. D22—122



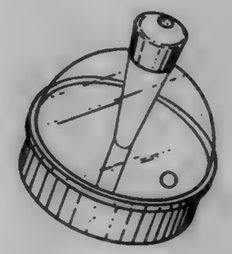
366,689
INSECT BAIT STATION
Joseph T. Mares, and Allan S. Lee, both of Valdosta, Ga., assignors to Griffin Corporation, Valdosta, Ga.
Filed Apr. 21, 1994, Ser. No. 21,619
Term of patent 14 years
U.S. Cl. D22—122



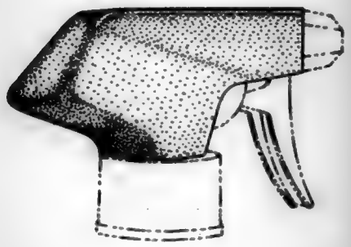
366,690
FISHING REEL
Achim Storz, Zell Am See, Austria, assignor to ABU AB, Svangsta, Sweden
Filed Nov. 7, 1994, Ser. No. 31,191
Term of patent 14 years
U.S. Cl. D22—140



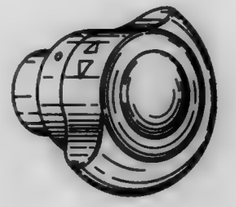
366,691
FISHING FLOAT
L. T. Botkins, 2910 Oak Dr., Paragould, Ark. 72450
Filed Sep. 30, 1993, Ser. No. 13,729
Term of patent 14 years
U.S. Cl. D22—146



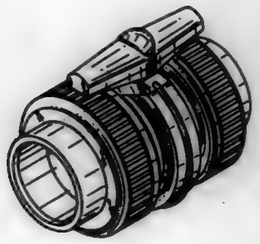
366,692
SPRAYER SHROUD
Ronald Wadsworth, Cambria, Calif., assignor to Calmar Inc., City of Industry, Calif.
Filed Sep. 21, 1994, Ser. No. 28,590
Term of patent 14 years
U.S. Cl. D23—213



366,694
FAUCET HANDLE
Hans Lobermeier, Menden, Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Germany
Filed Mar. 28, 1995, Ser. No. 36,805
Claims priority, application Germany, Jan. 31, 1994, 94 00 475.0
Term of patent 14 years
U.S. Cl. D23—250



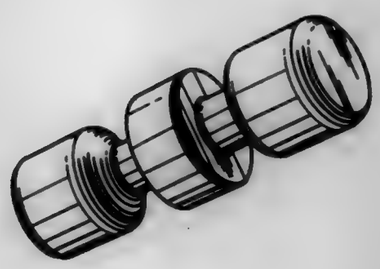
366,693
BALL VALVE
Nasf Gregor, Baden-Dattwil, Switzerland, assignor to Georg Fischer Rohrleitungssysteme AG, Schaffhausen, Switzerland
Filed Apr. 18, 1994, Ser. No. 21,437
Claims priority, application Hague Agreement, Jan. 18, 1993, DM/027612
Term of patent 14 years
U.S. Cl. D23—245



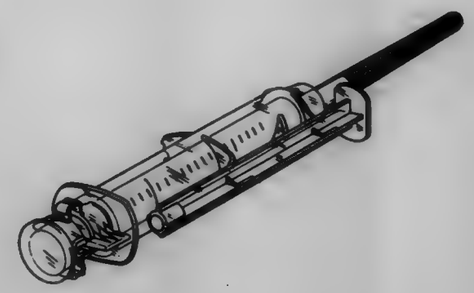
366,695
COMBINED AIR PURIFIER AND CLEANER
Guillen Berazaluce, Barcelona, Spain, assignor to Moulinex Societe Anonyme, Bagnolet, France
Filed Jan. 13, 1994, Ser. No. 17,558
Claims priority, application France, Jul. 21, 1993, 933,852
Term of patent 14 years
U.S. Cl. D23—364



366,696
EAR PLUG
Ward B. Krause, 10518 Ni River Dr., Spotsylvania, Va. 22553
Filed Jul. 21, 1994, Ser. No. 26,204
The portion of the term of this patent subsequent to Nov. 21, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—106



366,698
COMBINED PRE-FILLED CARTRIDGE-NEEDLE UNIT AND HOLDER
Mark A. Stiehl, Rochester; William A. Bergstresser, Pittsburgh, both of N.Y.; John J. Niederpiel, Princeton Junction, N.J.; Raymond P. Chapman, Fairport, N.Y.; Boris A. Dale, Rochester, N.Y.; Richard J. Fole, Penfield, N.Y., and Douglas W. Pfaff, LeRoy, N.Y., assignors to Sterling Winthrop, Inc., New York, N.Y.
Filed Sep. 29, 1993, Ser. No. 13,667
Term of patent 14 years
U.S. Cl. D24—114



366,697
COMBINED MOLDED CONE STYLE FACE MASK AND VISOR
Michael A. Drummond, Bedford, Tex., assignor to Tecnol Medical Products, Inc., Fort Worth, Tex.
Continuation-in-part of Ser. No. 45,524, Apr. 8, 1993, abandoned. This application Oct. 4, 1993, Ser. No. 13,892
Term of patent 14 years
U.S. Cl. D24—110.2



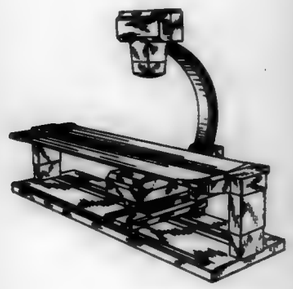
366,699
THORACOSCOPIC FORRESTER RING FORCEPS
Kenneth E. Blake, Brooklyn Park, Minn., assignor to Scanlan International, St. Paul, Minn.
Filed Apr. 22, 1994, Ser. No. 21,741
The portion of the term of this patent subsequent to Jan. 2, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—143



366,700
THORACOSCOPIC DEBAKEY CLAMP
Kenneth R. Blake, Brooklyn Park, Minn. 55444, assignor to Scanlan International, St. Paul, Minn.
Filed Apr. 22, 1994, Ser. No. 21,763
The portion of the term of this patent subsequent to Jan. 2, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—143



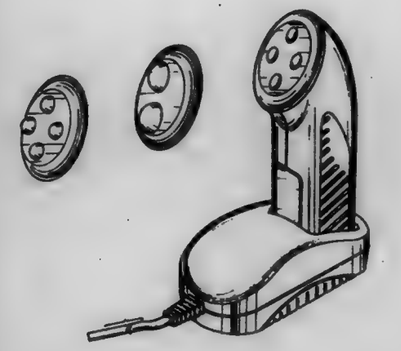
366,701
MEDICAL IMAGING MACHINE
Richard B. Mazess; Larry Fenske, both of Madison, Wis.; Bernard W. Siczek; Aldona A. Siczek, both of Boulder, Colo.; James G. Delahery, Madison, and Mike M. Teale, Verona, both of Wis., assignors to Lunar Corporation, Madison, Wis.
Continuation of Ser. No. 15,251, Nov. 12, 1993, abandoned.
This application Nov. 18, 1994, Ser. No. 32,012
Term of patent 14 years
U.S. Cl. D24—159



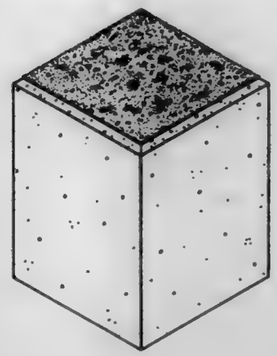
366,702
IONTOPHORETIC DRUG DELIVERY CONTROLLER
Karl D. Kirk, III, New York, N.Y., and James R. Tobeman, Palo Alto, Calif., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.
Filed Aug. 30, 1993, Ser. No. 12,391
Term of patent 14 years
U.S. Cl. D24—189



366,703
COMBINED MASSAGER WITH INTERCHANGEABLE MASSAGING HEADS AND CHARGER
Hing-Wah Huen, Kowloon, Hong Kong, assignor to Fairform Mfg. Co. Ltd., Hong Kong
Filed Dec. 29, 1993, Ser. No. 16,893
Claims priority, application United Kingdom, Nov. 16, 1993, 2035208
Term of patent 14 years
U.S. Cl. D24—214



366,704
TEXTURED PAVING STONE
Edward Bryant, Etobicoke, Canada, assignor to Hedgestone Holdings, Inc., Ontario, Canada
Continuation of Ser. No. 591,868, Oct. 2, 1990, abandoned.
This application May 12, 1993, Ser. No. 8,273
Term of patent 14 years
U.S. Cl. D25—113



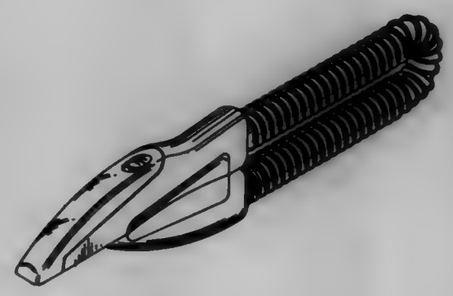
366,705
LAMP BULB
Chi W. Yang, G/F., 21-23 Po On Road, Sham Shui Po, Kowloon, Hong Kong
Filed Feb. 19, 1992, Ser. No. 838,468
Term of patent 14 years
U.S. Cl. D26—3



366,706
LAMP BULB
Chi W. Yang, G/F., 21-23 Po On Road, Sham Shui Po, Kowloon, Hong Kong
Filed Feb. 19, 1992, Ser. No. 838,469
Term of patent 14 years
U.S. Cl. D26—3



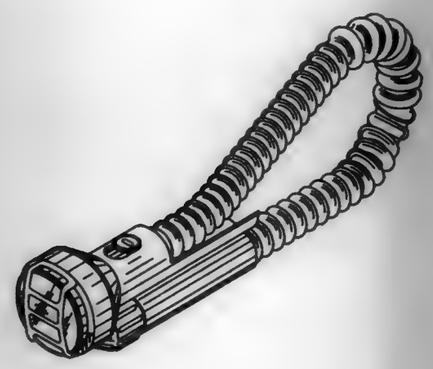
366,707
FLEXIBLE FLASHLIGHT
David W. Kaiser, North Haven, Conn., assignor to Black & Decker Inc., Newark, Del.
Filed Feb. 21, 1995, Ser. No. 35,076
Term of patent 14 years
U.S. Cl. D26—43



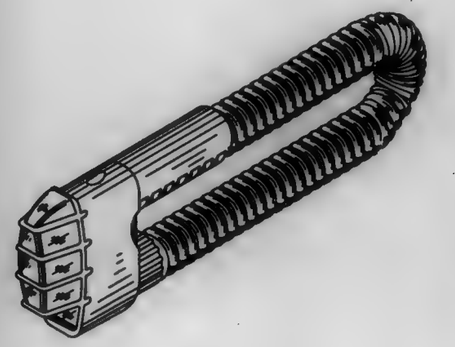
366,708
FLASHLIGHT WITH FLEXIBLE BODY
Paul S. Santaniero, Avon, Conn., assignor to Black & Decker Inc., Newark, Del.
Filed Mar. 3, 1995, Ser. No. 35,656
Term of patent 14 years
U.S. Cl. D26—43



366,709
FLASHLIGHT WITH FLEXIBLE BODY
Aaron Szmanski, Bristol, Conn., assignor to Black & Decker Inc., Newark, Del.
Filed Mar. 13, 1995, Ser. No. 36,658
Term of patent 14 years
U.S. Cl. D26—43



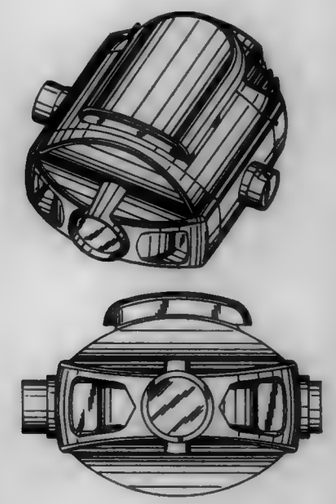
366,710
FLEXIBLE FLASHLIGHT
Aaron Szymanski, Bristol, Conn., assignor to Black & Decker Inc., Newark, Del.
Filed Mar. 13, 1995, Ser. No. 36,660
Term of patent 14 years
U.S. Cl. D26—43



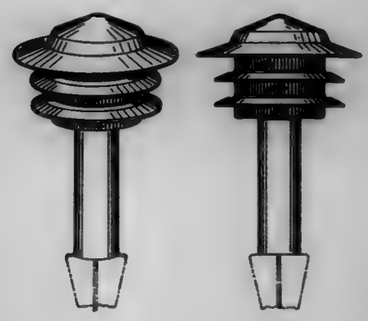
366,711
CLAMP-ON ADJUSTABLE LIGHT FOR A GRILL
Brad L. Canby, 3604 Stonebrook Farms Ct., Greensboro, N.C. 27406
Filed Nov. 10, 1994, Ser. No. 30,885
Term of patent 14 years
U.S. Cl. D26—60



366,712
ADJUSTABLE SPOT LUMINAIRE
Douglas A. Hanson, Arlington; Timothy D. Stacy, Plano, and Timothy W. Terleski, Garland, all of Tex., assignors to Vari-Lite, Inc., Dallas, Tex.
Filed Mar. 29, 1994, Ser. No. 20,618
Term of patent 14 years
U.S. Cl. D26—63



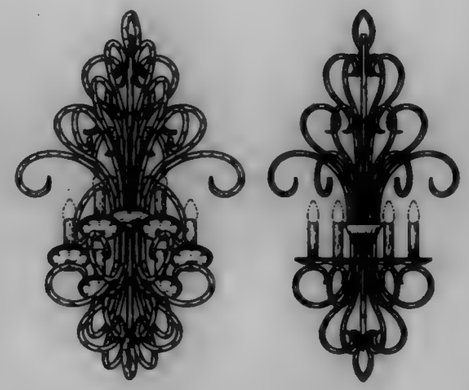
366,713
OUTDOOR LIGHT FIXTURE
Edward C. Cornell, Waukegan, Ill., and Robert D. Giese, Kenosha, Wis., assignors to Intermatic Incorporated, Spring Grove, Ill.
Filed Jul. 27, 1994, Ser. No. 26,434
Term of patent 14 years
U.S. Cl. D26—68



366,714
CHANDELIER
David H. Porter, Chagrin Falls, Ohio, assignor to The L. D. Kichler Co., Cleveland, Ohio
Filed Jan. 5, 1995, Ser. No. 33,101
Term of patent 14 years
U.S. Cl. D26—81



366,715
CHANDELIER
David H. Porter, Chagrin Falls, Ohio, assignor to The L. D. Kichler Co., Cleveland, Ohio
Filed Jan. 5, 1995, Ser. No. 33,102
Term of patent 14 years
U.S. Cl. D26—84



366,716
TABLE LAMP BASE
Colleen M. Visage, Willoughby Heights, Ohio, assignor to The L.D. Kichler Co., Cleveland, Ohio
Filed Oct. 11, 1994, Ser. No. 29,412
Term of patent 14 years
U.S. Cl. D26—93



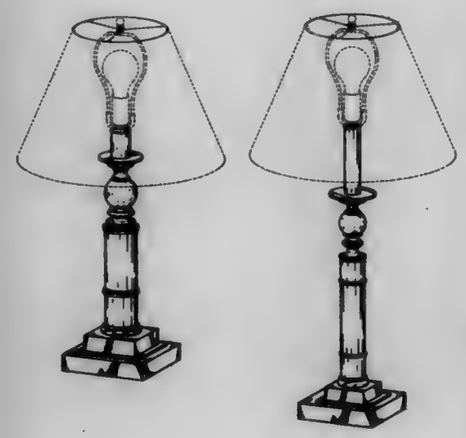
366,717
TABLE LAMP BASE
Colleen M. Visage, Willoughby Heights, Ohio, assignor to The L. D. Kichler Co., Cleveland, Ohio
Filed Oct. 11, 1994, Ser. No. 29,413
Term of patent 14 years
U.S. Cl. D26—93



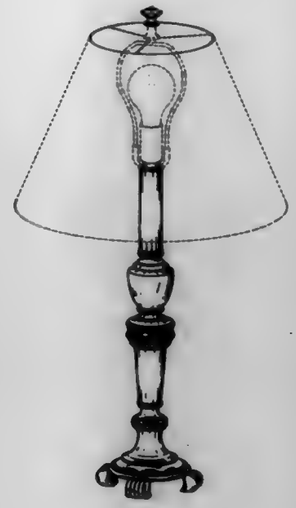
366,718
TABLE LAMP BASE
Gary M. Kattler, Chagrin Falls, Ohio, assignor to The L.D. Kichler Co., Cleveland, Ohio
Filed Oct. 11, 1994, Ser. No. 29,414
Term of patent 14 years
U.S. Cl. D26—93



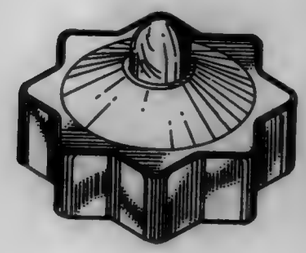
366,719
TABLE LAMP BASE
David H. Porter, Chagrin Falls, Ohio, assignor to The L.D. Kichler Co., Cleveland, Ohio
Filed Oct. 11, 1994, Ser. No. 29,415
Term of patent 14 years
U.S. Cl. D26—93



366,720
TABLE LAMP BASE
Gary M. Kattler, Chagrin Falls, Ohio, assignor to The L.D. Kichler Co., Cleveland, Ohio
Filed Oct. 11, 1994, Ser. No. 29,468
Term of patent 14 years
U.S. Cl. D26—93



366,721
LIGHT FIXTURE
Robert W. Borden, 1525 E. Baseline Rd. #116, Tempe, Ariz. 85283
Continuation-in-part of Ser. No. 789,469, Nov. 8, 1991, abandoned. This application Dec. 23, 1993, Ser. No. 16,746
Term of patent 14 years
U.S. Cl. D26—110



366,722
LAMP SHADE
Ming-Tyan Yan, 58, Ma Yuan West St., Taichung, Taiwan, Prov. of China
Filed Nov. 7, 1994, Ser. No. 30,733
Term of patent 14 years
U.S. Cl. D26—125



366,723
GLASS SHADE
Chi J. Chen, No. 101, Jian-Shan, Chi-Ding Li, Jwu-Nan Jeun., Miao-Li Hsien, Taiwan, Prov. of China
Filed Oct. 4, 1994, Ser. No. 29,344
Term of patent 14 years
U.S. Cl. D26—134



366,724
LAMPSHADE
Hsing-Min Kang, Palos Verdes Estates, and Richard W. McDowell, Palos Verdes, both of Calif., assignors to Jimway, Inc., Bell, Calif.
Filed Oct. 24, 1994, Ser. No. 30,246
Term of patent 14 years
U.S. Cl. D26—134



366,725
GLASS SHADE
Chi J. Chen, No. 101, Jian-Shan, Chi-Ding Li, Jwu-Nan Jeun, Miau-Li Hsien, Taiwan, Prov. of China
Filed Oct. 4, 1994, Ser. No. 29,346
Term of patent 14 years
U.S. Cl. D26—136



366,726
GLASS SHADE
Chun F. Sung, No. 1427, Ren-Ay Rd., Chi-Ding Li, Jwu-Nan Jeun, Miau-Li Hsien, Taiwan, Prov. of China
Filed Oct. 4, 1994, Ser. No. 29,356
Term of patent 14 years
U.S. Cl. D26—136



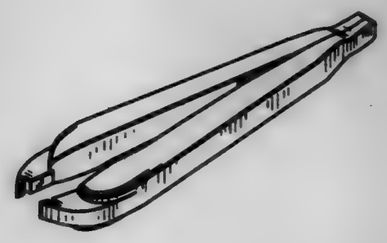
366,727
APPLICATOR
Anne M. Possemato, 109 Lake Ville Cir., Petaluma, Calif. 94954
Filed Aug. 19, 1991, Ser. No. 747,915
The portion of the term of this patent subsequent to Feb. 28, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D28—7



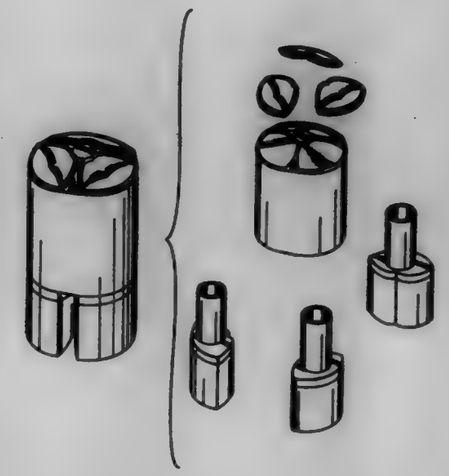
366,728
DISPOSABLE RAZOR HANDLE
Ki Jae Ryu, Seoul, Rep. of Korea, assignor to DORCO Co., Ltd., Kyunggi-do, Rep. of Korea
Filed Aug. 10, 1994, Ser. No. 26,961
Claims priority, application Rep. of Korea, Apr. 7, 1994, 1994-7059
Term of patent 14 years
U.S. Cl. D28—48



366,729
EARRING STUD TWEEZERS
Vladimir Reil, 30524 Gamado Dr., Rancho Palos Verdes, Calif. 90274
Filed Oct. 4, 1993, Ser. No. 13,864
Term of patent 14 years
U.S. Cl. D28—55



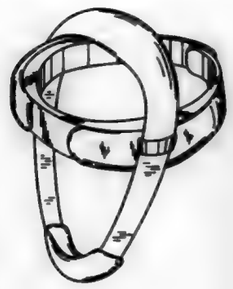
366,730
LIPSTICK KIT
Ching-Chun Chen, Taichung Hsien, Taiwan, Prov. of China, assignor to Fung Sheng Plastics Co., Ltd., Taichung Hsien, Taiwan, Prov. of China
Filed Jun. 9, 1994, Ser. No. 24,132
Term of patent 14 years
U.S. Cl. D28—86



366,731
CYCLIST HELMET
Louis Garneau, St-Augustin-de-Desmaures, Canada, assignor to Louis Garneau Sports Inc., Quebec, Canada
Filed Nov. 2, 1994, Ser. No. 30,126
Claims priority, application Canada, May 3, 1994, 1994-8876
Term of patent 14 years
U.S. Cl. D29—102



366,732
PROTECTIVE HEAD GEAR
Eugene S. Gregg, 20 Sally Port Rd., Hilton Head Island, and Thomas Wood, 100 Forest Garden, Hilton Head, both of S.C. 29928
Filed Dec. 13, 1994, Ser. No. 32,276
Term of patent 14 years
U.S. Cl. D29—108



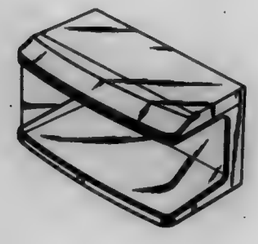
366,733
HANDCUFF
Emery J. Stanchin, 9617 Yarmouth Ct., Louisville, Ky. 40272
Filed Jul. 29, 1994, Ser. No. 26,479
Term of patent 14 years
U.S. Cl. D29—120



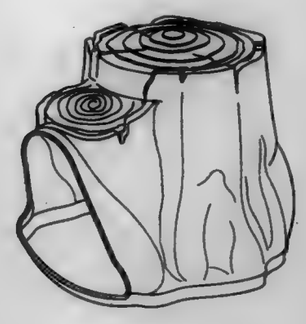
366,734
FIREFIGHTER RESCUE AND UTILITY BELT WITH DETACHABLE CARRIER
Lawrence C. Arthur, 159 Duncan Trial, Longwood, Fla. 32779
Filed Oct. 21, 1994, Ser. No. 30,173
Term of patent 14 years
U.S. Cl. D29—124



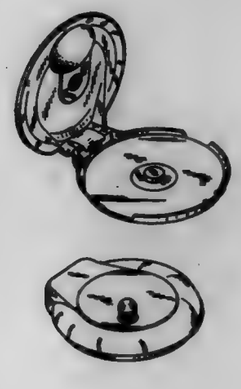
366,735
AQUARIUM TANK
Minoru Ichikawa, Tokyo, Japan, assignor to Nisso Industry Co., Ltd., Tokyo, Japan
Filed Dec. 10, 1993, Ser. No. 16,235
The portion of the term of this patent subsequent to Aug. 8, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D30—101



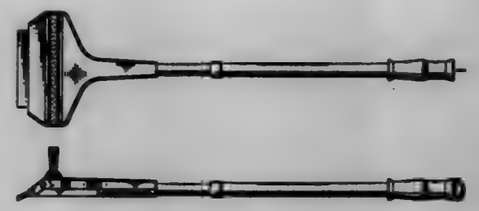
366,736
STUMP DOG HOUSE
Melaney L. Northrop, Cleburne, and Matthew J. Valle, Frisco, both of Tex., assignors to Deskocil Manufacturing Company, Inc., Arlington, Tex.
Filed Nov. 14, 1994, Ser. No. 30,923
Term of patent 14 years
U.S. Cl. D30—112



366,737
COMPACT DISC CLEANER
Yong E. Chen, Rm. C, 12th Fl., Fu Hsing North Rd., Taipei, Taiwan, Prov. of China
Filed Jul. 18, 1994, Ser. No. 26,833
Term of patent 14 years
U.S. Cl. D32—35



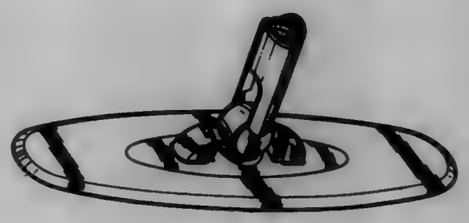
366,738
COMBINATION ICE SCRAPER AND SNOW BROOM
Gary P. Israel, Andover, Kans., assignor to Wescan Products Company, Wichita, Kans.
Filed Dec. 23, 1994, Ser. No. 32,695
Term of patent 14 years
U.S. Cl. D32—42



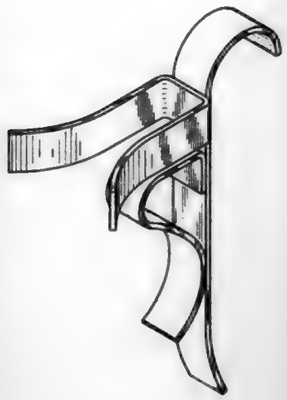
366,739
COMBINED CLEANING AND WIPING DEVICE
Tassilo von Grolman, Oberwesel; Bernhard Heise, Friedberg, and Uwe Dingert, Abtsteinach, all of, Germany, assignors to Vileda GmbH, Germany
Filed Jan. 3, 1995, Ser. No. 33,611
Claims priority, application Germany, Jul. 4, 1994, M9405437.1
Term of patent 14 years
U.S. Cl. D32—42



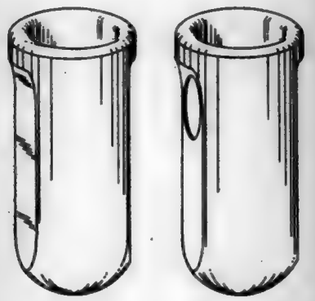
366,740
DUST MOP HEAD
Ken F. Clausen, Doylestown, and Vincent L. Haley, Orrville, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Aug. 11, 1994, Ser. No. 27,864
Term of patent 14 years
U.S. Cl. D32—50



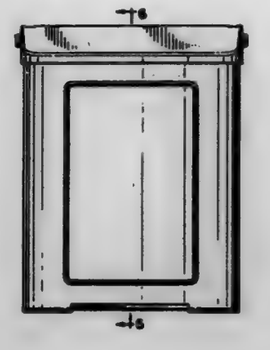
366,741
BRUSH HOLDER
Terrence A. Roehrig, 2827 Elmwood, Sylvania, Ohio 43560
Filed Oct. 19, 1994, Ser. No. 29,907
Term of patent 14 years
U.S. Cl. D32—54



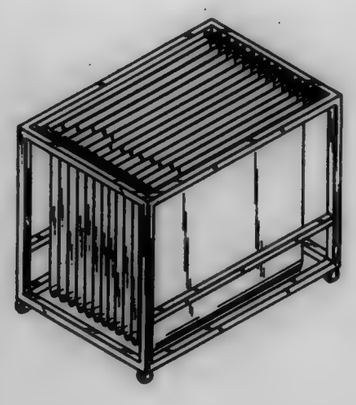
366,742
WASTE RECEPTACLE
Eric Chan, New York, N.Y., assignor to RPI Designs, Mariette, Mich.
Filed Nov. 22, 1994, Ser. No. 31,323
Term of patent 14 years
U.S. Cl. D34—1



366,743
SANITARY NAPKIN RECEPTACLE
Robert A. Davenport, Sylvania, Ohio, assignor to Impact Products, Inc., Toledo, Ohio
Filed Dec. 12, 1994, Ser. No. 32,869
Term of patent 14 years
U.S. Cl. D34—7



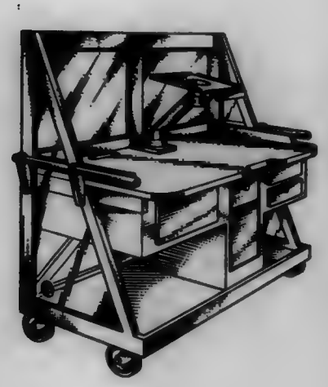
366,744
FILING CART FOR EDUCATIONAL ASSESSMENT PORTFOLIOS
Jane B. Bailey, 1601 S. Shepherd, No. 255, Houston, Tex. 77019
Filed Nov. 2, 1994, Ser. No. 30,573
Term of patent 14 years
U.S. Cl. D34—12



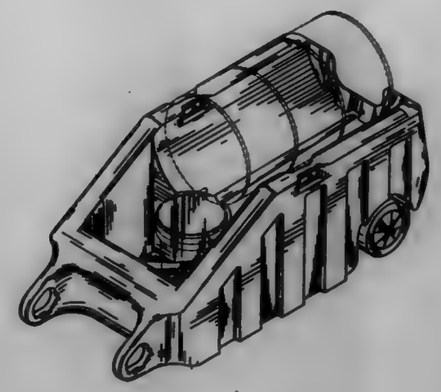
366,745
FLAT BED CART
Alan R. Kern; John A. LaFleur, both of Richmond; George Hand, Midlothian, and Bruce Ferris, Richmond, all of Va., assignors to Rehrig International, Inc., Richmond, Va.
Filed Jan. 5, 1995, Ser. No. 33,121
Term of patent 14 years
U.S. Cl. D34—17



366,746
MOBILE ANALYSIS CART
William P. Jones, Gurnee, Ill., assignor to Symnex Corporation, Long Grove, Ill.
Filed Feb. 2, 1995, Ser. No. 34,371
Term of patent 14 years
U.S. Cl. D34—20



366,747
DRUM CRADLE
Michael H. Litle, Janesville, Wis.; James P. Onders, Independence, and John O. Milliken, Gates Mills, both of Ohio, assignors to ENPAC Corporation, Chardon, Ohio
Filed Nov. 28, 1994, Ser. No. 31,644
Term of patent 14 years
U.S. Cl. D34—12



366,748
GARDEN CART
Stephen H. Harrington, 7035 Stancliff Ln., Fort Washington, Pa. 19034
Filed Mar. 1, 1995, Ser. No. 35,535
Term of patent 14 years
U.S. Cl. D34—24



366,749

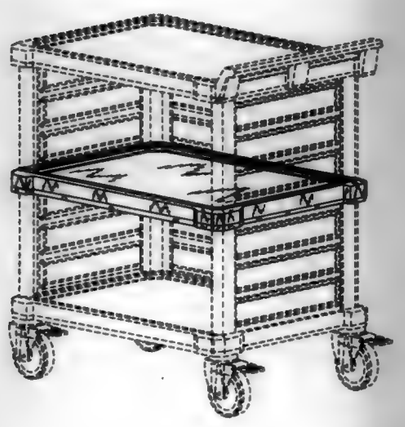
MIDDLE SHELF FOR USE IN A BUSSING CART

Bradley J. Carlson, and Jonathan M. Dougherty, both of Wilkes-Barre, Pa., assignors to Metro Industries, Inc., Reno, Nev.

Filed Aug. 11, 1994, Ser. No. 27,129

Term of patent 14 years

U.S. Cl. D34—27



366,750

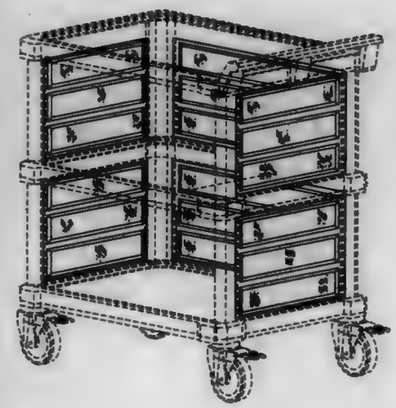
ENCLOSURE PANEL

Jonathan M. Dougherty, Wilkes-Barre, Pa., assignor to Metro Industries, Inc., Reno, Nev.

Filed Aug. 11, 1994, Ser. No. 27,130

Term of patent 14 years

U.S. Cl. D34—27



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30th DAY OF JANUARY, 1996

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.C. Nielsen Company: *See*—
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A. O. Smith Corporation: *See*—
Ruehl, Phillip C.; Kretschmer, Stephen L.; and Behrmann, Richard J., 5,487,219, Cl. 29-897.000.

AB Volvo: *See*—
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ABB Management AG: *See*—
Erogiu, Adnan; Joos, Franz; Novacek, Peter; and Senior, Peter, 5,487,659, Cl. 431-350.000.

ABB Power T&D Company Inc.: *See*—
Keanon, Jerry M.; Murphy, Michael A.; and Sharp, Kenneth C., 5,488,563, Cl. 364-483.000.

Abbott Laboratories: *See*—
Grabenkort, Richard W., 5,487,380, Cl. 128-204.150.
Lu, Mou-Ying P.; and Reiland, Thomas L., 5,487,898, Cl. 424-435.000.
Masor, Marc L.; Katz, Gary E.; and Bynum, Douglas G., 5,488,039, Cl. 514-43.000.

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Abe, Hitoshi: *See*—
Ota, Yasuo; Enomoto, Masanori; and Abe, Hitoshi, 5,488,443, Cl. 351-221.000.

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Abe, Tetsuya, to Asahi Kogaku Kogyo Kabushiki Kaisha. Apparatus for adjusting color tone of image to be recorded. 5,488,492, Cl. 358-518.000.

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Abreu, Christian O., to Xerox Corporation. Liquid development system. 5,488,466, Cl. 355-256.000.

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Green, Thomas W., 5,488,554, Cl. 363-25.000.

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Firoozmand, Farzin, 5,488,724, Cl. 395-200.070.

Advanced Spine Fixation Systems, Inc.: *See*—
Howland, Robert S., 5,487,744, Cl. 606-61.000.

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Alexander, Samuel E.: *See—*
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Aoki, Daigo: *See—*
Sakano, Shinichi; Aoki, Daigo; Utsumi, Minoru; Akada, Masanori; and Shimizu, Osamu, 5,488,601, Cl. 369-120.000.

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Aoki, Tomohiro: *See—*
Mitomi, Tatsuo; Aoki, Tomohiro; Murayama, Yasushi; Uchida, Takashi; Kobayashi, Tohru; Ikkatai, Masatoshi; and Nemura, Masaharu, 5,488,399, Cl. 347-43.000.

Aoyama, Moriyuki: *See—*
Takemoto, Takanobu; Yoshikawa, Masayoshi; Aoyama, Moriyuki; Muramatsu, Meiji; and Kawashima, Kazunari, 5,487,696, Cl. 451-105.000.

Appel, Hans; and Diem, Fritz, to Peroxid-Chemie GmbH. Method for the preparation of alkyl hydroperoxide solutions containing little or no water. 5,488,177, Cl. 568-576.000.

Apple Computer, Inc.: *See—*
Palmer, James B.; Powers, John R., III; Coleman, Patricia J.; Brewer, Gregory S.; Herman, Jeffrey A.; and Cochran, Eli, 5,488,685, Cl. 395-157.000.

Applied Materials, Inc.: *See—*
Demaray, Richard E.; Berkstresser, David E.; and Herrera, Manuel J., 5,487,822, Cl. 204-298.090.

Appolonia, Jack; Muscato, Robert; and Witzel, George, to BOC Group, Inc., The. Method and device for transmitting heating or cooling medium to a food product on a moving substrate. 5,487,908, Cl. 426-520.000.

Apt, Jerome, Jr.: *See—*
Nathenson, Richard D.; Apt, Jerome, Jr.; Uram, Martin J.; Brumbaugh, Paul M.; Brawley, Gary H.; Hackman, Donald J.; and Christenson, Brian, 5,487,229, Cl. 37-347.000.

Arai, Seiji: *See—*
Ishikawa, Masaaki; Igashi, Michihisa; Hashimoto, Hiroshi; Nakamura, Tetsuya; Sasou, Kouichirou; Okano, Yoshiaki; Fukuyama, Hirotaka; Katagata, Satoshi; Ishikawa, Takashi; Arai, Seiji; Sakai, Chiseko; and Kabal, Takahiro, 5,488,462, Cl. 355-215.000.

Aramaki, Satoshi: *See—*
Sato, Makoto; Ose, Takayoshi; and Aramaki, Satoshi, 5,487,503, Cl. 229-87.050.

Arasaki, Eiji: *See—*
Sakashita, Hiroshi; and Arasaki, Eiji, 5,488,526, Cl. 360-106.000.

Arch Development Corporation: *See—*
Grdina, David J., 5,488,042, Cl. 514-114.000.
Rowley, Janet D.; and Diaz, Manuel O., 5,487,970, Cl. 435-6.000.

Arco Chemical Technology: *See—*
Faraj, Mahmoud K., 5,488,176, Cl. 568-558.000.

ARCO Chemical Technology, L.P.: *See—*
Hayes, John E.; Sinnroth, Donald W.; and Zhou, Xinkun, 5,488,085, Cl. 525-53.000.

Argyropoulos, John N.: *See—*
Jenkins, Richard D.; Bassett, David R.; Smith, Danny E.; Argyropoulos, John N.; Loftus, James E.; and Shay, Gregory D., 5,488,180, Cl. 568-609.000.

Aria, Pariba: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; and Aria, Pariba, 5,488,183, Cl. 568-828.000.

Arian, Abbas: *See—*
Mackay, Bruce W.; and Arian, Abbas, 5,487,433, Cl. 175-78.000.

Arima, Junichi: *See—*
Harada, Shigeru; Arima, Junichi; and Fujiki, Noriaki, 5,488,014, Cl. 437-192.000.

Armen, Ardy: *See—*
Kent, George M.; and Armen, Ardy, 5,487,860, Cl. 264-103.000.

Aronsson, Joachim, to Rotech Tooling. Swivel connection. 5,488,215, Cl. 219-86.250.

Artzer, Richard F. Structural panel. 5,487,248, Cl. 52-309.120.

Aruga, Tumotsu: *See—*
Shimada, Tomoyuki; Sasaki, Masaomi; and Aruga, Tumotsu, 5,488,164, Cl. 564-426.000.

Asabuki, Hiroshi; Fujio, Masayuki; Watanabe, Takashi; Yamazaki, Susumu; and Ishida, Puniaki, to Hitachi, Ltd. Vortex flow blower and vane wheel therefor. 5,487,639, Cl. 415-55.100.

Asada, Makoto, to THK Co., Ltd. Slide unit for linear motion. 5,487,609, Cl. 384-18.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Yuki, Tadayuki; and Kato, Iku, 5,487,716, Cl. 493-86.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Abe, Tetsuya, 5,488,492, Cl. 358-518.000.
Kirigaya, Tadayuki; Imakyuse, Kaoru; Ozaki, Hiroyasu; and Kawi, Hiroshi, 5,488,446, Cl. 354-289.100.
Takahashi, Tadashi; Utsui, Tetsuya; Adachi, Reisuke; Iida, Mitsuru; Furuya, Katsuhiko; Usami, Junji; and Honda, Ryoji, 5,488,509, Cl. 359-385.000.
Tanaka, Hitoshi, 5,488,513, Cl. 359-699.000.

Asai, Akiyoshi: *See—*
Tsuruta, Kazuhiro; Himi, Hiroshi; Asai, Akiyoshi; and Fujino, Seiji, 5,488,243, Cl. 257-314.000.

Asai, Kuniaki: *See—*
Nitta, Itaru; and Asai, Kuniaki, 5,488,138, Cl. 560-144.000.

Asamura, Yoshinori: *See—*
Ueda, Tomohiro; Iotow, Takashi; Asamura, Yoshinori; Onishi, Ken; and Mishima, Hidetoshi, 5,488,482, Cl. 358-339.000.

Asanagi, Tsuneo: *See—*
Ushitora, Akihiro; Yamaguchi, Kazuo; and Asanagi, Tsuneo, 5,487,646, Cl. 417-4.000.

Asgari, Jahanbakhsh; Tran, Minh N.; and Hrovat, Davorin D., to Ford Motor Company. Method and apparatus for four wheel steering control. 5,488,555, Cl. 364-424.050.

Ash, Robert A., to Davidson Textron Inc. Method of making a covered article by vacuum drawing. 5,487,800, Cl. 156-87.000.

Ashiwake, Noriyuki: *See—*
Sato, Kazuo; Shikida, Mitsuhiro; Ohashi, Shigeo; Hatada, Toshio; Ashiwake, Noriyuki; Tanaka, Shinji; Harada, Takeshi; and Honda, Yukio, 5,488,255, Cl. 257-718.000.

Ashida, Ryoji; Takahara, Haruo; and Katsuki, Takayo, to Murata Manufacturing Co., Ltd. PTC thermistor. 5,488,348, Cl. 338-22.000.

Ashman, Lars; Leonhardt, Werner; and Svahn, Ingemar, to Nestec S.A. Process for the production of cannelloni. 5,487,905, Cl. 426-297.000.

Aslam, Mohammad; and Beck, James V., to Michigan State University. Diamond film structures and methods related to same. 5,488,350, Cl. 338-225.000.

AT&T Corp.: *See—*
Daoud, Bassel Hage, 5,487,675, Cl. 439-95.000.
Dragone, Corrado, 5,488,680, Cl. 385-24.000.
Glance, Bernard, 5,488,500, Cl. 359-127.000.
Grimes, Gary J., 5,488,425, Cl. 348-559.000.
Houck, Warren B.; Illuzzi, Vincent A.; Ricker, Mary E.; and Vidil, Richard S., 5,488,693, Cl. 395-300.050.
Heaton, Richard S.; Taylor, Gary N.; and Wheeler, David R., 5,487,967, Cl. 430-322.000.
Johnston, James D.; and Sinha, Deepen, 5,488,665, Cl. 381-2.000.
Kaplan, Marc P.; Lo, Hui-Lan; and Steinman, Lev, 5,488,569, Cl. 364-514.00R.
Laroia, Rajiv, 5,488,633, Cl. 375-262.000.
Lee, Kuo-Hsiung and Sung, Jeanyee, 5,488,348, Cl. 257-38.200.
Majeti, Venkata C.; Midani, Mowaffak T.; Watson, Richard J.; and Zabriskie, Kenneth A., 5,488,412, Cl. 348-10.000.
Wainwright, Paul F., 5,488,715, Cl. 395-182.020.

AT&T Global Information Solutions Company: *See—*
Crafts, Harold S., 5,488,249, Cl. 257-401.000.

Atanasyan, Alain A.; and Tarroux, Francis, to Siemens Automotive S.A. Method for monitoring the efficiency of a catalytic converter for treating exhaust gases from an internal combustion engine. 5,487,269, Cl. 60-274.000.

Athey, Phillip S.; Crump, Bruce E.; and Wilson, David A., to Dow Chemical Company, The. Amino nitrile intermediate for the preparation of 2-hydroxypropyl iminodiacetic acid. 5,488,130, Cl. 558-441.000.

Atmel Corporation: *See—*
Casarosa, Rafael C., 5,488,582, Cl. 365-189.050.

Atobe, Hiroshi: *See—*
Ojima, Masaki; Ohkubo, Masaharu; Itoh, Michio; Sasame, Hiroshi; Yamada, Hiromichi; Saito, Tetsuo; Kashihara, Atsushi; Kawana, Takashi; Mano, Hiroshi; Seto, Kaoru; and Atobe, Hiroshi, 5,488,487, Cl. 358-456.000.

Atrix Laboratories, Inc.: *See—*
Polson, Alan M.; Swanborn, Deryl D.; Dunn, Richard L.; Cox, Charles P.; Norton, Richard L.; Lowe, Bryan K.; and Peterson, Kenneth S., 5,487,897, Cl. 424-426.000.

ATS Medical, Inc.: *See—*
Villafana, Manuel A., 5,487,760, Cl. 623-2.000.

Atsushi Maki: *See—*
Miyazaki, Minoru, 5,487,370, Cl. 123-538.000.

Atuta, Hiroshi: *See—*
Kayashima, Kazuhiro; Kurosaki, Toshihiko; Egusa, Yo; Atuta, Hiroshi; and Yamamoto, Hiroshi, 5,488,427, Cl. 348-569.000.

Audia, James E.; Droste, James J.; and Evrard, Deborah A., to Eli Lilly and Company. Tetrahydro-pyrido-indole. 5,488,053, Cl. 514-280.000.

Ausimont S.p.A.: *See—*
Cavallotti, Claudio; Troglia, Claudio; and Garaffa, Roberto, 5,487,818, Cl. 203-41.000.
Marchionni, Giuseppe; Guarda, Pier A.; and Pagani, Maurizio, 5,488,181, Cl. 568-615.000.

Austin, Pixie A.; Fox, Duane M.; and Wikloff, Christopher A., to Intermec Corporation. System and method for automatic selection of printer control parameters. 5,488,223, Cl. 235-375.000.

Austin, Rickey G.: *See—*
Danielson, Arvin D.; Schultz, Darald R.; Silva, Dennis; Boatwright, Darrell L.; Austin, Rickey G.; and Alt, Daniel E., 5,488,575, Cl. 364-707.000.

Automatic Machinery and Electronics, Inc.: *See—*
Bushman, Ronald C.; Harris, William E., Jr.; and Foch, Roger N., 5,487,331, Cl. 99-504.000.

Avellanet, Ernesto; and Hernandez, Ernesto, to Cordis Corporation. Magnetic guidewire coupling for catheter exchange. 5,487,729, Cl. 604-96.000.

Avitall, Boaz. Atrial mapping and ablation catheter system. 5,487,385, Cl. 128-642.000.

Avitan, Isaac. Coupled differential turning control system for electric vehicle traction motors. 5,487,437, Cl. 180-6.500.

Avni, Dror: *See—*
MacWilliams, Peter D.; Avni, Dror; Liebermensch, Avi; Barnsley, Anan; and Farrell, Robert L., 5,488,639, Cl. 375-355.000.

Avula, Jayachandra B.: *See—*
Vegesna, Anantalotiraju; Avula, Jayachandra B.; Jewett, Peter H.; and Muralkar, Yatin G., 5,488,729, Cl. 395-800.000.

Ayada, Michihiko: *See—*
Taguchi, Kohei; Ayada, Michihiko; and Shinga, Hideo, 5,487,866, Cl. 419-28.000.

Ayres, Sally J.: *See—*
More, Iain; Lawtas, Kenneth; Bland, Jacqueline D.; and Ayres, Sally J., 5,487,763, Cl. 44-393.000.

Baba, Shigeki: *See—*
Maruyama, Shigeru; Shimasaki, Yuichi; Kaechiro, Masaki; Hisaki, Takashi; Baba, Shigeki; Ishioka, Takuji; Takagi, Jiro; and Akiyama, Eietsu, 5,487,676, Cl. 439-125.000.

Baba, Shinichi: *See—*

Tanabe, Noboru; Oyanagi, Shigeru; Baba, Shinichi; Kaminishi, Kazuji; Nakamura, Masaru; and Sekido, Kazunori, 5,488,735, Cl. 395-800.000.
Bach, John M.: *See*—
Vajapey, Sridhar; Krause, Paul W.; and Bach, John M., 5,488,318, Cl. 326-46.000.
Bacher, Jean-Pierre: *See*—
Reinehr, Dieter; Bacher, Jean-Pierre; and Schmitter, André, 5,488,112, Cl. 548-261.000.
Back, Gordon E.; and Greer, Jeffrey P., to International Envelope Company, Inc. Cardboard mailer packages. 5,487,826, Cl. 206-308.300.
Bacon, Edward R.: *See*—
Singh, Baldev; Bacon, Edward R.; and Robinson, Shaughnessy, 5,488,133, Cl. 424-9.450.
Bader, Martina; and Kerscher, Volker, to Roehm GmbH Chemische Fabrik. Monomer for high refractive index plastics. 5,488,128, Cl. 558-251.000.
Bagatini, Dante, to Circuit Breakers Industries Ltd. GFCI with auxiliary coil current blocking means and improved test button configuration. 5,488,303, Cl. 324-509.000.
Bailey, Warren D.; Barker, Kenneth J.; Bellinghausen, Joan M.; Calhoun, George M.; Naudin, Bernard J.; and Suffern, Edward, to International Business Machines Corporation. Coupler for providing a high speed interface between a communication controller and a controller extension. 5,488,734, Cl. 395-800.000.
Baird, William J., to Inland Container Corporation. Paperboard tray and cover assembly. 5,487,504, Cl. 229-120.170.
Baitz, Günter; and Ihlenburg, Rainer, to Siemens Nixdorf Informationssysteme Aktiengesellschaft. Weighing device for the registration of goods in stores. 5,488,202, Cl. 177-25.150.
Baker, Daniel G.; Parish, Robert W.; and Zink, Scott E., to Tektronix, Inc. Return-loss detection for serial digital source. 5,488,310, Cl. 324-648.000.
Baker Hughes Incorporated: *See*—
Crawley, Dolph R.; and Brooke, Steven R., 5,487,435, Cl. 175-363.000.
Carington, Alfred R., 5,487,427, Cl. 166-382.000.
Baker, Jay O.: *See*—
Russ, Timothy J.; Khatib, Khal M.; and Baker, Jay O., 5,487,915, Cl. 427-208.000.
Baker, Jeffrey L.: *See*—
Wendorf, Kent; Hilton, Ronald N.; Pang, Nicholas Y.; Baker, Jeffrey L.; and Nguyen, Khanh X., 5,488,706, Cl. 395-375.000.
Baker, Michael J.; Dilworth, Jonathan R.; Sunley, John G.; and Wheatley, Nigel, to BP Chemicals Limited. Process for the carbonylation of methanol or a reactive derivative thereof. 5,488,153, Cl. 562-519.000.
Bakir, Farid: *See*—
Sovak, Milos; Terry, Ronald C.; Douglass, James G., III; and Bakir, Farid, 5,487,885, Cl. 424-59.000.
Baldwin, Linda: *See*—
Oyen, Margaret A.; and Baldwin, Linda, 5,487,668, Cl. 434-98.000.
Baliga, B. Jayant; and Korec, Jacek, to North Carolina State University. Latch-up resistant bipolar transistor with trench IGFET and buried collector. 5,488,236, Cl. 257-132.000.
Balkovich, Edward: *See*—
Schneider, Fred B.; Lampson, Butler; Balkovich, Edward; and Thiel, David, 5,488,716, Cl. 395-182.080.
Ball, Johannes; Henseler, Wolfgang; Gerstenberg, Uwe; and Fischer, Thomas, to Mercedes-Benz AG. Instrument panel in a motor vehicle. 5,487,558, Cl. 280-728.300.
Ball, Randall W. Pliant unitary coupling element dual handled shovel. 5,487,577, Cl. 294-58.000.
Balmer, Oskar: *See*—
Focke, Heinz; and Balmer, Oskar, 5,487,461, Cl. 198-571.000.
Banlu Chemical Industries, Ltd.: *See*—
Shirota, Yasuhiro; Inada, Hiroshi; Yonemoto, Yoshinobu; Wakimoto, Takeo; and Imai, Kunio, 5,487,953, Cl. 428-690.000.
Banjanin, Zoran B.; and Kim, Jin, to Siemens Medical Systems, Inc. Ultrasonic Doppler imager having an adaptive tissue rejection filter with enhanced tissue motion sensitivity. 5,487,389, Cl. 128-661.090.
Banyu Pharmaceutical Co., Ltd.: *See*—
Nomoto, Takashi; Hayashi, Masahiro; Shibata, Jun; Iwasawa, Yoshikazu; Mitsuya, Morihiro; Iida, Yoshiaki; Nonoshita, Katsumasa; and Nagata, Yasufumi, 5,488,149, Cl. 562-449.000.
Baradel, Christophe; Eychenne, Yves; and Kohen, Bruno, to Cegelec. Software system having replicated objects and using dynamic messaging, in particular for a monitoring/control installation of redundant architecture. 5,488,723, Cl. 395-700.000.
Baraldi, Mario: *See*—
Costa, Erminio; Guidotti, Alessandro; Baraldi, Mario; Bertolino, Marilla; DiBella, Maria; and Vicini, Stefano, 5,488,049, Cl. 514-223.200.
Baran, John S.: *See*—
Chen, Barbara B.; Hanson, Gunnar J.; and Baran, John S., 5,488,066, Cl. 514-618.000.
Barassy, Anan: *See*—
MacWilliams, Peter D.; Avni, Dror; Liebermensch, Avi; Barassy, Anan; and Farrell, Robert L., 5,488,639, Cl. 375-355.000.
Barberis, Pierre: *See*—
Dumas, Gerard; Barberis, Pierre; and Binel, Gerard, 5,487,797, Cl. 148-672.000.
Barbier, Alain; and Lachoretz, Frederic, to Sanofi. Method of promoting bone repair using tiludronic disodium salt. 5,488,041, Cl. 514-108.000.
Bardy, Marie-Claude, to Thomson-CSF. Method for the management of the beam of an electronically scanned rotating antenna. 5,488,381, Cl. 342-372.000.
Barfield, Marvin W. Ornamental tree flower pot displays. 5,487,476, Cl. 211-71.000.
Barker, Kenneth J.: *See*—
Bailey, Warren D.; Barker, Kenneth J.; Bellinghausen, Joan M.; Calhoun, George M.; Naudin, Bernard J.; and Suffern, Edward, 5,488,734, Cl. 395-800.000.
Barnes, David A.: *See*—
Jones, Anthony M.; and Barnes, David A., 5,488,646, Cl. 377-47.000.
Barnes, Derek, to MacMillan Bloedel Limited. Short strand orienter. 5,487,460, Cl. 198-382.000.
Barnsley, Peter E., to British Telecommunications plc. Optical processing system. 5,488,501, Cl. 359-137.000.
Baroni, Marco; Cecchi, Roberto; and Croci, Tiziano, to Sanofi. {(7S)-7-[(2R)-2-(3-chlorophenyl)-2-hydroxyethylamino)-2-hydroxyethylamino]5,6,7,8-tetrahydronaphthalen-2-yloxy} acetic acid and its pharmaceutically acceptable salts. 5,488,151, Cl. 562-452.000.
Barr, Sophia C.: *See*—
Carter, Robert L.; and Barr, Sophia C., 5,487,535, Cl. 267-220.000.
Barrett, David W.; McHugh, Thomas M.; Ahigian, Edward E.; Jasniset, Jerome F.; He, Thomas; Perreggi, Richard E.; Kowalcyk, Thomas M.; and Kulak, Richard E., to Otis Elevator Company. Magnetic elevator door coupling. 5,487,449, Cl. 187-330.000.
Bartilucci, Anthony R.; Gilchrist, George W.; and Yurman, Richard, to Northrop Grumman Corporation. Molding composite by positioning heat-conductive mat between platen and tool. 5,487,864, Cl. 264-219.000.
Bartmann, Ekkehard: *See*—
Reiffenrath, Volker; Kurmeier, Hans A.; Poetsch, Eike; Plach, Herbert; Finkenzeller, Ulrich; Bartmann, Ekkehard; Krause, Joachim; and Scheuble, Bernhard, 5,487,845, Cl. 252-299.630.
Basch, Lauren R.: *See*—
Hassel, David R.; and Basch, Lauren R., 5,488,203, Cl. 177-184.000.
BASF Aktiengesellschaft: *See*—
Boeckh, Dieter; Penhof, Angelika; Kroner, Matthias; Hartmann, Heinrich; Baur, Richard; Kud, Alexander; and Schwendemann, Volker, 5,488,095, Cl. 528-361.000.
Dyllick-Brenzinger, Rainer; Raulfs, Friedrich-Wilhelm; Schlösser, Ulrike; Beck, Karin H.; and Scholz, Gerhard, 5,487,770, Cl. 44-328.000.
Hasenpreckt, Gerhard; Mayer, Horst; Westphalen, Karl-Otto; Gerber, Matthias; Kardorff, Uwe; and Walter, Helmut, 5,488,029, Cl. 504-212.000.
Marschner, Claus; and Patsch, Manfred, 5,488,100, Cl. 534-618.000.
Marschner, Claus; and Patsch, Manfred, 5,488,127, Cl. 558-25.000.
BASF Corporation: *See*—
Green, Todd J., 5,488,072, Cl. 521-129.000.
Kent, George M.; and Armen, Ardy, 5,487,860, Cl. 264-103.000.
Mason, Charles M.; and Sutton, Ted L., 5,487,836, Cl. 210-791.000.
Patterson, Jimmy L., 5,488,071, Cl. 521-114.000.
Saraf, Anil W., 5,487,856, Cl. 264-78.000.
BASF Schwarzheide GmbH: *See*—
Falke, Peter; Seifert, Holger; and Heinz, Marion, 5,488,070, Cl. 521-51.000.
Mueller-Hagen, Gerd; Heinrich, Horst; and Meyer, Baerbel, 5,488,074, Cl. 521-172.000.
Bassett, David R.: *See*—
Jenkins, Richard D.; Bassett, David R.; Smith, Danny E.; Argyropoulos, John N.; Loftus, James E.; and Sisay, Gregory D., 5,488,180, Cl. 568-609.000.
Bastyr, Charles A.; and Kolen, Paul T. Nerve stimulating device and associated support device. 5,487,759, Cl. 607-149.000.
Battelle Memorial Institute: *See*—
McGinniss, Vincent D.; Dick, Richard J.; Russell, Robert E., III; and Rogers, Stephen D., 5,487,946, Cl. 428-413.000.
Batzill, Manfred; Beck, Hans-Joachim; Mezger, Hans; Distelrath, Winfried; and Reustle, Albrecht, to Dr. Ing. h.c.F. Porsche AG. Internal-combustion engine comprising two cylinder banks. 5,487,363, Cl. 123-41.740.
Bauer, Fred P.; Sanders, Stuart E.; Van Wagener, Raymond H.; and Oppenheuser, Mark R., to Magnetek, Inc. Electrical connector with improved centering of mating terminal pins, for a fluorescent-lighting ballast. 5,488,268, Cl. 315-70.000.
Bauer, Klaus; and Bieringer, Hermann, to Hoechst Aktiengesellschaft. Herbicide-safener combinations containing sulfonylurea or imidazolinone herbicides. 5,488,027, Cl. 504-105.000.
Bauer, William, Jr.; Quiros, Nelson I.; and Upmacis, Rita K., to Rohm and Haas Company. Removal of carbonyl impurities from α,β unsaturated carboxylic acid esters. 5,488,141, Cl. 560-218.000.
Baum, Eric A.: *See*—
Robertson, Paul A.; Hounego, Peter J.; Jensen, Borge R.; Crooks, Murray A.; Emerton, Neil; Hodson, Peter D.; and Baum, Eric A., 5,487,378, Cl. 128-200.160.
Baur, Richard: *See*—
Boeckh, Dieter; Penhof, Angelika; Kroner, Matthias; Hartmann, Heinrich; Baur, Richard; Kud, Alexander; and Schwendemann, Volker, 5,488,095, Cl. 528-361.000.
Baverstam, Bengt I., to Combustion Engineering, Inc. Method and apparatus for supporting a shroud in a nuclear reactor. 5,488,643, Cl. 376-390.000.
Bayer AG: *See*—

Thurm, Siegfried; Sommer, Klaus; Bier, Peter; Elschner, Andreas; Kowitz, Manfred; and Sandquist, Axel, 5,487,810, Cl. 216-67.000.
Wood, Louis L.; and Calton, Gary J., 5,488,088, Cl. 525-432.000.
Bayer Aktiengesellschaft: *See*—
Haas, Wilhelm; Müller, Klaus-Helmut; König, Klaus; Santel, Hans-Joachim; Lürssen, Klaus; and Schmidt, Robert R., 5,488,028, Cl. 504-193.000.
Reichert, Günther; Lietz, Hans; Hasedenteufel, Jürgen-Rolf; Sackmann, Günter; and Kobelka, Frank, 5,487,964, Cl. 430-16.000.
Bayer Corporation: *See*—
Werner, Joachim; Kase, Scott A.; Doerge, Herman P.; and Boonstra, Eric F., 5,488,073, Cl. 521-131.000.
Bayerische Motoren Werke Aktiengesellschaft: *See*—
Fueller, Peter; Kuebler, Juergen; Guest, Herbert; and Amsseder, Franz, 5,487,564, Cl. 280-808.000.
Bayliss, Eric K., to Ciba-Geigy Corporation. Phosphinate esters. 5,488,171, Cl. 568-8.000.
Bayliss, John P.; and Byrnes, Sean, to Lucas Industries. Vehicle brake servo booster with traction control mode. 5,487,325, Cl. 91-376.00R.
Beacham, William H., Jr.; and Lillestolen, Erik C., to United Technologies Corporation. True hysteresis window comparator for use in monitoring changes in switch resistance. 5,488,323, Cl. 327-74.000.
Bean, Richard A. Pool brush hydrofoil. 5,487,397, Cl. 134-6.000.
Beason, Ronnie B.: *See*—
Fagan, John E.; Sluss, James J., Jr.; Hassell, John W.; Mears, R. Brian; Beason, Ronnie B.; Wilkinson, Sonja R.; Lear, Tommy; and Tan, Kok S., 5,488,224, Cl. 250-227.160.
Beck, James V.: *See*—
Aslam, Mohammad; and Beck, James V., 5,488,350, Cl. 338-225.00D.
Beck, Jeffrey S.; and Dessau, Ralph M., to Mobil Oil Corp. Selective production of para-dialkyl substituted benzenes and catalyst therefor. 5,488,194, Cl. 585-475.000.
Beck, Karin H.: *See*—
Dyllick-Brenzinger, Rainer; Raulfs, Friedrich-Wilhelm; Schlösser, Ulrike; Beck, Karin H.; and Scholz, Gerhard, 5,487,770, Cl. 44-328.000.
Beck, Robert L.: *See*—
Mowrer, Kevin B.; and Beck, Robert L., 5,487,692, Cl. 446-465.000.
Beckman, Kurt D.; and Hinchee, Beth A., to Caterpillar Inc. Air-oil separator utilizing centrifugal separation. 5,487,371, Cl. 123-572.000.
Beckwell International, Inc.: *See*—
Haswell, James S.; and Stevens, Michael S., 5,487,393, Cl. 128-760.000.
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Bend All Manufacturing Inc.: *See*—
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Bessler, Warren F., to General Electric Company. Independent compartment temperature control in a household refrigerator using interlinked thermostats. 5,487,277, Cl. 62-187.000.
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Bissell, Stephen R.: *See*—
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Appolonia, Jack; Muscato, Robert; and Wittel, George, 5,487,908, Cl. 426-520.000.
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Boechh, Dieter; Funhof, Angelika; Kroner, Matthias; Hartmann, Heinrich; Baur, Richard; Kud, Alexander; and Schwendemann, Volker, to BASF Aktiengesellschaft. Condensation products that contain N,O-acetal or carboxamide structures, preparation thereof, use thereof, and condensation products that contain acetal-lactone structures. 5,488,095, Cl. 528-361.000.

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Bonaccio, Anthony R., to International Business Machines Corp. Open and short fault detector for a differential interface. 5,488,306, Cl. 324-539.000.

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Bonavia, Howard V.; and Geislinger, Dale F., to Simmonds Precision Engine Systems, Inc. Exciter circuit using gated switches. 5,488,536, Cl. 361-253.000.

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Boonstra, Eric F.: *See*—
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BP Chemicals Limited: *See*—
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Brach, Philip L., Jr.; Khalil, Charles; and Mead, Robert W. Squeegee having an advertising display area. 5,487,203, Cl. 15-245.000.

Brackett, Anne W.; Durham, Marcus O.; Perkins, Lynn K.; and Thomas, Gregory E., to W. L. Walker Co., Inc. Tank gauging apparatus and method. 5,487,300, Cl. 73-61.590.

Bradley, Benjamin A. D. B.; Doyle, Alan; and Kumpel, Belinda M., to National Blood Authority. Human anti-RH(D) monoclonal antibodies reagents and hybridomas and methods of RH typing using anti-RH(D) monoclonal antibodies and reagents. 5,487,891, Cl. 424-142.100.

Brady, David J.: *See*—
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Braginsky, Asik: *See*—
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Brault, Donald A.: *See*—
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Brennan, Thomas J.; DeFilippi, Michael E.; Gayp, Steven M.; and Kremer, Gregory D., to Johnstone Pump Company. Mastic applicator system. 5,487,781, Cl. 118-300.000.

Brezlin, Michael K. Pneumatically powered submersible fluids pump with casing activator and biasing means. 5,487,647, Cl. 417-131.000.

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Bromley, Steven D.; Herrmann, James F.; and Emery, Mark V. Adaptive backup battery management for vehicular based electronic modules. 5,487,956, Cl. 429-90.000.

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Broskow, James A., to Illinois Tool Works Inc. Container carrier. 5,487,465, Cl. 206-150.000.

Brosnan, Kerry R. Light - reflecting waveguide assemblies and process. 5,488,696, Cl. 385-129.000.

Brotherton, Stanley D., to U.S. Philips Corporation. Manufacture of electronic devices comprising thin-film transistors using an ion implantation mask having bevelled edges. 5,488,001, Cl. 437-21.000.

Brown, Brian J.: *See*—
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Brown, Malcolm C.; and Hammond, Paul E. Device for testing medical infusion. 5,487,309, Cl. 73-861.000.

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Matsubara, Miyuki; Hirabayashi, Hironitsu; Sugimoto, Hitoshi; and Takahashi, Kiichiro, 5,488,398, Cl. 347-43.000.

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Takayanagi, Yoshiaki; Saito, Asao; and Koizumi, Ryoichi, 5,488,395, Cl. 347-7.000.

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Tsuda, Tadayuki; Sekine, Kazumi; Ikemoto, Isao; Watanabe, Kazushi; Sasago, Yoshikazu; Shimizu, Yasushi; Noda, Shinya; and Kobayashi, Kazunori, 5,488,459, Cl. 355-211.000.

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Carter, Robert L.; and Barr, Sophia C., 5,487,535, Cl. 267-220.000.
Chu, Alice S.; Jackson, Andrew; and Wu, Margaret M., to Mobil Oil Corporation. Hydrocarbon lube and distillate fuel additive. 5,488,191, Cl. 585-10.000.
Chum, Pak-Wing S.: *See*—
Spencer, Lee; Kolthammer, Brian W. S.; Ripplinger, Miriam P.; Wooster, Jeffrey J.; Chum, Pak-Wing S.; and deGroot, Jacquelya A., 5,487,938, Cl. 428-332.000.
Chung, Chen-Hui: *See*—
Hsue, Chen-Chiu; Shen, Yi-Chung; Sheu, Shing-Rea; and Chung, Chen-Hui, 5,488,009, Cl. 437-52.000.
Chung, Hae Y.: *See*—
Kim, Jung H.; Chung, Hae Y.; Kim, Hyung S.; Lee, Byeong H.; and Roh, Young H., 5,487,284, Cl. 68-3.0SS.
Chunghwa Picture Tubes, Ltd.: *See*—
Chen, Hsing-Yao, 5,488,265, Cl. 313-414.000.
Church & Dwight Co., Inc.: *See*—
Shank, James D., 5,487,695, Cl. 451-102.000.
Ciba-Geigy Corporation: *See*—
Angst, Christof; Allgeier, Hans; Heckendorn, Roland; and Wallach, Daniel, 5,488,140, Cl. 560-170.000.
Baylis, Eric K., 5,488,171, Cl. 568-8.000.
Fischer-Reimann, Evelyn; and Fischer, Walter, 5,488,119, Cl. 552-201.000.
Kiser, Adolf, 5,487,761, Cl. 8-527.000.
Leppard, David G.; Burdeska, Kurt; and Slongo, Mario, 5,488,108, Cl. 544-216.000.
Morrissey, Michael M., 5,488,160, Cl. 564-165.000.
Nesvadba, Peter, 5,488,117, Cl. 549-302.000.
Reinehr, Dieter; Bacher, Jean-Pierre; and Schmitter, André, 5,488,112, Cl. 548-261.000.
Steinmann, Bettina; Schulthess, Adrian; and Hunziker, Max, 5,487,966, Cl. 430-269.000.
Vetter, Dirk, 5,488,102, Cl. 536-32.000.
Cimenti, Giovanni: *See*—
Losardi, Emile; Andonov, Radomir; and Cimenti, Giovanni, 5,487,532, Cl. 266-271.000.
Circuit Breakers Industries Ltd.: *See*—
Bagalini, Dante, 5,488,303, Cl. 324-509.000.
Cirrus Logic, Inc.: *See*—
Reinert, Christopher L.; and Sharma, Sudhir, 5,488,390, Cl. 345-145.000.
Citizen Watch Co., Ltd.: *See*—
Wakita, Maki, 5,488,538, Cl. 361-685.000.
Clapper, Ronald C., Jr. Electronic gaming apparatus and method. 5,487,544, Cl. 273-138.00A.
Clark, Michael C.: *See*—
Schedegger, Charles E.; Allen, Clyde G.; Clark, Michael C.; Nurenberg, Aundrea; and Wnuk, Jack, 5,487,701, Cl. 454-271.000.
Clark, Richard S.: *See*—
Dalton, William S.; Dalton, Patrick S.; and Clark, Richard S., 5,487,549, Cl. 277-54.000.
Clark, Thomas: *See*—
Miller, J. Clayton; Harvey, Michael; Taylor, James L.; Clark, Thomas; and Dawson, Gerry, 5,487,290, Cl. 70-303.00A.
Clark, Wesley R.: *See*—
Leuthold, Hans; Jennings, David J.; Clark, Wesley R.; Khan, Raquib; and Heine, Guenther, 5,487,608, Cl. 384-113.000.
Clarke, William A. Baby carousel. 5,487,705, Cl. 472-29.000.
Clary, Cynthia G.: *See*—
Clary, Michael S., 5,487,402, Cl. 135-87.000.
Clary, Michael S., to Clary, Michael S.; and Clary, Cynthia G. Portable shelter with expandable frame. 5,487,402, Cl. 135-87.000.
Cline, Jack R.: *See*—
Maghati, Mohammad; and Cline, Jack R., 5,488,535, Cl. 361-119.000.
Clinical Innovation Associates, Inc.: *See*—
Smith, Steven R.; Cutler, Christopher A.; and Wallace, William D., 5,487,377, Cl. 600-204.000.
Clouth Gummiwerke Aktiengesellschaft: *See*—
Engst, Wilhelm; Repczak, Alexander; and Weller, Horst, 5,487,501, Cl. 238-2.000.
CMD Corporation: *See*—
Saindon, Stephen A.; Heindel, Kevin O.; and Morrow, James G., 5,488,480, Cl. 356-429.000.
Cobb, Vicky S.; Gutek, Beth I.; and Le Grow, Gary E., to Dow Corning Corporation. Alkylpolyether siloxanes. 5,488,124, Cl. 556-445.000.
Cochran, Eli: *See*—
Palmer, James E.; Powers, John R., III; Coleman, Patricia J.; Brewer, Gregory S.; Herman, Jeffrey A.; and Cochran, Eli, 5,488,685, Cl. 395-157.000.
Cochran, William A. Vision control glasses. 5,488,438, Cl. 351-45.000.
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Bates, David W., 5,487,490, Cl. 222-1.000.
Cody, Delbert J. Saw guide apparatus. 5,487,319, Cl. 83-745.000.
Coelho, Rohan: *See*—
Keith, Michael; Coelho, Rohan; Golin, Stuart; and Nickerson, Brian, 5,488,568, Cl. 364-514.00R.
Cohen, Smadar; Andrianov, Alexander K.; Wheatley, Margaret; Allcock, Harry R.; and Langer, Robert S., to Massachusetts Institute of Technology; and Penn State Research Foundation, The. Gas-filled polymeric microbubbles for ultrasound imaging. 5,487,390, Cl. 128-662.020.
Cole, Josephine A.; and Muderlak, Kenneth J. Hanging file system and apparatus. 5,487,617, Cl. 402-4.000.
Cole, Michael L., to Bnimi, Sam H. Recursive data compression. 5,488,364, Cl. 341-50.000.
Coleman, Patricia J.: *See*—
Palmer, James E.; Powers, John R., III; Coleman, Patricia J.; Brewer, Gregory S.; Herman, Jeffrey A.; and Cochran, Eli, 5,488,685, Cl. 395-157.000.
Colgate-Palmolive Company: *See*—
Dixit, Nagaraj; Durga, Gary; Burke, Michael R.; Principe, Michael; and Patel, Suryakant, 5,487,906, Cl. 424-673.000.
Colley, Jaime B., to Rockwell International Corporation. Method and apparatus for determining positions on the earth corresponding to an observed rate of change of satellite range. 5,488,378, Cl. 342-357.000.
Collier Campbell Ltd.: *See*—
Collier, Susan J., 5,487,936, Cl. 428-229.000.
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Collins, Robert J.: *See*—
Aneja, Arun P.; Bennie, David G.; Collins, Robert J.; Frankfort, Hans Rudolf E.; Johnson, Stephen B.; Knox, Benjamin H.; and Most, Elmer E., Jr., 5,487,859, Cl. 264-103.000.
Colombo, Maristella: *See*—
Buzzetti, Franco; Longo, Antonio; and Colombo, Maristella, 5,488,057, Cl. 514-312.000.
Colony, James L.: *See*—
Subramanian, Ramaswamy; and Colony, James L., 5,488,126, Cl. 558-17.000.
Colorado State University Research Foundation: *See*—
Nett, Torrance M.; and Glode, Leonard M., 5,488,036, Cl. 514-15.000.
Colwell, Larry W.: *See*—
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Combot-Courrau, Yves; Le Saint, Benoit; Musellec, Jean-Noël; and Le Quere, Philippe, to Legris S.A. Quick-connection coupling. 5,487,572, Cl. 285-304.000.
Combustion Engineering, Inc.: *See*—
Baverstam, Bengt I., 5,488,643, Cl. 376-390.000.
ComByte, Inc.: *See*—
Peace, Steven L.; and Precht, Terry A., 5,488,522, Cl. 360-99.060.
Compaq Computer Corp.: *See*—
Belmont, Brian V., 5,488,572, Cl. 364-514.00R.
Wood, Paul B.; and Bounds, Brian F., 5,488,393, Cl. 345-213.000.
Complex Chemicals, Corp.: *See*—
Jackson, Thomas C., 5,488,122, Cl. 556-8.000.
Comsat Corporation: *See*—
Dimolitsas, Spiros; Onufry, Michael, Jr.; and Risser, Jack H., 5,488,653, Cl. 379-100.000.
Consair Corporation: *See*—
Sansone, Arthur J.; and Braginsky, Asik, 5,487,511, Cl. 241-282.100.
Consair Group, Inc., The: *See*—
Downie, John P., 5,487,225, Cl. 34-473.000.
Connell Limited Partnership: *See*—
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Conner Peripherals, Inc.: *See*—
Lemke, James U.; and French, William W., 5,488,521, Cl. 360-97.020.
Consolidated Edison Company of New York, Inc.: *See*—
Malik, Paul; Kosson, Robert; Vasoly, Michael; and Stegmann, George, 5,488,642, Cl. 376-272.000.
Conte, Ubaldo; La Manna, Aldo; and Maggi, Lauretta, to Ekita Investments N.V. Process for preparing pharmaceutical tablet capable of releasing the active ingredients contained therein at subsequent times. 5,487,901, Cl. 424-472.000.
Conti Florentia S.R.L.: *See*—
Frullini, Alberto; and Frullini, Paolo, 5,487,281, Cl. 66-13.000.
Continental Controls, Inc.: *See*—
Berkowitz, Peter N.; Papadopoulos, Michael N.; Colwell, Larry W.; and Moran, Martin K., 5,488,561, Cl. 364-165.000.
Contreras, Edward A.: *See*—
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Cookson, Christopher J.: *See*—
Lieberfarb, Warren N.; Cookson, Christopher J.; and Ostrover, Lewis S., 5,488,410, Cl. 348-5.500.
Coolbear, Bruce S.: *See*—
Miller, Mitchell E.; Ferry, Julian J.; Kilbey, Brian E.; Coolbear, Bruce S.; and Gandy, Richard F., 5,487,682, Cl. 439-607.000.
Cooper, Daniel: *See*—
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Copeland Corporation: *See*—
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Hutchin, Graham J.; Themistocleous, Themistoclis; and Copperthwaite, Richard G., 5,488,165, Cl. 564-479.000.
Cordes, John. Sewing machine with elongated arm and strengthening plate. 5,487,348, Cl. 112-259.000.
Cordis Corporation: *See*—
Avellanet, Ernesto; and Hernandez, Ernesto, 5,487,729, Cl. 604-96.000.
Cornell Research Foundation, Inc.: *See*—
Soderlund, David M.; Knipple, Douglas C.; and Henderson, Joseph E., 5,487,976, Cl. 435-7.210.
Corning Incorporated: *See*—
Cunningham, George M.; Frost, Rodney L; and Lachman, Irwin M., 5,487,863, Cl. 264-177.110.
DeLiso, Evelyn M.; and Zaun, Kenneth E., 5,488,021, Cl. 502-63.000.
Deming, Scott W., 5,487,694, Cl. 451-49.000.
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Hampton, Leslie B.; and Weiss, David S., 5,487,865, Cl. 419-5.000.
Rittler, Hermann L., 5,488,016, Cl. 501-39.000.
Correia, Yves: *See*—
Le Blevec, Jean-Marc; Correia, Yves; Masini, Jean-Jacques; Bousquet, Jacques; and Bergougnou, Maurice A., 5,488,190, Cl. 570-226.000.
Costa, Erminio; Guidotti, Alessandro; Baraldi, Mario; Bertolino, Mariella; DiBella, Maria; and Vicini, Stefano, to FIDIA - Georgetown Institute for the Neuro-Sciences. Method of treating learning and memory disorders using benzothiadiazide derivatives as nootropic agents. 5,488,049, Cl. 514-223.200.
Cotillion, Inc.: *See*—
D'Amore, William, Jr., 5,487,280, Cl. 63-12.000.
Cotrel, Yves P., to Sofamore Danek Group. Transverse fixation device for a spinal osteosynthesis system. 5,487,742, Cl. 606-61.000.
Cotton, John R., to Rank Brimar Limited. Deflection system. 5,488,272, Cl. 315-408.000.
Coulie, Pierre: *See*—
Boon-Falleur, Thierry; Brichard, Vincent; Van Pel, Aline; De Plaen, Etienne; Coulie, Pierre; Renauld, Jean-Christope; Wölfel, Thomas; and Lethé, Bernard, 5,487,974, Cl. 435-6.000.
Court, John J.: *See*—
Dunlap, Richard P.; Hlasta, Dennis J.; Desai, Ranjit C.; Latimer, Lee H.; Subramanyam, Chakrapani; Court, John J.; Bell, Malcolm R.; and Kumar, Virendra, 5,488,062, Cl. 514-373.000.
Covol Technologies, Inc.: *See*—
Ford, George W., Jr., 5,487,764, Cl. 44-553.000.
Cowan, Gloria L. Floor mopping device with wheeled support frame. 5,487,202, Cl. 15-228.000.
Cowell, Michael J.: *See*—
Anderson, Peter L.; Cowell, Michael J.; and Hosek, Dan J., 5,487,623, Cl. 405-286.000.
Cox, Charles E. Barrier device for a traffic bollard to protect detached movable objects during contact. 5,487,618, Cl. 404-6.000.
Cox, Charles P.: *See*—
Polson, Alan M.; Swanborn, Deryl D.; Dunn, Richard L.; Cox, Charles P.; Norton, Richard L.; Lowe, Bryan K.; and Peterson, Kenneth S., 5,487,897, Cl. 424-426.000.
Coyle, Laurie; Finucane, Kevin M.; Greene, Alan P.; and Moran, Robert E., to Lever Brothers Company, Division of Conopco, Inc. Process for accurately controlling moisture levels of aqueous surfactant compositions during on line processing. 5,487,843, Cl. 252-89.100.
Crafts, Harold S., to AT&T Global Information Solutions Company; Hyundai Electronics America; and Symbios Logic Inc. Differential analog transistors constructed from digital transistors. 5,488,249, Cl. 257-401.000.
Crane Plastics Company Limited Partnership: *See*—
Newby, Charles D., 5,487,937, Cl. 428-317.100.
Crane, Robert F.: *See*—
Wentworth, Steven W.; Crane, Robert F.; and Haas, Jon A., 5,487,430, Cl. 173-91.000.
Crawley, Dolph R.; and Brooke, Steven R., to Baker Hughes Incorporated. Mounting system for raise and shaft cutters. 5,487,435, Cl. 175-363.000.
Creamery Hollow U.S.A., Inc.: *See*—
Fackrell, Robert N.; and Griffeth, Lorenzo P., 5,487,913, Cl. 426-603.000.
Creatura, John A.: *See*—
Mahabadi, Hadi K.; Wright, Denise Y.; Cunningham, Michael F.; and Creatura, John A., 5,487,847, Cl. 252-511.000.
Creeke, Murray A.: *See*—
Robertson, Paul A.; Houzego, Peter J.; Jensen, Borge R.; Creeke, Murray A.; Emerton, Neil; Hodson, Peter D.; and Baum, Eric A., 5,487,378, Cl. 128-200.160.
Cregge, Robert J.: *See*—
Flynn, Gary A.; Cregge, Robert J.; Fevig, Thomas L.; Sunder, Shyam; and Shum, Patrick W., 5,488,048, Cl. 514-214.000.
Crippen, Randall M.: *See*—
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Cristobal, Cliff: *See*—
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Croci, Tiziano: *See*—
Barosi, Marco; Cecchi, Roberto; and Croci, Tiziano, 5,488,151, Cl. 562-452.000.
Cronquist, Brian E.: *See*—
Quek, Elgin K. B.; Cronquist, Brian E.; and Wei, Che C., 5,488,244, Cl. 257-314.000.
Crossman, David D.: *See*—
Marshall, Jeremy; and Crossman, David D., 5,487,748, Cl. 606-182.000.
Crump, Druce K.: *See*—
Athey, Phillip S.; Crump, Druce K.; and Wilcox, David A., 5,488,130, Cl. 558-441.000.
Crystal, Richard G.; Geffre, Raymond; and Karlsson, Sven, to Graphic Utilities, Inc. Method for refilling ink jet cartridges. 5,488,400, Cl. 347-85.000.
CTB, Inc.: *See*—
Hoover, Don R., 5,487,226, Cl. 34-503.000.
Cunningham, Earl A., to International Business Machines Corporation. Self adaptive head for semi-contact recording. 5,488,524, Cl. 360-103.000.
Cunningham, George M.; Frost, Rodney L; and Lachman, Irwin M., to Corning Incorporated. Extrusion die for protrusion and/or high cell density ceramic honeycomb structures. 5,487,863, Cl. 264-177.110.
Cunningham, Michael F.: *See*—
Mahabadi, Hadi K.; Wright, Denise Y.; Cunningham, Michael F.; and Creatura, John A., 5,487,847, Cl. 252-511.000.
Curington, Alfred R., to Baker Hughes Incorporated. Slip release mechanism. 5,487,427, Cl. 166-382.000.
Curtis, Harold D., to Tower Tech, Inc. Dual layered drainage collection system. 5,487,531, Cl. 261-30.000.
Curtis, Harold D., to Tower Tech, Inc. Pultruded cooling tower construction. 5,487,849, Cl. 261-30.000.
Cutler, Christopher A.: *See*—
Smith, Steven R.; Cutler, Christopher A.; and Wallace, William D., 5,487,377, Cl. 600-204.000.
Cutler, Daniel F., to Data Translation, Inc. Video peripheral board in expansion slot independently exercising as bus master control over system bus in order to relief control of host computer. 5,488,695, Cl. 395-290.000.
Czaderna, Alvin W.: *See*—
King, David E.; Czaderna, Alvin W.; and Kennedy, Cheryl E., 5,487,792, Cl. 136-256.000.
Czernakowski, Waldemar: *See*—
Burleigh, David W.; Czernakowski, Waldemar; and Wetter, Hermann, 5,487,588, Cl. 297-253.000.
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Fawley, William G.; and Sobczynski, Radoslaw, 5,488,474, Cl. 356-326.000.
Daewoo Electronics Co., Ltd.: *See*—
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Daft, Christopher M. W.: *See*—
Engeler, William E.; and Daft, Christopher M. W., 5,488,588, Cl. 367-7.000.
Dahlin, Donald W.: *See*—
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Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See*—
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Dai Nippon Printing Co., Ltd.: *See*—
Sakano, Shinichi; Aoki, Daigo; Utsumi, Minoru; Akada, Masanori; and Shimizu, Osamu, 5,488,601, Cl. 369-120.000.
Dai, Pei-Shing E.: *See*—
Knifton, John F.; Marquis, Edward T.; and Dai, Pei-Shing E., 5,488,178, Cl. 568-578.000.
Knifton, John F.; Marquis, Edward T.; and Dai, Pei-Shing E., 5,488,179, Cl. 568-578.000.
Daicel Chemical Industries, Ltd.: *See*—
Kanno, Tatsuya; and Fududa, Yutaka, 5,488,094, Cl. 528-199.000.
Dainippon Ink and Chemicals, Inc.: *See*—
Koesmehl, Gerhard; and Lundt, Bettina, 5,488,093, Cl. 528-193.000.
Dainippon Pharmaceutical Co., Ltd.: *See*—
Uno, Yoichiro; Takeno, Fumio; Yamatoya, Kazuhiko; and Ohtsu, Keiji, 5,488,105, Cl. 536-128.000.
Daishin Instrument Co., Ltd.: *See*—
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Daiwabo Create Co., Ltd.: *See*—
Ikizanzaka, Isao; Ikeda, Kazuhiro; and Takai, Yousuke, 5,487,944, Cl. 428-374.000.
Dallas Semiconductor Corporation: *See*—
Dias, Donald R.; and Mumper, Eric W., 5,488,284, Cl. 320-39.000.
Dalton, Patrick S.: *See*—
Dalton, William S.; Dalton, Patrick S.; and Clark, Richard S., 5,487,549, Cl. 277-54.000.
Dalton, William S.; Dalton, Patrick S.; and Clark, Richard S., to Deneg Delaval Turbomachinery Corp. TurboCare Division. Turbine interfitting packing with cam adjustment. 5,487,549, Cl. 277-54.000.
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Daly, Thomas M.; and Daly, Rita, 5,487,548, Cl. 273-431.000.
Daly, Thomas M.; and Daly, Rita. Question and answer board game representing snooker. 5,487,548, Cl. 273-431.000.
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D'Amore, William, Jr., to Cotillion, Inc. Convertible earring. 5,487,280, Cl. 63-12.000.

Dan-Chief Enterprise Co., Ltd.: *See*—
Liu, Danny, 5,488,201, Cl. 174-262.000.
Dana Corporation: *See*—
Brown, Johnny M., 5,487,767, Cl. 55-357.000.
Danielson, Arvin D.; Schultz, Derald R.; Silva, Dennis; Boatwright, Darrell L.; Austin, Rickey G.; and Alt, Daniel E., to Norand Corporation. Portable work station and data collection terminal including switchable multi purpose touch screen display. 5,488,575, Cl. 364-707.000.
Danishefsky, Samuel J.; Bornmann, William G.; Quesnea, Yves; Magee, Thomas V.; Krol, Walter J.; Masters, John J.; and Jung, David K., to Sloan-Kettering Institute for Cancer Research. Total synthesis of taxol and analogues thereof. 5,488,116, Cl. 549-214.000.
Dao, Loc H.: *See*—
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Daoud, Bassel Hage, to AT&T Corp. Integrated protector and modular jack. 5,487,675, Cl. 439-95.000.
Daoust, Bernard, to Canstar Sports Group Inc. Braking mechanism for in-line skates. 5,487,552, Cl. 280-11.200.
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Dillard, Kenneth D., 5,487,700, Cl. 452-188.000.
Dapper, Gregory S.; and Yamamoto, Ronald K., to Vitaphore Corporation. Method for forming controlled release polymeric substrate. 5,487,895, Cl. 424-278.100.
Dassault Electronique: *See*—
Chazelle, Xavier; Hunot, Anne-Marie; and Lepere, Gérard, 5,488,563, Cl. 364-461.000.
Data Translation, Inc.: *See*—
Cutter, Daniel F., 5,488,695, Cl. 395-290.000.
DataSouth Computer Corporation: *See*—
Uland, David M., 5,487,337, Cl. 101-288.000.
Daum, Ulrich: *See*—
Hardt, Peter; Daum, Ulrich; and Völker, Theodor, 5,488,163, Cl. 564-315.000.
David Sarnoff Research Center, Inc.: *See*—
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Davidson Textron Inc.: *See*—
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Davis, Donald E.: *See*—
Zampini, Michael A.; Flum, Alan; Davis, Donald E.; and Dombrowski, Joseph J., 5,488,669, Cl. 381-119.000.
Davis, L. Berkley, Jr.: *See*—
Borkowicz, Richard J.; Davis, L. Berkley, Jr.; and Kuwata, Masayoshi, 5,487,275, Cl. 60-747.000.
Davis, Robert H., to Jess Clarke & Sons, Inc. Wound healing. 5,487,899, Cl. 424-443.000.
Davis, William R.; and Walton, Willard S., to United States of America, Army. Inertial Hopkinson bar shock sensor. 5,487,298, Cl. 73-12.050.
Davison, Roger C., to Trauter, Inc. Double-wall welded plate heat exchanger. 5,487,424, Cl. 165-166.000.
Dawes, Steven B.: *See*—
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Dawkins, Katherine J. Self-inflating tents. 5,487,400, Cl. 135-87.000.
Dawson, Gerald L.; and Thompson, Daniel L., to Mas-Hamilton Group. Electronic combination lock utilizing a one-time use combination. 5,488,660, Cl. 380-24.000.
Dawson, Gerald L.: *See*—
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Dawson, Gerry: *See*—
Miller, J. Clayton; Harvey, Michael; Taylor, James L.; Clark, Thomas; and Dawson, Gerry, 5,487,290, Cl. 70-303.00A.
Dayco Products, Inc.: *See*—
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Dazo, Jeanette; Reiber, Herman G.; Knighton, Richard; and Peaden, Spurgeon T., to Wing Industries, Inc. Panelled light transmissive member. 5,487,245, Cl. 52-204.610.
Deacon, David A. G.; Brinkman, Michael J.; and Bischel, William K., to Deacon Research. Method for controllable optical power splitting. 5,488,681, Cl. 385-37.000.
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Eglinton, Robert B.: *See*—
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Falgén, Helena; Sundström, Göran; Laadfors, Johan; and Sokol, John C., 5,487,881, Cl. 423-478.000.
Ekis, Robert W.: *See*—
Chew, Ralph M.; and Ekis, Robert W., 5,487,334, Cl. 101-126.000.
Ekita Investments N.V.: *See*—
Conte, Ubaldo; La Manna, Aldo; and Maggi, Lauretta, 5,487,901, Cl. 424-472.000.
Ekman, Rainer O.: *See*—
Thornton, Jeffrey W.; Eckerman, Christer S.; Ekman, Rainer O.; and Holmbom, Bjarne R., 5,487,812, Cl. 162-72.000.
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Woolsey, Kevin G., 5,488,566, Cl. 364-488.000.
Elder, Joseph M.; Bise, Donald L.; Bolinger, Terry D.; and Ruether, Peter, to XEL Communications, Inc. CATV telephony system using subsplit band for both directions of transmission. 5,488,413, Cl. 348-13.000.
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Korall, Menachem; Harats, Yehuda; Dechovich, Boris; Goldstein, Jonathan R.; and Koretz, Binyamin, 5,487,955, Cl. 429-26.000.
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Nathenson, Richard D.; Apt, Jerome, Jr.; Uram, Martin J.; Brustbough, Paul M.; Brawley, Gary H.; Hackman, Donald J.; and Christenson, Brian, 5,487,229, Cl. 37-347.000.
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Kurze, Peter; and Kletke, Hans-Jürgen, 5,487,825, Cl. 205-200.000.
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Kwon, O-Kyun; Choi, Young-Wan; and Lee, El-Hang, 5,488,231, Cl. 257-17.000.
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Le Blevec, Jean-Marc; Correia, Yves; Masini, Jean-Jacques; Bousquet, Jacques; and Bergougnou, Maurice A., 5,488,190, Cl. 570-226.000.

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Audia, James E.; Droste, James J.; and Evrard, Deborah A., 5,488,053, Cl. 514-280.000.
Bodick, Neil C.; Bymaster, Franklin P.; Offen, Walter W.; and Shannon, Harlan E., 5,488,056, Cl. 514-305.000.
Palkowitz, Alan D., 5,488,058, Cl. 514-324.000.
Sall, Daniel J.; and Shuman, Robert T., 5,488,037, Cl. 514-19.000.
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Elliott, David J.; and Shafer, David, to Excimer Laser Systems, Inc. Deep ultraviolet microlithography system. 5,488,229, Cl. 250-492.200.
Ellis, Frank B., Jr. Formation of tin oxide films on glass substrates. 5,487,784, Cl. 118-718.000.
Elmer, Werner, to Texas Instruments Deutschland GmbH. Circuit arrangement integrated in a semiconductor circuit. 5,488,288, Cl. 323-284.000.
Elpern, David G.; and Blake, James E. T., to AlliedSignal Inc. Turbocharger having pneumatic actuator with pilot valve. 5,487,273, Cl. 60-602.000.
Elschner, Andreas: *See*—
Thurm, Siegfried; Sommer, Klaus; Bier, Peter; Elschner, Andreas; Kowitz, Manfred; and Sandquist, Axel, 5,487,810, Cl. 216-67.000.
Emambakhsh, Al S., to TRW Vehicle Safety Systems Inc. Apparatus for controlling flow of inflation fluid into an air bag. 5,487,560, Cl. 280-740.000.
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Hait, David R.; Young, Jeffery L.; and Holsten, Stuart V., 5,487,213, Cl. 29-596.000.
Rau, C. Peter; and Hitch, Thomas T., 5,488,534, Cl. 361-56.000.
Richmond, James W., 5,487,528, Cl. 251-127.000.
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Robertson, Paul A.; Houzego, Peter J.; Jensen, Borge R.; Creeke, Murray A.; Emerton, Neil; Hodson, Peter D.; and Baum, Eric A., 5,487,378, Cl. 128-200.160.
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Bromley, Steven D.; Herrmann, James F.; and Emery, Mark V., 5,487,956, Cl. 429-90.000.
Encore Technologies, Inc.: *See*—
Osborn, John D., 5,488,080, Cl. 524-270.000.
Endo, Kiyonobu; Matsumoto, Kazuya; and Kuwayama, Tetsuro, to Canon Kabushiki Kaisha. Optical pickup using split beams impinging on different photodetector areas. 5,488,598, Cl. 369-120.000.
Endo, Sadao; Tokinaga, Yoshito; and Sasaki, Kazuo, to Unitec Corporation. Motorized board with pressure actuated power switch. 5,487,441, Cl. 180-181.000.
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Energy Innovations, Inc.: *See*—
Gourdine, Meredith, 5,487,957, Cl. 429-49.000.
Energy Life Systems Corporation: *See*—
Sulek, Stanislaw; and Hussein, Hany M. G., 5,487,740, Cl. 606-15.000.
Engeler, William E.; and Daft, Christopher M. W., to General Electric Company. Ultrasonic imager having wide-bandwidth dynamic focusing. 5,488,588, Cl. 367-7.000.
Engelhardt, Fritz; Kühlwein, Jürgen; Schuler, Wilfried; Zarrer, Ralf; and Antwerpen, Werner, to Cassella AG. Polycondensates containing polyriloxane groups. 5,488,123, Cl. 556-428.000.
Engle, Craig D. Enhanced electrostatic shutter mosaic modulator. 5,488,505, Cl. 359-292.000.
Engst, Wilhelm; Repczuk, Alexander; and Weller, Horst, to Clouth Gummiwerke Aktiengesellschaft. Shock absorber component for railway track having pourous rubber particle core enclosed by cover layer. 5,487,501, Cl. 238-2.000.
ENI, A Div. of Astec America, Inc.: *See*—
Kease, Anthony R. A.; and Vandebroek, Bart C., 5,488,331, Cl. 330-296.000.
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Messina, Giuseppe; Sechi, Giovanni M.; and De Micheli, Silvio, 5,488,158, Cl. 564-125.000.
Enomoto, Masanori: *See*—
Ota, Yasuo; Enomoto, Masanori; and Abe, Hitoshi, 5,488,443, Cl. 351-221.000.
Enraku, Motohiro; and Tanaka, Yutaka, to Kabushiki Kaisha Toshiba. Arrangement of power supply lines used in a unit functional block. 5,488,238, Cl. 257-207.000.
Enterra Patco Oilfield Products Inc.: *See*—
O'Hair, Dan E., 5,487,426, Cl. 166-378.000.
Entrepreneurial Technologies, Inc.: *See*—
Isanhart, Bowdie J., 5,487,457, Cl. 192-58.200.
EP Technologies, Inc.: *See*—
Panescu, Doria, 5,487,391, Cl. 128-699.000.
Erickson, Bruce L.; and Stall, Allen H. Multiple range variable resistor. 5,488,349, Cl. 338-171.000.
Broglia, Adnan; Joos, Franz; Novacek, Peter; and Senior, Peter, to ABB Management AG. Fuel lance for liquid and/or gaseous fuels and method for operation thereof. 5,487,659, Cl. 431-350.000.
Erowa AG: *See*—
Obrist, Basil, 5,487,539, Cl. 269-309.000.
Esch, Hans-Joachim: *See*—
Betzill, Manfred; Esch, Hans-Joachim; Metzger, Hans; Dieterath, Winfried; and Reustle, Albrecht, 5,487,363, Cl. 123-41.740.
Esdaile, Anthony R.: *See*—
Walkingshaw, M. Jay; Somerville, Lorne R.; Esdaile, Anthony R.; and Stuart, David J., 5,488,423, Cl. 348-460.000.
Essig, Willi: *See*—
Fettig, Guenter; Horn, Juergen; Bogdanski, Franz; and Essig, Willi, 5,488,214, Cl. 219-627.000.
Essilor International: *See*—
Harsigny, Christian; Miege, Christian; Chauveau, Jean-Pierre; and Ahrabis, Françoise, 5,488,442, Cl. 351-169.000.
Estes, David W., to CODEV Corp. Product dispenser with air displacement device. 5,487,490, Cl. 222-1.000.
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Yabe, Toshikazu; Yamamoto, Atsuhiro; Yokouchi, Atsushi; and Esumi, Kunio, 5,487,840, Cl. 252-62.510.
Ethicon Endo-Surgery, Inc.: *See*—
Knodel, Bryan D.; Thompson, Bennie; and Nuchols, Richard P., 5,487,500, Cl. 227-181.100.
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Demarest, David; Duncan, Robert B.; Sobel, Martin; Lenihan, Timothy P.; Rattan, William; Blanch, John F.; Hodulik, Michael G.; and Yost, Dennis P., 5,487,212, Cl. 29-407.000.
Demarest, David; and Hodulik, Michael G., 5,487,216, Cl. 29-705.000.
Roshdy, Constance; and Johnson, E. Paul, 5,487,469, Cl. 206-363.000.
ETI Systems: *See*—
Tice, Bill, 5,488,275, Cl. 318-468.000.
Eulmi, Sam H.: *See*—
Cole, Michael L., 5,488,364, Cl. 341-50.000.
Evans, Christopher M.; and Norman, Colin F. W., to Minnesota Mining and Manufacturing Company. Magnetic recording medium with a binder resin of a starblock copolymer having at least six arms. 5,487,951, Cl. 428-523.000.
Evans, Jonathan C.; Goralski, Christian T.; Rand, Cynthia L.; and Voscjpka, Paul C., to Merrell Dow Pharmaceuticals Inc. Process for the preparation of (E)-1-amino-2-(fluoromethylene)-4-(p-fluorophenyl)butane, novel processes for preparing an intermediate thereof, and novel intermediates thereof. 5,488,188, Cl. 570-128.000.
Eveready Battery Company, Inc.: *See*—
Strangways, Bradley D.; and Ritter, Dale E., 5,487,961, Cl. 429-223.000.
Everett, Peter K. Production of metals from minerals. 5,487,819, Cl. 205-347.000.
Everman, Michael R.; Murphy, David M.; and Wachtholz, James J., to ABC Able Engineering Co., Inc. Stowable and self-deployable parallelogram-type panel array. 5,487,791, Cl. 136-245.000.
Everson, Mark P.: *See*—
Gerlock, John L.; and Everson, Mark P., 5,487,914, Cl. 427-140.000.
Evrard, Deborah A.: *See*—
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Exabyte Corporation: *See*—
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Excimer Laser Systems, Inc.: *See*—
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Exxon Chemical Patents Inc.: *See*—
More, Iain; Lewtas, Kenneth; Bland, Jacqueline D.; and Ayres, Sally J., 5,487,763, Cl. 44-393.000.
Shutt, John R.; and Touzard, Benoit M. F., 5,488,078, Cl. 524-71.000.
Eybergen, William N.; and Hutchison, Wayne K., to Eaton Corporation. Heat exchanger with integral filter/drier cartridge. 5,487,279, Cl. 62-474.000.
Eychenne, Yves: *See*—
Baradel, Christophe; Eychenne, Yves; and Kohen, Bruno, 5,488,723, Cl. 395-700.000.
Fabio, Paul: *See*—
Ziegler, Carl; Fabio, Paul; Bush, Karen; and Steinberg, Deborah, 5,488,106, Cl. 540-310.000.
Fabritex S.R.L.: *See*—
Prulliasi, Alberto; and Prulliasi, Paolo, 5,487,281, Cl. 66-13.000.
Fackrell, Robert N.; and Griffeth, Lorenzo P., to Creamery Hollow U.S.A., Inc. Butter products. 5,487,913, Cl. 426-663.000.
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Dreschmann, Peter; and Walter, Wilhelm, 5,487,611, Cl. 384-478.000.
Fagan, John E.; Sluss, James J., Jr.; Hassell, John W.; Mears, R. Brian; Beason, Ronnie B.; Wilkinson, Sonja R.; Lear, Tommy; and Tan, Kok S., to Gas Research Institute. System for characterizing flow pattern, pressure and movement of a fluid. 5,488,224, Cl. 250-227.160.
Failli, Amedeo A.; Bleyman, Oleg J.; Kao, Wealing; and Abou-Gharbia, Magid A., to American Home Products Corporation. Carbamates of Rapamycin. 5,488,054, Cl. 514-291.000.
Fairbanks, Floyd B.; Snell, Thomas G.; and McDonough, James M., to BIC Corporation. Selectively actuatable lighter. 5,487,657, Cl. 431-153.000.
Fairbrother, Matthew D.: *See*—
Salzburg, Fredric S.; and Fairbrother, Matthew D., 5,487,638, Cl. 414-796.900.
Fairchild, Gary. Combination level. 5,487,222, Cl. 33-273.000.
Falgén, Helena; Sundström, Göran; Laadfors, Johan; and Sokol, John C., to EKA Nobel Inc. Process of producing chlorine dioxide. 5,487,881, Cl. 423-478.000.

Falke, Peter; Seifert, Holger; and Heinz, Marion, to BASF Schwarzheide GmbH. Polyurethane-based, compact moldings or moldings having a cellular core and a compacted surface, process for their production, and their use as shoe or shoe sole material. 5,488,070, Cl. 521-51.000.

Fall, David J.; and Guerra, Miguel A., to Minnesota Mining and Manufacturing Company. Fluorination in tubular reactor system. 5,488,142, Cl. 560-227.000.

Fanuc Ltd.: *See*—
Suzuki, Ryuji, 5,487,628, Cl. 409-135.000.

FAPEC: *See*—
Heimendinger, Bernard, 5,487,474, Cl. 211-59.200.

Faraj, Mahmoud K., to Arco Chemical Technology. Preparation of dialkyl peroxides. 5,488,176, Cl. 568-558.000.

Faris, Randi W.; and Henz, Christopher, to Motorola, Inc. Method and apparatus for setting a memory full condition in a selective call receiver. 5,488,359, Cl. 340-825.440.

Farmitalia Carlo Erba S.r.l.: *See*—
Buzzetti, Franco; Longo, Antonio; and Colombo, Maristella, 5,488,057, Cl. 514-312.000.

Farmont, Johann, to Farmont Technik GmbH & Co. KG. Collection and issuing apparatus for round parking cards. 5,487,459, Cl. 194-213.000.

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Farmont, Johann, 5,487,459, Cl. 194-213.000.

Farnworth, Warren M., to Micron Technology, Inc. Method for fabricating a penetration limited contact having a rough textured surface. 5,487,999, Cl. 437-7.000.

Faroudja, Yves C.; and Bialo, Charles A., to Faroudja, Yves C. Video scan converter including the modification of spatially interpolated pixels as a function of temporal detail and motion. 5,488,422, Cl. 348-448.000.

Farrel Corporation: *See*—
Valsamis, Lefteris N.; Canedo, Eduardo L.; Pereira, Jose M.; and Poscich, Douglas V., 5,487,602, Cl. 366-81.000.

Farrell, Robert L.: *See*—
MacWilliams, Peter D.; Avni, Dror; Liebermensch, Avi; Baransy, Anas; and Farrell, Robert L., 5,488,639, Cl. 375-355.000.

Farwell, William D., to Hughes Aircraft Company. Method of testing the output propagation delay of digital devices. 5,488,309, Cl. 324-617.000.

Farwer, Alfward, to Messer Griesheim GmbH. Protective gas for the laser welding of aluminum. 5,488,216, Cl. 219-121.640.

Fateley, William G.; and Sobczynski, Radoslaw, to D.O.M. Associates Int'l. Hadamard phasing in a multisource array. 5,488,474, Cl. 356-326.000.

Favot, Jean-Jacques; Fontan, Jean-Pierre; and Perbet, Jean-Noël, to Sextant Avionique. Method and device for the optimizing of the performance characteristics of a liquid crystal display matrix screen as a function of the angle of observation. 5,488,391, Cl. 345-156.000.

Fazioli, Francesca: *See*—
DiFiore, Pier P.; and Fazioli, Francesca, 5,487,979, Cl. 435-240.200.

Federalloy, Inc.: *See*—
Singh, Akhileshwar R., 5,487,867, Cl. 420-471.000.

Feigel, Hans-Jörg, to ITT Automotive Europe GmbH. Variable flow valve with position sensor. 5,487,455, Cl. 188-299.000.

Feldle, Heinz-Peter: *See*—
Ludwig, Michael; Reber, Rolf; and Feldle, Heinz-Peter, 5,488,328, Cl. 327-538.000.

Felis, Kenneth P.: *See*—
Annacone, William R.; Felis, Kenneth P.; and Speliotis, Dennis E., 5,487,931, Cl. 428-64.100.

Fenzi, Neal O.; and Long, Stephen I., to Superconductor Technolgies Inc. Low noise amplifier. 5,488,382, Cl. 343-700.00R.

Fernandez, Joseph M.: *See*—
Herrmstadt, Corinna; Fernandez, Joseph M.; Smith, Lloyd; and Mead, David A., 5,487,993, Cl. 435-172.300.

Ferrari, Carlo, to Weider Health and Fitness, Inc. Exercise machine with enclosed resistance assembly. 5,487,714, Cl. 482-123.000.

Ferree, Marsha E.; and Gray, James P., to International Business Machines Corporation. System for establishing and performing multiple conversations simultaneously between transaction programs through logical units. 5,488,703, Cl. 395-200.120.

Ferry, Julian J.: *See*—
Miller, Mitchell E.; Ferry, Julian J.; Kilbey, Brian E.; Coolbear, Bruce S.; and Gandy, Richard F., 5,487,682, Cl. 439-607.000.

Fertin Laboratories Ltd. (Dansk Tyggegummi Fabrik A/S): *See*—
Andersen, Carsten; and Pedersen, Morten, 5,487,902, Cl. 426-3.000.

Fessler, John T.: *See*—
Hardin, Keith B.; Fessler, John T.; Bush, Donald R.; and Booth, James J., 5,488,627, Cl. 375-204.000.

Festo KG: *See*—
Stoll, Kurt; de Fries, Jan R.; and Köngeter, Herbert, 5,487,409, Cl. 137-625.640.

Fettig, Guenter; Horn, Juergen; Bogdanski, Franz; and Essig, Willi, to E.G.O. Elektro-Gerate Blanc u. Fischer. Inductive cooking point heating system. 5,488,214, Cl. 219-627.000.

Fevig, Thomas L.: *See*—
Flynn, Gary A.; Cregge, Robert J.; Fevig, Thomas L.; Sunder, Shyam; and Shum, Patrick W., 5,488,048, Cl. 514-214.000.

Ficker, Stefan, to Ingenieurburo S. Ficker Verfahrenstechnik. Apparatus for preparing rubber scrap for recycling. 5,487,510, Cl. 241-199.600.

FIDIA - Georgetown Institute for the Neuro-Sciences: *See*—
Costa, Erminio; Guidotti, Alessandro; Baraldi, Mario; Bertolino, Marilla; DiBella, Maria; and Vicini, Stefano, 5,488,049, Cl. 514-223.200.

Fidziukiewicz, Erich D.: *See*—
Gerhart, Roland T.; and Fidziukiewicz, Erich D., 5,487,296, Cl. 72-381.000.

Fife, James F.; Vorhis, Daniel J.; Laughlen, Kenneth D.; and Dienes, Nancy L., to Mountain Safety Research (MSR). Water filter with adjustable inlet hose assembly. 5,487,833, Cl. 210-232.000.

Figura, Thomas A.; and Prail, Kirk D., to Micron Technology, Inc. Method of forming contact areas between vertical conductors. 5,488,011, Cl. 437-60.000.

Fileco: *See*—
Vachy, Robert, 5,487,893, Cl. 424-195.100.

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Osborne, William E.; Waterman, Harold J., Jr.; and Findlay, David, 5,487,232, Cl. 42-51.000.

Finet, Philip J.; and Kirkham, Edward, to Giddings & Lewis. Rotational motion limit detector system and method. 5,487,315, Cl. 73-865.900.

Finkenzeller, Ulrich: *See*—
Reiffenrath, Volker; Kurmeier, Hans A.; Poetsch, Eike; Plach, Herbert; Finkenzeller, Ulrich; Bartmann, Ekkehard; Krause, Joachim; and Scheuble, Bernhard, 5,487,845, Cl. 252-299.630.

Finn-Aqua Santasalo-Sohlberg Oy: *See*—
Santasalo, Lauri, 5,487,814, Cl. 203-2.000.

Finucane, Kevin M.: *See*—
Coyle, Laurie; Finucane, Kevin M.; Greene, Alan P.; and Moran, Robert B., 5,487,843, Cl. 252-89.100.

Firma Carl Freudenberg: *See*—
Döhring, Klaus, 5,487,366, Cl. 123-336.000.

Firoozmand, Farzin, to Advanced Micro Devices, Inc. Network controller with memory request and acknowledgement signals and a network adapter therewith. 5,488,724, Cl. 395-200.070.

Fischer, Eugene: *See*—
Gourse, Stanley J.; Fischer, Eugene; and Harrison, George A., 5,488,313, Cl. 324-754.000.

Fischer, Gerhard: *See*—
Müller, Andreas; Grubisic, Vatroslav; and Fischer, Gerhard, 5,487,301, Cl. 73-118.100.

Fischer, Kenneth E. Electronic avoidance configurations. 5,488,372, Cl. 342-5.000.

Fischer, Thomas: *See*—
Ball, Johannes; Henseler, Wolfgang; Gerstenberg, Uwe; and Fischer, Thomas, 5,487,558, Cl. 280-728.300.

Fischer, Walter: *See*—
Fischer-Reimann, Evelyn; and Fischer, Walter, 5,488,119, Cl. 552-201.000.

Fischer-Reimann, Evelyn; and Fischer, Walter, to Ciba-Geigy Corporation. Polymerisable photochromic naphthacenediones, polymers of these monomers, process for their preparation and the use thereof. 5,488,119, Cl. 552-201.000.

Fisher Controls International, Inc.: *See*—
Eggleston, Philip W., 5,487,527, Cl. 251-62.000.

Fisher, Jacob E., Jr.: *See*—
Yount, Patty L.; and Fisher, Jacob E., Jr., 5,487,250, Cl. 52-417.000.

Fisher, Raymond, to Eastman Chemical Company. Process for the preparation of 1-hydroxyindole compounds. 5,488,113, Cl. 548-508.000.

Fisher, Richard J.: *See*—
Hewitt, Kent D.; Alexander, Samuel E.; and Fisher, Richard J., 5,488,711, Cl. 395-430.000.

Fissler, Harald, to Vesta AG & Co. OHG. Cooking or boiling pot. 5,487,329, Cl. 99-403.000.

Fitzsimmons, George W.: *See*—
Harvey, Donn T.; and Fitzsimmons, George W., 5,488,380, Cl. 342-368.000.

Fizet, Christian, to Hoffmann-La Roche Inc. Process for tocopherols and sterols from natural sources. 5,487,817, Cl. 203-38.000.

Flammer, George H., III, to Metricom, Inc. Method and system for routing packets in a packet communication network using locally constructed routing tables. 5,488,608, Cl. 370-85.130.

Fleck, Friedrich; and Jörgens, Klaus-Dieter, to Siemens Aktiengesellschaft. Optical character generator for an electro photographic printer. 5,488,404, Cl. 347-238.000.

Fleetwood Systems, Inc.: *See*—
Mojden, Andrew E.; and Hoinacki, Richard P., 5,487,637, Cl. 414-788.400.

Floryan, Richard F.; and Frisch, David D., to ITT Corporation. High throughput assembly station and method for image intensifier tubes. 5,487,689, Cl. 445-29.000.

Floyd, Thomas R.: *See*—
Rivera, David F.; Floyd, Thomas R.; and Josypenko, Michael J., 5,488,336, Cl. 333-252.000.

Fluidmaster, Inc.: *See*—
Hennessy, Arnold, 5,487,193, Cl. 4-328.000.

Flum, Alan: *See*—
Zampini, Michael A.; Flum, Alan; Davis, Donald E.; and Dombrowski, Joseph J., 5,488,669, Cl. 381-119.000.

Flynn, Gary A.; Cregge, Robert J.; Fevig, Thomas L.; Sunder, Shyam; and Shum, Patrick W., to Merrell Dow Pharmaceuticals Inc. Aminoacetylmercapto derivatives useful as inhibitors of enkephalinase and ace. 5,488,048, Cl. 514-214.000.

Flynn, Gary A.: *See*—
Warshawsky, Alan M.; and Flynn, Gary A., 5,488,047, Cl. 514-214.000.

Foch, Roger N.: *See*—
Bushman, Ronald C.; Harris, William E., Jr.; and Foch, Roger N., 5,487,331, Cl. 99-504.000.

Focke & Co. (GmbH & Co.): *See*—
Focke, Heinz; and Balmer, Oskar, 5,487,461, Cl. 198-571.000.

Focke, Heinz; and Balmer, Oskar, to Focke & Co. (GmbH & Co.). Apparatus for transporting packs. 5,487,461, Cl. 198-571.000.

Foley, Thomas P. Automatically-scoring golf game. 5,487,542, Cl. 273-176.00A.

Fontan, Jean-Pierre: *See*—
Favot, Jean-Jacques; Fontan, Jean-Pierre; and Perbet, Jean-Noël, 5,488,391, Cl. 345-156.000.

Ford, Allan L., to Reborn Products Co., Inc. Belt rack vending fixture. 5,487,473, Cl. 211-59.100.

Ford, George W., Jr., to Covol Technologies, Inc. Reclaiming and utilizing discarded and newly formed coke breeze, coal fines, and blast furnace revert materials, and related methods. 5,487,764, Cl. 44-553.000.

Ford Motor Company: *See*—
Asgari, Jahanbakhsh; Tran, Minh N.; and Hrovat, Davorin D., 5,488,555, Cl. 364-424.050.
Gaston, Robert D.; and Yu, Dequan, 5,487,650, Cl. 417-423.300.
Gerlock, John L.; and Everson, Mark P., 5,487,914, Cl. 427-140.000.
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Kinoshita, Shigenori, 5,487,438, Cl. 180-65.100.
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Suzuki, Isao; Shindo, Masuo; and Nakao, Kiyoshi, 5,487,808, Cl. 156-556.000.

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Fujino, Seiji: *See*—
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Kakuma, Satoshi; Yoshimura, Shuji; Hajikano, Kazuo; Murayama, Masami; and Okuyama, Yuzo, 5,488,606, Cl. 370-16.000.
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Fujitsu Network Engineering Limited: *See*—
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Fuller, Milton E.: *See*—
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Funk, Charles R. Shot peened golf club head. 5,487,543, Cl. 273-78.000.
Fuoco, Daniel P.; Herring, Christopher M.; Kellogg, Mark W.; and Leata, Jorge E., to International Business Machines Corporation. Memory card, computer system and method of operation for differentiating the use of read-modify-write cycles in operating and initializaiton modes. 5,488,691, Cl. 395-185.050.
Furukawa, Kaoru: *See*—
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Chrusciel, Robert A.; Hagen, Timothy J.; Hallinan, E. Ann; Li, Jinglin; Taymbalov, Sofya; and Reitz, David B., 5,488,046, Cl. 514-211.000.
Hanson, Gunnar J., 5,488,067, Cl. 514-618.000.
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Gadkaree, Kishor P., to Corning Incorporated. Carbon coated substrates. 5,487,917, Cl. 427-228.000.
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Strowe, Robert J., 5,487,395, Cl. 128-878.000.
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Shiu, Almon S.; Tung, Samuel S.; and Gastorf, Robert J., 5,487,394, Cl. 128-846.000.
Gates, Michael B. Spring tooth harrow packer. 5,487,429, Cl. 172-175.000.
Gatlin, Larry W. Hydrogen sulfide converter. 5,488,103, Cl. 536-55.200.
Gault, Michael J.; and Pfaff, Ernest H. Electrode arrangement for creating corona and method of treating electrically-conductive surfaces. 5,488,222, Cl. 250-324.000.
Gautier, Jean P.; Verbo, Ulysse; and Perez, Miguel, to AlliedSignal Europe Services Techniques. Pneumatic booster. 5,487,324, Cl. 91-369.100.
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GDS Technology, Inc.: *See*—
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Gefficen, Robert M.; and Rotten, Matthew J., to International Business Machines Corporation. Method of forming transverse diffusion barrier interconnect structure. 5,488,013, Cl. 437-187.000.
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General Electric Company: *See*—
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Brown, Dale M., 5,487,266, Cl. 60-39.060.
Chennakeshu, Sandeep; Koilpillai, Ravinder D.; and Toy, Raymond L., 5,488,635, Cl. 375-340.000.
El-Hamamsy, Sayed-Amr; Kheraluwala, Mustansir H.; and Kachmarik, David J., 5,488,269, Cl. 315-307.000.
Engeler, William E.; and Daft, Christopher M. W., 5,488,588, Cl. 367-7.000.
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Galati, Anil; Warren, Richard E., Jr.; and Voorhees, Bayre B., 5,487,274, Cl. 60-725.000.
Havens, Timothy J.; Tas, Yulas; and Scaturro, John, Jr., 5,488,339, Cl. 335-216.000.
Hornung, Richard E.; and Luken, Patrick C., 5,487,316, Cl. 74-527.000.
Jenkins, Thomas E.; Mulligan, Charles R.; and Jubenville, Duane, 5,487,239, Cl. 49-498.100.
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Rajamani, Ravi; Minto, Karl D.; Bulkley, Benjamin E.; and Norman, Bruce G., 5,487,265, Cl. 60-39.030.
Scott, Curtis E.; Kaliszewski, Mary Sue; and Levinson, Lionel M., 5,487,353, Cl. 117-4.000.
Seymour, Raymond K.; Rajotte, Paul T.; and Bogue, Elaine B., 5,488,338, Cl. 335-202.000.
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Szweda, Andrew; Millard, Michael L.; and Harrison, Michael G., 5,488,017, Cl. 501-95.000.
General Hospital Corporation, The: *See*—
Smith, John A.; Lee, Pang-Jen S.; and Lin, Lee-Wen, 5,487,990, Cl. 435-172.300.
General Signal Corporation: *See*—
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Genzyme Corporation: *See*—
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Geotechnical Instruments (UK) Limited: *See*—
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Gerber, Hans, to Garaventa Holding A.G. Braking apparatus and method for a rail-bound carriage of an inclined or vertical elevator. 5,487,450, Cl. 187-367.000.
Gerber, Howard L., to Inland Steel Company. Strip casting apparatus with electromagnetic confining dam. 5,487,421, Cl. 164-467.000.
Gerber, Matthias: *See*—
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Stegmann, Robert; and Demmerle, Rudolf, 5,487,747, Cl. 606-166.000.

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Packrell, Robert N.; and Griffeth, Lorenzo P., 5,487,913, Cl. 426-663.000.

Griffin, Brenda G. Container for earrings and small jewelry. 5,487,600, Cl. 312-135.000.

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Aldridge, David L.; Bissell, Stephen R.; and Gunn, Daniel D., 5,488,531, Cl. 361-18.000.

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DeCastro, Aurora F.; and Gupta, Surendra K., 5,487,978, Cl. 435-11.000.

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Cobb, Vicky S.; Gutek, Beth L.; and Le Grow, Gary E., 5,488,124, Cl. 556-445.000.

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Schaffner, James H.; and Hammond, Mark B., 5,488,503, Cl. 359-245.000.

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Holman, Harm W., 5,487,620, Cl. 404-31.000.

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Teppler, John J.; Rauckman, Barbara S.; Harmer, Russell R. L.; Freed, Brian S.; and Merriman, Gregory H., 5,488,061, Cl. 514-372.000.
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Patton, David L.; Harris, Clark E.; and Rosenbaugh, John H., 5,488,447, Cl. 354-290.000.

Harris, Randall L., to Riverwood International Corporation. Beaded bottle neck carrier. 5,487,463, Cl. 206-145.000.

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Gourse, Stanley J.; Fischer, Eugene; and Harrison, George A., 5,488,313, Cl. 324-754.000.

Harrison, Michael G.: *See*—
Szweda, Andrew; Millard, Michael L.; and Harrison, Michael G., 5,488,017, Cl. 501-95.000.

Harrison, Stephen J.: *See*—
Brown, Peter E.; and Harrison, Stephen J., 5,487,206, Cl. 16-52.000.

Harry, David N.: *See*—
Kinsey, E. Wayne, III; Sharif, Sharif; and Harry, David N., 5,488,083, Cl. 507-211.000.

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Newman, G. Robert; and Reeves, Edwin H., 5,487,341, Cl. 104-17.100.

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Hartmann, Gary L.: *See*—
Marazzo, Joseph; Russo, Frank; Palmer, Michael G.; and Hartmann, Gary L., 5,487,228, Cl. 37-317.000.

Hartmann, Heinrich: *See*—

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Campbell, Ronald; Campbell, Gaylon; and Christensen, Craig, 5,487,702, Cl. 460-7.000.

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Mahant-Shetti, Shivaling S.; Agarwala, Manisha; Mehendale, Mahesh M.; Landers, Robert J.; and Harward, Mark G., 5,488,315, Cl. 326-37.000.

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Kamiya, Hideaki; Hashimoto, Satoshi; and Matumoto, Satoru, 5,487,788, Cl. 134-1.000.

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Hassdenteufel, Jürgen-Rolf: *See*—
Reichert, Günther; Lietz, Hans; Hassdenteufel, Jürgen-Rolf; Sackmann, Günter; and Kobelka, Frank, 5,487,964, Cl. 430-16.000.

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Fagan, John E.; Shue, James J., Jr.; Hassell, John W.; Mears, R. Brian; Beason, Ronnie B.; Wilkinson, Sonja R.; Lear, Tommy; and Tan, Kok S., 5,488,224, Cl. 250-227.160.

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Martin, Thomas W.; Simpson, William H.; and Hastreiter, Jacob J., Jr., 5,488,025, Cl. 503-227.000.

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Ishikawa, Masayuki; Nishikawa, Yukie; Saito, Shinji; Parbrook, Peter J.; Onomura, Masaaki; Nitta, Koichi; and Hatakoshi, Genichi, 5,488,233, Cl. 257-94.000.

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Iskra, Joseph W., Jr.; and Havener, John A., 5,487,197, Cl. 5-654.000.

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Hayano, Kijuro: *See*—
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Hayao, Satoe, to Sercomp Corporation. Ribbon drive assembly for ribbon cartridge. 5,487,615, Cl. 400-207.000.

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Hayashi, Masao, to Canon Kabushiki Kaisha. Memory management in an image processing apparatus with detachable memory. 5,488,708, Cl. 395-442.000.

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Hayden, Jim: *See*—
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Hayes, John E.; Simroth, Donald W.; and Zhou, Xinhua, to ARCO Chemical Technology, L.P. Semi-batch process for producing polymer polyols. 5,488,085, Cl. 525-53.000.

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Taylor, Wayne A.; Heaton, Richard C.; and Jamriska, David J., 5,487,880, Cl. 423-2.000.

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Hedayatnia, Mostafa; and Graham-Meighan, Margaret, to Motorola, Inc. Rocking vibrator alert apparatus driven by opposite phases of a frequency generator. 5,488,351, Cl. 340-407.100.

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Fox, Thomas M.; Anderson, Neal R.; and Heeren, Julius A., 5,488,662, Cl. 380-34.000.

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Gove, Robert J.; Doherty, Donald B.; Heimbuch, Scott D.; Urbanus, Paul M.; and Marshall, Stephen W., 5,488,431, Cl. 348-716.000.

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Heindel, Kevin O.: *See*—
Saindon, Stephen A.; Heindel, Kevin O.; and Morrow, James G., 5,488,480, Cl. 356-429.000.

Heine, Guenther: *See*—
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Heinrich, Horst: *See*—
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Heinz, Marion: *See*—
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Heiser, Bernd: *See*—
Ceroghetti, Marco; Foricher, Joseph; Heiser, Bernd; and Schmid, Rudolf, 5,488,172, Cl. 568-13.000.

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Soderlund, David M.; Knipple, Douglas C.; and Henderson, Joseph E., 5,487,976, Cl. 435-7.210.

Henkel Corporation: *See*—
Krbechek, Leroy O., 5,488,161, Cl. 564-259.000.

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Ball, Johannes; Henseler, Wolfgang; Gerstenberg, Uwe; and Fischer, Thomas, 5,487,558, Cl. 280-728.300.

Henz, Christopher: *See*—
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Rudolph, Bernd; Dietz, Klaus J.; and Oostlander, Klaas, 5,488,267, Cl. 315-63.000.

Hercules Incorporated: *See*—
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Herman, Jeffrey A.: *See*—
Palmer, James E.; Powers, John R., III; Coleman, Patricia J.; Brewer, Gregory S.; Herman, Jeffrey A.; and Cochran, Eli, 5,488,685, Cl. 395-157.000.

Herman Miller, Inc.: *See*—
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Herrera, Manuel J.: *See*—
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Herring, Christopher M.: *See*—
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Herrmann, James F.: *See*—
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Nguyen, Michael A.; Stewart, Lowell J.; Kline, Daniel S.; Boeller, Robert A.; Ta, Chuong C.; and Haselby, Robert D., 5,488,397, Cl. 347-40.000.
Seroussi, Gadiel; and Lempel, Abraham, 5,488,365, Cl. 341-51.000.
Shields, James P.; and Radke, Gerald E., 5,488,402, Cl. 347-96.000.
Thoulon, Pierre-Yves, 5,488,628, Cl. 375-239.000.

Heybruck, William F., to International Business Machines Corporation. Method and apparatus for field testing field programmable logic arrays. 5,488,612, Cl. 371-22.200.

Heynard, Marc A., to Johnson Electric S.A. Encapsulated magnets in a permanent magnet rotor. 5,488,260, Cl. 310-156.000.

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Hieda, Katsuhiko: *See*—
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High, Kane M.: *See*—
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Hill, George A. Shutter system and method. 5,487,244, Cl. 52-202.000.

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Hilti Aktiengesellschaft: *See*—
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Hilton, Ronald N.: *See*—
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Hirai, Hiroaki: *See*—
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Hingorani, Rajesh: *See*—
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Hirakawa, Tatsuhiro: *See*—
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Hiramatsu, Koji, to Takata Corporation. Pretensioner for vehicle seat belt system. 5,487,563, Cl. 280-806.000.

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Hiraoka, Tatushi, to Koito Manufacturing Co., Ltd. Headlamp for a motor vehicle. 5,488,547, Cl. 362-66.000.

Hirasawa, Masahide; and Takahashi, Kohji, to Canon Kabushiki Kaisha. Video camera apparatus having mode selection display on electronic viewfinder screen. 5,488,414, Cl. 348-207.000.

Hirashima, Masayoshi, to Matsushita Electric Industrial Co., Ltd. Video signal scrambling and descrambling apparatus. 5,488,658, Cl. 380-14.000.

Hirayama, Hiroshi: *See*—
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Hisaki, Takashi: *See*—
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Asabuki, Hiroshi; Fujio, Masayuki; Watanabe, Takashi; Yamazaki, Suzuno; and Ishida, Fumiaki, 5,487,639, Cl. 415-55.100.
Murata, Satoru; Kawabata, Atsushi; Miura, Shunichi; Tashiro, Korefumi; Morooka, Yasuo; Yahiro, Masakazu; Katahira, Masaki; and Kera, Kazuo, 5,487,516, Cl. 246-182.00C.
Nishimura, Asao; Kitano, Makoto; and Shimizu, Ichio, 5,488,254, Cl. 257-707.000.
Sato, Kazuo; Shikida, Mitsuhiro; Ohashi, Shigeo; Hatada, Toshio; Ashiwake, Noriyuki; Tanaka, Shinji; Harada, Takeshi; and Honda, Yukio, 5,488,255, Cl. 257-718.000.
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Hitachi Metals, Ltd.: *See*—
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Hlasta, Dennis J.: *See*—
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Hlousek, Louis; Odencrantz, K. C.; Orwald, Richard K.; Dahlin, Donald W.; Motaei, Saied; Siggins, Paul W.; Wong, Kenny; Smith, Ronald A.; and Scheinert, Philip M. Apparatus and method for rotating an optical element using a moving coil in a constant magnetic field. 5,488,240, Cl. 250-231.160.

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Hockenberry, Pamela S.: *See*—
Meibach, Ronald L.; Hockenberry, Pamela S.; and Kaafarani, Bilal, 5,487,912, Cl. 426-614.000.

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Hodson, Peter D.: *See*—
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Hodulik, Michael G.: *See*—
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Tolliver, Wilbur E.; and Magnuson, Larry R., 5,487,251, Cl. 52-600.000.

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Lin, Ran-Jin, 5,488,031, Cl. 505-475.000.
Wu, Druong-Yow, 5,488,366, Cl. 341-67.000.

Ingenieurburo S. Ficker Verfahrenstechnik: *See*—
Ficker, Stefan, 5,487,510, Cl. 241-199.600.

Ingersoll-Rand Company: *See*—
Hutchinson, William R.; and Martin, Daniel T., 5,487,769, Cl. 55-442.000.

Ingram, William D.; and James, J. Steven, to Ivie Industries. Readily relocatable security mount which can hold articles with a wide range of dimensions. 5,487,523, Cl. 248-551.000.

Injeyan, Hagop; and Holcomb, Terry L., to TRW Inc. Ultracompact Q-switched microlasers and related method. 5,488,619, Cl. 372-12.000.

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Baird, William J., 5,487,504, Cl. 229-120.170.

Inland Steel Company: *See*—
Gerber, Howard L., 5,487,421, Cl. 164-467.000.

Inoue, Hiroshi: *See*—
Taniguchi, Osamu; Inoue, Hiroshi; Mizutome, Atsushi; Mihara, Tadashi; Onitsuka, Yoshihiro; and Terada, Masahiro, 5,488,388, Cl. 345-97.000.

Inoue, Satosi: *See*—
Sunouchi, Kazumasa; Takao, Hiroshi; Ozaki, Tohru; Okabe, Naoko; Hieda, Katsuhiko; Horiguchi, Fumio; Nitayama, Akihiro; Yamada, Takashi; Hasimoto, Kouji; and Inoue, Satosi, 5,488,242, Cl. 257-301.000.

Inoue, Yoshio: *See*—
Omura, Naoki; Igarashi, Minoru; Inoue, Yoshio; and Takahashi, Masaharu, 5,488,125, Cl. 556-463.000.

Insero, Mark A.: *See*—
Jacobs, Michael A.; and Insero, Mark A., 5,488,571, Cl. 364-705.070.

Intel Corporation: *See*—
Agarwal, Rohit, 5,488,570, Cl. 364-514.00R.
Bhattacharyya, Bidyut; and Mallik, Debendra, 5,488,257, Cl. 257-774.000.
Chambers, Stephen; Brown, Brian J.; Chern, Chan-Hong; Chau, Robert; and Yau, Leopoldo D., 5,488,003, Cl. 437-31.000.
Dreyer, Robert S., 5,488,728, Cl. 395-726.000.
Keith, Michael; Coelho, Rohan; Golin, Stuart; and Nickerson, Brian, 5,488,568, Cl. 364-514.00R.
MacWilliams, Peter D.; Avni, Dror; Liebermensch, Avi; Barnny, Anas; and Farrell, Robert L., 5,488,639, Cl. 375-355.000.

Intermec Corporation: *See*—
Austin, Pixie A.; Fox, Duane M.; and Wiklof, Christopher A., 5,488,223, Cl. 235-375.000.

International Business Machines Corporation: *See*—
Adams, George F.; and Kalwaty, Vincent N., 5,488,525, Cl. 360-104.000.
Agnello, Paul D.; and Sodgwick, Thomas O., 5,487,783, Cl. 118-715.000.
Agrawal, Rakesh; De Michiel, Linda G.; and Lindsay, Bruce G., 5,488,727, Cl. 395-700.000.
Bailey, Warren D.; Barker, Kenneth J.; Bellinghausen, Joan M.; Calhoun, George M.; Nandin, Bernard J.; and Suffern, Edward, 5,488,734, Cl. 395-800.000.
Bhatt, Anilkumar C.; Magnuson, Roy H.; Markovich, Voya R.; Papathomas, Konstantinos I.; and Powell, Douglas O., 5,487,218, Cl. 29-852.000.
Bonaccio, Anthony R., 5,488,306, Cl. 324-539.000.
Brady, James T.; and Menon, Jaishankar M., 5,488,701, Cl. 395-182.040.
Brandt, Wolfram; Marquart, Bernd; and Stoehr, Roland R., 5,488,314, Cl. 324-758.000.
Cassidy, Bruce M., 5,488,533, Cl. 361-18.000.
Chen, Mao-Min; Ju, Kochas; Robertson, Neil L.; and Wang, Po-Kang, 5,488,528, Cl. 360-126.000.
Cunningham, Earl A., 5,488,524, Cl. 360-103.000.
Ferree, Marsha E.; and Gray, James P., 5,488,703, Cl. 395-200.120.
Fujii, Yoshiharu; and Yoshida, Toshihiko, 5,488,498, Cl. 359-88.000.
Pasco, Daniel P.; Herring, Christopher M.; Kellogg, Mark W.; and Lenta, Jorge E., 5,488,691, Cl. 395-185.050.
Geffken, Robert M.; and Rutten, Matthew J., 5,488,013, Cl. 437-187.000.
Gharachorloo, Nader; and Luken, William L., 5,488,684, Cl. 395-123.000.
Heybruck, William F., 5,488,612, Cl. 371-22.200.
Karasick, Michael S.; and Strip, David R., 5,488,692, Cl. 395-120.000.
Lo, Tin-chee, 5,488,319, Cl. 326-115.000.
Malik, Randhir S., 5,488,551, Cl. 363-20.000.
Meadelsohn, Noah, 5,488,731, Cl. 395-800.000.
Murphy, Alan S.; and Tustin, Patricia, 5,488,686, Cl. 395-161.000.
Phillips, James E.; and Vassiliadis, Stamatis, 5,488,707, Cl. 395-420.000.
Polok, Thomas B., 5,488,722, Cl. 395-600.000.
Rich, William L.; and Shackelford, Floyd W., 5,488,721, Cl. 395-600.000.
Tsukada, Yutaka, 5,488,200, Cl. 174-261.000.
Walters, Michael M., 5,487,214, Cl. 29-602.100.
Wong, Hon-Sum P., 5,488,010, Cl. 437-53.000.

International Container Systems, Inc.: *See*—
Hammett, Roy, 5,487,487, Cl. 220-509.000.

International Envelope Company, Inc.: *See*—
Back, Gordon E.; and Greer, Jeffrey P., 5,487,826, Cl. 206-308.300.

Interpore International: *See*—
White, Eugene W., 5,487,933, Cl. 428-131.000.

Interspec, Inc.: *See*—
Rello, Michael J.; and Derman, Richard M., 5,487,388, Cl. 128-660.090.

Inui, Kenichi, to Sharp Kabushiki Kaisha. Apparatus with deletion safeguard for setting a number of data in temporary deletion state and independently releasing or deleting any one of the data. 5,488,720, Cl. 395-600.000.

Invitrogen Corporation: *See*—
Hermstadt, Corinna; Fernandez, Joseph M.; Smith, Lloyd; and Mead, David A., 5,487,993, Cl. 435-172.300.

Iotow, Takashi: *See*—
Ueda, Tomohiro; Iotow, Takashi; Asamura, Yoshinori; Onishi, Ken; and Mishima, Hidetoshi, 5,488,482, Cl. 358-339.000.

Ipex Inc.: *See*—
Goncalves, Joseph É. F., 5,487,411, Cl. 138-98.000.

Ipsen, Richard E. Adhesive form assembly. 5,487,568, Cl. 283-81.000.

Irie, Tadashi: *See*—
Nishitani, Yasuhiro; Irie, Tadashi; and Nishino, Yutaka, 5,488,107, Cl. 540-541.000.

Irie, Yasuo: *See*—
Sumikawa, Michiko; Koguchi, Yoshihiko; Ohgane, Takao; Irie, Yasuo; and Takahashi, Satoji, 5,488,150, Cl. 562-450.000.

Isaka, Yoshiharu, to Yamaha Hatsudoki Kabushiki Kaisha. Induction system for engine. 5,487,365, Cl. 123-306.000.

Isanhart, Bowdie J., to Entrepreneurial Technologies, Inc. Pressure activated rotary clutch. 5,487,457, Cl. 192-58.200.

Ishida, Fumiaki: *See*—
Asabuki, Hiroshi; Fujio, Masayuki; Watanabe, Takashi; Yamazaki, Susumu; and Ishida, Fumiaki, 5,487,639, Cl. 415-55.100.

Ishida, Takehisa; and Takino, Hiroshi, to Sony Corporation. Recording and reproducing device having conductive spindle. 5,488,519, Cl. 360-77.030.

Ishida, Yoshiyuki: *See*—
Nagao, Mitsuhiro; Shimbayashi, Kohji; and Ishida, Yoshiyuki, 5,488,581, Cl. 365-189.050.

Ishigaki, Eiichi; Oura, Kazumitsu; and Honda, Takaharu, to Ishigaki Mechanical Industry Co., Ltd. Pump having a single or a plurality of helical blades. 5,487,644, Cl. 415-220.000.

Ishigaki Mechanical Industry Co., Ltd: *See*—
Ishigaki, Eiichi; Oura, Kazumitsu; and Honda, Takaharu, 5,487,644, Cl. 415-220.000.

Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Nakamura, Tetsuya; Satou, Kouichirou; Okano, Yoshiaki; Fukuyama, Hirotaka; Katagata, Satoshi; Ishikawa, Takashi; Arai, Seiji; Sakai, Chinobu; and Kabei, Takahito, to Kabushiki Kaisha Toshiba. Electrophotographic apparatus having developing device with seals for preventing toner leakage. 5,488,462, Cl. 355-215.000.

Ishikawa, Masayuki; Nishikawa, Yukie; Saito, Shinji; Parbrook, Peter J.; Onomura, Masaaki; Nitta, Koichi; and Hatakoshi, Genichi, to Kabushiki Kaisha Toshiba. Semiconductor light-emitting device with compound semiconductor layer. 5,488,233, Cl. 257-94.000.

Ishikawa, Takashi: *See*—
Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Nakamura, Tetsuya; Satou, Kouichirou; Okano, Yoshiaki; Fukuyama, Hirotaka; Katagata, Satoshi; Ishikawa, Takashi; Arai, Seiji; Sakai, Chinobu; and Kabei, Takahito, 5,488,462, Cl. 355-215.000.

Ishimaru, Kenji: *See*—
Ikeda, Yoshihiko; Yamane, Takeo; Kaji, Eiichi; and Ishimaru, Kenji, 5,488,169, Cl. 568-3.000.

Ishimatsu, Yoshikazu, to Sony Corporation. Disc cartridge with easily assembled shider and shutter means. 5,488,605, Cl. 369-291.000.

Ishioka, Takuji: *See*—
Maruyama, Shigeru; Shimasaki, Yuichi; Kanehiro, Masaki; Hisaki, Takashi; Babe, Shigeki; Ishioka, Takuji; Takagi, Jiro; and Akiyama, Eietsu, 5,487,676, Cl. 439-125.000.

Ishizu, Masanori: *See*—
Nakamori, Tomohiro; Hashimoto, Hiroshi; Endo, Soya; Machino, Hitoshi; and Ishizu, Masanori, 5,488,625, Cl. 372-50.000.

Ishra, Joseph W., Jr.; and Havener, John A. Pneumatic wheelchair cushion. 5,487,197, Cl. 5-654.000.

Ismar Maschinen GmbH: *See*—
Zehle, Gunter; Juhnke, Hubert; and Ismar, Thomas T., 5,487,605, Cl. 366-300.000.

Ismar, Thomas T.: *See*—
Zehle, Gunter; Juhnke, Hubert; and Ismar, Thomas T., 5,487,605, Cl. 366-300.000.

Isomura, Arihiro: *See*—
Kawakami, Yoshinaka; Takigawa, Yoshiharu; Isomura, Arihiro; Kamiya, Kouichi; and Hamatani, Katsunori, 5,488,353, Cl. 340-576.000.

Isomura, Shigenori: *See*—
Yamashita, Yukihiro; Ikuta, Kenji; and Isomura, Shigenori, 5,487,270, Cl. 60-276.000.

Isomura, Tohru: *See*—
Mouri, Takayuki; and Isomura, Tohru, 5,487,520, Cl. 248-429.000.

Ito, Hideo: *See*—
Yabe, Hisao; Iida, Yoshihiro; Suzuki, Akira; Ito, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; and Tamada, Osamu, 5,487,376, Cl. 600-121.000.

Ito, Kenji, to Kabushiki Kaisha Toshiba. MCM manufactured by using thin film multilevel interconnection technique. 5,488,542, Cl. 361-793.000.

Ito, Takafumi: *See*—
Satake, Satoru; Inaashi, Tadanobu; and Ito, Takafumi, 5,487,472, Cl. 209-581.000.

Ito, Takakazu. Multi-directional rolling massager. 5,487,723, Cl. 601-99.000.

Itoh, Hiroki; Tabata, Tetsuro; and Kikuta, Jun-Ichi, to Takeda Chemical Industries, Limited. Stabilized vitamin D preparation. 5,487,900, Cl. 424-451.000.

Itoh, Michio: *See*—
Ojima, Masaki; Ohkubo, Masaharu; Itoh, Michio; Sasame, Hiroshi; Yamada, Hironichi; Saito, Tetsuo; Kashihara, Atsushi; Kawana, Takashi; Mase, Hiroshi; Seto, Kaoru; and Atobe, Hiroshi, 5,488,487, Cl. 358-456.000.

Itoh, Takeshi; and Kosaki, Yukio, to N.E. Chemcat Corporation. Catalyst for purifying exhaust gas and method of purifying exhaust gas. 5,487,268, Cl. 60-274.000.

Itow, Takashi: *See*—
Mishima, Hidetoshi; and Itow, Takashi, 5,488,418, Cl. 348-398.000.

Itozaki, Hideo: *See*—
Tanaka, Saburo; Matsuura, Takashi; and Itozaki, Hideo, 5,488,030, Cl. 505-190.000.

ITT Automotive Europe GmbH: *See*—
Feigel, Hans-Jörg, 5,487,455, Cl. 188-299.000.

ITT Corporation: *See*—
Floryan, Richard F.; and Frisch, David D., 5,487,689, Cl. 445-29.000.
Panek, John G.; and Gottorff, Richard L., 5,487,573, Cl. 285-332.000.

ITW Oberflachentechnik GmbH: *See*—
Seewaldt, Kurt, 5,487,782, Cl. 118-621.000.

Ivie Industries: *See*—
Ingram, William D.; and James, J. Steven, 5,487,523, Cl. 248-551.000.

Iwama, Eyeichi, to Fujitsu Limited. Serial type electrophotography printer for forming a latent image and developing and printing the developed image. 5,488,452, Cl. 355-202.000.

Iwanaga, Masao: *See*—
Toyota, Hiromichi; and Iwanaga, Masao, 5,487,624, Cl. 406-14.000.

Iwasawa, Yoshikazu: *See*—
Nomoto, Takashi; Hayashi, Masahiro; Shibata, Jun; Iwasawa, Yoshikazu; Mitsuya, Morihiro; Iida, Yoshiaki; Nomoto, Kazumasa; and Nagata, Yasuhisa, 5,488,149, Cl. 562-449.000.

Izawa, Makoto: *See*—
Sato, Osamu; Hayami, Toshihisa; Obushi, Hideki; Izawa, Makoto; Serizawa, Tomoeki; and Uchida, Hideki, 5,488,546, Cl. 362-61.000.

J & M Turner, Inc.: *See*—
Hood, A. Craig; and Larson, Lloyd J., 5,487,632, Cl. 411-10.000.

J.M. Voith GmbH: *See*—
Schiel, Christian, 5,487,715, Cl. 492-16.000.

J. P. Walls, Inc.: *See*—
Yount, Patty L.; and Fisher, Jacob E., Jr., 5,487,250, Cl. 52-417.000.

Jäckel, Johann: *See*—
Friedmann, Oswald; and Jäckel, Johann, 5,487,704, Cl. 464-24.000.

Jackson, Andrew: *See*—
Chu, Alice S.; Jackson, Andrew; and Wu, Margaret M., 5,488,191, Cl. 585-10.000.

Jackson, Kenneth J.: *See*—
Carman, Margaret L.; Jackson, Kenneth J.; Knapp, Richard B.; Kaesovich, John P.; Shah, Nilesh N.; and Taylor, Robert T., 5,487,834, Cl. 210-606.000.

Jackson, Thomas; and Marr, Mark, to Hughes Aircraft Company. Apparatus and method for positioning an antenna in a remote ground terminal. 5,488,379, Cl. 342-359.000.

Jackson, Thomas C., to Complex Chemicals, Corp. Alkyl substituted metal alkylalkoxyhydroborate reducing agents, and processes for production and use of the same. 5,488,122, Cl. 556-8.000.

Jacobs, Melvin T.: *See*—
Williams, John R.; and Jacobs, Melvin T., 5,487,352, Cl. 116-218.000.

Jacobs, Michael A.; and Insero, Mark A., to Timex Corporation. Method and apparatus for downloading information from a controllable light source to a portable information device. 5,488,571, Cl. 364-705.070.

Jager, Willem W.: *See*—
Drent, Eit; and Jager, Willem W., 5,488,175, Cl. 568-454.000.

Jamas, Spiros; Basson, D. Davidson, Jr.; and Ostroff, Gary R., to Alpha-Beta Technology, Inc. Use of neutral soluble glucan preparations to stimulate platelet production. 5,488,040, Cl. 514-54.000.

James, J. Steven: *See*—
Ingram, William D.; and James, J. Steven, 5,487,523, Cl. 248-551.000.

Jamieson, Robert S. Method and apparatus for monitoring the state of charge of a battery. 5,488,300, Cl. 324-432.000.

Jaminet, Jerome F.: *See*—
Barrett, David W.; McHugh, Thomas M.; Abigian, Edward E.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalcyk, Thomas M.; and Kulak, Richard E., 5,487,449, Cl. 187-330.000.

Jamriska, David J.: *See*—
Taylor, Wayne A.; Heaton, Richard C.; and Jamriska, David J., 5,487,880, Cl. 423-2.000.

Jamzadeh, Feraydoon S., to Eastman Kodak Company. Method and apparatus for detecting which side of a recording sheet contains a coating. 5,488,456, Cl. 355-203.000.

Jauhonen, Veikko, to Pamilkaita Oy. Packaging method for wrapping books or the like. 5,487,256, Cl. 53-461.000.

Jaunary, Daniel B., to Hunter Engineering Company. Apparatus for determining vehicle wheel alignment positions and orientations. 5,488,472, Cl. 356-139.090.

Jaunary, Daniel B.: *See*—
McClenahan, James W.; Burns, Leigh R., Jr.; Stieff, Michael T.; and Jaunary, Daniel B., 5,488,471, Cl. 356-139.090.

Japan Electronic Control Systems Co., Ltd.: *See*—
Kamioka, Hideki; Kobayashi, Kazumitsu; Shimamura, Masahiko; and Takeuchi, Kiyoshi, 5,488,311, Cl. 324-674.000.

Japan Energy Corporation: *See*—
Sawada, Susumu; Anan, Junichi; Nakamura, Hiroki; and Sakaya, Yoshiharo, 5,487,823, Cl. 204-290.120.

Japan Petroleum Exploration Co., Ltd.: *See*—
Ohno, Takamasa; Kato, Keietsu; Yamaguchi, Yoshiyuki; Murakami, Masami; Suzuki, Shogo; Kanda, Shoichi; and Nakagawa, Tsuyoshi, 5,487,425, Cl. 166-293.000.

Jaraczewski, Richard S.: *See*—
Trucksi, Csaba; Jaraczewski, Richard S.; Nguyen, Frank; and West, Scott H., 5,487,757, Cl. 607-122.000.

Jarvis, Brian J.: *See*—
Patnode, Eric T.; and Jarvis, Brian J., 5,487,446, Cl. 182-148.000.

Jasper, Kenneth O., to Vehicle Enhancement Systems, Inc. Communications and control system for tractor/trailer and associated method. 5,488,352, Cl. 340-431.000.

Jaszewski, Wayne M.: *See*—
Idzikowski, George D.; Jaszewski, Wayne M.; and Phillips, George E., 5,487,687, Cl. 440-77.000.

Jeffrey, Peter, to Safe-T-Limited. Syringe with retractable needle. 5,487,732, Cl. 604-110.000.

Jeng, Shin-Puu: *See*—
Havemann, Robert H.; Jeng, Shin-Puu; Gnade, Bruce E.; and Cho, Chih-Chen, 5,488,015, Cl. 437-195.000.

Jenkins, Jeffrey A.; and Wiers, John W., to TRW Vehicle Safety Systems Inc. Air bag module. 5,487,556, Cl. 280-728.200.

Jenkins, Richard D.; Bassett, David R.; Smith, Danny E.; Argyropoulos, John N.; Loftus, James E.; and Shay, Gregory D., to Union Carbide Chemicals & Plastics Technology Corporation. Complex hydrophobe compounds. 5,488,180, Cl. 568-609.000.

Jenkins, Thomas E.; Mulligan, Charles R.; and Jubeauville, Duane, to General Electric Company. Refrigerator gasket assembly. 5,487,239, Cl. 49-498.100.

Jennings, David J.: *See*—
Leuthold, Hans; Jennings, David J.; Clark, Wesley R.; Khan, Raquib; and Heine, Guenther, 5,487,608, Cl. 384-113.000.

Jensen, Borge R.: *See*—
Robertson, Paul A.; Houzego, Peter J.; Jensen, Borge R.; Creeke, Murray A.; Emerton, Neil; Hodson, Peter D.; and Baum, Eric A., 5,487,378, Cl. 128-200.160.

Jensen, Elmer W., to Rodel, Inc. Polishing apparatus and method using a rotary work holder travelling down a rail for polishing a workpiece with linear pads. 5,487,697, Cl. 451-324.000.

Jeon, Ki U.: *See*—
Choi, Soon C.; and Jeon, Ki U., 5,488,436, Cl. 348-751.000.

Jeong, Jechang; and Shin, Hyunsoo, to Samsung Electronics Co., Ltd. Decoding method and apparatus having optimum decoding paths. 5,488,637, Cl. 375-341.000.

Jerbron Limited: *See*—
Brown, Peter E.; and Harrison, Stephen J., 5,487,206, Cl. 16-52.000.

Jespersen, Lee, to Wahpeton Canvas Co. South Dakota, Inc. Swing away support system for a covering. 5,487,584, Cl. 296-100.000.

Jess Clarke & Sons, Inc.: *See*—
Davis, Robert H., 5,487,899, Cl. 424-443.000.

Jewell, Arnold W. Trigger mechanism for firearms. 5,487,233, Cl. 42-69.010.

Jewett, Peter H.: *See*—
Vegesna, Anantakotiraju; Avula, Jayachandra B.; Jewett, Peter H.; and Mundkur, Yatin G., 5,488,729, Cl. 395-800.000.

Jinotti, Walter J. Closed system for treating pulmonary patient. 5,487,381, Cl. 128-207.140.

Jirasek, James D. Drain control valve and manifold system. 5,487,406, Cl. 137-519.000.

Johansson, Eric B.; Elkins, Robert B.; Matzner, Bruce; Latter, Gerald M.; and Proebstle, Richard A., to General Electric Company. Lower tie plate debris catcher for a nuclear reactor. 5,488,634, Cl. 376-313.000.

Johansson, Eric B., to General Electric Company. Spring assemblies for adjoining nuclear fuel rod containing ferrules and a spacer formed of the spring assemblies and ferrules. 5,488,644, Cl. 376-441.000.

Johansson, Ted; Leighton, Larry; and Hamberg, Ivar, to Telefonaktiebolaget L M Ericsson. Layout for radio frequency power transistors. 5,488,252, Cl. 257-579.000.

Johns Hopkins University, The: *See*—
Chandrasegaran, Srinivasan, 5,487,994, Cl. 435-199.000.

Johnson Electric S.A.: *See*—
Heyraud, Marc A., 5,488,260, Cl. 310-156.000.

Johnson, E. Paul: *See*—
Roshdy, Constance; and Johnson, E. Paul, 5,487,469, Cl. 206-363.000.

Johnson, Gary D.; and Hochfeld, Stanley, to Holtz, Leonard. Windproof umbrella. 5,487,401, Cl. 135-33.700.

Johnson, Leo F.: *See*—
Thrash, Robert J.; and Johnson, Leo F., 5,488,624, Cl. 372-41.000.

Johnson, Mark G., to Rambus, Inc. Static high speed comparator. 5,488,321, Cl. 327-66.000.

Johnson, Marvin M.: *See*—
Cheung, Tin-Tack P.; Johnson, Marvin M.; Brown, Scott H.; Zisman, Stan A.; and Kimble, James B., 5,488,024, Cl. 502-325.000.

Johnson, Paul H., to Microsensor Technology, Inc. Fluid-lock fixed-volume injector. 5,487,313, Cl. 73-863.710.

Johnson, Richard J.: *See*—
Dougherty, Thomas J.; Wruck, William J.; and Johnson, Richard J., 5,488,283, Cl. 320-15.000.

Johnson, Stephen B.: *See*—
Aneja, Arun P.; Bennie, David G.; Collins, Robert J.; Frankfort, Hans Rudolf E.; Johnson, Stephen B.; Knox, Benjamin H.; and Most, Elmer E., Jr., 5,487,859, Cl. 264-103.000.

Johnston, James D.; and Sinha, Deepen, to AT&T Corp. Multi-channel perceptual audio compression system with encoding mode switching among matrixed channels. 5,488,665, Cl. 381-2.000.

Johnstone Pump Company: *See*—
Brennan, Thomas J.; DeFilippi, Michael E.; Gnyp, Steven M.; and Kremer, Gregory D., 5,487,781, Cl. 118-300.000.

Jones, Anthony M.; and Barnes, David A., to Discovision Associates. Clock divider. 5,488,646, Cl. 377-47.000.

Joo, Ho-gal, to Samsung Electronics Co., Ltd. Infinite-distance detecting circuit for an auto-focus system. 5,488,449, Cl. 354-402.000.

Joo, Oh S.: *See*—
Uhm, Sung J.; Han, Sung H.; Oh, Jun W.; and Joo, Oh S., 5,488,143, Cl. 560-231.000.

Joos, Franz: *See*—
Eroglu, Adnan; Joos, Franz; Novacek, Peter; and Senior, Peter, 5,487,659, Cl. 431-350.000.

Jordan, Venita A.: *See*—
Godlove, Ronald E.; Jordan, Venita A.; McCumiskey, Robert E.; Yeh, Huoy-Jen; and Zaman, Kamran U., 5,488,460, Cl. 355-211.000.

Jörgens, Klaus-Dieter: *See*—
Fleck, Friedrich; and Jörgens, Klaus-Dieter, 5,488,404, Cl. 347-238.000.

Josypenko, Michael J.: *See*—
Rivera, David F.; Floyd, Thomas R.; and Josypenko, Michael J., 5,488,336, Cl. 333-252.000.

Journeau, Jacques, to U.S. Philips Corporation. Integrated device combining a bipolar transistor and a field effect transistor. 5,488,241, Cl. 257-273.000.

Ju, Kochan: *See*—
Chen, Mao-Min; Ju, Kochan; Robertson, Neil L.; and Wang, Po-Kang, 5,488,528, Cl. 360-126.000.

Jubeauville, Duane: *See*—
Jenkins, Thomas E.; Mulligan, Charles R.; and Jubeauville, Duane, 5,487,239, Cl. 49-498.100.

Juhnke, Hubert: *See*—
Zehle, Gunter; Juhnke, Hubert; and Isnar, Thomas T., 5,487,605, Cl. 366-300.000.

Juki Corporation: *See*—
Kogawara, Satoshi, 5,487,347, Cl. 112-242.000.

Jung, David K.: *See*—
Danishefsky, Samuel J.; Bornmann, William G.; Queneau, Yves; Magee, Thomas V.; Krol, Walter J.; Masters, John J.; and Jung, David K., 5,488,116, Cl. 549-214.000.

Jung, Hun J., to Goldstar Electron Co., Ltd. Solid state image sensor with shaped photodiodes. 5,488,239, Cl. 257-231.000.

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Oh, Young Jei; Choy, Jin-Ho; Jung, Hyung Jin; Han, Yang Su; and Song, Seung Wan, 5,487,878, Cl. 423-140.000.

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Hatakeyama, Kunio; and Habu, Yoshihiko, 5,487,413, Cl. 139-116.200.

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Ito, Kenji, 5,488,542, Cl. 361-793.000.
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Masuoka, Hideaki; and Kuroda, Akio, 5,488,330, Cl. 330-261.000.
Miyano, Yuichi, 5,488,484, Cl. 358-433.000.
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Shimizu, Nobukazu, 5,488,488, Cl. 358-468.000.
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Sotoya, Kotahiro; Abe, Hiroshi; Aikawa, Jun; Taniguchi, Hideki; and Nishimoto, Uichiro, 5,488,168, Cl. 564-506.000.
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Kelly, Stephen: *See*—
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Kern, Norman P., to Unisys Corporation. Reducing operator balancing in a document processing system employing automatic reading. 5,488,671, Cl. 382-138.000.

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Ueda, Tsuneyuki; Kusama, Tadao; and Honma, Kazuo, 5,487,911, Cl. 426-614.000.

Khalil, Charles: *See*—
Brach, Philip L., Jr.; Khalil, Charles; and Mead, Robert W., 5,487,203, Cl. 15-245.000.

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Leuthold, Hans; Jennings, David J.; Clark, Wesley R.; Khan, Raquib; and Heine, Guenther, 5,487,608, Cl. 384-113.000.

Khatib, Khal M.: *See*—
Rusa, Timothy J.; Khatib, Khal M.; and Baker, Jay O., 5,487,915, Cl. 427-208.000.

Kheraluwala, Mustansir H.: *See*—
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Kightlinger, Paul E. Device to restore water level in toilet bowl. 5,487,194, Cl. 4-415.000.

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Kilbey, Brian E.: *See*—
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Kim, Jin: *See*—
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Bell, Richard H., 5,487,189, Cl. 2-79.000.

Kimble, James B.: *See*—
Cheung, Tin-Tack P.; Johnson, Marvin M.; Brown, Scott H.; Zisman, Stan A.; and Kimble, James B., 5,488,024, Cl. 502-325.000.

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Diesen, Ronald W.; Burdett, Kenneth A.; Dixit, Ravi S.; and King, Stanley S. T., 5,488,020, Cl. 502-60.000.

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Radosa, Stephen W.; King, Steven L.; Mills, Randall D.; and Cristobal, Cliff, 5,487,751, Cl. 607-1.000.

Kinkaide, James R., to Wells Cargo, Inc. Frame for securing a wind deflector to a trailer. 5,487,586, Cl. 296-180.100.

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Kiriyama, Katsumobu: *See*—
Yamamoto, Mikio; Yamashita, Keisuru; and Kiriyama, Katsumobu, 5,488,341, Cl. 335-302.000.

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Plant, Philip J.; and Kirkham, Edward, 5,487,315, Cl. 73-865.900.

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Sharma, Umesh; Hayden, Jim; and Kirsch, Howard C., 5,488,579, Cl. 365-185.090.

Kitamura, Shoji; Shindo, Yoichi; and Amano, Akira, to Fuji Electric Co., Ltd. Mold-type semiconductor laser device with reduced light-emitting point displacement during operation. 5,488,623, Cl. 372-36.000.

Kitamura, Takuya, to Sony Corporation. Method of and apparatus for generating variable length code table. 5,488,367, Cl. 341-106.000.

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Kiuchi, Toyoo, to NEC Corporation. Memory circuit with pipeline processing. 5,488,712, Cl. 395-431.000.

Klemkczyk, Alan R.; and Metzger, John C., to Tayco Developments, Inc. Leakage bellows of hydraulic damper protected by oppositely wound coil springs. 5,487,454, Cl. 188-298.000.

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Klotke, Hans-Jürgen: *See*—
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Knapp, Richard B.: *See*—
Carman, Margaret L.; Jackson, Kenneth J.; Knapp, Richard B.; Kuczovich, John P.; Shah, Nilesh N.; and Taylor, Robert T., 5,487,834, Cl. 210-606.000.

Knee, Raymond W. Fishing equipment storage apparatus. 5,487,475, Cl. 211-70.800.

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Kuczovich, John P.: *See*—
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Knifton, John F.; Marquis, Edward T.; and Dai, Pei-Shing E., to Texaco Chemical Inc. Ditertiary butyl peroxide preparation from tertiary butyl hydroperoxide. 5,488,178, Cl. 568-578.000.

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Knoblock, Glenn A., to Steelcase, Inc. Back shell with selective stiffening. 5,487,591, Cl. 297-452.140.

Knodel, Bryan D.; Thompson, Bennie; and Nuchols, Richard P., to Ethicon Endo-Surgery, Inc. Surgical stapler instrument. 5,487,500, Cl. 227-181.100.

Knoerzer, Anthony R.: *See*—
Bianchini, Eber C.; Knoerzer, Anthony R.; Parr, Larry A.; and Reid, Leland W., 5,487,943, Cl. 428-349.000.

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Knutson, Joyce C.; Bishop, Charles W.; and Moriarty, Robert M., to Lunar Corporation. 1α-hydroxy vitamin D_4 and novel intermediates and analogues. 5,488,120, Cl. 552-653.000.

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Kobayashi, Kazumitsu: *See*—
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Kobayashi, Kazusori: *See*—
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Kobelka, Frank: *See*—
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Koch, Robert; Mossner, Knud; and Schleicher, Roland, to Hubner Gummi - und Kunstoff GmbH. Hinge connection between two vehicles connected to each other in an articulated manner. 5,487,555, Cl. 280-403.000.
Kogawara, Satoshi, to Juki Corporation. Looper thread paying-out apparatus for sewing machine. 5,487,347, Cl. 112-242.000.
Koguchi, Yoshihito: *See*—
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Koh, Shokyo: *See*—
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Kohen, Bruno: *See*—
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Koide, Hidenobu, to Fuji Electric Co., Ltd. Optical current transformer. 5,488,291, Cl. 324-96.000.
Koilpillai, Ravinder D.: *See*—
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Koito Manufacturing Co., Ltd.: *See*—
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Sato, Osamu; Hayami, Toshihisa; Ohashi, Hideki; Izawa, Makoto; Serizawa, Tomoaki; and Uchida, Hideki, 5,488,546, Cl. 362-61.000.
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Kojima, Kazuaki; Kuno, Tetsuya; Sugiura, Hiroaki; and Yamada, Takeshi, to Mitsubishi Denki Kabushiki Kaisha. Video signal processor for detecting flesh tones in an image. 5,488,429, Cl. 348-653.000.
Koksbang, Rene. Layer for stabilization of lithium anode. 5,487,959, Cl. 429-191.000.
Kokusai Denshin Denwa Co., Ltd.: *See*—
Takishima, Yasuhiro; Wada, Masahiro; and Murakami, Hitomi, 5,488,616, Cl. 371-30.000.
Kolczynski, Raymond J.: *See*—
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Kolthammer, Brian W. S.: *See*—
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Komori, Noboru; Kato, Yoshiaki; and Umekida, Masaru, to Fuji Photo Film Co., Ltd. Magnetic head including a magnetic recording medium slide surface with predetermined dimensions. 5,488,527, Cl. 360-122.000.
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Kondo, Masafumi; and Kawamoto, Hiromi, to Kabushiki Kaisha Toshiba. Nuclear magnetic resonance imaging with improved image quality and operation efficiency. 5,488,299, Cl. 324-318.000.
Kondo, Shigeki: *See*—
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Kondo, Shinichi; Shibahara, Seiji; Usui, Takayuki; Kudo, Toshiaki; Gomi, Shuichi; Tamura, Atsushi; Ikeda, Yoko; Ikeda, Daishiro; and Takeuchi, Tomio, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Dibekacin derivatives and arbekacin derivatives active against resistant bacteria. 5,488,038, Cl. 514-41.000.
Kondo, Tetsujiro; and Nakaya, Hideo, to Sony Corporation. Error detecting apparatus. 5,488,618, Cl. 371-67.100.
Köngeter, Herbert: *See*—
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Konica Corporation: *See*—
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Koshigoe, Taichi; Satoh, Hitoshi; and Yamamoto, Kenichi, to Nippon Kayaku Kabushiki Kaisha. Process for producing optically active erythro-3-amino-1,2-epoxy compound. 5,488,118, Cl. 549-518.000.
Koshiishi, Eiichi, to Harisan Co., Ltd. Snorkel. 5,487,379, Cl. 128-201.110.
Koshika, Norihide: *See*—
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Kossmehl, Gerhard; and Lundt, Bettina, to Dainippon Ink and Chemicals, Inc. Stiff-chain polyesters and a method of preparing them. 5,488,093, Cl. 528-193.000.
Kosson, Robert: *See*—
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Kotabe, Noriko: *See*—
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Kourbatov, Vladimir A.; Boreyko, Natalya P.; Zousv, Valerii P.; and Liakumovich, Alexandr G., to Kourbatov. Method for inhibiting the polymerization of styrene. 5,488,192, Cl. 585-435.000.
Kovacs, Joseph. Composition of dehydrated powdered mung bean sprout and plant fiber for use as dietary supplement in healthcare. 5,487,894, Cl. 424-195.100.
Kowalcyk, Thomas M.: *See*—
Barrett, David W.; McHugh, Thomas M.; Abigian, Edward E.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalcyk, Thomas M.; and Kulak, Richard E., 5,487,449, Cl. 187-330.000.
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Kramer, Hy. Protection device for apertures in metal studs or panels. 5,488,198, Cl. 174-48.000.
Krane, Anthony E. Linear scale. 5,487,223, Cl. 33-494.000.
Krasinski, Jerzy S.: *See*—
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Krause, Joachim: *See*—
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Krause, Paul W.: *See*—
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Kremer, Gregory D.: *See*—
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Kroner, Matthias: *See*—
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Kubler, Edmund: *See*—
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Kuchar, George J. Straw walker for chaff removal in a combine. 5,487,703, Cl. 460-85.000.
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Kondo, Hiroki; Totsuka, Mitsuhiko; and Kudo, Toshiharu, 5,488,346, Cl. 337-198.000.
Kuebler, Juergen: *See*—
Fueller, Peter; Kuebler, Juergen; Gnett, Herbert; and Amsoeder, Franz, 5,487,364, Cl. 280-806.000.
Kugo, Daisaku, to Murata Manufacturing Co., Ltd. Chuck unit. 5,487,580, Cl. 294-119.100.
Kühlwein, Jürgen: *See*—
Engelhardt, Fritz; Kühlwein, Jürgen; Schuler, Wilfried; Zerrer, Ralf; and Antwerpen, Werner, 5,488,123, Cl. 556-428.000.
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Kumar, Virendra: *See*—
Dunlap, Richard P.; Hlasta, Dennis J.; Desai, Ranjit C.; Latimer, Lee H.; Subramanyam, Chakrapani; Court, John J.; Bell, Malcolm R.; and Kumar, Virendra, 5,488,062, Cl. 514-373.000.
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Wise, William D.; De Wever, Marc L.; Kumke, Dale J.; Lumpkin, Everett R.; Sale, Matthew D.; and Schousek, Brian W., 5,487,595, Cl. 303-168.000.
Kumpel, Belinda M.: *See*—
Bradley, Benjamin A. D. B.; Doyle, Alan; and Kumpel, Belinda M., 5,487,891, Cl. 424-142.100.
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Ohmi, Tadahiro; Yonekawa, Naomichi; Horiki, Hiroyuki; Kaji, Toshimitsu; Kunimoto, Fumitomo; and Tamaki, Takeo, 5,487,398, Cl. 134-95.100.
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Kurashige, Mitsuhiro: *See*—
Yamagishi, Toshio; Naoba, Masakazu; Egami, Norifumi; Tanioka, Kenkichi; Kurashige, Mitsuhiro; Tsuji, Kazutaka; Kaneko, Yoshiyuki; Makishima, Tatsuo; Nagatsuma, Kazuyuki; Okabima, Tetsuya; and Nakano, Yasushi, 5,488,386, Cl. 345-74.000.
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Kirigaya, Tadayuki; Imakyure, Kaoru; Ozaki, Hiroyasu; and Kurei, Hiroshi, 5,488,446, Cl. 354-289.100.
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Kurita, Yutaka; and Muragishi, Yasushi, to Shinko Electric Co., Ltd. Automatic transport vehicle with three-axis motion sensing and vibration damping. 5,487,533, Cl. 267-140.500.
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Reiffenrath, Volker; Kurmeier, Hans A.; Poetsch, Eike; Plach, Herbert; Finkenzeller, Ulrich; Bartmann, Ekkehard; Krause, Joachim; and Scheuble, Bernhard, 5,487,845, Cl. 252-299.630.
Kuroda, Akio: *See*—
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Kuroi, Takashi: *See*—
Shimizu, Masahiro; Shirahata, Masayoshi; Kuroi, Takashi; and Yamaguchi, Takehisa, 5,488,245, Cl. 257-316.000.
Kurosaki, Toshihiko: *See*—
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Sato, Makoto; Yamazaki, Hiroshi; Kotabe, Noriko; Osakabe, Yoshio; Kusagaya, Yasuo; Tanaka, Shigeo; Sugiyama, Kouich; and Katsuyama, Akira, 5,488,357, Cl. 340-825.250.
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Ueda, Tsuneyuki; Kusama, Tadao; and Hoama, Kazuo, 5,487,911, Cl. 426-614.000.
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Kuwata, Nobuhiro, to Sumitomo Electric Industries, Ltd. Semiconductor device with delta-doped layer in channel region. 5,488,237, Cl. 257-194.000.
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Kwakernaat, Pieter: *See*—
Leichel, René; and Leichel, Johannes E., 5,487,285, Cl. 70-18.000.
Kwiatkowski, Frank P. Bicycle handle bar accessory mount. 5,487,497, Cl. 224-41.000.
Kwoh, Daniel S.: *See*—
Yuen, Henry C.; and Kwoh, Daniel S., 5,488,409, Cl. 348-5.000.
Kwon, O-Kyun; Choi, Young-Wan; and Lee, Ill-Hang, to Electronics and Telecommunications Research Institute. Metal/semiconductor junction Schottky diode optical device using a distortion grown layer. 5,488,231, Cl. 257-17.000.
Kwong, Allan H. C. Modular lighting fixture. 5,488,548, Cl. 362-249.000.
Kyuma, Kenji, to Canon Kabushiki Kaisha. Image sensing method and apparatus in which the exposure time may be varied. 5,488,416, Cl. 348-296.000.
LaBarbera, Richard S., to Du Pont de Nemours, E. I., and Company. Apparatus for connecting computer devices. 5,488,705, Cl. 395-309.000.
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Guillon, Jean-Claude; and Perdriaux, Laurent, 5,488,432, Cl. 348-717.000.
Labsphere, Inc.: *See*—
Springsteen, Arthur W.; and Taylor, Jeffrey L., 5,488,473, Cl. 356-317.000.
Labudde, Brian R.; and Hackmaier, Frank, to Eastman Kodak Company. Operator control interface mounting mechanism. 5,488,453, Cl. 355-202.000.
Labuguen, Ronald: *See*—
Taylor, Ronald P.; Sutherland, William M.; Reist, Craig; Wright, Eleanor L.; Webb, Donna; and Labuguen, Ronald, 5,487,890, Cl. 424-136.100.
LaCava, Alberto; and McKeigue, Kevin, to BOC Group, Inc., The. Continuous pressure difference driven adsorption process. 5,487,775, Cl. 95-98.000.
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Barbier, Alain; and Lacheretz, Frederic, 5,488,041, Cl. 514-108.000.
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Cunningham, George M.; Frost, Rodney I.; and Lachman, Irwin M., 5,487,863, Cl. 264-177.110.

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Chase, Lee A., 5,487,575, Cl. 293-115.000.

Ladouceur, Harold A., to Multifastener Corporation. Self-adjusting head. 5,487,215, Cl. 29-702.000.

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Brun, Daniel; Labary, Pierre-Yves; and Thierry, Jean-Francois, 5,488,155, Cl. 562-554.000.

Lähteenmäki, Mikko J.: *See*—
Lundan, Arvo O.; Ånäis: Per-Håkan V.; and Lähteenmäki, Mikko J., 5,487,777, Cl. 106-188.000.

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Lampson, Butler: *See*—
Schneider, Fred B.; Lampson, Butler; Balkovich, Edward; and Thiel, David, 5,488,716, Cl. 395-182.080.

Landers, Robert J.: *See*—
Mahant-Shetti, Shivaling S.; Agarwala, Manisha; Mehendale, Mahesh M.; Landers, Robert J.; and Harward, Mark G., 5,488,315, Cl. 326-37.000.

Landesfeind, Klaus: *See*—
Otterbein, Stefan; Kunz, Dieter; Kallenbach, Rainer; and Landesfeind, Klaus, 5,488,562, Cl. 364-424.050.

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Falgén, Helena; Sundström, Göran; Landfors, Johan; and Sokol, John C., 5,487,881, Cl. 423-478.000.

Landgren, Robert; and Perenchio, William F., to Kalman Floor Company, Inc. Method and apparatus for testing concrete expansion. 5,487,307, Cl. 73-803.000.

Landymore, Barry W.: *See*—
Tyrrell, Christopher M.; Wills, David R.; Gardiner, David V.; and Landymore, Barry W., 5,487,699, Cl. 452-66.000.

Langer, Robert S.: *See*—
Cohen, Smadar; Andrianov, Alexander K.; Wheatley, Margaret; Allcock, Harry R.; and Langer, Robert S., 5,487,390, Cl. 128-662.020.

Langrock, Gerald K., to Marquip, Inc. Adaptive control of a multiphase induction motor having concentrated phase windings. 5,488,280, Cl. 318-805.000.

Lanxide Technology Company, LP: *See*—
Newkirk, Marc S., 5,487,420, Cl. 164-97.000.

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Turtle, Howard R.; Morton, Gerald J.; and Lantz, F. Kinley, 5,488,725, Cl. 395-600.000.

Laroia, Rajiv, to AT&T Corp. Intersymbol interference channel coding scheme. 5,488,633, Cl. 375-262.000.

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Hood, A. Craig; and Larson, Lloyd J., 5,487,632, Cl. 411-10.000.

Lassiter, Keith R. Motorcycle circuit breaker ignition advance. 5,487,367, Cl. 123-420.000.

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Dunlap, Richard P.; Hlasta, Dennis J.; Desai, Ranjit C.; Latimer, Lee H.; Subramanyam, Chakrapani; Court, John J.; Bell, Malcolm R.; and Kumar, Virendra, 5,488,062, Cl. 514-373.000.

Latter, Gerald M.: *See*—
Johansson, Eric B.; Elkins, Robert B.; Matzner, Bruce; Latter, Gerald M.; and Proebstle, Richard A., 5,488,634, Cl. 376-313.000.

Laughlen, Kenneth D.: *See*—
Fife, James F.; Vorhis, Daniel J.; Laughlen, Kenneth D.; and Dienes, Nancy L., 5,487,833, Cl. 210-232.000.

Laurain, Jean-Marie; DeWald, Ronald L.; D'Amore, Jean-François; and Deneuvillers, Guy, to Sofamore, S.N.C. Anterior dorso-lumbar spinal osteosynthesis instrumentation for the correction of kyphosis. 5,487,743, Cl. 606-61.000.

Laurel Bank Machines Co., Ltd.: *See*—
Ozeki, Masamichi; Takasaki, Mamoru; Miyamoto, Katsuyuki; and Tsuruda, Mitsumasa, 5,487,252, Cl. 53-212.000.

Lautenschläger, Horst, to MEPLA-Werke Lautenschläger GmbH & Co. KG. Wheel for roller drawer guides. 5,487,610, Cl. 384-19.000.

Lavorgna, Blaise; and Sebastian, Peter R. Swimmer's drag suit having detachable and repositionable pockets. 5,487,710, Cl. 482-55.000.

LDC Analytical, Inc.: *See*—
McDow, Timothy S.; and Bensinger, Martin, 5,487,871, Cl. 422-80.000.

Lear, Tommy: *See*—
Fagan, John E.; Sluss, James J., Jr.; Hassell, John W.; Mears, R. Brian; Beason, Ronnie B.; Wilkinson, Sonja R.; Lear, Tommy; and Tan, Kok S., 5,488,224, Cl. 250-227.160.

Le Blevec, Jean-Marc; Correia, Yves; Masini, Jean-Jacques; Bousquet, Jacques; and Bergougnou, Maurice A., to Elf Atochem S.A. Prepartion of vinyl chloride by ultrapyrolysis of 1,2-dichloroethane. 5,488,190, Cl. 570-226.000.

Lebret, Pierre, to AlliedSignal Europe Services Techniques. Hydraulic circuit with a capacity forming a distributor. 5,487,597, Cl. 303-116.200.

Lechner, Robert J.; and Streid, Harold R., to McDonnell Douglas Corporation. Video display system and method for generating and individually positioning high resolution inset images. 5,487,665, Cl. 434-44.000.

Lee, Byeong H.: *See*—
Kim, Jung H.; Chung, Hae Y.; Kim, Hyung S.; Lee, Byeong H.; and Roh, Young H., 5,487,284, Cl. 68-3.08S.

Lee, Byung C., to Goldstar Co. Ltd. Axial leakage resistant apparatus of scroll-type compressor. 5,487,653, Cl. 418-14.000.

Lee, El-Hang: *See*—
Kwon, O-Kyun; Choi, Young-Wan; and Lee, El-Hang, 5,488,231, Cl. 257-17.000.

Lee, Fang-Jen S.: *See*—
Smith, John A.; Lee, Fang-Jen S.; and Lin, Lee-Wen, 5,487,990, Cl. 435-172.300.

Lee, Jin-Suk: *See*—
Kim, Jong-Kyu; and Lee, Jin-Suk, 5,487,795, Cl. 148-520.000.

Lee, Jung J., to Blue Marble Research, Inc. Kinematic assay of plasma glucose concentration without blood sampling. 5,487,384, Cl. 128-633.000.

Lee, Kuo-Hua; and Sung, Janmye, to AT&T Corp. Memory integrated circuit. 5,488,248, Cl. 257-38.200.

Lee, Myeong-hwan: *See*—
Hwang, Humor; and Lee, Myeong-hwan, 5,488,421, Cl. 348-448.000.

Lee, Seung-Soo. Safety device for novelty candle holders. 5,487,658, Cl. 431-253.000.

Lee, Stanley M.: *See*—
Wineburger, Ken N.; and Lee, Stanley M., 5,487,345, Cl. 108-51.300.

Lee, Tien-Yu T.: *See*—
Chiou, Herng-Der; and Lee, Tien-Yu T., 5,487,355, Cl. 117-13.000.

Lee, Whay C.: *See*—
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Leemans, Jan: *See*—
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Legris S.A.: *See*—
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Le Grow, Gary E.: *See*—
Cobb, Vicky S.; Gutek, Beth I.; and Le Grow, Gary E., 5,488,124, Cl. 556-445.000.

Leichel, Johannes E.: *See*—
Leichel, René; and Leichel, Johannes E., 5,487,285, Cl. 70-18.000.

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Leichel, René; and Leichel, Johannes E., 5,487,285, Cl. 70-18.000.

Leighton, Larry: *See*—
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Leland Stanford Junior University, The Board of Trustees of the: *See*—
Bloom, David M.; Ho, Francis; and Hou, Alfred S., 5,488,305, Cl. 324-537.000.

Leland Stanford University, Board of Trustees of the: *See*—
Wright, Graham; and Pauly, John M., 5,488,298, Cl. 324-309.000.

LeMay, Edward J. Enhanced depth perception viewing device for television. 5,488,510, Cl. 359-478.000.

Lemke, James U.; and French, William W., to Conner Peripherals, Inc. Information recording apparatus with a non-newtonian liquid bearing. 5,488,521, Cl. 360-97.020.

Lempel, Abraham: *See*—
Seroussi, Gadiel; and Lempel, Abraham, 5,488,365, Cl. 341-51.000.

Lenander, Anders: *See*—
Ljungberg, Bjorn; and Lenander, Anders, 5,487,625, Cl. 407-119.000.

Lenihan, Timothy: *See*—
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Lenihan, Timothy P.: *See*—
Demarest, David; Duncan, Robert B.; Sobel, Martin; Lenihan, Timothy P.; Rattan, William; Blanch, John F.; Hodulik, Michael G.; and Yost, Dennis P., 5,487,212, Cl. 29-407.000.

Lennig, Matthew: *See*—
Bielby, Gregory J.; Gupta, Vishwa N.; Hodgson, Lauren C.; Lennig, Matthew; Sharp, R. Douglas; and Wasmeier, Hans A., 5,488,652, Cl. 379-88.000.

Lennox Industries Inc.: *See*—
Olsen, Mark W.; Powell, Joe R.; Tharp, Russell C.; and Walter, Stephen A., 5,488,218, Cl. 219-492.000.

Lenta, Jorge E.: *See*—
Fuoco, Daniel P.; Herring, Christopher M.; Kellogg, Mark W.; and Lenta, Jorge E., 5,488,691, Cl. 395-185.050.

Leonhardt, Helga F. Dynamic language training system. 5,487,670, Cl. 434-167.000.

Leonhardt, Werner: *See*—
Askman, Lars; Leonhardt, Werner; and Svahn, Ingemar, 5,487,905, Cl. 426-297.000.

Leoni, Peter B., to United Technologies Corporation. Two-state co-cure method for fabricating a composite article. 5,487,854, Cl. 264-46.400.

Lepere, Gérard: *See*—
Chazelle, Xavier; Hunot, Anne-Marie; and Lepere, Gérard, 5,488,563, Cl. 364-461.000.

Leppard, David G.; Burdeska, Kurt; and Slongo, Mario, to Ciba-Geigy Corporation. Triazine compounds as UV absorbers for photographic material. 5,488,108, Cl. 544-216.000.

Le Quere, Philippe: *See*—

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Boon-Falleur, Thierry; Brichard, Vincent; Van Pel, Aline; De Plaen, Etienne; Coulie, Pierre; Renauld, Jean-Christope; Wölfel, Thomas; and Lethé, Bernard, 5,487,974, Cl. 435-6.000.

Leuthold, Hans; Jennings, David J.; Clark, Wesley R.; Khan, Raquib; and Heine, Guenther, to Seagate Technology, Inc. Single plate hydrodynamic bearing with self-balancing fluid level and fluid circulation. 5,487,608, Cl. 384-113.000.

Lever Brothers Company, Division of Conopco, Inc.: *See*—
Coyle, Laurie; Pinucase, Kevin M.; Greene, Alan P.; and Moran, Robert E., 5,487,843, Cl. 252-89.100.
Gutierrez, Eddie N.; and Wu, Shang-Ren, 5,488,146, Cl. 562-109.000.

Levinson, Gary. Tracheal tube cuff inflation control and monitoring system. 5,487,383, Cl. 128-207.150.

Levinson, Lionel M.: *See*—
Scott, Curtis E.; Kaliszewski, Mary Sue; and Levinson, Lionel M., 5,487,353, Cl. 117-4.000.

Lewis, Scott W., to Multimedia Systems Corporation. Interactive system for a closed cable network. 5,488,411, Cl. 348-8.000.

Lewis, Thomas E.; Nowak, Michael T.; Robichaud, Kenneth T.; and Cassidy, Kenneth R., to Presstek, Inc. Lithographic printing plates for use with laser-discharge imaging apparatus. 5,487,338, Cl. 101-454.000.

Lewtas, Kenneth: *See*—
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Lexmark International, Inc.: *See*—
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Lextron, Inc.: *See*—
Hoff, Charles H.; and Bergen, Bernard J., 5,487,603, Cl. 366-141.000.

LG Industrial Systems Co., Ltd.: *See*—
Cho, Wan J., 5,487,488, Cl. 221-150.0HC.

Li, Jinglin: *See*—
Chrusciel, Robert A.; Hagen, Timothy J.; Hallinan, E. Ann; Li, Jinglin; Tsymbalov, Sofya; and Reitz, David B., 5,488,046, Cl. 514-211.000.

Li, Sidong: *See*—
Singhal, Dave M.; and Li, Sidong, 5,488,385, Cl. 345-3.000.

Li, Yung R. Speedometer capable of providing real-time speed pulse signals. 5,487,303, Cl. 73-499.000.

Li, Yi-Ous; and Zhang, Jiming, to Advanced Technology Materials, Inc. Chemical vapor deposition method of growing oxide films with giant magnetoresistance. 5,487,356, Cl. 117-99.000.

Liakumovich, Alexandr G.: *See*—
Kourbatov, Vladimir A.; Boreyko, Natalija P.; Zouev, Valerii P.; and Liakumovich, Alexandr G., 5,488,192, Cl. 585-435.000.

Liao, Ming-Kang. Decorative means for emitting odor and generating sound. 5,487,502, Cl. 239-69.000.

Liddell, Peter A.; Mueller, Douglas L.; and Wohlers, Gary L., to Honeywell Inc. Magnetic sensor with means for retaining a magnet at a precise calibrated position. 5,488,294, Cl. 324-207.210.

Lieberfarb, Warren N.; Cookson, Christopher J.; and Ostrover, Lewis S., to Telectronics Pacing Systems, Inc. System and method for disk software publishers to control disk distribution. 5,488,410, Cl. 348-5.500.

Liebermensch, Avi: *See*—
MacWilliams, Peter D.; Avni, Dror; Liebermensch, Avi; Baransy, Anan; and Farrell, Robert L., 5,488,639, Cl. 375-355.000.

Liebram, Udo: *See*—
Hielscher, Uwe; Liebram, Udo; Reil, Wilhelm; and Sattler, Peter, 5,487,253, Cl. 53-281.000.

Lietz, Hans: *See*—
Reichert, Günther; Lietz, Hans; Hassdenteufel, Jürgen-Rolf; Sackmann, Günter; and Kobelka, Frank, 5,487,964, Cl. 430-16.000.

Light Age, Inc.: *See*—
Heller, Donald F.; Chin, Timothy C.; and Krasinski, Jerzy S., 5,488,626, Cl. 372-70.000.

Liimatta, Eric W.: *See*—
Hu, Patrick C.; and Liimatta, Eric W., 5,487,882, Cl. 423-700.000.

Lillestolen, Erik C.: *See*—
Beacham, William H., Jr.; and Lillestolen, Erik C., 5,488,323, Cl. 327-74.000.

Limaye, Santosh Y. Ultra low thermal expansion, highly thermal shock resistant ceramic. 5,488,018, Cl. 501-104.000.

Lin El, Inc.: *See*—
Hale, Joseph P.; and Burgardt, Jeffrey, 5,487,243, Cl. 52-202.000.

Lin, John: *See*—
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Lin, Lee-Wen: *See*—
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Lin, Ran-Jin, to Industrial Technology Research Institute. Process for making high temperature superconducting oxide films. 5,488,031, Cl. 505-475.000.

Lindahl, Lars: *See*—
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Lindenman, Charles E.: *See*—
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Lindsay, Bruce G.: *See*—
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Link, Donald A.: *See*—
Hubbard, Dean A.; Link, Donald A.; and Hunter, David S., 5,488,337, Cl. 335-202.000.

Link Group International: *See*—
Simmel, Thomas L.; McDarren, Robert S.; and Truchsess, Joseph, 5,487,925, Cl. 428-19.000.

Little, Oscar L. Lower leg exercise device and method. 5,487,711, Cl. 482-79.000.

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Brown, Eric W.; and Littlefield, James A., 5,488,368, Cl. 341-119.000.

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Gourse, Stanley J.; Fischer, Eugene; and Harrison, George A., 5,488,313, Cl. 324-754.000.
Michal, Ronald J.; and Torres, Fernando, 5,488,683, Cl. 385-98.000.
Mitchell, Robert A., 5,488,622, Cl. 372-33.000.
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Lo, Tin-chee, to International Business Machines Corporation. Latch interface for self-reset logic. 5,488,319, Cl. 326-115.000.

Lockheed Martin Energy Systems, Inc.: *See*—
Canada, Donald A.; Haynes, Howard D.; Moyers, John C.; and Stewart, Brian K., 5,487,302, Cl. 73-168.000.

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Friedman, Arnold; Ribble, William; and Wade, William D., 5,488,343, Cl. 343-912.000.

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Jenkins, Richard D.; Bassett, David R.; Smith, Danny E.; Argyropoulos, John N.; Loftus, James E.; and Shay, Gregory D., 5,488,180, Cl. 568-609.000.

Lokhoff, Gerardus C. P.: *See*—
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McKee, Mark P.; Zapisek, John; Bulfer, David M.; Long, John M.; Nicholls, John R.; and Blask, William T., 5,488,694, Cl. 395-824.000.

Long, Stephen L: *See*—
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Buzzetti, Franco; Longo, Antonio; and Colombo, Maristella, 5,488,057, Cl. 514-312.000.

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Hardt, Peter; Dunn, Ulrich; and Völker, Theodor, 5,488,163, Cl. 564-315.000.

Lopata, Eugene S.; and Nakanishi, John S., to BOC Group, Inc., The. Process for plasma-enhanced chemical vapor deposition of anti-fog and anti-scratch coatings onto various substrates. 5,487,920, Cl. 427-489.000.

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Halladay, James R., 5,488,081, Cl. 524-314.000.
Sweeney, Eugene J.; and Pelta, Gregory A., 5,487,803, Cl. 156-91.000.

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Scheufeld, Heinz; Lossa, Ulrich; and Stenmans, Heinz, 5,487,263, Cl. 57-58.900.

Lovejoy, Michael W., to Minnesota Mining and Manufacturing Company. High intensity peening flaps with fastener, and wheels incorporating same. 5,487,293, Cl. 72-53.000.

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Polson, Alan M.; Swanbom, Deryl D.; Dunn, Richard L.; Cox, Charles P.; Norton, Richard L.; Lowe, Bryan K.; and Peterson, Kenneth S., 5,487,897, Cl. 424-426.000.

Lowman, Richard M., Jr.: *See*—
Drumwood, Michael T.; Hill, Calvin G.; Lowman, Richard M., Jr.; Suski, William C.; Roberts, Rodney W.; and Lowry, James W., 5,487,506, Cl. 229-202.000.

Lowry, James W.: *See*—
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Yang, Ming-Sheng; Cherng, Yu-Show; and Lu, Chien-Te, 5,487,485, Cl. 220-403.000.

Lu, Hui-Lan: *See*—
Kaplan, Marc P.; Lu, Hui-Lan; and Slutzman, Lev, 5,488,569, Cl. 364-514.000.

Lu, Mou-Ying F.; and Reiland, Thomas L., to Abbott Laboratories. Compositions and method for the sublingual or buccal administration therapeutic agents. 5,487,898, Cl. 424-435.000.

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Luciani, Carmen V.; and Rizvi, Syed Q. A., 5,487,838, Cl. 252-49.900.
Vinci, James N.; Rizvi, Syed Q. A.; and Luciani, Carmen V., 5,487,839, Cl. 252-49.900.

Lucardie, John F. Baseball card storage and protection device. 5,487,601, Cl. 312-183.000.

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Bayliss, John P.; and Byrnes, Sean, 5,487,325, Cl. 91-376.00R.

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Schlüter, Peter; and Zeuner, Lothar, 5,487,327, Cl. 92-128.000.

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Vinci, James N.; Rizvi, Syed Q. A.; and Luciani, Carmen V., 5,487,839, Cl. 252-49.900.

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Kim, Sung-Hou; and Cho, Joong M., 5,487,983, Cl. 435-69.100.

Ludden, Michael J.; Penneck, Richard J.; and Smith, Nicholas J. G., to Raychem Limited. Laser-machining polymers. 5,487,852, Cl. 264-400.000.

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Boon-Falleur, Thierry; Brichard, Vincent; Van Pel, Aline; De Plaen, Etienne; Coulie, Pierre; Renauld, Jean-Christope; Wölfel, Thomas; and Lethé, Bernard, 5,487,974, Cl. 435-6.000.

Ludwig, Michael; Reber, Rolf; and Feldle, Heinz-Peter, to Deutsche Aerospace AG. Constant current source. 5,488,328, Cl. 327-538.000.

LUK Lamellen und Kupplungsbau GmbH: *See*—
Friedmann, Oswald; and Jäckel, Johann, 5,487,704, Cl. 464-24.000.

Luken, Patrick C.: *See*—
Hornung, Richard E.; and Lukes, Patrick C., 5,487,316, Cl. 74-527.000.

Luken, William L.: *See*—
Gharachorloo, Nader; and Luken, William L., 5,488,684, Cl. 395-123.000.

Lumpkin, Everett R.: *See*—
Wise, William D.; De Wever, Marc L.; Kumke, Dale J.; Lumpkin, Everett R.; Sale, Matthew D.; and Schousek, Brian W., 5,487,595, Cl. 303-168.000.

Lunar Corporation: *See*—
Knutson, Joyce C.; Bishop, Charles W.; and Moriarty, Robert M., 5,488,120, Cl. 552-653.000.

Lundan, Arvo O.; Anais: Per-Hikan V.; and Lähteenmäki, Mikko J., to Metsä-Serla Chemicals Oy. Stable CMC slurry. 5,487,777, Cl. 106-188.000.

Lundt, Bettina: *See*—
Kossmehl, Gerhard; and Lundt, Bettina, 5,488,093, Cl. 528-193.000.

Lürssen, Klaus: *See*—
Haas, Wilhelm; Müller, Klaus-Helmut; König, Klaus; Santel, Hans-Joachim; Lürssen, Klaus; and Schmidt, Robert R., 5,488,028, Cl. 504-193.000.

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Sharf, Lucille M.; Lynd, Laurence J.; Smith, James F.; and Schlueter, Edward L., Jr., 5,487,707, Cl. 474-253.000.

Lynn, Dwight D.; Reid, Kirk A.; and Chen, Shu-Ren, to ACS Communications, Inc. Apparatus for and method of operating an automatic log on/log off circuit in a telephone system by disconnecting a headset. 5,488,657, Cl. 379-395.000.

Lyon, Sue B.; O'Neal, Clifford; Van Der Lee, Hennes; and Rogers, Brian, to Gillette Company, The. Amino acid β-lyase enzyme inhibitors as deodorants. 5,487,886, Cl. 424-65.000.

M L Aviation Limited: *See*—
Rhodes, Glenn M., 5,487,322, Cl. 89-1.560.

MacCarter, Dean J.; Hopper, Don; Cooper, Daniel; and Hassell, Roger, to Telectronics Pacing Systems, Inc. Rate-responsive pacemaker with anaerobic threshold adaptation and method. 5,487,753, Cl. 607-017.000.

Machino, Hitoshi: *See*—
Nakamori, Tomohiro; Hashimoto, Hiroshi; Endo, Soya; Machino, Hitoshi; and Ishizu, Masanori, 5,488,625, Cl. 372-50.000.

Mack, Henry J. Stowaway table. 5,487,342, Cl. 108-42.000.

Mackay, Bruce W.; and Arian, Abbas, to Western Atlas International Inc. Core separator assembly. 5,487,433, Cl. 175-78.000.

Mackerer, Carl R.; Roy, Timothy A.; and Blackburn, Gary R., to Mobil Oil Corporation. Process for reducing polynuclear aromatic mutagenicity by alkylation. 5,488,193, Cl. 585-455.000.

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Barnes, Derek, 5,487,460, Cl. 198-382.000.

MacWilliams, Peter D.; Avni, Dror; Liebermensch, Avi; Baransy, Anan; and Farrell, Robert L., to Intel Corporation. Parallel multistage synchronization method and apparatus. 5,488,639, Cl. 375-355.000.

Madden, James R., Jr. Removable bullet resistant apparatus for vehicles. 5,487,323, Cl. 89-36.080.

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Zytka, Donald J.; Madden, Peter G.; and Eglinton, Robert B., 5,487,768, Cl. 55-385.200.

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Maduzia, Kenneth S.; Frett, Kenneth J.; and Vitt, James J., to A.C. Nielsen Company. Serial data channel metering attachment for metering channels to which a receiver is tuned. 5,488,408, Cl. 348-2.000.

Maeda, Hiroshi; and Omori, Takuro, to Sharp Kabushiki Kaisha. Method for driving display device. 5,488,387, Cl. 345-89.000.

Maekawa, Hiromi: *See*—
Wakabayashi, Naoto; Tsuchiko, Masayoshi; Akama, Terufumi; Maekawa, Hiromi; Shikata, Hiroyuki; Yamazaki, Nobuo; and Kawaguchi, Tomio, 5,487,386, Cl. 128-660.010.

Maemoto, Kazuo: *See*—
Kobayashi, Fumikazu; Mizutani, Kazuyoshi; and Maemoto, Kazuo, 5,488,182, Cl. 568-660.000.

Magee, Thomas V.: *See*—
Danishefsky, Samuel J.; Bornmann, William G.; Queneau, Yves; Magee, Thomas V.; Krol, Walter J.; Masters, John J.; and Jung, David K., 5,488,116, Cl. 549-214.000.

Maggi, Lauretta: *See*—
Conte, Ubaldo; La Manna, Aldo; and Maggi, Lauretta, 5,487,901, Cl. 424-472.000.

Magnetek, Inc.: *See*—
Bauer, Fred P.; Sanders, Stuart E.; Van Wagener, Raymond H.; and Opperthauser, Mark R., 5,488,268, Cl. 315-70.000.

Magnuson, Larry R.: *See*—
Tolliver, Wilbur E.; and Magnuson, Larry R., 5,487,251, Cl. 52-600.000.

Magnuson, Roy H.: *See*—
Bhatt, Anilkumar C.; Magnuson, Roy H.; Markovich, Voya R.; Papathomas, Konstantinos I.; and Powell, Douglas O., 5,487,218, Cl. 29-852.000.

Mahabadi, Hadi K.; Wright, Denise Y.; Cunningham, Michael F.; and Creatura, John A., to Xerox Corporation. Process for the preparation of conductive polymeric particles with linear and crosslinked portions. 5,487,847, Cl. 252-511.000.

Mahant-Shetti, Shivaling S.; Agarwala, Manisha; Mehendale, Mahesh M.; Landers, Robert J.; and Harward, Mark G., to Texas Instruments Incorporated. Adder-based base cell for field programmable gate arrays. 5,488,315, Cl. 326-37.000.

Maher, Gregory F.: *See*—
Kulprathipanja, Santi; Maher, Gregory F.; and Lorsbach, Thomas W., 5,488,156, Cl. 562-580.000.

Main, David R., to 3DO Company, The. Amplitude adaptive filter. 5,488,576, Cl. 364-724.010.

Maina, Bruno, to Roj Electrotex S.p.A. Weft feeder with rethreading and braking devices. 5,487,415, Cl. 139-452.000.

Majeti, Venkata C.; Midani, Mowaffak T.; Watson, Richard J.; and Zabriskie, Kenneth A., to AT&T Corp. Customer premises equipment receives high-speed downstream data over a cable television system and transmits lower speed upstream signaling on a separate channel. 5,488,412, Cl. 348-10.000.

Major, Miklos, to Microsonic, Inc. Hearing aid tubing connector. 5,488,205, Cl. 181-129.000.

Makishima, Tatsuo: *See*—
Yanagishi, Toshio; Nasba, Masakazu; Egami, Norifumi; Taniola, Kenichi; Kurashige, Mitsuhiro; Tsuji, Kazutaka; Kaneko, Yoshiyuki; Makishima, Tatsuo; Nagatsuma, Kazuyuki; Ohshima, Tetsuya; and Nakano, Yasushi, 5,488,386, Cl. 345-74.000.

Makita Corporation: *See*—
Oda, Zenichi; and Kani, Toshiyuki, 5,487,221, Cl. 30-392.000.

Makita, Shigeru; Sano, Yoshihiko; Nakamura, Yasushi; and Ota, Hiroyuki, to Omron Corporation. Radiation clinical thermometer. 5,487,607, Cl. 374-158.000.

Maksim, James E., to Precision Technologies, Inc. Lead conditioning system for semiconductor devices. 5,487,416, Cl. 140-105.000.

Maley, Dale C.; and Tharp, Dwayne E., to Caterpillar Inc. Hard magnetic valve actuator adapted for a fuel injector. 5,488,340, Cl. 335-253.000.

Malik, Paul; Kosson, Robert; Vasely, Michael; and Stegmann, George, to Consolidated Edison Company of New York, Inc.; and Vasely, Michael. Cooling system for spent fuel pool. 5,488,642, Cl. 376-272.000.

Malik, Randhir S., to International Business Machines Corporation. Pulse width modulated power supply which avoids excessive on-time of switch during start-up. 5,488,551, Cl. 363-20.000.

Mallik, Debendra: *See*—
Bhattacharyya, Bidyut; and Mallik, Debendra, 5,488,257, Cl. 257-774.000.

Mallinson, Steven M.; and McAleavey, Michael E. Apparatus and method for continuous synthesis of vanadium oxide. 5,487,876, Cl. 422-205.000.

MAN Roland Druckmaschinen AG: *See*—
Simeth, Claus, 5,487,336, Cl. 101-216.000.

Mandeville, W. Harry, III; and Holmes-Farley, Stephen R., to GelTex, Inc. Iron-binding polymers for oral administration. 5,487,888, Cl. 424-78.100.

Mandzy, John; and Degler, David S., to Martin Marietta Corporation. Safety bag inflation apparatus using a liquid propellant gas generator. 5,487,561, Cl. 280-741.000.

Manitowoc Company, Inc., The: *See*—
Pech, David J.; Walker, Robert J.; and Wanek, Michael J., 5,487,479, Cl. 212-270.000.

Mann, Brian M.: *See*—
Snell, Jeffery D.; Schloss, Harold C.; Mann, Brian M.; Poore, John W.; and Medlin, Roy B., 5,487,754, Cl. 607-27.000.
Snell, Jeffery D.; Schloss, Harold C.; Mann, Brian M.; Poore, John W.; and Medlin, Roy B., 5,487,755, Cl. 607-27.000.

Mannesmann Aktiengesellschaft: *See*—
Kahl, Melchior; and Risse, Friedhelm, 5,487,312, Cl. 73-863.010.

Mannesmann Aktiengesellschaft A corporation of Germany: *See*—
Kenner, Axel; Keschwari, Mahmud; and Zeller, Peter K., 5,488,287, Cl. 322-20.000.

Manning, Mark C.: *See*—
Chace, Raymond A., Jr.; and Manning, Mark C., 5,487,350, Cl. 114-330.000.

Mano, Hiroshi: *See*—
Ojima, Masaki; Obkubo, Masaharu; Itoh, Michio; Sasame, Hiroshi; Yamada, Hiromichi; Saito, Tetsuo; Kashihara, Atsushi; Kawana, Takeshi; Mano, Hiroshi; Seno, Kaoru; and Atobe, Hiroshi, 5,488,487, Cl. 358-456.000.

Mansfield, Daniel; Bell, Ian; Buehring, Ian; and Harding, Jennifer, to Rank Taylor Hobson Limited. Apparatus and method using optical diffraction to measure surface roughness. 5,488,476, Cl. 356-354.000.

Marazzo, Joseph; Russo, Frank; Palmer, Michael G.; and Hartmann, Gary L., to Brooklyn Union Gas. Material transfer apparatus and method. 5,487,228, Cl. 37-317.000.

Marcadis, Stuart J.; and Devries, James H., to Medtronic, Inc. Balloon catheter with balloon surface retention means. 5,487,730, Cl. 604-96.000.

March, Carl J.: *See*—
Dower, Steven K.; March, Carl J.; Sims, John E.; and Urdal, David L., 5,488,032, Cl. 514-2.000.

Marchek, Kyle J.; and McClelland, Timothy R., to Molex Incorporated. Packaging container assembly for electrical connector components. 5,487,471, Cl. 206-725.000.

Marchionni, Giuseppe; Guarda, Pier A.; and Pagania, Maurizio, to Ausimont S.p.A. Process for preparing perfluoropolyethers. 5,488,181, Cl. 568-615.000.

Marchuk, Jeffrey P.: *See*—
Guzik, Andrzej T.; Smith, Todd L.; and Marchuk, Jeffrey P., 5,487,674, Cl. 439-83.000.

Marentes, Faustin T.; and Monasterio, Jorge, to RJS, Inc. Laser printer paper handling system. 5,488,467, Cl. 355-282.000.

Marin, Constantin: *See*—
Wood, John R.; and Marin, Constantin, 5,488,560, Cl. 364-148.000.

Marion, Michael P.; and Otto, David C., to Du Pont de Nemours, E. I., and Company. Pre-proof temperature controlling assembly. 5,487,801, Cl. 156-64.000.

Markovich, Voya R.: *See*—
Bhatt, Anilkumar C.; Magnuson, Roy H.; Markovich, Voya R.; Papathomas, Konstantinos I.; and Powell, Douglas O., 5,487,218, Cl. 29-852.000.

Markunas, Albert L.: *See*—
Rozmus, Gregory I.; Markunas, Albert L.; Hanson, Michael J.; and Weber, Leland E., 5,488,286, Cl. 322-10.000.

Martin Firearms Company, The: *See*—
Osborne, William E.; Waterman, Harold J., Jr.; and Findlay, David, 5,487,232, Cl. 42-51.000.

Marmonier, Gilles, to Skis Rossignol S.A. Ski boot with a collar having a closure slide. 5,487,227, Cl. 36-117.000.

Marquart, Bernd: *See*—
Brandt, Wolfram; Marquart, Bernd; and Stoehr, Roland R., 5,488,314, Cl. 324-758.000.

Marquip, Inc.: *See*—
Langreck, Gerald K., 5,488,280, Cl. 318-805.000.

Marquis, Edward T.: *See*—
Knifton, John F.; Marquis, Edward T.; and Dai, Pei-Shing E., 5,488,178, Cl. 568-578.000.
Knifton, John F.; Marquis, Edward T.; and Dai, Pei-Shing E., 5,488,179, Cl. 568-578.000.

Marschall, Christian: *See*—
Pohl, Ludwig; Schumann, Herbert; and Marschall, Christian, 5,487,357, Cl. 117-104.000.

Marschner, Claus; and Patsch, Manfred, to BASF Aktiengesellschaft. Formazan-based reactive dyes with at least two reactive groups, and aminophenols. 5,488,100, Cl. 534-618.000.

Marschner, Claus; and Patsch, Manfred, to BASF Aktiengesellschaft. Aminophenols useful as intermediates for formazan reactive dyes. 5,488,127, Cl. 558-25.000.

Marshall, Jeremy; and Crossman, David D., to Owen Mumford Limited. Blood sampling device. 5,487,748, Cl. 606-182.000.

Marshall, Stephen W.: *See*—
Gove, Robert J.; Doherty, Donald B.; Heinbuch, Scott D.; Urbanus, Paul M.; and Marshall, Stephen W., 5,488,431, Cl. 348-716.000.

Martel, Ralph R.: *See*—
Miller, Phillip C.; Druyor, Roberta L.; and Martel, Ralph R., 5,487,975, Cl. 435-7.300.

Martherus, William A.: *See*—
Hilleveld, Jerry; Martherus, William A.; and Hartman, Kenneth J., 5,487,278, Cl. 62-236.000.

Martin, Bill, Jr. Security device for buildings. 5,487,237, Cl. 49-57.000.

Martin, Daniel T.: *See*—
Hutchinson, William R.; and Martin, Daniel T., 5,487,769, Cl. 55-442.000.

Martin Marietta Corporation: *See*—
Mandzy, John; and Degler, David S., 5,487,561, Cl. 280-741.000.
Williams, Laureace O., 5,487,798, Cl. 149-22.000.
Worchesky, Terrance L.; and Ritter, Kenneth J., 5,488,504, Cl. 359-248.000.

Martin Marietta Magnesia Specialities Inc.: *See*—
Witkowski, Joseph T.; Smith, David M.; and Wajer, Mark T., 5,487,879, Cl. 423-155.000.

Martin, Robert D. Cleaning device that does not engage the disc drive spindle. 5,488,596, Cl. 369-71.000.

Martin, Thomas W.; Simpson, William H.; and Hautcoeur, Jacob J., Jr., to Eastman Kodak Company. Dye-receiving element containing elastomeric beads in overcoat layer for thermal dye transfer. 5,488,025, Cl. 503-227.000.

Martinez Velasquez, Manuel J. System for facilitating an oil change and/or an oil filter change in internal combustion engines. 5,487,447, Cl. 184-1.500.

Martinovich, Krasnas; and Beyer, Donald R. Method and apparatus for secure programming of communication radios. 5,488,350, Cl. 340-825.330.

Maru, Saburo: *See*—
Takada, Kunio; Otani, Kenji; Yamada, Masayuki; Maru, Saburo; Sudo, Sumio; and Tanaka, Satoshi, 5,487,621, Cl. 405-52.000.

Marutsc, Tsuhihisa, to Mazda Motor Corporation. Automatic transmission control system for automobiles. 5,487,708, Cl. 475-116.000.

Maruyama, Shigeru; Shimazaki, Yuichi; Kanehiro, Masaki; Hiraki, Takashi; Baba, Shigeki; Ishioka, Takuji; Takagi, Jiro; and Akiyama, Eietsu, to Honda Giken Kogyo Kabushiki Kaisha. Spark plug cap with ignition voltage detective capacitor for internal combustion engine. 5,487,676, Cl. 439-125.000.

Maruyama, Yu; Taguchi, Yoshio; and Hayano, Kijuro, to Taguchi Medical Co., Ltd. Bone plate. 5,487,741, Cl. 606-60.000.

Mas-Hamilton Group: *See*—
Dawson, Gerald L.; and Thompson, Daniel L., 5,488,660, Cl. 380-24.000.
Hamilton, James E.; Dawson, Gerald L.; and Thompson, Daniel L., 5,488,358, Cl. 340-825.310.

Masbach, Bernd: *See*—
Frey, Detlef; and Masbach, Bernd, 5,487,655, Cl. 425-72.200.

Maghati, Mohammad; and Cline, Jack R., to Illinois Tool Works Inc. Arc suppressor for sidecars. 5,488,535, Cl. 361-119.000.

Masini, Jean-Jacques: *See*—
Le Blevec, Jean-Marc; Correia, Yves; Masini, Jean-Jacques; Bousquet, Jacques; and Bergougnou, Maurice A., 5,488,190, Cl. 570-226.000.

Mason, Arthur G.; and Gledhill, Jeffrey J., to National Transcommunications Limited. Transmission and reception in a hostile interference environment. 5,488,632, Cl. 375-260.000.

Mason, Charles M.; and Sutton, Ted L., to BASF Corporation. Method of cleaning a sintered powdered metal filter. 5,487,836, Cl. 210-791.000.

Mason, Robert W., to Olin Corporation. Process for the production of dinitrobenzene and mononitrobenzene. 5,488,187, Cl. 568-932.000.

Mason, Marc L.; Katz, Gary E.; and Bynum, Douglas G., to Abbott Laboratories. Method for the production of an enteral formula containing ribonucleotides. 5,488,039, Cl. 514-43.000.

MasPar Computer Company: *See*—
McKee, Mark P.; Zapisek, John; Bulfer, David M.; Long, John M.; Nickolls, John R.; and Blank, William T., 5,488,694, Cl. 395-434.000.

Massachusetts Institute of Technology: *See*—
Cohen, Sanader; Andrianov, Alexander K.; Wheatley, Margaret; Allcock, Harry R.; and Langer, Robert S., 5,487,390, Cl. 128-662.020.

Masters, John J.: *See*—
Danishefsky, Samuel J.; Bornmann, William G.; Queneau, Yves; Magee, Thomas V.; Krol, Walter J.; Masters, John J.; and Jung, David K., 5,488,116, Cl. 549-214.000.

Masuda, Masami: *See*—
Shiraishi, Sumitor; Masuda, Masami; and Nogami, Kazutaka, 5,488,326, Cl. 327-408.000.

Masuda, Noriyuki: *See*—
Sato, Masatoshi; and Masuda, Noriyuki, 5,488,325, Cl. 327-286.000.

Matsuka, Hideaki; and Kuwada, Akio, to Kabushiki Kaisha Toshiba. Bias circuit for controlling bias voltage of differential amplifier. 5,488,330, Cl. 330-261.000.

Matheson, K. Lee: *See*—
Weerasooriya, Upali; Lin, John; Matheson, K. Lee; Robertson, Donald T.; Watson, Janet L.; and Rowe, LeAnn M., 5,488,148, Cl. 562-123.000.

Matossian, Jesse N.: *See*—
Nieh, Simon K.; Matossian, Jesse N.; Krajenbrink, Frans G.; and Schumacher, Robert W., 5,487,922, Cl. 427-528.000.

Matsubara, Miyuki; Hirabayashi, Hiromitsu; Sugimoto, Hitoshi; and Takahashi, Kiichiro, to Canon Kabushiki Kaisha. Ink jet recording apparatus capable of emphasizing the density of black. 5,488,398, Cl. 347-43.000.

Matsuda, Toshiro, to Nissan Motor Co., Ltd. Anti-skid controlling system and method for automotive vehicle. 5,488,557, Cl. 364-426.020.

Matsui, Mitsuru, to Mitsubishi Denki Kabushiki Kaisha. Data communication system and method with data scrambling. 5,488,661, Cl. 380-29.000.

Matsumoto, Kazuya: *See*—
Endo, Kiyonobu; Matsumoto, Kazuya; and Kuwayama, Tetsuro, 5,488,598, Cl. 369-120.000.

Matsunaga, Toshihiro: *See*—
Takeuchi, Takashi; Saitoh, Tadashi; Matsunaga, Toshihiro; Mori, Masashi; and Fujiya, Hajime, 5,488,595, Cl. 369-54.000.

Matsuo, Katsuaki: *See*—
Kakishita, Osamu; Nishioka, Jun; Fujita, Takeshi; and Matsuo, Katsuaki, 5,487,947, Cl. 428-424.400.

Matsuoka, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device. 5,488,253, Cl. 257-622.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Akashi, Tomoko; and Suzuki, Norio, 5,488,428, Cl. 348-578.000.

Brown, Gary; and Miyake, Jiro, 5,488,573, Cl. 364-578.000.
Furumiya, Shigeru; and Takemura, Yoshinari, 5,488,593, Cl. 369-32.000.
Hirashima, Masayoshi, 5,488,658, Cl. 380-14.000.
Hui, Lucas Y. W.; and Chong, Siew-Tan, 5,488,419, Cl. 348-402.000.
Kayashima, Kazuhiro; Kuroaki, Toshihiko; Egusa, Yo; Atuta, Hiroshi; and Yamamoto, Hiroshi, 5,488,427, Cl. 348-569.000.
Shigetoh, Nobuyuki; Miyazaki, Jipsei; Nakayama, Hiroshi; Yugawa, Keiko; and Mitsumata, Tadayasu, 5,488,114, Cl. 548-510.000.
Takabeshi, Kenichi; Takeishi, Minako; and Onishi, Hiroshi, 5,488,629, Cl. 375-206.000.
Tomita, Hironori; Nakamura, Tohru; Wada, Takuya; and Nakamura, Hiroyuki, 5,488,603, Cl. 369-219.000.
Yamamoto, Hajime; and Terada, Hiroshi, 5,488,465, Cl. 355-246.000.
Yoshii, Shigeo; Okawa, Kazuhiro; Tsujimura, Ayumi; and Mitsuya, Tuneo, 5,488,234, Cl. 257-94.000.

Matsushita Electric Works: *See*—
Sakamoto, Hiroshi; Tamura, Hideki; and Furukawa, Kaoru, 5,488,552, Cl. 363-21.000.

Matsushita, Shigenori: *See*—
Yamamoto, Shigeru; Matsushita, Shigenori; Zhang, Shu hui; Nishita, Satoru; and Nakata, Kazushi, 5,487,428, Cl. 172-4.500.

Matsuura, Takashi: *See*—
Tanaka, Saburo; Matsuura, Takashi; and Itozaki, Hideo, 5,488,030, Cl. 505-190.000.

Matthews International Corporation: *See*—
Chew, Ralph M.; and Elkis, Robert W., 5,487,334, Cl. 101-126.000.

Matthews, Kent R.; Schakel, Eric G.; and Gamboa, Ricardo R., to Schuller International, Inc. Glass fiber airduct with coated interior surface containing a biocide. 5,487,412, Cl. 138-149.000.

Matumoto, Satoru: *See*—
Kamiya, Hideaki; Hashimoto, Satoshi; and Matumoto, Satoru, 5,487,788, Cl. 134-1.000.

Matzner, Bruce: *See*—
Johansson, Eric B.; Elkins, Robert B.; Matzner, Bruce; Latter, Gerald M.; and Proebstle, Richard A., 5,488,634, Cl. 376-313.000.

Max Levy Autograph, Inc.: *See*—
Sedberry, Donald C., 5,488,394, Cl. 346-141.000.

Maxi System International S.A.: *See*—
Hoffner, Max, 5,487,677, Cl. 439-293.000.

Maxtor Corporation: *See*—
Seaver, Jay R.; Diel, Mark A.; and Titcomb, Forrest, 5,488,523, Cl. 360-99.120.

May, William A. Bicycle training apparatus. 5,487,554, Cl. 280-293.000.

Mayer, Horst: *See*—
Hamprecht, Gerhard; Mayer, Horst; Westphalen, Karl-Otto; Gerber, Matthias; Kardorff, Uwe; and Walter, Helmut, 5,488,029, Cl. 504-212.000.

Mazda Motor Corporation: *See*—
Marusue, Toshihisa, 5,487,708, Cl. 475-116.000.

Mazura, Paul; and Schwenk, Hans-Martin, to Schroff GmbH. Frame stand. 5,488,543, Cl. 361-829.000.

McAleavey, Michael E.: *See*—
Mallinson, Steven M.; and McAleavey, Michael E., 5,487,876, Cl. 422-205.000.

McCarthy, Anthony M., to University of California, The Regents of the. Silicon on insulator with active buried regions. 5,488,012, Cl. 437-62.000.

McClelland, Michael; Welsh, John T.; and Sorge, Joseph A., to Stratagene. Arbitrarily primed polymerase chain reaction method for fingerprinting genomes. 5,487,985, Cl. 435-91.200.

McClelland, Timothy R.: *See*—
Marchek, Kyle J.; and McClelland, Timothy R., 5,487,471, Cl. 206-725.000.

McClenahan, James W.; Burns, Leigh R., Jr.; Stieff, Michael T.; and January, Daniel B. Sensors for vehicle alignment system and apparatus using same. 5,488,471, Cl. 356-139.090.

McCoy, Paul E. Carboxylate nutrients and methods for their production and use. 5,487,772, Cl. 71-26.000.

McCrady, John M.: *See*—
Bertva, John T.; Hutto, Scott L.; and McCrady, John M., 5,487,422, Cl. 165-67.000.

McCraney, William E.; and McCraney, William J. Water heater restraint. 5,487,518, Cl. 248-225.110.

McCraney, William J.: *See*—
McCraney, William E.; and McCraney, William J., 5,487,518, Cl. 248-225.110.

McCullough, Harold J. Shoveling aid. 5,487,530, Cl. 254-131.500.

McCumiskey, Robert E.: *See*—
Godlove, Ronald E.; Jordan, Venita A.; McCumiskey, Robert E.; Yuh, Huoy-Jen; and Zaman, Kamran U., 5,488,460, Cl. 355-211.000.

McDarren, Robert S.: *See*—
Simmel, Thomas L.; McDarren, Robert S.; and Truchsess, Joseph, 5,487,925, Cl. 428-19.000.

McDonald, Daniel P.; and Smitherman, John P., to Illinois Tool Works Inc. Quick release and connect nozzle assembly. 5,487,507, Cl. 239-391.000.

McDonald, Norman J., Jr. Stabilizers adapted to be connected to a bow. 5,487,375, Cl. 124-89.000.

McDonnell Douglas Corporation: *See*—
De Jong, Hans E., 5,488,530, Cl. 361-6.000.
Lechner, Robert J.; and Streid, Harold R., 5,487,665, Cl. 434-44.000.
Reynolds, Albert H., III; Boettger, Rand E.; and Pauly, Steven W., 5,488,377, Cl. 342-93.000.

McDonough, James M.: *See*—
Fairbanks, Floyd B.; Snell, Thomas G.; and McDonough, James M., 5,487,657, Cl. 431-153.000.

McDow, Timothy S.; and Beasinger, Martin, to LDC Analytical, Inc. Mercury assay. 5,487,871, Cl. 422-80.000.

McElechin, Jerry F. Banner table. 5,487,536, Cl. 269-21.000.

McGean-Rohco, Inc.: *See*—
Sim, Johnny O., 5,487,789, Cl. 134-38.000.

McGinniss, Vincent D.; Dick, Richard J.; Russell, Robert E., III; and Rogers, Stephen D., to Battelle Memorial Institute. Thermally-protective intumescent coating. 5,487,946, Cl. 428-413.000.

McGraw, Peter S.; and Kelly, Charles M., to United States of America, Navy. Load limit system for mechanical linear actuator. 5,488,278, Cl. 318-626.000.

McGregor, Weldon C.; Stubstad, James; and Chang, C. Paul, to XOMA Corporation. Pharmaceutical composition comprising BPI proteins. 5,488,034, Cl. 514-12.000.

McHugh, Thomas M.: *See*—
Barrett, David W.; McHugh, Thomas M.; Ahigian, Edward E.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalcyk, Thomas M.; and Kulak, Richard E., 5,487,449, Cl. 187-330.000.

McKee, Mark P.; Zapisek, John; Bulfer, David M.; Long, John M.; Nickolls, John R.; and Blank, William T., to MasPar Computer Company. Broadcasting headers to configure physical devices interfacing a data bus with a logical assignment and to effect block data transfers between the configured logical devices. 5,488,694, Cl. 395-824.000.

McKeigue, Kevin: *See*—
LaCava, Alberto; and McKeigue, Kevin, 5,487,775, Cl. 95-98.000.

McKenzie, Thomas P. Curvilinear surgical punch. 5,487,745, Cl. 606-83.000.

McKevitt, Frank X.: *See*—
Cann, Gordon L.; Shepard, Cecil B., Jr.; and McKevitt, Frank X., 5,487,787, Cl. 118-723.00R.

McKinney, David K.; Fuller, Milton E.; and Carone, Berry V., to Solid State Farms, Inc. Apparatus for sedimentation based blood analysis. 5,487,870, Cl. 422-73.000.

Mclaury, Loren L.: *See*—
Vo, Huy T.; and Mclaury, Loren L., 5,488,584, Cl. 365-203.000.

McNabb, Rex P. Frozen beverage dispensing apparatus. 5,487,493, Cl. 222-153.140.

McNabb, Thomas J. Water hyacinth removal apparatus and method. 5,487,258, Cl. 56-9.000.

Mead, Carver A.; Wolf, Ralph; and Allen, Timothy P., to Synaptics, Incorporated. Paintbrush stylus for capacitive touch sensor pad. 5,488,204, Cl. 178-18.000.

Mead, David A.: *See*—
Hernstadt, Corinna; Fernandez, Joseph M.; Smith, Lloyd; and Mead, David A., 5,487,993, Cl. 435-172.300.

Mead, Robert W.: *See*—
Brach, Philip L., Jr.; Khalil, Charles; and Mead, Robert W., 5,487,203, Cl. 15-245.000.

Meadox Medicals, Inc.: *See*—
Schmitt, Peter J., 5,487,858, Cl. 264-103.000.

Mears, R. Brian: *See*—
Fagan, John E.; Sluss, James J., Jr.; Hassell, John W.; Mears, R. Brian; Beason, Ronnie B.; Wilkinson, Sonja R.; Lear, Tommy; and Tan, Kok S., 5,488,224, Cl. 250-227.160.

Medlin, Roy B.: *See*—
Snell, Jeffery D.; Schloss, Harold C.; Mann, Brian M.; Poore, John W.; and Medlin, Roy B., 5,487,754, Cl. 607-27.000.
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Medtronic CardioRhythm: *See*—
Truckai, Csaba; Jaraczewski, Richard S.; Nguyen, Frank; and West, Scott H., 5,487,757, Cl. 607-122.000.

Medtronic, Inc.: *See*—
Marcadis, Stuart J.; and Devries, James H., 5,487,730, Cl. 604-96.000.

Meguerdichian, Gary: *See*—
Hughes, David M.; and Meguerdichian, Gary, 5,487,451, Cl. 187-392.000.

Mehendale, Mahesh M.: *See*—
Mahant-Shetti, Shivaling S.; Agarwala, Manisha; Mehendale, Mahesh M.; Landers, Robert J.; and Harward, Mark G., 5,488,315, Cl. 326-37.000.

Meibach, Ronald L.; Hockenberry, Pamela S.; and Kaafarani, Bilal, to Kraft Foods, Inc. Method of producing cholesterol-reduced whole egg products. 5,487,912, Cl. 426-614.000.

Meiller, Hermann; and Beier, Wolfgang, to Grammer AG. Vehicle seat. 5,487,589, Cl. 297-342.000.

Melby, Earl G.: *See*—
Kausch, Charles M.; Melby, Earl G.; and Sharma, Satish C., 5,488,092, Cl. 528-60.000.

Melton, Robert D.: *See*—
Kunoff, Noah; Patel, Anant; and Melton, Robert D., 5,488,615, Cl. 371-22 400.

Mendelsohn, Noah, to International Business Machines Corporation. Synchronization method for loosely coupled arrays of redundant disk drives. 5,488,731, Cl. 395-800.000.

Meneo, David M. Beverage container with ice compartment filled by inverted scooping. 5,487,486, Cl. 220-504.000.

Menon, Jaishankar M.: *See*—
Brady, James T.; and Menon, Jaishankar M., 5,488,701, Cl. 395-182.040.

MEPLA-Werke Lautenschläger GmbH & Co. KG: *See*—
Lautenschläger, Horst, 5,487,610, Cl. 384-19.000.

Mercedes-Benz AG: *See*—
Ball, Johannes; Heaseler, Wolfgang; Gerstenberg, Uwe; and Fischer, Thomas, 5,487,558, Cl. 280-728.300.

Merck Patent Gesellschaft Mit Beschrankter Haftung: *See*—
Pohl, Ludwig; Schumann, Herbert; and Marschall, Christian, 5,487,357, Cl. 117-104.000.
Reiffenrath, Volker; Kurmeier, Hans A.; Poetsch, Eike; Plach, Herbert; Finkenzeller, Ulrich; Bartmann, Ekkehard; Krause, Joachim; and Scheuble, Bernhard, 5,487,845, Cl. 252-299.630.

Merle, Thomas C.; Ryan, Dale W.; Slater, Walter C.; Rowden, David L.; Sherman, Gerald F., Jr.; and Iassi, Alfonso, to Eastman Kodak Company. Film cartridge recovery tool. 5,488,448, Cl. 354-313.000.

Merrell Dow Pharmaceuticals Inc.: *See*—
Evans, Jonathan C.; Goralski, Christian T.; Rand, Cynthia L.; and Voeijkta, Paul C., 5,488,188, Cl. 570-128.000.
Flynn, Gary A.; Cregge, Robert J.; Fevig, Thomas L.; Sunder, Shyam; and Shum, Patrick W., 5,488,048, Cl. 514-214.000.
Warshawsky, Alan M.; and Flynn, Gary A., 5,488,047, Cl. 514-214.000.

Merriman, Gregory H.: *See*—
Tegeler, John J.; Rauckman, Barbara S.; Harmer, Russell R. L.; Freed, Brian S.; and Merriman, Gregory H., 5,488,061, Cl. 514-372.000.
Tegeler, John J.; Rauckman, Barbara S.; Harmer, Russell R. L.; Freed, Brian S.; and Merriman, Gregory H., 5,488,063, Cl. 514-438.000.

Mery, Jean Claude: *See*—
Moinard, Patrice; Thioux, Alain; and Mery, Jean Claude, 5,487,452, Cl. 188-72.700.

Messer Griesheim GmbH: *See*—
Parwer, Alfward, 5,488,216, Cl. 219-121.640.

Messina, Giuseppe; Sechi, Giovanni M.; and De Michell, Silvio, to Enichem S.p.A. Production in continuous of oxamide for the catalytic oxidation of HCN. 5,488,158, Cl. 564-125.000.

Mesta-Serla Oy: *See*—
Thornton, Jeffrey W.; Eckerman, Christer S.; Ekman, Rainer O.; and Holmbom, Bjarne R., 5,487,812, Cl. 162-72.000.

Met-Tech Systems Limited: *See*—
Monzyk, Bruce F., 5,487,842, Cl. 252-60.000.

Methode Electronics, Inc.: *See*—
Bolen, Patrick A., 5,487,667, Cl. 439-164.000.

Metricom, Inc.: *See*—
Flammer, George H., III, 5,488,608, Cl. 370-85.130.

MetroHealth System, The: *See*—
Eckert, Richard L.; Smith, Daniel J.; and Schafer, Irwin, 5,487,889, Cl. 424-93.100.

Metsä-Serla Chemicals Oy: *See*—
Lundan, Arvo O.; Anais: Per-Hakan V.; and Lilsteenmäki, Mikko J., 5,487,777, Cl. 106-188.000.

Metzger, John C.: *See*—
Klembczyk, Alan R.; and Metzger, John C., 5,487,454, Cl. 188-298.000.

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Mueller-Hagen, Gerd; Heinrich, Horst; and Meyer, Baerbel, 5,488,074, Cl. 521-172.000.

Meyer, Gabriel, to Becton, Dickinson and Company. Storage and transfer bottle designed for storing a component of a medicamental substance. 5,487,737, Cl. 604-403.000.

Meyer, Uwe F.: *See*—
Sander, Dieter; and Meyer, Uwe F., 5,487,481, Cl. 215-252.000.

Meyer-Stork, Sebastian: *See*—
Weber, Gunter; Reiners, Ulrich; and Meyer-Stork, Sebastian, 5,487,950, Cl. 428-484.000.

Mezger, Hans: *See*—
Barzill, Manfred; Esch, Hans-Joachim; Mezger, Hans; Distelrath, Winfried; and Reastle, Albrecht, 5,487,363, Cl. 123-41.740.

Michaelson, Wayne A.: *See*—
Byers, Larry L.; Desubijana, Joceba M.; and Michaelson, Wayne A., 5,488,702, Cl. 395-186.000.

Michal, Ronald J.; and Torres, Fernando, to Litton Systems, Inc. Method for splicing polarization maintaining fiber with elliptical stress member. 5,488,683, Cl. 385-98.000.

Micheloni, Walter; Giugni, Fabrizio; and Ahlbaumer, Georg. Glove with means for protecting the ligaments and articulations of the hand. 5,487,188, Cl. 2-16.000.

Michie, Terry K., to AlliedSignal Inc. Airborne weather radar system with icing detection capability. 5,488,375, Cl. 342-26.000.

Michigan State University: *See*—
Aslam, Mohammad; and Beck, James V., 5,488,350, Cl. 338-225.00D.

Mickel, Thatil J. Automatically actuated sound apparatus. 5,488,195, Cl. 84-609.000.

Microcell, Inc.: *See*—
Weibel, Michael K., 5,487,419, Cl. 162-9.000.

Microchip Technology Incorporated: *See*—
Hewitt, Kent D.; Alexander, Samuel E.; and Fisher, Richard J., 5,488,711, Cl. 395-430.000.

Micron Technology, Inc.: *See*—
Farnworth, Warren M., 5,487,999, Cl. 437-7.000.
Figura, Thomas A.; and Prall, Kirk D., 5,488,011, Cl. 437-60.000.
Ong, Adrian E.; Waller, William K.; and Zagar, Paul S., 5,488,583, Cl. 365-201.000.
Vo, Huy T.; and Mclaury, Loren L., 5,488,584, Cl. 365-203.000.

Microsensor Technology, Inc.: *See*—
Johnson, Paul H., 5,487,313, Cl. 73-863.710.

Microsonic, Inc.: *See*—
Major, Miklos, 5,488,205, Cl. 181-129.000.

Mid-America Building Products Corporation: *See*—
Schedegger, Charles E.; Allen, Clyde G.; Clark, Michael C.; Nunnenberg, Andrew; and Wnuk, Jack, 5,487,701, Cl. 454-271.000.

Midani, Mowaffak T.: *See*—
Majeti, Venkata C.; Midani, Mowaffak T.; Watson, Richard J.; and Zabriskie, Kenneth A., 5,488,412, Cl. 348-10.000.

Midwest Brake Bond Company: *See*—
Sommer, Gordon M., 5,487,458, Cl. 192-18.00B.

Midwest Research Institute: *See*—
King, David E.; Czanderna, Alvin W.; and Kennedy, Cheryl E., 5,487,792, Cl. 136-256.000.

Miege, Christian: *See*—
Harsigny, Christian; Miege, Christian; Charveau, Jean-Pierre; and Alesbaha, Francoise, 5,488,442, Cl. 351-160.000.

Miele & Cie. GmbH & Co.: *See*—
Heilkuhl, Ladger; Möm, Siegfried; Pelzer, Günter; and Wesselmann, Friedhelm, 5,487,635, Cl. 414-277.000.

Mihara, Tadashi: *See*—
Taniguchi, Osamu; Inoue, Hiroshi; Mizusome, Atsushi; Mihara, Tadashi; Onitsuka, Yoshihiro; and Terada, Masahiro, 5,488,388, Cl. 345-97.000.

Miki, Masayuki; Akabori, Kingo; Kayane, Yutaka; and Washimi, Takashi, to Sumitomo Chemical Company, Limited. Monomer compounds having vinylsulfone type fiber reactive group and method for dyeing or printing fiber materials using the same. 5,488,098, Cl. 534-605.000.

Milani, Pablo, to California Amplifier. Encryption/decryption process and apparatus for a multichannel television system. 5,488,659, Cl. 380-15.000.

Mill Hill Factory, Inc.: *See*—
Oyen, Margaret A.; and Baldwin, Linda, 5,487,668, Cl. 434-98.000.

Millard, Michael L.: *See*—
Szweda, Andrew; Millard, Michael L.; and Harrison, Michael G., 5,488,017, Cl. 501-95.000.

Miller, Allen, to Gould Electronics, Ltd. High speed sampling apparatus and method for calibrating the same. 5,488,369, Cl. 341-122.000.

Miller, Donna R.; and Miller, Kenneth B. Decorative light-supporting apparatus for holding connected strings of lights. 5,488,549, Cl. 362-252.000.

Miller, Frederick H. Compact sleeping unit. 5,487,240, Cl. 52-33.000.

Miller, James P.: *See*—
Gustiva, Alfonso C.; Schwenk, David M.; and Miller, James P., 5,487,311, Cl. 73-861.770.

Miller, J. Clayton; Harvey, Michael; Taylor, James L.; Clark, Thomas; and Dawson, Gerry, to C & M Technology, Inc. High security lock mechanism. 5,487,290, Cl. 70-303.00A.

Miller, Kenneth B.: *See*—
Miller, Donna R.; and Miller, Kenneth B., 5,488,549, Cl. 362-252.000.

Miller, Mitchell E.; Ferry, Julian J.; Kilbey, Brian E.; Coolbear, Bruce S.; and Gandy, Richard F., to Whitaker Corporation, The. Shielded data connector. 5,487,682, Cl. 439-607.000.

Miller, Phillip C.; Druyor, Roberta L.; and Martel, Ralph R., to Ventana Medical Systems, Inc. Biotin/avidin formulation. 5,487,975, Cl. 435-7.500.

Millipore Corporation: *See*—
Zeller, Robert S., 5,487,771, Cl. 55-523.000.

Mills, Randall D.: *See*—
Radons, Stephen W.; King, Steven L.; Mills, Randall D.; and Cristobal, Cliff, 5,487,751, Cl. 607-1.000.

Min, Byung-Hyuk: *See*—
Han, Min-Ku; and Min, Byung-Hyuk, 5,488,005, Cl. 437-41.000.

Min, Suk-ki; and Kim, Yong T., to Korea Institute of Science and Technology. Method for depositing tungsten nitride thin films for formation of metal wirings of silicon semiconductor elements. 5,487,923, Cl. 427-569.000.

Minden, Monica L., to Hughes Aircraft Company. Passively mode locked-laser and method for generating a pseudo random optical pulse train. 5,488,620, Cl. 372-18.000.

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Dunshee, Wayne K., 5,487,932, Cl. 428-68.000.
Evans, Christopher M.; and Norman, Colin F. W., 5,487,951, Cl. 428-523.000.
Pall, David J.; and Guerra, Miguel A., 5,488,142, Cl. 560-227.000.
Kipke, Cary A.; and Bentsen, James G., 5,487,662, Cl. 433-37.000.
Lovejoy, Michael W., 5,487,293, Cl. 72-53.000.
Ritter, Johannes A., 5,487,780, Cl. 118-231.000.
Robertson, Paul A.; Houzego, Peter J.; Jensen, Borge R.; Creeke, Murray A.; Emerton, Neil; Hodson, Peter D.; and Baum, Eric A., 5,487,378, Cl. 128-200.160.
Vogel, Dennis R.; and Vogel, Kim M., 5,488,147, Cl. 562-113.000.

Minolta Camera Kabushiki Kaisha: *See*—
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Sawada, Kenji; Yamada, Yasushi; and Ozawa, Sei, 5,488,490, Cl. 358-487.000.

Minto, Karl D.: *See*—
Rajamani, Ravi; Minto, Karl D.; Bulkley, Benjamin E.; and Norman, Bruce G., 5,487,265, Cl. 60-39.030.

Mirabel, Pierre: *See*—
Gabelda, Carlos M.; and Mirabel, Pierre, 5,487,224, Cl. 34-266.000.

Mishima, Hidesuke; and Ikeo, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Encoder and decoder. 5,488,418, Cl. 348-398.000.

Mishima, Hidetoshi: *See*—
Ueda, Tomohiro; Iotow, Takashi; Asamura, Yoshinori; Onishi, Ken; and Mishima, Hidetoshi, 5,488,482, Cl. 358-339.000.

Mishima, Naoshi: *See*—
Tamura, Hiroshi; Fukagai, Toshio; Mishima, Naoshi; and Sasaki, Masaomi, 5,488,137, Cl. 560-141.000.

Mistry, Balwantrai; and Wallace, Raymond B., to Northern Telecom Limited. VME bus compatible backplane and shelf arrangement. 5,488,541, Cl. 361-788.000.

Mita, Yoshinobu, to Canon Kabushiki Kaisha. Color image processing apparatus. 5,488,672, Cl. 382-167.000.

Mitchell, Robert A., to Litton Systems, Inc. Simplified dispersion equalization field coil design for a multioscillator ring laser gyroscope. 5,488,622, Cl. 372-33.000.

Mitomi, Tatsuo; Aoki, Tomohiro; Murayama, Yasushi; Uchida, Takashi; Kobayashi, Tohru; Ikkatai, Masatoshi; and Nemura, Masaharu, to Canon Kabushiki Kaisha. Belt driving apparatus and image recording apparatus using the same. 5,488,399, Cl. 347-43.000.

Mitsubishi Chemical Corporation: *See*—
Takahashi, Tadashi; Fujita, Takashi; Nakamura, Kazuo; and Tsukamoto, Seiichi, 5,488,022, Cl. 502-115.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Harada, Shigeru; Arima, Junichi; and Fujiki, Noriaki, 5,488,014, Cl. 437-192.000.
Hayashide, Yoshio; and Tsujita, Kouichirou, 5,488,246, Cl. 257-336.000.
Ikeda, Mutsumi, 5,488,564, Cl. 364-474.160.
Kojima, Kazuaki; Kuno, Tetsuya; Sugiura, Hiroaki; and Yamada, Takashi, 5,488,429, Cl. 348-653.000.
Matsui, Mitsuru, 5,488,661, Cl. 380-29.000.
Matsuoka, Hiroshi, 5,488,253, Cl. 257-622.000.
Mishima, Hidetoshi; and Itow, Takashi, 5,488,418, Cl. 348-398.000.
Nagao, Masashi, 5,487,272, Cl. 62-6.000.
Sakurai, Mikio, 5,488,247, Cl. 257-368.000.
Shimizu, Masahiro; Shirahata, Masayoshi; Kinoi, Takashi; and Yamaguchi, Takehisa, 5,488,245, Cl. 257-316.000.
Shirota, Shozo, 5,488,006, Cl. 437-43.000.
Takemura, Taketoshi; Sakuwa, Makoto; and Watanuki, Haruo, 5,488,263, Cl. 313-402.000.
Takita, Hidenori; and Hirakawa, Tatsuhiro, 5,488,270, Cl. 315-370.000.
Ueda, Tomohiro; Iotow, Takashi; Asamura, Yoshinori; Onishi, Ken; and Mishima, Hidetoshi, 5,488,482, Cl. 358-339.000.
Yamada, Akira, 5,488,578, Cl. 365-49.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Kawakami, Yoshinaka; Takigawa, Yoshiharu; Isomura, Arihiro; Kamiya, Kouichi; and Hamatani, Katsumori, 5,488,353, Cl. 340-576.000.

Mitsubishi Materials Corporation: *See*—
Kasutani, Hiroshi; Koyama, Takao; Hashimoto, Kouji; and Adachi, Yutaka, 5,487,627, Cl. 408-145.000.

Mitsubishi Plastics, Inc.: *See*—
Kakishita, Osamu; Nishioka, Jun; Fujita, Takeshi; and Matsuo, Katsuaki, 5,487,947, Cl. 428-424.400.

Mitsumata, Tadayasu: *See*—
Shigetoh, Nobuyuki; Miyazaki, Jipsei; Nakayama, Hiroshi; Yugawa, Keiko; and Mitsumata, Tadayasu, 5,488,114, Cl. 548-510.000.

Mitsunori, Hiromi; and Sadayori, Toshio, to Kawasaki Steel Corporation. Method of producing crystal bodies having controlled crystalline orientation. 5,487,794, Cl. 148-111.000.

Mitsuya, Morihiro: *See*—
Nomoto, Takashi; Hayashi, Masahiro; Shibata, Jun; Iwasawa, Yoshikazu; Mitsuya, Morihiro; Iida, Yoshiaki; Nonoshita, Katsumasa; and Nagata, Yasufumi, 5,488,149, Cl. 562-449.000.

Mitsuyu, Tsuneo: *See*—
Yoshii, Shigeo; Okawa, Kazuhiro; Tsujimura, Ayumi; and Mitsuyu, Tsuneo, 5,488,234, Cl. 257-94.000.

Miura, Shuuichi: *See*—
Murata, Satoru; Kawabata, Atsushi; Miura, Shuuichi; Tashiro, Korefumi; Morooka, Yasuo; Yahiro, Masakazu; Katahira, Masaki; and Kera, Kazuo, 5,487,516, Cl. 246-182.00C.

Miura, Yasuhiro: *See*—
Yokoyama, Takaaki; Sasaki, Hirotaka; Ohno, Yumiko; Nakajima, Kentaro; Miura, Yasuhiro; and Mori, Hideki, 5,487,903, Cl. 426-56.000.

Miyagawa, Ichiro, to Fuji Photo Film Co., Ltd. Image read-out and reproducing apparatus. 5,488,489, Cl. 358-474.000.

Miyake, Jiro: *See*—
Brown, Gary; and Miyake, Jiro, 5,488,573, Cl. 364-578.000.

Miyamae, Akira: *See*—
Kobayashi, Fumio; Kasuga, Ikuo; and Miyamae, Akira, 5,488,594, Cl. 369-44.140.

Miyamoto, Katsuyuki: *See*—
Ozeki, Masamichi; Takasaki, Mamoru; Miyamoto, Katsuyuki; and Tsuruda, Mitsumasa, 5,487,252, Cl. 53-212.000.

Miyano, Yuichi, to Kabushiki Kaisha Toshiba. Image data processing apparatus with adjustment of image portion paste-in position to minimize amount of compressed image data. 5,488,484, Cl. 358-433.000.

Miyata, Masanori: *See*—
Fukada, Tsisei; Miyata, Masanori; Adachi, Hideki; Nakamura, Shinichi; Ohki, Naoyuki; Kaneko, Tokuharu; Kuroyanagi, Satoshi; Ozaki, Hiroshi; Tahara, Hisatsugu; Kaneko, Satoshi; and Takizawa, Mitsuharu, 5,488,454, Cl. 355-202.000.

Miyazaki, Jipsei: *See*—
Shigetoh, Nobuyuki; Miyazaki, Jipsei; Nakayama, Hiroshi; Yugawa, Keiko; and Mitsumata, Tadayasu, 5,488,114, Cl. 548-510.000.

Miyazaki, Minoru, to Atsushi Maki. Fuel oil improvement apparatus. 5,487,370, Cl. 123-538.000.

Miyazaki, Toshihiko: *See*—
Yamano, Akihiko; Nose, Hiroyasu; Kawase, Toshimitsu; Miyazaki, Toshihiko; and Oguchi, Takahiro, 5,488,602, Cl. 369-126.000.

Mizukawa, Yuki; and Kobayashi, Hidetoshi, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,487,968, Cl. 430-544.000.

Mizuta, Akira; and Yamazaki, Fumio, to Fuji Photo Film Co., Ltd. Ultrasonic welding method and apparatus for molded resin materials. 5,487,802, Cl. 156-73.100.

Mizuta, Satoru; and Shimizu, Katsuya, to Fujitsu Limited; and Fujitsu VLSI Limited. Detection circuit for detecting a state of a control system with improved accuracy. 5,488,324, Cl. 327-77.000.

Mizutani, Hidemasa; and Kondo, Shigeki, to Canon Kabushiki Kaisha. Semiconductor device and process for producing the same. 5,488,251, Cl. 257-557.000.

Mizutani, Hideo; and Ota, Kazuya, to Nikon Corporation. Double-beam light source apparatus, position detecting apparatus and aligning apparatus. 5,488,230, Cl. 250-548.000.

Mizutani, Kazuyoshi: *See*—
Kobayashi, Fumikazu; Mizutani, Kazuyoshi; and Maemoto, Kazuo, 5,488,182, Cl. 568-660.000.

Mizutome, Atsushi: *See*—
Taniguchi, Osamu; Inoue, Hiroshi; Mizutome, Atsushi; Mihara, Tadashi; Onitsuka, Yoshihiro; and Terada, Masahiro, 5,488,388, Cl. 345-97.000.

Mkrtchyan, Main. Time and cost efficient storage facility. 5,487,636, Cl. 414-286.000.

Mobil Oil Corp.: *See*—
Beck, Jeffrey S.; and Dessau, Ralph M., 5,488,194, Cl. 585-475.000.
Bianchini, Eber C.; Knoerzer, Anthony R.; Parr, Larry A.; and Reid, Leland W., 5,487,940, Cl. 428-349.000.
Brown, Stephen H.; and Trewella, Jeffrey C., 5,488,186, Cl. 568-897.000.
Chu, Alice S.; Jackson, Andrew; and Wu, Margaret M., 5,488,191, Cl. 585-10.000.
Mackerer, Carl R.; Roy, Timothy A.; and Blackburn, Gary R., 5,488,193, Cl. 585-455.000.

Mochizuki, Noboru: *See*—
Ikegaya, Isao; and Mochizuki, Noboru, 5,487,583, Cl. 296-65.100.

Mochizuki, Seiji; Kawakami, Kazuhisa; Nakamura, Masahiro; Obshima, Keiichi; and Yoshida, Masanori, to Seiko Epson Corporation. Ink-jet recording apparatus and ink tank cartridge thereof. 5,488,401, Cl. 347-86.000.

Modak, Shanta; and Sampath, Lester, to Trustees of Columbia University In The City of New York. Antimicrobial glove comprising a rapid release matrix system for antiinfective agent delivery. 5,487,896, Cl. 424-402.000.

Moeggenborg, Kevin J.; and Reed, Peter E., to Nalco Chemical Company. Polymeric binders for enhancing green strength of pressed ceramics. 5,487,855, Cl. 264-63.000.

Moinard, Patrice; Thioux, Alain; and Mery, Jean Claude, to Bendix Europe Services Techniques. Revolving plate clamping device. 5,487,452, Cl. 188-72.700.

Mojaradi, Mohamad M.: *See*—
Werner, Alan J., Jr.; Mojaradi, Mohamad M.; Zomorrodi, Mehrdad; Buhler, Steven A.; and Vo, Tuan A., 5,488,301, Cl. 324-458.000.

Mojden, Andrew E.; and Hoinacki, Richard P., to Fleetwood Systems, Inc. Automatic tray loading, unloading and compensating system. 5,487,637, Cl. 414-786.400.

Moldauer, John G.: *See*—
Aebischer, Patrick; Goddard, Moses; Moldauer, John G.; Mulhauser, Paul J.; Rathbun, Anne M.; Samberg, Paul R.; Vasconcellos, Alfred V.; and Warner, Nicholas F., 5,487,739, Cl. 604-890.100.

Molecular Device Corporation: *See*—
Hafeman, Dean G.; and Humphries, Gillian M. K., 5,487,872, Cl. 422-102.000.

Molex Incorporated: *See*—
Marchek, Kyle J.; and McClelland, Timothy R., 5,487,471, Cl. 206-725.000.

Moliner, Carlos F. I.: *See*—
Persson, Hakan B., deceased; and Moliner, Carlos F. I., 5,488,099, Cl. 530-399.000.

Mollo, James R. Variable discharge pump with low unload to secondary. 5,487,403, Cl. 137-115.000.

Molyneaux, William F., to ABG Transportation Systems, Inc. Propulsion control system central processing unit board. 5,488,733, Cl. 395-800.000.

Monasterio, Jorge: *See*—
Marentes, Faustin T.; and Monasterio, Jorge, 5,488,467, Cl. 355-202.000.

Monnier, Kenneth J.: *See*—
Wallis, Frank S.; Houghtby, Timothy R.; Monnier, Kenneth J.; and Weatherston, Roger C., 5,487,654, Cl. 418-55.100.

Monsanto Company: *See*—
Talley, John J., 5,488,132, Cl. 560-39.000.

Montez, Karen: *See*—
Drown, David C.; and Montez, Karen, 5,487,907, Cl. 426-417.000.

Montreuil, Michel. Low amperage electronic milk level detector. 5,487,359, Cl. 119-14.170.

Monzyk, Bruce F., to Met-Tech Systems Limited. Metal extractant solution comprising N-ethyl hydroxamic acid chelants and kerosene solvent. 5,487,842, Cl. 252-60.000.

Moon, Donald D. Plant food and fertilizer applicator. 5,487,236, Cl. 47-48.500.

Mooney, Audrey J. Taco baking and serving pan. 5,487,330, Cl. 99-425.000.

Moore Business Forms, Inc.: *See*—
Russ, Timothy J.; Khatib, Khal M.; and Baker, Jay O., 5,487,915, Cl. 427-208.000.

Moran, Francis J., Jr.: *See*—
Supcoe, Robert F.; and Moran, Francis J., Jr., 5,488,076, Cl. 523-175.000.

Moran, Martin K.: *See*—
Berkowitz, Peter N.; Papadopoulos, Michael N.; Colwell, Larry W.; and Moran, Martin K., 5,488,561, Cl. 364-165.000.

Moran, Robert E.: *See*—
Coyle, Laurie; Finucane, Kevin M.; Greene, Alan P.; and Moran, Robert E., 5,487,843, Cl. 252-89.100.

Moran, Ronald S. Mulch receiving bin and method of using same. 5,487,604, Cl. 366-225.000.

More, Iain; Lewtas, Kenneth; Bland, Jacqueline D.; and Ayres, Sally J., to Exxon Chemical Patents Inc. Fuel compositions. 5,487,763, Cl. 44-393.000.

Mori, Hideki: *See*—
Yokoyama, Takaaki; Sasaki, Hirotaka; Ohno, Yumiko; Nakajima, Kentaro; Miura, Yasuhiro; and Mori, Hideki, 5,487,903, Cl. 426-56.000.

Mori, Kenichi; and Yokoyama, Shotaro, to Fuji Electric Co., Ltd. Clock signal generating device. 5,488,645, Cl. 377-20.000.

Mori, Masashi: *See*—
Takeuchi, Takashi; Saitoh, Tadashi; Matsunaga, Toshihiro; Mori, Masashi; and Fujiya, Hajime, 5,488,595, Cl. 369-54.000.

Mori, Sachio; Takechi, Shozo; and Kida, Shiro, to Shionogi & Co., Ltd. Preparation of compounds of lignan series. 5,488,134, Cl. 560-53.000.

Moriarty, Robert M.: *See*—
Knutson, Joyce C.; Bishop, Charles W.; and Moriarty, Robert M., 5,488,120, Cl. 552-653.000.

Morii, Makito: *See*—
Niwa, Takashi; Shimohara, Kenji; and Morii, Makito, 5,488,207, Cl. 200-43.040.

Morioka, Tatsuya: *See*—
Taneya, Mototaka; Kawanishi, Hidenori; Morioka, Tatsuya; and Shimonaka, Atsushi, 5,488,678, Cl. 385-14.000.

Morito, Nobuyuki: *See*—
Tobiyama, Yoichi; Kano, Chiaki; Morito, Nobuyuki; and Kimura, Hajime, 5,487,919, Cl. 427-327.000.

Morley, Stephen, to Hewlett-Packard Company. Communication system. 5,488,610, Cl. 370-82.000.

Moroni, Jonny, to AlliedSignal Europe Services Techniques. Thermal protection device. 5,487,453, Cl. 188-264.00G.

Morooka, Yasuo: *See*—
Murata, Satoru; Kawabata, Atsushi; Miura, Shuuichi; Tashiro, Korefumi; Morooka, Yasuo; Yahiro, Masakazu; Katahira, Masaki; and Kera, Kazuo, 5,487,516, Cl. 246-182.00C.

Morrissey, Michael M., to Ciba-Geigy Corporation. Amidino compounds, their manufacture and method of treatment. 5,488,160, Cl. 564-165.000.

Morrow, James G.: *See*—
Saindon, Stephen A.; Heindel, Kevin O.; and Morrow, James G., 5,489,480, Cl. 356-429.000.

Morrow, William D. Inverted kingpost crane. 5,487,478, Cl. 212-253.000.

Mörs, Siegfried: *See*—
Heilkuhl, Ladger; Mörs, Siegfried; Pelzer, Günter; and Wesselmann, Friedhelm, 5,487,635, Cl. 414-277.000.

Morton, Gerald J.: *See*—
Turtle, Howard R.; Morton, Gerald J.; and Lamtz, F. Kinley, 5,488,725, Cl. 395-600.000.

MOS Electronics, Corp.: *See*—
Chan, Alfred K., 5,488,769, Cl. 395-445.000.

Mosaner, Knud: *See*—
Koch, Robert; Mosaner, Knud; and Schleicher, Roland, 5,487,555, Cl. 280-403.000.

Moss, Gaylord E., to Hughes Aircraft Company. Holographic CHMSL including a hologram assembly and a refractive element laminarly attached thereto for diverging zero order beam. 5,488,493, Cl. 359-13.000.

Most, Elmer E., Jr.: *See*—
Aneja, Arun P.; Beusie, David G.; Collins, Robert J.; Frankfort, Hans Rudolf E.; Johnson, Stephen B.; Knox, Benjamin H.; and Most, Elmer E., Jr., 5,487,859, Cl. 264-103.000.

Motaei, Saied: *See*—
Hlinsek, Lonie; Odeacmatz, E. C.; Oswald, Richard K.; Dehlin, Donald W.; Motaei, Saied; Siggins, Paul W.; Wong, Kenny; Smith, Ronald A.; and Scheinert, Philip M., 5,488,240, Cl. 250-231.160.

Motorola, Inc.: *See*—
Aghili-Kesheh, Darioush; Zekman, Zdravko M.; and Kenoun, Robert, 5,488,335, Cl. 333-206.000.
Carvella, James S.; and Quigley, John H., 5,488,320, Cl. 327-65.000.
Chiou, Heng-Der; and Lee, Tien-Yu T., 5,487,355, Cl. 117-13.000.
Faris, Randi W.; and Heaz, Christopher, 5,488,359, Cl. 340-825.440.
Fox, Thomas M.; Anderson, Neal R.; and Heeren, Julius A., 5,488,662, Cl. 380-34.000.
Gonzalez, David R.; and Carichner, Gordon A., 5,488,688, Cl. 395-183.100.
Gutik, Andrzej T.; Smith, Todd L.; and Maschak, Jeffrey P., 5,487,674, Cl. 439-83.000.
Haas, Kevin L.; Haas, Ken A.; and Vought, Kimber J., 5,487,211, Cl. 29-25.350.
Hedayatnia, Mostafa; and Graham-Meighan, Margaret, 5,488,351, Cl. 585-807.100.
Hlushyj, Michael G.; and Lee, Whay C., 5,488,609, Cl. 370-84.000.
Kuzecki, Henry L.; and Diehl, John W., 5,488,638, Cl. 375-347.000.
Redden, James P.; Terris, David; and Olds, Keith A., 5,488,640, Cl. 375-357.000.
Risic, Ljubisa; Gesteridge, Ronald J.; Krochaeg, Wr; Calaway, Michael F.; and Dunn, William C., 5,487,305, Cl. 73-514.320.
Schellinger, Michael J., 5,488,649, Cl. 379-62.000.
Seymour, Leslie G., 5,488,559, Cl. 364-449.000.
Sharma, Umesh; Hayden, Jim; and Kirsch, Howard C., 5,488,579, Cl. 365-185.000.

Mountain Safety Research (MSR): *See*—
Pife, James F.; Vochis, Daniel J.; Laughlen, Kenneth D.; and Dienes, Nancy L., 5,487,833, Cl. 210-232.000.

Mouri, Takayuki; and Isomura, Tohru, to Ikeda Bussan Co., Ltd. Power seat slide device. 5,487,520, Cl. 248-429.000.

Mower, Kevin B.; and Beck, Robert L., to Toska Corporation. Expandable wheel assembly. 5,487,692, Cl. 446-465.000.

Moyers, John C.: *See*—
Casada, Donald A.; Haynes, Howard D.; Moyers, John C.; and Stewart, Brian K., 5,487,302, Cl. 73-168.000.

Mrowiec, David J.; and Good, Jef W., to Southstrand Corporation. System of protection for electric power distribution failures. 5,488,532, Cl. 361-63.000.

MTC Co., Ltd.: *See*—
Ohmi, Tadahiro; Yonekawa, Naomichi; Horiki, Hiroyuki; Kaji, Toshimitsu; Kunimoto, Fumitomo; and Tanaki, Takao, 5,487,398, Cl. 134-95.100.

Muchel, Franz, to Carl-Zeiss-Stiftung. Color corrected ocular. 5,488,512, Cl. 359-646.000.

Muderlak, Kenneth J.: *See*—
Cole, Josephine A.; and Muderlak, Kenneth J., 5,487,617, Cl. 402-4.000.

Mueller, Douglas L.: *See*—
Liddell, Peter A.; Mueller, Douglas L.; and Wohlers, Gary L., 5,488,294, Cl. 324-207.210.

Mueller, Roger P.; Mueller, Roy P.; Nemeth, Joe; and Schoning, Robert, to RPM Industries, Inc. Two-piece high top shoe tree. 5,487,198, Cl. 12-117.400.

Mueller, Roy P.: *See*—
Mueller, Roger P.; Mueller, Roy P.; Nemeth, Joe; and Schoning, Robert, 5,487,198, Cl. 12-117.400.

Mueller-Hagen, Gerd; Heinrich, Horst; and Meyer, Beerbel, to BASF Schwarzheide GmbH. Polyetheresterols, their preparation, and their use in polyurethanes. 5,488,074, Cl. 521-172.000.

Mulhauser, Paul J.: *See*—
Aebischer, Patrick; Goddard, Moses; Moldauer, John G.; Mulhauser, Paul J.; Rathbun, Anne M.; Samberg, Paul R.; Vasconcellos, Alfred V.; and Warner, Nicholas F., 5,487,739, Cl. 604-890.100.

Müller, Andreas; Grubisic, Vatroslav; and Fischer, Gerhard, to Fraunhofer-Gesellschaft zur Foerderung der Angewandten Forschung. Test rig and process for testing motor vehicle assemblies, in particular independent wheel suspension. 5,487,301, Cl. 73-118.100.

Müller, Klaus-Helmut: *See*—
Haas, Wilhelm; Müller, Klaus-Helmut; König, Klaus; Sastel, Hans-Joachim; Lörsch, Klaus; and Schmidt, Robert R., 5,488,028, Cl. 504-197.000.

Mulligan, Charles R.: *See*—
Jenkins, Thomas E.; Mulligan, Charles R.; and Jubenville, Donne, 5,487,239, Cl. 49-498.100.

Mullins, Atty T.: *See*—
Kaplan, Ronald M.; Shuchatowitz, Robert; and Mullins, Atty T., 5,488,719, Cl. 395-600.000.

Multifastener Corporation: *See*—
Ladouceur, Harold A., 5,487,215, Cl. 29-702.000.

Multimedia Systems Corporation: *See*—
Lewis, Scott W., 5,488,411, Cl. 348-8.000.

Mumper, Eric W.: *See*—
Dias, Donald R.; and Mumper, Eric W., 5,488,284, Cl. 320-39.000.

Munakata, Tomoo: *See*—
Ozaki, Takahiro; Munakata, Tomoo; Goto, Fumio; and Tsuchiya, Tetsuo, 5,487,837, Cl. 252-25.000.

Mundkur, Yatin G.: *See*—
Vegesna, Anantakotiraju; Avula, Jayachandra B.; Jewett, Peter H.; and Mundkur, Yatin G., 5,488,729, Cl. 395-800.000.

Muragishi, Yasushi: *See*—
Kurita, Yutaka; and Muragishi, Yasushi, 5,487,533, Cl. 267-140.500.

Murakami, Hitomi: *See*—
Takishima, Yasuhiro; Wada, Masahiro; and Murakami, Hitomi, 5,488,616, Cl. 371-30.000.

Murakami, Masami: *See*—
Ohno, Takamasa; Kato, Keietsu; Yamaguchi, Yoshiyuki; Murakami, Masami; Suzuki, Shogo; Kanda, Shoichi; and Nakagawa, Tsuyoshi, 5,487,425, Cl. 166-295.000.

Murakami, Motoichi: *See*—
Takeda, Masashi; Fukuhara, Kazuyuki; and Murakami, Motoichi, 5,487,364, Cl. 123-193.600.

Muramatsu, Meiji: *See*—
Takemoto, Takatoshi; Yoshikawa, Masayoshi; Aoyama, Moriyuki; Muramatsu, Meiji; and Kawashima, Kazunari, 5,487,696, Cl. 451-105.000.

Murata Manufacturing Co., Ltd.: *See*—
Asida, Shyoji; Takahata, Haruo; and Katsuki, Takayo, 5,488,348, Cl. 338-22.00R.
Kugo, Daisaku, 5,487,580, Cl. 294-119.100.

Murata, Satoru; Kawabata, Atsushi; Miura, Shunichi; Tashiro, Korefumi; Morooka, Yasuo; Yahiro, Masakazu; Katahira, Masaki; and Kera, Kazuo, to Hitachi, Ltd. Train control system. 5,487,516, Cl. 246-182.00C.

Murayama, Masahiro, to Canon Kabushiki Kaisha. Facsimile with user selective compression methods. 5,488,483, Cl. 358-426.000.

Murayama, Masami: *See*—
Kakuma, Satoshi; Yoshimura, Shuji; Hajikano, Kazuo; Murayama, Masami; and Okuyama, Yuzo, 5,488,606, Cl. 370-16.000.

Murayama, Yasushi: *See*—
Mitomi, Tatsuo; Aoki, Tomohiro; Murayama, Yasushi; Uchida, Takashi; Kobayashi, Tohru; Ikkatai, Masatoshi; and Nemura, Masaharu, 5,488,399, Cl. 347-43.000.

Murphy, Alan S.; and Tustin, Patricia, to International Business Machines Corporation. Data processing system. 5,488,686, Cl. 395-161.000.

Murphy, David M.: *See*—
Everman, Michael R.; Murphy, David M.; and Wachholz, James J., 5,487,791, Cl. 136-245.000.

Murphy, Michael A.: *See*—
Kenson, Jerry M.; Murphy, Michael A.; and Shuey, Kenneth C., 5,488,565, Cl. 364-483.000.

Murr, Mark: *See*—
Jackson, Thomas; and Murr, Mark, 5,488,379, Cl. 342-359.000.

Muscato, Robert: *See*—
Appolonia, Jack; Muscato, Robert; and Wittel, George, 5,487,908, Cl. 426-520.000.

Musellec, Jean-Noël: *See*—
Combot-Courran, Yves; Le Saint, Benoît; Musellec, Jean-Noël; and Le Quere, Philippe, 5,487,572, Cl. 285-308.000.

Myers, Andrew G., to California Institute of Technology. Synthesis of compounds with predetermined chirality. 5,488,131, Cl. 560-3.000.

N.E. Chemcat Corporation: *See*—
Itoh, Takashi; and Kosaki, Yukio, 5,487,268, Cl. 60-274.000.

N.V. Bekaert S.A.: *See*—
De Waegenaere, Johan; Sabbe, Luc; and Van Giel, Frans, 5,487,262, Cl. 57-58.650.

Nagahata, Takaya, to Rohm Co., Ltd. Printing element drive device having separately operating shift registers. 5,488,403, Cl. 347-211.000.

Nagai, Masahiko: *See*—
Takase, Akira; Kai, Hiroyuki; Nishida, Kuniyoshi; Shinomoto, Shoji; and Nagai, Masahiko, 5,488,159, Cl. 564-164.000.

Nagao, Masashi, to Mitsubishi Denki Kabushiki Kaisha. Cryogenic refrigerator. 5,487,272, Cl. 62-6.000.

Nagao, Mitsuhiro; Shimbayashi, Kohji; and Ishida, Yoshiyuki, to Fujitsu Limited; and Fujitsu VLSI Limited. Semiconductor memory device. 5,488,581, Cl. 365-189.050.

Nagata, Yasufumi: *See*—
Nomoto, Takashi; Hayashi, Masahiro; Shibata, Jun; Iwasawa, Yoshikazu; Mitsuya, Morihiro; Iida, Yoshiaki; Nonoshita, Katsumasa; and Nagata, Yasufumi, 5,488,149, Cl. 562-449.000.

Nagatsuma, Kazuyuki: *See*—
Yamagishi, Toshio; Nanba, Masakazu; Egami, Norifumi; Tanioka, Kenkichi; Kurashige, Mitsuhiro; Tsuji, Kazutaka; Kaneko, Yoshiyuki; Makishima, Tatsuo; Nagatsuma, Kazuyuki; Ohshima, Tetsuya; and Nakano, Yasushi, 5,488,386, Cl. 345-74.000.

Nagoya, Takatoshi: *See*—
Ohta, Yutaka; and Nagoya, Takatoshi, 5,487,358, Cl. 117-200.000.

Naito, Toshiharu: *See*—
Takahashi, Koichi; Katsoka, Hiroshi; Ichikawa, Haruo; Takatori, Tetsuya; and Naito, Toshiharu, 5,487,513, Cl. 242-348.100.

Nakada, Tsutomu, to University of California, The Regents of the. Three dimensional anisotropy contrast magnetic resonance imaging. 5,488,297, Cl. 324-309.000.

Nakagama, Kiyohari; and Nemoto, Mitsugu, to Konica Corporation. Image forming apparatus with power source control. 5,488,457, Cl. 355-203.000.

Nakagawa, Tsuyoshi: *See*—
Ohno, Takamasa; Kato, Keietsu; Yamaguchi, Yoshuyuki; Murakami, Masami; Suzuki, Shogo; Kanda, Shoichi; and Nakagawa, Tsuyoshi, 5,487,425, Cl. 166-295.000.

Nakajima, Kentaro: *See*—
Yokoyama, Takaaki; Sasaki, Hirotaka; Ohno, Yumiko; Nakajima, Kentaro; Miura, Yasuhiro; and Mori, Hideki, 5,487,903, Cl. 426-56.000.

Nakamori, Tomohiro; Hashimoto, Hiroshi; Endo, Soya; Machino, Hitoshi; and Ishizu, Masanori, to Canon Kabushiki Kaisha. Semiconductor laser device having chip-mounted heating element. 5,488,625, Cl. 372-50.000.

Nakamura, Hiroki: *See*—
Sawada, Susumu; Anan, Junichi; Nakamura, Hiroki; and Sakaya, Yoshihiro, 5,487,823, Cl. 204-298.120.

Nakamura, Hiroyuki: *See*—
Tomita, Hironori; Nakamura, Tohru; Wada, Takuya; and Nakamura, Hiroyuki, 5,488,603, Cl. 369-219.000.

Nakamura, Kazuo: *See*—
Takahashi, Tadashi; Fujita, Takashi; Nakamura, Kazuo; and Tsukamoto, Seiichi, 5,488,022, Cl. 502-115.000.

Nakamura, Masahiro: *See*—
Mochizuki, Seiji; Kawakami, Kazuhisa; Nakamura, Masahiro; Ohshima, Keiichi; and Yoshida, Masanori, 5,488,401, Cl. 347-86.000.

Nakamura, Masaru: *See*—
Tanabe, Noboru; Oyanagi, Shigeru; Baba, Shinichi; Kaminishi, Katsuji; Nakamura, Masaru; and Sekido, Kazumori, 5,488,735, Cl. 395-800.000.

Nakamura, Shinichi: *See*—
Fukada, Taisei; Miyata, Masanori; Adachi, Hideki; Nakamura, Shinichi; Ohki, Naoyuki; Kaneko, Tokuharu; Kuroyanagi, Satoshi; Ozaki, Hiroshi; Tahara, Hisatsugu; Kaneko, Satoshi; and Takizawa, Mitsuharu, 5,488,454, Cl. 355-202.000.

Nakamura, Tetsuya: *See*—
Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Nakamura, Tetsuya; Satou, Kouichirou; Okano, Yoshiaki; Fukuyama, Hirotaka; Katagata, Satoshi; Ishikawa, Takashi; Arai, Seiji; Sakai, Chinobu; and Kabei, Takahito, 5,488,462, Cl. 355-215.000.

Nakamura, Tohru: *See*—
Tomita, Hironori; Nakamura, Tohru; Wada, Takuya; and Nakamura, Hiroyuki, 5,488,603, Cl. 369-219.000.

Nakamura, Yasushi: *See*—
Makita, Shigeru; Sano, Yoshihiko; Nakamura, Yasushi; and Ota, Hiroyuki, 5,487,607, Cl. 374-158.000.

Nakanishi, John S.: *See*—
Lopata, Eugene S.; and Nakanishi, John S., 5,487,920, Cl. 427-489.000.

Nakanishi, Kaoru; Horino, Shinji; Shiono, Kiyoshi; Tanaka, Hiroshi; and Terada, Kunihiro, to Sharp Kabushiki Kaisha. Display device. 5,488,389, Cl. 345-131.000.

Nakano, Yasushi: *See*—
Yamagishi, Toshio; Nanba, Masakazu; Egami, Norifumi; Tanioka, Kenkichi; Kurashige, Mitsuhiro; Tsuji, Kazutaka; Kaneko, Yoshiyuki; Makishima, Tatsuo; Nagatsuma, Kazuyuki; Ohshima, Tetsuya; and Nakano, Yasushi, 5,488,386, Cl. 345-74.000.

Nakao, Kiyoshi: *See*—
Suzuki, Isao; Shindo, Masuo; and Nakao, Kiyoshi, 5,487,808, Cl. 156-356.000.

Nakata, Kazushi: *See*—
Yamamoto, Shigeru; Matsushita, Shigenori; Zhang, Shu huai; Nishita, Satoru; and Nakata, Kazushi, 5,487,428, Cl. 172-4.500.

Nakata, Toshinobu: *See*—
Tsunemi, Hidenari; and Nakata, Toshinobu, 5,488,144, Cl. 560-301.000.

Nakaya, Hideo: *See*—
Kondo, Tetsujiro; and Nakaya, Hideo, 5,488,618, Cl. 371-67.100.

Nakayama, Hiroshi: *See*—
Shigetoh, Nobuyuki; Miyazaki, Jipsei; Nakayama, Hiroshi; Yugawa, Keiko; and Mitsumata, Tadayasu, 5,488,114, Cl. 548-510.000.

Nakayama, Yoshifumi: *See*—
Ota, Yutaka; Iguchi, Yukinobu; and Nakayama, Yoshifumi, 5,488,264, Cl. 313-412.000.

Nalco Chemical Company: *See*—
Moeggenborg, Kevin J.; and Reed, Peter E., 5,487,855, Cl. 264-63.000.

Namco Controls Corporation: *See*—
Plott, Robert J., 5,488,307, Cl. 324-555.000.

Namisniak, Dianna; and Namisniak, Lee. Food inventory system. 5,487,276, Cl. 62-125.000.

Namisniak, Lee: *See*—
Namisniak, Dianna; and Namisniak, Lee, 5,487,276, Cl. 62-125.000.

Nanataki, Tsutomu: *See*—
Abe, Masahiro; Nanataki, Tsutomu; and Yano, Shinsuke, 5,488,019, Cl. 501-139.000.

Nanba, Masakazu: *See*—
Yamagishi, Toshio; Nanba, Masakazu; Egami, Norifumi; Tanioka, Kenkichi; Kurashige, Mitsuhiro; Tsuji, Kazutaka; Kaneko, Yoshiyuki; Makishima, Tatsuo; Nagatsuma, Kazuyuki; Ohshima, Tetsuya; and Nakano, Yasushi, 5,488,386, Cl. 345-74.000.

Napa Pipe Corporation: *See*—
Williamson, Calvin C.; and Salsman, Jeffrey S., 5,487,299, Cl. 73-12.090.

Nappa, Mario J.: *See*—
Sievert, Allen C.; and Nappa, Mario J., 5,488,189, Cl. 570-172.000.

Nathenson, Richard D.; Apt, Jerome, Jr.; Uram, Martin J.; Brumbaugh, Paul M.; Brawley, Gary H.; Hackman, Donald J.; and Christenson, Brian, to Electric Power Research Institute, Inc. Apparatus for pneumatic excavation. 5,487,229, Cl. 37-347.000.

National Blood Authority: *See*—
Bradley, Benjamin A. D. B.; Doyle, Alan; and Kumpel, Belinda M., 5,487,891, Cl. 424-142.100.

National Graphics, Inc.: *See*—
Goggins, Timothy P., 5,488,451, Cl. 355-77.000.

National Science Council: *See*—
Chia, Tsung-Shune; and Deng, Ming-Cheng, 5,487,954, Cl. 428-694.000.

National Semiconductor Corp.: *See*—
Yeung, Pak-Ho, 5,488,289, Cl. 323-312.000.

National Transcommunications Limited: *See*—
Mason, Arthur G.; and Gledhill, Jeffrey J., 5,488,632, Cl. 375-260.000.

Naudin, Bernard J.: *See*—
Bailey, Warren D.; Barker, Kenenth J.; Bellinghausen, Joan M.; Calhoun, George M.; Naudin, Bernard J.; and Suffern, Edward, 5,488,734, Cl. 395-800.000.

Nebashi, Satoshi: *See*—

Kobayashi, Michio; Hirayama, Hiroshi; and Nebashi, Satoshi, 5,488,591, Cl. 369-13.000.

NEC Corporation: *See*—
Fujimoto, Jun, 5,487,928, Cl. 428-36.400.
Harada, Hirotaka, 5,488,370, Cl. 341-161.000.
Kiuchi, Toyoo, 5,488,712, Cl. 395-431.000.
Saitou, Toniaki, 5,487,220, Cl. 30-90.600.
Shima, Tomoaki, 5,488,614, Cl. 371-22.300.
Yamazaka, Yutaka, 5,488,600, Cl. 369-116.000.

Necchi Compressori S.r.l.: *See*—
Alfano, Biagio; and Biscaldi, Edoardo, 5,487,648, Cl. 417-312.000.

Nedblake, Grifydon W.; and Garber, John, to Nedblake, Greydon W. System for producing labels from a web. 5,487,807, Cl. 156-353.000.

Nedblake, Greydon W.: *See*—
Nedblake, Grifydon W.; and Garber, John, 5,487,807, Cl. 156-353.000.

Nedderman, William H., Jr, to United States of America, Navy. Control surface for underwater vehicle. 5,487,351, Cl. 114-332.000.

Neer, Robert E.: *See*—
Scherch, Richard P.; and Neer, Robert E., 5,487,205, Cl. 15-250.310.

Negishi, Nobuyasu, to Pioneer Electronic Corporation. Magneto-optical disk having zero kerr rotation angle at room temperature. 5,488,604, Cl. 369-275.200.

Negrin, Dan, to Kelsey-Hayes Company. Method and system for controlling rear wheel anti-lock brake control on four-wheel drive vehicles braking on high mu surfaces. 5,487,596, Cl. 303-149.000.

Nelson, John. Vandalism prevention device for highway bridges. 5,487,199, Cl. 14-74.500.

Nelson, Steven M. Windshield wiper with deicer. 5,487,204, Cl. 15-250.190.

Nemeth, Joe: *See*—
Mueller, Roger P.; Mueller, Roy P.; Nemeth, Joe; and Schoning, Robert, 5,487,198, Cl. 12-117.400.

Nemoto, Mitsugu: *See*—
Nakagama, Kiyohari; and Nemoto, Mitsugu, 5,488,457, Cl. 355-203.000.

Nemura, Masaharu: *See*—
Mitomi, Tatsuo; Aoki, Tomohiro; Murayama, Yasushi; Uchida, Takashi; Kobayashi, Tohru; Ikkatai, Masatoshi; and Nemura, Masaharu, 5,488,399, Cl. 347-43.000.

Nestec S.A.: *See*—
Asikman, Lars; Leonhardt, Werner; and Svahn, Ingemar, 5,487,905, Cl. 426-297.000.
Caly, William G., 5,487,904, Cl. 426-96.000.

Nesvadba, Peter, to Ciba-Geigy Corporation. 3-(acyloxyphenyl)benzofuran-2-one stabilisers. 5,488,117, Cl. 549-302.000.

Nett, Torrance M.; and Glode, Leonard M., to Colorado State University Research Foundation. Method for sterilizing animals using hormone-toxin conjugate compounds. 5,488,036, Cl. 514-15.000.

Neturen Co., Ltd.: *See*—
Tanaka, Yoshimasa; and Tabuchi, Hisashi, 5,488,219, Cl. 219-644.000.

Neuberger, Wolfgang: *See*—
Krisvoshlykov, Sergej G.; and Neuberger, Wolfgang, 5,488,506, Cl. 359-341.000.

Neufeld, Arthur H., to Telor Opinthalmic Pharmaceuticals, Inc. Methods and products for treating presbyopia. 5,488,050, Cl. 514-236.200.

New Holland North America, Inc.: *See*—
Schott, Allan N., 5,487,318, Cl. 74-606.00R.

Newby, Charles D., to Crane Plastics Company Limited Partnership. Metal-polymer composite insulative spacer for glass members and insulative window containing same. 5,487,937, Cl. 428-317.100.

Newkirk, Marc S., to Lanxide Technology Company, LP. Method for forming metal matrix composite bodies by using a modified spontaneous infiltration process and products produced thereby. 5,487,420, Cl. 164-97.000.

Newman, G. Robert; and Reeves, Edwin H., to Harsco Corporation. Spiker with hole sensing. 5,487,341, Cl. 104-17.100.

Newville, Duane H. Flow-through washing and scrubbing brush handle. 5,487,529, Cl. 251-148.000.

NGK Insulators, Ltd.: *See*—
Abe, Masahiro; Nanataki, Tsutomu; and Yano, Shinsuke, 5,488,019, Cl. 501-139.000.

Nguyen, Frank: *See*—
Truckai, Csaba; Jaraczewski, Richard S.; Nguyen, Frank; and West, Scott H., 5,487,757, Cl. 607-122.000.

Nguyen, Kham X.: *See*—
Wendorf, Kent; Hilton, Ronald N.; Pang, Nicholas Y.; Baker, Jeffrey L.; and Nguyen, Kham X., 5,488,706, Cl. 395-375.000.

Nguyen, Michael A.; Stewart, Lowell J.; Kline, Daniel S.; Boeller, Robert A.; Ta, Choong C.; and Haselby, Robert D., to Hewlett-Packard Company. Wide-swath printer/plotter using multiple printheads. 5,488,397, Cl. 347-40.000.

NHK Spring Co., Ltd.: *See*—
Taguchi, Kohei; Ayada, Michihiko; and Shingu, Hideo, 5,487,866, Cl. 419-28.000.

Ni, Jian M. High current continuous welding device. 5,488,217, Cl. 219-137.310.

Nickerson, Brian: *See*—
Keith, Michael; Coelho, Rohan; Golia, Smart; and Nickerson, Brian, 5,488,568, Cl. 364-514.00R.

Nickolls, John R.: *See*—
McKee, Mark P.; Zapisek, John; Bulfer, David M.; Long, John M.; Nickolls, John R.; and Blank, William T., 5,488,694, Cl. 395-824.000.

Nidek Co., Ltd.: *See*—
Ota, Yasuo; Enomoto, Masanori; and Abe, Hitoshi, 5,488,443, Cl. 351-221.000.

Nieh, Simon K.; Matossian, Jesse N.; Krajenbrink, Frans G.; and Schumacher, Robert W., to Hughes Aircraft Company. Surface preparation and deposition method for titanium nitride onto carbon-containing materials. 5,487,922, Cl. 427-528.000.

Nieuwczyk, Thomas: *See*—
Allen, Fritz; and Nieuwczyk, Thomas, 5,488,567, Cl. 364-497.000.

Niethammer, Bernd, to Hydraulik-Ring Antriebs- und Steuerungstechnik GmbH. Proportional solenoid valve unit. 5,487,410, Cl. 137-625.650.

Nightingale, Kathryn: *See*—
Trahey, Gregg E.; Koruganh, Phyllis; Nightingale, Kathryn; and Walker, William F., 5,487,387, Cl. 128-660.020.

Nihon Superior Co., Ltd.: *See*—
Nishimura, Tetsuro, 5,487,868, Cl. 420-559.000.

Nikon Corporation: *See*—
Mizutani, Hideo; and Ota, Kazuya, 5,488,230, Cl. 250-548.000.

Nilsen, Thor W.; and Prensky, Wolf, to PolyProbe, Inc. Methods for detecting and assaying nucleic acid sequences. 5,487,973, Cl. 435-6.000.

Nilsson, Bo-Arne, to Björkrebo Gård AB. Arrangement for a carton. 5,487,505, Cl. 229-191.000.

Nimni, Marcel. Anti-fungal nail lacquer and method therefor. 5,487,776, Cl. 106-18.350.

Nimura, Mitsuo; Hirooka, Kazuhiko; Koh, Shokyo; and Watanabe, Masao, to Canon Kabushiki Kaisha. Image forming apparatus to form images onto a sheet a plurality of times. 5,488,463, Cl. 355-322.000.

Nippon Filcon Co., Ltd.: *See*—
Kuji, Takehiro; and Yasuoka, Tatsuhiko, 5,487,414, Cl. 139-383.00A.

Nippon Kayaku Kabushiki Kaisha: *See*—
Koshigoe, Taichi; Satoh, Hitoshi; and Yamamoto, Kenichi, 5,488,118, Cl. 549-518.000.

Nippon Sanmo Senryoku Co., Ltd.: *See*—
Gonzbuchi, Reizo, 5,487,942, Cl. 428-364.000.

Nippon Steel Corporation: *See*—
Kawamura, Koichiro, 5,488,008, Cl. 437-52.000.

Nippon Telegraph and Telephone Corporation: *See*—
Hamade, Toshiharu; Shiotani, Masaichi; Shimo, Yukio; and Higashikata, Munehiko, 5,488,304, Cl. 324-520.000.

Nippondenso Co., Ltd.: *See*—
Hatta, Hiroyoshi, 5,488,540, Cl. 361-704.000.
Iida, Hisashi; and Honjoh, Keiji, 5,487,372, Cl. 123-585.000.
Kato, Hideyuki; Sugawara, Ryoichi; Horii, Yasutoshi; and Hiramatsu, Hiroai, 5,488,545, Cl. 362-32.000.
Takazura, Kozo, 5,488,262, Cl. 313-141.000.
Tsuruta, Kazuhiro; Hirai, Hiroaki; Asai, Akiyoshi; and Fujino, Seiji, 5,488,243, Cl. 257-314.000.
Yamashita, Yukihiro; Ikuta, Kenji; and Isomura, Shigenori, 5,487,270, Cl. 60-276.000.

Nishibe, Yasushi, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Apparatus for driving and controlling motor. 5,488,276, Cl. 318-473.000.

Nishida, Kuniyoshi: *See*—
Takase, Akira; Kai, Hiroyuki; Nishida, Kuniyoshi; Shinomoto, Shoji; and Nagai, Masahiko, 5,488,159, Cl. 564-164.000.

Nishikawa, Yuji; and Onishi, Masanori, to Shinki Electric Co., Ltd. Travel control method, travel control device, and mobile robot for mobile robot systems. 5,488,277, Cl. 318-587.000.

Nishikawa, Yukie: *See*—
Ishikawa, Masayuki; Nishikawa, Yukie; Saito, Shinji; Parbrook, Peter J.; Ducourra, Masaaki; Nitta, Koichi; and Hasakubi, Genichi, 5,488,233, Cl. 257-94.000.

Nishimoto, Uichiro: *See*—
Sotoya, Kohshiro; Abe, Hiroshi; Aikawa, Jun; Taniguchi, Hideki; and Nishimoto, Uichiro, 5,488,168, Cl. 564-506.000.

Nishimura, Asao; Kitano, Makoto; and Shimizu, Ichio, to Hitachi, Ltd. Plastic-molded-type semiconductor device. 5,488,254, Cl. 257-707.000.

Nishimura, Isao: *See*—
Sakamoto, Mitsuo; Kushika, Norihide; Nishimura, Isao; Suzuki, Kazuyasu; and Ozawa, Satoshi, 5,487,534, Cl. 267-141.100.

Nishizawa, Michio: *See*—
Yamamoto, Koji; Hamafuna, Masahiro; Oomura, Fumio; and Nishizawa, Michio, 5,488,469, Cl. 356-72.000.

Nishizawa, Michiyo, to Canon Kabushiki Kaisha. Semiconductor optical amplifier having reduced polarization dependence. 5,488,507, Cl. 359-344.000.

Nishizawa, Tetsuro, to Nihon Superior Co., Ltd. Tin based solder alloy containing lead, antimony, and tellurium. 5,487,868, Cl. 420-559.000.

Nishino, Yutaka: *See*—
Nishitani, Yasuhiro; Irie, Tadashi; and Nishino, Yutaka, 5,488,107, Cl. 540-541.000.

Nishioka, Jun: *See*—
Kakishita, Osamu; Nishioka, Jun; Fujita, Takeshi; and Matsuo, Katsuaki, 5,487,947, Cl. 428-424.400.

Nishita, Satoru: *See*—
Yamamoto, Shigeru; Matsushita, Shigenori; Zhang, Shu huai; Nishita, Satoru; and Nakata, Kazushi, 5,487,428, Cl. 172-4.500.

Nishitani, Yasuhiro; Irie, Tadashi; and Nishino, Yutaka, to Shionogi Seiyaku Kabushiki Kaisha. Intermediates for pyrrolidylthiocarbapenem derivative. 5,488,107, Cl. 540-541.000.

Nissan Motor Company, Limited: *See*—
Kamioka, Hideki; Kobayashi, Kazunitsu; Shimamura, Masahiko; and Takeuchi, Kiyoshi, 5,488,311, Cl. 324-674.000.

Nissan Motor Co., Ltd.: *See—*
Matsuda, Toshiro, 5,488,557, Cl. 364-426.020.
Nisshinbo Industries, Inc.: *See—*
Imashiro, Yasuo; Horie, Naofumi; and Yamane, Takeshi, 5,488,170, Cl. 568-12.000.
Nisso Engineering Co., Ltd.: *See—*
Ohmi, Tadahiro; Yonekawa, Naomichi; Horiki, Hiroyuki; Kaji, Toshimitsu; Kunimoto, Fumitomo; and Tamaki, Takeo, 5,487,398, Cl. 134-95.100.
Nitayama, Akihiro: *See—*
Sunouchi, Kazumasa; Takato, Hiroshi; Ozaki, Tohru; Okabe, Naoko; Hieda, Katsuhiko; Horiguchi, Fumio; Nitayama, Akihiro; Yamada, Takashi; Hasimoto, Kouji; and Inoue, Satosi, 5,488,242, Cl. 257-301.000.
Nitta, Itaru; and Asai, Kuniaki, to Sumitomo Chemical Company, Limited. Process for producing highly pure carboxylic acid phenyl esters. 5,488,138, Cl. 560-144.000.
Nitta, Koichi: *See—*
Ishikawa, Masayuki; Nishikawa, Yukie; Saito, Shinji; Parbrook, Peter J.; Onomura, Masaaki; Nitta, Koichi; and Hatakoshi, Genichi, 5,488,233, Cl. 257-94.000.
Nitto Chemical Industry Co., Ltd.: *See—*
Ohno, Takamasa; Kato, Keietsu; Yamaguchi, Yoshiyuki; Murakami, Masami; Suzuki, Shogo; Kanda, Shoichi; and Nakagawa, Tsuyoshi, 5,487,425, Cl. 166-295.000.
Nivens, David E.; Chambers, James Q.; and White, David C., to United States of America, Navy. Apparatus for and method of detecting/identifying microbial contamination in ultra-pure water systems. 5,487,981, Cl. 435-30.000.
Niwa, Takashi; Shinohara, Kenji; and Morii, Makito. Key switch with a locking arrangement on a rotating element. 5,488,207, Cl. 200-43.040.
Noda, Shinya: *See—*
Tsuda, Tadayuki; Sekine, Kazumi; Ikemoto, Isao; Watanabe, Kazushi; Sasago, Yoshikazu; Shimizu, Yasushi; Noda, Shinya; and Kobayashi, Kazunori, 5,488,459, Cl. 355-211.000.
Nogami, Kazutaka: *See—*
Shiraishi, Sumako; Masuda, Masami; and Nogami, Kazutaka, 5,488,326, Cl. 327-408.000.
Nojiri, Hironobu; Yakushiji, Kazuyuki; Yoshinaga, Minoru; and Terasaka, Hiroyuki, to Toray Industries, Inc. Take-up apparatus for and package of tape type non-twisted carbon fiber bundle. 5,487,512, Cl. 242-471.000.
Nomoto, Katsuhiko: *See—*
Chida, Atsushi; Sannomiya, Hitoshio; Nomoto, Katsuhiko; Okamoto, Hiroshi; and Yamamoto, Yoshihiro, 5,487,786, Cl. 118-723.00E.
Nomoto, Takashi; Hayashi, Masahiro; Shibata, Jun; Iwasawa, Yoshikazu; Mitsuya, Morihiro; Iida, Yoshiaki; Nonoshita, Katsumasa; and Nagata, Yasufumi, to Banyu Pharmaceutical Co., Ltd. Substituted amic acid derivatives. 5,488,149, Cl. 562-449.000.
Nonoshita, Katsumasa: *See—*
Nomoto, Takashi; Hayashi, Masahiro; Shibata, Jun; Iwasawa, Yoshikazu; Mitsuya, Morihiro; Iida, Yoshiaki; Nonoshita, Katsumasa; and Nagata, Yasufumi, 5,488,149, Cl. 562-449.000.
Norand Corporation: *See—*
Danielson, Arvin D.; Schultz, Darald R.; Silva, Dennis; Boatwright, Darrell L.; Austin, Rickey G.; and Alt, Daniel E., 5,488,575, Cl. 364-707.000.
Noritsu Koki, Co.: *See—*
Tanibata, Toru, 5,488,450, Cl. 355-38.000.
Norman, Bruce G.: *See—*
Rajamani, Ravi; Minto, Karl D.; Bulkley, Benjamin E.; and Norman, Bruce G., 5,487,265, Cl. 60-39.030.
Norman, Colin F. W.: *See—*
Evans, Christopher M.; and Norman, Colin F. W., 5,487,951, Cl. 428-523.000.
Norris, Philip R., to Polaroid Corporation. Camera back adapter and method. 5,488,444, Cl. 354-83.000.
North, Bernard F.: *See—*
Dragner, Louis R.; and North, Bernard F., 5,488,139, Cl. 560-155.000.
North Carolina State University: *See—*
Baliga, B. Jayant; and Korec, Jacek, 5,488,236, Cl. 257-132.000.
Glass, Jeffrey T.; Simendinger, Denise T.; and Goeller, Peter T., 5,488,232, Cl. 257-77.000.
Yang, Peichun; Zhu, Wei; and Glass, Jeffrey T., 5,487,945, Cl. 428-408.000.
Northern Telecom Limited: *See—*
Bielby, Gregory J.; Gupta, Vishwa N.; Hodgson, Lauren C.; Lennig, Matthew; Sharp, R. Douglas; and Wasmeier, Hans A., 5,488,652, Cl. 379-88.000.
Mistry, Balwantrai; and Wallace, Raymond B., 5,488,541, Cl. 361-788.000.
Ozkan, Oguz, 5,488,641, Cl. 375-374.000.
Wu, Chi, 5,488,679, Cl. 385-15.000.
Northrop Grumman Corporation: *See—*
Bartilucci, Anthony R.; Gilchrist, George W.; and Yurman, Richard, 5,487,864, Cl. 264-219.000.
Star, Albert A.; and Carbone, Anthony T., 5,487,681, Cl. 439-581.000.
Norton, Karen J.: *See—*
Norton, Richard L.; and Norton, Karen J., 5,488,713, Cl. 395-500.000.
Norton, Paul F.; and Shaffer, James E., to Solar Turbines Incorporated. Turbine nozzle positioning system. 5,487,642, Cl. 415-209.200.
Norton, Richard L.; and Norton, Karen J., to Digital Equipment Corporation. Computer simulation technique for predicting program performance. 5,488,713, Cl. 395-500.000.
Norton, Richard L.: *See—*
Polson, Alan M.; Swanbom, Deryl D.; Dunn, Richard L.; Cox, Charles P.; Norton, Richard L.; Lowe, Bryan K.; and Peterson, Kenneth S., 5,487,897, Cl. 424-426.000.
Nose, Hiroyasu: *See—*
Yamano, Akihiko; Nose, Hiroyasu; Kawase, Toshimitsu; Miyazaki, Toshihiko; and Oguchi, Takahiro, 5,488,602, Cl. 369-126.000.
Novacek, Peter: *See—*
Broglu, Adnas; Joos, Franz; Novacek, Peter; and Senior, Peter, 5,487,659, Cl. 431-350.000.
Nowak, Michael T.: *See—*
Lewis, Thomas E.; Nowak, Michael T.; Robichaud, Kenneth T.; and Cassidy, Kenneth R., 5,487,338, Cl. 101-454.000.
Nozaki, Hideki; and Ueno, Kazumi, to Kabushiki Kaisha Toshiba. Semiconductor light-emitting element and method for manufacturing therefor. 5,488,235, Cl. 257-94.000.
NSK Ltd.: *See—*
Yabe, Toshikazu; Yamamoto, Atsuhiro; Yokouchi, Atsushi; and Esumi, Kunio, 5,487,840, Cl. 252-62.510.
Nuchols, Richard P.: *See—*
Knodel, Bryan D.; Thompson, Bennie; and Nuchols, Richard P., 5,487,500, Cl. 227-181.100.
Numao, Takaji, to Sharp Kabushiki Kaisha. Driving method for a ferroelectric liquid crystal displays having no change data pulses. 5,488,495, Cl. 359-56.000.
Nurenberg, Aundrea: *See—*
Schedegger, Charles E.; Allen, Clyde G.; Clark, Michael C.; Nurenberg, Aundrea; and Wnuk, Jack, 5,487,701, Cl. 454-271.000.
Nussbaumer, Peter; and Stutz, Anton, to Sandoz Ltd. Bis(phenyl)ethane derivatives. 5,488,135, Cl. 560-266.000.
Obermeier, Josef, to Hilti Aktiengesellschaft. Rock drill with conveying groove. 5,487,434, Cl. 175-323.000.
Obrist, Basil, to Brown AG. Apparatus for clamping a work piece in a well defined position. 5,487,539, Cl. 269-309.000.
Occam Marine Technologies Ltd.: *See—*
Pace, Dan R., 5,487,720, Cl. 494-35.000.
Oda, Zenichi; and Kani, Toshiyuki, to Makita Corporation. Jig saw. 5,487,221, Cl. 30-392.000.
Odell, Peter G., to Xerox Corporation. Processes for the preparation of developer compositions. 5,487,965, Cl. 430-137.000.
Odencrantz, K. C.: *See—*
Hlousek, Louis; Odencrantz, K. C.; Oswald, Richard K.; Dahlin, Donald W.; Motaei, Saied; Siggins, Paul W.; Wong, Kenny; Smith, Ronald A.; and Scheinert, Philip M., 5,488,240, Cl. 250-231.160.
Oehman, Alf: *See—*
Hoegnelid, Kurt; and Oehman, Alf, 5,487,758, Cl. 607-123.000.
Oelkrug, Hans: *See—*
von Ammon, Wilfried; Dornberger, Erich; Oelkrug, Hans; Gertach, Peter; and Segieth, Franz, 5,487,354, Cl. 117-13.000.
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Offen, Walter W.: *See—*
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Aoki, Masaaki; Yokotsuka, Isao; and Ogata, Yoshihiro, 5,488,266, Cl. 313-509.000.
Ogino, Kazuya; Akahori, Kingo; Harada, Naoki; Kayane, Yutaka; Kawashita, Hideo; and Ohta, Mituhiro, to Sumitomo Chemical Company, Limited. Trisazo compounds, method for dyeing fiber materials, paper or leather using the same and inks containing the same. 5,488,101, Cl. 534-680.000.
Oguchi, Takahiro: *See—*
Yamano, Akihiko; Nose, Hiroyasu; Kawase, Toshimitsu; Miyazaki, Toshihiko; and Oguchi, Takahiro, 5,488,602, Cl. 369-126.000.
Ogura, Masami: *See—*
Takanashi, Hiroshi; Ogura, Masami; and Tanimoto, Masahiro, 5,488,497, Cl. 359-74.000.
Oh, Jun W.: *See—*
Uhm, Sung J.; Han, Sung H.; Oh, Jun W.; and Joo, Oh S., 5,488,143, Cl. 560-232.000.
Oh, Young Jei; Choy, Jin-Ho; Jung, Hyung Jin; Han, Yang Su; and Song, Seung Wan. Method for preparing perpendicularly magnetizable material usable on magnetic recording media. 5,487,878, Cl. 423-140.000.
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Ohashi, Shigeo: *See—*
Sato, Kazuo; Shikida, Mitsuhiro; Ohashi, Shigeo; Hatada, Toshio; Ashiwake, Noriyuki; Tanaka, Shinji; Harada, Takeshi; and Honda, Yukio, 5,488,255, Cl. 257-718.000.
Ohgane, Takao: *See—*
Sumikawa, Michito; Koguchi, Yoshihito; Ohgane, Takao; Irie, Yasuo; and Takahashi, Satoji, 5,488,150, Cl. 562-450.000.
Ohki, Naoyuki: *See—*
Fukada, Taisei; Miyata, Masanori; Adachi, Hideki; Nakamura, Shinichi; Ohki, Naoyuki; Kaneko, Tokuharu; Kuroyanagi, Satoshi; Ozaki, Hiroshi; Tahara, Hisatsugu; Kaneko, Satoshi; and Takizawa, Mitsuharu, 5,488,454, Cl. 355-202.000.
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Ohshima, Keiichi: *See—*
Mochizuki, Seiji; Kawakami, Kazuhisa; Nakamura, Masahiro; Ohshima, Keiichi; and Yoshida, Masanori, 5,488,401, Cl. 347-86.000.
Ohshima, Tetsuya: *See—*
Yamagishi, Toshio; Nanbe, Masakazu; Egami, Norifumi; Tanioka, Kenichi; Kurashige, Mitsuhiro; Tsuji, Kazutaka; Kaneko, Yoshiyuki; Makishima, Tatsuo; Nagatsuma, Kazuyuki; Ohshima, Tetsuya; and Nakano, Yasushi, 5,488,386, Cl. 345-74.000.
Ohta, Hideo: *See—*
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Ohta, Mituhiro: *See—*
Ogino, Kazuya; Akahori, Kingo; Harada, Naoki; Kayane, Yutaka; Kawashita, Hideo; and Ohta, Mituhiro, 5,488,101, Cl. 534-680.000.
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Ohtsu, Keiji: *See—*
Uno, Yoichiro; Takeso, Fumio; Yamatoya, Kazuhiko; and Ohtsu, Keiji, 5,488,105, Cl. 536-128.000.
Ohtsubo, Toshiro: *See—*
Yamada, Masahiro; Katayama, Yasuyuki; and Ohtsubo, Toshiro, 5,488,043, Cl. 514-120.000.
Oi, Nakao; and Komatsuzaki, Hiroshi, to Fuji Photo Film Co., Ltd. Lens-fitted photographic film package and production method therefor. 5,488,445, Cl. 354-106.000.
Oikawa, Ryuetsu: *See—*
Seki, Yoshinobu; Kawaguchi, Kenichiro; Oozono, Gen; Sugiyama, Akio; and Oikawa, Ryuetsu, 5,488,345, Cl. 337-186.000.
Ojima, Masaki; Ohkubo, Masaharu; Itoh, Michio; Sasame, Hiroshi; Yamada, Hiromichi; Saito, Tetsuo; Kashihara, Atsushi; Kawana, Takashi; Mano, Hiroshi; Seto, Kaoru; and Atobe, Hiroshi, to Canon Kabushiki Kaisha. Image forming apparatus, and modulating method therein. 5,488,487, Cl. 358-456.000.
Okabe, Naoko: *See—*
Sunouchi, Kazumasa; Takato, Hiroshi; Ozaki, Tohru; Okabe, Naoko; Hieda, Katsuhiko; Horiguchi, Fumio; Nitayama, Akihiro; Yamada, Takashi; Hasimoto, Kouji; and Inoue, Satosi, 5,488,242, Cl. 257-301.000.
Okada, Hiroshi; and Shima, Hisato, to Sony Corporation. Apparatus for generating a composite video signal. 5,488,481, Cl. 358-319.000.
Okada, Keiichi: *See—*
Kawanishi, Shinya; Paruta, Kouichi; and Okada, Keiichi, 5,488,468, Cl. 356-4.010.
Okada, Masaki, to Fujitsu Limited; and Fujitsu VLSI Limited. Supply voltage generator. 5,488,327, Cl. 327-536.000.
Okamoto, Hiroshi: *See—*
Chida, Atsushi; Sannomiya, Hitoshio; Nomoto, Katsuhiko; Okamoto, Hiroshi; and Yamamoto, Yoshihiro, 5,487,786, Cl. 118-723.00E.
Okamoto, Masaya: *See—*
Umeda, Takashi; and Okamoto, Masaya, 5,488,086, Cl. 525-92.00A.
Okano, Yoshiaki: *See—*
Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Nakamura, Tetsuya; Satou, Kouichirou; Okano, Yoshiaki; Fukuyama, Hirotaka; Katagata, Satoshi; Ishikawa, Takashi; Arai, Seiji; Sakai, Chinobu; and Kabai, Takahito, 5,488,462, Cl. 355-215.000.
Okawa, Kazuhiro: *See—*
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O'Keefe, Dennis J.: *See—*
Young, Eugene F.; and O'Keefe, Dennis J., 5,487,841, Cl. 252-62.590.
Oki Telecom: *See—*
De Loe, John P., Jr., 5,488,332, Cl. 331-25.000.
Oklahoma Medical Research Foundation: *See—*
Carney, John M., 5,488,145, Cl. 562-62.000.
Okuyama, Yuzo: *See—*
Kakuma, Satoshi; Yoshimura, Shuji; Hajikano, Kazuo; Murayama, Masami; and Okuyama, Yuzo, 5,488,606, Cl. 370-16.000.
Olds, Keith A.: *See—*
Redden, James P.; Terris, David; and Olds, Keith A., 5,488,640, Cl. 375-357.000.
O'Lenick, Anthony J., Jr., to Siltech Inc. Di-guerbet esters. 5,488,121, Cl. 554-167.000.
Oleo International Holdings Limited: *See—*
Page, Ronald C.; Bushnell, John J.; and Williams, Terence D., 5,487,480, Cl. 213-43.000.
Olin Corporation: *See—*
Mason, Robert W., 5,488,187, Cl. 568-932.000.
Oliver, David C.; and Petrillo, Michael J. Rasterization of line segments using difference vectors. 5,488,698, Cl. 395-110.000.
Oliver, Stewart W., to Telegenics, Inc. Telemetry device including a dynamic off-hook detector capable of operating in a pulse-dialing environment. 5,488,654, Cl. 379-106.000.
Olmstead, Thomas A.; Gonzalez, Michael A.; Orvik, Jon A.; Pearson, Douglas L.; Ringer, James W.; Shiang, Dawn; Tai, Jimmy J.; and Wallin, Anne P., to DowElanco. 5-alkoxy[1,2,4]triazolo[1,5-c]pyrimidine-2(3H)—thione compounds and their use in the preparation of and 2-chlorosulfonyl-5-alkoxy[1,2,4]triazolo[1,5-c]-pyrimidine compounds. 5,488,109, Cl. 544-263.000.
Olsen, Mark W.; Powell, Joe R.; Tharp, Russell C.; and Walter, Stephen A., to Lennox Industries Inc. Electric heat control apparatus and method. 5,488,218, Cl. 219-492.000.
Olson, William J.: *See—*
Orrico, Mario M. V.; Olson, William J.; Zielinski, James S.; and Crippen, Randall M., 5,488,209, Cl. 200-61.700.
Olympus Optical Co., Ltd.: *See—*
Uno, Masayuki, 5,488,415, Cl. 348-241.000.
Yabe, Hiroo; Iida, Yoshihiro; Suzuki, Akira; Ito, Hideo; Tashiro, Yushio; Yamazaki, Minoru; and Tamada, Osamu, 5,487,376, Cl. 600-121.000.
Omniglow Corporation: *See—*
Ladyjensky, Jacques, 5,488,544, Cl. 362-34.000.
Omori, Kenji: *See—*
Shibatani, Takeji; Komatsubara, Saburo; Omori, Kenji; and Akatsuka, Hiroyuki, 5,487,996, Cl. 435-252.100.
Omori, Takuro: *See—*
Maeda, Hiroshi; and Omori, Takuro, 5,488,387, Cl. 345-89.000.
Omron Corporation: *See—*
Kanai, Hirokazu, 5,487,340, Cl. 101-486.000.
Makita, Shigeru; Sano, Yoshihiko; Nakamura, Yasushi; and Ota, Hiroyuki, 5,487,607, Cl. 374-158.000.
Yamamoto, Koji; Hanafusa, Masahiro; Omma, Fumio; and Nishimura, Michio, 5,488,469, Cl. 356-72.000.
Onuma, Naoki; Igarashi, Minoru; Inoue, Yoshio; and Takahashi, Masaharu, to Shin-Etsu Chemical Co., Ltd. Method for manufacturing organosilanes having silanol groups. 5,488,125, Cl. 556-463.000.
O'Neal, Clifford: *See—*
Lyon, Sue B.; O'Neal, Clifford; Van Der Lee, Hermes; and Rogers, Brian, 5,487,886, Cl. 424-65.000.
Ong, Adrian E.; Waller, William K.; and Zagar, Paul S., to Micron Technology, Inc. Memory integrated circuits having on-chip topology logic driver, and methods for testing and producing such memory integrated circuits. 5,488,583, Cl. 365-201.000.
Onishi, Hiroshi: *See—*
Takahashi, Kenichi; Takeuchi, Minoru; and Onishi, Hiroshi, 5,488,629, Cl. 375-206.000.
Onishi, Ken: *See—*
Ueda, Tomohiro; Iotow, Takashi; Asamura, Yoshinori; Onishi, Ken; and Mishima, Hidetoshi, 5,488,482, Cl. 358-339.000.
Onishi, Masanori: *See—*
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Onitsuka, Yoshihiro: *See—*
Taniguchi, Osamu; Inoue, Hiroshi; Mizutome, Atsushi; Mihara, Tadashi; Onitsuka, Yoshihiro; and Terada, Masahiro, 5,488,388, Cl. 345-97.000.
Onomura, Masaaki: *See—*
Ishikawa, Masayuki; Nishikawa, Yukie; Saito, Shinji; Parbrook, Peter J.; Onomura, Masaaki; Nitta, Koichi; and Hatakoshi, Genichi, 5,488,233, Cl. 257-94.000.
Onufry, Michael, Jr.: *See—*
Dimolitsas, Spiros; Onufry, Michael, Jr.; and Rieser, Jack H., 5,488,653, Cl. 379-100.000.
Onuma, Fumio: *See—*
Yamamoto, Koji; Hanafusa, Masahiro; Onuma, Fumio; and Nishimura, Michio, 5,488,469, Cl. 356-72.000.
Onuma, Sei: *See—*
Sawada, Kenji; Yamade, Yasushi; and Onuma, Sei, 5,488,490, Cl. 358-487.000.
Oonenoki, Toshiyuki, to Kabushiki Kaisha Komatsu Seisakusho. Bending angle detector for use in a bending machine. 5,488,470, Cl. 356-138.000.
Oorui, Satoshi: *See—*
Sakamoto, Mitsuo; Koshika, Norihide; Nishimura, Isao; Sasaki, Katsuyasu; and Oorui, Satoshi, 5,487,534, Cl. 267-141.100.
Oosawa, Hidefumi: *See—*
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Oostlander, Klaas: *See—*
Rudolph, Bernd; Dietz, Klaus J.; and Oostlander, Klaas, 5,488,267, Cl. 313-63.000.
Oozono, Gen: *See—*

Seki, Yoshinobe; Kawaguchi, Kenichiro; Oozono, Gen; Sugiyama, Akio; and Oikawa, Ryuetsu, 5,488,345, Cl. 337-186.000.
Opperthauser, Mark R.: *See*—
Bauer, Fred P.; Sanders, Stuart E.; Van Wagener, Raymond H.; and Opperthauser, Mark R., 5,488,268, Cl. 315-70.000.
Ordentlich, Erik: *See*—
Shpiro, Zeev; Groser, Gabriel F.; and Ordentlich, Erik, 5,487,671, Cl. 434-185.000.
Oriel, Patrick J.: *See*—
Chang, Hae C.; and Oriel, Patrick J., 5,487,988, Cl. 435-147.000.
Orita, Yasuhide: *See*—
Shigetaka, Hiroshi; and Orita, Yasuhide, 5,488,210, Cl. 200-344.000.
Ormat Turbines (1965) Ltd.: *See*—
Kedar, Alon; and Zimron, Ohad, 5,487,765, Cl. 55-310.000.
OroAmerica, Inc.: *See*—
Strobel, Kalman, 5,487,264, Cl. 59-80.000.
Orrico, Mario M. V.; Olson, William J.; Zielinski, James S.; and Crippen, Randall M., to Illinois Tool Works Inc. Hinge operated switch assembly. 5,488,209, Cl. 200-61.700.
Orthomerica Products, Inc.: *See*—
Schwenn, Shannon R., 5,487,724, Cl. 602-20.000.
Orvik, Jon A.: *See*—
Olmstead, Thomas A.; Gonzalez, Michael A.; Orvik, Jon A.; Pearson, Douglas L.; Ringer, James W.; Shiang, Dawn; Tai, Jimmy J.; and Wallin, Anne P., 5,488,109, Cl. 544-263.000.
Osakabe, Yoshio: *See*—
Sato, Makoto; Yamazaki, Hiroshi; Kotabe, Noriko; Osakabe, Yoshio; Kusagaya, Yasuo; Tanaka, Shigeo; Sugiyama, Kouichi; and Katsuyama, Akira, 5,488,357, Cl. 340-825.250.
Osborn, John D., to Encore Technologies, Inc. Rubber and plastic bonding. 5,488,080, Cl. 524-270.000.
Osborn, Kevin O.: *See*—
Otto, John G., III; Vanderwall, Ronald W.; Hamilton, Eugene R.; and Osborn, Kevin O., 5,487,289, Cl. 70-279.000.
Osborne, William E.; Waterman, Harold J., Jr.; and Findlay, David, to Martin Firearms Company, The. Detonator assembly. 5,487,232, Cl. 42-51.000.
Ose, Takayoshi: *See*—
Sato, Makoto; Ose, Takayoshi; and Aramaki, Satoshi, 5,487,503, Cl. 229-87.050.
Oshio, Susumu; and Igarashi, Tadayuki, to Riso Kagaku Corporation. Stencil printing device equipped with a stencil master plate ejecting device. 5,487,333, Cl. 101-116.000.
Ostroff, Gary R.: *See*—
Jamas, Spiros; Easson, D. Davidson, Jr.; and Ostroff, Gary R., 5,488,040, Cl. 514-54.000.
Ostrover, Lewis S.: *See*—
Lieberfarb, Warren N.; Cookson, Christopher J.; and Ostrover, Lewis S., 5,488,410, Cl. 348-5.500.
Oswald, Richard K.: *See*—
Hlousek, Louis; Odescrantz, K. C.; Oswald, Richard K.; Dahlin, Donald W.; Motaei, Saied; Siggins, Paul W.; Wong, Kenny; Smith, Ronald A.; and Scheinert, Philip M., 5,488,240, Cl. 250-231.160.
Ota, Hiroyuki: *See*—
Makita, Shigeru; Sano, Yoshihiko; Nakamura, Yasushi; and Ota, Hiroyuki, 5,487,607, Cl. 374-158.000.
Ota, Kazuya: *See*—
Mizutani, Hideo; and Ota, Kazuya, 5,488,230, Cl. 250-548.000.
Ota, Yasuo; Enomoto, Masanori; and Abe, Hitoshi, to Nidek Co., Ltd. Portable laser apparatus for ophthalmological operation. 5,488,443, Cl. 351-221.000.
Ota, Yutaka; Iguchi, Yukinobu; and Nakayama, Yoshifumi, to Sony Corporation. Electron gun for color cathode-ray tube. 5,488,264, Cl. 313-412.000.
Otani, Kenji: *See*—
Takada, Kunio; Otani, Kenji; Yamada, Masayuki; Maru, Saburo; Sudo, Sumio; and Tanaka, Sadashi, 5,487,621, Cl. 405-52.000.
Otis Elevator Company: *See*—
Barrett, David W.; McHugh, Thomas M.; Ahigian, Edward E.; Jaminet, Jerome F.; He, Thomas; Peruggi, Richard E.; Kowalcyk, Thomas M.; and Kulak, Richard E., 5,487,449, Cl. 187-330.000.
Hughes, David M.; and Meguerdichian, Gary, 5,487,451, Cl. 187-392.000.
Otomo, Shigeru, to Union Chemical Co., Ltd. Rust inhibitor. 5,487,846, Cl. 252-389.610.
Otsuka, Joji: *See*—
Kabuto, Katsukuni; and Otsuka, Joji, 5,487,439, Cl. 180-79.100.
Otterbein, Stefan; Knaz, Dieter; Kallenbach, Rainer; and Landesfeind, Klaus, to Robert Bosch GmbH. System for generating signals for control or regulation of a chassis controllable or regulable in its sequences of movement. 5,488,562, Cl. 364-424.050.
Otto, David C.: *See*—
Marion, Michael P.; and Otto, David C., 5,487,801, Cl. 156-64.000.
Otto, John G., III; Vanderwall, Ronald W.; Hamilton, Eugene R.; and Osborn, Kevin O., to Herman Miller, Inc. Lock assembly. 5,487,289, Cl. 70-279.000.
Oura, Kazumitsu: *See*—
Ishigaki, Eiichi; Oura, Kazumitsu; and Honda, Takaharu, 5,487,644, Cl. 415-220.000.
Owen Mumford Limited: *See*—
Marshall, Jeremy; and Crossman, David D., 5,487,748, Cl. 606-182.000.
Owens, Carl H. Hydraulic cylinder with end closure assembly. 5,487,326, Cl. 92-128.000.
Oxford Instruments Limited: *See*—
Hanley, Peter, 5,488,342, Cl. 335-306.000.
Oyanagi, Shigeru: *See*—
Tanabe, Noboru; Oyanagi, Shigeru; Baba, Shinichi; Kaminishi, Katsuji; Nakamura, Masaru; and Sekido, Kazunori, 5,488,735, Cl. 395-800.000.
Oyen, Margaret A.; and Baldwin, Linda, to Mill Hill Factory, Inc. Set of blocks for making designs. 5,487,668, Cl. 434-98.000.
Ozaki, Hiroshi: *See*—
Fukada, Thisei; Miyata, Masanori; Adachi, Hideki; Nakamura, Shinichi; Ohki, Naoyuki; Kaneko, Tokuharu; Kuroyanagi, Satoshi; Ozaki, Hiroshi; Tahara, Hisatsugu; Kaneko, Satoshi; and Takizawa, Mitsuharu, 5,488,454, Cl. 355-202.000.
Ozaki, Hiroyasu: *See*—
Kirigaya, Tadayuki; Imakyure, Kaoru; Ozaki, Hiroyasu; and Kurei, Hiroshi, 5,488,446, Cl. 354-289.100.
Ozaki, Takahiro; Munakata, Tomoo; Goto, Fumio; and Tsuchiya, Tetsuo, to Showa Shell Sekiyu K. K. Grease composition for constant velocity joint. 5,487,837, Cl. 252-25.000.
Ozaki, Tohru: *See*—
Sunouchi, Kazumasa; Takato, Hiroshi; Ozaki, Tohru; Okabe, Naoko; Hieda, Katsuhiko; Horiguchi, Fumio; Nitayama, Akihiro; Yamada, Takashi; Hasimoto, Kouji; and Inoue, Satosi, 5,488,242, Cl. 257-301.000.
Ozeki, Masamichi; Takasaki, Mamoru; Miyamoto, Katsuyuki; and Tsuruda, Mitsumasa, to Laurel Bank Machines Co., Ltd. Coin wrapping machine. 5,487,252, Cl. 53-212.000.
Ozkas, Oguz, to Northern Telecom Limited. Digital phase-locked loop circuit. 5,488,641, Cl. 375-374.000.
Pace, Dan R., to Occam Marine Technologies Ltd. Particle concentrator. 5,487,720, Cl. 494-35.000.
Paceasetter, Inc.: *See*—
Reager, Herman L., 5,488,553, Cl. 363-21.000.
Snell, Jeffery D.; Schloss, Harold C.; Mann, Brian M.; Poore, John W.; and Medlin, Roy B., 5,487,754, Cl. 607-27.000.
Snell, Jeffery D.; Schloss, Harold C.; Mann, Brian M.; Poore, John W.; and Medlin, Roy B., 5,487,755, Cl. 607-27.000.
Pack, Bok H., to Goldstar Co., Ltd. Clock-setting apparatus and method utilizing broadcasting character recognition. 5,488,426, Cl. 348-569.000.
Paganin, Maurizio: *See*—
Marchioani, Giuseppe; Guarda, Pier A.; and Paganin, Maurizio, 5,488,181, Cl. 568-615.000.
Page, Ronald C.; Bushnell, John J.; and Williams, Terence D., to Oleo International Holdings Limited. Hydro-pneumatic cushioning device. 5,487,480, Cl. 213-43.000.
Paice, Mark E. R.: *See*—
Kettlewell, Peter J.; Paice, Mark E. R.; Whetlor, William C.; and Sparrey, Julian M., 5,487,698, Cl. 452-58.000.
Palitex Project-Company GmbH: *See*—
Scheufeld, Heinz; Lossa, Ulrich; and Steumans, Heinz, 5,487,263, Cl. 37-31.850.
Palkowitz, Alan D., to Eli Lilly and Company. Benzothiophene compounds, intermediates, compositions, and method for inhibiting resteosis. 5,488,058, Cl. 514-324.000.
Palmer, James E.; Powers, John R., III; Coleman, Patricia J.; Brewer, Gregory S.; Herman, Jeffrey A.; and Cochran, Eli, to Apple Computer, Inc. Method and apparatus for providing visual cues in a graphic user interface. 5,488,685, Cl. 395-157.000.
Palmer, Michael G.: *See*—
Marazzo, Joseph; Russo, Frank; Palmer, Michael G.; and Hartmann, Gary L., 5,487,228, Cl. 37-317.000.
Panandiker, Rajan K.: *See*—
Bjorkquist, David W.; and Panandiker, Rajan K., 5,488,157, Cl. 562-7.000.
Panek, John G.; and Gottorff, Richard L., to ITT Corporation. Unitary assembly of tubing and a pressed on, interference fit, terminating fitting. 5,487,573, Cl. 285-332.000.
Paneacu, Dorin, to EP Technologies, Inc. Systems and methods for deriving and displaying the propagation velocities of electrical events in the heart. 5,487,391, Cl. 128-699.000.
Pang, Nicholas Y.: *See*—
Wendorf, Kent; Hilton, Ronald N.; Pang, Nicholas Y.; Baker, Jeffrey L.; and Nguyen, Kham X., 5,488,706, Cl. 395-375.000.
Panol, Georg: *See*—
Snider, Michael T.; High, Kane M.; Panol, Georg; Ultman, James; Richard, Russell B.; Stene, John K.; and Russell, Garfield B., 5,487,727, Cl. 604-49.000.
Pantelleria, Joseph A.: *See*—
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Papadopoulos, Michael N.: *See*—
Berkowitz, Peter N.; Papadopoulos, Michael N.; Colwell, Larry W.; and Moran, Martin K., 5,488,561, Cl. 364-165.000.
Papathomas, Konstantinos I.: *See*—
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Papenfuhs, Theodor: *See*—
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Williamson, Calvin C.; and Salsman, Jeffrey S., 5,487,299, Cl. 73-12.090.
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Modak, Shanta; and Sampath, Lester, 5,487,896, Cl. 424-402.000.
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Cho, Nam-Sik, 5,488,259, Cl. 310-91.000.
Choi, Soon C.; and Jeon, Ki U., 5,488,436, Cl. 348-751.000.
Han, Min-Ku; and Min, Byung-Hyuk, 5,488,005, Cl. 437-41.000.
Hwang, Hamor; and Lee, Myeong-hwan, 5,488,421, Cl. 348-448.000.
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Jung, Tae-Hong, 5,488,434, Cl. 348-725.000.
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Samberg, Paul R.: *See*—
Aebischer, Patrick; Goddard, Moses; Moldawer, John G.; Mulhouser, Paul J.; Rathbun, Anne M.; Samberg, Paul R.; Vasconcellos, Alfred V.; and Warner, Nicholas F., 5,487,739, Cl. 604-890.100.
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Bauer, Fred P.; Sanders, Stuart E.; Van Wagener, Raymond H.; and Opperthauser, Mark R., 5,488,268, Cl. 315-70.000.
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Nussbaumer, Peter; and Stutz, Anton, 5,488,135, Cl. 560-266.000.
Staniek, Peter, 5,488,079, Cl. 524-116.000.
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Ljungberg, Bjorn; and Lenander, Anders, 5,487,625, Cl. 407-119.000.
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Chida, Atsushi; Sanomiya, Hitoshio; Nomoto, Katsuhiko; Okamoto, Hiroshi; and Yamamoto, Yoshihiro, 5,487,786, Cl. 118-723.00E.

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Makita, Shigeru; Sano, Yoshihiko; Nakamura, Yasushi; and Ota, Hiroyuki, 5,487,607, Cl. 374-158.000.

Sanofi: *See*—
Barbier, Alain; and Lacheretz, Frederic, 5,488,041, Cl. 514-108.000.
Baroni, Marco; Cecchi, Roberto; and Croci, Tiziano, 5,488,151, Cl. 562-452.000.

Sanofi Winthrop Inc.: *See*—
Kumar, Virendra; and Dority, John A., Jr., 5,488,055, Cl. 514-293.000.

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Sumigawa, Yukio, 5,487,688, Cl. 440-88.000.

Sansone, Arthur J.; and Braginsky, Asik, to Consair Corporation. Blender blades and system adapted for ice crushing. 5,487,511, Cl. 241-282.100.

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Santel, Hans-Joachim: *See*—
Haas, Wilhelm; Müller, Klaus-Helmut; König, Klaus; Santel, Hans-Joachim; Lürssen, Klaus; and Schmidt, Robert R., 5,488,028, Cl. 504-193.000.

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Fujimoto, Mitsuo, 5,488,704, Cl. 395-228.000.

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Takanashi, Hiroshi; Ogura, Masami; and Tanimoto, Masahiro, 5,488,497, Cl. 359-74.000.

Senzari, Martin A., to Kearfott Guidance and Navigation Corporation. Superconducting dual junction gyroscope apparatus. 5,487,304, Cl. 73-504.070.

Saraf, Anil W., to BASF Corporation. Process for the manufacture of a post-heat set dyed fabric of polyamide fibers having improved dye wash-fastness and heat stability. 5,487,856, Cl. 264-78.000.

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Tindall, David; and Sarjeant, Malcolm, 5,488,355, Cl. 340-578.000.

Sasago, Yoshikazu: *See*—
Tsuda, Tadayuki; Sekine, Kazumi; Ikemoto, Isao; Watanabe, Kazushi; Sasago, Yoshikazu; Shimizu, Yasushi; Noda, Shinya; and Kobayashi, Kazunori, 5,488,459, Cl. 355-211.000.

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Sasaki, Katsuyasu: *See*—
Sakamoto, Mitsuo; Koshika, Norihide; Nishimura, Isao; Sasaki, Katsuyasu; and Oorui, Satoshi, 5,487,534, Cl. 267-141.100.

Sasaki, Kazuo: *See*—
Endo, Sadao; Tokinaga, Yoshito; and Sasaki, Kazuo, 5,487,441, Cl. 180-181.000.

Sasaki, Masaomi: *See*—
Shimada, Tomoyuki; Sasaki, Masaomi; and Aruga, Tamotsu, 5,488,164, Cl. 564-426.000.
Tamura, Hiroshi; Fukagai, Toshio; Mishima, Naoshi; and Sasaki, Masaomi, 5,488,137, Cl. 560-141.000.

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Satake Corporation: *See*—
Satake, Satoru; Inaoshi, Tadanobu; and Ito, Takafumi, 5,487,472, Cl. 209-581.000.

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Sato, Kazuma: *See*—
Go, Shintetsu; Kashizaki, Yoshio; Suzuki, Koichi; Sato, Kazuma; and Shimada, Akira, 5,488,461, Cl. 355-211.000.

Sato, Kazuo; Shikida, Mitsuhiro; Ohashi, Shigeo; Hatada, Toshio; Ashiwake, Noriyuki; Tanaka, Shinji; Harada, Takeshi; and Honda, Yukio, to Hitachi, Ltd. Cooling device for semiconductor packages, having flexible film heat expulsion means. 5,488,255, Cl. 257-718.000.

Sato, Makoto; Ose, Takayoshi; and Aramaki, Satoshi, to Fuji Photo Film Co., Ltd. Wrapped article with tear slits. 5,487,503, Cl. 229-87.050.

Sato, Makoto; Yamazaki, Hiroshi; Kotabe, Noriko; Osakabe, Yoshio; Kasagaya, Yasuo; Tanaka, Shigeo; Sugiyama, Kouich; and Katsuyama, Akira, to Sony Corporation. Remote controlling method and system feature starting method and controlling method for audio/visual system. 5,488,357, Cl. 340-825.250.

Sato, Masatoshi; and Masuda, Noriyuki, to Advantest Corporation. Timing generator intended for semiconductor testing apparatus. 5,488,325, Cl. 327-286.000.

Sato, Osamu; Hayami, Toshihisa; Ohashi, Hideki; Izawa, Makoto; Serizawa, Tomoaki; and Uchida, Hideki, to Koito Manufacturing Co., Ltd. Color-changing lamp for vehicle. 5,488,546, Cl. 362-61.000.

Sato, Taizo; and Fujihira, Atsushi, to Fujitsu Limited. Cache memory and data processor including instruction length decoding circuitry for simultaneously decoding a plurality of variable length instructions. 5,488,710, Cl. 395-452.000.

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Tanaka, Takaaki; and Sato, Yuzuru, 5,488,499, Cl. 359-102.000.

Satoh, Hitoshi: *See*—
Koshigoe, Tuchi; Satoh, Hitoshi; and Yamamoto, Kenichi, 5,488,118, Cl. 549-518.000.

Satoh, Masafumi, to Fujitsu Limited. Method for controlling activation of disk drive motors. 5,488,274, Cl. 318-101.000.

Satoh, Shingo: *See*—
Kasahara, Shigeo; Sueoka, Kiyoshi; Takayama, Gen; Satoh, Shingo; and Houjyou, Hidemi, 5,487,417, Cl. 141-32.000.

Satou, Kouichirou: *See*—
Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Nakamura, Tetsuya; Satou, Kouichirou; Okuno, Yoshiaki; Fukuyama, Hirotaka; Katagata, Satoshi; Ishikawa, Takashi; Arai, Seiji; Sakai, Chinobu; and Kabei, Takahito, 5,488,462, Cl. 355-215.000.

Sattler, Peter: *See*—
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Saukaitis, John C., to Hoechst Celanese Corporation. 8-sulfo-3-quinoline carboxylic acid compounds. 5,488,111, Cl. 546-156.000.

Sauter, Gerald F.; and Stevens, Rick C., to Unisys Corporation. Polymer based optical connector. 5,488,682, Cl. 385-53.000.

Sauvin, Patrick: *See*—
Huignard, Jean; and Sauvin, Patrick, 5,488,630, Cl. 375-206.000.

Sawada, Kenji; Yamade, Yasushi; and Osuma, Sei, to Minolta Camera Kabushiki Kaisha. Image reading apparatus for reading images recorded on film. 5,488,490, Cl. 358-487.000.

Sawada, Susumu; Asao, Junichi; Nakamura, Hiroki; and Sakaya, Yoshihiro, to Japan Energy Corporation. Sputtering targets having life alarm function. 5,487,823, Cl. 204-298.120.

Sawada, Yoshitsugu, to Yazaki Corporation. Pin terminal. 5,487,686, Cl. 439-884.000.

Sawafuji Electric Co., Ltd.: *See*—
Kawamoto, Takao; Gezima, Makoto; and Furuse, Eiichi, 5,488,279, Cl. 318-801.000.

Sawgrass Systems, Inc., a South Carolina Corporation: *See*—
Hale, Nathan S., 5,487,614, Cl. 400-120.020.

Scanbur A/S: *See*—
Salling, Bo, 5,487,574, Cl. 292-218.000.

Scangraphic PrePress Technology GmbH: *See*—
Rubi, Horst, 5,488,406, Cl. 347-259.000.

Scaturro, John, Jr.: *See*—
Havens, Timothy J.; Tan, Yulan; and Scaturro, John, Jr., 5,488,339, Cl. 335-216.000.

Schafer, Irwin: *See*—
Eckert, Richard L.; Smith, Daniel J.; and Schafer, Irwin, 5,487,889, Cl. 424-93.100.

Schaffner, James H.; and Hammond, Mark B., to Hughes Aircraft Company. Low-power, stabilized, photonic modulator system. 5,488,503, Cl. 359-245.000.

Schakel, Eric G.: *See*—
Matthews, Kent R.; Schakel, Eric G.; and Gamboa, Ricardo R., 5,487,412, Cl. 138-149.000.

Schalk, Petrus W. H.; and Pigmans, Paulus J. M., to Berg Technology, Inc. Electrical contact pin for printed circuit board. 5,487,684, Cl. 439-715.000.

Schardt, Gunter: *See*—
Swoboda, Anton; Kubler, Edmund; Ulm, Horst; and Schardt, Gunter, 5,488,261, Cl. 310-249.000.

Schedegger, Charles E.; Allen, Clyde G.; Clark, Michael C.; Nurenberg, Aundrea; and Wnuk, Jack, to Mid-America Building Products Corporation. Plastic foundation vent. 5,487,701, Cl. 454-271.000.

Scheinert, Philip M.: *See*—
Hlousek, Louis; Odencrantz, K. C.; Oswald, Richard K.; Dahlin, Donald W.; Motaei, Saied; Siggins, Paul W.; Wong, Kenny; Smith, Ronald A.; and Scheinert, Philip M., 5,488,240, Cl. 250-231.160.

Schellinger, Michael J., to Motorola, Inc. Method for validating a communication link. 5,488,649, Cl. 379-62.000.

Scherch, Richard P.; and Neer, Robert E., to Grimes Aerospace Company. Windshield wiper blade with securing rod. 5,487,205, Cl. 15-250.310.

Scherer, Klaus: *See*—
Schollkopf, Karl-Otto; Böhm, Werner; Kellings, Gerhard; Bollerott, Michael; and Scherer, Klaus, 5,487,448, Cl. 187-247.000.

Scheuble, Bernhard: *See*—
Reiffenrath, Volker; Karmeier, Hans A.; Poetsch, Eike; Ptach, Herbert; Finkenzeller, Ulrich; Bartmann, Ekkehard; Krause, Joachim; and Scheuble, Bernhard, 5,487,845, Cl. 252-299.630.

Scheufeld, Heinz; Lossa, Ulrich; and Steumans, Heinz, to Palitex Project-Company GmbH. Device for adjusting capsule thread brakes in twisting machines, in particular two-for-one twisters. 5,487,263, Cl. 57-58.860.

Schiel, Christian, to J.M. Voith GmbH. Roll with vibration damper. 5,487,715, Cl. 492-16.000.

Schindler, Eric J. Portable golf putting cup. 5,487,545, Cl. 273-178.00R.

Schirmer, Robert M.: *See*—
Alquist, Henry E.; and Schirmer, Robert M., 5,487,267, Cl. 60-206.000.

Schleicher, Roland: *See*—
Koch, Robert; Mosaner, Knud; and Schleicher, Roland, 5,487,555, Cl. 280-401.000.

Schloss, Harold C.: *See*—
Snell, Jeffery D.; Schloss, Harold C.; Mann, Brian M.; Poore, John W.; and Medlin, Roy B., 5,487,754, Cl. 607-27.000.

Snell, Jeffery D.; Schloss, Harold C.; Mann, Brian M.; Poore, John W.; and Medlin, Roy B., 5,487,755, Cl. 607-27.000.

Schlösser, Ulrike: *See*—
Dyllick-Brenzinger, Rainer; Raulfs, Friedrich-Wilhelm; Schlösser, Ulrike; Beck, Karin H.; and Scholz, Gerhard, 5,487,770, Cl. 44-328.000.

Schlueter, Edward L., Jr.: *See*—
Sharf, Lucille M.; Lynd, Laurence J.; Smith, James F.; and Schlueter, Edward L., Jr., 5,487,707, Cl. 474-253.000.

Schlüter, Peter; and Zeuner, Lothar, to Lucas Industries Public Limited Company. Booster housing, especially for vehicle brake systems, and method of assembling such as booster housing. 5,487,327, Cl. 92-128.000.

Schmid, Rudolf: *See*—
Coreghetti, Marco; Foricher, Joseph; Heizer, Bernd; and Schmid, Rudolf, 5,488,172, Cl. 568-13.000.

Schmidt, Dominik: *See*—
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Schmidt, Robert R.: *See*—
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Schmitt, Peter J., to Meadox Medicals, Inc. Process of making self-supporting woven vascular graft. 5,487,858, Cl. 264-103.000.

Schmitter, André: *See*—
Reinehr, Dieter; Bacher, Jean-Pierre; and Schmitter, André, 5,488,112, Cl. 548-261.000.

Schneider, Fred B.; Lampson, Butler; Balkovich, Edward; and Thiel, David, to Digital Equipment Corporation. Fault tolerant computer system with shadow virtual processor. 5,488,716, Cl. 395-182.080.

Schneider, Michael J., to AlliedSignal Inc. Method for updating a wheel reference value by assessing proximity for the braking power curve peak. 5,487,594, Cl. 303-155.000.

Schneider, Michael J.: *See*—
Rivard, Robert M.; Schneider, Michael J.; Pattantyus, Tamas L; Towers, Kenneth S.; and Phipps, Jack R., 5,487,598, Cl. 303-166.000.

Schnoes, Heinrich K.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; and Aria, Fariba, 5,488,183, Cl. 568-828.000.

Schollkopf, Karl-Otto; Böhm, Werner; Kellings, Gerhard; Bollerott, Michael; and Scherer, Klaus, to Thyssen Aufzuge GmbH; and Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V. Device for monitoring a control unit. 5,487,448, Cl. 187-247.000.

Scholz, Gerhard: *See*—
Dyllick-Brenzinger, Rainer; Raulfs, Friedrich-Wilhelm; Schlösser, Ulrike; Beck, Karin H.; and Scholz, Gerhard, 5,487,770, Cl. 44-328.000.

Schoning, Robert: *See*—
Mueller, Roger P.; Mueller, Roy P.; Nemeth, Joe; and Schoning, Robert, 5,487,198, Cl. 12-117.400.

Schott, Allan N., to New Holland North America, Inc. Shift fork actuated position sensor. 5,487,318, Cl. 74-606.00R.

Schousek, Brian W.: *See*—
Wise, William D.; De Wever, Marc L.; Kumke, Dale J.; Lumpkin, Everett R.; Sale, Matthew D.; and Schousek, Brian W., 5,487,595, Cl. 303-168.000.

Schriever, Matthias P. Non-chromated oxide coating for aluminum substrates. 5,487,949, Cl. 428-472.100.

Schroff GmbH: *See*—
Mazura, Paul; and Schwenk, Hans-Martin, 5,488,543, Cl. 361-829.000.

Schuler, Wilfried: *See*—
Engelhardt, Fritz; Kühlwein, Jürgen; Schuler, Wilfried; Zerrer, Ralf; and Antwerpen, Werner, 5,488,123, Cl. 556-428.000.

Schuller International, Inc.: *See*—
Matthews, Kent R.; Schakel, Eric G.; and Gamboa, Ricardo R., 5,487,412, Cl. 138-149.000.

Schultheiss, Adrian: *See*—
Steinmann, Bettina; Schultheiss, Adrian; and Hunziker, Max, 5,487,966, Cl. 430-269.000.

Schultz, Darald R.: *See*—
Danielson, Arvin D.; Schultz, Darald R.; Silva, Dennis; Boatwright, Darrell L.; Austin, Rickey G.; and Alt, Daniel E., 5,488,575, Cl. 364-707.000.

Schulz, Gary J., to Dow Chemical Company, The. Process for comminuting cellulose ethers. 5,488,104, Cl. 536-86.000.

Schulz, Russell C.; Tagamolila, Constante P.; and Bullen, Patrick J., to UOP. Process for the reduction of phenol content in a crude organic stream recovered from a phenol stripper. 5,487,816, Cl. 203-14.000.

Schulz, Stephen C.: *See*—
Sieck, Peter A.; Hill, Russell J.; Vossen, John L.; and Schulz, Stephen C., 5,487,821, Cl. 204-192.120.

Schumacher, Robert W.: *See*—
Nieh, Simon K.; Matoesian, Jesse N.; Krajenbrink, Frans G.; and Schumacher, Robert W., 5,487,922, Cl. 427-528.000.

Schumann, Herbert: *See*—
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Schunk Kohlenstofftechnik GmbH: *See*—
Swoboda, Anton; Kubler, Edmund; Ulm, Horst; and Schardt, Gunter, 5,488,261, Cl. 310-249.000.

Schwab, Barry H.: *See*—
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Schwandtmann, Volker: *See*—
Boecich, Dieter; Pushof, Angelika; Kroner, Matthias; Hartmann, Heinrich; Baur, Richard; Kud, Alexander; and Schwandtmann, Volker, 5,488,095, Cl. 528-361.000.

Schwenk, David M.: *See*—
Gustiva, Alfonso C.; Schwenk, David M.; and Miller, James P., 5,487,311, Cl. 73-861.770.

Schwenk, Hans-Martin: *See*—
Mazura, Paul; and Schwenk, Hans-Martin, 5,488,543, Cl. 361-829.000.

Schwesn, Shannon R., to Orthomerica Products, Inc. Orthopaedic shoulder brace having adjustable pelvic and arm supports. 5,487,724, Cl. 602-20.000.

Scientific Products Corporation: *See*—
Gibbonsey, James W., Jr., 5,487,874, Cl. 422-186.030.

Scinicariello, Franco: *See*—
Eberle, Richard; Black, Darla; Scinicariello, Franco; and Hilliard, Julia, 5,487,969, Cl. 435-5.000.

Sciulli, Eugene B. Apparatus for drawing fluids into a hypodermic syringe. 5,487,738, Cl. 604-414.000.

Scott, Curtis E.; Kaliszewski, Mary Sue; and Levinson, Lionel M., to General Electric Company. Conversion of doped polycrystalline material to single crystal. 5,487,353, Cl. 117-4.000.

Seagate Technology, Inc.: *See*—
Leuthold, Hans; Jennings, David J.; Clark, Wesley R.; Klaus, Raquib; and Heine, Guenther, 5,487,608, Cl. 384-113.000.

Sealright Company, Inc.: *See*—
Smith, Ernest L.; and Pastelleria, Joseph A., 5,487,491, Cl. 222-95.000.

Seaver, Jay R.; Diel, Mark A.; and Tiscomb, Forrest, to Maxtor Corporation. Ultra-slim disk storage unit having a hydrodynamic bearing assembly which forms a stable meniscus. 5,488,523, Cl. 360-99.120.

Sebastian, Peter R.: *See*—
Lavorgna, Blaise; and Sebastian, Peter R., 5,487,710, Cl. 482-55.000.

Sechi, Giovanni M.: *See*—
Messina, Giuseppe; Sechi, Giovanni M.; and De Micheli, Silvio, 5,488,158, Cl. 564-125.000.

Sedberry, Donald C., to Max Levy Autograph, Inc. Print head and method of making same. 5,488,394, Cl. 346-141.000.

Sedgwick, Thomas O.: *See*—
Agnello, Paul D.; and Sedgwick, Thomas O., 5,487,783, Cl. 118-715.000.

Seemann, Henry R. Robotic apparatus. 5,487,440, Cl. 180-164.800.

Seewald, Gerhard. Multiple electrical outlet box with locking cover and power interrupt switch. 5,488,208, Cl. 200-43.220.

Seewaldt, Kurt, to ITW Oberflachentechnik GmbH. Electrostatic spray coating device for electrically conductive, non-combustible coating fluid. 5,487,782, Cl. 118-621.000.

Segieth, Franz: *See*—
von Ammon, Wilfried; Dornberger, Erich; Oelkrug, Hans; Gerlach, Peter; and Segieth, Franz, 5,487,354, Cl. 117-13.000.

Seidler, David: *See*—
Weiss, Stephan; and Seidler, David, 5,487,489, Cl. 222-1.000.

Seifert, Holger: *See*—
Falke, Peter; Seifert, Holger; and Heinz, Marion, 5,488,970, Cl. 521-51.000.

Seiko Epson Corporation: *See*—
Kobayashi, Michio; Hirayama, Hiroshi; and Nobeshi, Satoshi, 5,488,591, Cl. 369-13.000.
Mochizuki, Seiji; Kawakami, Kazuhisa; Nakamura, Masahiro; Otahima, Keiichi; and Yoshida, Masanori, 5,488,401, Cl. 347-86.000.
Tanaka, Takaaki; and Sato, Yuzuru, 5,488,499, Cl. 359-102.000.

Seki, Yoshinobu; Kawaguchi, Kenichiro; Oozono, Gen; Sagiyama, Akio; and Oikawa, Ryuetsu, to Yazaki Corporation. Disconnection mechanism for a dark current fuse. 5,488,345, Cl. 337-186.000.

Sekido, Kazunori: *See*—
Tanabe, Noboru; Oyanagi, Shigeru; Baba, Shinichi; Kaminishi, Katsuji; Nakamura, Masaru; and Sekido, Kazunori, 5,488,735, Cl. 395-800.000.

Sekine, Kazumi: *See*—
Tsuda, Tadayuki; Sekine, Kazumi; Ikemoto, Isao; Watanabe, Kazushi; Sasago, Yoshikazu; Shimizu, Yasushi; Noda, Shinya; and Kobayashi, Kazunori, 5,488,459, Cl. 355-211.000.

Selsing, Jorgen; and Thompson, Mac A., to G & W Electric Company. Electrical-stress-controlled solid dielectric cable termination assembly. 5,488,199, Cl. 174-73.100.

Semiconductor Energy Laboratory Co., Ltd.: *See*—
Zhang, Hongyong; and Terasoto, Satoshi, 5,488,000, Cl. 437-21.000.

Senge, George H.: *See*—
Frankot, Robert T.; Hudson, Ralph E.; and Senge, George H., 5,488,374, Cl. 342-25.000.

Senior, Peter: *See*—
Eroglu, Adnan; Joos, Franz; Novacek, Peter; and Senior, Peter, 5,487,659, Cl. 431-350.000.

Seppä, Heikki, to Valtion Teknillinen Tutkimuskeskus. Method and apparatus for cancelling noise of a low-noise sensor. 5,488,295, Cl. 324-248.000.

Sequa Chemicals, Inc.: *See*—
Dragner, Louis R.; and North, Bernard F., 5,488,139, Cl. 560-155.000.

Sercomp Corporation: *See*—
Hayao, Sakae, 5,487,615, Cl. 400-207.000.

Serizawa, Tomoaki: *See*—

Sato, Osamu; Hayami, Toshihisa; Ohashi, Hideki; Izawa, Makoto; Serizawa, Tomoaki; and Uchida, Hideki, 5,488,546, Cl. 362-61.000.
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Carman, Margaret L.; Jackson, Kenneth J.; Knapp, Richard B.; Knezovich, John P.; Shah, Nilesh N.; and Taylor, Robert T., 5,487,834, Cl. 210-606.000.
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Sharf, Lucille M.; Lynd, Laurence J.; Smith, James F.; and Schlueter, Edward L., Jr., to Xerox Corporation. Puzzle cut seamed belt with bonding between adjacent surfaces by UV cured adhesive. 5,487,707, Cl. 474-253.000.
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Fukumoto, Katsumi, 5,488,587, Cl. 365-222.000.
Inui, Kenichi, 5,488,720, Cl. 395-600.000.
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Numao, Takaji, 5,488,495, Cl. 359-56.000.
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Sheppard, Sherman H., to Surry Chemicals, Inc. Prescour bleaching tunnel. 5,487,283, Cl. 68-27.000.
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Shikata, Hiroyuki: *See*—
Wakabayashi, Naoto; Tsuchiko, Masayoshi; Akama, Terufumi; Maekawa, Hiromi; Shikata, Hiroyuki; Yamazaki, Nobuo; and Kawaguchi, Tomio, 5,487,386, Cl. 128-660.010.
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Shima, Tomoaki, to NEC Corporation. Integrated logic circuit. 5,488,614, Cl. 371-22.300.
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Shimada, Tomoyuki; Sasaki, Masaomi; and Aruga, Tamotsu, to Ricoh Company, Ltd. Electrophotographic photoconductors and tertiary amine compounds having condensed polycyclic group for use in the same. 5,488,164, Cl. 564-426.000.
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Shimizu, Nobukazu, to Kabushiki Kaisha Toshiba. Facsimile machine having received-image display function. 5,488,488, Cl. 358-468.000.
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Shin-Etsu Handotai Co., Ltd.: *See*—
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Shinki Electric Co., Ltd.: *See*—
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Shiotani, Masaichi: *See*—
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Shirishi, Sumako; Masuda, Masami; and Nogami, Kazutaka, to Kabushiki Kaisha Toshiba. Data output circuit for semiconductor integrated circuit device which prevents current flow from the output to supply voltage. 5,488,326, Cl. 327-408.000.
Shirota, Shozo, to Mitsubishi Denki Kabushiki Kaisha. One-chip microcomputer manufacturing method. 5,488,006, Cl. 437-43.000.
Shirota, Yasuhiko; Inada, Hiroshi; Yonemoto, Yoshinobu; Wakimoto, Tokuo; and Imai, Kunio, to Pioneer Electronic Corporation; and Bando Chemical Industries, Ltd. Organic electroluminescent device. 5,487,953, Cl. 428-690.000.
Shiu, Almon S.; Tung, Samuel S.; and Gastorf, Robert J., to University of Texas System, The Board of Regents of the. Tungsten eye shields for electron beam treatment. 5,487,394, Cl. 128-846.000.
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Aoki, Masashi; Yokotsuka, Isao; and Ogata, Yoshihiro, 5,488,266, Cl. 313-509.000.
Ozaki, Takahiro; Munakata, Tomoo; Goto, Fumio; and Tsuchiya, Tetsuo, 5,487,837, Cl. 252-25.000.
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Shuchatowitz, Robert: *See*—
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Shultz, Gil F., to SGS-Thomson Microelectronics, Inc. Fuel flow stabilizer. 5,487,652, Cl. 417-543.000.
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Shuman, Robert T.: *See*—
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Shutt, John R.; and Touzard, Benoit M. F., to Exxon Chemical Patents Inc. Compositions for construction materials. 5,488,078, Cl. 524-71.000.
Shuttleworth, Leslie; Weber, Helmut; and Saeva, Franklin D., to Eastman Kodak Company. Thermal dye transfer system with receiver containing an acid-generating compound. 5,488,026, Cl. 503-227.000.
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Testa, James F.; Horstmann, Jens; and Sisbpolo, Hassan, 5,488,539, Cl. 361-720.000.
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Sieck, Peter A.; Hill, Russell J.; Vossen, John L.; and Schulz, Stephen C., to BOC Group, Inc., The. Anode structure for magnetron sputtering systems. 5,487,821, Cl. 204-192.120.
Siemens Aktiengesellschaft: *See*—
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Siemens Automotive S.A.: *See*—
Atanasyan, Alain A.; and Tarroux, Francis, 5,487,269, Cl. 60-274.000.
Siemens-Elema AB: *See*—
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Banjanin, Zoran B.; and Kim, Jin, 5,487,389, Cl. 128-661.090.
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Sienon Company, The: *See*—
Carlson, Robert C., Jr., 5,487,683, Cl. 439-718.000.
Sievert, Allen C.; and Nappa, Mario J., to Du Pont de Nemours, E. I., and Company. Process for fluorinated propanes and pentanes. 5,488,189, Cl. 570-172.000.
Siggins, Paul W.: *See*—
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Silagy, Howard. Buckle faceplate belt clamp. 5,487,210, Cl. 24-170.000.
Siltech Inc.: *See*—
O'Lenick, Anthony J., Jr., 5,488,121, Cl. 554-167.000.
Silva, Dennis: *See*—
Danielson, Arvin D.; Schultz, Darald R.; Silva, Dennis; Boatwright, Darrell L.; Austin, Rickey G.; and Alt, Daniel E., 5,488,575, Cl. 364-707.000.
Silvis, Paul H.; and Rightnour, Bradley R., to Restek Corporation. Connector for three or more capillary tubes. 5,487,569, Cl. 285-24.000.
Sim, Johnny O., to McGean-Rohco, Inc. Paint stripper. 5,487,789, Cl. 134-38.000.
Simendinger, Denise T.: *See*—
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Simeth, Claus, to MAN Roland Druckmaschinen AG. Suspension for a device serving as a guard in front of the printing-unit cylinders of a printing machine. 5,487,336, Cl. 101-216.000.
Simmel, Thomas L.; McDarren, Robert S.; and Trucheaa, Joseph, to Link Group International. Ornament/display member. 5,487,925, Cl. 428-19.000.
Simmonds Precision Engine Systems, Inc.: *See*—
Bonavia, Howard V.; and Geislinger, Dale F., 5,488,536, Cl. 361-253.000.
Simmons, James A.: *See*—
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Simon Fraser University: *See*—
Kallesoe, Klaus; Hoffer, Joaquín A.; Strange, Kevin; and Valenzuela, Ignacio, 5,487,756, Cl. 607-118.000.
Simpson, William H.: *See*—

Martin, Thomas W.; Simpson, William H.; and Hastreiter, Jacob J., Jr., 5,488,025, Cl. 503-227.000.

Simroth, Donald W.: *See*—
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Sims, John E.: *See*—
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Singh, Akhileshwar R., to Federalloy, Inc. Copper-bismuth casting alloys. 5,487,867, Cl. 420-471.000.

Singh, Baldev; Bacon, Edward R.; and Robinson, Shaughnessy, to Eastman Kodak Company. Iodinated aroyloxy ketones. 5,488,133, Cl. 424-9.450.

Singhal, Dave M.; and Li, Sidong, to Trident MicroSystems, Inc. Multiple concurrent display system. 5,488,385, Cl. 345-3.000.

Sinha, Deepen: *See*—
Johnston, James D.; and Sinha, Deepen, 5,488,665, Cl. 381-2.000.

Sinha, Rabindra K., to Calgon Corporation. Method of minimizing deposits when firing tire derived fuels. 5,487,762, Cl. 44-363.000.

Sinko, John, to Wayne Pigment Corp. Corrosion inhibiting pigment composition and method. 5,487,779, Cl. 106-480.000.

Sippican, Inc.: *See*—
Chace, Raymond A., Jr.; and Manning, Mark C., 5,487,350, Cl. 114-330.000.

Skidmore, Wendy C., to Unisys Corporation. Computer program analyzer for adapting computer programs to different architectures. 5,488,714, Cl. 395-500.000.

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Skoglund, Paul K. Flow control valve having flow adjustable by variable ring. 5,487,405, Cl. 137-501.000.

Slater, Walter C.: *See*—
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Slawson, Michael R.; and Stiscia, James J., to Alcatel Network Systems, Inc. Laser bias and modulation circuit. 5,488,621, Cl. 372-31.000.

Sloan-Kettering Institute for Cancer Research: *See*—
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Slongo, Mario: *See*—
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Sluss, James J., Jr.: *See*—
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Slutsman, Lev: *See*—
Kaplan, Marc P.; Lu, Hui-Lan; and Slutsman, Lev, 5,488,569, Cl. 364-514.00R.

Smith, Allan F., to Precision Shooting Equipment, Inc. Archery bow with laterally adjustable limb pocket. 5,487,373, Cl. 124-23.100.

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Eckert, Richard L.; Smith, Daniel J.; and Schafer, Irwin, 5,487,889, Cl. 424-93.100.

Smith, Danny E.: *See*—
Jenkins, Richard D.; Bassett, David R.; Smith, Danny E.; Argyropoulos, John N.; Loftus, James E.; and Shay, Gregory D., 5,488,180, Cl. 568-609.000.

Smith, David M.: *See*—
Witkowski, Joseph T.; Smith, David M.; and Wajer, Mark T., 5,487,879, Cl. 423-155.000.

Smith, Ernest L.; and Pantelleria, Joseph A., to Sealright Company, Inc. Cartridge dispenser with interior bag and interlocking lid. 5,487,491, Cl. 222-95.000.

Smith, George L., Jr.: *See*—
Diekhoff, Hans H.; and Smith, George L., Jr., 5,487,295, Cl. 72-379.400.

Smith, Harold C. Removable hanger. 5,487,517, Cl. 248-215.000.

Smith, James F.: *See*—
Sharf, Lucille M.; Lynd, Laurence J.; Smith, James F.; and Schlueter, Edward L., Jr., 5,487,707, Cl. 474-253.000.

Smith, James R. Surgical needle holder. 5,487,749, Cl. 606-205.000.

Smith, John A.; Lee, Fang-Jen S.; and Lin, Lee-Wen, to General Hospital Corporation, The. Glucose-regulated promoter of yeast acetyl-CoA hydrolase. 5,487,990, Cl. 435-172.300.

Smith, Lloyd: *See*—
Herrstadt, Corinna; Fernandez, Joseph M.; Smith, Lloyd; and Mead, David A., 5,487,993, Cl. 435-172.300.

Smith, Nicholas J. G.: *See*—
Ludden, Michael J.; Penneck, Richard J.; and Smith, Nicholas J. G., 5,487,852, Cl. 264-400.000.

Smith, Ronald A.: *See*—
Hlousek, Louis; Odencrantz, K. C.; Oswald, Richard K.; Dahlin, Donald W.; Motaei, Saied; Siggins, Paul W.; Wong, Kenny; Smith, Ronald A.; and Scheinert, Philip M., 5,488,240, Cl. 250-231.160.

Smith, Stephen D.: *See*—
Bisbee, Philip L; Richerson, James D.; Smith, Stephen D.; and Richardson, Eric S., 5,488,344, Cl. 336-206.000.

Smith, Steven R.; Cutler, Christopher A.; and Wallace, William D., to Clinical Innovation Associates, Inc. Uterine manipulator and manipulator tip assembly. 5,487,377, Cl. 600-204.000.

Smith, Todd L.: *See*—
Guzik, Andrzej T.; Smith, Todd L.; and Marchuk, Jeffrey P., 5,487,674, Cl. 439-83.000.

Smitherman, John P.: *See*—
McDonald, Daniel P.; and Smitherman, John P., 5,487,507, Cl. 239-391.000.

Snell, Jeffery D.; Schloss, Harold C.; Mann, Brian M.; Poore, John W.; and Medlin, Roy B., to Pacesetter, Inc. Method and apparatus for reporting and displaying a sequential series of pacing events. 5,487,754, Cl. 607-27.000.

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Snider, Michael T.; High, Kane M.; Panol, Georg; Ulman, James; Richard, Russell B.; Stene, John K.; and Russell, Garfield B., to Penn State Research Foundation, The. Method of implanting an intravascular membrane lung. 5,487,727, Cl. 604-49.000.

Sobczynski, Radoslaw: *See*—
Fateley, William G.; and Sobczynski, Radoslaw, 5,488,474, Cl. 356-326.000.

Sobel, Martin: *See*—
Demarest, David; Duncan, Robert B.; Sobel, Martin; Lenihan, Timothy P.; Rattan, William; Blanch, John F.; Hodulik, Michael G.; and Yost, Dennis P., 5,487,212, Cl. 29-407.000.

Sobotta, Rainer, to Boehringer Ingelheim KG. Process for the racemization of nosracemic 3-oxyoxylopentane- or -hexanecarboxylic acids or their esters with C_1-C_6-alcohols. 5,488,136, Cl. 560-122.000.

Societe Civile des Brevets Henri C. Vidal: *See*—
Anderson, Peter L.; Cowell, Michael J.; and Hosek, Dan J., 5,487,623, Cl. 405-286.000.

Sodeau: *See*—
Huignard, Jean; and Sauvin, Patrick, 5,488,630, Cl. 375-206.000.

Söderberg, Staffan. Bale, an apparatus and a method for the wrapping of a bale in two crossing wrapping layers applied in overlapping helical turns. 5,487,255, Cl. 53-399.000.

Soderlund, David M.; Knipple, Douglas C.; and Henderson, Joseph E., to Cornell Research Foundation, Inc. DNA encoding an insect gamma-aminobutyric acid (GABA) receptor subunit cells expressing it, and pesticide screening methods using such cells. 5,487,976, Cl. 435-7.210.

Sofamore Danek Group: *See*—
Cotrel, Yves P., 5,487,742, Cl. 606-61.000.

Sofamore, S.N.C.: *See*—
Laurain, Jean-Marie; DeWald, Ronald L.; D'Amore, Jean-François; and Deneuvillers, Guy, 5,487,743, Cl. 606-61.000.

Sokol, John C.: *See*—
Falgén, Helena; Sundström, Göran; Landfors, Johan; and Sokol, John C., 5,487,881, Cl. 423-478.000.

Solar Turbines Incorporated: *See*—
Norton, Paul F.; and Shaffer, James E., 5,487,642, Cl. 415-209.200.

Solid State Farms, Inc.: *See*—
McKinney, David K.; Fuller, Milton E.; and Carone, Berry V., 5,487,870, Cl. 422-73.000.

Somerville, Lorne R.: *See*—
Walkingshaw, M. Jay; Somerville, Lorne R.; Esdaile, Anthony R.; and Stuart, David J., 5,488,423, Cl. 348-460.000.

Sommer Company: *See*—
Sommer, Gordon M., 5,487,456, Cl. 192-18.00A.

Sommer, Gordon M., to Sommer Company. Press drive with oil shear clutch/brake drives with internal flywheel brake. 5,487,456, Cl. 192-18.00A.

Sommer, Gordon M., to Midwest Brake Bond Company. Electrically energized oil shear drive system. 5,487,458, Cl. 192-18.00B.

Sommer, Klaus: *See*—
Thurm, Siegfried; Sommer, Klaus; Bier, Peter; Elachner, Andreas; Kowitz, Manfred; and Sandquist, Axel, 5,487,810, Cl. 216-67.000.

Song, Seung Wan: *See*—
Oh, Young Jei; Choy, Jin-Ho; Jung, Hyung Jin; Han, Yang Su; and Song, Seung Wan, 5,487,878, Cl. 423-140.000.

Sonoco Products Company: *See*—
Drummond, Michael T.; Hill, Calvin G.; Lowman, Richard M., Jr.; Suski, William C.; Roberts, Rodney W.; and Lowry, James W., 5,487,506, Cl. 229-202.000.

Sony Corporation: *See*—
Ishida, Takehisa; and Takino, Hiroshi, 5,488,519, Cl. 360-77.030.
Ishimasu, Yoshikazu, 5,488,605, Cl. 369-291.000.
Kitamura, Takuya, 5,488,367, Cl. 341-106.000.
Kondo, Tetsujiro; and Nakaya, Hideo, 5,488,618, Cl. 371-67.100.
Okada, Hiroshi; and Shima, Hisato, 5,488,481, Cl. 358-319.000.
Ota, Yutaka; Iguchi, Yukinobu; and Nakayama, Yoshifumi, 5,488,264, Cl. 313-412.000.
Sato, Makoto; Yamazaki, Hiroshi; Kotabe, Noriko; Osakabe, Yoshio; Kusagaya, Yasuo; Tanaka, Shigeo; Sugiyama, Kouich; and Katsuyama, Akira, 5,488,357, Cl. 340-825.250.
Sugawara, Minoru, 5,487,963, Cl. 430-5.000.
Takemura, Taketoshi; Sakuwa, Makoto; and Watanuki, Haruo, 5,488,263, Cl. 313-402.000.
Watanabe, Tetsu; and Yamagami, Tamotsu, 5,488,590, Cl. 369-13.000.
Zampini, Michael A.; Flum, Alan; Davis, Donald E.; and Dombrowski, Joseph J., 5,488,669, Cl. 381-119.000.

Sony Electronics Inc.: *See*—
Zampini, Michael A.; Flum, Alan; Davis, Donald E.; and Dombrowski, Joseph J., 5,488,669, Cl. 381-119.000.

Sonya, Sonyapour. Method of quenching metals. 5,487,796, Cl. 148-633.000.

Sorge, Joseph A.: *See*—
McClelland, Michael; Welsh, John T.; and Sorge, Joseph A., 5,487,985, Cl. 435-91.200.

Sorrentino, Gregory; and Alli, Alim, to United States Surgical Corporation. Surgical apparatus for applying surgical fasteners including a counter. 5,487,499, Cl. 227-175.100.

Sotoya, Kohshiro; Abe, Hiroshi; Aikawa, Jun; Taniguchi, Hideki; and Nishimoto, Uichiro, to Kao Corporation. Tertiary amino alcohol and method of producing the same. 5,488,168, Cl. 564-506.000.

Southwest Foundation for Biomedical Research: *See*—
Eberle, Richard; Black, Darla; Sciuto-riello, Franco; and Hilliard, Julia, 5,487,969, Cl. 435-5.000.

Southwestern Bell Technology Resources, Inc.: *See*—
Harbin, Steven A.; and Rainer, Brian K., 5,488,737, Cl. 455-33.100.

Sovak, Milos; Terry, Ronald C.; Douglass, James G., III; and Bakir, Farid, to Biophysica, Inc. Sunblocking polymers and their formulation. 5,487,885, Cl. 424-59.000.

Spun America Medical Systems, Inc.: *See*—
Wilkinson, John W.; and Raburn, Richard W., 5,487,196, Cl. 5-453.000.

Sparrey, Julian M.: *See*—
Kettlewell, Peter J.; Paice, Mark E. R.; Whetlor, William C.; and Sparrey, Julian M., 5,487,698, Cl. 452-58.000.

Specialized Health Products, Inc.: *See*—
Thorne, Gale H.; and Thorne, David L., 5,487,734, Cl. 604-195.000.

Spectus Limited: *See*—
Tindall, David; and Sarjeant, Malcolm, 5,488,355, Cl. 340-578.000.

Speliotis, Dennis E.: *See*—
Annacone, William R.; Felis, Kenneth P.; and Speliotis, Dennis E., 5,487,931, Cl. 428-64.100.

Spencer, Lee; Kolthammer, Brian W. S.; Ripplinger, Miriam P.; Wooster, Jeffrey J.; Chum, Pak-Wing S.; and deGroot, Jacquelyn A., to Dow Chemical Company, The. Silica supported transition metal catalyst. 5,487,938, Cl. 428-332.000.

Spinelli, Julio C.: *See*—
Salo, Rodney W.; Spinelli, Julio C.; and Tockman, Bruce A., 5,487,752, Cl. 607-17.000.

Springsteen, Arthur W.; and Taylor, Jeffrey L., to Labsphere, Inc. Method of and apparatus for increasing measurement sensitivity of fluorescence and luminescence. 5,488,473, Cl. 356-317.000.

Sresty, Gugglam C.: *See*—
Bridges, Jack E.; Sresty, Gugglam C.; and Tallove, Allen, 5,487,873, Cl. 588-212.000.

Sridhar, Thirumalai, to Texas Instruments Incorporated. Scan test circuits for use with multiple frequency circuits. 5,488,613, Cl. 371-22.300.

Stadnick, Steven J.: *See*—
Hayden, Joseph H.; and Stadnick, Steven J., 5,488,282, Cl. 320-14.000.

Stafford, Robert M. Method and apparatus for uniformly tensioning fabric panels of portable buildings. 5,487,242, Cl. 52-86.000.

Stegmann, Robert; and Demmerle, Rudolf, to Grieshaber & Co. AG Schaffhausen. Opthalmic surgical apparatus for macerating and removing the lens nucleus from the eye of a living being. 5,487,747, Cl. 606-166.000.

Stanick, Peter, to Sasdoz Ltd. Polyolefin stabilization. 5,488,079, Cl. 524-116.000.

Staniszewski, Tadeusz, to Sharp, Inc. Folder for sheet paper such as letter-mail, fliers and the like. 5,487,718, Cl. 493-421.000.

Star, Albert A.; and Carbone, Anthony T., to Northrop Grumman Corporation. Pin BNC coaxial cable connector receptacle. 5,487,681, Cl. 439-581.000.

Star Technologies, Inc.: *See*—
Rich, Henry H., 5,488,687, Cl. 395-164.000.

Starkey, Daniel C.: *See*—
Drabczyk, Matthew P.; and Starkey, Daniel C., 5,487,525, Cl. 249-639.000.

Steelcase Inc.: *See*—
Hodges, Ronald R.; and Weller, George V., 5,487,246, Cl. 52-220.700.
Knoblock, Glenn A., 5,487,591, Cl. 297-452.140.

Stegmann, George: *See*—
Malik, Paul; Kosson, Robert; Vasely, Michael; and Stegmann, George, 5,488,642, Cl. 376-272.000.

Stein, Judith, to General Electric Company. Bis(bis-silylalkyl) dicarboxylates as adhesion promoters and compositions containing them. 5,487,948, Cl. 428-447.000.

Steinberg, Deborah: *See*—
Ziegler, Carl; Fabio, Paul; Bush, Karen; and Steinberg, Deborah, 5,488,106, Cl. 540-310.000.

Steinkirchner, James J., to Eastman Kodak Company. Image processing apparatus and method for eliminating background density in a designated image area. 5,488,491, Cl. 358-501.000.

Steinmann, Bettina; Schultheiss, Adrian; and Hunziker, Max, to Ciba-Geigy Corporation. Photosensitive compositions. 5,487,966, Cl. 430-269.000.

Stene, John K.: *See*—
Snider, Michael T.; High, Kane M.; Panol, Georg; Ulman, James; Richard, Russell B.; Stene, John K.; and Russell, Garfield B., 5,487,727, Cl. 604-49.000.

Stenmans, Heinz: *See*—
Scheufeld, Heinz; Lossa, Ulrich; and Stenmans, Heinz, 5,487,263, Cl. 57-58.860.

Sterling Winthrop Inc.: *See*—
Dunlap, Richard P.; Hlasta, Dennis J.; Desai, Ranjit C.; Latimer, Lee H.; Subramanyam, Chakrapani; Court, John J.; Bell, Malcolm R.; and Kumar, Virender, 5,488,052, Cl. 514-373.000.

Stevens, Michael S.: *See*—
Harwell, James S.; and Stevens, Michael S., 5,487,393, Cl. 128-760.000.

Stevens, Rick C.: *See*—
Emmer, Gerald F.; and Stevens, Rick C., 5,488,683, Cl. 385-53.000.

Stewart, Brian K.: *See*—
Casada, Donald A.; Haynes, Howard D.; Moyers, John C.; and Stewart, Brian K., 5,487,302, Cl. 73-168.000.

Stewart, Lowell J.: *See*—
Nguyen, Michael A.; Stewart, Lowell J.; Kline, Daniel S.; Boeller, Robert A.; Ta, Chuong C.; and Hanelby, Robert D., 5,488,397, Cl. 347-40.000.

Stieff, Michael T.: *See*—
McClenahan, James W.; Burns, Leigh R., Jr.; Stieff, Michael T.; and January, Daniel B., 5,488,471, Cl. 356-139.090.

Stillbäck, Ola; and Lindahl, Lars, to AB Volvo. Electrical contact nut. 5,487,625, Cl. 439-801.000.

Stiscia, James J.: *See*—
Slawson, Michael R.; and Stiscia, James J., 5,488,621, Cl. 372-31.000.

Stockton, John: *See*—
Redfield, Stephen R.; Willenbring, Gerald R.; Stockton, John; and Halter, Edward A., 5,488,494, Cl. 359-22.000.

Stoehr, Roland R.: *See*—
Brandt, Wolfram; Marquart, Bernd; and Stoehr, Roland R., 5,488,314, Cl. 324-758.000.

Stoffle, Linda M.: *See*—
Stoffle, Thomas N.; and Stoffle, Linda M., 5,487,690, Cl. 446-105.000.

Stoffle, Thomas N.; and Stoffle, Linda M. Clamps for ganking corrugated panel free standing play structures. 5,487,690, Cl. 446-105.000.

Stoll, Kurt; de Fries, Jan R.; and Köngeter, Herbert, to Festo KG. Spool valve. 5,487,409, Cl. 137-625.640.

Stoll, Steven: *See*—
Hlavka, Michael K.; and Stoll, Steven, 5,487,515, Cl. 242-383.400.

Stolp, Philip E., to Point Plastics Incorporated. Pipette tip mounting and transfer apparatus and method. 5,487,997, Cl. 436-54.000.

Strange, Kevin: *See*—
Kallesoe, Klaus; Hoffer, Joaquin A.; Strange, Kevin; and Valenzuela, Ignacio, 5,487,756, Cl. 607-118.000.

Strangways, Bradley D.; and Ritter, Dale E., to Eveready Battery Company, Inc. Sintered metal electrode. 5,487,961, Cl. 429-223.000.

Stratagene: *See*—
McClelland, Michael; Welsh, John T.; and Sorge, Joseph A., 5,487,985, Cl. 435-91.200.

Streid, Harold R.: *See*—
Lechner, Robert J.; and Streid, Harold R., 5,487,665, Cl. 434-44.000.

Strip, David R.: *See*—
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Strobel, Kalman, to OroAmerica, Inc. Hollow diamond cut rope chain. 5,487,264, Cl. 59-80.000.

Stroppolo, Federico; Bonadeo, Daniele; Tocchini, Francesco; and Garzaniga, Annibale, to Zambon Group S.p.A. Ophthalmic pharmaceutical composition containing N-acetyl-cysteine and polyvinylalcohol. 5,488,069, Cl. 514-772.400.

Strosacio, Michael A.: *See*—
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Strouth, Marvin A.: *See*—
Freerks, Randall C.; and Strouth, Marvin A., 5,488,220, Cl. 219-727.000.

Strowe, Robert J., to Gait Scan, Inc. Apparatus for supporting an arm. 5,487,395, Cl. 128-878.000.

Stuart, David J.: *See*—
Walkingshaw, M. Jay; Somerville, Lorne R.; Esdaile, Anthony R.; and Stuart, David J., 5,488,423, Cl. 348-460.000.

Stubstad, James: *See*—
McGregor, Weldon C.; Stubstad, James; and Chang, C. Paul, 5,488,034, Cl. 514-12.000.

Stull, Allen H.: *See*—
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Stutz, Anton: *See*—
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Subramanian, Ramaswamy; and Colony, James L., to Akzo Nobel N.V. Bifunctional chelating agents. 5,488,126, Cl. 558-17.000.

Subramanyam, Chakrapani: *See*—
Dunlap, Richard P.; Hlasta, Dennis J.; Desai, Ranjit C.; Latimer, Lee H.; Subramanyam, Chakrapani; Court, John J.; Bell, Malcolm R.; and Kumar, Virender, 5,488,052, Cl. 514-373.000.

Sudo, Sumio: *See*—
Takada, Kunio; Otani, Kenji; Yamada, Masayuki; Mura, Sabaro; Sudo, Sumio; and Tanaka, Sadashi, 5,487,621, Cl. 405-52.000.

Suenka, Kiyoshi: *See*—
Kanehara, Shigeo; Suenka, Kiyoshi; Takayama, Ozo; Saith, Shingo; and Hosjyou, Hidemi, 5,487,417, Cl. 141-32.000.

Suffern, Edward: *See*—
Bailey, Warren D.; Barker, Kenneth J.; Bellinghausen, Joan M.; Calhoun, George M.; Nesdin, Bernard J.; and Suffern, Edward, 5,488,734, Cl. 395-800.000.

Sugawara, Minoru, to Sony Corporation. Phase shifting mask wherein light transmitted through second transmission areas intensifies light through first transmission areas. 5,487,963, Cl. 430-5.000.

Sugawara, Ryoichi: *See*—
Kato, Hideyuki; Sugawara, Ryoichi; Horii, Yasutoshi; and Hiramatsu, Hiromi, 5,488,545, Cl. 362-32.000.

Sugimoto, Hitoshi: *See*—
Matsubara, Miyuki; Hirabayashi, Hiromitsu; Sugimoto, Hitoshi; and Takahashi, Kiichiro, 5,488,398, Cl. 347-43.000.

Sugiura, Hiroshi: *See*—
Kojima, Kazuaki; Kuno, Tetsuya; Sugiura, Hiroshi; and Yamada, Takeshi, 5,488,429, Cl. 348-653.000.

Sugiyama, Akio: *See*—
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Sugiyama, Kouich: *See*—
Sato, Makoto; Yamazaki, Hiroshi; Kotabe, Noriko; Osakabe, Yoshio; Kusagaya, Yasuo; Tanaka, Shigeo; Sugiyama, Kouich; and Katsuyama, Akira, 5,488,357, Cl. 340-825.250.

Sulek, Stanislaw; and Hussein, Hany M. G., to Energy Life Systems Corporation. Laser device for ablation of human tissue. 5,487,740, Cl. 606-15.000.

Sumigawa, Yukio, to Sanshin Kogyo Kabushika Kaisha. Outboard motor. 5,487,688, Cl. 440-88.000.

Sumikawa, Michito; Koguchi, Yoshihito; Ohgane, Takao; Irie, Yasuo; and Takahashi, Satoji, to Ajinomoto Co., Inc. Crystals of N-(trans-4-isopropylcyclohexylcarbonyl)-D-phenylalanine and methods for preparing them. 5,488,150, Cl. 562-450.000.

Sumitomo Chemical Company, Limited: *See*—
Miki, Masayuki; Akahori, Kingo; Kayane, Yutaka; and Washimi, Takeshi, 5,488,098, Cl. 534-605.000.
Nitta, Itaru; and Asai, Kuniaki, 5,488,138, Cl. 560-144.000.
Ogino, Kazuya; Akahori, Kingo; Harada, Naoki; Kayane, Yutaka; Kawashita, Hideo; and Obta, Mituhiro, 5,488,101, Cl. 534-680.000.

Sumitomo Chemical Co., Ltd.: *See*—
Yamada, Masahiro; Katayama, Yasuyuki; and Obtsubo, Toshiro, 5,488,043, Cl. 514-120.000.

Sumitomo Electric Industries, Inc.: *See*—
Tanaka, Saburo; Matsuura, Takashi; and Itozaki, Hideo, 5,488,030, Cl. 505-190.000.

Sumitomo Electric Industries, Ltd.: *See*—
Kuwata, Nobuhiro, 5,488,237, Cl. 257-194.000.

Sun, Jung-Hui, to Du Pont Merck Pharmaceutical Company, The. Highly water soluble bis-naphthalimides useful as anticancer agents. 5,488,110, Cl. 546-100.000.

Sun Microsystems, Inc.: *See*—
Testa, James F.; Hoostmans, Jens; and Sinhpolo, Hassan, 5,488,539, Cl. 361-720.000.

Sunder, Shyam: *See*—
Flynn, Gary A.; Cregge, Robert J.; Fevig, Thomas L.; Sunder, Shyam; and Shum, Patrick W., 5,488,048, Cl. 514-214.000.

Sundstrand Corporation: *See*—
Mrowiec, David J.; and Good, Jef W., 5,488,532, Cl. 361-63.000.
Rozman, Gregory I.; Markunas, Albert L.; Hanson, Michael J.; and Weber, Leland E., 5,488,286, Cl. 322-10.000.

Sundström, Göran: *See*—
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Sung, Jaamye: *See*—
Lee, Kuo-Hua; and Sung, Jaamye, 5,488,248, Cl. 257-38.200.

Sunley, John G.: *See*—
Baker, Michael J.; Dilworth, Jonathan R.; Sunley, John G.; and Wheatley, Nigel, 5,488,153, Cl. 562-519.000.

Sunouchi, Kazumasa; Takato, Hiroshi; Ozaki, Tohru; Okabe, Naoko; Hieda, Katsuhiko; Horiguchi, Fumio; Nitayama, Akihiro; Yamada, Takashi; Hasimoto, Kouji; and Inoue, Satosi, to Kabushiki Kaisha Toshiba. Semiconductor memory device. 5,488,242, Cl. 257-301.000.

Supcoe, Robert F.; and Moran, Francis J., Jr., to United States of America, Navy. Water ablative coating for drag reduction applications. 5,488,076, Cl. 523-175.000.

Superconductor Technologies Inc.: *See*—
Feazi, Neal O.; and Long, Stephen L., 5,488,382, Cl. 343-700.00R.

Surry Chemicals, Inc.: *See*—
Sheppard, Sherman H., 5,487,283, Cl. 68-27.000.

Suski, William C.: *See*—
Drummond, Michael T.; Hill, Calvin G.; Lowman, Richard M., Jr.; Suski, William C.; Roberts, Rodney W.; and Lowry, James W., 5,487,306, Cl. 229-202.000.

Sutherland, William M.: *See*—
Taylor, Ronald P.; Sutherland, William M.; Reist, Craig; Wright, Eleanor L.; Webb, Donna; and Labuguen, Ronald, 5,487,890, Cl. 424-136.100.

Sutton, Ted L.: *See*—
Mason, Charles M.; and Sutton, Ted L., 5,487,836, Cl. 210-791.000.

Suykerbuyk, Jacoba C. L. J.: *See*—
Drent, Eit; Pello, Dennis H. L.; and Suykerbuyk, Jacoba C. L. J., 5,488,174, Cl. 568-454.000.

Suzuki, Akira: *See*—
Yabe, Hisao; Iida, Yoshihiro; Suzuki, Akira; Ito, Hidoo; Tashiro, Yoshio; Yamazaki, Minoru; and Tamada, Osamu, 5,487,376, Cl. 600-121.000.

Suzuki, Isao; Shindo, Masuo; and Nakao, Kiyoshi, to Fuji Electric Co., Ltd. Apparatus for laminating plates. 5,487,808, Cl. 156-556.000.

Suzuki, Koichi: *See*—
Go, Shintarou; Kashizaki, Yoshio; Suzuki, Koichi; Sato, Kazuma; and Shimada, Akira, 5,488,461, Cl. 355-211.000.

Suzuki, Nobumasa, to Canon Kabushiki Kaisha. Microwave introducing device provided with an endless circular waveguide and plasma treating apparatus provided with said device. 5,487,875, Cl. 422-186.050.

Suzuki, Norio: *See*—
Akaishi, Tomoko; and Suzuki, Norio, 5,488,428, Cl. 348-578.000.

Suzuki, Ryuji, to Fanuc Ltd. Device for preventing cutting fluid from entering a bearing on a spindle in a machine tool. 5,487,628, Cl. 409-135.000.

Suzuki, Shogo: *See*—
Ohno, Takamasa; Kato, Keietsu; Yamaguchi, Yoshiyuki; Murakami, Masami; Suzuki, Shogo; Kanda, Shoichi; and Nakagawa, Tsuyoshi, 5,487,425, Cl. 166-295.000.

Suzuki, Yoshiyuki; and Funada, Masahiro, to Canon Kabushiki Kaisha. Color image processing method and apparatus. 5,488,670, Cl. 382-165.000.

Svahn, Ingemar: *See*—
Askmas, Lars; Leonhardt, Werner; and Svahn, Ingemar, 5,487,905, Cl. 426-297.000.

Swanbom, Deryl D.: *See*—
Polson, Alan M.; Swanbom, Deryl D.; Dunn, Richard L.; Cox, Charles P.; Norton, Richard L.; Lowe, Bryan K.; and Peterson, Kenneth S., 5,487,897, Cl. 424-426.000.

Swartz, James R., to Genentech, Inc. Method of determining propensity of dissolved oxygen instability. 5,487,980, Cl. 435-29.000.

Sweeney, Eugene J.; and Pelts, Gregory A., to Lord Corporation. Method for obtaining mechanical lock between surfaces. 5,487,803, Cl. 156-91.000.

Sweet, Christopher R., to Geotechnical Instruments (UK) Limited. Gas analyzer. 5,488,227, Cl. 250-343.000.

Swoboda, Anton; Kubler, Edmund; Ulm, Horst; and Schardt, Gunter, to Schunk Kohlenstofftechnik GmbH. Carbon brush and fastening a braided indicator wire therein. 5,488,261, Cl. 310-249.000.

Symbios Logic Inc.: *See*—
Crafts, Harold S., 5,488,249, Cl. 257-401.000.

Synaptics, Incorporated: *See*—
Mead, Carver A.; Wolf, Ralph; and Allen, Timothy P., 5,488,204, Cl. 178-18.000.

Syntec, Inc.: *See*—
Peymas, Gholam A., 5,487,725, Cl. 604-22.000.

Systematic Drill Head Co. Ltd.: *See*—
Child, Robin E., 5,487,631, Cl. 409-231.000.

Szweda, Andrew; Millard, Michael L.; and Harrison, Michael G., to General Electric Company. Fibert reinforced ceramic matrix composite member. 5,488,017, Cl. 501-95.000.

Ta, Chuong C.: *See*—
Nguyen, Michael A.; Stewart, Lowell J.; Kline, Daniel S.; Boeller, Robert A.; Ta, Chuong C.; and Haselby, Robert D., 5,488,397, Cl. 347-40.000.

Tabata, Tetsuro: *See*—
Itoh, Hiroki; Tabata, Tetsuro; and Kikuta, Jun-Ichi, 5,487,900, Cl. 424-451.000.

Tabuchi, Hisashi: *See*—
Tanaka, Yoshimasa; and Tabuchi, Hisashi, 5,488,219, Cl. 219-644.000.

Tachibana, Shunichi, to Canon Kabushiki Kaisha. Image recording apparatus. 5,488,407, Cl. 347-264.000.

Taddei, Mario A. High-tension current transformer, with storage production by means of the automatization of the insulation thereof. 5,488,343, Cl. 336-229.000.

Tallove, Allen: *See*—
Bridges, Jack E.; Sresty, Gaggiam C.; and Tallove, Allen, 5,487,873, Cl. 588-212.000.

Tagamolila, Constante P.: *See*—
Schulz, Russell C.; Tagamolila, Constante P.; and Bullen, Patrick J., 5,487,816, Cl. 203-14.000.

Taguchi, Kohei; Ayada, Michihiko; and Shingu, Hideo, to NHK Spring Co., Ltd. Method for an article made of a Ti-Al intermetallic compound. 5,487,866, Cl. 419-28.000.

Taguchi Medical Co., Ltd.: *See*—
Maruyama, Yu; Taguchi, Yoshu; and Hayano, Kijuro, 5,487,741, Cl. 606-60.000.

Taguchi, Yoshu: *See*—
Maruyama, Yu; Taguchi, Yoshu; and Hayano, Kijuro, 5,487,741, Cl. 606-60.000.

Tahara, Hisatsugu: *See*—
Fukada, Taisei; Miyata, Masanori; Adachi, Hideki; Nakamura, Shinichi; Ohki, Naoyuki; Kaneko, Tokuharu; Kuroyanagi, Satoshi; Ozaki, Hiroshi; Tahara, Hisatsugu; Kaneko, Satoshi; and Takizawa, Mitsuharu, 5,488,454, Cl. 355-202.000.

Tai, Jimmy J.: *See*—
Olmstead, Thomas A.; Gonzalez, Michael A.; Orvik, Jon A.; Pearson, Douglas L.; Ringer, James W.; Shiang, Dawn; Tai, Jimmy J.; and Wallin, Anne P., 5,488,109, Cl. 544-263.000.

Taka, Shin-ichi: *See*—
Kimura, Koji; and Taka, Shin-ichi, 5,488,002, Cl. 437-31.000.

Takada, Kunio; Otani, Kenji; Yamada, Masayuki; Maru, Saburo; Sado, Sumio; and Tanaka, Sadashi, to Hitachi, Ltd. Large-depth underground drainage facility and method of running same. 5,487,621, Cl. 405-52.000.

Takagi, Jiro: *See*—
Maruyama, Shigeru; Shimasaki, Yoichi; Kanehiro, Masaki; Hisaki, Takashi; Baba, Shigeki; Ishioka, Takuji; Takagi, Jiro; and Akiyama, Eitetsu, 5,487,676, Cl. 439-125.000.

Takahashi, Kenichi; Takeishi, Misako; and Onishi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Signal processing circuit for spread spectrum communications. 5,488,629, Cl. 375-206.000.

Takahashi, Kiichiro: *See*—
Matsubara, Miyuki; Hirabayashi, Hiromitsu; Sugimoto, Hitoshi; and Takahashi, Kiichiro, 5,488,398, Cl. 347-43.000.

Takahashi, Kohji: *See*—
Hirasawa, Masahide; and Takahashi, Kohji, 5,488,414, Cl. 348-207.000.

Takahashi, Koichi; Kataoka, Hiroshi; Ichikawa, Haruo; Takatori, Tetsuya; and Naito, Toshiharu, to Fuji Photo Film Co., Ltd. Photographic film cassette machine with film anchoring device. 5,487,513, Cl. 242-348.100.

Takahashi, Masaharu: *See*—
Omura, Naoki; Igarashi, Minoru; Inoue, Yoshio; and Takahashi, Masaharu, 5,488,125, Cl. 556-463.000.

Takahashi, Satoji: *See*—
Sumikawa, Michito; Koguchi, Yoshihito; Ohgane, Takao; Irie, Yasuo; and Takahashi, Satoji, 5,488,150, Cl. 562-450.000.

Takahashi, Tadashi; Fujita, Takashi; Nakamura, Kazuo; and Tsukamoto, Seiichi, to Mitsubishi Chemical Corporation. Catalyst component for olefin polymerization. 5,488,022, Cl. 502-115.000.

Takahashi, Tadashi; Utsui, Tetsuya; Adachi, Rensuke; Iida, Mitsuru; Furuya, Katsuhiko; Usami, Junji; and Honda, Ryoji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Light source apparatus for endoscope. 5,488,509, Cl. 359-385.000.

Takahashi, Yoshitaka: *See*—
Akiyama, Hiroshi; and Takahashi, Yoshitaka, 5,488,599, Cl. 369-112.000.

Takahata, Haruo: *See*—
Asida, Shyoji; Takahata, Haruo; and Katsuki, Takayo, 5,488,348, Cl. 338-22.00R.

Takai, Yousuke: *See*—
Ikkanzaka, Isao; Ikeda, Kazuhiro; and Takai, Yousuke, 5,487,944, Cl. 428-374.000.

Takamura, Kozo, to Nippondenso Co., Ltd. Spark electrode having low thermal stress. 5,488,262, Cl. 313-141.000.

Takanashi, Hiroshi; Ogura, Masami; and Tanimoto, Masahiro, to Sharp Kabushiki Kaisha; and Sanyo Vacuum Industries Co, Ltd. Color liquid crystal device with organic smoothing layer over ITO separated by an oxide layer and a nitride layer. 5,488,497, Cl. 359-74.000.

Takasaki, Mamoru: *See*—
Ozeki, Masamichi; Takasaki, Mamoru; Miyamoto, Katsuyuki; and Tsuruda, Mitsumasa, 5,487,252, Cl. 53-212.000.

Takase, Akira; Kai, Hiroyuki; Nishida, Kuniyoshi; Shinomoto, Shoji; and Nagai, Masahiko, to Shionogi & Co., Ltd. Process for producing methoxyiminoacetamide compounds and intermediates. 5,488,159, Cl. 564-164.000.

Takata Corporation: *See*—
Hiramatsu, Koji, 5,487,563, Cl. 280-806.000.

Takato, Hiroshi: *See*—
Sunouchi, Kazumasa; Takato, Hiroshi; Ozaki, Tohru; Okabe, Naoko; Hieda, Katsuhiko; Horiguchi, Fumio; Nitayama, Akihiro; Yamada, Takashi; Hasimoto, Kouji; and Inoue, Satosi, 5,488,242, Cl. 257-301.000.

Takatori, Tetsuya: *See*—
Takahashi, Koichi; Kataoka, Hiroshi; Ichikawa, Haruo; Takatori, Tetsuya; and Naito, Toshiharu, 5,487,513, Cl. 242-348.100.

Takayama, Gen: *See*—
Kasahara, Shigeo; Sueoka, Kiyoshi; Takayama, Gen; Satoh, Shingo; and Houjyou, Hidemi, 5,487,417, Cl. 141-32.000.

Takayanagi, Yoshiaki; Saito, Asao; and Koizumi, Ryoichi, to Canon Kabushiki Kaisha. Liquid jet recording apparatus. 5,488,395, Cl. 347-7.000.

Takechi, Shozo: *See*—
Mori, Sachio; Takechi, Shozo; and Kida, Shiro, 5,488,134, Cl. 560-33.000.

Takeda Chemical Industries, Limited: *See*—
Itoh, Hiroki; Tabata, Tetsuro; and Kikuta, Jun-Ichi, 5,487,900, Cl. 424-451.000.

Takeda, Masashi; Fukuhara, Kazuyuki; and Murakami, Motoichi, to Toyota Jidosha Kabushiki Kaisha. Piston for an internal combustion engine. 5,487,364, Cl. 123-193.600.

Takeishi, Minako: *See*—
Takahashi, Kenichi; Takeishi, Misako; and Onishi, Hiroshi, 5,488,629, Cl. 375-206.000.

Takemoto, Takatoshi; Yoshikawa, Masayoshi; Aoyama, Moriyuki; Muramatsu, Meiji; and Kawashima, Kazunari, to Kabushiki Kaisha Ace Denken. Apparatus for polishing medals for game machine and for separating abrasive therefrom. 5,487,696, Cl. 451-105.000.

Takemura, Takatoshi; Sakuwa, Makoto; and Watanuki, Haruo, to Mitsubishi Denki Kabushiki Kaisha; and Sony Corporation. Color selecting electrode for cathode-ray tube. 5,488,263, Cl. 313-402.000.

Takemura, Yoshinari: *See*—
Furumiya, Shigeru; and Takemura, Yoshinari, 5,488,593, Cl. 369-32.000.

Takeno, Fumio: *See*—
Uno, Yoichiro; Takeno, Fumio; Yamatoya, Kazuhiko; and Ohtsu, Keiji, 5,488,105, Cl. 536-128.000.

Takeuchi, Hitoshi: *See*—
Yamada, Eiji; and Takeuchi, Hitoshi, 5,488,636, Cl. 375-340.000.

Takeuchi, Kiyoshi: *See*—
Kamioka, Hideki; Kobayashi, Kazunitsu; Shimamura, Masahiko; and Takeuchi, Kiyoshi, 5,488,311, Cl. 324-674.000.

Takeuchi, Takashi; Saitoh, Tadashi; Matsunaga, Toshihiro; Mori, Masaaki; and Fujiya, Hajime, to Hitachi, Ltd.; and Hitachi Video Engineering, Inc. Optical information recording medium having a transitioning three bit access pit group and optical information recording/reproducing apparatus using the same. 5,488,595, Cl. 369-54.000.

Takeuchi, Tomio: *See*—
Kondo, Shinichi; Shibahara, Seiji; Usui, Takayuki; Kudo, Toshiaki; Gomi, Shuichi; Tamura, Atsushi; Ikeda, Yoko; Ikeda, Daisuke; and Takeuchi, Tomio, 5,488,038, Cl. 514-41.000.

Takigawa, Yoshiharu: *See*—
Kawakami, Yoshisuke; Takigawa, Yoshiharu; Isomura, Arihiro; Kamiya, Kenichi; and Hamasaki, Katsunori, 5,488,353, Cl. 340-576.000.

Takino, Hiroshi: *See*—
Ishida, Takehisa; and Takino, Hiroshi, 5,488,519, Cl. 360-77.030.

Takishima, Yasuhiro; Wada, Masahiro; and Murakami, Hitomi, to Kokusai Denshin Denwa Co., Ltd. System for providing reversible variable length codes. 5,488,616, Cl. 371-30.000.

Takita, Hidenori; and Hirakawa, Tetsuhiro, to Mitsubishi Denki Kabushiki Kaisha. Color CRT display apparatus. 5,488,270, Cl. 315-370.000.

Takizawa, Mitsuharu: *See*—
Fukada, Taisei; Miyata, Masanori; Adachi, Hideki; Nakamura, Shinichi; Ohki, Naoyuki; Kaneko, Tokuharu; Kuroyanagi, Satoshi; Ozaki, Hiroshi; Tahara, Hisatsugu; Kaneko, Satoshi; and Takizawa, Mitsuharu, 5,488,454, Cl. 355-202.000.

Talley, John J., to Monsanto Company. Process for making optically active alpha-amino ketones and selected novel optically active alpha-amino ketones. 5,488,132, Cl. 560-39.000.

Tamada, Osamu: *See*—
Yabe, Hisao; Iida, Yoshihiro; Suzuki, Akira; Ito, Hidoo; Tashiro, Yoshio; Yamazaki, Minoru; and Tamada, Osamu, 5,487,376, Cl. 600-121.000.

Tamaki, Takeo: *See*—
Ohmi, Tadahiro; Yonekawa, Naomichi; Horiki, Hiroyuki; Kaji, Toshimitsu; Kunimoto, Fumitomo; and Tamaki, Takeo, 5,487,398, Cl. 134-95.100.

Tamamura, Manpei; Iidaka, Hiroshi; and Shibata, Eiji, to Fuji Jukogyo Kabushiki Kaisha. Vehicle internal noise reduction system. 5,488,667, Cl. 387-71.000.

Tamarack Storage Devices: *See*—
Redfield, Stephen R.; Willenbring, Gerald R.; Stockton, John; and Halter, Edward A., 5,488,494, Cl. 359-22.000.

Tamura, Atsushi: *See*—
Kondo, Shinichi; Shibahara, Seiji; Usui, Takayuki; Kudo, Toshiaki; Gomi, Shuichi; Tamura, Atsushi; Ikeda, Yoko; Ikeda, Daisuke; and Takeuchi, Tomio, 5,488,038, Cl. 514-41.000.

Tamura, Hideki: *See*—
Sakamoto, Hiroshi; Tamura, Hideki; and Furukawa, Kaoru, 5,488,552, Cl. 363-21.000.

Tamura, Hiroshi; Fukaya, Toshio; Mishima, Naoshi; and Suzaki, Masaomi, to Ricoh Company, Ltd. Acrylic acid ester derivative having a triphenyl amine skeleton. 5,488,137, Cl. 560-141.000.

Tan, Kok S.: *See*—
Pagan, John B.; Sluss, James J., Jr.; Hassell, John W.; Mears, R. Brian; Beason, Ronnie B.; Wilkinson, Sonja R.; Lear, Tommy; and Tan, Kok S., 5,488,224, Cl. 250-227.160.

Tan, Yulan: *See*—
Havens, Timothy J.; Tan, Yulan; and Scaturro, John, Jr., 5,488,339, Cl. 335-216.000.

Tanabe, Noboru; Oyanagi, Shigeru; Baba, Shinichi; Kaminishi, Katsuji; Nakamura, Masaru; and Sekido, Kazunori, to Kabushiki Kaisha Toshiba. Optical interconnection suitable for highly parallel computer system. 5,488,735, Cl. 395-800.000.

Tanabe Seiyaku Co., Ltd.: *See*—
Shibatani, Takeji; Komatsubara, Saburo; Omori, Kenji; and Akatsuka, Hiroyuki, 5,487,996, Cl. 435-252.100.

Tanaka, Hirokazu; and Tauchiya, Keiji, to Canon Kabushiki Kaisha. Recording and reproducing method in which data and updating data are recorded in a sector of a selected block of a recording medium in a predetermined order without recording a directory. 5,488,718, Cl. 395-600.000.

Tanaka, Hiroshi: *See*—
Nakanishi, Kaoru; Horino, Shinji; Shiono, Kiyoshi; Tanaka, Hiroshi; and Terada, Kunihiro, 5,488,389, Cl. 345-131.000.

Tanaka, Hitoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens barrel. 5,488,513, Cl. 359-699.000.

Tanaka, Mitsuoshi, to Fuji Photo Film Co., Ltd. Nonaqueous secondary battery. 5,487,960, Cl. 429-218.000.

Tanaka, Saburo; Matsuura, Takashi; and Itozaki, Hideo, to Sumitomo Electric Industries, Inc. Superconductor junction structure including two oxide superconductor layers separated by a non-superconducting layer. 5,488,030, Cl. 505-190.000.

Tanaka, Sadashi: *See*—
Takada, Kunio; Otani, Kenji; Yamada, Masayuki; Maru, Saburo; Sado, Sumio; and Tanaka, Sadashi, 5,487,621, Cl. 405-52.000.

Tanaka, Shigeo: *See*—
Sato, Makoto; Yamazaki, Hiroshi; Kotabe, Noriko; Osakabe, Yoshio; Kusagaya, Yasuo; Tanaka, Shigeo; Sugiyama, Kouich; and Katsuyama, Akira, 5,488,357, Cl. 340-825.250.

Tanaka, Shinji: *See*—

Sato, Kazuo; Shikida, Mitsuhiro; Ohashi, Shigeo; Hatada, Toshio; Ashiwake, Noriyuki; Tanaka, Shinji; Harada, Takeshi; and Honda, Yukio, 5,488,255, Cl. 257-718.000.

Tanaka, Takaaki; and Sato, Yuzuru, to Seiko Epson Corporation. Liquid crystal display device utilizing a chiral nematic liquid crystal medium operative relative to two metastable states. 5,488,499, Cl. 359-102.000.

Tanaka, Yoshimasa; and Tabuchi, Hisashi, to Neturen Co., Ltd. Induction heating coil assembly and method for hardening inner surface of cylinder by using the same. 5,488,219, Cl. 219-644.000.

Tanaka, Yutaka: *See*—
Enraku, Motohiro; and Tanaka, Yutaka, 5,488,238, Cl. 257-207.000.

Tandem Computers Incorporated: *See*—
Aldridge, David L.; Bissell, Stephen R.; and Gunn, Daniel D., 5,488,531, Cl. 361-18.000.

Taneya, Mototaka; Kawanishi, Hidenori; Morioka, Tatsuya; and Shimonaka, Atsushi, to Sharp Kabushiki Kaisha. Assembly structure for an optical integrated circuit device. 5,488,678, Cl. 385-14.000.

Tanibata, Toru, to Noritsu Koki, Co. Image printer. 5,488,450, Cl. 355-38.000.

Taniguchi, Hideki: *See*—
Sotoya, Kohshiro; Abe, Hiroshi; Aikawa, Jun; Taniguchi, Hideki; and Nishimoto, Uichiro, 5,488,168, Cl. 564-506.000.

Taniguchi, Osamu; Inoue, Hiroshi; Mizusome, Atsushi; Mihara, Tadashi; Onitsuka, Yoshihiro; and Terada, Masahiro, to Canon Kabushiki Kaisha. Liquid crystal apparatus. 5,488,388, Cl. 345-97.000.

Tanimoto, Masahiro: *See*—
Takasashi, Hiroshi; Ogura, Masami; and Tanimoto, Masahiro, 5,488,497, Cl. 359-74.000.

Tanioka, Kenkichi: *See*—
Yamagishi, Toshio; Nanba, Masakazu; Egami, Norifumi; Tanioka, Kenkichi; Kurashige, Mitsuhiro; Tsuji, Kazutaka; Kaneko, Yoshiyuki; Makishima, Tatsuo; Nagatsuma, Kazuyuki; Obahima, Tetsuya; and Nakano, Yasushi, 5,488,386, Cl. 345-74.000.

Targove, James D., to Litton Systems, Inc. Radio frequency absorbing windows. 5,488,371, Cl. 342-1.000.

Tarroux, Francis: *See*—
Atsasyan, Alain A.; and Tarroux, Francis, 5,487,269, Cl. 60-274.000.

Tashiro, Korefumi: *See*—
Murata, Satoru; Kawabata, Atsushi; Miura, Shuuichi; Tashiro, Korefumi; Morooka, Yasuo; Yahiro, Masakazu; Katahira, Masaki; and Kera, Kazuo, 5,487,516, Cl. 246-182.00C.

Tashiro, Yoshio: *See*—
Yabe, Hisao; Iida, Yoshihiro; Suzuki, Akira; Ito, Hideo; Tashiro, Yoshio; Yamazaki, Minoru; and Tamada, Osamu, 5,487,376, Cl. 600-121.000.

Tayco Developments, Inc.: *See*—
Klembczyk, Alan R.; and Metzger, John C., 5,487,454, Cl. 188-298.000.

Taylor, Dene H.: *See*—
Cahill, Douglas A.; Brault, Donald A.; Himmelwright, Richard S.; and Taylor, Dene H., 5,488,455, Cl. 355-202.000.

Taylor, Donald K. Soil injection system. 5,487,346, Cl. 111-127.000.

Taylor, Gary N.: *See*—
Hutton, Richard S.; Taylor, Gary N.; and Wheeler, David R., 5,487,967, Cl. 430-322.000.

Taylor, James L.: *See*—
Miller, J. Clayton; Harvey, Michael; Taylor, James L.; Clark, Thomas; and Dawson, Gerry, 5,487,290, Cl. 70-303.00A.

Taylor, Jeffrey L.: *See*—
Springsteen, Arthur W.; and Taylor, Jeffrey L., 5,488,473, Cl. 356-317.000.

Taylor, Robert T.: *See*—
Carman, Margaret L.; Jackson, Kenneth J.; Knapp, Richard B.; Knezovich, John P.; Shah, Nilesh N.; and Taylor, Robert T., 5,487,834, Cl. 210-606.000.

Taylor, Ronald P.; Sutherland, William M.; Reist, Craig; Wright, Eleanor L.; Webb, Donna; and Labuguen, Ronald, to University of Virginia Patent Foundation. Mammalian primate erythrocyte bound heteropolymerized monoclonal antibodies and methods of use thereof. 5,487,890, Cl. 424-136.100.

Taylor, Wayne A.; Heaton, Richard C.; and Jamriska, David J., to Unviersity of California Office of Technology Transfer, The Regents of the. Production of sodium-22 from proton irradiated aluminum. 5,487,880, Cl. 423-2.000.

TDK Corporation: *See*—
Kuribayashi, Isamu; and Tezuka, Shin-ichi, 5,487,926, Cl. 428-33.000.

TechnoView Inc.: *See*—
Brown, Eric W.; and Littlefield, James A., 5,488,368, Cl. 341-119.000.

Tegeler, John J.; Rauckman, Barbara S.; Harmer, Russell R. L.; Freed, Brian S.; and Merriman, Gregory H., to Hoechst-Roussel Pharmaceuticals Inc. 1-alkyl-, 1-alkenyl-, and 1-alkynylaryl-2-amino-1,3-propanediols and related compounds. 5,488,061, Cl. 514-372.000.

Tegeler, John J.; Rauckman, Barbara S.; Harmer, Russell R. L.; Freed, Brian S.; and Merriman, Gregory H., to Hoechst-Roussel Pharmaceuticals Inc. 1-alkyl-, 1-alkenyl-, and 1-alkynylaryl-2-amino-1,3-propanediols and related compounds. 5,488,063, Cl. 514-438.000.

Tekavec, James E.; and Simmons, James A., to Raspak Corp. Dispensing table for a cushioning conversion machine. 5,487,717, Cl. 493-352.000.

Tektronix, Inc.: *See*—
Baker, Daniel G.; Parish, Robert W.; and Zink, Scott E., 5,488,310, Cl. 324-648.000.
Burke, Edward F.; and Karambelas, Randy C., 5,488,396, Cl. 347-37.000.

Telectronics Pacing Systems, Inc.: *See*—
Lieberfarb, Warren N.; Cookson, Christopher J.; and Ostrover, Lewis S., 5,488,410, Cl. 348-5.500.
MacCarter, Dean J.; Hopper, Don; Cooper, Daniel; and Hassell, Roger, 5,487,753, Cl. 607-017.000.

Teledirektoratets Forskningsavdeling: *See*—
Bjontegaard, Gisle, 5,488,420, Cl. 348-419.000.

Telefonaktiebolaget L M Ericsson: *See*—
Womble, Brian R., 5,488,648, Cl. 375-13.000.

Telefonaktiebolaget L M Ericsson: *See*—
Johansson, Ted; Leighton, Larry; and Hasnberg, Ivar, 5,488,252, Cl. 257-579.000.

Telegenics, Inc.: *See*—
Oliver, Stewart W., 5,488,654, Cl. 379-106.000.

Telor Ophthalmic Pharmaceuticals, Inc.: *See*—
Neufeld, Arthur H., 5,488,050, Cl. 514-236.200.

Terada, Hiroshi: *See*—
Yamamoto, Hajime; and Terada, Hiroshi, 5,488,465, Cl. 355-246.000.

Terada, Kunihiro: *See*—
Nakanishi, Kaoru; Horino, Shinji; Shiono, Kiyoshi; Tanaka, Hiroshi; and Terada, Kunihiro, 5,488,389, Cl. 345-131.000.

Terada, Masahiro: *See*—
Taniguchi, Osamu; Inoue, Hiroshi; Mizusome, Atsushi; Mihara, Tadashi; Onitsuka, Yoshihiro; and Terada, Masahiro, 5,488,388, Cl. 345-97.000.

Teramoto, Satoshi: *See*—
Zhang, Hongyong; and Teramoto, Satoshi, 5,488,000, Cl. 437-21.000.

Terasaka, Hiroyuki: *See*—
Nojiri, Hironobu; Yakushiji, Kazuyuki; Yoshinaga, Minoru; and Terasaka, Hiroyuki, 5,487,512, Cl. 242-471.000.

Terra IJssel B.V.: *See*—
Holman, Harm W., 5,487,620, Cl. 404-31.000.

Terris, David: *See*—
Redden, James P.; Terris, David; and Olds, Keith A., 5,488,640, Cl. 375-357.000.

Terry, Ronald C.: *See*—
Sovak, Milos; Terry, Ronald C.; Douglass, James G., III; and Bakir, Farid, 5,487,885, Cl. 424-59.000.

Testa, James P.; Horstmann, Jens; and Sinhpoio, Hassan, to Sun Microsystems, Inc. Protecting cot packaged ICs during wave solder operations. 5,488,539, Cl. 361-720.000.

Tetra Laval Holdings & Finance S.A.: *See*—
Hieltscher, Uwe; Liebram, Udo; Reil, Wilhelm; and Sattler, Peter, 5,487,253, Cl. 53-281.000.

Texaco Chemical Inc.: *See*—
Knifton, John F.; Marquis, Edward T.; and Dai, Pei-Shing E., 5,488,178, Cl. 568-578.000.
Knifton, John F.; Marquis, Edward T.; and Dai, Pei-Shing E., 5,488,179, Cl. 568-578.000.

Texas Instruments: *See*—
Vajapey, Sridhar; Krause, Paul W.; and Bach, John M., 5,488,318, Cl. 326-46.000.

Texas Instruments Deutschland GmbH: *See*—
Elmer, Werner, 5,488,288, Cl. 323-284.000.

Texas Instruments Incorporated: *See*—
Gove, Robert J.; Doherty, Donald B.; Heimbuch, Scott D.; Urbanus, Paul M.; and Marshall, Stephen W., 5,488,431, Cl. 348-716.000.
Havemann, Robert H.; Jeng, Shin-Puu; Gnade, Bruce E.; and Cho, Chih-Chen, 5,488,015, Cl. 437-195.000.
Hurta, Dwaine S.; and Froschermeier, Guenther, 5,488,376, Cl. 342-42.000.
Mahant-Shetti, Shivaling S.; Agarwala, Manisha; Mehendale, Mahesh M.; Landers, Robert J.; and Harward, Mark G., 5,488,315, Cl. 326-37.000.
Sridhar, Thirumalai, 5,488,613, Cl. 371-22.300.
Webster, William S.; and Wilmoth, David D., 5,488,317, Cl. 326-45.000.

Tezuka, Shin-ichi: *See*—
Kuribayashi, Isamu; and Tezuka, Shin-ichi, 5,487,926, Cl. 428-33.000.

Tharp, Dwayne E.: *See*—
Maley, Dale C.; and Tharp, Dwayne E., 5,488,340, Cl. 335-253.000.

Tharp, Russell C.: *See*—
Olsen, Mark W.; Powell, Joe R.; Tharp, Russell C.; and Walter, Stephen A., 5,488,218, Cl. 219-492.000.

Themistocleous, Themistoclis: *See*—
Hutchin, Graham J.; Themistocleous, Themistoclis; and Copperthwaite, Richard G., 5,488,165, Cl. 564-479.000.

Therm-O-Disc, Incorporated: *See*—
Gurski, Michael T., 5,488,347, Cl. 337-380.000.

Thevenet, Bruno; and Gille, Denis, to Protecma. Method allowing the incorporation of a metallic structure into a plastic. 5,487,804, Cl. 156-148.000.

Thiel, David: *See*—
Schneider, Fred B.; Lampson, Butler; Balkovich, Edward; and Thiel, David, 5,488,716, Cl. 395-182.080.

Thierry, Jean-Francois: *See*—
Brun, Daniel; Lahery, Pierre-Yves; and Thierry, Jean-Francois, 5,488,155, Cl. 562-554.000.

Thiokol Corporation: *See*—
Dilleshay, David R.; Turner, David W.; Wingfield, Horace L., III; and Blackwell, James A., 5,487,851, Cl. 264-3.300.

Thioux, Alain: *See*—
Moinard, Patrice; Thioux, Alain; and Mery, Jean Claude, 5,487,452, Cl. 188-72.700.

THK Co., Ltd.: *See*—
Asada, Makoto, 5,487,609, Cl. 384-18.000.

Thomas, Gregory E.: *See*—
Brackett, Anne W.; Durham, Marcus O.; Perkins, Lynn K.; and Thomas, Gregory E., 5,487,300, Cl. 73-61.590.

Thomas, Gareth J.: *See*—
Parkes, Kevin E. B.; Redshaw, Sally; and Thomas, Gareth J., 5,488,115, Cl. 549-34.000.

Thomas J. Lipton Co., Division of Conopco, Inc.: *See*—
Zabel, Dale D.; Brown, Charles B.; and Cassetta, James V., 5,487,909, Cl. 426-574.000.
Zabel, Dale D.; Brown, Charles B.; and Cassetta, James V., 5,487,910, Cl. 426-574.000.

Thomas, Kirk R.: *See*—
Capecchi, Mario R.; and Thomas, Kirk R., 5,487,992, Cl. 435-172.300.

Thomcast: *See*—
Wolk, Ivan, 5,488,334, Cl. 333-22.00F.

Thompson, Bennie: *See*—
Knodel, Bryan D.; Thompson, Bennie; and Nichols, Richard P., 5,487,500, Cl. 227-181.100.

Thompson, Bradley J. Vehicle water spray diverter. 5,487,565, Cl. 280-848.000.

Thompson, Daniel L.: *See*—
Dawson, Gerald L.; and Thompson, Daniel L., 5,488,660, Cl. 380-24.000.
Hamilton, James E.; Dawson, Gerald L.; and Thompson, Daniel L., 5,488,358, Cl. 340-825.310.

Thompson, Jon E. Subsurface tool. 5,487,432, Cl. 175-20.000.

Thompson, Mac A.: *See*—
Selsing, Jorgen; and Thompson, Mac A., 5,488,199, Cl. 174-73.100.

Thompson, Todd G. Workman's material support vest for supporting cylinders. 5,487,190, Cl. 2-102.000.

Thomson Consumer Electronics, Inc.: *See*—
Griepentrog, Dal F., 5,488,417, Cl. 348-379.000.

Thomson-CSF: *See*—
Bardy, Marie-Claude, 5,488,381, Cl. 342-372.000.
Bosmias, Philippe; and Chanelas, Jean, 5,487,484, Cl. 220-201.000.

Thorne, David L.: *See*—
Thorne, Gale H.; and Thorne, David L., 5,487,734, Cl. 604-195.000.

Thorne, Gale H.; and Thorne, David L., to Specialized Health Products, Inc. Self retracting catheter needle apparatus and methods. 5,487,734, Cl. 604-195.000.

Thornton, Jeffrey W.; Eckerman, Christer S.; Ekman, Rainer O.; and Holmbom, Bjarne R., to Mesta-Serla Oy. Treatment of alkaline bleached mechanical wood pulp with pectinase. 5,487,812, Cl. 162-72.000.

Thouion, Pierre-Yves, to Hewlett-Packard Company. Method and apparatus for transition encoding a logic signal. 5,488,628, Cl. 375-239.000.

Thrash, Robert J.; and Johnson, Leo F., to Amoco Corporation. Rare earth ion upconversion laser system. 5,488,624, Cl. 372-41.000.

Thurn, Kenneth R. Motorcycle torsion suspension system. 5,487,443, Cl. 180-227.000.

Thurn, Siegfried; Sommer, Klaus; Bier, Peter; Elschner, Andreas; Kowitz, Manfred; and Sandquist, Axel, to Bayer AG. Process for pretreating surfaces of plastic items. 5,487,810, Cl. 216-67.000.

Thyssen Aufzuge GmbH: *See*—
Schollkopf, Karl-Otto; Böhm, Werner; Kellings, Gerhard; Bollerott, Michael; and Scherer, Klaus, 5,487,448, Cl. 187-247.000.

Tibbet, Michael D., to Glaser Tool Co. Workpiece holding assembly. 5,487,538, Cl. 269-71.000.

Tice, Bill, to ETI Systems. Control circuit for feedback, motor-operated valve. 5,488,275, Cl. 318-468.000.

Tilley, T. Don; and Imori, Toru, to University of California, The Regents of the. High molecular weight polystannanes by metal-catalyzed dehydropolymerization. 5,488,091, Cl. 528-9.000.

Timex Corporation: *See*—
Jacobs, Michael A.; and Insero, Mark A., 5,488,571, Cl. 364-705.070.

Tindall, David; and Sarjeant, Malcolm, to Specius Limited. Integrated spectral flame monitor. 5,488,355, Cl. 340-578.000.

Titcomb, Forrest: *See*—
Seaver, Jay R.; Diel, Mark A.; and Titcomb, Forrest, 5,488,523, Cl. 360-99.120.

Tobiyama, Yoichi; Kato, Chiaki; Morito, Nobuyuki; and Kimura, Hajime, to Kawasaki Steel Corporation. Method of manufacturing of galvanized steel sheet having high press formability. 5,487,919, Cl. 427-327.000.

Tocchini, Francesco: *See*—
Stroppolo, Federico; Bonadeo, Daniele; Tocchini, Francesco; and Gazzaniga, Annibale, 5,488,069, Cl. 514-772.400.

Tockman, Bruce A.: *See*—
Salo, Rodney W.; Spinelli, Julio C.; and Tockman, Bruce A., 5,487,752, Cl. 607-17.000.

Tokano, Yuichi, to Tokin Corporation. Electric field sensor. 5,488,677, Cl. 385-3.000.

Tokin Corporation: *See*—
Tokano, Yuichi, 5,488,677, Cl. 385-3.000.

Tokinaga, Yoshito: *See*—
Endo, Sadao; Tokinaga, Yoshito; and Sasaki, Kazuo, 5,487,441, Cl. 180-181.000.

Tokyo Electron Kabushiki Kaisha: *See*—
Horiike, Yasuhiro; and Fukazawa, Takayuki, 5,487,785, Cl. 118-723.00E.

Tokyo Nissan Jahara Co., Ltd.: *See*—
Tsukada, Ken, 5,487,799, Cl. 156-71.000.

Tokyo Seimitsu Co., Ltd.: *See*—
Tsuta, Kiyoaki, 5,488,292, Cl. 324-158.100.

Tolliver, Wilbur E.; and Magnuson, Larry R., to Independent Concrete Pipe. Apparatus and method for reinforcing cast structures. 5,487,251, Cl. 52-600.000.

Tolo, Inc.: *See*—
Lockshaw, James J.; Kelly, Stephen; Walker, Randall; and Kaiser, John, Jr., 5,487,930, Cl. 428-53.000.

Tomco$_2$ Equipment Co.: *See*—
Shane, Tommy J., 5,487,835, Cl. 210-74.900.

Tomei Sangyo Kabushiki Kaisha: *See*—
Kaneiya, Hideaki; Hashimoto, Satoshi; and Matsumoto, Satoru, 5,487,788, Cl. 134-1.000.

Tomita, Hironori; Nakamura, Tohru; Wada, Takuya; and Nakamura, Hiroyuki, to Matsushita Electric Industrial Co., Ltd. Optical information recording reproducing apparatus with first and second electrokinetic transducers at respective distances. 5,488,603, Cl. 369-219.000.

Tonka Corporation: *See*—
Mowrer, Kevin B.; and Beck, Robert L., 5,487,692, Cl. 446-465.000.

Tonsy Industries, Inc.: *See*—
Kadoi, Sho; Yabe, Hidemi; and Kobayashi, Kazuhiko, 5,488,084, Cl. 524-473.000.
Nojiri, Hironobu; Yakushiji, Kazuyuki; Yoshinaga, Minoru; and Terasaka, Hiroyuki, 5,487,512, Cl. 242-471.000.

Torrent Trading Ltd.: *See*—
Kerger, Leon, 5,487,404, Cl. 137-413.000.

Torres, Fernando: *See*—
Michal, Ronald J.; and Torres, Fernando, 5,488,683, Cl. 385-98.000.

Torrington Company, The: *See*—
Wasikiewicz, Walter P., 5,487,613, Cl. 384-539.000.

Toshiba Battery Co., Ltd.: *See*—
Kasahara, Shigeo; Sueoka, Kiyoshi; Takayama, Gen; Satoh, Shingo; and Houjyou, Hidemi, 5,487,417, Cl. 141-32.000.

Tosoh Akzo Corporation: *See*—
Ikeda, Yoshihiko; Yamane, Takeo; Kaji, Hiichi; and Ishimaru, Kenji, 5,488,169, Cl. 568-3.000.

Tozuka, Mitsuhiko: *See*—
Kondo, Hiroki; Tozuka, Mitsuhiko; and Kudo, Toshiharu, 5,488,346, Cl. 337-198.000.

Touzard, Benoit M. F.: *See*—
Shutt, John R.; and Touzard, Benoit M. F., 5,488,078, Cl. 524-71.000.

Tower Tech, Inc.: *See*—
Curtis, Harold D., 5,487,531, Cl. 261-30.000.
Curtis, Harold D., 5,487,849, Cl. 261-30.000.

Towers, Kenneth S.: *See*—
Rivard, Robert M.; Schneider, Michael J.; Pattantyus, Tamas I.; Towers, Kenneth S.; and Phipps, Jack R., 5,487,598, Cl. 303-166.000.

Toy, Raymond L.: *See*—
Chennakesha, Sandeep; Koilpillai, Ravinder D.; and Toy, Raymond L., 5,488,635, Cl. 375-340.000.

Toyota, Hiromichi; and Iwanaga, Masao, to I.T.M. Corporation. Powder feeding apparatus, electrostatic powder coating apparatus and powder flow-rate measuring apparatus. 5,487,624, Cl. 406-14.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Takeda, Masashi; Fukuhara, Kazuyuki; and Murakami, Motoichi, 5,487,364, Cl. 123-193.600.

Trahey, Gregg E.; Kornguth, Phyllis; Nightingale, Kathryn; and Walker, William F., to Duke University. Method and apparatus for distinguishing between solid masses and fluid-filled cysts. 5,487,387, Cl. 128-660.020.

Tran, Minh N.: *See*—
Asgari, Jahanbakhsh; Tran, Minh N.; and Hrovat, Davoria D., 5,488,555, Cl. 364-424.050.

Tranter, Inc.: *See*—
Davison, Roger C., 5,487,424, Cl. 165-166.000.

Trewella, Jeffrey C.: *See*—
Brown, Stephen H.; and Trewella, Jeffrey C., 5,488,186, Cl. 568-897.000.

Trident MicroSystems, Inc.: *See*—
Singhal, Dave M.; and Li, Sidong, 5,488,385, Cl. 345-3.000.

Trippensee Corporation: *See*—
Phillips, William H., 5,487,314, Cl. 73-864.660.

Troglia, Claudio: *See*—
Cavallotti, Claudio; Troglia, Claudio; and Gamalia, Roberto, 5,487,818, Cl. 203-41.000.

Truchsess, Joseph: *See*—
Simmel, Thomas L.; McDarren, Robert S.; and Truchsess, Joseph, 5,487,925, Cl. 428-19.000.

Truckai, Csaba; Juracsewski, Richard S.; Nguyen, Frank; and West, Scott H., to Medtronic CardioRhythm. Multicurve deflectable catheter. 5,487,757, Cl. 607-122.000.

Trustees of Columbia University in The City of New York: *See*—
Modak, Shanta; and Sampath, Lester, 5,487,896, Cl. 424-402.000.

TRW Inc.: *See*—
Headley, Paul S., 5,487,559, Cl. 280-735.000.
Injeyan, Hagop; and Holcomb, Terry L., 5,488,619, Cl. 372-12.000.

TRW Vehicle Safety Systems Inc.: *See*—
Emambakhsh, Al S., 5,487,560, Cl. 280-740.000.

Hishon, Michael K.; and Stoll, Steven, 5,487,515, Cl. 242-383.400.
Jenkins, Jeffrey A.; and Wiers, John W., 5,487,556, Cl. 280-728.200.

Tsuchiizo, Masayoshi: *See*—
Wakabayashi, Naoto; Tsuchiko, Masayoshi; Akama, Terufumi; Maekawa, Hiromi; Shikata, Hiroyuki; Yamazaki, Nobuo; and Kawaguchi, Tomio, 5,487,386, Cl. 128-660.010.

Tsuchiya, Keiji: *See*—
Tanaka, Hirokazu; and Tsuchiya, Keiji, 5,488,718, Cl. 395-600.000.

Tsuchiya, Tetsuo: *See*—
Ozaki, Takahiro; Munakata, Tomoo; Goto, Fumio; and Tsuchiya, Tetsuo, 5,487,837, Cl. 252-25.000.

Tsuda, Tadayuki; Sekine, Kazumi; Ikemoto, Isao; Watanabe, Kazushi; Sasago, Yoshikazu; Shimizu, Yasushi; Noda, Shinya; and Kobayashi, Kazunori, to Canon Kabushiki Kaisha. Image bearing member having an asymmetrically weighted base, process cartridge and image forming apparatus. 5,488,459, Cl. 355-211.000.

Tsuji, Kazutaka: *See*—
Yamagishi, Toshio; Nanba, Masakazu; Egami, Norifumi; Tanioka, Kenichi; Kuraishige, Mitsuhiro; Tsuji, Kazutaka; Kaneko, Yoshiyuki; Makishima, Tatsuo; Nagatsuma, Kazuyuki; Ohshima, Tetsuya; and Nakano, Yasushi, 5,488,386, Cl. 345-74.000.

Tsuji, Masanori: Kashiyama, Motohisa; and Kitamura, Takuya, to Yazaki Corporation. Connector housing having a lock mechanism. 5,487,678, Cl. 439-352.000.

Tsujimura, Ayumi: *See*—
Yoshii, Shigeo; Okawa, Kazuhiro; Tsujimura, Ayumi; and Mitsuya, Tsuneo, 5,488,234, Cl. 257-94.000.

Tsujita, Kouichirou: *See*—
Hayashide, Yoshio; and Tsujita, Kouichirou, 5,488,246, Cl. 257-336.000.

Tsukada, Kea, to Tokyo Nisshin Jahara Co., Ltd. Method of preventing fire in ship engine room by wrapping protected area with a laminated material. 5,487,799, Cl. 156-71.000.

Tsukada, Yutaka, to International Business Machines Corporation. Interconnect structure with replaced semiconductor chips. 5,488,200, Cl. 174-261.000.

Tsukamoto, Seiichi: *See*—
Takahashi, Tadashi; Fujita, Takashi; Nakamura, Kazuo; and Tsukamoto, Seiichi, 5,488,022, Cl. 502-115.000.

Tsunemi, Hidesari; and Nakata, Toshinobu, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Bifunctional aromatic cyanates, prepolymers and electrical laminates made therefrom. 5,488,144, Cl. 560-301.000.

Tsunoda, Tetsujiro, to Kabushiki Kaisha Toshiba. Semiconductor device with interconnect substrates. 5,488,256, Cl. 257-723.000.

Tsuruda, Mitsumasa: *See*—
Ozeki, Masamichi; Takaoki, Mamoru; Miyamoto, Katsuyuki; and Tsuruda, Mitsumasa, 5,487,252, Cl. 53-212.000.

Tsuruta, Kazuhiro; Himi, Hiroaki; Asai, Akiyoshi; and Fujino, Seiji, to Nippondenso Co., Ltd. SOI MOSFET with floating gate. 5,488,243, Cl. 257-314.000.

Tsuta, Kiyoaki, to Tokyo Seimitsu Co., Ltd. Wafer inspecting system. 5,488,292, Cl. 324-158.100.

Tsymbalov, Sofya: *See*—
Chrusciel, Robert A.; Hagen, Timothy J.; Hallinan, E. Ann; Li, Jingjin; Tsymbalov, Sofya; and Reitz, David B., 5,488,046, Cl. 514-211.000.

Tung, Samuel S.: *See*—
Shin, Almon S.; Tung, Samuel S.; and Gastorf, Robert J., 5,487,394, Cl. 128-846.000.

Turn, Drew. Interlocking frame system for lithium-polymer battery construction. 5,487,958, Cl. 429-151.000.

Turner, David W.: *See*—
Dillehay, David R.; Turner, David W.; Wingfield, Horace L., III; and Blackwell, James A., 5,487,851, Cl. 264-3.300.

Turtle, Howard R.; Morton, Gerald J.; and Lamtz, F. Kinley, to West Publishing Company. System of document representation retrieval by successive iterated probability sampling. 5,488,725, Cl. 395-600.000.

Tustin, Patricia: *See*—
Murphy, Alan S.; and Tustin, Patricia, 5,488,686, Cl. 395-161.000.

Tyrrell, Christopher M.; Wills, David R.; Gardiner, David V.; and Leadymore, Barry W., to Anglia Autoflow Limited. Treatment of poultry. 5,487,699, Cl. 452-66.000.

Tyus, Lisa A.: *See*—
Hedderly, Gregory T.; Tyus, Lisa A.; and Brown, Leonard M., 5,487,562, Cl. 280-777.000.

U S WEST Technologies, Inc.: *See*—
Hamlen, Glen A., 5,488,655, Cl. 379-114.000.

Uchida, Hideki: *See*—
Sato, Osamu; Hayami, Toshihisa; Obashi, Hideki; Izawa, Makoto; Serizawa, Tomoaki; and Uchida, Hideki, 5,488,546, Cl. 362-61.000.

Uchida, Takashi: *See*—
Mitomi, Tatsuo; Aoki, Tomohiro; Murayama, Yasushi; Uchida, Takashi; Kobayashi, Tohru; Ikkatai, Masatoshi; and Nemura, Masaharu, 5,488,399, Cl. 347-43.000.

Ueda, Tomohiro; Iotow, Takashi; Asamura, Yoshinori; Onishi, Ken; and Mishima, Hidetoshi, to Mitsubishi Denki Kabushiki Kaisha. High-efficiency encoder and video information recording/reproducing apparatus. 5,488,482, Cl. 358-339.000.

Ueda, Tsunesuke; Kusama, Tadao; and Honma, Kazuo, to Kewpie Kabushiki Kaisha. Processed egg powder and process for production thereof. 5,487,911, Cl. 426-614.000.

Uehara, Keiichi; and Hanada, Toora, to Kabushiki Kaisha Toshiba. Display control system for determining connection of optional display unit by using palette. 5,488,384, Cl. 345-1.000.

Uemura Kogyo Kabushiki Kaisha: *See*—
Griego, Thomas P., 5,487,824, Cl. 205-128.000.

Uhm, Sung J.; Hee, Sung H.; Oh, Jun W.; and Joo, Oh S., to Korea Institute of Science and Technology. Processes for the carbonylation of methanol to form acetic acid, methyl acetate and acetic anhydride. 5,488,143, Cl. 560-232.000.

Uland, David M., to DataSouth Computer Corporation. Method and apparatus for printing linerless media having an adhesive backing. 5,487,337, Cl. 101-288.000.

Ullman, Adam N.: *See*—
Ullman, Noah T.; and Ullman, Adam N., 5,488,362, Cl. 341-20.000.

Ullman, Noah T.; and Ullman, Adam N., to Anaphase Unlimited, Inc. Apparatus for controlling a video game. 5,488,362, Cl. 341-20.000.

Ulm, Horst: *See*—
Swoboda, Anton; Kubler, Edmund; Ulm, Horst; and Schardt, Gunter, 5,488,261, Cl. 310-249.000.

Ultman, James: *See*—
Snider, Michael T.; High, Kase M.; Panol, Georg; Ultman, James; Richard, Russell B.; Stone, John K.; and Russell, Garfield B., 5,487,727, Cl. 604-49.000.

Umeda, Takashi; and Okamoto, Masaya, to Idemitsu Petrochemical Co., Ltd. Polycarbonate resin composition. 5,488,086, Cl. 525-92.00A.

Umekida, Masaru: *See*—
Komori, Noboru; Kato, Yoshiaki; and Umekida, Masaru, 5,488,527, Cl. 360-122.000.

Umrigar, Pesi P.; and Kuan, Shia S., to United States of America, Health and Human Services. Trapping of aflatoxins and phytoestrogens. 5,487,998, Cl. 436-93.000.

Union Camp Corporation: *See*—
Freerks, Randall C.; and Strouth, Marvin A., 5,488,220, Cl. 219-727.000.

Union Carbide Chemicals & Plastics Technology Corporation: *See*—
Jenkins, Richard D.; Bassett, David R.; Smith, Danny E.; Argyropoulos, John N.; Loftus, James E.; and Shay, Gregory D., 5,488,180, Cl. 568-609.000.

Union Chemical Co., Ltd.: *See*—
Otomo, Shigeru, 5,487,846, Cl. 252-389.610.

Unipal International Corporation: *See*—
Wineberger, Ken N.; and Lee, Stanley M., 5,487,345, Cl. 108-51.300.

Unisia Jecs Corporation: *See*—
Sasaki, Mitsuo, 5,488,556, Cl. 364-424.050.

UNISYS Corporation: *See*—
Byers, Larry L.; Desubijana, Joseba M.; and Michaelson, Wayne A., 5,488,702, Cl. 395-186.000.
Kern, Norman P., 5,488,671, Cl. 382-138.000.
Sauter, Gerald F.; and Stevens, Rick C., 5,488,682, Cl. 385-53.000.
Skidmore, Wendy C., 5,488,714, Cl. 395-500.000.

Unitec Corporation: *See*—
Endo, Sadao; Tokinaga, Yoshito; and Sasaki, Kazuo, 5,487,441, Cl. 180-181.000.

United Microelectronics Corporation: *See*—
Hsue, Chen-Chiu; Shen, Yi-Chung; Sheu, Shing-Ren; and Chung, Chen-Hui, 5,488,009, Cl. 437-52.000.
Yang, Ming-Tzong, 5,488,004, Cl. 437-35.000.

U.S. Narrow Networks, Inc.: *See*—
Walkingshaw, M. Jay; Somerville, Lorne R.; Esdaile, Anthony R.; and Stuart, David J., 5,488,423, Cl. 348-460.000.

United States of America
Administrator, Environmental Protection Agency: *See*—
Sefferman, Steven I.; and Bishop, Paul L., 5,487,829, Cl. 210-151.000.
Agriculture: *See*—
Williams, Earl J.; and Adams, Stephen D., 5,488,479, Cl. 356-402.000.
Army: *See*—
Davis, William R.; and Walton, Willard S., 5,487,298, Cl. 73-12.050.
Gustiva, Alfonso C.; Schwenk, David M.; and Miller, James P., 5,487,311, Cl. 73-861.770.
Infrate, Gerald J.; Dutta, Mitra; Shen, Paul H.; and Stroscio, Michael A., 5,488,226, Cl. 250-338.400.
Vig, John R., 5,488,333, Cl. 331-66.000.
Health and Human Services: *See*—
DiFiore, Pier P.; and Fazioli, Francesca, 5,487,979, Cl. 435-240.200.
Umrigar, Pesi P.; and Kuan, Shia S., 5,487,998, Cl. 436-93.000.
Navy: *See*—
DeAngelis, Christopher M., 5,488,589, Cl. 367-131.000.
Friebele, Edward J.; and Kersey, Alan D., 5,488,475, Cl. 356-352.000.
McGraw, Peter S.; and Kelly, Charles M., 5,488,278, Cl. 318-626.000.
Nedderman, William H., Jr, 5,487,351, Cl. 114-332.000.
Nivens, David E.; Chambers, James Q.; and White, David C., 5,487,981, Cl. 435-30.000.
Rivera, David F.; Floyd, Thomas R.; and Josypenko, Michael J., 5,488,336, Cl. 333-252.000.
Supcoe, Robert F.; and Moran, Francis J., Jr., 5,488,076, Cl. 523-175.000.

U.S. Philips Corporation: *See*—
Aldcormaas, Gerardus W. A.; Braun, Augustinus L.; and Klerk, Sander J., 5,488,517, Cl. 360-53.000.

Brotherton, Stanley D., 5,488,001, Cl. 437-21.000.
Devolf, Jan; Lokhoff, Gerardus C. P.; and Hoogendoorn, Abraham, 5,488,663, Cl. 380-49.000.
Journeau, Jacques, 5,488,241, Cl. 257-273.000.
Kalfs, Johannes J. W.; and Kaesphens, Franciscus A., 5,488,516, Cl. 360-51.000.
Ridgers, Timothy, 5,488,329, Cl. 327-539.000.
Van Driel, Carel-Jan L., 5,488,617, Cl. 371-37.100.
Zijderhand, Frans; and Weling, Alfred L. M., 5,488,611, Cl. 370-108.000.

United States Surgical Corporation: *See*—
Sorrentino, Gregory; and Alli, Alim, 5,487,499, Cl. 227-175.100.

United Technologies Corporation: *See*—
Beacham, William H., Jr.; and Lillestolen, Erik C., 5,488,323, Cl. 327-74.000.
Leosi, Peter B., 5,487,854, Cl. 264-46.400.

Universal Maschinenfabrik: *See*—
Kilhaert, Gottfried, 5,487,282, Cl. 66-69.000.

University of Akron, The: *See*—
Eckert, Richard L.; Smith, Daniel J.; and Schafer, Irwin, 5,487,889, Cl. 424-93.100.

University of California, The Regents of the: *See*—
Carman, Margaret L.; Jackson, Kenneth J.; Knapp, Richard B.; Kaczovich, John P.; Shah, Nilesh N.; and Taylor, Robert T., 5,487,834, Cl. 210-606.000.
Kim, Sung-Hou; and Cho, Joong M., 5,487,983, Cl. 435-69.100.
McCarthy, Anthony M., 5,488,012, Cl. 437-62.000.
Nakada, Tsutomu, 5,488,297, Cl. 324-309.000.
Tilley, T. Don; and Imori, Toru, 5,488,091, Cl. 528-9.000.
Wei, Edward T., 5,488,033, Cl. 514-12.000.

University of Cincinnati, The: *See*—
Sefferman, Steven I.; and Bishop, Paul L., 5,487,829, Cl. 210-151.000.

University of Kentucky Research Foundation: *See*—
Carney, John M., 5,488,145, Cl. 562-62.000.

University of New York: *See*—
Cabasso, Israel; and Greiver, Daniel, 5,488,087, Cl. 525-100.000.

University of Pittsburgh: *See*—
Salter, Russell D., 5,487,982, Cl. 435-69.100.

University of Texas System, The Board of Regents of the: *See*—
Shin, Almon S.; Tung, Samuel S.; and Gastorf, Robert J., 5,487,394, Cl. 128-846.000.

University of Utah Research Foundation: *See*—
Capecchi, Mario R.; and Thomas, Kirk R., 5,487,992, Cl. 435-172.300.

University of Virginia Patent Foundation: *See*—
Taylor, Ronald P.; Sutherland, William M.; Reist, Craig; Wright, Eleanor L.; Webb, Donna; and Labaguen, Ronald, 5,487,890, Cl. 424-136.100.

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Wakabayashi, Naoto; Tsuchiko, Masayoshi; Akama, Terufumi; Maekawa, Hiromi; Shikata, Hiroyuki; Yamazaki, Nobuo; and Kawaguchi, Tomio, 5,487,386, Cl. 128-660.010.
Yamazaki, Susumu: *See*—
Asabuki, Hiroshi; Fujio, Masayuki; Watanabe, Takashi; Yamazaki, Susumu; and Ishida, Fumiaki, 5,487,639, Cl. 415-55.100.
Yang, Jerry S. C. Multi purpose lamp. 5,488,550, Cl. 362-298.000.
Yang, Ming-Sheng; Cherng, Yu-Show; and Lu, Chien-Te, to Chi Mei Corporation. Liner for a cargo container. 5,487,485, Cl. 220-403.000.
Yang, Ming-Tzong, to United Microelectronics Corporation. SOI by large angle oxygen implant. 5,488,004, Cl. 437-35.000.
Yang, Peichun; Zhu, Wei; and Glass, Jeffrey T., to North Carolina State University. Diamond films on nondiamond substrates. 5,487,945, Cl. 428-408.000.
Yano, Shinsuke: *See*—
Abe, Masahiro; Nanataki, Tsutomu; and Yano, Shinsuke, 5,488,019, Cl. 501-139.000.
Yasuda, John P. Golf training method. 5,487,546, Cl. 273-187.200.
Yasuda, Shigeyuki. Electric power generating element. 5,487,790, Cl. 136-200.000.
Yasuoka, Tatsuhiko: *See*—
Kuji, Takehito; and Yasuoka, Tatsuhiko, 5,487,414, Cl. 139-383.00A.
Yau, Leopoldo D.: *See*—
Chambers, Stephen; Brown, Brian J.; Chern, Chan-Hong; Chau, Robert; and Yau, Leopoldo D., 5,488,003, Cl. 437-31.000.
Yau, Yeong J. Perching rod for bird cage. 5,487,360, Cl. 119-26.000.
Yazaki Corporation: *See*—
Kondo, Hiroki; Totsuka, Mitsuhiko; and Kudo, Toshiharu, 5,488,346, Cl. 337-198.000.
Sawada, Yoshitsugu, 5,487,686, Cl. 439-884.000.
Seki, Yoshinobu; Kawaguchi, Kenichiro; Oozono, Gen; Sugiyama, Akio; and Oikawa, Ryuetsu, 5,488,345, Cl. 337-186.000.
Tsuji, Masanori; Kashiyama, Motohisa; and Kitamura, Takuya, 5,487,678, Cl. 439-352.000.
Yamanashi, Makoto, 5,487,680, Cl. 439-552.000.
Yoda Research and Development Co., Ltd.: *See*—
Shamir, Adi, 5,488,664, Cl. 380-54.000.
Yeung, Pak-Ho, to National Semiconductor Corp. Voltage to current converter having feedback for providing an exponential current output. 5,488,289, Cl. 323-312.000.
Yip Tai Toys Industrial Ltd.: *See*—
Chiu, Frank T. S., 5,487,691, Cl. 446-126.000.
Yokotsuka, Isao: *See*—
Aoki, Masaaki; Yokotsuka, Isao; and Ogata, Yoshihiro, 5,488,266, Cl. 313-509.000.
Yokouchi, Atsushi: *See*—
Yabe, Toshikazu; Yamamoto, Atsuhiro; Yokouchi, Atsushi; and Esumi, Kunio, 5,487,840, Cl. 252-62.510.
Yokoyama, Shotaro: *See*—
Mori, Kenichi; and Yokoyama, Shotaro, 5,488,645, Cl. 377-20.000.
Yokoyama, Takaaki; Sasaki, Hirotaka; Ohno, Yumiko; Nakajima, Kentaro; Miura, Yasuhiro; and Mori, Hideki, to Kao Corporation. Method for improving the qualities of meat and meat piece treated thereby. 5,487,903, Cl. 426-56.000.
Yonekawa, Naomichi: *See*—
Ohmi, Tadahiro; Yonekawa, Naomichi; Horiki, Hiroyuki; Kaji, Toshimitsu; Kunimoto, Fumitomo; and Tanaki, Takeo, 5,487,398, Cl. 134-95.100.
Yonemoto, Yoshinobu: *See*—
Shirota, Yasuhiro; Inada, Hiroshi; Yonemoto, Yoshinobu; Wakimoto, Takeo; and Imai, Kunio, 5,487,953, Cl. 428-690.000.
Yoo, Beoung Doo: *See*—
Yoo, Han-Ill; Park, Tae Ho; Kang, Dae Suk; and Yoo, Beoung Doo, 5,487,952, Cl. 428-552.000.
Yoo, Han-Ill; Park, Tae Ho; Kang, Dae Suk; and Yoo, Beoung Doo. Sintered BI2TE3-based thermoelectric materials preventing P- to N-type transition. 5,487,952, Cl. 428-552.000.
Yoo, Tae W. Process for producing moxas. 5,487,883, Cl. 424-40.000.
Yoshida, Masanori: *See*—
Mochizuki, Seiji; Kawakami, Kazuhisa; Nakamura, Masahiro; Ohshima, Keiichi; and Yoshida, Masanori, 5,488,401, Cl. 347-86.000.
Yoshida, Toshihiko: *See*—
Fujii, Yoshiharu; and Yoshida, Toshihiko, 5,488,498, Cl. 359-88.000.
Yoshii, Shigeo; Okawa, Kazuhiro; Tsujimura, Ayumi; and Mitsuyu, Tsuneo, to Matsushita Electric Industrial Co., Ltd. Semiconductor element having bivalent and VI group element and an insulating layer. 5,488,234, Cl. 257-94.000.
Yoshikawa, Masayoshi: *See*—
Takemoto, Takatoshi; Yoshikawa, Masayoshi; Aoyama, Moriyuki; Muramatsu, Meiji; and Kawashima, Kazunari, 5,487,696, Cl. 451-105.000.
Yoshimura, Shuji: *See*—
Kakuma, Satoshi; Yoshimura, Shuji; Hajikano, Kazuo; Murayama, Masami; and Okuyama, Yuzo, 5,488,606, Cl. 370-16.000.
Yoshinaga, Minoru: *See*—
Nojiri, Hironobu; Yakushiji, Kazuyuki; Yoshinaga, Minoru; and Terasaka, Hiroyuki, 5,487,512, Cl. 242-471.000.
Yost, Dennis P.: *See*—
Demarest, David; Duncan, Robert B.; Sobel, Martin; Lenihan, Timothy P.; Rattan, William; Blanch, John F.; Hodulik, Michael G.; and Yost, Dennis P., 5,487,212, Cl. 29-407.000.
Young, Eugene F.; and O'Keefe, Dennis J., to Xerox Corporation. Magnetic compositions with surface additives. 5,487,841, Cl. 252-62.590.
Young, Jeffery L.: *See*—
Hult, David R.; Young, Jeffery L.; and Holsten, Stuart V., 5,487,213, Cl. 29-596.000.
Yount, Patty L.; and Fisher, Jacob E., Jr., to J. P. Walls, Inc. Predecorated wallboard joint and method of joining predecorated wallboards to form a concealed joint. 5,487,250, Cl. 52-417.000.
Yu, Dequan: *See*—
Gaston, Robert D.; and Yu, Dequan, 5,487,650, Cl. 417-423.300.
Yu, George W.; and Holtgrewe, H. Logan. Surgical clip having a longitudinal opening through which clamped tissue protrudes. 5,487,746, Cl. 606-151.000.
Yuen, Henry C.; and Kwoh, Daniel S. Apparatus and method for tracking the playing of VCR programs. 5,488,409, Cl. 348-5.000.
Yugawa, Keiko: *See*—
Shigetoh, Nobuyuki; Miyazaki, Jipei; Nakayama, Hiroshi; Yugawa, Keiko; and Mitsumata, Tadayasu, 5,488,114, Cl. 548-510.000.
Yuh, Huoy-Jen: *See*—
Godlove, Ronald E.; Jordan, Venita A.; McCumiskey, Robert E.; Yuh, Huoy-Jen; and Zaman, Kamran U., 5,488,460, Cl. 355-211.000.
Yuki, Tadayuki; and Kato, Iku, to Asahi Kasei Kogyo Kabushiki Kaisha. Wrap film containing box and manufacturing method therefor. 5,487,716, Cl. 493-86.000.
Yurman, Richard: *See*—
Bartilucci, Anthony R.; Gilchrist, George W.; and Yurman, Richard, 5,487,864, Cl. 264-219.000.
Zabel, Dale D.; Brown, Charles B.; and Cassetta, James V., to Thomas J. Lipton Co., Division of Conopco, Inc. Process for preparing a meat emulsion containing meat broth. 5,487,909, Cl. 426-574.000.
Zabel, Dale D.; Brown, Charles B.; and Cassetta, James V., to Thomas J. Lipton, Co., Division of Conopco, Inc. Process for preparing a meat emulsion containing meat broth and product thereof. 5,487,910, Cl. 426-574.000.
Zabriskie, Kenneth A.: *See*—
Majeti, Venkata C.; Midani, Mowaffak T.; Watson, Richard J.; and Zabriskie, Kenneth A., 5,488,412, Cl. 348-10.000.
Zaffetti, Mark A.: *See*—
Castonguay, Roger N.; Rosen, James L.; and Zaffetti, Mark A., 5,488,211, Cl. 200-400.000.
Zagar, Paul S.: *See*—
Ong, Adrian E.; Waller, William K.; and Zagar, Paul S., 5,488,583, Cl. 365-201.000.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Kondo, Shinichi; Shibehara, Seiji; Usui, Takayuki; Kudo, Toshiaki; Gomi, Shuichi; Tamura, Atsushi; Ikeda, Yoko; Ikeda, Daishiro; and Takeuchi, Tomio, 5,488,038, Cl. 514-41.000.
Zakman, Zdravko M.: *See*—
Agahi-Kesheh, Darioush; Zakman, Zdravko M.; and Kenoun, Robert, 5,488,335, Cl. 333-206.000.
Zaman, Kamran U.: *See*—
Godlove, Ronald E.; Jordan, Venita A.; McCumiskey, Robert E.; Yuh, Huoy-Jen; and Zaman, Kamran U., 5,488,460, Cl. 355-211.000.
Zambon Group S.p.A.: *See*—
Stroppolo, Federico; Bonadeo, Daniele; Tocchini, Francesco; and Gazzaniga, Annibale, 5,488,069, Cl. 514-772.400.
Zampini, Michael A.; Flum, Alan; Davis, Donald E.; and Dombrowski, Joseph J., to Sony Corporation; and Sony Electronics Inc. Manual cross fade learn feature for an audio follow video mixer. 5,488,669, Cl. 381-119.000.
Zapisek, John: *See*—
McKee, Mark P.; Zapisek, John; Bulfer, David M.; Long, John M.; Nickolls, John R.; and Blank, William T., 5,488,694, Cl. 395-824.000.
Zaun, Kenneth E.: *See*—
DeLiso, Evelyn M.; and Zaun, Kenneth E., 5,488,021, Cl. 502-63.000.
Zayed, Gaith O.: *See*—
Benedict, Lawrence R.; and Zayed, Gaith O., 5,488,458, Cl. 355-206.000.
Zehle, Gunter; Juhnke, Hubert; and Ismar, Thomas T., to Ismar Maschinen GmbH. Process and device for the continuous blending of liquid and/or pourable materials into foodstuff masses. 5,487,605, Cl. 366-300.000.
Zeller, Peter K.: *See*—
Kemner, Axel; Keschwari, Mahmud; and Zeller, Peter K., 5,488,287, Cl. 322-20.000.
Zeller, Robert S., to Millipore Corporation. High-efficiency metal membrane element, filter, and process for making. 5,487,771, Cl. 55-523.000.
Zeofuels Research (Proprietary) Limited: *See*—
Hutchin, Graham J.; Themistocleous, Themistoclis; and Copperthwaite, Richard G., 5,488,165, Cl. 564-479.000.
Zerrer, Ralf: *See*—

Engelhardt, Fritz; Kühlwein, Jürgen; Schuler, Wilfried; Zerrer, Ralf; and Antwerpen, Werner, 5,488,123, Cl. 556-428.000.
Zeuner, Lothar: *See*—
Schlitter, Peter; and Zeuner, Lothar, 5,487,327, Cl. 92-128.000.
Zhang, Hongyong; and Teramoto, Satoshi, to Semiconductor Energy Laboratory Co., Ltd. Method of fabricating a thin film transistor using a nickel silicide layer to promote crystallization of the amorphous silicon layer. 5,488,000, Cl. 437-21.000.
Zhang, Jiming: *See*—
Li, Yi-Qun; and Zhang, Jiming, 5,487,356, Cl. 117-99.000.
Zhang, Shu hui: *See*—
Yamamoto, Shigeru; Matsushita, Shigenori; Zhang, Shu hui; Nishita, Satoru; and Nakata, Kazushi, 5,487,428, Cl. 172-4.500.
Zhou, Xinhua: *See*—
Hayes, John E.; Simroth, Donald W.; and Zhou, Xinhua, 5,488,085, Cl. 525-53.000.
Zhu, Wei: *See*—
Yang, Peichun; Zhu, Wei; and Glass, Jeffrey T., 5,487,945, Cl. 428-408.000.
Zide, Robert M.: *See*—
Zide, Rodney M.; Zide, Robert M.; and Rector, James L., 5,487,187, Cl. 2-2.000.
Zide, Rodney M.; Zide, Robert M.; and Rector, James L. Underarm straps for shoulder pads. 5,487,187, Cl. 2-2.000.
Ziegler, Carl; Febio, Paul; Bush, Karen; and Steinberg, Deborah, to American Cyanamid Company. Process for preparing 6-[(isoxazolinyl)methyl]penicillanic acid 1,1-dioxide compounds. 5,488,106, Cl. 540-310.000.
Zielinski, James S.: *See*—
Orrico, Mario M. V.; Olson, William J.; Zielinski, James S.; and Crippen, Randall M., 5,488,209, Cl. 200-61.700.
Zijderhand, Frans; and Weling, Alfred L. M., to U.S. Philips Corporation. Method and arrangement for data transmission. 5,488,611, Cl. 370-108.000.
Zimmerman, Thomas G.; and Wasman, Samuel P. Electronic musical re-performance and editing system. 5,488,196, Cl. 84-612.000.
Zimron, Ohad: *See*—
Kedar, Alon; and Zimron, Ohad, 5,487,765, Cl. 55-310.000.
Zink, Scott E.: *See*—
Baker, Daniel G.; Parish, Robert W.; and Zink, Scott E., 5,488,310, Cl. 324-648.000.
Zinman, Stan A.: *See*—
Cheung, Tin-Tack P.; Johnson, Marvin M.; Brown, Scott H.; Zinman, Stan A.; and Kimble, James B., 5,488,024, Cl. 502-325.000.
Zomorrodi, Mahdad: *See*—
Werner, Alan J., Jr.; Mojaradi, Mohamad M.; Zomorrodi, Mahdad; Buhler, Steven A.; and Vo, Tuan A., 5,488,301, Cl. 324-458.000.
Zouev, Valerii P.: *See*—
Kourbatov, Vladimir A.; Borsyko, Nataljya P.; Zouev, Valerii P.; and Liakumovich, Alexandr G., 5,488,192, Cl. 585-435.000.
Zuo, Lianghe, to Caterpiller Inc. Injection rate shaping control ported check stop for a fuel injection nozzle. 5,487,508, Cl. 239-533.500.
Zygo Corporation: *See*—
de Groot, Peter, 5,488,477, Cl. 356-359.000.
Zytka, Donald J.; Madden, Peter G.; and Eglinton, Robert B. Miniaturisement for material handling. 5,487,768, Cl. 55-385.200.
3DO Company, The: *See*—
Main, David R., 5,488,576, Cl. 364-724.010.
1st Desk Systems, Inc.: *See*—
Gibson, Seann; and Gibson, Kerr, 5,488,717, Cl. 395-600.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30th DAY OF JANUARY, 1996

NOTE— Arranged is accordance with the first significant character or word if the name (in accordance with city and telephone directory practice).

Anthony's Manufacturing Company, Inc.: *See*—
Richardson, Richard J.; and Downing, Bennie R., Re. 35,149, Cl. 52-204.593.
Downing, Bennie R.: *See*—
Richardson, Richard J.; and Downing, Bennie R., Re. 35,149, Cl. 52-204.593.
Fuji Spinning Company, Limited: *See*—
Hirukawa, Tsuguhisa; Tanibe, Hiroaki; and Miyaji, Tuguo, Re. 35,151, Cl. 428-364.000.
Hirukawa, Tsuguhisa; Tanibe, Hiroaki; and Miyaji, Tuguo, to Fuji Spinning Company, Limited. Modified cellulose regenerated fiber comprising chitosan particles. Re. 35,151, Cl. 428-364.000.
Horst, James F.: *See*—
McKenna, Frank J., Jr.; Horst, Richard K.; Horst, James F.; Wright, Charles S.; and Matthews, John D., Re. 35,150, Cl. 56-328.100.
Horst, Richard K.: *See*—
McKenna, Frank J., Jr.; Horst, Richard K.; Horst, James F.; Wright, Charles S.; and Matthews, John D., Re. 35,150, Cl. 56-328.100.
Matthews, John D.: *See*—
McKenna, Frank J., Jr.; Horst, Richard K.; Horst, James F.; Wright, Charles S.; and Matthews, John D., Re. 35,150, Cl. 56-328.100.
McKenna, Frank J., Jr.; Horst, Richard K.; Horst, James F.; Wright, Charles S.; and Matthews, John D., to McKenna: Kathleen. Tray for fruit harvesting system. Re. 35,150, Cl. 56-328.100.
McKenna: Kathleen: *See*—
McKenna, Frank J., Jr.; Horst, Richard K.; Horst, James F.; Wright, Charles S.; and Matthews, John D., Re. 35,150, Cl. 56-328.100.
Miyaji, Tuguo: *See*—
Hirukawa, Tsuguhisa; Tanibe, Hiroaki; and Miyaji, Tuguo, Re. 35,151, Cl. 428-364.000.
Richardson, Richard J.; and Downing, Bennie R., to Anthony's Manufacturing Company, Inc. Railless refrigerator display door. Re. 35,149, Cl. 52-204.593.
Tanibe, Hiroaki: *See*—
Hirukawa, Tsuguhisa; Tanibe, Hiroaki; and Miyaji, Tuguo, Re. 35,151, Cl. 428-364.000.
Wright, Charles S.: *See*—
McKenna, Frank J., Jr.; Horst, Richard K.; Horst, James F.; Wright, Charles S.; and Matthews, John D., Re. 35,150, Cl. 56-328.100.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Antwiler, Glen D., to Cobe Laboratories, Inc. Washing cells. B1 5,141,486, Cl. 494-37.000.
Brasiawsky, Gary R.: *See*—
Kaneko, Takeshi; Willner, David; Monkovic, Ivo; Greenfield, Robert S.; and Brasiawsky, Gary R., B1 5,137,877, Cl. 514-25.000.
Bristol-Myers Squibb Company: *See*—
Kaneko, Takeshi; Willner, David; Monkovic, Ivo; Greenfield, Robert S.; and Brasiawsky, Gary R., B1 5,137,877, Cl. 514-25.000.
Cobe Laboratories, Inc.: *See*—
Antwiler, Glen D., B1 5,141,486, Cl. 494-37.000.
Counselman, Charles C., III, to Western Atlas International, Inc. System for simultaneously deriving position information from a plurality of satellite transmissions. B1 5,014,066, Cl. 342-352.000.
Environ Products, Inc.: *See*—
Webb, Michael C., B1 5,297,996, Cl. 405-52.000.
Greenfield, Robert S.: *See*—
Kaneko, Takeshi; Willner, David; Monkovic, Ivo; Greenfield, Robert S.; and Brasiawsky, Gary R., B1 5,137,877, Cl. 514-25.000.
Kaneko, Takeshi; Willner, David; Monkovic, Ivo; Greenfield, Robert S.; and Brasiawsky, Gary R., to Bristol-Myers Squibb Company. Bifunctional linking compounds, conjugates and methods for their production. B1 5,137,877, Cl. 514-25.000.
Kaplan, Carl, to Plough, Inc. Substantive topical compositions. B1 4,522,807, Cl. 424-59.000.
Monkovic, Ivo: *See*—
Kaneko, Takeshi; Willner, David; Monkovic, Ivo; Greenfield, Robert S.; and Brasiawsky, Gary R., B1 5,137,877, Cl. 514-25.000.
Plough, Inc.: *See*—
Kaplan, Carl, B1 4,522,807, Cl. 424-59.000.
Webb, Michael C., to Environ Products, Inc. Environmentally safe underground piping system. B1 5,297,896, Cl. 405-52.000.
Western Atlas International, Inc.: *See*—
Counselman, Charles C., III, B1 5,014,066, Cl. 342-352.000.
Willner, David: *See*—
Kaneko, Takeshi; Willner, David; Monkovic, Ivo; Greenfield, Robert S.; and Brasiawsky, Gary R., B1 5,137,877, Cl. 514-25.000.

LIST OF DESIGN PATENTEES

Ablenet, Inc.: *See*—
Hallgren, Leander; and Peterson, Lisa E., 366,657, Cl. D14-160.000.
ABU AB: *See*—
Storz, Achim, 366,690, Cl. D22-140.000.
Ancona, Bruce, to B. Via International Housewares, Inc. Kettle. 366,589, Cl. D7-320.000.
Anderson, John R. Lemonade stand. 366,634, Cl. D12-102.000.
Antonious, Anthony J. Metal wood golf club head. 366,682, Cl. D21-214.000.
Aptar Group, Inc.: *See*—
Knickerbocker, Michael G., 366,616, Cl. D9-445.000.
Arnette, Gregory F. Sunglasses. 366,666, Cl. D16-325.000.
Arnette, Gregory F. Sunglasses. 366,667, Cl. D16-329.000.
Arthur, Lawrence C. Firefighter rescue and utility belt with detachable carrier. 366,734, Cl. D29-124.000.
Ashby, Ann: *See*—
Ashby, Theodore; and Ashby, Ann, 366,557, Cl. D2-870.000.
Ashby, Theodore; and Ashby, Ann. Soft hat in the shape of a football helmet. 366,557, Cl. D2-870.000.
Avery Dennison Corporation: *See*—
Deschenes, Charles L.; Jones, Terence J.; and Cooper, William J., 366,608, Cl. D8-382.000.
B. Via International Housewares, Inc.: *See*—
Ancona, Bruce, 366,589, Cl. D7-320.000.
Bailey, Jane B. Filing cart for educational assessment portfolios. 366,744, Cl. D34-12.000.
Ballentine, Lester E. Water craft propulsion device with pivoting vane. 366,643, Cl. D12-317.000.
Barry, Michael R.: *See*—
McKinnon, Raymond J., Jr.; and Barry, Michael R., 366,650, Cl. D14-114.000.
Barta, Robert D.: *See*—
Penn, Evan R.; and Barta, Robert D., 366,602, Cl. D7-636.000.
BC-USA, Inc.: *See*—
Fultz, Jerry, 366,613, Cl. D9-429.000.
Becton Dickinson and Company: *See*—
Kirk, Karl D., III; and Toleman, James R., 366,702, Cl. D24-189.000.
Beliard, Claire: *See*—
Sanchez, Russell; Paull, Mike; Kaneko, Steve; Chin, Henry; Dillon, Robert; Knodt, Michael; and Beliard, Claire, 366,655, Cl. D14-114.000.
Benson, Steven R. Snow mobile engine head. 366,660, Cl. D15-5.000.
Berazaluce, Guillen, to Moulinex Societe Anonyme. Combined air purifier and cleaner. 366,695, Cl. D23-364.000.
Bergstresser, William A.: *See*—
Stiehl, Mark A.; Bergstresser, William A.; Niedospial, John J.; Chapman, Raymond P.; Dale, Berle A.; Felts, Richard J.; and Pfaff, Douglas W., 366,698, Cl. D24-114.000.
Berol Corporation: *See*—
Kitzmiller, Sean, 366,671, Cl. D19-53.000.
Kitzmiller, Sean, 366,672, Cl. D19-53.000.
Berry, Richard D., Jr.; and Clark, David A., to Ethea Allen Finance Corporation. Elliptical coffee table. 366,580, Cl. D6-480.000.
Black & Decker Inc.: *See*—
Kaiser, David W., 366,707, Cl. D26-43.000.
Santarsiero, Paul S., 366,708, Cl. D26-43.000.
Szmanski, Aaron, 366,709, Cl. D26-43.000.
Szymanski, Aaron, 366,710, Cl. D26-43.000.
Blake, Kenneth R., to Scanlan International. Thoracoscopic forceps ring forceps. 366,699, Cl. D24-143.000.
Blake, Kenneth R., to Scanlan International. Thoracoscopic debakey clamp. 366,700, Cl. D24-143.000.
Blumenauer, Jon M., to Clipstix, Inc. Spring clip. 366,610, Cl. D8-395.000.
Bobo, Michael: *See*—
Holmgren, Paul; and Bobo, Michael, 366,607, Cl. D8-382.000.
Borden, Robert W. Light fixture. 366,721, Cl. D26-110.000.
Botkins, L. T. Fishing float. 366,691, Cl. D22-146.000.
Bourgeois, Bryon J.: *See*—
Edstrom, Richard C.; Bourgeois, Bryon J.; and Hirst, Richard N., 366,612, Cl. D9-429.000.
Brickner, Louis C.: *See*—
Haffely, Jeffrey L.; Lei, Xue; and Brickner, Louis C., 366,662, Cl. D15-124.000.
Brillet, Isabelle; and Brillet, Jean-Louis, to Maison J.R. Brillet S.A. Bottle. 366,618, Cl. D9-522.000.
Brillet, Jean-Louis: *See*—
Brillet, Isabelle; and Brillet, Jean-Louis, 366,618, Cl. D9-522.000.
Brooks, James P.; Buck, Ross L.; Hackett, John P.; Hoffman, Kenneth E.; Pethtel, Kermit B., Jr.; Robbins, John F.; Steelman, William J.; Fitzgerald, Martin F.; and Thawley, Thomas J., to Ingalls Shipbuilding Inc. Multi purpose frigate. 366,642, Cl. D12-315.000.
Brown, Patrick W.; and Saunders, Craig M., to Rubbermaid Specialty Products Inc. Wheeled insulated cooler. 366,599, Cl. D7-605.000.
Bryant, Edward, to Hedgestone Holdings, Inc. Textured paving stone. 366,704, Cl. D25-113.000.
Buck, Ross L.: *See*—
Brooks, James P.; Buck, Ross L.; Hackett, John P.; Hoffman, Kenneth E.; Pethtel, Kermit B., Jr.; Robbins, John F.; Steelman, William J.; Fitzgerald, Martin F.; and Thawley, Thomas J., 366,642, Cl. D12-315.000.
Bushey, Russell. Vehicle body protective panel unit. 366,637, Cl. D12-167.000.
Calmar Inc.: *See*—
Wadsworth, Ronald, 366,692, Cl. D23-213.000.
Cambro Manufacturing Company: *See*—
Campbell, Argyle; and Maddux, Larry D., 366,581, Cl. D6-491.000.
Campbell, Argyle; and Maddux, Larry D., to Cambro Manufacturing Company. Food service divider bar. 366,581, Cl. D6-491.000.
Carlson, Bradley J.; and Daugherty, Jonathan M., to Metro Industries, Inc. Middle shelf for use in a bussing cart. 366,749, Cl. D34-27.000.
Carr, Francis L., to SAFCO Corporation. Electrical connector. 366,646, Cl. D13-146.000.
Carroll, Charles E., to Thermo Jarrell Ash Corporation. Oil analysis apparatus. 366,625, Cl. D10-81.000.
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CLASS 106
18.35 5,487,776
188 5,487,777
287.23 5,487,778
480 5,487,779

CLASS 108
42 5,487,342
51.1 5,487,343
51.3 5,487,344
5,487,345

CLASS 111
127 5,487,346

CLASS 112
242 5,487,347
259 5,487,348

CLASS 114
219 5,487,349
330 5,487,350
332 5,487,351

CLASS 116
218 5,487,352

CLASS 117
4 5,487,353
13 5,487,354
5,487,355
99 5,487,356
104 5,487,357
200 5,487,358

CLASS 118
231 5,487,780
300 5,487,781
621 5,487,782
715 5,487,783
718 5,487,784
723 E 5,487,785
5,487,786
723 R 5,487,787

CLASS 119
14.17 5,487,359
26 5,487,360
28.5 5,487,361

CLASS 123
27 GE 5,487,362
41.74 5,487,363
193.6 5,487,364
306 5,487,365
336 5,487,366
420 5,487,367
470 5,487,368
520 5,487,369
538 5,487,370
572 5,487,371
585 5,487,372
753 5,487,392

CLASS 134
23.1 5,487,373
86 5,487,374
89 5,487,375

CLASS 128
34.4 5,487,927
200.16 5,487,378
201.11 5,487,379
204.15 5,487,380
207.14 5,487,381
5,487,382
207.15 5,487,383
633 5,487,384
642 5,487,385
660.01 5,487,386
660.02 5,487,387
660.09 5,487,388
661.09 5,487,389
662.02 5,487,390
699 5,487,391
760 5,487,393
846 5,487,394
878 5,487,395

CLASS 132
248 5,487,396

CLASS 134
1 5,487,788
6 5,487,397
38 5,487,789
95.1 5,487,398
138 5,487,399

CLASS 135
33.7 5,487,401
87 5,487,400
5,487,807

CLASS 136
200 5,487,790
245 5,487,791
256 5,487,792

CLASS 137
115 5,487,403
413 5,487,404
501 5,487,405
510 5,487,406
522 5,487,807
556.3 5,487,408
625.64 5,487,409
625.65 5,487,410

CLASS 138
98 5,487,411
149 5,487,412

CLASS 139
116.2 5,487,413
383 A 5,487,414
452 5,487,415

CLASS 140
105 5,487,416

CLASS 141
31 5,487,417
392 5,487,418

CLASS 148
111 5,487,794
520 5,487,795
633 5,487,796
672 5,487,797

CLASS 149
22 5,487,798

CLASS 156
64 5,487,801
71 5,487,799
73.1 5,487,802
87 5,487,800
91 5,487,803
148 5,487,804
150 5,487,805
175 5,487,806
239 5,487,809
353 5,487,807
556 5,487,808
606.1 5,487,811

CLASS 162
9 5,487,419
72 5,487,812
111 5,487,813

CLASS 164
87 5,487,429
447 5,487,421

CLASS 165
67 5,487,422
156 5,487,423
166 5,487,424

CLASS 166
295 5,487,425
378 5,487,426
382 5,487,427

CLASS 173
4.5 5,487,428
175 5,487,429

CLASS 173
91 5,487,430

CLASS 174
42 5,488,197
48 5,488,198
73.1 5,488,199
261 5,488,200
262 5,488,201

CLASS 175
80 5,487,431
5,487,432
78 5,487,433
323 5,487,434
363 5,487,435
432 5,487,436

CLASS 177
25.15 5,488,202
184 5,488,203

CLASS 178
18 5,488,204

CLASS 180
6.5 5,487,437
65.1 5,487,438
79.1 5,487,439
164 5,487,440
181 5,487,441
220 5,487,442
227 5,487,443

CLASS 181
129 5,488,205

CLASS 182
6 5,487,444
148 5,487,446
181 5,487,445

CLASS 184
1.5 5,487,447

CLASS 187
247 5,487,448
330 5,487,449
367 5,487,450
392 5,487,451

CLASS 188
72.7 5,487,452
264 G 5,487,453
298 5,487,454
299 5,487,455

CLASS 193
18 A 5,487,456
18 B 5,487,458
58.2 5,487,457

CLASS 194
213 5,487,459

CLASS 198
382 5,487,460
571 5,487,461
594 5,487,462

CLASS 200
6 A 5,488,206
43.04 5,488,207
43.22 5,488,208
61.7 5,488,209
344 5,488,210
400 5,488,211
5,488,212
533 5,488,213

CLASS 203
2 5,487,814
5,487,815
14 5,487,816
38 5,487,817
41 5,487,818

CLASS 204
192.12 5,487,821
298.09 5,487,822
298.12 5,487,823

CLASS 205
128 5,487,824
200 5,487,825
347 5,487,819
716 5,487,820

CLASS 206
145 5,487,463
149 5,487,464
150 5,487,465
214 5,487,466
216 5,487,467
242 5,487,468
308.3 5,487,826
363 5,487,469
522 5,487,470
725 5,487,471

CLASS 209
581 5,487,472

CLASS 210
74.9 5,487,835
87 5,487,827
90 5,487,828
151 5,487,829
169 5,487,830
198.2 5,487,831
232 5,487,832
[illegible] 5,487,833
606 5,487,834
791 5,487,836

CLASS 211
59.1 5,487,473
59.2 5,487,474
70.8 5,487,475
71 5,487,476

CLASS 212
253 5,487,478
270 5,487,479

CLASS 213
43 5,487,480

CLASS 215
252 5,487,481
396 5,487,482

CLASS 216
27 5,487,483
67 5,487,810

CLASS 219
86.25 5,488,215
121.64 5,488,216
137.31 5,488,217
492 5,488,218
627 5,488,214
644 5,488,219
727 5,488,220
765 5,488,221

CLASS 220
201 5,487,484
403 5,487,485
504 5,487,486
509 5,487,487

CLASS 221
190 HC 5,487,488

CLASS 222
1 5,487,489
[illegible] 5,487,490
95 5,487,491
129.1 5,487,492
153.14 5,487,493
158 5,487,494
209 5,487,495
593 5,487,496

CLASS 224
41 5,487,497
224 5,487,498

CLASS 227
175.1 5,487,499
181.1 5,487,500

CLASS 229
87.05 5,487,503
120.17 5,487,504
191 5,487,505
202 5,487,506

CLASS 235
375 5,488,223

CLASS 238
2 5,487,501

CLASS 239
69 5,487,502
391 5,487,507
533.5 5,487,508

CLASS 241
152.2 5,487,509
199.6 5,487,510
282.1 5,487,511

CLASS 242
348.1 5,487,513
383.4 5,487,515
471 5,487,512

CLASS 246
182 C 5,487,516

CLASS 248
215 5,487,517
225.11 5,487,518
311.2 5,487,519
429 5,487,520
441.1 5,487,521
549 5,487,522
551 5,487,523
613 5,487,524
639 5,487,525

CLASS 249
2 5,487,526

CLASS 250
227.16 5,488,224
231.16 5,488,240
236 5,488,225
324 5,488,222
338.4 5,488,226
343 5,488,227
423 R 5,488,228
492.2 5,488,229
548 5,488,230

CLASS 251
62 5,487,527
127 5,487,528
148 5,487,529

CLASS 252
25 5,487,837
49.9 5,487,838
[illegible] 5,487,839
60 5,487,842
62.51 5,487,840
62.59 5,487,841
89.1 5,487,843
175 5,487,844
299.63 5,487,845
389.61 5,487,846
511 5,487,847

CLASS 254
131.5 5,487,530

CLASS 257
17 5,488,231
38.2 5,488,248
77 5,488,232
94 5,488,253
[illegible] 5,488,234
[illegible] 5,488,235
132 5,488,236
194 5,488,237
207 5,488,238
231 5,488,239
273 5,488,241
301 5,488,242
314 5,488,243
[illegible] 5,488,244
316 5,488,245
336 5,488,246
368 5,488,247
401 5,488,249
421 5,488,250
557 5,488,251
579 5,488,252
622 5,488,253
707 5,488,254
718 5,488,255
723 5,488,256
774 5,488,257

CLASS 260
665 R 5,487,848

CLASS 261
30 5,487,531
[illegible] 5,487,849
64.1 5,487,850

CLASS 264
3.3 5,487,851
46.4 5,487,854
63 5,487,855
78 5,487,856
103 5,487,858
[illegible] 5,487,859
[illegible] 5,487,860
134 5,487,861
142 5,487,862
177.11 5,487,863
219 5,487,864
400 5,487,852
496 5,487,853

CLASS 266
271 5,487,532

CLASS 267
140.5 5,487,533
141.1 5,487,534
220 5,487,535

CLASS 269
21 5,487,536
51 5,487,537
71 5,487,538
309 5,487,539

CLASS 273
1.5 A 5,487,540
30 5,487,541
78 5,487,543
138 A 5,487,544
176 FA 5,487,542
178 R 5,487,545
187.2 5,487,546
274 5,487,547
431 5,487,548

CLASS 277
54 5,487,549
65 5,487,550

CLASS 280
11.2 5,487,552
47.19 5,487,551
280 5,487,553
293 5,487,554
403 5,487,555
728.2 5,487,556
728.3 5,487,557
[illegible] 5,487,558
735 5,487,559
740 5,487,560
741 5,487,561
777 5,487,562
806 5,487,563
808 5,487,564
848 5,487,565

CLASS 283
56 5,487,566
72 5,487,567
81 5,487,568

CLASS 288
24 5,487,569
256 5,487,570
259 5,487,571
308 5,487,572
332 5,487,573

CLASS 292
218 5,487,574

CLASS 293
115 5,487,575

CLASS 294
19.1 5,487,576
58 5,487,577
99.2 5,487,578
115 5,487,579
119.1 5,487,580
137 5,487,581
146 5,487,582

CLASS 296
65.1 5,487,583
100 5,487,584
[illegible] 5,487,585
180.1 5,487,586

CLASS 297
219.1 5,487,587
253 5,487,588
342 5,487,589
344.14 5,487,590
452.14 5,487,591

CLASS 301
59 5,487,592

CLASS 303
11 5,487,593
116.2 5,487,597
149 5,487,596
155 5,487,594
166 5,487,598
168 5,487,595

CLASS 307
64 5,488,258

CLASS 310
91 5,488,259
156 5,488,260
249 5,488,261

CLASS 313
9.46 5,487,599
135 5,487,600
183 5,487,601

CLASS 313
141 5,488,262
402 5,488,263
412 5,488,264
414 5,488,265
509 5,488,266

CLASS 315
63 5,488,267
70 5,488,268
307 5,488,269
370 5,488,270
[illegible] 5,488,271
408 5,488,272

CLASS 318
16 5,488,273
101 5,488,274
468 5,488,275
473 5,488,276
587 5,488,277
626 5,488,278
801 5,488,279
805 5,488,280
806 5,488,281

CLASS 320
14 5,488,282
15 5,488,283
39 5,488,284
46 5,488,285

CLASS 321
10 5,488,286
20 5,488,287

CLASS 323
284 5,488,288
312 5,488,289

CLASS 324
74 5,488,290
96 5,488,291
158.1 5,488,292
202 5,488,293
[illegible]21 5,488,294
248 5,488,295
[illegible] 5,488,296
309 5,488,297
[illegible] 5,488,298
[illegible] 5,488,299
432 5,488,300
458 5,488,301
509 5,488,303
520 5,488,304
537 5,488,305
[illegible] 5,488,306
555 5,488,307
[illegible] 5,488,309
617 5,488,310
648 5,488,311
674 5,488,312
689 5,488,313
[illegible] 5,488,314

CLASS 326
37 5,488,315
41 5,488,316
45 5,488,317
46 5,488,318
115 5,488,319

CLASS 327
65 5,488,320
66 5,488,321
74 5,488,322
[illegible] 5,488,323
77 5,488,324
286 5,488,325
408 5,488,326
536 5,488,327
538 5,488,328
539 5,488,329

CLASS 330
261 5,488,330
296 5,488,331

CLASS 331
25 5,488,332
66 5,488,333

CLASS 333
22 F 5,488,334
206 5,488,335
252 5,488,336

CLASS 335
202 5,488,337
[illegible] 5,488,338
216 5,488,339
253 5,488,340
302 5,488,341
306 5,488,342

CLASS 336
206 5,488,344
229 5,488,343

CLASS 337
186 5,488,345
198 5,488,346
380 5,488,347

CLASS 338
22 R 5,488,348
171 5,488,349
225 D 5,488,350

CLASS 340
407.1 5,488,351
431 5,488,352
576 5,488,353
[illegible] 5,488,354
578 5,488,355
825.22 5,488,356
825.25 5,488,357
825.31 5,488,358
825.44 5,488,359
933 5,488,360
984 5,488,361

CLASS 341
20 5,488,362
28 5,488,363
50 5,488,364
51 5,488,365
67 5,488,366
106 5,488,367
119 5,488,368
122 5,488,369
161 5,488,370

CLASS 342
1 5,488,371
5 5,488,372
25 5,488,373
[illegible] 5,488,374
26 5,488,375
42 5,488,376
93 5,488,377
352 B1 5,014,066
357 5,488,378
359 5,488,379
368 5,488,380
372 5,488,381

CLASS 343
700 R 5,488,382
912 5,488,383

CLASS 345
1 5,488,384
3 5,488,385
74 5,488,386
89 5,488,387
97 5,488,388
131 5,488,389
145 5,488,390
156 5,488,391
157 5,488,392
213 5,488,393

CLASS 346
141 5,488,394

CLASS 347
7 5,488,395
37 5,488,396
40 5,488,397
43 5,488,398
[illegible] 5,488,399
85 5,488,400
86 5,488,401
96 5,488,402
211 5,488,403
238 5,488,404
254 5,488,405
259 5,488,406
264 5,488,407

CLASS 348
2 5,488,408
5 5,488,409
5.5 5,488,410
8 5,488,411
10 5,488,412
13 5,488,413
207 5,488,414
241 5,488,415
296 5,488,416
379 5,488,417
398 5,488,418
402 5,488,419
419 5,488,420
448 5,488,421
[illegible] 5,488,422
460 5,488,423
559 5,488,425
569 5,488,426
[illegible] 5,488,427
578 5,488,428
653 5,488,429
699 5,488,430
716 5,488,431
717 5,488,432
722 5,488,433
725 5,488,434
751 5,488,436

CLASS 351
45 5,488,438
58 5,488,439
141 5,488,440
156 5,488,441
169 5,488,442
221 5,488,443

CLASS 354
83 5,488,444
106 5,488,445
289.1 5,488,446
298 5,488,447
313 5,488,448
402 5,488,449

CLASS 355
38 5,488,450
77 5,488,451
[illegible] 5,488,452
[illegible] 5,488,453
[illegible] 5,488,454
[illegible] 5,488,455
203 5,488,456
[illegible] 5,488,457
206 5,488,458
211 5,488,459
[illegible] 5,488,460
[illegible] 5,488,461
215 5,488,462
233 5,488,464
246 5,488,465
256 5,488,466
282 5,488,467
322 5,488,463

CLASS 356
4.01 5,488,468
72 5,488,469
138 5,488,470
139.09 5,488,471
317 5,488,473
326 5,488,474
352 5,488,476
359 5,488,477
376 5,488,478
402 5,488,479
429 5,488,480

CLASS 358
319 5,488,481
339 5,488,482
426 5,488,483
433 5,488,484
444 5,488,485
451 5,488,486
456 5,488,487
468 5,488,488
474 5,488,489
487 5,488,490
501 5,488,491
518 5,488,492

CLASS 359
13 5,488,493
22 5,488,494
56 5,488,495
63 5,488,496
74 5,488,497
88 5,488,498
102 5,488,499
127 5,488,500
137 5,488,501
205 5,488,502
245 5,488,503
248 5,488,504
292 5,488,505
341 5,488,506
344 5,488,507
362 5,488,508
385 5,488,509
478 5,488,510
586 5,488,511
646 5,488,512
699 5,488,513
811 5,488,514

855 5,488,515

CLASS 300
51 5,488,516
53 5,488,517
67 5,488,518
77.08 5,488,519
77.12 5,488,520
97.02 5,488,521
99.06 5,488,522
99.12 5,488,523
108 5,488,524
[illegible] 5,488,525
[illegible] 5,488,526
122 5,488,527
126 5,488,528
128 5,488,529

CLASS 301
6 5,488,530
[illegible] 5,488,531
[illegible] 5,488,533
56 5,488,534
63 5,488,532
119 5,488,535
253 5,488,536
[illegible] 5,488,537
605 5,488,538
720 5,488,539
[illegible] 5,488,541
790 5,488,542
794 5,488,540
[illegible] 5,488,543

CLASS 302
[illegible] 5,488,545
[illegible] 5,488,544
[illegible] 5,488,546
[illegible] 5,488,547
[illegible] 5,488,548
252 5,488,549
298 5,488,550

CLASS 303
[illegible] 5,488,551
[illegible] 5,488,552
[illegible] 5,488,553
25 5,488,554
[illegible] 5,488,555
[illegible] 5,488,556
[illegible] 5,488,562
426.02 5,488,557
449 5,488,558
[illegible] 5,488,559
461 5,488,563
474.16 5,488,564
483 5,488,565
488 5,488,566
497 5,488,567
314 R 5,488,568
[illegible] 5,488,569
[illegible] 5,488,570
[illegible] 5,488,572
578 5,488,573
705.07 5,488,571
707 5,488,575
724.01 5,488,576

CLASS 305
[illegible] 5,488,578
185 5,488,579
189.03 5,488,580
[illegible] 5,488,581
[illegible] 5,488,582
201 5,488,583
203 5,488,584
210 5,488,585
218 5,488,586
222 5,488,587

CLASS 306
81 5,487,602
141 5,487,603
225 5,487,604
300 5,487,605
339 5,487,606

CLASS 307
7 5,488,588
131 5,488,589

CLASS 309
13 5,488,590
[illegible] 5,488,591
[illegible] 5,488,592
32 5,488,593
44.14 5,488,594
54 5,488,595
71 5,488,596
108 5,488,597
112 5,488,599
116 5,488,600
120 5,488,598
126 5,488,601
219 5,488,602
273.2 5,488,603
291 5,488,604
[illegible] 5,488,605

CLASS 370
16 5,488,606
17 5,488,607
82 5,488,610
84 5,488,609
85.13 5,488,608
108 5,488,611

CLASS 371
22.2 5,488,612
22.3 5,488,613
[illegible] 5,488,614
22.4 5,488,615
30 5,488,616
37.1 5,488,617
67.1 5,488,618

CLASS 372
12 5,488,619
18 5,488,620
31 5,488,621
33 5,488,622
36 5,488,623
41 5,488,624
50 5,488,625
70 5,488,626

CLASS 374
158 5,487,687

CLASS 375
13 5,488,648
204 5,488,627
206 5,488,629
[illegible] 5,488,630
[illegible] 5,488,631
239 5,488,628
260 5,488,632
262 5,488,633
340 5,488,635
[illegible] 5,488,636
341 5,488,637
347 5,488,638
355 5,488,639
357 5,488,640
374 5,488,641

CLASS 376
272 5,488,642
313 5,488,634
390 5,488,643
441 5,488,644

CLASS 377
20 5,488,645
47 5,488,646

CLASS 379
62 5,488,649
67 5,488,650
88 5,488,652
100 5,488,651
[illegible] 5,488,653
106 5,488,654
114 5,488,655
155 5,488,656
395 5,488,657

CLASS 380
14 5,488,658
15 5,488,659
24 5,488,660
29 5,488,661
34 5,488,662
49 5,488,663
54 5,488,664

CLASS 381
2 5,488,665
68.4 5,488,668
71 5,488,666
119 5,488,669

CLASS 382
138 5,488,671
165 5,488,670
167 5,488,672
270 5,488,673
284 5,488,674
[illegible] 5,488,675
320 5,488,676

CLASS 384
18 5,487,609
19 5,487,610
113 5,487,608
478 5,487,611
501 5,487,612
539 5,487,613

CLASS 385
3 5,488,677
14 5,488,678
15 5,488,679
24 5,488,680
37 5,488,681
53 5,488,682
98 5,488,683
129 5,488,696

CLASS 387
71 5,488,667

CLASS 395
51 5,488,697
99 5,488,689
109 5,488,690
110 5,488,698
119 5,488,699
120 5,488,692
123 5,488,684
126 5,488,700
157 5,488,685
161 5,488,686
164 5,488,687
182.02 5,488,715
182.04 5,488,701
182.08 5,488,716
183.1 5,488,688
185.05 5,488,691
186 5,488,702
200.05 5,488,693
200.07 5,488,724
200.12 5,488,703
228 5,488,704
290 5,488,695
309 5,488,705
375 5,488,706
420 5,488,707
430 5,488,711
431 5,488,712
442 5,488,708
445 5,488,709
452 5,488,710
[illegible] 5,488,713
[illegible] 5,488,714
600 5,488,717
[illegible] 5,488,718
[illegible] 5,488,720
[illegible] 5,488,721
[illegible] 5,488,722
[illegible] 5,488,725
700 5,488,723
[illegible] 5,488,727
726 5,488,728
800 5,488,729
[illegible] 5,488,730
[illegible] 5,488,731
[illegible] 5,488,732
[illegible] 5,488,733
[illegible] 5,488,734
[illegible] 5,488,735
[illegible] 5,488,736
824 5,488,694

CLASS 400
120.02 5,487,614
207 5,487,615
489 5,487,616

CLASS 401
4 5,487,617

CLASS 404
6 5,487,618
[illegible] 5,487,619
31 5,487,620

CLASS 405
52 5,487,621
[illegible] B1 5,297,896
128 5,487,622
286 5,487,623

CLASS 406
14 5,487,624

CLASS 407
119 5,487,625

CLASS 408
144 5,487,626
145 5,487,627
[illegible] 5,487,930
[illegible] 5,487,911
[illegible] 5,487,912
643 5,487,913

CLASS 427
140 5,487,914
288 5,487,915
213 5,487,916
228 5,487,917
255.3 5,487,918
327 5,487,919
489 5,487,920
528 5,487,922
560 5,487,923

CLASS 428
[illegible] 5,487,924
19 5,487,925
33 5,487,926
[illegible] 5,487,928
40 5,487,929
53 5,487,930
[illegible] 5,487,931
[illegible] 5,487,932
131 5,487,933
[illegible] 5,487,936
[illegible] 5,487,937
[illegible] 5,487,938
[illegible] 5,487,939
[illegible] 5,487,940
[illegible] 5,487,941
[illegible] 5,487,942
[illegible] 5,487,943
[illegible] 5,487,944
[illegible] 5,487,945
[illegible] 5,487,946
[illegible] 5,487,947
447 5,487,948
472.1 5,487,949
484 5,487,950
525 5,487,951
532 5,487,952
690 5,487,953
[illegible] D 5,487,704

CLASS 429
26 5,487,885
49 5,487,957
90 5,487,956
151 5,487,958
191 5,487,959
218 5,487,960
223 5,487,961

CLASS 430
5 5,487,962
[illegible] 5,487,963
16 5,487,964
137 5,487,965
269 5,487,966
322 5,487,967
544 5,487,968

CLASS 431
153 5,487,657
253 5,487,658
350 5,487,659

CLASS 433
3 5,487,660
29 5,487,661
37 5,487,662
218 5,487,663
221 5,487,664

CLASS 434
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72 5,487,666
98 5,487,668
112 5,487,669
167 5,487,670
185 5,487,671

CLASS 435
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5 5,487,969
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[illegible] 5,487,972
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7.21 5,487,976
7.24 5,487,977
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11 5,487,978
29 5,487,980
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69.5 5,487,984
91.1 5,487,986
91.2 5,487,985
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147 5,487,988
168 5,487,989
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[illegible] 5,487,992
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199 5,487,994
240.2 5,487,979
252.1 5,487,996

CLASS 436
56 5,487,997
95 5,487,998

CLASS 437
7 5,487,999
21 5,488,000
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31 5,488,002
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43 5,488,006
47 5,488,007
52 5,488,008
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60 5,488,011
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195 5,488,015

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83 5,487,674
93 5,487,675
125 5,487,676
184 5,487,667
299 5,487,677
352 5,487,678
428 5,487,679
552 5,487,680
581 5,487,681
607 5,487,682
715 5,487,684
718 5,487,683
801 5,487,685
884 5,487,686

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77 5,487,687
88 5,487,688

CLASS 445
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126 5,487,691
465 5,487,692

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45 5,487,693
49 5,487,694
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105 5,487,696
324 5,487,697

CLASS 452
58 5,487,698
66 5,487,699
188 5,487,700

CLASS 454
271 5,487,701

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85 5,487,703

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34 5,487,704

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29 5,487,705
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35	5,487,720
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104	5,488,018
139	5,488,019
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60	5,488,020
63	5,488,021
115	5,488,022
182	5,488,023
325	5,488,024
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227	5,488,025
	5,488,026
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105	5,488,027
193	5,488,028
212	5,488,029
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190	5,488,030
475	5,488,031
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211	5,488,083
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15	5,488,036
19	5,488,037
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120	5,488,043
167	5,488,044
211	5,488,046
214	5,488,047
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223.2	5,488,049
236.2	5,488,050
248	5,488,051
259	5,488,052
280	5,488,053
291	5,488,054
293	5,488,055
305	5,488,056
312	5,488,057
324	5,488,058
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465	5,488,064
504	5,488,065
618	5,488,066
	5,488,067
647	5,488,068
772.4	5,488,069
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51	5,488,070
114	5,488,071
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168	5,488,075
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71	5,488,078
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270	5,488,080
314	5,488,081
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100	5,488,087
432	5,488,088
463	5,488,089
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60	5,488,092
193	5,488,093
199	5,488,094
361	5,488,095
392	5,488,096
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399	5,488,099
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605	5,488,098
618	5,488,100
680	5,488,101
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128	5,488,105
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156	5,488,111
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39	5,488,132
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218	5,488,141
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7	5,488,157
62	5,488,145
109	5,488,146
113	5,488,147
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449	5,488,149
450	5,488,150
452	5,488,151
474	5,488,152
519	5,488,153
540	5,488,154
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580	5,488,156
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125	5,488,158
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165	5,488,160
259	5,488,161
301	5,488,162
315	5,488,163
426	5,488,164
479	5,488,165
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489	5,488,167
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8	5,488,171
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13	5,488,172
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454	5,488,174
454.000	5,488,175
558.000	5,488,176
576	5,488,177
578	5,488,178
	5,488,179
609	5,488,180
615	5,488,181
660	5,488,182
828	5,488,183
867	5,488,184
896	5,488,185
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226	5,488,190
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212	5,487,873
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99	5,487,723
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20	5,487,724
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22	5,487,725
46	5,487,726
49	5,487,727
86	5,487,728
96	5,487,729
	5,487,730
103	5,487,731
110	5,487,732
	5,487,733
195	5,487,734
308	5,487,736
403	5,487,737
414	5,487,738
890.1	5,487,739
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15	5,487,740
60	5,487,741
61	5,487,742
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	5,487,744
83	5,487,745
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166	5,487,747
182	5,487,748
205	5,487,749
236	5,487,750
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17	5,487,752
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27	5,487,754
	5,487,755
118	5,487,756
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123	5,487,758
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	861	366,556
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	872	366,558
	904	366,559
	912	366,560
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D6—	310	366,568
	315	366,569
	317	366,570
	361	366,571
	373	366,572
		366,573
	395	366,574
		366,575
	397	366,576
	434	366,577
	470	366,578
	476	366,579
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	491	366,581
	501	366,582
	515	366,583
	552	366,584
	580	366,585
		366,586
		366,587
	630	366,588
D7—	320	366,589
	348	366,590
	351	366,591
	360	366,592
	376	366,593
	383	366,594
	384	366,595
	412	366,596
	536	366,597
	553	366,598
	605	366,599
	620	366,600
	622	366,601
	636	366,602
	654	366,603
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	356	366,606
	382	366,607
		366,608
	387	366,609
	395	366,610
D9—	342	366,611
	429	366,612
		366,613
	434	366,614
		366,615
	445	366,616
	447	366,617
	522	366,618
	526	366,619
	542	366,620
D10—	15	366,621
	46.2	366,622
	63	366,623
	70	366,624
	81	366,625
	131	366,626
D11—	17	366,627
	90	366,628
	164	366,629
		366,630
		366,631
		366,632
D12—	6	366,633
	102	366,634
	112	366,635
	114	366,636
	167	366,637
	173	366,638
	181	366,639
	184	366,640
	209	366,641
	315	366,642
	317	366,643
		366,644
	405	366,645
D13—	146	366,646
D14—	100	366,647
		366,648
	106	366,649
	107	366,651
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	114	366,650
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	121	366,656
	160	366,657
	168	366,658
D15—	5	366,660
		366,661
D16—	124	366,662
	101	366,663
	237	366,665
	325	366,666
	329	366,667
D19—	33	366,668
	42	366,669
	53	366,670
		366,671
		366,672
	59	366,673
	86	366,674
	90	366,675
D21—	34	366,676
	66	366,677
	120	366,678
	199	366,679
	208	366,680
	212	366,681
	214	366,682
		366,683
		366,684
	234	366,685
	244	366,686
	246	366,687
D22—	122	366,688
		366,689
	140	366,690
	146	366,691
	213	366,692
	245	366,693
	250	366,694
	364	366,695
	106	366,696
	110.2	366,697
	114	366,698
	143	366,699
		366,700
	159	366,701
	189	366,702
	214	366,703
D25—	113	366,704
D26—	3	366,705
		366,706
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		366,708
		366,709
		366,710
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	81	366,714
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	93	366,716
		366,717
		366,718
		366,719
		366,720
	110	366,721
	125	366,722
	134	366,723
		366,724
	136	366,725
		366,726
D28—	7	366,727
	48	366,728
	55	366,729
	86	366,730
D29—	102	366,731
	108	366,732
	120	366,733
	124	366,734
D30—	101	366,735
	112	366,736
D32—	35	366,737
	42	366,738
		366,739
	50	366,740
	54	366,741
D34—	1	366,742
	7	366,743
	12	366,744
		366,747
	17	366,745
	20	366,746
	24	366,748
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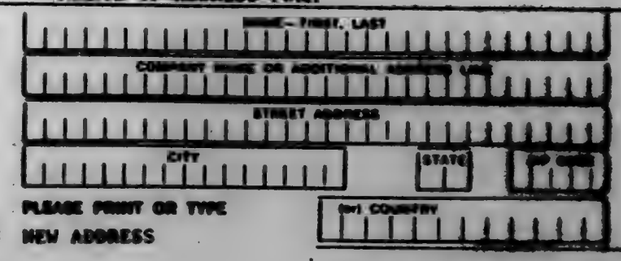
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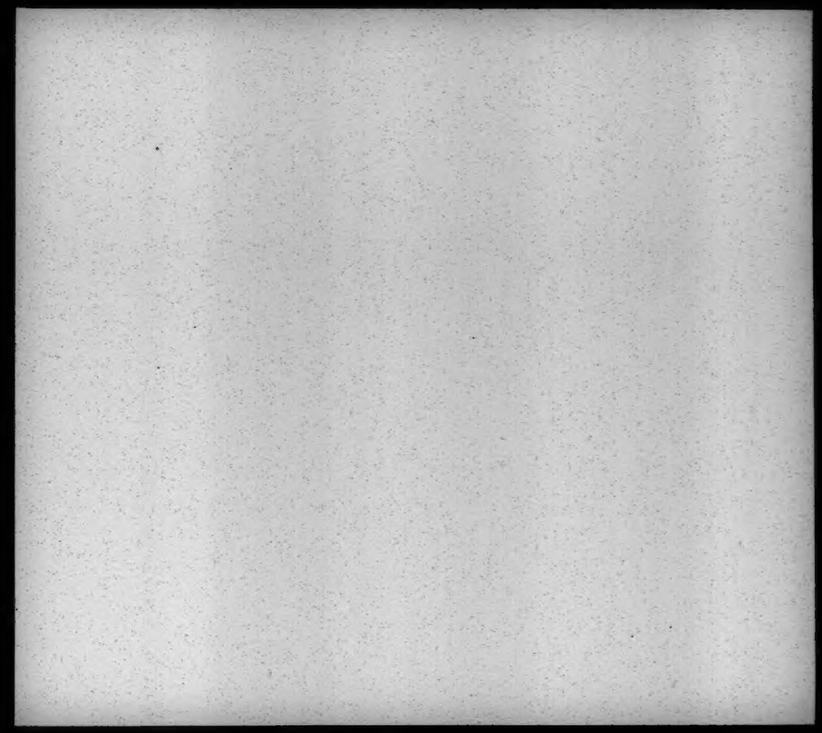
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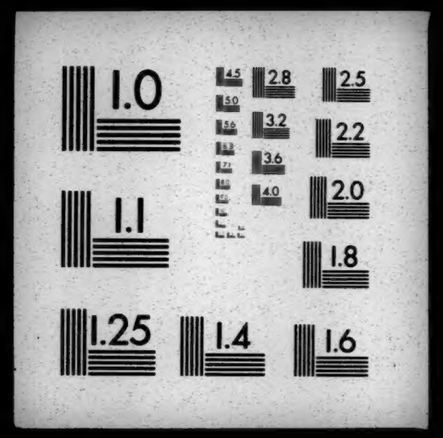
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